DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
Type I Action
HIGHGATE-WOODLANDS AT NORTH SALEM
Reed Road
TOWN OF NORTH SALEM, WESTCHESTER COUNTY, NEW YORK

Volume I

Tax Lot Numbers
Sheet 2, Block 1734, Lots 15, 16, 19

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Lead Agency Acceptance Date: April 23, 2013

SEQR Public Hearing Date: June 25, 2013

Deadline for comments to be submitted to Lead Agency July 25, 2013

April 22, 2013

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Highgate-Woodlands at North Salem
Draft Supplemental Environmental Impact Statement
Town of North Salem, Westchester County, New York

Volume I

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2.0 EXECUTIVE SUMMARY

This document is a Draft Supplemental Environmental Impact Statement (DSEIS) prepared in conformance with the requirements of the New York State Environmental Quality Review Act (SEQR). The Town of North Salem Town Board is Lead Agency for this action. The applicant has prepared this document addressing the items described in a Scoping Document dated March 22, 2005, and in response to comment letters prepared by the Town's professional consultants.

2.1 Project History and Background

The action proposed in this DSEIS is for a residential development on a 159.52 acre property in the Town of North Salem that is currently undeveloped woodland. A previous proposal for this property was evaluated in a Draft Environmental Impact Statement (DEIS), with the Town Board as Lead Agency, and accepted as complete for public review on December 16, 1996. The proposal in the DEIS was for a project known as the "Jo Flo" project (Lukashok Petition Application)" and later as the "Highgate Project (Lukashok)."

The Highgate project consisted of the proposed re-zoning of approximately 40 acres of the property to the Town's existing RO Research-Office Non-Residential Zoning District, the subsequent development of approximately 250,000 sf of office and research space, and the subdivision of the remaining approximately 120 acre portion of the site into approximately 49 single-family residential lots.

The accepted DEIS for the Highgate project incorporated the terms of a Stipulation of Settlement adopted on December 8, 1992, pursuant to litigation following a change in zoning of a portion of the property from commercial to residential. The zoning change precluded the development of a portion of the property for hotel use as had been proposed and evaluated in a DEIS completed on February 18, 1987. The Stipulation of Settlement contemplated an amendment to the Town Zoning Law to allow the use of the rezoned portion of the property (approximately 40 acres) for offices as of right. The Stipulation also indicated that the rezoning, site plan, and subdivision approvals were subject to and conditioned upon completion of all requirements of SEQRA.

Required SEQR public hearings on the Highgate DEIS were held on January 30, 1997 and February 6, 1997, prior to the preparation of a Final EIS. Based on ongoing discussions between the Town Board and the Applicant and his representatives, it was acknowledged that there was not adequate demand for office space locally and in the surrounding area, and a project change should be considered. The commercial aspect of the project, the previously proposed office space and related RO (Research-Office) rezoning in the center of the former Highgate site, was dropped from the proposed development. Instead the central area would be proposed for active adult townhouse development specifically designed for occupancy by one or more persons 55 years or older. This aspect of the project, which would involve rezoning to a designation that would permit such a use, was identified by the Applicant as "The Woodlands at North Salem". The previously proposed mixed use development (office and single family residential) is considered as an alternative in this DSEIS.

The project considered in this DSEIS consists of 76 units of active adult townhomes and 42 single-family homes, and is known as "Highgate-Woodlands at North Salem".

Amendment #1 to the Stipulation of Settlement was entered into by and between the Town Board, the Planning Board and the Applicant, and filed with the Westchester County Clerk on November 29, 2004. The Amendment was adopted to support the use of the portion of the property previously designated for office use as an active adult townhouse development, subject to the Town rezoning the central area of the property to allow for such uses. Since the project was significantly changed from the project proposed in the accepted DEIS, a Draft Supplemental EIS (DSEIS) was required, and a Scoping Outline was adopted for the DSEIS on March 22, 2005.

The project site is currently zoned R-1 for single family residences on one acre lots. The proposed project would require the subdivision of the entire parcel and the rezoning of approximately 39 acres to a new zoning district, the proposed R-AMF/2 zoning district for occupancy by one or more persons 55 or older. The rezoned portion of the property would be developed with 76 attached residential dwelling units pursuant to the proposed zoning provisions, including amenities associated with multi-family complexes. The current proposal for the single family portion of the property includes 42 single family lots instead of the previously proposed 49. Additional parcels would be created to provide for roadways, conservation, and water and sewer facilities.

In addition, as described further below, up to three off site moderate income housing (MIH) units are proposed to be provided on an off-site property known as the "Dino and Artie's site" owned by the Town of North Salem. The Dino and Artie's site is located in the hamlet of Croton Falls, west of the site. The project sponsor will be responsible for the construction of the MIH residential units on the Dino and Artie's site. The completed residential development on that property would be donated to a not for profit organization, which would manage it thereafter. The former Dino and Arties site is referred to herein as the Moderate Income Housing (MIH) site.

2.2 Summary of Proposed Action

Proposed Development

The revised proposal for Highgate-Woodlands is for a residential development that would provide 42 market rate single family dwellings and 76 active adult townhouses and related recreational facilities in development located east of the hamlet of Croton Falls. In addition, up to 3 affordable apartments would be provided in Croton Falls on the former Dino and Artie's site, herein referred to as the "Moderate Income Housing" site. As shown in Table 2-1, the entire Highgate-Woodlands project site consists of 159.52 acres.

The key elements of the proposed development include:

- **76 Active Adult Townhomes** clustered on an approximately 38.65 acre parcel in the approximate center of the property. The active adult townhomes will be located in 19 buildings, each containing four (4) residential units. The units will be a mix of one-bedroom (28 units) and two-bedroom townhomes (48 units). Access to the active adult townhomes will be from two cul-de-sac roads (Roads "D" and "E"). The active adult townhomes will have a recreation and community building located near the entrance of the active adult development. This "active adult recreation building" is located on the shared active adult townhome parcel.

- **42 Single-Family residences** on individual lots ranging in size from 1.01 to 6.4 acres (total area). All of the single family lots will be zoning compliant and comprise an area of 71.97 acres. The single family homes will all be market rate and will range from approximately 2,500 square feet to 4,500 square feet in size. Single family homes would be accessed from a private road system, as described below. The single family residences will have a recreation and community building located on a separate parcel at the end of Access Road "A", in the northwest portion of the site (Parcel R).

- **Private Road System** The development will be served by a private road system (Roads "A", "B" and "C"), with access provided from Reed Road. The internal roads will be 22 feet in width with 4-foot shoulders and a 50 foot right-of-way. The private road system will be contained on a lot (Parcel C) comprised of 12.75 acres.

- **Public Road Portion** The first approximately 650 feet of the access road will be dedicated to the Town of North Salem on a separate lot (R.O.W. Town Road) consisting of 0.95 acres. The public portion of the access road will provide a turn-around for school buses and will be maintained by the Town.

- **Sewage Treatment Plant** A private community sewage treatment plant will treat wastewater from the entire Highgate-Woodlands development (active adult townhomes and single family residences). The sewage treatment plant will be located on a 14.13 acre parcel in the south-central portion of the site. Treated wastewater will be disposed of into subsurface sewage disposal system (SSDS) areas. The SSDS areas are located on the 14.13 acre sewage treatment plant parcel, and one SSDS area is located on a separate 1.01 acre parcel (Parcel J).

- **Water Treatment Plant** The Highgate-Woodlands development will be provided water from a community water treatment plant located on a 3.10 acre parcel in the north central portion of the site (Parcel W).

- **Additional Parcels** Parcels D, E and F, identified on the proposed Plat and listed in Table 2-1, below, will be used for the following uses:
  Parcel D, (9.37 acres) located in the southwest portion of the site is designated as a conservation parcel, and will contain a portion of the emergency access drive connecting Sun Valley Drive to "Private Road A",
  Parcel E, (3.13 acres) in the northwest portion of the site will be utilized for stormwater management facilities, and
  Parcel F, (3.36 acres) located at the intersection of Road "A" and Road "C", is designated as a conservation parcel, and will also contain stormwater management facilities and a wastewater pump station.

- **Moderate Income Housing** The above described development is proposed for the project site. Moderate Income Housing development is proposed for an off-site parcel located in the hamlet of Croton Falls, formerly known as the Dino and Artie's site. The Moderate Income Housing parcel in Croton Falls will be developed with up to three affordable apartments, and associated parking, and utilities. The proposed Moderate Income Housing is further described in Section 3.300 Design and Layout, below.

Table 2-1
Proposed Parcels in Highgate-Woodlands Development

Parcel	Size (acres)	Use
Single Family Lots 1-42	Total 71.97	Single family residences
Active Adult Townhomes (R-AMF-2) Parcel	38.65	Active adult townhomes. Includes cul-de-sac access roads, recreation building and undeveloped land.
R.O.W. Town Road	0.95	Town Road
Parcel C	12.75	Private Road
Parcel D	9.37	Conservation
Parcel E	3.13	Drainage
Parcel F	3.36	Drainage, Pump Station, Conservation
Parcel I	14.13	Sewer (sewer treatment plant and 4 SSDS fields
Parcel J	1.01	Sewer (SSDS field)
Parcel R	1.10	Single family home recreation building
Parcel W	3.10	Water treatment and pump house
Total Area	**159.52 acres**	

Emergency access into the site will be provided from the northern end of Sun Valley Drive. This access will extend through Parcel D (described above) and through a proposed easement that will straddle the lot line shared by Lot 2 and Lot 3, connecting to Road "A". A second internal emergency access road would extend from the cul-de-sac at the terminus of the active adult townhome development Road D and would connect to Road C, in the northern portion of the site. Emergency access is further described in Section 3.3.6 Roads.

This DSEIS describes the existing on-site wetlands and 100-foot wetland buffers, and project related impacts to these resources (see Section 4.430 Wetlands). The project as designed would result in the direct impact to Town designated wetlands of 87 sf (0.002) acres, and impacts to Town regulated 100- foot wetland buffers would total 5.73 acres. The applicant proposes wetland mitigation measures in the form of invasive species management and wetland buffer enhancement. Section 4.430 Wetlands provides a detailed description of existing conditions, potential impacts and mitigation.

2.3 Approvals and Permits Required

A summary of permits and approvals for the review process is set forth in Table 2-2. This chart lists the administering agency, the statute or regulations which govern each phase and the current status of each action.

Table 2-2
Summary of Required Permits and Approvals - Highgate-Woodlands

Review Agencies	Approvals and Permits Required	Status of Application
North Salem Town Board	Re-zoning; Formation of Sewer and Water Works Corporations; Approval for the designation of the property as an Open Development Area, for the required frontage on a Town approved road (the project would be served by private roads);	Pending
North Salem Planning Board	Site Plan and Subdivision Approval; Zoning Referral to the Town Board; waiver for exceeding the maximum length of a cul-de-sac; waiver of road gradient; approval of a street right-of-way width in excess of the minimum standard; wetland permit; Approval of SWPPP.	Pending
North Salem Town Engineer	Water Supply System and Treatment Facility; STP, Review and Approval of Construction Drawings Review and approval of SWPPP	Pending
North Salem Building Inspector	Building permits	TBD
Westchester County Department of Health	Permit to construct wells; Water Supply and Sanitary Sewage Disposal Systems; Subsurface Sewage Disposal Systems (SDSS); STP; Subdivision Approval;	Pending
Westchester County Department of Planning	Planning Review pursuant to Section 239 l, m, n of the New York State General Municipal Law	Pending
New York City Department of Environmental Protection (NYCDEP)	Review and approval of Sewage Treament Plant, Subsurface Disposal System (SSDS), and Stormwater Pollution Prevention Plan.	Pending
New York State Department of Environmental Conservation (NYSDEC)	Water Supply; SPDES permit approval of effluent flow amount pursuant to the Environmental Conservation Law, (ECL) Article 17, Title 8, Part 750, SPDES General Permit for Stormwater Discharge from Construction Activities (GP-0-08-001) pursuant to ECL, Article 17, Titles 7 and 8 and Article 70 of the ECL Section 401 Water Quality Certification	Pending
New York State Department of Transportation (NYSDOT)	Highway Work Permit for construction within NYS Road Right-of-Ways	Pending
New York State Attorney General's Office	Formation of the Homeowner's Association and its ownership and maintenance with regard to road parcels, the Central Water System Parcel, conservation parcels/land, stormwater management facilities, and STP and SSDS system parcels.	Pending
New York State Department of Health	Approval for Wells and Central Water Supply System	Pending
Town of North Salem Highway Department	Curb Cut Approvals; Access from Reed Road	Pending
US Army Corps of Engineers	Individual Wetlands Permit	Pending

As indicated in the table, the project will require an Individual Permit from the US Army Corps of Engineers for the filling of 87 square feet (0.002 acres) of Wetland F for the construction of Road F. Impacts to wetlands of less than 0.5 acres may qualify for Nationwide wetland permits from the ACOE, but given that the project site is located in the NYCDEP watershed, an Individual Permit is required.

Moderate Income Housing Approvals

The Moderate Income Housing (MIH) portion of the project is subject to SEQR and conceptual review by the Town of North Salem Town Board as part of the Highgate-Woodlands at North Salem project. Specific Site Plan review and approval would be required from the North Salem Planning Board. Other approvals and agency review for the MIH parcel is provided in Table 2-3, below.

Table 2-3
Summary or Required Permits and Approvals
Moderate Income Housing Property

Review Agencies	Approvals and Permits Required	Status of Application
North Salem Town Board	Conceptual plan and SEQR review as part of the Highgate-Woodlands at North Salem project. Connection to Town Water District.	Pending
North Salem Planning Board	Site Plan approval, Conditional Use approval	Pending
North Salem Town Engineer	Septic System and construction drawing approval	Pending
North Salem Building Inspector	Building permits	Pending
North Salem Housing Board	Review of moderate income housing units	Pending
Westchester County Department of Health	Connection to Town Water District. Septic system approval	Pending
New York City Department of Environmental Protection (NYCDEP)	Review for septic system.	Pending
New York State Department of Transportation (NYSDOT)	Highway Work Permit for construction within NYS Road Right-of-Ways, Curb cut approval/ modification	Pending

2.4 Soils, Topography and Geology Impacts and Mitigation

Potential Grading Impacts

The construction of the project roadways, infrastructure and foundations would physically alter the existing topography because of the excavation and fill requirements of the proposed construction. The site road system and proposed residential lots have been designed to avoid steep slopes and areas of rock outcrop. The active adult townhome buildings have been located in the area of the site with the most shallow slopes (<15 percent) to minimize on-site and off-site potential impacts.

Based on the Site Plan drawings, the total disturbance to the site would result in 82.13 acres of disturbance. Lawn and landscaping and plantings for stormwater management features would total 63.13 acres, following the full build-out of the project. Impervious surface for buildings and roadways would total approximately 19.00 acres. The limits of grading are shown in Figure

4.1-5 Steep Slopes Disturbance Map and in Full Sized Plan Sheet SA-1 Slopes Analysis (Drawing 4).

When surface soils are exposed during construction, they become subject to erosion. The erosion potential is greatest in areas with steep slopes. The most severely sloping areas on the site are the Chatfield-Hollis-Rock Outcrop Complex. In addition, the potential for soil erosion and sedimentation increases in relation to the amount of disturbance due to construction activities. Soil erosion on the Highgate-Woodlands site would be minimized by implementing the Erosion Control Site Plan, (See attached Full Sized Plan Sheets EC-1 through EC-4 (Drawings 19 through 22)), and by avoiding the most steeply sloping areas on the property.

Cut and Fill

Project construction would result in a significant amount of earthwork. Based on the Layout and Grading Plans for the project, grading for the residential development, roadways and stormwater facilities would require approximately 340,321 cubic yards (c.y.) of cut and 307,205 c.y. of fill. The "cut" materials include the "ripped" or blasted rock material which will be reused on-site to the extent possible. The preliminary earthwork estimates result in approximately 33,116 cubic yards that will require transport and removal from the site, if an on-site use for the soil cannot be found. The topsoil removed would be stockpiled on-site for reuse.

To the extent possible, excavated soil and rock will be reused on-site to avoid off-site transport and disposal. Raising the grade in the area of the multi-family buildings slightly could utilize a portion of the estimated excess fill material. Excavated rock will be utilized as construction material for road beds, building foundations and as backfill. Excavated bedrock and field stone will also be used in landscaping and in the construction of retaining walls on the site.

Steep Slopes

The most substantial alteration to topography would occur in two locations. The first would be at the site's entry where an entry roadway (Road A) would be cut into the hillside from Reed Road westward. This area is currently a steep hillside with existing slopes of greater than 25 percent. At this location, there would be approximately a 30 foot cut from existing grade (Sta 2+50). The second location would be in the vicinity of Road C as it rises in elevation from its intersection with Road A. In this area, a maximum cut of approximately 25 feet would be required (Sta. 6+00).

Other portions of the site with slopes ranging from 12 to 25 percent and greater than 25 percent will require grading and disturbance, including single family homes in the west central portion of the site and in the northeastern portion of the site. An analysis of potential impacts to slopes is shown in Full Sized Plan Sheet SA-1 Slope Analysis (Drawing 4) and also in Figure 4.1-5 Steep Slopes Disturbance Map.

Construction and grading on steep slopes has the potential to result in soil erosion during storm events. Once vegetation is removed, exposed soils have the potential to be transported and eroded during storm events. In addition, grading of the site for construction will result in the alteration of drainage patterns within individual existing drainage areas. In general, post-development drainage areas will be similar in size and location to pre-development drainage areas. Modification to site drainage are fully described in Section 4.220 Surface Water.

Soil Grading Mitigation Measures

Grading, site disturbance and the removal of existing vegetation will be limited to the disturbance shown on the site plan drawings. As shown in Full Sized Plan Sheet OS-1 Overall Site Plan (Drawing 3), areas or islands of existing vegetation and trees will be retained on individual lots such as 9, 18, 19, and 38. The retention of existing vegetation will provide screening and privacy for certain homes, from the street, and reduce the overall tree clearing and change in surface cover. The limits of disturbance will be marked in the field with construction fencing and no tree cutting or grading will be permitted beyond the limits of disturbance, as shown on the Site Plans.

Soils with high erosion potential CsD, CuD and CtC would be avoided during construction to the greatest extent possible and soils within the HrC area are not planned to be disturbed at all. Erosion of surface soils, which are exposed during construction, would be controlled by implementing soil erosion and sedimentation control measures. Erosion control methods described below include:

- The sequencing of construction and grading, to minimize the amount of exposed soil at any one time,
- Installing and maintaining erosion control devises such as silt fence, inlet control devices and temporary stormwater management facilities.
- Quickly stabilizing exposed areas of soil with temporary mulch as well as both temporary and permanent vegetative cover.
- Inspecting and maintaining erosion control methods on a routine and scheduled basis. The NYSDEC General Permit for Stormwater Discharges from Construction Activities (GP-0-10-001) requires routine inspections by trained and qualified inspectors. This required routine inspection reduces the potential for major problems with erosion control measures.

Steep Slopes Mitigation Measures

The preferable mitigation for steep slopes disturbance is avoidance. As described above, disturbance to steep slopes for the Highgate-Woodlands project is unavoidable, given the sloping topography on the site and limited road frontage and access into the site's interior. Nevertheless, the proposed site plan has been designed to avoid steep slope disturbance to the extent possible. The active adult townhome development has been sited in the most level portion of the property, in the central portion of the site. The single-family residences have been designed and positioned to avoid steep portions of the site, including a steep rocky area east of Wetland B, and the slopes in the southwest portion of the site (Parcel D). Where avoidance is not possible, the potential impacts of slope disturbance (erosion, vegetation loss), will be minimized by detailed erosion control procedures, outlined below. The proposed limits of disturbance are shown in Full Sized Plan Sheet SA-1 Slope Analysis (Drawing 4) and in Figure 4.1-5. These limits of disturbance will be marked and maintained in the field during construction with construction fencing. Defined limits of disturbance will result in the avoidance of unnecessary grading and loss of existing trees and vegetation.

Grading - Impacts and Mitigation for the MIH Parcel

The MIH site in Croton Falls has been completely graded and filled to complete a NYSDEC directed soil remediation project for the site. Fill soils comprise all surface soils at the property. The property has nearly level topography and all slopes are less than 10 percent.

Based upon the proposed preliminary site plan for Moderate Income Housing, approximately 80 percent of the site will be re-graded for the construction of the residential building, parking area and septic system. The grading will not result in the disturbance of steep slopes.

The MIH parcel is relatively level, in a developed portion of Croton Falls. The soils on the property have been extensively excavated and graded for the site clean-up work which has been completed. Standard erosion control features would be utilized during the development on the site and the construction of parking areas, the single residential structure and the septic system. Specifically, silt-fencing and haybales would be installed at the limits of grading and construction on the property. A detailed, site specific soil erosion control plan will be required for the development and will be subject to review and approval by the Planning Board and Town Engineer as part of the site plan review process for the MIH parcel.

Soil Sampling for Pesticides Impacts and Mitigation

Ten soil samples were collected for laboratory analysis for organochloride pesticides and for specific metals related to pest control in orchards. The metals results were within ranges typical for the northeast and within published NYSDEC guidelines. At nine sampling locations, no pesticide compounds were found above the laboratory detection limits.

At location S-7, Sample S-7 contained 21 ppb of 4,4' DDT. No other pesticide compounds were detected in the sample. As shown in Table 4.1-4, the result is below the NYSDEC TAGM recommended soil cleanup objective, but above the new NYSDEC Division of Environmental Remediation unrestricted residential use soil clean-up objective value for 4,4 DDT (NYS SCO, Subpart 375-6).

The S-7 sample location is in the southwestern portion of the development, on proposed Lot 14. Under the current plan, the sample location would be at the edge of a proposed driveway under approximately 2 to 3 feet of fill. The proposed driveway will be shifted to the sampling location, to ensure that there will be no potential for future direct physical contact with the existing soil at this location after construction.

The applicant has provided the pesticide sampling results to the Westchester County Department of Health (WCDOH) and the New York State Department of Environmental Conservation (NYSDEC)(letter dated January 24, 2011). On April 12, 2011 the WCDOH Office of Health Risk Control collected soil samples from locations previously sampled by TMA to confirm the sampling results. To date, the results have not been provided to the applicant. A review of the results and concurrence with the proposed mitigation of preventing contact with soil by covering the location with soil fill and a driveway is pending.

Potential Blasting Impacts

It is anticipated that some blasting would be required to develop the Highgate-Woodlands site. Ripping or blasting rock for roads and lot improvements can considerably lengthen the site preparation period.

The layout of the Highgate-Woodlands roadway network has been designed to limit cuts. Rock removal is expected for the construction of the roadway within the Chatfield-Charlton Complex Series soils. The project plans show that proposed roadways would be located as close to the existing grade as possible. While blasting is anticipated, it has been minimized to the extent necessary construct the project to meet the Code requirements for road grades. The project engineer has developed a Blasting Plan which shows areas of potential blasting, based upon known rock outcrops and the extent of required excavation or cut. The Blasting Plan is provided as Figure 4.1-6 Potential Areas of Blasting.

In addition, excavation for a portion of the driveways and basements of some of the residences may require blasting depending upon the detailed soil characteristics of those particular areas. The extent of blasting cannot be accurately determined until construction activities commence and the depth to bedrock for each section of roadway, driveway, town houses and homesite is more accurately defined. Areas of anticipated blasting are those areas where bedrock is at or near the surface and include:

1. Front entrance road station 0+00 to station 20+00
2. Two locations on Roadway A
3. An area of Roadway C, east of the Road A intersection
4. The cu-de-sac at the end of Roadway B
5. Individual Lot 34

Where blasting is found to be required, its impacts are likely to be confined to noise. A discussion of construction noise is provided in Section 4.3.20 Noise Levels. The potential dust impacts are expected to be limited, and can be mitigated with the use of water to spray exposed surfaces. Although the charge explosions would be noticeable, they are likely to be intermittent over the period of initial excavation and grading, as further described, below. All necessary blasting will be conducted in conformance with North Salem's Blasting Code (Chapter 48 - Blasting and Explosives Law of the Town of North Salem).

Blasting Mitigation Measures

A Blasting Protocol has been prepared for the project and is provided in Appendix 8 of this DSEIS. The blasting contractor will possess the required insurance coverage to perform blasting work in the State of New York. In addition, they will perform such blasting operations in accordance with Chapter 48 - Blasting and Explosives Law of the Town of North Salem, and the recommended good practices employed in the industry.

The Blasting Protocol, explains that a pre-blast survey will be performed on all structures within 1000 feet of any proposed blasting. The survey will be conducted by the blasting contractor or professional insurance representative. The purpose of the pre-blast survey is to document the existing condition of homes and foundations, including any existing cracks, separations or structural issues. If any damage to private homes or structures is documented, the blasting contractor will be responsible for the damage and any resultant claims.

In summary, blasting operations would be strictly controlled to maintain vibrations within the limits specified by federal, state and local regulations. Blasting charges would be kept at a level such that vibrations would fall well below any level at which damage might occur and further would keep the noise levels as low as practical. The hours of blasting operations would conform to those set by the Town Code. The law requires that blasting be conducted between the hours of 8:00 AM and 5:00 PM and not on Sundays or holidays. The applicant would comply with the required blasting procedures established by the Town (Chapter 48 - Blasting and Explosives Law of the Town of North Salem).

2.5 Water Resources Impacts and Mitigation

Potential Impacts to Groundwater Resources

Potential Water Supply Wells Impacts

A well pumping test was conducted in July and August 2008 and is described in the Highgate-Woodlands at North Salem Water Supply Report (Appendix 7). The test demonstrates that four designated production wells on the property can provide the necessary water capacity redundancy required by NY State law for community water systems. The pumping test results show that Well 4 can produce 60 gpm, and that together Wells 2, 5A and 3A can provide 92 gpm. This rate includes a provision for potential drought periods. The conservative recharge analysis indicates that a greater volume of groundwater is available through groundwater recharge on the site, than the project water demand.

Based upon the well monitoring data, none of the off-site private monitored wells showed any connection to the pumping test wells. A slight water level fluctuation was observed in the Brook's well, located approximately 1,750 feet southwest of test Well 4. Upon close examination of the water level data, it does not appear that the fluctuation observed in the Brook's well was the result of the Well 4 pump test. A detailed discussion of the pumping test data and results, including the Brook's well, is provided in Appendix 7 - Highgate Woodlands Water Supply Report.

Water Supply Wells Mitigation Measures

The use of the Highgate-Woodlands wells is not expected to impact the long term use of off-site wells. The pump testing and mounding analysis completed to date support the conclusion that the project will not impact off-site wells. Nevertheless, post-construction operation of the subsurface wastewater discharge area may result in unforeseen off-site impacts (see discussion of potential wastewater impacts below). Therefore, the applicant has agreed to provide for the monitoring of the Vasilevsky well, which is the only private well downgradient/ cross gradient from the on-site subsurface wastewater disposal area. If the Vasilevsky well is impacted by the project, the applicant will either install a new deeper well, or connect the home to the Highgate-Woodlands water supply, subject to the approval of the homeowner. The details of this proposed mitigation will be developed in consultation with the Town, as part of the project Findings Statement.

Water Supply for the MIH Property

The source of water for the Moderate Income Housing (MIH) property will be the Croton Falls Hamlet Water supply, a Town Water District. The hamlet of Croton Falls is served by the Croton Falls Water District. The water connection will require approvals from the North Salem Town Board and the Westchester County Department of Health. According to a Town representative, the district has allocated sufficient capacity for the MIH units. The Town indicated that the Town is in the process of drilling new wells for the District due to water quality issues related to radiological parameters, as well as lead and copper, in existing water supplies.

Potential Sewage Treatment Plant Groundwater Impacts

The applicant proposes to construct a sewage treatment plant (STP) to treat the wastewater generated by the proposed development. The STP would be designed to treat a maximum flow of 33,000 gallons per day (gpd) of effluent.[1] This design flow allows sufficient capacity for all of 42 single family homes and the 76 active adult townhouse condominium units, as well as any peaking factor. The average flow is described below and the design engineer's report is included in Appendix 5 in its entirety.

Fully treated effluent from the WWTP would be discharged to a subsurface disposal system located on the south central portion of the site. The system will be subject to WCDOH and New York City Department of Environmental Protection (NYCDEP) review and approval. The WWTP has been designed to meet all applicable effluent standards. The treatment process would consist of primary settling; equalization; biological contact (rotating disc); a secondary clarifier with alum treatment; and aeration.

The applicant has completed an analysis of the potential impacts of nitrate on both on-site wells and nearby off-site wells. The analysis was completed by Leggette, Brashears & Graham, Inc. and is provided in the supplemental report dated January 19, 2011 (see Appendix 14). Based upon treatment system information, the average total nitrogen concentration for treated effluent entering the ground in the winter months (worst case) will be 2.2 mg/L. This concentration is less than the NYSDOH drinking water standard of 10 mg/L. The dilution analysis indicates that the nitrate-nitrogen concentration leaving the property would be approximately 1.3 mg/L.

Septic Mounding Analysis

A septic mounding analysis was completed by Leggette, Brashears & Graham, Inc. to assess the proposed subsurface wastewater disposal areas (SSDS) (two primary and one secondary). As described above, the design flow to the SSDS areas is conservatively estimated at 33,000 gpd. The mounding analysis consisted of completed soil borings, installing shallow groundwater monitoring wells, and conducting a computer modeling of potential wastewater flows using the "Modular Three-Dimensional Finite-Difference Ground water Flow Model" (MODFLOW). The results indicate that groundwater will not cross a property boundary, enter a surface water body or breakout at the identified locations before 21-days of travel time is reached. The Septic Mounding Analysis report is provided in Appendix 14.

[1] This design flow is based on “Design Standards for Wastewater Treatment Works” (1988), published by the New York State Department of Environmental Conservation.

Sewage Treatment Plant Mitigation Measures

Although the potential impact of the subsurface disposal system is quite low, the applicant has agreed to provide mitigation for the Vasilevskey property, which is the only private well downgradient/ cross gradient from the on-site subsurface wastewater disposal area. As described above, the applicant has agreed to provide for the monitoring of the Vasilevskey well. If the Vasilevskey well is impacted by the project, the applicant will either install a new deeper well, or connect the home to the Highgate-Woodlands water supply, subject to the approval of the homeowner. The details of this proposed mitigation will be developed in consultation with the Town.

Potential Impacts to Surface Water

Adequacy of Water Supply for Fire Protection

The water distribution system at Highgate Woodlands is not designed for fire fighting purposes. Following consultation with the Croton Falls Fire District, the Fire District requested either lined ponds or underground storage tanks be installed to provide for fire fighting capacity. The applicant has agreed to provide these facilities, subject to review and consultation with the Fire District regarding the location and total capacity of this supplemental water supply. The facilities proposed by the applicant are described in Section 4.830 Fire Protection/ Emergency Services. Such storage features can be filled and maintained with the project water supply system.

Impact to On-site and Off-site Springs/Seeps

An area of seasonal springs and seeps is located in the northwest corner of the property near Juengst Road. In the springtime or following periods of heavy precipitation, shallow groundwater breaks out into seeps at the ground surface. Several shallow intermittent streams collect this water where it flows off-site towards the northwest. As described above, the springs/ seeps are not used for drinking water.

Grading for the stormwater management facility on Parcel E will likely reduce the amount and frequency of surface springs/seeps in this portion of the property. Grading during construction has the potential to impact water quality (turbidity, TSS) in the springs/seeps. Adherence to the SWPPP and soil erosion control plan for construction will minimize the potential for water quality impacts. The SWPPP and soil erosion control procedures during construction are further described below.

Impacts to Waterways, Waterbodies Wetlands and Regulated 100-foot Buffers

Impacts to surface water resources may occur as a result of changes to water quality and/or to water quantity during storms resulting in soil erosion, turbidity and the transport of soil in stormwater. The potential impacts may affect the on-site pond and the perennial stream that flows off-site at the eastern edge of the site near Reed Road, as well as the on-site wetlands and associated adjacent regulated 100-foot buffers. These potential impacts may occur during construction and potentially post-construction. The discussion below provides a description of facilities and methods to reduce these potential impacts.

Surface Water Quality - Impacts of MIH Development

The MIH property in Croton Falls has no streams, waterbodies or wetlands on the property. The property is within approximately 300 feet of the West Branch of the Croton River. The MetroNorth railroad tracks lie between the site and the river.

Impacts to surface water quality may occur as a result of soil erosion during construction on the MIH property. Mitigation measures including soil erosion control will minimize potential water quality impacts from the site.

Construction Impacts

The project has the potential to impact on-site surface streams, the pond and off-site water bodies during grading and removal of vegetation for construction. Exposed soil has the potential to be eroded and carried in run-off during storms. The removal of vegetation has the potential to increase stormwater velocity and the volume running off-site. The Stormwater Pollution Prevention Plan (SWPPP) prepared for the project will reduce the potential impacts of soil erosion during construction.

Post-Construction Impacts

Following construction and full project build out, the project has the potential to impact surface water quality, both on-site and off-site. Water quality in stormwater run-off has the potential to be impacted by impervious surface introduced to the project site, such as rooftops, roads and driveways, new areas of lawn and landscaping. The introduction of developed land may result in increased phosphorus, nitrates, TSS, and oil and grease from vehicles and pesticides from landscape maintenance. The potential impacts are addressed by the SWPPP.

Streambank Protection

The project will involve no direct impact to streams. As described above, the project site contains three streams: 1) an intermittent stream through Wetland F, 2) an intermittent stream seasonally flowing between Wetland C and Wetland A, and 3) a perennial stream flowing from the pond and Wetland A easterly through Wetland B to eastern edge of the site. None of the on-site streams is classified by NYSDEC on published maps or per 6 NYCRR 859.1 Subchapter B: Classes and Standards of Quality and Purity Assigned to Fresh Surface and Tidal Salt Waters.

One wetland and intermittent stream crossing is proposed for the project, where Road A and Road C intersect and cross Wetland F. The roadway crossing will consist of a open bottom arch culvert approximately 40 feet wide and 70 feet long. The culvert will be installed outside of the edges of Wetland F and the intermittent stream at that location. The steambanks of the intermittent stream will not be disturbed. Erosion control measures, including a double row of silt fence will be installed at the edges of the wetland/ intermittent stream to minimize any potential construction impacts. The details of the culvert installation and erosion control provisions will be provided in the Town of North Salem Wetlands Permit application.

Stormwater Management Mitigation Measures

The development of the site and introduction of impervious surfaces could result in greater volumes of stormwater being discharged from the site, as well as increases in the peak rates of discharge and pollutant loads in the stormwater. The NYCDEP, Town of North Salem and the NYSDEC have promulgated rules and regulations that address stormwater. These regulations require preparation of Stormwater Pollution Prevention Plans (SWPPPs) to control post construction changes in peak discharge rates and pollutant loading.

The SWPPP provided herein is intended to provide water quality treatment to minimize the project's impacts to surface water quality for on-site wetlands and waterways, as well as off-site waterways, and the New York City Watershed, in general. The stormwater management program, described below, will maintain stormwater flow rates to at or below existing stormwater rates, thereby minimizing impacts to off-site waterways and springs.

HydroCAD Modeling of Proposed Action

The proposed subdivision of approximately 159.52 acres will increase the property's impervious coverage from approximately four acres (as rock outcrops) to approximately 19.00 acres and landscaped areas and stormwater basin coverage will be increased to approximately 63.13 acres. The total amount cleared is thus 82.13 acres as shown on plans for the Highgate-Woodlands at North Salem. The increase in impervious and landscape coverage resulting from the proposed development will increase the peak discharge rate, peak volume, and pollutant load of runoff from the site.

The quantification of increase and how it is mitigated is the basis of stormwater management analysis for the DSEIS. The results of the site modeling indicate that the proposed development of the Highgate-Woodlands project will have peak stormwater runoff rates that are at or below those of existing conditions for all storms at the 1, 2, 10, 25 and 100-year frequency. This will not adversely impact receiving waters or downstream properties.

Surface Hydrology/Drainage Analysis

The drainage analysis was performed to fulfill both the SEQR Environmental Review and SWPPP requirements. Keane Coppelman Gregory Engineers, P.C. prepared the drainage report to analyze the impacts of stormwater runoff at the 12 design points on the property. The impacts of overall development on existing drainage patterns were evaluated for both the single family and the multi-family developments.

To mitigate potential impacts on surface waters associated with post construction changes in stormwater, the Highgate-Woodlands SWPPP specifies a network of stormwater conveyance, collection, and treatment facilities. The goal of stormwater management for the Highgate-Woodlands Residential Project is to reduce post-construction peak rates of stormwater runoff to levels at, or less than, the existing peak rates for the site.

As set forth in the SWPPP, a variety of stormwater quality practices are proposed as the primary means of controlling post construction changes in stormwater runoff quality from the site. The Stormwater Management Plan is based on the analysis of the changes in runoff characteristics between existing and developed stormwater conditions discussed in the previous section of this report, and upon the design criteria of the stormwater management

practices described below. An outline of the varying stormwater quality management practices, both structural and non-structural to be implemented both during construction and/or after project completion, includes:

- *Filter Strips (green infrastructure practice)*
- *Swales (green infrastructure practice)*
- *Surface Sand Filters (F-1)*
- *Micro-pool Extended Detention Ponds (P-1)*
- *Underground Infiltration Practice (I-1)*
- *Infiltration Basins (I-2)*
- *Pocket Wetlands (W-4)*

Stormwater quality and quantity has been analyzed in accordance with the guidelines set forth in the New York State General Permit for Storm Water Discharge, GP-0-10-001 (Appendix F of the SWPPP).

The subject project is located in the New York City East-of-Hudson Croton Watershed, which is listed as a phosphorus-limited watershed. Therefore, the stormwater management practices have been designed in accordance with the *Enhanced Phosphorus Removal Standards* (Chapter 10) of the NYS Stormwater Management Design Manual to extent practicable. These standards, adopted in April of 2008, require that the water quality volume be calculated using a 1-year storm event (3.1 inches in Westchester County) rather than the 90% rainfall event previously used (in this case, 1.15 inches). This essentially triples the volume required for capture and treatment.

Stormwater Runoff During Construction

Prior to and throughout the construction phase, four basic principles of stormwater runoff management will be applied at the site to control runoff.

(1) stabilization of disturbed areas,
(2) containment of sediments,
(3) treatment of turbid water, and
(4) diversion of clean water.

Implemented, monitored, and enforceable Best Management Practices (BMP) will be utilized during the construction phase as the primary means of instituting controls for erosion and sediment control. The greatest potential watershed impacts associated with this project relative to soils disturbance would be from erosion and sedimentation during construction.

An Erosion and Sediment Control Plan (Appendix E in the SWPPP) is provided which incorporates both structural and nonstructural (i.e. operational) provisions. The primary aim of this plan is to minimize the potential for soil erosion from areas exposed during construction and prevent sediment from reaching the downgradient streams, lakes and wetlands.

All soil erosion and sedimentation control practices will be installed in accordance with the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities (Permit No. GP-0-10-001) best management practices and Town of North Salem code.

Soil Erosion Control for the MIH Property

Standard erosion control features would be utilized during the development on the MIH site and the construction of parking areas, the single residential structure and the septic system. Specifically, silt-fencing and haybales would be installed at the limits of grading and construction on the property. A detailed, site specific soil erosion control plan will be required for the development and will be subject to review and approval by the Planning Board and Town Engineer as part of the site plan review process for the MIH parcel.

Future Monitoring of Basins and Stormwater Discharged From Site

Each swale and basin, when stabilized, is designed to allow for sediments to accumulate for a period of 10-20 years before the functional capacity of the structure will be impacted. Sediment removal at this time will restore the structure to its original over-design capacity. Entry to the basins for performing scheduled maintenance activities will be through stabilized basin accesses.

During construction, all basins and sedimentation and erosion controls must be inspected on a weekly basis, in compliance with GP-0-10-001. Monitoring reports will be left at the site construction trailer for inspection and will be forwarded to the local jurisdiction, if requested. Inspections will also occur on a random basis following storm events. These inspections include observation of storm water leaving the site.

2.6 Air Quality Impacts and Mitigation

Potential Air Quality Impacts

Indirect Source Emissions

An air quality analysis was done to assess the potential air quality impacts from indirect sources, such as project traffic. This study was done according to the NYSDOT's Environmental Procedures Manual (EPM), and is based upon the traffic analysis. The Traffic Impact Study evaluated intersections in the Existing Condition plus in the 2007 and 2010 Build conditions. NYSDOT's EPM "Section 9 - Projects Needing Air Quality Analysis," EPM, provides the guidance that intersections be screened for overall Level of Service (LOS). If the LOS is A, B, or C, no further analyses are required. Further, if any intersection (at poorer LOS) has increases in traffic of 5 percent or less, no further analyses are required. The largest anticipated impact to any local intersection will be to Reed Road at Hardscrabble road at 51 vehicles in the peak AM and 59 vehicles in the peak PM. This represents a maximum of 4.8 percent of the AM traffic in 2007 and declines with time. It also represents a maximum of 3.6 percent of the PM traffic in 2007 and declines with time.

Based upon the NYSDOT procedures, "an air quality analysis is not necessary since this project will not increase traffic volumes, reduce source-receptor distances or change other existing conditions to such a degree as to jeopardize attainment of the National Ambient Air Quality Standards".

Direct Source Emissions

Direct Source Emissions with the potential for air quality impacts, include those related to the heating system boilers and any potential diesel powered emergency generation equipment. It is anticipated that some homes will incorporate, geothermal heating and cooling systems, solar panels or other alternative energy sources that do not result in emissions, although the proportion of such sources is expected to be small.

The heating systems at the Highgate-Woodlands project are anticipated to result in the generation of CO2, sulfur dioxide and other greenhouse gases in the low concentrations associated with highly efficient, modern heating systems, furnaces and appliances. The operation of 42 new single family homes and 76 townhouse units will result in a cumulative impact on local and regional air quality, although this impact is anticipated to be minor, given the residential uses.

Construction Related Air Quality Impacts

The short term use of heavy equipment operations at the site will result in a temporary minor increase in pollutant emissions from the various equipment used in the construction process for a five year phased duration. However, the major concern during the construction operation will be the control of fugitive dust during site clearing, grading and excavation operations. Fugitive dust is essentially airborne soil particles caused by heavy equipment operations entraining the soil into the air. To a lesser extent, some fugitive dust emissions will arise from wind erosion of the exposed soil after the groundcover is removed.

Construction related air quality impacts will be of relatively short duration and not in close proximity to public receptors. The phasing of the proposed residential project will reduce the intensity of any impacts. Best management practices will be employed during construction to reduce potential sources of fugitive dust as provided in the project's Storm Water Pollution Prevention Plan (SWPPP)(See Section 3.410 of the DSEIS.)

Air Quality Mitigation Measures

In summary, no violations of National or NYS Ambient Air Quality Standards are anticipated from the Highgate-Woodlands residential project. Air quality impacts from indirect (traffic) and direct (heating systems) are expected to be non-significant.

Mitigation measurers to control dust during construction include best management practices during construction including: providing a construction entrance with truck wheel wash facilities, minimizing construction traffic across unpaved ground, spraying exposed soil during dry conditions, and quickly stabilizing exposed soils.

Noise Levels Impacts and Mitigation

Construction Related Noise

Construction activities at the proposed Highgate-Woodlands site will result in noise impacts from the project site but this impact will be temporary. Construction-related noise can be divided into 3 major components: equipment operating noise, construction traffic on local roadways, and blasting noise. Typically, the two noisiest periods of construction occur during grading and

blasting operations (when earthmoving equipment is used) and foundation work (when compressors and drills may be in use). These impacts are of a temporary nature, and limited to the construction phase only.

Construction equipment with different noise characteristics will be used as required, depending upon the stage of construction, specific need, and site conditions. In the early stages of construction during site clearing and grading activities, backhoes, graders, and dump trucks will be required. During the construction of homes, the water and sewer facilities, and recreation facilities, concrete trucks, delivery trucks, generators and hand tools will be utilized.

Section 4.300 provides a summary of different construction equipment that may be used for the development and anticipated noise from that equipment. The noise levels provided are at a reference distance of 50 ft. With the exception of the access road, most construction will be occurring a minimum of 400 feet from any existing residence. In general, local noise, such as that is caused by construction equipment is reduced by 5 dBA for each doubling of distance from the source. Noise levels become attenuated by 15 dB(A) with a distance of 400 feet. Along the access road (coming off Reed Road), most construction will be occurring a minimum of 200 feet from any existing residence reducing noise levels by 10 dB(A) with that distance. Construction noise, while audible at the property boundary and adjacent residences, will be limited to working hours, and will be limited in duration.

Construction is anticipated to last approximately five years. A construction sequence is provided in Full Sized Plan Sheet PP-1 Phasing Plan (Drawing 26). Each of the four construction phases will affect different portions of the site, and therefore will result in noise impacts in different portions of the site at different phases of construction.

Potential Blasting Impacts

The undesirable effects from blasting, namely ground and air vibration can be measured and scientifically predicted. They can also be controlled by safe blasting practices which involve the careful selection of a number of variables. The most important of them include: the blast round size (amount of explosive used in pounds); the use of millisecond delay caps; and the time and method of initiation.

The use of explosives in New York State is regulated by Industrial Code Rule No.39. The Town of North Salem adopted a local ordinance (Chapter 48 - Blasting and Explosives Law of the Town of North Salem) that regulates blasting within the Town. Blasting will result in short term noise impacts during the initial phases of construction, such as the construction of roads.

Blasting Mitigation

A Blasting Protocol has been prepared for the project and includes procedures for blasting that will minimize the impacts to neighbors, including noise (see Appendix 8). The blasting procedures the builder will follow include the following:

1. A pre- and post- blast survey of structures and water wells within a half mile radius of the blast site should be conducted for residents who elect to participate. Structural surveys should include identification of visible structural damage, plaster cracks, settling, etc.

2. Peak particle velocities should not exceed 1.25 ips at a distance of 300 feet from the blast site. This figure should be modified if geologic/seismic evidence so dictates. (No data indicates the potential for such exceedances at present.)
3. Noise/airblast levels should not exceed 128 decibels at any residential structure within a half mile radius of the blast area.
4. All blasts should be recorded with respect to ground velocity and airblast levels to insure that threshold criterion values are not exceeded.

Operational Noise

Once the Highgate-Woodlands residential project is constructed and occupied, the site will generate noise associated with a residential development. Noise sources may include, residential traffic, dogs barking, and truck traffic from deliveries. Deliveries of mail and packages to the Highgate-Woodlands development are expected to occur during business hours (8:00 am to 5:00 pm), Monday through Saturday, one to three times per day.
The future residents of the Moderate Income Housing site may hear some road noise, the metro north trains, as well as pedestrians frequenting the hamlets stores and shops. Acoustic materials between the units will limit the noise impacts from adjacent dwellings. No mitigation measures for operational noise are warranted or proposed.

Air Quality and Noise - MIH Property Impacts and Mitigation

Construction of the MIH residential building on the Croton Falls property has the potential to result in temporary air quality impacts related to dust from exposed soils. Noise from construction equipment and activity will be a temporary impact during construction.

The MIH development will consist of a single residential building approximately 3,100 square feet in size and its associated parking and landscaping. Since the site has been graded for remediation, only limited site work (grading and excavation) will be necessary for construction. The potential for dust and noise impact to neighbors will be minimized by the relatively modest scale and size of construction and by best management practices during construction.

2.7 Terrestrial and Aquatic Ecology Impacts and Mitigation

Potential Impact to Upland Vegetation

The Highgate-Woodlands project will involve the removal of existing successional northern hardwood forest vegetation. Based upon the grading plan, the total area to be impacted would be approximately 82.13 acres. The development would result in the construction of approximately 19.00 acres of impervious surfaces (houses, driveways, roads, patios) and approximately 63.13 acres of regraded/re-vegetated area *(i.e.* storm water basins, side slopes, lawns, and landscaping).

Approximately 77.39 acres (or approximately 48 percent) of the existing vegetation on the site would be retained following construction. The limits of grading and vegetation removal are generally shown in Figure 3-3: Highgate-Woodlands Site Plan and are represented by the tree line. Existing trees and vegetation have been retained where possible between homes and driveways and on individual lots.

Potential Impacts to Wetlands and Watercourses

Development of the property has the potential for direct and indirect impacts to wetlands and associated surface water resources (streams or intermittent water courses on site) The "direct impacts" involve loss of habitat through grading, filling or clearing of vegetation in the wetland. These impacts could affect ACOE regulated wetlands, Town wetlands, and NYCDEP intermittent water courses. The indirect impacts derive from the loss of wetland functions originally associated with a habitat, and result in degradation of a natural resource. Indirect impacts may result from the clearing of vegetation within the regulated 100-foot wetland buffers.

Direct and indirect impacts to on-site wetlands and their 100-foot buffers have been minimized to the extent practical. Wetland buffer mitigation planting and enhancement has been designed to mitigate and replace those unavoidable wetland buffer impacts.

Direct Wetland Impact

The single direct wetland impact from the project involves the filling of 87 square feet or 0.002 acres of Wetland F, and is required for the construction of Road C, near the intersection with Road A. The stream crossing of Wetland F, at the intersection of Roads A, B and C will involve no direct impacts to the streambed or the wetland resource, since a structure will span the stream. No fill will be placed in the stream or wetland at this location.

Indirect Wetland Impact

The native vegetation fringing a wetland serve to filter stormwater runoff, visually screen wildlife in the wetland habitat, control soil erosion and provide biotic diversity for the wetland system. Grading, filling, or clearing in the wetland setback area can potentially reduce these benefits, and reduce the effectiveness of the wetland "buffer zone". The proposed Highgate-Woodlands residential development will require grading or filling in this wetland buffer area. The total area of wetland buffer impacts will be 5.73 acres. The majority of buffer impacts involve: 1) roadway (Roadway A, B and C, in the Wetland F buffer) or 2) relate to stormwater management facilities.

The impacts to and the description of Highgate-Woodlands wetland buffers (regulated 100-foot buffer) follows:

Wetland A and Wetland B The largest wetland on the site is bordered by the sewage treatment plant to the south, and the active adult townhomes to the west, and an emergency access drive and the water treatment facility to the north. Approximately 79,720 sf or 1.83 acres disturbance to this wetland buffer (regulated 100-foot buffer) will result from construction of stormwater basins, and the emergency access road at the north side of Wetland A. The location of the basins at the edge of the wetland buffer was unavoidable since stormwater flows from the multifamily development to a low point in this area. In addition, an small area of buffer will be disturbed for the grading related to the wastewater treatment plant building, at the southern edge of Wetland B.

Wetland C, D/E The impacts to this wetland buffer (regulated 100-foot buffer), which total 56,644 sf or 1.30 acres are related to an emergency access road connecting the active adult townhouse development with Road B, and the cul-de-sac in the northeast corner of the

property. The impacts to the buffer were minimized to the extent possible, including pushing the location of the emergency access road further west of Wetland D/E, onto a portion of Lot 36.

Wetland F As described above, the only direct impact to wetlands for the project will occur at a finger of Wetland F, located on the edge of Road B. The direct wetland impact will total 87 sf or 0.002 acres.

Surrounding Wetland F, a total of 113,337 sf or 2.60 acres of wetland buffer (regulated 100-foot buffer) will be disturbed. The Wetland F buffer impact is necessary for the construction of the primary access road to the single family residential development: Road A and its intersection with Roads B and C. In addition, stormwater management basins were located at a topographic low point at the northwest edge of the active adult townhomes, and at a similar low point on the east side of Road A, at the edge of the Wetland F buffer.

The proposed stormwater facilities will treat the stormwater for quantity and quality aspects prior to its discharge.

DEC Wetland F-16, which is 6,500 feet downstream of the site, will also be protected from water quality impacts by these best management practices.

Sewage Treatment Plant

As noted elsewhere in this DSEIS, the applicant is proposing to build a sewage treatment plant for the treatment of residential wastewater. This wastewater will then be discharged to a subsurface disposal area after tertiary treatment. DEP Watershed Regulations prohibit surface discharges in the watershed. As shown in the grading plan, the subsurface disposal area is located in a different drainage area than Wetlands A/B. The disposal area generally slopes towards the south and away from Wetlands A/B, and therefore is not expected to have a direct or indirect impact on the wetlands.

Fish and Wildlife

The impact that the development will have on wildlife species is related to the disturbance of vegetative communities which provide habitat. The wildlife species most affected by this development are species requiring a wooded, upland habitat. The development involves the construction of impervious surfaces which provide little or no habitat value. The lawns associated with each development alternative would provide habitat value to suburban-adapted species not sensitive to the clearing of herbaceous and shrub vegetation *(e.g.,* robin, starling, blue jay). The loss of wildlife habitat will be a function of the extent of removed vegetation, which is 82.13 acres or 52 percent of the 159.52 acre site.

Animal species ill-adapted to populated environments such as some owls, diurnal birds of prey, and pileated woodpeckers may suffer from displacement due to loss of habitat. In the active adult townhouse portion of the site, all layers of the site's woodland habitat will be disrupted and the impact will be proportional to the acreage cleared. In the residential portion of the site, however, only portions of the lot will be cleared. In these cleared portions, the shrubs and soil layers will be disturbed but the canopy will be maintained partially intact. Thus, those species which occupy the herbaceous soil layer will experience greater impact than those in the shrub layer will experience a lesser impact and those in the forest canopy will generally experience the least impact. The presence of communal recreation facilities for the single family residential

units will also serve as a mitigating feature over time. That is, when such facilities are provided in common, the individual homes have a lesser tendency to have such amenities separately. Thus, the amount of clearing on individual lots is limited.

Eastern Box Turtle

Eastern box turtle, a State listed "species of special concern" and Westchester County listed as a "threatened species" was observed on the project site in two locations, both of which are proposed for development. The September, 2008 observation was located in the area of the proposed active adult units, which are located between Wetlands A and F. This proposed development is relatively high density and will require significant grading; therefore box turtle habitat will be eliminated from this part of the site. The June, 2010 sighting was in the vicinity of proposed Lots 1 and 2 and the primary development road. This area will likewise be altered during construction, although a number of trees and undisturbed areas will remain. If this particular turtle typically utilizes the Wetland F corridor, this corridor will be preserved in the proposed condition.

Ample areas of the site with suitable habitat for box turtles will remain in the proposed condition. More than 41 contiguous acres in the eastern part of the site will remain undeveloped, and most of this undisturbed during construction. This includes Wetlands A, B, C, D and E as well as large expanses of second growth woodlands similar to the two locations where box turtles were observed. The key to preservation of box turtles on this site is the preparation and education of the construction crews during development activities. As final development plans progress, the phasing plan will consider the strategic use of silt fence along limits of disturbance and a regular program of inspection at the fence line prior to daily construction activities to find and relocate turtles outside of work areas.

Wetland Mitigation

Wetland mitigation is proposed to off-set the project related impacts, including the 87 sf (0.002 acres) direct impact to Wetland F and the 5.73 acres of disturbance to wetland buffers on the property. Two methods of wetland mitigation are proposed, as follows.

1) Invasive Species Management Invasive species, including Barberry, Rugosa Rose and Burning Bush were observed in the on-site wetland buffers. A program is proposed to remove invasive species from the a portion of the Wetland F buffer, with an area of approximately 7.5 acres in size (see landscaping plans Full Sized Plan Sheets LS-1 and LS-2, (Drawings 23 and 24)). Invasive plants in this area will be removed by hand. Remaining stems will be treated with an herbicide to prevent regrowth. The invasive species management is intended to improve the functioning of existing, non-disturbed wetland buffer.

2) Wetland Buffer Enhancement Enhancement planting is proposed in specific wetland buffers disturbed by grading or in areas adjacent to existing buffers (outside the buffer), as shown in the landscape plans Full Sized Plan Sheets LS-1 and LS-2 (Drawings 23 and 24). These areas, with a total area of 2.1 acres, will be planted with seed and with individual native plants. The intent of the planting is to replace and enhance existing buffers. The plants complementing the seed mix will be native woody perennial plants, installed at a rate of 40 trees and 80 shrubs per acre, thereby achieving nearly fully wooded conditions at the maturity of the plants. Proposed plants for the enhancement planting are provided in the landscaping plans (Full Sized Plan Sheet LS-1 and LS-2 (Drawings 23 and 24)).

Terrestrial and Aquatic Ecology - MIH Property Impacts and Mitigation

The MIH property is located in the hamlet of Croton Falls between Route 22 and the MetroNorth railroad lines. The property has been completely graded for a NYSDEC supervised soil remediation project. Vegetation on the property consists of recently planted grasses, bushes and several existing larger trees at the edges of the site (eight trees identified on the survey). The property provides limited potential for bird and small mammal habitat and cover given its proximity to surrounding development and human traffic. No adverse impacts to the local terrestrial and aquatic ecology are anticipated by the redevelopment of the property for residential use.

2.8 Transportation Impacts and Mitigation

Proposed Project Traffic Generation

Trips Generated

The traffic impact study[2] projects traffic generated by the proposed development based on 49 single family detached units and 76 senior attached units[3] at 51 trips during the peak a.m. hour and 59 trips during the peak p.m. hour. No reductions in traffic volumes were taken for potential use of mass transit or the attached active adult townhouses. Further, the original traffic impact study does not reflect the recent reduction in the number of single family detached housing from 49 to 42 units.

Capacity Analyses Findings

The following are brief descriptions of the results of the capacity analyses for each of the study locations, the amount of traffic expected to be added by the proposed project, and, where feasible, improvements that would eliminate or reduce the projected problems. Recent traffic counts completed by TMA indicate that future traffic levels projected to 2015, will be lower than the original Baseline conditions.

A summary of the capacity analysis is as follows:

1. *Hardscrabble Road and I-684 Northbound Ramps*

- Capacity analyses with the Baseline traffic volumes show that all movements along Hardscrabble Road and the right turns from the I-684 exit ramp operate at acceptable Levels of Service. However, the left turns from the I-684 ramp experience very long delays and operate at unacceptable Level of Service F.
- The proposed project will add 18 and 24 new trips to this intersection during the peak a.m. and p.m. hours, respectively, which would represent less than 1.5 percent of the total intersection traffic. This increase is not considered significant. Analyses with the Build traffic volumes verify that the additional traffic would not have any

[2] See Appendix 12 (Michael Maris Associates, Inc., *Traffic Impact Study Woodlands Development*, Hackensack, NJ, April 2005, Exhibit 6).

[3] The proposal has since been reduced to 42 detached units and 76 senior attached units which would lower the trips generated.

significant impact and show similar traffic operations as those with the Baseline and No Build volumes.

2. *Hardscrabble Road and Reed Road*

- Capacity analyses with the Baseline traffic volumes indicate that all movements at the intersection operate at acceptable Levels of Service during both the morning and afternoon peak hours.
- All of the traffic from the proposed project would pass through this intersection, representing an increase of 51 and 59 new trips during the a.m. and p.m. peaks, respectively. This is between 3.3 and 4.3 percent of the total intersection traffic. Capacity analyses with the Build traffic volumes indicate that the additional traffic would not have a significant impact and that traffic exiting Reed Road would not exceed its capacity or experience unacceptable delays.

3. *Hardscrabble Road and I-684 Southbound Ramps*

- Capacity analyses with the Baseline traffic volumes indicate all movements experience acceptable delays (Level of Service D or better) during the peak a.m. hour, while the southbound through traffic experiences Level of Service F delays during the p.m. peak hour.
- The proposed project will add 34 and 39 new trips to this intersection during the a.m. and p.m. peak hours, respectively. These volumes represent an increase of less than 2 percent of the total intersection traffic volumes. This increase is not considered significant and the capacity analyses with the Build traffic volumes indicate similar operating conditions as those with the Baseline and No Build traffic volumes.

4. *Hardscrabble Road and New York State Route 22*

- Capacity analyses with the Baseline traffic volumes indicate that the eastbound and westbound approaches experienced Level of Service F delays during the morning peak, while all movements operated at acceptable Levels of Service during the afternoon peak.
- The proposed project would add 16 and 18 new trips to this intersection during the a.m. and p.m. peak periods, respectively. This represents less than 1 percent of the total volume of the intersection. The increase is not significant and analyses with the Build volumes indicate similar traffic operating conditions as those with the Baseline and No Build volumes.

5. *New York State Route 22 and Front Street*

- Capacity analyses with the Baseline traffic volumes indicate that, other than the northbound left turns during the a.m. peak, all other movements generally operate at acceptable Levels of Service. However, it must be noted that problems were observed at the intersection to the north, with left-turning vehicles from New York State Route 22 to Croton Falls Road queuing and blocking traffic at this intersection. Problems were also observed due to the poor visibility caused the railroad overpass and by the sharp turns to and from Front Street and New York State Route 22.
- The proposed project will add 6 and 7 new trips to this intersection during the a.m. and p.m. Peak periods, respectively. These additional trips represent approximately

0.5 percent of the total intersection traffic, which is not a significant impact. Capacity analyses with the Build traffic volumes indicate similar operations as those with the Baseline and No Build traffic volumes.

6. *Reed Road and Highgate-Woodlands Driveway*

- All of the traffic from the proposed project would pass through this intersection. The volume would be about 50 trips during each of the peak hours, or less than one vehicle per minute. This would not represent a significant impact and unsignalized intersection capacity analyses with Build traffic volumes show that all movements through the intersection will operate at acceptable Levels of Service during both the morning and afternoon peak hours.

Transportation - MIH Property Impacts and Mitigation

As indicated, a Traffic Impact Study was completed by Michael Maris Associates, Inc. In 2005 for the Highgate Woodlands project. The traffic estimates in the study have been updated by TMA through 2010. The traffic impacts from the MIH parcel were not specifically analyzed in the Maris traffic study. The MIH residential building will contain either three one-bedroom apartments or one one-bedroom and one two-bedroom apartments. Five parking spaces are required by the Town Code and two additional spaces will be provided for visitors for a total of seven spaces. No adverse impacts to the local traffic network are anticipated by the five anticipated vehicles associated with the MIH development.

Mitigation Measures

The following mitigation measures may be necessary to alleviate the traffic conditions that will be exacerbated by the proposed development:

1. *Hardscrabble Road and I-684 Northbound Ramps*

Delays could be substantially reduced by the installation of a traffic signal and by re-striping and/or widening the eastbound and westbound approaches to provide separate right and left turn lanes. The Level of Service F delays could be eliminated and all movements through the intersection would operate at Level of Service C or better during the peak a.m. hour and at Level of Service E or better during the peak p.m. Hour with these improvements.

2. *Hardscrabble Road and I-684 Southbound Ramps*

Delays could be reduced to acceptable levels by adjusting the signal operations. With the suggested improvements the intersection would operate at acceptable Levels of Service during the peak hours.

3. *Hardscrabble Road and New York State Route 22*

Delays during the a.m. peak hour are caused by the very heavy left turns (843 trips) on southbound Hardscrabble Road onto NYS Route 22 that would be opposed by very heavy through (701 trips) on the eastbound NYS Route 22 approach. It does not appear that the a.m. peak delays could be brought to acceptable levels without very extensive roadway widening. However, additional analyses show that the delays could be reduced substantially by changing the signal cycle and the green time allocation.

4. *New York State Route 22 and Front Street*

Installation of a traffic signal might eliminate the problems at this intersection. However, a review of the projected traffic volumes indicates that they would not meet the required signal warrant criteria and no analyses were performed for the New York State Route 22/Croton Falls intersection to determine what improvements would be required to eliminate the problems at that location.

Any Work done in the State right-of-way will be subject to a NYSDOT review and a Highway Work Permit.

Sight Distance at Reed Road and Hardscrabble Road

As described in the Existing Conditions section, the sight distance for drivers looking east from Reed Road at its intersection with Hardscrabble Road does not meet the AASHTO recommendations for intersection sight distance or for stopping distance. Sight Distance is limited by a guide rail and chain link fence providing safety for the bridge crossing Interstate I-684. These obstructions cannot practically be moved. At a minimum, appropriate warning signs would increase awareness for drivers on westbound Hardscrabble Road to be alert for drivers entering Hardscrabble Road from Reed Road. Any new signs on Hardscrabble Road would need to be coordinated with Westchester County Highway Department (WCHD) and the New York State Department of Transportation (NYSDOT).

2.9 Land Use and Zoning Impacts and Mitigation

Impacts and Mitigation

Neighborhood Land Use

The proposed residential subdivision component of the Highgate-Woodlands Project will conform to or be somewhat less dense than the existing residential density of the surrounding neighborhoods. The multi-family development surrounded by the single-family component is consistent with nearby R-1/2 (Medium Density Residential) zoning. The overall proposed density of the Highgate-Woodlands site will be approximately 1 dwelling units per 1-1/3 acre (118 total d.u.'s on 159.52 acres), which is consistent with residential density in the surrounding neighborhoods.

Significant areas of the site will remain undisturbed; wetland areas will be avoided and/or enhanced; and stormwater management and erosion/sedimentation control measures are proposed to address the effects of site disturbance.

The project has been designed to retain areas of existing vegetation, in part to maintain the wooded character of the property and to provide a visual buffer between existing residential development and the project.

A strip of existing vegetation, ranging from 60 to 150 feet in width will be maintained along Reed Road. Along the western property border, a buffer of existing vegetation averaging approximately 90 feet in width will be maintained. Along the northern property border, a buffer of existing vegetation averaging approximately 150 feet in width will be maintained. In most locations to the north and west of the project site a buffer of 100 feet or more between the

proposed residences and the property line would be provided. A large portion of the east side of the property, which includes Wetland A and dense woods on steeply sloping topography, would remain undisturbed. This area borders several existing residences along Reed Road. Maintaining existing vegetation on this eastern slope will preserve the wooded character of the site for drivers on Interstate 684 and Hardscrabble Road.

These features are intended to enhance the character and quality of the Highgate-Woodlands Project and help to mitigate potential disturbance, visual, noise and other development impacts from the Proposed Action as seen from adjacent roadways and as experienced by adjoining residential property owners.

Single Family Residential Development

The proposed preliminary subdivision plat, conforms to all density and bulk requirements set forth in the Town's Zoning Ordinance (Chapter 250) (see Full Sized Plan Sheet PS-1, Preliminary Subdivision Plat (Drawing 2)). The R-1 (Medium Density Residential) zoning district permits single-family dwelling units on lots with a minimum size of 1 acre, and a maximum building coverage of ten percent per lot.

Chapter 200 Subdivision regulations of the Town Code require that each lot have access to a State highway, County road or Town Street, or a private street authorized by the Town Board in an open development area under Section 280-a, Subdivision 4 of the NYS Town law. Given that the site will have private streets, the project will require such authorization by the Town Board.

The single family residential lots have been designed in consideration of the road layout, site topography, and areas of wetlands, watercourses and regulated Controlled Areas (wetlands and associated 100-foot upland buffer therefrom). areas. Each of the lots has been designed to be consistent with all area and bulk requirements provided in the Town Zoning Code regulations for the R-1 Residential District. The single family lots range in size from 1.01 to 6.4 acres in size (total size).

The roads in the Highgate-Woodlands project would be constructed in conformance with Town of North Salem Town Road Standards (Chapter 200-23 Street Planning and Design of the Subdivision regulations), with the exception of: 1) a portion of Road A and 2) the turnarounds at the ends of Road D and E in the Active Adult Townhouse development. Due to the existing steep grades at the project entrance, a portion of Road A will have grades of 12 percent, instead of the Town Standard of 10 percent. According to the Code (Chapter 200-23 H. Grade), the maximum grade for a local street is 10 percent, "except that grades up to 12 percent may be approved for short distances, primarily on tangents". A waiver from the Planning Board will be required for the proposed road grade. A waiver will also be required for proposed 80 foot diameter turnarounds at the end of Roads D and E, since the Town Standard is 100 feet minimum. The cul-de-sacs at the ends of Roads B and C are 100 feet in diameter. A full discussion of these exceptions is provided in Section 3.360 - Roads.

Active Adult Townhouse Development

A new zoning district, R-AMF/2 is proposed to permit multifamily adult housing for occupancy by one or more persons 55 and older. The active adult townhouse development will consist of 76 residential units in 19 buildings. Each of the buildings will have four units and will be two stories in height. The active adult townhouse buildings are located along two cu-de-sacs, with the main

cu-de-sac (Road D) extending from Road A in the south-cental portion of the site. The active adult townhouse buildings meet all bulk, area and setback requirements of the proposed R-AMF/2 (Residential-Adult Multi-Family/Medium Density) Zoning District.

Development in the R-MF/6, R-MF/4 and the proposed R-AMF/2 High and Medium Density Residential districts are subject to Chapter 250-19.1 - Supplemental Requirements for high and medium density residential development, of the Town Zoning Code. These supplemental requirements relate specifically to area, density and setbacks for multifamily buildings and related amenities in such developments. The Highgate-Woodlands project meets all requirements of Supplemental Requirements as listed in Chapter 250-19.1.

Approval for Cul-de-sacs

The applicant is seeking an approval or in essence waivers for the length of the proposed cul-de-sacs. The Code of the Town of North Salem, Chapter 200, Section 200-23, J., indicates that unless approved by the Planning Board proposed cul-de-sac should not exceed a maximum length of 1,000 linear feet. The proposed development includes an entry road (Road A) from Reed Road to the intersection with the western and eastern cul-de-sacs with a length of 4,300 linear feet. The western cul-de-sac (Road B) is 900 linear feet; and the eastern cul-de-sac (Road C) is 2,260 linear feet. Therefore the total length of each cul-de-sac including the entry road plus the cul-de-sac length is as follows:

- From Reed Road to the end of Road B is 5,200 linear feet; and
- From Reed Road to the end of Road C is 6,560 linear feet.

Both exceed the 1,000 foot maximum length standard. However, Section 200-23, J., allows the Planning Board to approve roads exceeding this standard by evaluating for safe vehicular circulation including access for emergency vehicles. The proposed road layout includes the following features as a result of comments from the Town:

- A portion of the proposed road will be a public road from the site's entry at Reed Road running for a length of 650 linear feet with a turnaround and bus shelter before the gated entry to the rest of the development;
- A pullout area is provided on Reed Road at the site's entry;
- An emergency only access road is provided to Sun Valley Drive;
- An emergency only access road is provided from the northern area of the active adult townhouse development to Road C (eastern cul-de-sac); and
- Circular turnarounds are proposed at the ends of Roads B and C (the western and eastern cul-de-sacs, respectively).

These design features are proposed to mitigate impacts associated with roads longer than the standard in the subdivision regulations to facilitate vehicular access within the site for residents and visitors; and provide safe, efficient access for emergency services.

In accordance with the applicable requirements of the zoning ordinance and subdivision regulations, applicants must provide on-site recreation, a park set-aside, or pay recreation fees. In this instance, the applicant would provide both -- the two on-site recreational facilities as well as the recreation fees. For the single family portion of the development the amount of

the recreation fee is not to exceed a $3,500 per lot (or $147,000) and for the active adult townhouse development the fee is not to exceed $5,000 per unit (or $380,000).

Additionally, the proposed action will conserve a 9.37-acre parcel on the western side of the site as privately held open land and other lands described herein. This parcel can serve as open space for passive recreation.

Ownership and Maintenance

In accordance with the Zoning Ordinance, subsection 250-19.1(L), the proposed Highgate-Woodlands project commonly held land and facilities shall be held in common ownership by an approved Homeowner's Association (HOA) and Condominium Association. Commonly held properties and facilities will include the proposed private and emergency access roads, land associated with the multifamily units, the central water and sewer system, stormwater management improvements, recreation amenities, and conservation land. All property owners will be members of the master HOA. The master HOA will be responsible for facilities benefiting both single family and mufti family owners, such as the water and sewer facilities, stormwater system, and roads. A separate HOA representing only the 42 single family homeowners will control facilities benefiting only them such as their recreation amenities.

In addition, a Condominium Association will control lands associated with and benefiting only the multifamily units such as their recreation amenities and the land surrounding their units. Each member of the master HOA, single family HOA and Condominium Association will be responsible for a fair share portion of the taxes, operation and maintenance of common lands and facilities controlled be these separate entities.

Conservation of Buffers

Aside from the requirements of the Town's regulations, the proposed Highgate-Woodlands project is a high-quality development incorporating a number of design elements. The proposed subdivision aspect of the Highgate-Woodlands project will produce 42 new residential lots that range in size from a minimum of approximately 1 acre to a maximum of approximately 6.4 acres (total lot area). The residential subdivision has been designed to work with the site's environmental features and has attempted to avoid impacting them as much as practicable. The project would result in wetland loss, limited to a 0.002 acres, and as discussed throughout the DSEIS document, appropriate wetland mitigation and enhancements are proposed to mitigate this minimal wetland intrusion.

The Highgate-Woodlands project will result in the preservation of almost 21 acres of the site as open space in relation to the following proposed lots or areas:

- Conservation land (Parcel D), which is 9.37 acres near Sun Valley Drive;
- Approximately 12 or more acres of undisturbed land consisting of the eastern one-third of the R-AMF/2 zoning district land (RMF Parcel) and containing Wetlands A and B surrounding buffer areas and western upland areas.

In addition, there are undisturbed and/or enhanced natural areas consisting of undisturbed portions of the road and sewer lots (Parcels C, I and J) and the rear portions of many of the single-family lots that add to the open space character of the development. Approximately 77.39 acres of the 159.52 acre site, or approximately 48 percent of the land area, will remain

undisturbed. The undisturbed areas in the rear portions of the proposed single-family lots are wooded and thus will provide screening of the proposed development from neighboring properties.

Land Use and Zoning - MIH Property Impacts and Mitigation

The applicant proposes to provide up to three (either three 1- bedroom units or a combination of one 1-bedroom and one 2-bedroom) affordable rental units at the Moderate Income Housing site in Croton Falls. The site for this proposed MIH is located within a "GB" General Business District site in central area of the hamlet of Croton Falls. These units would comply with the standards and uses described for this district in the Town Code, particularly for group o, multifamily moderate income dwellings (See Table 3-3). The residential apartments would be compatible with the mixed residential and commercial uses in the hamlet of Croton Falls. No adverse land use impacts are anticipated by the proposed development.

2.10 Demography Impacts and Mitigation

The Highgate-Woodlands development proposes construction of 76 two-bedroom condominium units in the active adult townhouse development and 42 single family residences.

Based on multipliers of 3.67 for 26 four-bedroom single family homes and 4.23 for 16 five-bedroom single family homes, the estimated total number of new residents for the single family portion of the development is 164 persons. This would include 51 school-aged children, based on multipliers of 1.05 and 1.47 for the, four-bedroom and five-bedroom residences, respectively.[4]

A multiplier of 1.91 persons per unit has been used to estimate the population of the one and two-bedroom active adult townhomes because these units would typically be occupied by couples or senior citizens living alone. Therefore, it is estimated that the 76 units in the active adult townhouse development would add 145 residents to the population of the Town of North Salem. The total estimated population for the entire project is 309 persons.

These 309 residents added to the Town population would represent approximately 5.8 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..

The proposed Highgate-Woodlands 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. As outlined in the fiscal analysis in Section 4.860 of this SEIS, tax revenues generated by the project are expected to offset the project-related educational expenditures that would be incurred by the Town of North Salem Central School District. As no significant impacts are anticipated, no mitigation measures are proposed.

[4] 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.

Demographics - MIH Property Impacts and Mitigation

Two to three proposed apartments (three one-bedroom apartments or one two-bedroom and one one-bedroom apartments) would result in an additional five to six residents, including 2 school age children, added to the Town population (according to CUPR multipliers for one or two bedroom rental apartments, greater than 5 units (since the CUPR study does not include rental units of less than 5 per building), with a price range of $750 to $1,100). Affordable housing is a goal of both the Town of North Salem and Westchester County. The community benefits of up to three new affordable housing units in the Town are expected to off-set the expenditures incurred by the Town and the North Salem School District.

2.11 Community Services Impacts and Mitigation

Educational Facilities

Projected Number of School Age Children from the Proposed Project

The addition of 42 single family residences would be anticipated to result in an increase in the number of school children attending school in North Salem. A total of 26 four-bedroom residences and 16 five-bedroom residences are proposed. Based upon ULI multipliers of 1.05 school aged children for each four-bedroom residence and 1.47 children for each five-bedroom residence, the project would result in an estimated 51 school-aged children attending the North Salem School District. [5]

While a portion of those children would be expected to attend private schools, to provide a conservative estimate, this analysis included all 51 children that could attend the North Central School District. There would be no children in the active adult townhomes.

MIH Projected School Age Children

Two to three proposed apartments (three one-bedroom apartments or one two-bedroom and one one-bedroom apartments) would result in an additional 2 school-age children, added to the Town population. Based upon ULI Multipliers of 0.3 for each one bedroom apartment and 0.51 for the two bedroom apartment.

Police Protection

Based upon correspondence with the Town of North Salem Police Department and the New York State Police, both departments have adequate manpower and capacity to service the site. It is anticipated that the servicing of the Highgate-Woodlands project would not require any additional police protection equipment or personnel. No mitigation is proposed.

Fire Protection/Emergency Services

The project water distribution facilities have not been designed for fire fighting purposes, and therefore water pressure related to fire service is not applicable. The applicant and the Chair of the North Salem Planning Board met with the Croton Falls Fire District to discuss the proposed

[5] 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.

development and address concerns relating to the site plan and the capacity of the Department to serve the project. The Fire Department provided the following comments:

1. The Fire District requests that the emergency access drive from Sun Valley Drive be maintained with a 15 percent grade, instead of the currently proposed 20 percent grade. The applicant has agreed to provide the 15 percent grade for the entirety of the emergency access drive.
2. The Fire District requested either underground tanks or a lined pond to supplement water supply for fire fighting emergencies. The applicant has agreed to provide these features, subject to review and consultation with the Fire District regarding the location and total capacity of this supplemental water supply.

   The following fire protection measures are included on the site plan: two (2) 21,000 gallon underground fire protection storage tanks, and two (2) Dry Hydrants from lined stormwater ponds.
3. The Fire District requested that the cul-de-sacs and turn-arounds provide adequate turning radius for fire fighting equipment. The applicant has agreed to demonstrate adequate turning radius for turn-arounds D and E, in consultation with the Fire Department.

Utilities

Water

Since no public Town Water District currently services the proposed site, the applicant will provide a private community water supply system to serve the project. The pumping test conducted in July and August 2008 demonstrates that four designated production wells on the property can provide the necessary water capacity and redundancy required by NY State law for community water systems.

The water system has been designed to produce 57,500 gallons per day. The previous average daily water demand for domestic purposes was 37,500 gpd or 26.0 gpm. Due to a reduction in the number of proposed residential units and bedroom mix, the current average daily demand is 33,000 gpd or 23.0 gpm. The pump testing and groundwater analysis completed for this DSEIS assumes the more conservative average daily demand of 37,500 gpd. Seasonal water demand for landscaping may add an additional 20,000 gallons per day for a total of up to 57,500 gpd or 40 gpm. The pumping test demonstrates that on-site wells can produce up to 132,480 gpd or 92 gpm.

Based upon the well monitoring data obtained during a 72 hour pumping test, none of the off-site private monitored wells showed any connection to the pumping test wells. The use of the Highgate-Woodlands wells is not expected to impact the long term use of off-site wells. The wells were tested at a rate that was intended to simulate drought conditions (92 gallons per minute), and the testing was done in July and August, typically a period with low precipitation.

Sewer

Wastewater Collection

The proposed residential development would be served by an advanced Wastewater Treatment plant (STP) and the treated effluent would be discharged into a common leaching field. The wastewater would be collected from the residential dwellings in a separate central sanitary sewer piping system.

Mounding Analysis

A septic mounding analysis was completed by Leggette, Brashears & Graham, Inc. to assess the proposed subsurface wastewater disposal areas (SSDS) . The design flow to the SSDS areas is conservatively estimated at 33,000 gallons per day (gpd). The results of the mounding analysis indicate that groundwater would not cross a property boundary, enter a surface water body or breakout at the identified locations before 21-days of travel time is reached. The Septic Mounding Analysis report is provided in Appendix 14.

Electric, Telephone, Cable and Lighting

All new utility service would be installed underground as required by Town Code. Utility easements are shown on the site plans. The existing services, including electrical, telephone, and cable are expected to be capable of servicing the Highgate-Woodlands development. In Phase I of the construction, sufficient area would be cleared and graded to allow for Road A, lots 1, 2 and 3 and all of Road D to allow access to project utilities.

Solid Waste Disposal

The proposed 309 Highgate-Woodlands residents would generate approximately 16.5 tons of solid waste per month, based on the Urban Land Institute multiplier of .00175 tons per day per person. Tax revenues generated by the project would help defray the cost of this municipal service, and are detailed in the following section. All of the units would have garages large enough to hold garbage cans and recycling containers until collection day.

Fiscal Impact Analysis

The fiscal analysis for the proposed project analyzes the costs and benefits for the development, which comprises 76 townhouse condominiums for active adults and 42 single family residences. 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.

Potential Costs

Town of North Salem Fiscal Impact

The proposed Highgate-Woodlands development is projected to increase the population of North Salem by 309 persons. The estimated annual per capita property tax levy for municipal services is $906. Using this as a basis for projections, the additional costs payable through the

property tax that would be induced by the proposed Highgate-Woodlands project, are projected to total $279,954.

North Salem Central School District Fiscal Impact

The costs to the North Salem Central School District associated with the addition of 51 school age children was examined. The estimate of the number of school age children that would be generated by the project is based on the number and type of single family units. Since the active adult townhouse development would be restricted to individuals 55 years or older, no increase in school age children would result from that portion of the proposed development.

The School District's budget for the 2009-2010 school year is $37,616,948[6]. According to Tiffany Navarro, at the District Business Office, the District's enrollment for the 2009-2010 school year is 1,343 students. The total tax levy for the District schools for the 2009-2010 school year is $32,346,545. Based on this, the per student cost from the tax levy is $24,085.

Based on the $24,085 figure calculated above, School District costs to educate the additional 51 students introduced by the Highgate-Woodlands development would be approximately $1,228,335.

Potential Impacts

The proposed Highgate-Woodlands development would be taxed based on the developed assessed value. This would result in an increase in tax revenues to each of the taxing jurisdictions, as compared to existing tax revenues.

Based upon the projected market value of future residences, the project would generate a total of approximately $638,092 in Town and County property tax revenues annually, $620,574 more than currently generated. The Croton Falls Fire District taxes would be $43,893, an increase of $42,629. The estimates provided in this section are based upon 2009 Town tax rates and 2009-2010 school tax data.

The property tax revenues to be generated to the School District would total $1,489,930 annually, which is $1,450,396 more than current revenues from the property. The combined tax revenues after development for the Highgate-Woodlands development would be $2,128,022, an increase of $2,070,969.

A total of $317,037 is projected to be generated in taxes payable to the Town of North Salem. Costs to the Town for municipal services are projected to be $279,954, and therefore a revenue surplus of $37,083 would be expected after development. For the North Salem Central School District the projected taxes would be $1,489,930, the projected costs $1,228,335, and the revenue surplus $261,595.

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 would benefit commercial businesses in the local area and the region. No secondary impacts are anticipated from the project due to changes in area properties' assessed value as a result of the proposed action.

[6] Tiffany Navarro, North Salem Central School District Business Office, April 13, 2010

MIH Fiscal Impacts and Mitigation

Two to three proposed apartments (three one-bedroom apartments or one two-bedroom and one one-bedroom apartments) would result in an additional five to six residents, including 2 school age children, added to the Town population (according to CUPR multipliers). The additional residents and school age children will result in expenditures by the Town for Town services and educational costs to the North Salem School District. Affordable housing is a goal of both the Town of North Salem and Westchester County. The community benefits of up to three affordable housing units in the Town are expected to off-set the expenditures incurred by the Town and the North Salem School District.

Recreational Facilities

Potential Impacts

Description of Proposed On Site Recreational Facilities

Residents of the proposed Highgate-Woodlands development would have access to recreational facilities on site and within the Town. Both portions of the development would have swimming facilities, and the site would include informal trails for passive recreation.

The proposed recreational facilities for the single family neighborhood and active adult townhouse development would each include a swimming pool (size) and clubhouse. For the active adult townhouse development a sports court would be provided. Each clubhouse would include a large gathering room, changing room facilities and a kitchen.

Dedicated Parkland

While there is no "dedicated parkland" as referenced in the Scope, the project includes one Conservation Parcel, Parcel D (approximately 9.37 acres). Additional land of approximately 12 acres on the active adult townhouse parcel (R-AMF/2) would remain undeveloped, with existing vegetation including the largest wetland on the property. Access to these parcels would be for residents. An informal loop trail is proposed to be installed around the central wetland.

Mitigation Measures

In accordance with the applicable requirements of the zoning ordinance and subdivision regulations, applicants either provide on-site recreation or a park set-aside or pay recreation fees. In this instance, the Applicant is doing both. Under the terms of the Stipulation of Agreement, the applicant would provide a recreation clubhouse and recreation area for the 42-lot single family residential subdivision and an additional recreation area for the active adult townhouse units. In addition, the applicant would pay recreation fees for the single family portion of the development in an amount not to exceed $3,500 per lot (or $147,000) and an amount for the active adult townhouse development not to exceed $5,000 per unit (or $380,000).

Further, the proposed action would conserve one parcel (Parcels D) with a total approximately 9 acres. Additional land of approximately 12 acres on the Active Adult Townhome parcel would remain undeveloped. These parcels can serve as open space for passive recreation or simply serve as unused open land.

Visual Resources

While the development of the Highgate-Woodlands project would not impact any scenic vistas in the area, identified in the Westchester County Atlas or the Town Master Plan, it is anticipated that some views of the proposed residential development would be possible from area roads east of the site. These views would include houses, portions of the access road and retaining walls proposed on the east of the site near Reed Road. However, views of these features would be minimized by road setbacks, vegetative buffers and topographic orientation. An assessment of the potential impacts of the proposed project on the views from Hardscrabble Road and other roads in vicinity of the site was completed (see Section 4.930 Community Character).

Historic Resources

A Phase IA Literature Review and Sensitivity Analysis and Phase I B Archaeological Field Reconnaissance Survey (January 2008) and a Phase II Site Investigation (September 2008) were prepared by STRATA Cultural Resource Management, LLC for Tim Miller Associates. See Appendix 10 for the full report.

National Register Properties

There are no National Register listed properties adjacent to the property mile of the Project Area. The National Register eligible Marriot-Fairfield Inn site lies approximately 3000 feet south of the Project Area alongside the Croton River.

Phase 1A Analysis

In the Phase 1A Analysis, the location and environmental conditions of the site were assessed, and a literature review and historic maps were consulted to identify the potential for historical resources on the site. Previous residences on the site included the E. Crosby Residence, Brown Residence and Brown's Corners, Chamberlain Residence, and the Juengst Residence. Prehistoric and historic sensitivity assessments were conducted to determine the degree of sensitivity for the presence of prehistoric and historic cultural remains.

The Project Area is considered to have moderate to high sensitivity for the presence of historic cultural remains. A complex of building foundations in the northwest corner of the Project Area indicates previous agricultural and/or industrial usage of this part of the Project Area. Stone walls divide the site into more than a dozen enclosures, suggesting farming and/or livestock pasturage. Based on these assessments subsurface archeological testing was recommended for the entirety of the Area of Potential Effect, excepting wetlands and areas of slope in excess of 12%.

Phase II Site Investigation

The Phase I/II Archeological Investigation and Site Evaluation of the proposed Highgate-Woodlands at North Salem development identified three historic archeological sites: The Juengst Barn Complex Historic Site, The Juengst Dump Historic Site, and The Lyle Gun Test Historic Site; an OPRHP Historic Archeological Site Form has been completed for each site (Appendices 8-10 of the Cultural Resources Report). A Phase II Site Evaluation was performed on the latter two sites, providing useful data for interpreting both sites. They do not

appear to be eligible for the State or National Registers of Historic Places and no further archeological work is recommended for either site. The Juengst Barn Complex site, at the northwestern edge of the Project Area, was considered for avoidance. However, the current design suggests potential impacts to the site related to a proposed roadway, Detention Basin No. 8, and the house and landscaping associated with Lot #19. If the current design cannot be modified and the Juengst Barn Complex Site cannot be avoided, a Phase II Site Evaluation is recommended for this site.

Proposed Mitigation

The applicant will assess the proposed layout and determine whether the current design can be modified to avoid the Juengst Barn Complex. If the site cannot be avoided, a Phase II Site Evaluation will be completed by a qualified historic resource consultant.

Historic Resources - MIH Property Impacts and Mitigation

The Moderate Income Housing site was formerly used as a vehicle repair shop. Soil at the site was impacted by petroleum use and underground storage tanks. The remediation of petroleum on the property required demolition of existing structures and extensive excavation and grading. Seven tanks were removed from the site in the late 1990's. The site has been extensively disturbed and therefore archeological resources are not likely to be present on the site. No mitigation related to historic resources is warranted for the MIH site.

2.12 Community Character Impacts and Mitigation

Viewshed Analysis

The visual assessment has been conducted in accordance with the New York State Department of Environmental Conservation (NYSDEC) guidelines[7] relating to the assessment and mitigation of visual impacts. A visual assessment is an analytical technique that determines the viewshed of a particular project, identifies aesthetic resources within the viewshed, determines the potential impact of the project on aesthetic resources, and identifies strategies to avoid, eliminate or reduce impacts. The visual assessment will often incorporate use of line-of-sight profiles or photographs to demonstrate potential visibility of the facility from a sensitive viewpoint.

Hardscrabble Road is the only scenic resource in the project vicinity identified by the Town of North Salem or Westchester County. It is listed as a scenic road in the North Salem Comprehensive Plan (2011).

Visual Field Survey

Visual field resource surveys were conducted in the project study area in March, May and August 2008 to identify local viewpoints from which the project site is visible, in addition to the scenic viewpoints listed previously. Photos taken during these surveys, presented below, show conditions in winter when many trees were substantially bare, as well as in spring and summer when they were in leaf.

[7] NYSDEC Program Policy, Assessing and Mitigating Visual Impacts, 2000.

Prior to conducting the visual field survey, the limits of the study area were determined through inspection of U.S. Geological Survey (USGS) topographic maps, which reveal the potential visibility of the project site based on topography alone. Based on this review, the potential viewshed from which the site may be visible extends approximately one half mile to the east and south, and approximately one mile to the east, less than one half mile north, west and south of the project site.

In the field survey other factors that may serve to limit or block views of the site, such as intervening vegetation or buildings were observed and documented. The survey established the following publicly-accessible locations from which portions of the site are visible. This list includes the key viewpoints required by the Town of North Salem Planning Board for analysis in terms of the visibility of the site and the type and quantity of viewers at each location.

- Interstate Route 684
- NYS Route 22
- Reed Road
- Hardscrabble Road
- Fields Road
- Sunset Drive and nearby neighborhood roads
- Sun Valley Road

Potential Impacts to Visual Existing Character

The proposed project would convert currently vacant woods to a residential development and therefore change the character of the site. Clearing of trees and grading for construction and the addition of two story single family and townhouse dwellings, retaining walls, and access roads would allow some views of the proposed development from area roadways. New lawns and landscaping would replace existing woods in developed areas. Natural buffers would be preserved along area roads to enhance and integrate the development with the existing character of the locale, and new landscaped buffers would be provided to screen views of the development from offsite.

Changes to the identified viewpoints on area roadways are described in Section 4.9 Cultural Resources. Cross sections and photosimulations have been prepared to illustrate the discussions of the visibility of the proposed project from several of these locations.

Mitigation Proposed for Visual Impacts

No significant impacts to visual resources are anticipated to occur as a result of the proposed development, therefore, no mitigation is proposed.

Increased Intensity of Development

The Highgate-Woodlands project would add 118 residences to the Croton Falls area and introduce a range of housing types for a mixed age population. The project would be located in a secluded setting, away from the intensely developed hamlet of Croton Falls, and would not be expected to impact the character of the hamlet. The development would be integrated with the existing wooded hillside and the older residential development on the lower slopes. The Middle Income Housing site would provide up to three units of affordable housing in the hamlet of Croton Falls on site that is currently vacant. Overall the project would contribute to increasing

the diversity of housing choices in the Croton Falls area and make a positive contribution to the local economy.

Lighting Impacts on Surrounding Residential Uses

Exterior lighting would be provided in three areas of the proposed development for safety purposes. The lighting would be "Night Sky" compliant and would have downward light directing shields to minimize off-site impacts. The fixtures would be laid out in a pattern to provide adequate light to safely illuminate the travel ways for pedestrians and motorists. The proposed lighting would conform to all applicable regulations.

The lighting in this project (street lighting as well as lights at individual residential units) is expected to create minimal nighttime visibility of portions of the project from several nearby properties, specifically on Sun Valley Drive and at the project entrance on Reed Road. Due to the dense vegetation and distance that would separate these areas from the new light sources, 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 neighborhoods is anticipated.

Protection of Areas of Archaeological, Historic, or Local Community Importance

The proposed project has been designed so that stone walls on the site would remain intact following construction to the extent practicable. Where feasible, these stone walls would be used along property lines, for walls in the residential development, and along the proposed project roadways. See Section 4.920 for a discussion of archaeological and historic resources. Apart from the visual impacts previously detailed, no potential impacts to areas of community importance were identified.

Landscaping and Exterior Materials

Landscaping for the project would include naturalistic plantings for the site at large and the stormwater basins, with more formal treatments along the entry road and at the recreational facilities. Clusters of evergreen and deciduous trees and flowering shrubs would provide screening between houses in the active adult townhouse development, on the sloped terrain along the entry road, and in front of the retaining walls. The single family residences would have open lawn areas surrounded by existing trees. See Full Sized Plan Sheet LS-1, Landscaping & Wetland Buffer Mitigation Plan (Drawing 23) for the overall landscape plan.

Landscaping for both the active adult townhouse development and single family recreation facilities would include a combination of shade, evergreen, and small flowering trees with shrubs, grasses and perennials. Existing stone walls would be retained to the extent practicable. Landscape details would include natural stone walls, wood trellises, pasture fence, and Belgium block curbing. The retaining walls would be constructed of interlocking concrete units in a natural color.

Architecture

The Town of North Salem Zoning Code XVI 250-103. B. describes "excessive similarity" among structures in the same permit application as a characteristic that would contribute to a "harmful effect" per § 250-98 of the same chapter, and thereby would be recommended for disapproval

by the Architectural Review Board. The single family portion of the proposed Highgate-Woodlands project would include a variety of housing styles and sizes. The architecture for the single family homes will include adaptations of traditional Colonial, Arts and Crafts, and Adirondack styles. In the active adult townhouse development, highly detailed architecture, with various patterns of window, door, roof and railing treatments would be repeated to create unity within the complex, appropriate to a townhouse community. The recreational facilities would include an Arts and Craft treatment. Wood siding and mortared stone would be used for these structures, and features such as decorative railings, door and window treatments, and cupolas are proposed.

Visual Resources - MIH Property Site Impacts and Mitigation

The Moderate Income Housing, located on NYS Route 22, would be visible from off site locations. The design of this housing has not yet been proposed. The architecture and design of the building will be subject to Town of North Salem review, comment and approval.

2.13 Alternatives

The currently proposed Highgate-Woodlands at North Salem (hereinafter Highgate-Woodlands) project is an all residential development consisting of 42 lots for single-family homes surrounding a community of 76 active adult townhouse units in nineteen (19) townhouse buildings. There is no longer a commercial office component as was included in the previously proposed action (the Highgate project), which consisted of 49 lots for single-family homes surrounding a 250,000 square-foot office development. Therefore, the alternatives reviewed in the DSEIS are considered in comparison to the currently proposed Highgate-Woodlands all-residential project, however, observations in regard to the previous office and residential development are included when appropriate.

Most of the alternatives that follow have been repeated from the previously accepted DEIS from the former Highgate project (office and single-family) and as outlined in the approved scoping document. The alternatives from the previous Highgate DEIS are summarized and included in Table 2-4 at the end of this introductory section and are thereby incorporated by reference (as agreed by the Town of North Salem and acknowledged in the Final Scoping Document). Each of these alternatives includes a residential subdivision consisting of 49 lots in compliance with the zoning requirements of the R-1 District. The repeated Highgate alternatives, some of which include office and residential components, were discussed in detail in the Highgate DEIS, include the following (with reference to the subsection of the adopted scoping outline):

- An office development with three buildings (Section 6.110);
- An office development with one building (Section 6.120);
- Three (3) two-story office buildings with a reduced height (2 occupied floors) (Section 6.130);
- A plan which fully utilizes a central wastewater treatment plant (WWTP) connecting both the office buildings and all 49 single family homes (Section 6.210);
- A reduced scale development consisting of both components reduced at a 25% lower density (190,000 square feet of office space and 37 single family homes) (Section 6.310);

- A higher scale development consisting of both components at a 25% higher density (312,500 square feet of office space and 61 single family homes) (Section 6.320);
- An all single-family residential plan in accordance with existing zoning (Section 6.410);
- A 49 lot single family residential subdivision with a 134 room hotel (Section 6.420);
- An alternative access plan with a permanent loop road joining the active adult townhouse and residential components of the project (Section 6.510);
- An alternative drainage plan which would not use any of the site's wetland for on-site detention (Section 6.610); and
- An alternative construction plan with different phasing (Section 6.710).

Additionally, the following alternatives are more specifically comparable to the currently proposed Highgate-Woodlands (all-residential) development:

- A single-family cluster development (Section 6.430);
- An adult active and single-family with the requisite number of Moderate-Income Housing (MIH) units on-site (Section 6.440);
- The previously proposed action with office and single-family residential development (Section 6.800);
- An all active adult townhouse development (Section 6.900); and
- No action (Section 6.1000).

The roadway length, disturbed area, impervious surface, building size in square feet, number of parking spaces and total traffic generated have been discussed for each of the various alternatives, as appropriate, and compared with the current Proposed Action in Table 2-4. Each of the various office buildings scenarios are developed in accordance with the proposed RO (Research Office) zoning requirements that were discussed at length in the accepted Highgate DEIS.

•*

Table 2-4 Alternative Comparison Chart

Proposed Action or Alternative	Traffic Generated (Total Vehicles) AM/PM Peak	Site Disturbance (acres)	Impervious Surfaces (acres)	Total Building (sq. ft)	Paved Area of Road (linear feet)	Number of Parking Spaces
Highgate- Woodlands Residential Proposed Action	51/59	82.13	19.0	392,600	9,480	318
Highgate Proposed Action	432/421	62.5	56	250,000	7,400	1,000
Section 6.110 - Research/Office Development with Three (3) Buildings	432/421	62.5	56	250,000	7,400	1,112
Section 6.120 - Research/Office Development with One (1) Building	432/421	60	53.5	250,000	7,400	1,112
Section 6.130 - Alternative Height of Office Building - 2 occupied floors	432/421	65	58.5	250,000	7,400	1,241
Section 6.210 - Alternative Central Sewage Treatment Plant (STP) Connection - all single-family homes connected	432/421	58	56	250,000	7,400	1,112
Section 6.410 - All Single Family Homes - 120 lots	95/127	59	54	420,000	7,400	240
Section 6.310 - Scaled-down development - 190,000 sq. ft. - 37 homes	349/342	59	54	190,000	7,400	946
Section 6.320 - Larger-scale development - 312,500 sq. ft. – 61 homes	515/501	73	69	312,500	7,400	1,390
Section 6.420 - 49 Single Family homes and hotel of 81,889 square feet	118/157	50	43.5	81,889 (Hotel)	7,400	255
Section 6.510 - Permanent Loop Road Alternative	432/421	63.6	57.1	250,000	9,000	1,112
Section 6.610 - Alternative Drainage - no use of wetlands	432/421	62.5	56	250,000	7,400	1,112
Section 6.710 - Alternative Construction Plan	432/421	62.5	56	250,000	7,400	1,112
Section 6.800 - No Action	0/0	0	0	0	0	0

3.0 DESCRIPTION OF THE PROPOSED ACTION

This document is a Draft Supplemental Environmental Impact Statement (DSEIS) prepared in conformance with the requirements of the New York State Environmental Quality Review Act (SEQR). The Town of North Salem Town Board is Lead Agency for this action. The applicant has prepared this document addressing the items described in a Scoping Document dated March 22, 2005, and in response to comment letters prepared by the Town's professional consultants.

3.100 Project Purpose, Need and Benefits

3.110 History and Background

The action proposed in this DSEIS is for a residential development on a 159.52 acre property in the Town of North Salem that is currently undeveloped woodland. A previous proposal for this property was evaluated in a Draft Environmental Impact Statement (DEIS), with the Town Board as Lead Agency, and accepted as complete for public review on December 16, 1996. The proposal in the DEIS was for a project known as the "Jo Flo" project (Lukashok Petition Application)" and later as the "Highgate Project (Lukashok)."

The Highgate project consisted of the proposed re-zoning of approximately 40 acres of the property to the Town's existing RO Research-Office Non-Residential Zoning District, the subsequent development of approximately 250,000 sf of office and research space, and the subdivision of the remaining approximately 120 acre portion of the site into approximately 49 single-family residential lots.

The accepted DEIS for the Highgate project incorporated the terms of a Stipulation of Settlement adopted on December 8, 1992, pursuant to litigation following a change in zoning of a portion of the property from commercial to residential. The zoning change precluded the development of a portion of the property for hotel use as had been proposed and evaluated in a DEIS completed on February 18, 1987. The Stipulation of Settlement contemplated an amendment to the Town Zoning Law to allow the use of the rezoned portion of the property (approximately 40 acres) for offices as of right. The Stipulation also indicated that the rezoning, site plan, and subdivision approvals were subject to and conditioned upon completion of all requirements of SEQRA.

Required SEQR public hearings on the Highgate DEIS were held on January 30, 1997 and February 6, 1997, prior to the preparation of a Final EIS. Based on ongoing discussions between the Town Board and the applicant and his representatives, it was acknowledged that there was not adequate demand for office space locally and in the surrounding area, and a project change should be considered. The commercial aspect of the project, the previously proposed office space and related RO (Research-Office) rezoning in the center of the former Highgate site, was dropped from the proposed development. Instead the central area would be proposed for active adult townhouse development specifically designed for occupancy by one or more persons 55 years or older. This aspect of the project, which would involve rezoning to a designation that would permit such a use, was identified by the applicant as "The Woodlands at North Salem". The previously proposed mixed use development (office and single family residential) is considered as an alternative in this DSEIS. The project considered in this DSEIS consisting of 76 units of active adult townhomes and 42 single-family homes, is known as "Highgate-Woodlands at North Salem".

Amendment #1 to the Stipulation of Settlement was entered into by and between the Town Board, the Planning Board and the applicant, and filed with the Westchester County Clerk on November 29, 2004. The Amendment was adopted to support the use of the portion of the property previously designated for office use as an active adult townhouse development, subject to the Town rezoning the central area of the property to allow for such uses. Since the project was significantly changed from the project proposed in the accepted DEIS, a Draft Supplemental EIS (DSEIS) was required, and a Scoping Outline was adopted for the DSEIS on March 22, 2005.

The project site is currently zoned R-1 for single family residences on one acre lots. The proposed project would require the subdivision of the entire parcel and the rezoning of approximately 39 acres to a new zoning district, the proposed R-AMF/2 zoning district for occupancy by one or more persons 55 or older. The rezoned portion of the property would be developed with 76 attached residential dwelling units pursuant to the proposed zoning provisions, including amenities associated with multi-family complexes. The current proposal for the single family portion of the property includes 42 single family lots instead of the previously proposed 49. Additional parcels would be created to provide for roadways, conservation, and water and sewer facilities.

In addition, as described further below, up to three off site moderate income housing (MIH) units are proposed to be provided on an off-site property known as the "Dino and Artie's site" owned by the Town of North Salem. The Dino and Artie's site is located in the hamlet of Croton Falls, west of the site. The project sponsor will be responsible for the construction of the MIH residential units on the Dino and Artie's site. The completed residential development on that property would be donated to a not for profit organization, which would manage it thereafter. The former Dino and Arties site is referred to herein as the Moderate Income Housing (MIH) site.

A more detailed description of the proposed project is provided in Section 3.130 Revised Objectives of the Project Sponsors, below.

Summary of Amendment #1 to the Stipulation of Settlement

A copy of the Stipulation of Settlement and Amendment #1 are provided in Appendix 3. The Amended Stipulation permits, subject to conditions, "an active adult, multi-family residential community of 76 residential dwellings specifically intended for occupancy by persons 55 years or older"(page 4). The active adult townhouse development would replace the previously proposed office development. It would require an amendment to the zoning code resulting in the rezoning of approximately 39 acres of the project site to a new R-AMF/2 Zoning District. The Stipulation indicates that the rezoning is subject to "a thorough site specific engineering, planning and environmental review"(page 4).

The Amendment also governs the terms of payment of development fees. The applicant would pay to the Town of North Salem, in order to ameliorate the impact of the proposed development upon the Croton Falls shopping area, the sum of $400,000 payable as follows: $120,000 upon the granting of the approvals for the proposed project and the approval of the first residential subdivision plat in the event it is accomplished in phases, and, $140,000 after the Plaintiffs have received a Building Permit for at least 40 of the multi-family dwellings and the final sum of $140,000 upon receipt of a Building Permit for the remaining thirty-six multi-family dwellings, (page 7-8).

The Amendment requires the provision of a community pool and recreational facility for each of the two portions of the development, (page 9). In addition to these recreational facilities, the applicant would be required to pay recreation fees under the Code, chargeable on a per lot or per unit basis as follows: For the single family portion of the development the amount would not exceed $3,500 per lot (or $147,000 under the current proposal) and for the active adult community the fee would not exceed $5,000 per unit (or $380,000), plus a total land contribution of 5 acres, (page 8).

The Amendment also requires all interior roads to be privately owned and maintained. At least 12 of the 49 single family residences (42 residences are proposed under the current plan) would be required to be designed and marketed with a first floor master bedroom, (page 9).

The acquisition and development of the 0.9 acre site known as Dino and Artie's on NYS State Highway 22 in the Hamlet of Croton Falls would be required under Amendment 1, (page 9 - 11). As further described below, the Dino and Arties site is a former auto repair facility that is currently undergoing remediation by the Town of North Salem under the guidance of the New York State Department of Environmental Conservation (NYSDEC) Environmental Restoration Program. According to Amendment #1, no more than five (5) moderate income apartments are to be developed, and the design of this housing would utilize an architect of the Town of North Salem's choosing at the Town of North Salem's expense. Based upon the on-site capacity for septic systems, up to three moderate income apartments are proposed and are considered in this DSEIS. If acquisition of Dino and Artie's site is not approved or the Town is unable to deliver marketable title, the applicant would be required to pay $400,000 to the Town of North Salem to be held in trust for the construction of the moderate income housing at the Town's own expense. Future development of the Dino and Artie's property will be subject to conditions and restrictions related to the site's former environmental contamination and remediation (see Section 3.300 Design and Layout).

A Croton Falls Water District fee of $200,000 would be required simultaneously with the closing of the DIno and Artie's site, or within 60 days of receipt of all approvals, in the event the Dino and Artie's site is not acquired, (page 11).

3.120 Relationship of the Project to the County and Town Plans and Zoning Objectives

Town and County Plans

North Salem is primarily a residential community, and the Comprehensive Plan of 2011 recommends that this residential character be maintained. Specifically, future residential development should have sufficient flexibility to serve all segments of the population, while preserving the stability of existing neighborhoods, and the rural character of the outlying areas. The Town Board adopted the current Comprehensive Plan in December, 2011.

The Town's current zoning map shows the existing Highgate-Woodlands Site as one of those eligible for "possible area for creation of PD district". The PD (Planned Development) District was created by the Town to provide flexible land use and development opportunities for potential areas of mixed residential and nonresidential uses in combination with open space and/or recreational facilities. The proposed plan combines two types of residential development with recreational facilities and open space.

At the county level, *Patterns for Westchester* (1996), the Westchester County guidelines for growth and development, identifies most of North Salem as appropriate for residential development at low density, ranging from 0.2 to 1.6 units per acres. Overall, the proposed project would comform to the goals of preserving the rural, low density residential character articulated in the Patterns for Westchester (1996).

A report prepared for the Westchester Land Trust studied the North Salem tax base and concluded that when planning for its future, the Town of North Salem should consider the four principles listed below.[1]

1. Discourage regional-scale commercial development that would attract secondary residential development, traffic impacts and service costs greatly in excess of those generated by the resident population;
2. Encourage development of local-scale commercial uses that draws on the existing population and that of adjacent towns for employees and clientele;
3. Encourage open space conservation for the dual purposes of retaining the community's most valuable amenity and controlling growth in demand for services; and
4. Maintain a gradual rate of residential growth that does not impose abrupt increases in school enrollment or demand for public services.

The Highgate-Woodlands proposal generally conforms to the guidelines set by the study. It proposes a phased development and provides approximately 9.37 acres of land proposed to be donated for recreation and/or open space purposes, in excess of the five acre donation mandated in the Stipulation. The Town Board has previously indicated it is not interested in acquiring the 9.37 acre parcel previously proposed by the applicant for open space. The active adult community would reduce the number of school children generated by the development of the site and reduce future impacts on the schools compared to residential development without age requirements.

The County report entitled "A Plan for Parks and Open Space Policies", sets forth basic planning and policy statements for open space protection, recognition of natural resources, and identification of areas with open space character. No areas identified for acquisition or trail connections are located on the subject property, but the proposed plan provides for passive recreation and nature trails on the proposed conservation parcels.

Westchester County Law protects Critical Environmental Areas (CEAs) as designated by the NYSDEC. The subject property does not include a CEA.

Future housing needs for Westchester County were assessed in a detailed study conducted by the Center for Urban Policy Research for the years 2000 to 2015 entitled *Affordable Housing Needs Assessment*. Subsequently the County prepared the Draft Affordable Housing Allocation Plan (July 14, 2005) that allocates a share of the total need for affordable housing in the County to each municipality. This DSEIS proposes the development of up to 3 units of Moderate Income Housing (MIH) at the Dino and Artie's property in Croton Falls.

[1] A Study of North Salem Real Property Taxes and Tax Base prepared for the Westchester Land Trust by Pamela M. Bush, A.I.C.P. with Associates of the Westchester Land Trust, October 1994, page 4.

Zoning

The development of the site would involve the following zoning and land development approvals:

- Adoption of zoning amendments and rezoning of an approximate 39 acre portion of the site, which is currently zoned R-1, to R-AMF/2, permitting the active adult townhouse aspect of the project;
- Subdivision approval to create the 42 single-family lots, and parcels for the multi-family zone, roads, water and sewer facilities, recreational and conservation parcels and to address related requirements and improvements;
- Site development plan approval to address layout of buildings, parking, access, stormwater, recreational and other improvements for the active adult townhouse aspect of the project.

R-1 District

The basic dimensional requirements of the R-1 District and the requirements of the proposed project are shown in Table 3-1 below. The size, area and coverage on each of the proposed 42 single family lots is further described in Section 3.310 General Site Description.

Table 3-1
Proposed R-1 (Medium Density Residential) Zoning District
Bulk and Area Requirements for Single-Family Detached Dwellings*

Features	**Minimum Required**	**Proposed**
Lot Area	1 acre	1.001-4.837 acres**
Lot Width	150 feet	150 -283 feet
Front Yard	35 feet	41 - 272 feet
Side Yard/Both Side Yards	20/50 feet	25/65 - 77/95 feet
Rear Yard	50 feet	51 - 418 feet
Street Frontage	120 feet	120 - 303 feet
Features	**Maximum Permitted**	**Proposed**
Building Height	35 feet	35 feet
Development Coverage	20%	3.94 - 16.02%
Building Coverage	10%	1.68 - 8.81%
Floor Area Ratio	0.2	.03 - .16

Source: Town of North Salem Zoning Ordinance (Section 250-15, Bulk Table of Requirements)
Note: The proposed single-family lots conform to all bulk and area requirements of the R-1 Medium Density Residential District. *Single-family dwellings are in "Use Group" e in accordance with the Table of General Use Requirements for the R-1 zoning district
** - The proposed minimum lot area includes deductions for slopes and wetlands per the Code (250-16A)

Proposed R-AMF/2 Zoning

The current Zoning Ordinance for the Town of North Salem was adopted in March 1987. In 2000, three new multi-family zoning districts were created and four parcels were rezoned for multi-family uses in response to the Continental Decision. These four parcels, which were

rezoned to permit a wider variety of housing types in the Town, permit multi-family and single-family residential developments with an inclusionary requirement that at least 10 to 20 percent of the units built must be MIH units.

The zoning districts created were the R-MF/4 (Residential-Multi-Family/Medium-Density), R-MF/6 (Residential-Multi-Family/High-Density) and PD-CCRC (Planned Development-Continuing Care Retirement) zoning districts. These permit a variety of types of residential units at densities varying from 4 to 8 dwelling units per acre.

The applicant has petitioned the Town of North Salem to create a multi-family zoning district for active adult residents at a density of 2 dwelling units per acre and to rezone an approximately 39-acre portion of the Highgate-Woodlands to this district. A draft of these zoning amendments (last revised April 21, 2005) proposes the creation of the R-AMF/2 Residential-Adult Multi-Family/Medium-Density zoning district with provisions regarding the age restriction for the proposed district (persons who are age 55 years or older).

The proposed bulk requirements for development in the proposed R-AMF/2 zoning district are outlined in Table 3-2 below. A copy of the proposed zoning is provided in Appendix 11.

Table 3-2
Proposed R-AMF/2 (Residential-Adult Multi-Family/Medium Density) Zoning District Bulk and Area Requirements for Multi-Family Dwellings*

Features	**Minimum Required**	**Proposed**
Lot Area	5 acre	38.65 acres
Lot Width	400 feet	746 feet
Front Yard	50 feet	51 feet
Side Yard/Both Side Yards	50/100 feet	62/157 feet
Rear Yard	50 feet	214 feet
Street Frontage	50 feet	732 feet
Features	**Maximum Permitted**	**Proposed**
Lot Area	50 acres	38.65 acres
Building Height	35 feet	35 feet
Development Coverage	40%	16.35 %
Building Coverage	20%	7.18 %
Floor Area Ratio	0.3	0.1321

Source: Proposed draft zoning amendments.
* Multi-family dwellings are in "Use Group" r in accordance with the Table of General Use Requirements for the proposed R-AMF/2 zoning district. The bulk requirements above apply to the overall development within the entire site on which the multi-family dwellings are located as per zoning subsection 250-19.1, A. Internal separation distances are addressed in the supplemental requirements for this use.

Moderate Income Housing (MIH) project in Croton Falls

The applicant proposes to provide up to three (either three 1- bedroom units or a combination of one 1-bedroom and one 2-bedroom) affordable rental units at the Moderate Income Housing site in Croton Falls. The requirements for the provision of moderate income housing at the former

Dino and Artie's property are described in the Stipulation of Settlement (see Appendix 3). The site for this proposed MIH is located within a "GB" General Business District site in central area of the hamlet of Croton Falls. These units would comply with the standards and uses described for this district in the Town Code, particularly for group o, multifamily moderate income dwellings. As required in § 250-126 of the Code, they would have minimum gross floor areas as follows:

One-bedroom: 700 square feet
Two-bedroom: 900 square feet

Table 3-3
Bulk Requirements for GB - General Business District (Use group "o")*

Features	**Minimum Required**	**Proposed**
Lot Area	5,000 square feet	25,700 sf (0.59 acre)
Lot Width	70 feet	230 feet
Front Yard	10 feet	35 feet
Side Yard/Both Side Yards	10/20 feet	34/145 feet
Rear Yard	20 feet	50 feet
Street Frontage	50 feet	230 feet
Features	**Maximum Permitted**	**Proposed**
Building Height	35 feet	35 feet
Development Coverage	70%	39%
Building Coverage	30%	6%
Floor Area Ratio	0.5	0.12

Source: Town of North Salem Code (§ 250-126)
* Multi-family dwellings containing all moderate income dwelling units are in "Use Group" o in accordance with the Table of General Use Requirements for the proposed GB- General Business district.

3.130 Revised Objectives of the Project Sponsors

Proposed Development

As outlined above, the revised proposal for Highgate-Woodlands is for a residential development that would provide 42 market rate single family dwellings and 76 active adult townhouses and related recreational facilities in development located east of the hamlet of Croton Falls. In addition, up to 3 affordable apartments would be provided in Croton Falls on the former Dino and Artie's site, herein refereed to as the "Moderate Income Housing" site. As shown in Table 3-4, the entire Highgate-Woodlands project site consists of 159.52 acres.

The key elements of the proposed development include:

- **76 Active Adult Townhomes** clustered on an approximately 38.65 acre parcel in the approximate center of the property. The active adult townhomes will be located in 19 buildings, each containing four (4) residential units. The units will be a mix of one-bedroom (28 units) and two-bedroom townhomes (48 units). Access to the active adult townhomes will be from two cul-de-sac roads (Roads "D" and "E"). The active

adult townhomes will have a recreation and community building located near the entrance of the active adult development. This "active adult recreation building" is located on the shared active adult townhome parcel.

- **42 Single-Family residences** on individual lots ranging in size from 1.01 to 6.4 acres (total size). All of the single family lots will be zoning compliant and comprise an area of 71.97 acres. The single family homes will all be market rate and will range from approximately 2,500 square feet to 4,500 square feet in size. Single family homes would be accessed from a private road system, as described below. The single family residences will have a recreation and community building located on a separate parcel at the end of Access Road "A", in the northwest portion of the site (Parcel R).

- **Private Road System** The development will be served by a private road system (Roads "A", "B" and "C"), with access provided from Reed Road. The internal roads will be 22 feet in width with 4-foot shoulders and a 50 foot right-of-way. The private road system will be contained on a lot (Parcel C) comprised of 12.75 acres.

- **Public Road Portion** The first approximately 650 feet of the access road will be dedicated to the Town of North Salem on a separate lot (R.O.W. Town Road) consisting of 0.95 acres. The public portion of the access road will provide a turn-around for school buses and will be maintained by the Town.

- **Sewage Treatment Plant** A private community sewage treatment plant will treat wastewater from the entire Highgate-Woodlands development (active adult townhomes and single family residences). The sewage treatment plant will be located on a 14.13 acre parcel in the south-central portion of the site. Treated wastewater will be disposed of into subsurface sewage disposal system (SSDS) areas. The SSDS areas are located on the 14.13 acre sewage treatment plant parcel, and one SSDS area is located on a separate 1.01 acre parcel (Parcel J).

- **Water Treatment Plant** The Highgate-Woodlands development will be provided water from a community water treatment plant located on a 3.10 acre parcel in the north central portion of the site (Parcel W).

- **Additional Parcels** Parcels D, E and F, identified on the proposed Plat and listed in Table 3-4, below, will be used for the following uses:
  Parcel D, (9.37 acres) located in the southwest portion of the site is designated as a conservation parcel, and will contain a portion of the emergency access drive connecting Sun Valley Drive to "Private Road A",
  Parcel E, (3.13 acres) in the northwest portion of the site will be utilized for stormwater management facilities, and
  Parcel F, (3.36 acres) located at the intersection of Road "A" and Road "C", is designated as a conservation parcel, and will also contain stormwater management facilities and a wastewater pump station.

- **Moderate Income Housing** The above described development is proposed for the project site. Moderate Income Housing development is proposed for an off-site parcel located in the hamlet of Croton Falls, formerly known as the Dino and Artie's site. The Moderate Income Housing parcel in Croton Falls will be developed with up to three affordable apartments, and associated parking, and utilities. The proposed Moderate Income Housing is further described in Section 3.300 Design and Layout, below.

Table 3-4
Proposed Parcels in Highgate-Woodlands Development

Parcel	Size (acres)	Use
Single Family Lots 1-42	Total 71.97	Single family residences
Active Adult Townhomes (R-AMF-2) Parcel	38.65	Active adult townhomes. Includes cul-de-sac access roads, recreation building and undeveloped land.
R.O.W. Town Road	0.95	Town Road
Parcel C	12.75	Private Road
Parcel D	9.37	Conservation
Parcel E	3.13	Drainage
Parcel F	3.36	Drainage, Pump Station, Conservation
Parcel I	14.13	Sewer (sewer treatment plant and 4 SSDS fields
Parcel J	1.01	Sewer (SSDS field)
Parcel R	1.10	Single family home recreation building
Parcel W	3.10	Water treatment and pump house
Total Area	**159.52 acres**	

Emergency access into the site will be provided from the northern end of Sun Valley Drive. This access will extend through Parcel D (described above) and through a proposed easement that will straddle the lot line shared by Lot 2 and Lot 3, connecting to Road "A". A second internal emergency access road would extend from the cul-de-sac at the terminus of the active adult townhome development Road D and would connect to Road C, in the northern portion of the site. Emergency access is further described in Section 3.3.6 Roads.

This DSEIS describes the existing on-site wetlands and regulated 100-foot buffer areas., and project related impacts to these resources (see Section 4.430 Wetlands). The project as designed would result in the direct impact to Town designated wetlands of 87 sf (0.002) acres, and impacts to Town regulated 100- foot wetland buffers would total 5.73 acres. Wetland mitigation measures in the form of invasive species management and wetland buffer enhancement are proposed by the applicant. Section 4.430 Wetlands provides a detailed description of existing conditions, potential impacts and mitigation.

Feasibility

Relationship to Area Amenities

The project site is located approximately one mile from the hamlet of Croton Falls on NYS Route 22. Croton Falls contains professional services, retail establishments, restaurants, and station stop on the Metro North Railroad.

The Hamlet of Somers is located approximately 3 miles south of the site, on Route 100. Somers contains shopping and service opportunities including banks, grocery and retail stores and professional services. The Village of Brewster is located approximately 6 miles northwest of the site, on Route 22. The Village center contains neighborhood retail stores, restaurants, banks and a stop on the Metro-north train line. A supermarket and additional shopping

opportunities are located near Sears Corner, on Route 22 in the Town of Southeast, approximately 8 miles north of the site. Recreation areas in the vicinity of the site include three Westchester County parks: the Angle Fly Preserve and Muscoot Farm on Route 100 in Somers and the Mountain Lakes Camp in the southeast corner of North Salem. In the Town of Southeast, the Field Farmstead owned by Putnam Land Trust is located on Fields Lane.

Accessible major transportation routes near the site will provide future Highgate-Woodlands residents opportunities to travel to work, recreation and shopping destinations. Exit 8 on Interstate 684 is located less than one-quarter mile from the project entrance. Interstate 684 is a major north-south highway through Westchester County. Interstate 84, a major east-west corridor through Putnam and Dutchess Counties, as well as Connecticut and New England to the east and Pennsylvania to the west is located approximately seven miles north of the site. The Croton Falls stop on the Metro-north Harlem Valley line is located approximately one mile west of the site. The Harlem Valley line includes service to businesses and shopping in White Plains and New York City.

Suitability of Site

The project site consists of 159.52 acres of undeveloped land, located in the R-1 (Medium Density Residential) Zoning District. As described above, the proposed action, in part, is to rezone approximately 38.65 acres of the property as R-AMF/2 (Residential-Adult Multi-Family/Medium Density) Zoning District. The rezoning would allow the development of up to 76 senior multifamily residences. The remaining portion of the site, proposed for single family residences is approximately 120.9 acres in size. This includes the single family lots (71.97 acres) and land for roads, water supply, wastewater treatment and stormwater facilities. The studies, data and engineering provided in this DSEIS demonstrate that the site is suitable to support the proposed development. The project site's proximity to major transportation corridors (Interstate 684, I-84, Metro north railroad), also support the sites suitability for residential development.

Comparable Development by Applicant

The applicant has not completed comparable residential developments, but has worked to develop the current project site with alternative proposals and plans, since the 1980's.

3.200 Location

3.210 Geographic Boundaries

The Highgate-Woodlands site is located in the northwestern quadrant of the Town of North Salem just south of the Westchester/Putnam County boundary line. The boundary between Putnam County and the Town of Southeast, and Westchester County and the Town of North Salem lies at the northern edge of the property. The property is designated on the Tax Assessment Map of the Town of North Salem as Sheet 2, Block 1734, Lots 15, 16, 19. The Highgate-Woodlands site has 480 feet of frontage on Hardscrabble Road, a County collector road, and 1,300 feet of frontage along Reed Road. The property is located less than 1 mile from the hamlet of Croton Falls near Interstate Route I-684 interchanges and Hardscrabble Road (Exit Number 8). Hardscrabble Road is a major east/west Town of North Salem highway. Several other regional roadways, including NY Route 22 and NY Route 116 pass near the site.

The project site is shown in Figure 3-1 Site Location Map. Existing conditions and wetland areas are shown in Full Sized Plan Sheet SM-1 Soils Map/Existing Conditions (Drawing 5).

The Moderate Income Housing site formerly known as the Dino and Artie's property, consists of approximately 0.9 acres on NYS State Highway 22. Designated as Sheet 1.1, Block 1727, Lots 3, 6, and 9 in the Town of North Salem, this site is located on the westerly side of New York State Route 22 within a "GB" General Business District in the central area of the hamlet of Croton Falls (see Figure 3-1) an aerial photo of the project site and environs is shown Figure 3-5.

3.220 Description of Site Access

Access to Highgate-Woodlands

Access to the site would be provided from Reed Road on proposed Road A, at a point about 1,200 feet northeast of Hardscrabble Road. A 39 foot wide boulevard style entrance with of one lane ingress and one lane egress (each lane 16 feet in width), separated by a 7-foot median would extend approximately 650 feet to a bus stop/turnaround. The entry boulevard segment would be dedicated to the Town. Beyond this turnaround, the road would narrow to 22 feet, where Road A would become part of the privately owned internal access road system, described in Section 3.360 below. Emergency access into the property will be provided from the northern terminus of Sun Valley Drive. Site access is shown in Figure 3-3 Highgate-Woodlands Site Plan.

Access to MIH site

An existing asphalt access driveway from NYS Route 22 would be widened to provide access to the proposed MIH development. The driveway would lead to the parking area south of the housing and would be maintained by the owner of the development.

3.300 Design and Layout

3.310 General Site Description

The proposed Highgate-Woodlands site plan described in this DSEIS has been designed to provide a residential development consistent with the existing (R-1 Residential District) and proposed (R-AMF/2 Residential-Adult Multi-Family/Medium Density) zoning districts, and consistent with the Town Code. The Highgate-Woodlands project has been designed to minimize impacts to natural resources, including Town regulated wetlands, regulated 100-foot buffer areas, streams, springs, steep slopes, rock outcrops and other environmental constraints, as further described below.

The project has a boulevard entrance on Reed Road that lead up the hillside that slopes to Reed Road and Interstate 684. The south central portion of the site is more level than other portions of the site and is proposed for the active adult townhouse development. The active adult townhomes are arrayed along two cul-de-sacs extending from the main project access road (Road "A"). The single family residences will be located along the main access Road A and two cul-de-sacs (Roads "B" and "C"). Single family residences are proposed in generally the western and northern portions of the site.

A mapped wetland area (Wetlands A and B) occupies the east-central portion of the property and other mapped wetlands (C, D/E and F) are located in the northern and northwestern portions of the site. The proposed roads, residential development and infrastructure have been designed around the mapped wetlands, their associated adjacent regulated 100-foot buffers, streams and springs. A more detailed description of on-site water resources, including wetlands, (and regulated 100 foot buffers) streams and springs is provided in Section 4.2 Water Resources. The section discusses existing water resource conditions, potential impacts and mitigation for those impacts. The layout of the project is shown in Figure 3-3 Highgate-Woodlands Site Plan. Table 3-4 above, shows the size and uses of the proposed parcels.

A list of proposed single family residential parcels, including area and bulk and coverage information is provided in Section 3.320 Proposed Uses and Project Site Layout; Area and Setback Design Standards, below. The total contiguous acres of all property owned by the applicant is 159.52 acres. The subject property is nearly entirely wooded with mature successional trees and vegetation. A small pond in the east-central portion of the site is open. The project site contains a total of 6.77 acres of delineated wetlands regulated by the Town of North Salem and the US Army Corps of Engineers. Wetland A, comprising the largest wetland on the site and containing the pond, is 3.43 acres in size. This wetland is regulated by the ACOE and the Town of North Salem. The remaining five mapped wetlands are a total of 3.34 acres in size and are regulated by the ACOE and the Town of North Salem. The existing ecology and vegetation on the property are fully described in Section 4.400 Terrestrial and Aquatic Ecology.

The specific parcels and proposed development layout is further shown in the Full Sized Plan Sheet PS-1, Preliminary Subdivision Plat (Drawing 2).

Purpose of Proposed Lot Layout for Highgate-Woodlands

In the proposed plan, the 76 attached residences in the active adult townhomes would be grouped in the more level central portion of the property (R-AMF-2 Parcel). Areas of wetlands and existing wooded vegetation would provide a separation between the active adult townhomes and the single family residences. The 42 single family homes would be arrayed generally on the southern, western and northern portions of the site. A portion of the east side of the property, including wetlands and regulated 100-foot buffers would remain wooded and provide screening of views into the property from the east.

Wetlands A and B, located east of the active adult townhomes, and Wetlands C, D and E located north of the townhomes as well as the woodland to be preserved around them would separate the northern portion of the single family residences and the active adult townhomes. An informal trail system would be provided in this area. Similarly, Wetland F and the area to the west of the active adult townhomes would provide a natural buffer between the two communities in the development. Further details regarding wetland and watercourse avoidance, potential wetland impacts and wetland mitigation is provided in Section 4.2 Water Resources.

On the wooded slopes on the southernmost portion of the site, adjacent to the proposed emergency access road, Conservation Parcel D would maintain existing vegetation and provide a buffer between existing residents to the west and the proposed development. This parcel would be dedicated to a conservation organization or maintained with a conservation easement.

The single family residence recreational facilities and associated parking would be located at the intersection of Roads A, and B on Parcel R.

The project's water plant would be located near the north end of the active adult townhomes on Parcel W. Parcel W also contains an emergency access road for the Road "C" cul-de-sac, connecting the active adult townhomes to Road "C". Wetlands C, D and E, and portions of associated regulated 100-foot buffers are located on Parcel W. Wastewater treatment facilities would be located east of the active adult townhomes on Parcels I and J. The community wastewater treatment facilities and the community water supply system would be used for both developments. Parcels E and F, located in the northwest portion of the site will be utilized for stormwater management facilities and a sewer pump station will be located on Parcel F.

Proposed Lot Layout for MIH

As previously described, up to three moderate income rental apartment units are proposed for the former Dino and Artie's property in the hamlet of Croton Falls. This site now owned by the Town of North Salem was formerly used as an auto repair facility. The property is currently undergoing environmental remediation by contractors for the Town of North Salem under the direction of the NYSDEC and the New York State Department of Health (NYSDOH) under New York's Environmental Restoration Program. According to a Fact Sheet prepared by the NYSDEC (October, 2009), the project clean-up involved the removal of soil contaminated with petroleum based compounds and metals. In addition, a demarcation barrier (orange construction fencing) and two feet of clean soil was placed over the property to stabilize the property for the future.

According to a conversation with Ms. Jamie Verrigni of the NYSDEC, the clean-up field-work is has been completed.[2] The NYSDEC has prepared a Final Engineering Report, documenting the clean-up, and it references draft deed restrictions for the property[3]. The Engineering Report and deed restrictions outline the required monitoring and development restrictions which will apply to any future development on the property. According to Ms. Verrigni, the site restrictions will allow future "Restricted Residential Use" or multifamily residential development on the property. The excavation and handling of impacted soil (soil below the demarcation barrier) will be limited and subject to conditions.

The proposed affordable housing to be constructed on the former Dino and Artie's site in Croton Falls would consist of one 3,100 square foot multifamily structure to be located in the center portion of the property, as shown in Figure 3-2, Dino and Artie's Location Map. The footprint of the building is approximately 1,550 square feet. Preliminary testing of the existing soils by Keene Coppelman Engineers indicate that up to three residential units could be supported by an on-site septic system (three 1-bedroom units or one 1-bedroom and one 2-bedroom unit). The conceptual plan for the MIH shown in Figure 3-4 shows two septic fields which were necessary due to the limitations of on-site soils. An off-site septic system, used by an adjacent property is shown on Figure 3-4 for planning and design purposes. Certain existing groundwater monitoring wells will need to remain on the site as part of the site remediation, following the construction of the residences. According to Ms. Verrigni (NYSDEC), the construction and location of monitoring wells can be modified during construction, subject to coordination with and approval by the NYSDEC. The details of well construction and

[2] Phone communication on August 23, 2012.
[3] The Final Engineering Report (NYSDEC) will be made part of the Highgate Woodlands FEIS.

modification will be coordinated with the NYSDEC and the Town Engineer, during the Site Plan review process.

Given the site remediation grading and fill that has occurred over the entire property, re-testing for septic capacity will need to occur, after the remediation of the site has been completed and accepted by the NYSDEC, the NYSDOH and the Town. Based upon discussions with NYSDEC staff, a final engineering report, survey and NYSDEC sign-off are pending and may not be completed for several months. Septic system testing will be completed prior to the preparation of SEQRA Findings and Preliminary Subdivision Approval. Any future septic system on the property will require review and approval by Westchester County Department of Health, the Town Building Inspector, and conformance with any restrictions imposed by NYSDEC and NYSDOH.

The proposed Moderate Income Housing plan described throughout this DSEIS will be subject to future development restrictions by NYSDEC, which are not known at this time. The analysis for the proposed MIH in this DSEIS provides an assessment of potential impacts related to the anticipated maximum development of the site, or up to three residential units.

South of the proposed residential building, an existing asphalt driveway would be widened to provide a 24 foot wide entrance drive and parking for seven cars. According to Town Code requirements for Multi-family dwellings in the GB District, one (1) parking space is required for each dwelling plus 0.5 spaces per bedroom. Assuming a maximum of three apartments, with one bedroom each, five spaces would be required. Two additional parking spaces will be provided for visitors.

An existing concrete sidewalk along the site frontage would remain, and a new sidewalk is proposed to connect the parking area and the existing sidewalk to the housing entrance. Shrubs located towards the east end of the property along the sidewalk would also remain, and along the south, west, and north property boundaries, large existing trees have been identified to be protected and preserved.

Site Disturbance

Highgate-Woodlands Project

The subject property comprises 159.52 acres, and the proposed development would require clearing of approximately 82.13 acres of vegetation to provide the buildings, roads and driveways, and associated facilites. Approximately 77.39 acres would remain undisturbed and forested as shown in Table 3-5. The limits of site disturbance are shown in Full Sized Plan Sheets EC-1 through EC-4, Erosion Control Site Plans (Drawings 19 through 22).

Table 3-5 Development Impacts Highgate-Woodlands		
Total Project Acreage: 159.52 acres		
Areas and Potential Impacts **Natural Resource Impacts (acres)**	**Existing**	**Proposed Disturbance**
Vegetation	152.75	82.13
Town / ACOE Wetland	6.77	0.002
Town Wetland Buffer Disturbance		5.73
Steep Slopes Disturbance 0-6%	21.91	12.23
6-12%	39.59	25.65
12-25%	62.91	32.38
>25%	35.11	11.87
Total Construction Disturbance		82.13
Off-site Construction Disturbance		1.16
Developed Area (acres)		
Impervious Surfaces buildings and paved surfaces	-	19.00
Lawn/ Landscaping / Stormwater Management Features	-	63.13
Earthwork		
Cut (cubic yards)	-	340,321 cy
Fill (cubic yards)	-	307,205 cy
Source: Tim Miller Associates, Inc. and Keane Coppelman Engineers, P.C., 2010		

Following development, the area of lawn and landscaping, including landscaped stormwater management features, would total approximately 63.13 acres. The proposed development would result in an increase of impervious surface on the site of 19.00 acres or approximately 12 percent, which would include buildings, roads and other paved areas.

Earthwork

The proposed development would require earthwork for the construction of the access roadways, parking areas, underground utility systems, multi-family building footings, foundation walls and residential homes. The project would physically alter the existing topography because of the excavation and fill requirements of the proposed construction. However, the site road system and proposed residential lots have been designed to avoid steep slopes and areas of rock outcrop to the maximum extent possible. The active adult townhouses would be situated on a plateau area in the central portion of the site to minimize on-site and off-site potential impacts. A further discussion of on-site rock outcrops and steep slopes, potential project impacts and proposed mitigation measures is provided in Section 4.1 Geology, Soils and Topography. As described in the Geology, Soils and Topography section, the project was designed to minimize areas of steep slope and bedrock.

Based on a preliminary cut and fill analysis approximately 340,321 cubic yards of rock and earth excavation would be required to complete construction of the proposed Highgate-Woodlands project, including residential development, access roads and parking areas and stormwater features. Approximately 307,205 cubic yards of fill would be used. Excess material will be reused on-site to the extent practical. The topsoil removed would be stockpiled on-site for reuse. The limits of grading are shown in Full Sized Plan Sheets EC-1 through EC-4, Erosion Control Site Plan (Drawings 19 through 22). Grading and construction phasing is further described in Section 3.4 Construction and Operation, and Section 4.100 Geology, Soils and Topography, below.

Blasting

For areas of the site within the proposed limits of disturbance, where rock is mapped on the surface, blasting would be performed. Where there is no surface ledge rock, ripping would be performed within 4 feet of the surface. Blasting would be performed at depths greater than 4 feet and continue to a point approximately 6 inches to 12 inches below the finished grade elevation. Topsoil and seeding would occur on horizontal areas to reclaim the disturbed area. The roads would be constructed with a gravel sub-base and then topped with asphalt. It is estimated that approximately 20 percent of the disturbed area would require some form of rock removal. Excavated rock will be crushed on-site and reused as road beds and in utility trenches. Reuse of rock will reduce the number of construction truck trips, carrying excess material from the site and trucks importing crushed stone onto the site. Potential impacts from blasting and proposed mitigation is further described in Section 4.1 - Geology, Soils, and Topography.

Proposed Limits of Disturbance

The project has been designed to retain areas of existing vegetation, in part to maintain the wooded character of the property and to provide a visual buffer between existing residential development and the project. The project's anticipated limits of disturbance (removal of vegetation and grading) are shown in Figure 3-3 Highgate-Woodlands Site Plan. The figure illustrates those areas where existing vegetation and trees will be retained, following construction. Construction limits of disturbance are shown in more detail in the landscaping plan Full Size Plan Sheet LS-1 (Drawing 23).

The limits of disturbance shown in the plans will be marked in the field with construction fencing and no clearing beyond these defined limits will be permitted during construction. The limits of disturbance, as shown, provide a reasonable area for a patio, deck, lawn and landscaping on individual lots, and allow reasonable access for construction of project buildings, roads and infrastructure (see Typical Site Design for Single Family Residential Lots*, below).* If, in the future, an individual homeowner wants to clear more trees or grade a portion of a lot, that work will be subject to the Town Code Section 189 Land Excavation, Filling and Tree Clearing.

A strip of existing vegetation, ranging from 60 to 150 feet in width will be retained following construction along Reed Road. Along the western property border, existing vegetation averaging approximately 90 feet in width will be retained following construction. Along the northern property border, existing vegetation averaging approximately 130 feet in width will be retained following construction (see Figure 3-3 Highgate-Woodlands Site Plan). Again, the limits of disturbance, as shown on the Site Plan will be identified in the field with construction fencing. Any future tree clearing by homeowners, beyond what is identified on the Site Plans,

will require review and approval by the Planning Board according to the Town Code Section 189 Land Excavation, Filling and Tree Clearing.

As shown in Figure 3-3, a large portion of the east side of the property, which includes Wetland A and dense woods on steeply sloping topography, would remain undisturbed. This area borders several existing residences along Reed Road. Maintaining existing vegetation on this eastern slope will preserve the wooded character of the site for drivers on Interstate 684 and Hardscrabble Road. Project visual impacts are further described in Section 4.910 Visual Resources.

Internal to the site, Wetland F provides a buffer of existing vegetation of approximately 250 feet in width, between the active adult townhomes and the single family residences. Wetland mitigation enhancement planting is proposed for specific edges of disturbed wetland buffers (regulated 100-foot buffers). The enhancement planing is described in Section 4.430 Wetlands and are shown in Full Size Plan Sheet LS-1 Landscaping & Wetland Buffer Mitigation Plan (Drawing 23).

Moderate Income Housing Project

The proposed MIH site has been cleared of above ground structures, and is currently cleared of vegetation, as of April, 2010 due to the on-going environmental remediation at the property. Weeds, trees and shrubs exist at the periphery of the site. The trees and shrubs at the edges of the site would be preserved, as shown in Figure 3-4. Once the site is developed, lawn and decorative residential landscaping will be provided in those areas not covered by the building, parking areas and walkways.

3.320 Proposed Uses and Project Site Layout; Area and Setback Design Standards

Typical Site Design for Single Family Residential Lots

The single family residential lots have been designed in consideration of the road layout, site topography, and areas of wetland and regulated 100-foot buffer areas. Each of the lots has been designed to comply with all area and bulk requirements provided in the Town Zoning Code regulations for the R-1 Residential District. The area and bulk details for the single family residential lots are further described below. The single family lots range in size from 1.01 to 6.4 acres in size.

Consistent with the Zoning Code, steep slopes and wetlands were evaluated on each lot to determine the minimum lot area. Table 3-6 Lot Area Calculations shows the areas of steep slopes and wetlands that were deducted to determine lot size. The bulk requirements listed in the Town Zoning Code and the bulk, area and coverage information for each of the 42 single family residential lots is provided in Table 3-7 Bulk and Area Data for Individual Single Family Lots.

Residences were situated on each lot considering topography, steep slopes and zoning setback requirements. Individual driveways will provide access to each of the residences. Homes are located at varying distances from the access roads. Existing trees and vegetation will be retained on the sides of driveways and around each of the residences, as shown in Figure 3-3 Highgate-Woodlands Site Plan. Areas of lawn and landscaping have been designed around

each home. An area with a radius of approximately 40 feet around the rear of each home has been provided. Typical landscaping for single family homes are shown in Full Size Plan Sheet L-2 Landscape Plan Details (Drawing 24). Underground utilities will be provided from the access roads under or near the driveways to each home. Stormwater from roofs and driveways will be either directed to nearby stormwater management basins or to subsurface stormwater drainage fields located in lawn areas.

Table 3-6 Lot Area Calculations

SPECIAL BULK REQUIREMENTS - 250-16A MINIMUM LOT AREA REQUIREMENT: 1 ACRE

LOT NO.	LOT AREA (ACRES)	Steep Slope Area Greater Than 25% (Acres)	WETLAND AREA (ACRES)	50% STEEP SLOPES DEDUCTED (ACRES)	50% WETLANDS DEDUCTED (ACRES)	LOT AREA COUNTED (ACRES)
1	2.150	0.700	0.000	0.350	0.000	1.800
2	2.334	0.475	0.000	0.238	0.000	2.096
3	1.504	0.110	0.000	0.055	0.000	1.449
4	1.822	0.184	0.000	0.092	0.000	1.730
5	1.658	0.118	0.000	0.059	0.000	1.599
6	1.038	0.060	0.000	0.030	0.000	1.007
7	1.048	0.063	0.000	0.031	0.000	1.016
8	1.069	0.107	0.000	0.053	0.000	1.016
9	1.011	0.002	0.000	0.001	0.000	1.010
10	1.039	0.076	0.000	0.038	0.000	1.001
11	1.461	0.230	0.000	0.115	0.000	1.346
12	2.683	0.553	0.000	0.276	0.000	2.406
13	1.645	0.745	0.000	0.373	0.000	1.272
14	1.777	0.251	0.000	0.125	0.000	1.652
15	1.393	0.192	0.000	0.096	0.000	1.297
16	1.299	0.124	0.000	0.062	0.000	1.237
17	2.374	0.660	0.000	0.330	0.000	2.044
18	1.754	0.472	0.000	0.236	0.000	1.518
19	1.567	0.372	0.000	0.186	0.000	1.381
20	1.553	0.289	0.000	0.144	0.000	1.409
21	1.375	0.423	0.000	0.212	0.000	1.163
22	1.248	0.257	0.000	0.128	0.000	1.120
23	1.214	0.012	0.000	0.006	0.000	1.208
24	1.180	0.032	0.000	0.016	0.000	1.164
25	1.145	0.110	0.000	0.055	0.000	1.090
26	1.111	0.149	0.000	0.074	0.000	1.037
27	1.693	0.492	0.000	0.246	0.000	1.447
28	2.504	0.714	0.000	0.357	0.000	2.147
29	1.801	0.370	0.000	0.185	0.000	1.617
30	1.141	0.160	0.000	0.080	0.000	1.061
31	6.409	3.145	0.000	1.573	0.000	4.837
32	1.948	0.769	0.000	0.384	0.000	1.563
33	3.172	1.050	0.000	0.525	0.000	2.647
34	1.305	0.336	0.000	0.168	0.000	1.137
35	3.587	1.076	0.000	0.538	0.000	3.049
36	1.400	0.021	0.000	0.011	0.000	1.390
37	1.340	0.023	0.000	0.012	0.000	1.328
38	1.103	0.066	0.000	0.033	0.000	1.070
39	1.327	0.007	0.167	0.004	0.084	1.240
40	1.165	0.025	0.251	0.012	0.125	1.028
41	1.161	0.119	0.196	0.060	0.098	1.003
42	1.460	0.448	0.188	0.224	0.094	1.142

TABLE 3-7 Bulk and Area Data for Individual Single Family Lots										
LOT NO.	LOT AREA (ACRES)	LOT WIDTH (FEET)	FRONT YARD (FEET)	SIDE YARD 1 SIDE / TOTAL (FEET)	REAR YARD (FEET)	STREET FRONTAGE (FEET)	BLDG HEIGHT (FEET)	MAX DEV COVERAGE (PERCENT)	MAX BLDG COVERAGE (PERCENT)	F.A.R.
REQUIRED	1.000	150	35	20 / 50	50	120	35	20	10	0.2
1	2.150	234	160	37 / 121	129	240	35	6.92	2.67	0.05
2	2.334	152	274	57 / 84	221	152	35	8.21	2.46	0.05
3	1.504	152	156	50 / 73	142	152	35	11.94	3.82	0.08
4	1.822	163	138	42 / 109	191	152	35	8.59	3.15	0.06
5	1.658	176	276	49 / 99	55	176	35	11.92	3.46	0.07
6	1.038	155	138	38 / 69	62	151	35	14.27	5.53	0.11
7	1.048	207	95	69 / 148	68	203	35	13.02	5.48	0.11
8	1.069	253	72	67 / 180	67	256	35	11.91	5.37	0.11
9	1.011	198	102	44 / 107	52	205	35	12.68	5.68	0.11
10	1.039	274	64	54 / 160	78	292	35	12.11	5.52	0.11
11	1.461	234	54	51 / 288	68	192	35	8.16	3.93	0.08
12	2.683	181	108	51 / 226	87	124	35	5.22	2.14	0.04
13	1.645	168	50	30 / 81	320	167	35	7.06	3.49	0.07
14	1.777	180	132	44 / 127	205	176	35	8.60	3.23	0.06
15	1.393	158	111	43 / 106	156	152	35	9.82	4.12	0.08
16	1.299	156	114	51 / 113	116	149	35	10.85	4.42	0.09
17	2.374	155	197	55 / 113	308	150	35	6.85	2.42	0.05
18	1.754	152	203	25 / 87	257	152	35	9.55	3.27	0.07
19	1.567	152	160	25 / 77	220	152	35	9.04	3.66	0.07
20	1.553	159	133	25 / 102	207	156	35	9.59	3.69	0.07
21	1.375	154	108	38 / 91	214	152	35	9.73	4.17	0.08
22	1.248	150	130	21 / 83	179	150	35	12.43	4.60	0.09
23	1.214	150	101	31 / 84	203	150	35	10.89	4.73	0.09
24	1.180	150	134	26 / 84	155	150	35	11.83	4.87	0.10
25	1.145	150	193	26 / 84	87	150	35	13.53	5.01	0.10
26	1.111	150	123	25 / 83	157	150	35	12.83	5.17	0.10
27	1.693	150	116	68 / 136	153	133	35	8.34	3.39	0.07
28	2.504	148	157	60 / 153	190	133	35	6.86	2.29	0.05
29	1.801	150	129	29 / 103	203	146	35	7.62	3.19	0.06
30	1.141	150	104	57 / 122	83	134	35	11.89	5.03	0.10
31	6.409	153	282	69 / 182	427	122	35	2.86	0.90	0.02
32	1.948	134	67	26 / 93	375	122	35	7.30	2.95	0.06
33	3.172	183	195	33 / 99	483	199	35	4.90	1.81	0.04
34	1.305	224	101	30 / 103	196	234	35	10.79	4.40	0.09
35	3.587	216	382	35 / 174	126	223	35	5.84	1.60	0.03
36	1.400	165	63	26 / 93	241	165	35	8.81	4.10	0.08
37	1.340	170	157	34 / 94	134	170	35	11.33	4.28	0.09
38	1.103	161	171	27 / 82	86	161	35	15.08	5.20	0.10
39	1.327	203	43	54 / 130	198	204	35	9.04	4.32	0.09
40	1.165	162	56	35 / 104	195	160	35	10.08	4.93	0.10
41	1.161	171	50	43 / 105	208	173	35	10.42	4.95	0.10
42	1.460	286	41	56 / 192	211	303	35	7.55	3.93	0.08

Design of MIH in the GB District

The multifamily building proposed for the former Dino and Arties site, located in the GB General Business Zoning District would comply with the standards and uses described for this district in the Town Code, particularly for group o, multifamily moderate income dwellings. The proposed

building would be 3,100 square feet in total size. The footprint of the building would be approximately 1,550 square feet.

The minimum and proposed setbacks are shown in Table 3-7 above. According to §250-126 of the Zoning Code, "the Minimum gross floor area (living space) per dwelling unit shall not be less than the following:

A. One-bedroom: 700 square feet.

B. Two-bedroom: 900 square feet.

C.Three-bedroom: 1,100 square feet.

The proposed housing would consist of three 1-bedroom apartments or one 1-bedroom and one 2-bedroom apartment, with the apartments in either case exceeding these minimum requirements.

Active Adult Townhouse Site Design and Amenities

Proposed types of Townhouses

The higher density of the active adult townhouse development would allow for easy pedestrian access within the complex. A four foot wide sidewalk would be provided along one side of the roadway. The townhome buildings would each contain four residential units, with two units on the first floor and two on the second. A total of 28 units will have one-bedroom and 48 units will have two-bedrooms. Fifteen townhome buildings would be arranged along Road D running north/south and ending in a cul de sac. Four buildings (sixteen units) would be located along the short spur to the southwest, Road E. All are arranged in two story pairs, each comprising four units. Preliminary floor plan arrangements are shown in Figure 4.9-13 Proposed Floor Plan - Townhomes.

The townhomes have been designed to provide an attractive landscaped street frontage, since the garages for the units are provided at the sides of the buildings. Most units will have a shared driveway and turnaround with adjoining units. All units with have a small deck area.

Recreational Facilities

Separate recreational facilities are proposed for both the single family residential and active adult townhouse communities. These facilities would only be open to residents and their guests, not the public and would be managed by the respective homeowners associations. The active adult recreational facility would be located on the 38.65 acre R-AMF/2 parcel and located near the entrance of the active adult townhouse community. The recreation building would be approximately 4,000 sf in size and include a pool and deck areas as well as a sports court. It would include meeting and common areas, an exercise room, kitchen and shower and changing facilities. The project's recreational amenities are further described below, in Section 3.380. Other Amenities and Improvements for Highgate-Woodlands Site.

Parking at Recreational Facilities

A parking area for 24 cars would be located along the west side of Road D for visitors to the active adult townhouse development recreational facility. Parking will be provided along the

road in spaces perpendicular to the road. Parking with 17 spaces would be provided for the single family residential recreation facility. The parking will be asphalt and striped to provide spaces 9 feet wide and 18 feet long. Parking for the recreation facilities, including details on landscaping, related stormwater improvements, signage and the number of spaces in comparison to zoning is further described in Section 3.370 Parking, below.

3.330 Sewage Treatment

System Capacity, Users, and Standards

The applicant proposes to construct a sewage treatment plant (STP) to treat the wastewater generated by the approximately 309 residents of the proposed development. The STP would be designed to treat an average daily flow of 33,000 gallons per day (gpd) of effluent (including water saving features).[4] This design flow allows sufficient capacity for all of 42 residential homes and the 76 active adult townhouse units, as well as any peaking factor. The average flow is described below and the design engineer's report is included in Appendix 5 in its entirety. The proposed maximum design flow would be able to handle any of the alternatives discussed in Section 6 of this DSEIS.

- Average Daily Flow = 33,000 gallons per day = 23 gallons per minute (gpm).
- Peak Hourly Flow = 123,750 gallons per day = 86 gpm.

The design flow for Highgate-Woodlands Residential Project is calculated as follows:

42 Single Family Residences

26 x 4 Bedrooms per unit = 104 bedrooms
16 x 5 Bedrooms per unit = 80 bedrooms

Total 182 bedrooms

26 (4 Bedrooms) x 475 gpd/House = 12,350 gpd
16 (5 Bedrooms) x 550 gpd/House = 8,800 gpd

Total flow for all Single-Family Homes = 21,150 gpd

76 Multi-Family Active Adult Townhouses

28 x 1 Bedrooms per Units = 28 bedrooms
48 x 2 Bedroom per Unit = 96 bedrooms

Total = 124 bedrooms

28 (1-Bedroom Units) x 200 gpd/Unit = 5,600 gpd
48 (2-Bedroom Units) x 300 gpd/Unit = 14,400 gpd

Total Active Adult Townhouse Residences Flow = 20,000 gpd

Total flow for all housing = 41,150 gpd

[4] This design flow is based on "Design Standards for Wastewater Treatment Works" (1988), published by the New York State Department of Environmental Conservation.

All fixtures will be water saving devices yielding a 20% reduction in actual flow.
Project Design Flow is 33,000 gpd.

On site recreational facilities would be used by residents and their guests; no public access is proposed. Therefore, no additional sanitary flow allocation is required since, whether guests use a bathroom facility in residence or in the recreational facility, the flow would be the same. All bathrooms would be equipped with water saving fixtures to yield a minimum 20% reduction in flow.

Effluent Standards

The wastewater system will be designed in accordance with all applicable regulations and requirements, including the Westchester County Department of Health (WCDOH) Rules and Regulations for the Design and Construction of Residential Subsurface Sewage Treatment Systems and the New York State Department of Environmental Conservation (NYSDEC) 1988 Design Standards for Wastewater Treatment works - Intermediate Sized Sewerage Facilities, and the 2004 Recommended Standards for Wastewater Facilities (10 State Standards). Wastewater from the project will be treated to water quality standards as shown in Table 3-8.

Table 3-8
Effluent Standards

Parameter	Treated Effluent Limit of Concentration	Untreated Effluent Concentration
5 Day Biological Oxygen Demand ($BOD_{3)}$	5.0	200
Suspended Solids	10.0	200
Ammonia (NH3)	2.0	25
Phosphorus (P)	1.0	10
Total Nitrogen (Kjeidahl)	2.2	36- 45
pH (units)	6.75 – 7.5	6 – 9
Fecal Coliform	200.1/100 ml	2400/100 ml.
Chlorine Residual	0.05	---
Settleable Solids	0.10	10
Dissolved Oxygen	7.0	0

***** Does not include mitigation resulting from horizontal movement of the effluent through surficial geologic materials and soils.
Source: Recommended Standards for Wastewater Facilities (10 State Standards), 2004 and Septic Systems Handbook, Kaplan, 1988

Design and Construction of Sewage Treatment System

Parcels and Location

The applicants would provide three separate parcels of land [Parcels F, I and J], approximately 18.6 acres in size, which would be subdivided from the total acreage and exclusively dedicated to this sewerage infrastructure use. The proposed location near Reed Road has good access from the road system for the project and also has an area of suitable soils. The applicant

acknowledges that subsurface discharge of the treated effluent would be required by NYCDEP. All of the sewer parcels are shown the Preliminary Plat and in the Site Plan. An expansion area for the STP disposal fields is also shown.

The selected wastewater treatment site is proposed for a remote area within the property. The anaerobic processes are situated below ground, therefore no odor control would be required. Landscape screening to mitigate visual impacts would be provided as shown on the landscape plans Full Size Plan Sheets LS-1 and LS-2 (Drawings 23 and 24).

Sewer Treatment System

A community sanitary sewer treatment and collection system would be constructed to serve the project. The sewage treatment system will be privately owned and operated by a transportation corporation, as further described below. The project would consist of 8 inch diameter plastic sewer piping and pre-cast sewer manholes. Generally, a maximum of 400 foot of sewer main would be constructed between manholes. In addition, manholes would be provided for all changes of direction (vertical and horizontal). A comprehensive testing program would be implemented in order to ensure that no leakage would occur in excess of Health Department guidelines prior to placing the sewer in service.

Wastewater from the development (including single family homes, active adult townhomes and the two recreation facilities) will flow by gravity to a pump station located at a common low point within the development. The pump station will be located at a low point on Road “C”. The pump station will pump wastewater to the wastewater treatment plant located in the southeast portion of the site. The Sewage Treatment Plant would be located in close proximity to the access road, providing easy access for maintenance purposes.

The redundant features of the STP are discussed in Appendix 5 in the Project Engineer's Wastewater Treatment Report.

Septic Mounding Analysis

A septic mounding analysis was completed by Leggette, Brashears & Graham, Inc. to assess the proposed subsurface effluent disposal areas (PSED) (two primary and one secondary). As described above, the design flow to the PSED areas is conservatively estimated at 33,000 gpd. The mounding analysis consisted of completed soil borings, installing shallow groundwater monitoring wells, and conducting a computer modeling of potential wastewater flows using the "Modular Three-Dimensional Finite-Difference Ground water Flow Model" (MODFLOW). The results indicate that groundwater will not cross a property boundary, enter a surface water body or breakout at the identified locations before 21-days of travel time is reached.

As requested by the Town, shallow groundwater levels were monitored during periods of seasonal high levels in the Spring of 2009. The mounding analysis was reevaluated using the additional groundwater data. The complete Septic System Mounding Analysis report (February 16, 2012) is provided in Appendix 14.

Design Guidelines

All sewage facilities would be designed in accordance with the latest NYSDEC, Westchester WCDOH, NYSDOH and New York City Department of Environmental Protection (NYCDEP)

Regulations. The wastewater effluent would be discharged to a subsurface SSDS System. An expansion area for the subsurface disposal system for the STP is shown on Full Size Plan Sheet PS-1, the Preliminary Subdivision Plat (Drawing 2), and the appended revised site plan.

The WCDOH and NYCDEP would review and approve the Wastewater Facility Report and the detailed design drawings for the STP. The review by these agencies includes an analysis of the capabilities of the proposed STP and the construction details to ensure the STP would treat the project wastewater to a level that would be acceptable for subsurface disposal. Full sized Drawings for the STP are attached as Wastewater Treatment Plan Sheets (Sheets 1 of 15).

The STP Facility would require a State Pollution Discharge Elimination System (SPDES) permit from the NYSDEC, and approval from the WCDOH and NYCDEP. An application has been filed with the WCDOH and NYCDEP. Additional site testing will be completed under the auspices of these two agencies. The agency reviews may lead to some adjustment of the locations of the subsurface sewage disposal systems proposed to handle the treated effluent. Proposed sewer connections and the common subsurface disposal areas have been added to the site plans. The SPDES permit would contain specified parameters with respect to the quantity and quality of the effluent flow that is discharged. The STP would be operated in conformance with the various permit requirements. These include routine testing according to a specified schedule and monthly reports to be submitted to the requisite governmental agencies.

Operation and Maintenance

All Wastewater Treatment Facilities must be managed by a Licensed New York State Sewage Treatment Plant Operator. The Operator would be responsible for routine maintenance of all mechanical equipment and monitoring of the STP processes. An Independent Laboratory would be under contract to provide monthly testing data to insure the STP is in compliance with the effluent parameters specified in the SPDES Permit.

A Sewer Works Corporation (Transportation Corporation) would be formed and a Town Sewer District would be created by the Town Board of North Salem. Provisions for backup services, taxation, and municipal ownership are provided within the transportation laws of the State of New York. The District would initially be privately owned. In the event that the ownership is abandoned, bankrupt, or in some other way unable to function, the Town can take over the district for $1, pursuant to a Turnover Agreement between the developers and the Town, then tax the residents of the district and operate the facilitates as per applicable permits.

MIH Sewage Disposal

The Moderate Income Housing site would be served by a Subsurface Sewage Disposal System (SSDS). Soil testing results indicate a limited area is available for wastewater treatment, resulting in the potential development of up to three residential units. A conceptual layout for the MIH property provides two areas for the septic system, based upon the limitations of on-site soils. The determination of the final number of units that can be supported by the waste water treatment system would involve the WCDOH, The New York City Department of Environmental Protection, and the North Salem Town Engineer.

Given the site remediation grading and fill that has occurred over the entire property, a complete re-testing for septic capacity will need to occur, after the remediation of the site has been completed and accepted by the NYSDEC, the NYSDOH and the Town. Any future septic

system on the property will require review and approval by Westchester County Department of Health, the Town Building Inspector, and conformance with any restrictions imposed by NYSDEC and NYSDOH.

3.340 Water Supply

In general, groundwater in northern Westchester County occurs in sand and gravel deposits or in joints and fractures in deeper bedrock. The Highgate-Woodlands site is located in an area where groundwater is usually found in rock formations. The quantity of groundwater available from the bedrock at a site is dependent on several factors: the type of bedrock in the area; the number, size and extent of fractures at the site; and the nature of the overlying materials and their ability to allow water to recharge into the fractures. There are several springs in the vicinity of the Highgate-Woodlands site. The locations of neighboring wells are shown on Figure 4.2-1 Well Location Map.

The Highgate-Woodlands at North Salem project is planned as a residential project. The pumping test and the analysis provided in this DSEIS was completed with the assumption that the wells were to be used to supply sufficient water for up to 47 single family homes (number of homes in previous plan), 76 condominium units, and the two recreational facilities. Seven (7) wells were drilled on the site during earlier project proposals beginning in the 1980's. Well locations are shown in Figure 4.2-1 Well Location Plan. Previous testing indicated that the existing wells were productive but the testing protocols used during prior testing do not meet current standards for pumping tests. Therefore, a pumping test was completed in July and August, 2008. The pumping test and water supply is described in the Water Supply Report provided in Appendix 7.

As part of the preparation for the pumping test program the existing wells were first inspected and then "redeveloped" using hydrosurging. During the redevelopment process it was discovered that Well 3 had been vandalized to the extent that it was not usable. Well 3 was replaced by Well 3A, located approximately 30 feet away. A second well, Well 5, which originally had been drilled in the 1980's, was too close to one of the onsite wetlands. This well was replaced by Well 5A, outside the wetland buffer (regulated 100-foot buffer). Wells 1, 6 and 7 were deemed not to be usable as production wells, due to their low yields. These wells will need to be properly closed, in accordance with NYSDEC well closure requirements.

In July and August 2008, two 72 hour pumping tests were completed on four wells (Wells 2, 3A, 4 and 5A) to determine the proposed well yields and to identify any potential off-site well impacts. The pump testing protocol and pumping rates were reviewed and agreed upon by the Town and WCDOH. Based upon coordination with the Town, 13 off-site private wells were monitored, with the well owners consent.

The project was designed for a total average daily water demand of 40 gallons per minute (gpm). To meet the NYSDEC and NYSDOH requirements the project wells must meet twice the average daily demand (maximum-day based on site storage] or 80 gpm. The Town requested that the test be run with an additional demand of 15 percent (above the 80 gpm, twice the daily demand) to accommodate the fact that the test was to occur during a seasonally wet time of the year. Although the test was delayed from March to July and August, the well test was performed at the 92 gpm rate instead of the 80 gpm rate.

The pumping test results show that Well 4 can produce 60 gpm, and that together Wells 2, 5A and 3A can provide 92 gpm, providing the necessary capacity redundancy required by NY State law for community water systems. The use of the Highgate-Woodlands wells is not expected to impact the long term use of off-site wells. None of the monitored wells showed any connection to the pumping test wells.

A Water Works Corporation would be formed to administer the water district and follow all the procedures set forth in Article 4 of the New York State Transportation Corporation Law. All the water facilities would be located on a separate parcel.

A water supply district would be formed by the Town Board of the Town of North Salem. Initially it would be privately owned. In the event that the ownership is abandoned, bankrupt, or in some other way not able to function, the Town can take over the district for $1, pursuant to a Turnover Agreement between the developer and the Town, then tax the residents of the district and operate the facilities as per applicable permits.

The Central Water Supply System includes the following components:

A. The central water supply would contain drilled rock wells, storage tanks, disinfection, booster pumps, an air compressor and emergency power.

B. A separate tax parcel is shown on the plat for the pump house location and its area is 0.58 acres.

C. The water system has been designed to produce 57,500 gallons per day or 40 gpm (average daily demand). The previous average daily water demand for domestic purposes was 37,500 gpd or 26.0 gpm. Due to a reduction in the number of proposed residential units and bedroom mix, the current average daily demand is 33,000 gpd or 23.0 gpm. The pump testing and groundwater analysis completed for this DSEIS assumes the more conservative average daily demand of 37,500 gpd. Seasonal water demand for landscaping may add an additional 20,000 gallons per day for a total of up to 57,500 gpd or 40 gpm. The pumping test demonstrates that on-site wells can produce up to 132,480 gpd or 92 gpm.

D. The test results for the well water indicates that the only treatment that is required is disinfection. Disinfection would be provided with the introduction of chlorine prior to routing the well water to the storage tank.

E. The residential housing units are fire code compliant without a sprinkler system.

F. The water plant would be run by a New York State Licenses Water Treatment Plant Operator. Routine maintenance on a water system includes monitoring of pressure, well levels, chlorine content and equipment maintenance, as well as checking for leaks and maintaining records of usage.

The water facilities have been over designed to supply water over and above the requirements for sanitary facilities. Therefore, there is capacity to serve the recreation facilities such as replenishment of pool water, cleaning of common areas, and watering of landscape features. The water distribution system has not been designed for fire fighting purposes. Water storage facilities for fire fighting, including water storage tanks are further described in Section 4.830 Fire Protection/ Emergency Services.

MIH Water Service

Water service for the Moderate Income Housing would be via a service connection to an existing water main situated on Route 22 in Croton Falls. The hamlet of Croton Falls is served by the Croton Falls Water District. The water connection will require approvals from the North Salem Town Board and the Westchester County Department of Health. According to Mr.Warren Lucas, Town Supervisor, the district has allocated sufficient capacity for the MIH units. Mr. Lucas indicated that the town is in the process of drilling new wells for the District due to water quality issues related to radiological parameters, as well as lead and copper, in existing water supplies.

3.350 Structures

Highgate-Woodlands

The 42 single family residences in the Highgate-Woodland development would contain approximately 2,500 to 4,500 square feet and would be two stories in height. For planning and design purposes, the residential structure footprint shown in the plans is approximately 3,500 square feet. Adaptations of traditional Colonial, Arts and Crafts, and Adirondack styles are proposed and the homes would be of wood framed construction. Wood siding and mortared stone, and features such as dormers and decorative door and window treatments would be used.

The active adult townhouse structures will consist of 19 buildings with four residential units in each building. Each building will be two stories in height and have a footprint of approximately 6,450 square feet. Similar construction and architectural elements would be used for the active adult townhouses and the two clubhouses. Townhouse units would range from 2,600 to 3,600 square feet in size. The design provides for 28 one-bedroom units and 48 two-bedroom units, for a total of 76 units. Garages will be situated at the side of each building, providing an attractive building front facing the roadway.

A typical elevation and floor plan for the active adult townhomes is provided in Figure 4.9-12 and 4.9-13 (Chapter 4.90 Cultural Resources). The proposed elevations and floor plans are preliminary and illustrative of potential building design. The design of the buildings will be modified and refined during the Site Plan process, in consultation with the Planning Board and the North Salem Architectural Review Board.

MIH

The design of the single structure proposed for the Moderate Income Housing has not yet been determined. The design will be compatible with the architecture of Croton Falls, with materials of wood and stone and traditional colonial architecture. The design and architecture of the building will be subject to review by the Lead Agency and the Town of North Salem Architectural Review Board.

3.360 Roads

Layout

As described above, the primary access to the Highgate-Woodlands development would be from Reed Road on proposed Road A at a point about 1,200 feet northeast of Hardscrabble Road. A 39 foot wide boulevard style entrance with of one lane ingress and one lane egress (16 feet in width, each), separated by a 7-foot median would extend approximately 650 feet to a bus stop/turnaround. Beyond this turnaround the road would narrow to 22 feet, where it would become part of the privately owned internal access road system.

The internal road system would consist of four access roadways. Road A would extend from Reed Road approximately 4,300 feet westward to within 500 feet of the property's western boundary. The construction of Road A would provide frontage for 14 single family residences and access to Roads B and C and to the multi-family roadway. Road B would then extend in perpendicular fashion from a "T" intersection at station 43+00. It would extend approximately 900 feet to the south of Road A and serve 7 single family lots plus the single family recreational lot. Road C would service 22 single family lots, splitting from Road A, opposite Road B at the "T" intersection and would extend approximately 2,260 feet to the north and east.

The active adult community roadway (Road D) would start at station 24+00 on Road A and extend some approximately 1,600 feet north and east accessing 15 multi-family units and terminating with a cul-de-sac. A second cul-de-sac extending approximately 400 feet towards the west near the recreation facility would provide access to the remaining 4 multi-family units.

Finally, an emergency access roadway is proposed to extend from the adjacent, existing Sun Valley Drive to Road A between lots 2 and 3. This roadway would have 12-foot wide pavement. It would be approximately 990 feet in length and would partially use an existing cellular tower gravel access roadway. Suitable access to the NYNEX owned cell tower facility would be maintained.

A second internal emergency access road would extend from the court at the terminus of the active-adult Road D and would pass on the western side of Wetland C and Wetland D/E. This roadway would also have 12-foot wide pavement and would be constructed of the same materials as the other proposed emergency access. It would be approximately 1,100 feet long to connect with Road C.

No roadway improvements beyond the driveway and widening of Reed Road and signal installed at the Hardscrabble Road intersection would be necessary, but an eight (8) foot gravel shoulder would be added to the western edge of Reed Road. This area could be used by vehicles with breakdowns or for live "standing" such as waiting for school busses.

Easements may be required for portions or all of some of the roads serving the multi-phased project. This internal roadway system would provide the means of ingress and egress from all portions of the site to Reed and Hardscrabble Roads as well as Route I-684. (See the Traffic Impact Study in Appendix 12. For more detail, see Alternatives, Section 6.500 Alternative Access, for a discussion of the Loop Road Alternative.)

All of the roads within the Highgate-Woodlands project would be constructed in conformance with Town of North Salem Town Road Standards (Chapter 200-23 Street Planning and Design

of the Subdivision regulations), shown in Table 3-9 with the exception of: 1) a portion of Road A and 2) the turnarounds at the ends of Road D and E in the Active Adult Townhouse development. Due to the existing steep grades at the project entrance, a portion of Road A will have grades of 12 percent, instead of the Town Standard of 10 percent. According to the Code (Chapter 200-23 H. Grade), the maximum grade for a local street is 10 percent, "except that grades up to 12 percent may be approved for short distances, primarily on tangents". A waiver from the Planning Board will be required for the proposed road grade. A waiver will also be required for proposed 80 foot diameter turnarounds at the end of Roads D and E, since the Town Standard is 100 feet minimum. The cul-de-sacs at the ends of Roads B and C are 100 feet in diameter.

After a written request, the Planning Board may waive specific provisions of Subdivision design regulations (§200-42 of the North Salem Land Subdivision Regulations), if, upon review of specific circumstances, the modifications do not affect public health, safety and general welfare. A waiver may be granted subject to conditions. Further discussion of the proposed grade is provided below.

The paved width of the private road would be 22 feet. The roads would have Belgium block curbs, and a 4 foot sidewalk would be installed on one side of all roads, with a 2 foot grassed area between the road and the sidewalk. Where necessary, guardrails and fencing would be provided. A minimum 4-foot shoulder area would be available for plowed snow.

Table 3-9
Town of North Salem Roadway Standards and Specifications

	Town Standard	**Provided**
Right-of-way	50 feet min	50 feet
Cul de sac	100 ft diameter min	100 ft diameter
Paved turnaround	100 ft diameter min.	100 - 80* ft.
Pavement width (Private Streets)	18 feet min.	22 feet
Grades min	1%	1%
Grades max	10% **	12%**
Shoulder width	3 ft. minimum	4 ft.
Gutter width	3 ft. minimum	3 ft.

Note: Standards shown are Chapter 200-23 Street Planning and Design of the Subdivision regulations.
* An 80 foot diameter turnaround is proposed at the ends of Road D and Road E in the Active Adult Townhouse portion of the development.
** Ten percent, except that grades up to 12% may be approved for short distances, primarily on tangents (per Subdivision Regulations 200.23 H(3)). A waiver from the maximum road grade standard will be required.

Comparison of Road Grade Construction

The current project design proposes a 12 percent road grade for Road A for a distance of approximately 800 lineal feet (Station 34+50 through 43+00). The roadway was designed with a 12 percent gradient, specifically to reduce the grading and site disturbance impacts that would result with a road constructed with a 10 percent gradient. The applicant would seek a waiver for

road grade greater than 10 percent. An analysis of the gradient and grading requirements, including a Plan View are shown in Figure 3-6 Road A Grade Comparison. The comparison is also provided in the Full Sized Plan Sheet RG-1 Road A Comparison 10% vs. 12% (Drawing 39).

The following impacts would result from a 10 percent gradient road:

- 10% gradient raises the intersection of Road A, B, & C by approximately thirteen feet, compared to the proposed plan. The 12% gradient requires 2 feet of fill, and the 10 % gradient requires approximately 14 feet of fill.
- 10% gradient raises the grade of Road A from station 34+50 to 43+00 an average of 18 vertical feet.
- 10% gradient creates a large fill area near the proposed box culvert located at the road A, B, & C intersection. Specifically fill would be closer to wetland F, immediately upstream of the proposed box culvert. Additional site disturbance for the 10% grade would require approximately 44,215 square feet (1.02 acres) of additional buffer disturbance on either side of Wetland F corridor (see Figure 3.6 Road A Grade Comparison).
- 10% gradient creates an additional fill area and 13,200 square feet (0.303 acres) disturbance on the northern side of the proposed box culvert. A total of approximately 8,393 sf (0.192 acres) of this disturbance is in the Wetland F buffer (regulated 100-foot buffer).
- 10% gradient creates additional disturbed areas on proposed Lots 9, 14, 15 and 16 is approximately 29,935 square feet (0.687 acres) along Road A and on the west side of Road B.
- 10% gradient creates a significantly less attractive view into the property from Juengst Road.
- A 10% grade would involve approximately 8,000 cy of cut and 15,000 cy of fill, while the 12 % grade would involve approximately 20,000 cy of cut.

The additional disturbance resulting from the 10 percent road grade is summarized as follows:

Location	Disturbance in Wetland Buffer(sf)	Disturbance Outside Wetland Buffer (sf)
Wetland F (south of Road A, B and C Intersection)	44,215	0
Wetland F (North of Road A, B & C Intersection)	8,393	4,807
Single Family Lots		29,935
Total	52,608 (1.21 ac.)	34,742 (0.80 ac.)

Safety related issues that arise due to road gradients deal specifically with drivers having sufficient distance to bring their vehicles to a stop. The ability of a driver traveling at a particular

speed, to observe an object in the road or safely drive through grade changes depends upon the horizontal and vertical geometry of the road. Road A has been designed, through horizontal alignment and grading, to provide the necessary sight and stopping distances that allow for safe driving through proposed grade changes.

In order to address the safety concerns associated with the gradient along Road A, the following mitigation measures have been incorporated into the plan:

- With the exception of a minor curve at the approach of Road A's intersection with Road B and C, the alignment of Road A is straight along the gradient. Proposed grading within the right of way is extensive, providing unobstructed sight lines in both directions.
- As a result of the straight alignment within the gradient, sufficient safe stopping distances are maintained while traveling in both directions.
- Caution signage will be provided at the crest of the gradient to provide adequate notice to drivers warning them of the approaching gradient. Appropriate signage being considered includes:

  Hill (MUTCD W7-1a)
  12% Grade (MUTCD W7-3)

- Guide rails are provided alongside Road A as a safety measure in areas where the proposed grading creates fill embankment elevations lower than the roadway elevations.

In summary, the grading analysis indicates that the grading and disturbance required for a 10 percent grade on Road A would result in an additional 2.01 acres of site disturbance, including an additional 1.21 acres of disturbance of the Wetland F buffer (regulated 100-foot buffer) and 0.8 acres outside of the buffer. The plan and profiles demonstrate that a 10% slope would result in unnecessary site disturbance and fill in the wetland buffer, without a substantial safety benefit.

Emergency Access Roads

Alternatives for providing secondary ingress and egress to the Highgate-Woodlands site were studied. Although the primary access to the site is from Reed Road, the site abuts four other public roads:

1. Hardscrabble Road
2. Sun Valley Drive
3. Sun Valley Heights Road
4. Juengst Road

A single emergency access road from abutting property would extend Sun Valley Drive into the site. The topography of the portion of the site adjacent to both Hardscrabble Road and Sun Valley Heights Road are too steep to be utilized for access. The present road grades from Juengst are not conducive to permitting a connection to the Highgate-Woodlands connector road. The connection of an emergency access would also create a potential disruption to the established character of the existing residential neighborhood.

A second internal emergency access road would extend from the court at the terminus of the active adult townhome development Road D and would connect to Road C, in the northern portion of the site.

The external and internal emergency access roads would be constructed within 20 foot easements. The current road design provides for crash gates at Sun Valley Drive, as well as at the northern Road D and Road C connections. Construction of the emergency access road would consist of a 3 foot shoulder, a 12 foot paved road, and another 3 foot shoulder (see Appended Full Sized Plan Sheet DS-4 Roadway/Driveway Construction Details (Drawing 33).

The applicant and project engineer met with representatives from the Croton Falls Fire District regarding emergency access, as well as other emergency service issues. The most recent meeting occurred on September 22, 2008. The Croton Falls Fire District requested that the emergency roadway be constructed with a maximum grade of 14 percent. The plans have been modified to show a redesigned emergency access road from Sun Valley Drive Road.

The proposed emergency access road does not meet the Town Specifications for subdivision access roads for pavement width and maximum grade (see Table 3-9 above). The emergency access will only be used in emergencies by emergency personnel and the applicant has met with representative of the Town and the Croton Falls Fire District for the design and specifications of the emergency access.

To prevent routine use of these emergency access roads, crash gates would be installed at the property line and at the intersections with the main road to prevent usage other than in an emergency situation.

Ownership, Maintenance and Repair

The first 650 feet of Road A is proposed to be owned and maintained by the Town of North Salem. The remainder of the roads throughout the project would be privately owned. The Homeowners Association (HOA) would be responsible for the maintenance and repair of all roads and common facilities such as drainage structures. The HOA would also be responsible for snow removal; snow storage areas have been shown on the revised site plan.

Access for MIH site

As described above, access to the proposed middle income housing on the former Dino and Artie's site would be from a new private 22 foot wide entrance drive from NYS Route 22. The driveway would lead to the parking area at the center of that site. It would be owned an maintained by the owner of the housing. The driveway will be constructed in accordance with NYSDOT standards.

3.370 Parking

Each of the proposed single-family homes and condominium units would have a two car garage and additional potential parking in the driveways at the front of the garage. A total of 40 off-street visitor parking spaces have been provided on the site, located near the two recreation facilities. Parking calculations are provided on the site plan drawings in Full Sized Plan Sheets CS-1 through CS-4 (Drawings 6 through 9).

Active Adult Townhouse Parking

The proposed Zoning Code for the R-AMF/2 district requires 2 parking spaces for each dwelling. The proposed 76 units would require 152 spaces per the Code. The required spaces are provided in garages in the multi-family buildings. An additional 24 off-street spaces are provided at the recreation building which can be used by guests or visitors to the recreation facility. Additional parking will be available in the driveways of the multi-family buildings, although credit for this parking is not part of the overall parking calculation provided in the site plan drawings.

Single Family Residence Parking

The Zoning Code parking requirements for the R-1 district include 2 spaces per dwelling. Therefore, 84 spaces are required for the 42 residences. These spaces are provided in the garages for each residence. The parking calculation provides for an additional 1 space per dwelling in each driveway, for a total of 126 spaces. The single family residence recreation building will have 16 off-street spaces.

Recreation Building Parking

The Town Code (Section 250-19.1 Supplemental Requirements for high- and medium-density residential development and Table of General Use Requirements), does not have specific requirements for recreational building parking. A parking area for 24 cars would be located along the west side of Road D for visitors to the active adult townhouse development recreational facility. Parking will be provided along the road in spaces perpendicular to the road. Parking with 16 spaces would be provided for the single family residential recreation facility. The number of spaces for the recreation buildings was determined by the project engineer based upon the size of the recreation building. No signs will be necessary or provided for parking at the two recreation buildings. Stormwater for the recreation building parking areas will be managed simultaneously with stormwater management for the roadways (Roads D and B, respectively). Landscaping for the active adult townhouse recreation building is shown in appended Full Sized Plan Sheet LS-2 Landscaping Plan Details (Drawing 24). The single family residential recreation building will have similar landscaping.

All driveways would have a minimum gradient of 1 percent and maximum of 14 percent, consistent with the Town Subdivision requirements (200-23 H(5)). Parking spaces would be 9 feet wide by 18 feet long. If during the site plan review process a further reduction in the amount of impervious surface is required, pervious pavement or “grass-crete” visitor parking spaces would accomplish this goal.

A concrete sidewalk, four feet in width is proposed for one side of all proposed roads. Exterior lighting would be provided in the parking areas for the two recreation facilities, the active adult townhomes and the single family residences. Lighting for the single family residential recreation parking area will be provided on a single pole, with a manual switch. Therefore, it will only be on during evening events or when the building is in use, minimizing its visibility to neighbors. Lighting for the recreation buildings and the development in general is further described below and in Section 4.930 Community Character.

A driveway will be provided for each of the 42 single family residences. Driveway grades will range from 1 percent to 14 percent, consistent with the Town Code (200-23 H(5)). A profile of a

typical driveway at 14 percent grade is shown on the attached Full Sized Plan Sheets PR-3 Profiles, Road "B", Emergency Roads and Typical Driveway (Drawing 12).

MIH Parking

Parking for future residents of the Moderate Income Housing units will be provided in a single lot in the southern portion of the property (see Figure 3-4). Five regular spaces and two handicapped spaces would be provided for a total of seven spaces. According to Town Code requirements for Multi-family dwellings in the GB District, 1 space is required for each dwelling plus 0.5 spaces per bedroom. Assuming a maximum of three apartments, with one bedroom each, five spaces would be required. Two additional spaces will be provided for visitors. The lot would have a 24 foot wide aisle for access and circulation. Since the MIH site is nearly level, all parking spaces would have grades of less than 5 percent.

3.380 Other Amenities and Improvements for Highgate-Woodlands Site

Drainage and Stormwater Management Design

As discussed in detail in DSEIS Section 4.2, to minimize potential impacts on receiving waters resulting from post construction changes in stormwater, the proposed development incorporates a network of catchment systems, swales and detention basins to accomplish New York State, New York City, and Town of North Salem stormwater management goals. A hydrological evaluation of the Highgate-Woodlands site, and contributing drainage areas, was performed to determine the future stormwater flows. These flows were the basis for the design of the stormwater management system.

Drainage from the proposed access road would be collected by a series of catch basins located at regular intervals along the pavement edge. The storm drainage system, including the detention basins, has been designed to capture and treat stormwater and maintain, or reduce, post development peak rates of stormwater discharge.

The potential impact of the increased quantity and rate of runoff would be mitigated by the proposed stormwater management system. Specifically, this mitigation would be accomplished by the proposed detention/infiltration basins constructed on site. Fifteen such basin systems plus a small basin for lot 14 and the "out" parcel systems have been incorporated into the proposed site plan for the Highgate-Woodlands Project. The outlot systems would incorporate drywells or shallow Cultec infiltrators.

The combination of basins and infiltration devices for the site as a whole would provide sufficient storage and restriction of outflows so that in the 1, 2, 10, 25 and 100 year storm events, the rate of runoff and peak discharge from the site as a whole would remain the same or would be less than under existing conditions. See Section 4.220 of this DSEIS for a full discussion of the proposed stormwater management system design.

Erosion and sedimentation control features would be installed before any site work occurs. The these features have been designed and their installation would be carried out according to the specifications and details listed in the New York State Standards and Specification for Erosion and Sediment Control. All topsoil to be stripped from the area being developed would be immediately seeded with annual rye or a similar rapidly-germinating grass. All fill/cut slopes would be vegetated with an annual rye and various tree and shrub species as shown on the

landscaping plans Full Sized Plan Sheets LS-1 and LS-2 (Drawings 23 and 24). In addition to the preceding site stabilization measures, further erosion and siltation control measures, including but not limited to silt traps, staked haybales or brush checkdams would be employed where practicable for supplementary erosion control measures. See Section 4.130 of this DSEIS for a full discussion of the proposed Erosion and Sediment Control Plan included in the Highgate-Woodlands Stormwater Pollution Prevention Plan (SWPPP), which is presented in its entirety in Appendix 13.

Refuse

Refuse and recycling collection would be private, and garage storage for containers would be available for each dwelling unit, for both the single family residential homes and the active adult townhomes. The refuse collection would be contracted by the Homeowners Association. Dumpsters are not required at the two recreation buildings or at the sewer and water plants. Refuse will be collected inside each of these buildings and picked up by the same contractor and schedule as the residences. Therefore, no dumpsters will be necessary at the Highgate Woodlands development.

Conservation and Recreation Amenities

The applicant propose no improvements to the 9.37-acre conservation parcel (Parcel D), with the exception of a portion of the emergency access road. The parcel will be donated to a conservation organization or maintained in a conservation easement. A proposed informal hiking/jogging trail system is shown on the site plan. It would loop around Wetland A, to the north of the active adult townhomes, and connect to Road D. The trails would be constructed of woodchips. No grading or removal of trees will be required for the preparation of the trails. The location of the trails would be marked by blazes places on trees and no signs would be necessary. The trails would be for use by residents of the development and not open to the general public.

The current access and easement to the NYNEX Tower, shown on the Plat, would remain. The proposed emergency access road is located generally in a portion of an existing unimproved access road to the NYNEX cell tower located adjacent to the project site.

Landscaping and Lighting

Landscaping for the project would include naturalistic plantings for the site at large and the stormwater basins, with more formal treatments along the entry road and at the recreational facilities (see landscaping plans Full Sized Plan Sheets LS-1 and LS-2 (Drawings 23 and 24)). Clusters of evergreen and deciduous trees and flowering shrubs would provide screening between buildings in the active adult townhomes, on the sloped terrain along the entry road, and in front of the proposed retaining walls. The single family residences would have open lawn surrounded by existing trees.

Street trees are proposed for the sides and center of the boulevard style entrance. A planting of shrubs and trees will provide an attractive project entrance. The stormwater basins to the east of the entrance would be planted with native grasses and wildflowers. This would be typical of the basin plantings which will conform to the specifications in the New York State Stormwater Management Design Manual.

Within the active adult townhouse community, walkways and terraces would be paved with concrete unit pavers, and shrubs, grasses, and annuals would be used in the planting beds. Landscaping for the clubhouses and recreation areas in both the active adult and single family communities would include a combination of shade trees, evergreen trees, small flowering trees, shrubs, grasses and perennials. Landscape details would include natural stone walls, wood trellises, pasture fence, and Belgium block curbing.

Exterior lighting would be provided in several areas of the proposed development for safety purposes. Lighting will be provided at the entrance, on the switchback section of Road A, and along the internal road and parking areas within the active adult townhouses. Building mounted lighting will also be provided at the two recreation buildings (single family residential and active adult townhomes), as well as at the water and sewer plant buildings. A single pole mounted light will be provided for the single family residential recreation building parking area. This light would have a manual light switch from the recreation building and would only be used when the building is in use during evening hours.

The Lighting Plan and fixture details are shown on the attached Lighting Plan (see Full Sized Plan Sheet LP-1 Lighting Plan (Drawing 25). The proposed pole mounted fixtures would be antique style, Hadco Reflective Globe (R-52) and the Hadco Pendant Westbrook (CR-15), or similar, fixtures. The lighting would be "Night Sky" compliant and would have downward light directing shields to minimize off-site impacts. The Hadco Reflective Globe and Pendant Westbrook fixtures are night sky compliant fixtures in that they restricts light from escaping upward towards the sky and redirect it downward and outward.

The two light fixtures will be approximately 12 to 13 feet in height, and will each include a single 150 watt HPS bulb. The fixtures were selected and located, based upon their specific lighting coverage and contours and specific safety concerns (school bus turnaround, recreational buildings). The lighting contours are shown in the attached Lighting Plan (see Full Sized Plan Sheet LP-1 Lighting Plan (Drawing 25).

Street lights for the project will be switched on and off with light sensitive switches, and will operate from dusk until dawn for driver and resident safety. The single pole mounted light at the parking lot for the single family recreation building will have a manual switch from the building and will only be used when the building is in use during evening hours.

Recreational facilities

Separate recreational facilities are proposed for both the single family residential and active adult townhouse communities. These facilities would only be open to residents and their guests, not the public and would be managed by the respective homeowners associations.

The single family residential recreation building would be located on a separate lot (Parcel R) consisting of 1.10 acres and located at the end of Road A and its intersection with Road B. The single family residential clubhouse would be approximately 2,000 sf in size on a single level, and would include a pool and deck areas. The clubhouse would include a meeting hall and common area, exercise room, a kitchen, and changing/shower facilities with restrooms.

The active adult recreational facilities would be located on the 38.65 acre R-AMF/2 parcel and located near the entrance of the active adult townhouse community. The recreation building would be approximately 4,000 sf in size and include a pool and deck areas as well as a sports

court. Similar to the single family residential clubhouse, it would include meeting and common areas, an exercise room, kitchen and shower and changing facilities. Both clubhouses will have traditional architecture that will be compatible with the, respective single family homes, and the active adult townhomes. The buildings will be constructed of wood with brick and stone elements.

As described in more detail above, an informal trail loop would be created around Wetlands A and B, to provide the project residents with additional recreational opportunities, using the properties' natural assets.

Other Amenities

All buildings would have a sewer connection, water connection, underground electric, underground TV/cable and underground telephone service. The first 650 feet of the Road A access road would be a town public road with a turn around loop to provide a school bus pick up area with shelter.

3.400 Construction and Operation

3.410 Construction

Scheduling - Summary

It is anticipated that the Highgate-Woodlands project would be constructed in four phases, each approximately a year to 18 months in length, for a total of approximately five years. Erosion and sedimentation control features would be installed before any site work occurs (refer to Section 4.130). Following the installation of erosion controls, the access road would be rough graded to allow construction access from Reed Road. Staging and Stockpile Areas are shown on the Appended Construction Plans. The Phasing Plan is shown on Full Sized Plan Sheet PP-1 (Drawing 26), and is summarized as follows:

- Phase 1 This phase would include the construction of Road A to Station 31+00 and would include the retaining walls and stormwater management features related to this portion of road. Single family lots 1 through 4 would be developed, as well as six active adult townhomes and the active adult recreation building. Access to the sewer and water treatment plant would be developed. Grading for septic fields would begin. In compliance with SPDES GP-08-001, a maximum of 5 acres will be disturbed at any one time; total area of this phase is 38.31 acres. Graded areas would be stabilized with seed and cover, prior to grading additional or new areas.

- Phase 2 Phase 2 would include the construction of the remaining 13 active adult townhouse buildings and improvement of the Roads D and E. Road A would be improved to the north, including its intersection with Road B and C, and the culvert over Wetland F. Single family Lots 5 through 9 and 39 through 42 would be developed. The single family residential recreation building will be constructed on Parcel R. Stormwater management features for these areas of the site, along Roads A, D and E will be constructed. Phase 2 includes 15.17 acres of the site.

- Phase 3 This phase would include 6.73 acres of the northwest portion of the site and Road B and its cul-de-sac would be completed. Single family residential Lots 10 through 16 will be

developed. Stormwater management features associated with this area and Road B will be completed.

- Phase 4 Phase 4 would include the north and northeastern portions of the property and Road C and its cul-de-sac would be completed. Single family residential Lots 17 through 38 will be developed. Stormwater management features associated with this area and Road C will be completed. The emergency access road between Road C and the active adult townhouse development (Road D) would be completed. Total on-site acreage of Phase 4 is 21.92 acres, with an additional 1.16 acres of off-site improvements.

Hours of Construction Operation

Work on the project would take place only during normal daylight working hours, 8 A.M. to 5 P.M. Monday through Saturday. The hours of blasting operations would conform to those set by the Town Code. The law requires that blasting be conducted between the hours of 8:00 AM and 5:00 PM and not on Sundays or holidays. No significant noise impacts to adjacent properties would result, as most work would occur in the interior portion of the site and would be kept on the site during construction. Construction noise is further described in Section 4.320 Noise Impacts and Mitigation. Deliveries requiring the use of large vehicles or trailers would be scheduled to avoid peak hours.

MIH Construction

The MIH Project would be built in a single phase that is anticipated to take approximately one year.

Table 3-10
Construction Phasing Plan

Phase I - Phasing Plan (38.31 acres)	Phase II - Phasing Plan (15.17 acres)	Phase III - Phasing Plan (6.73 acres)	Phase IV - Phasing Plan (21.92 acres plus 1.16 acres off-site)
Road "A" from Reed Road to Station 31+00 including Retaining Walls and associated Drainage Basins including CB's, MH's & Pipes. Well Feed Lines from Wells to Water Plant Rock Processing Equipment in area of proposed turnaround Begin Water Plant & Mains Sewage Collection from SMH A1 - A3, D1 – D10, through Septic Tanks, Pump and Fields. Grading for SSDS areas Single Family Houses on Lots 1, 2, 3 & 4 Rough Grade Road "D" From Road "A" to Cul-de-sac Rough Grade Road "E" Active Adult Townhouse Buildings 1 though 6 associated Retaining Walls, Access Road to Water and Sewer Plant Locations Multi-family Clubhouse and Recreation Landscaping Requirements for the finished areas of Construction Emergency Access Road	Rough Grade Road A from Station 31+00 through Intersection to Station 2+50 on Road B and associated Drainage Construct Precast Concrete culvert Move Rock Processing Equipment to area of Multi-Family Unit 18 with access road Water Main Road from Station 31+00 through Intersection Sewage Collection from SMH A4 through Intersection, Lift Station and Force Mains to Plant Houses on Lots 5 - 9, 39 - 42 Single Family Residential Clubhouse Remaining (13) Active Adult Townhouse Buildings 7 - 19 including associated Retaining Walls Road D from 7+50 to cul-de-sac Road D in Entirety Road E in Entirety Sewer Plant in Entirety Landscaping Requirements for the finished areas of Construction	Rough Grade Road B from Station 2+50 to cul-de-sac and associated drainage Water Main Road B from Station 2+50 to cul-de-sac Sewage Collection from SMH B-1 to End Houses on Lots 10 - 16 B in its Entirety Landscaping Requirements for the finished areas of Construction	Rough Grade and finish Road C from Intersection to cul-de-sac and associated Drainage Move Rock Processing Equipment to area of Cul-De-Sac Water Mains Road C from Intersection to Cul-De-Sac, and Road B Sewage Collection from SMH C-1 to End Emergency Access Road Road D to Road C Houses on Lots 17 - 38 Landscaping Requirements for the finished areas of Construction

3.420 HOA Operation and Maintenance of Water and Sewer Facilities, Roads and Open Space

Ownership

A property owners association for the entire Highgate-Woodlands development and two homeowners associations (one for each residential component) would be formed during the subdivision review process, requiring the approval of the New York State Attorney General. Commonly held properties and facilities would include the proposed private and emergency access roads, land associated with the multi-family units, the central water and sewer system, stormwater management system, recreation amenities, conservation land and other items as illustrated on the project plat and construction plans. At the end of the project build out, there would be a determination of the percentage of the cost for maintenance of the joint facilities, based on property value.

Property Owners Association

The Highgate-Woodlands would be owned and maintained by a Property Owners Association (POA) comprising all owners of the development. All owners would contribute an equal amount to the POA, which would be responsible for all common infrastructure, specifically: sewer, water, stormwater facilities, and roads, including plowing. The POA would be responsible for and own the conservation and utility parcels. A Draft Umbrella Association agreement is provided in Appendix 4. The agreement provides a Declaration of The Highgate-Woodlands Property Owners Association, Inc. and describes the structure and mechanisms of the ownership and maintenance agreement proposed.

Homeowners Association

Single family homeowners would also be members of a Homeowners Association (HOA) and would contribute a separate fee to that association. The HOA would be responsible for maintenance of the Homeowners Recreational area and Family Clubhouse building. Individual owners of lots would be responsible for maintenance on the single family residential lots.

The Planning Board has expressed concern about the potential for conversion of non-bedroom spaces within the multi-family units into unauthorized bedrooms. The HOA agreement will contain specific prohibitions against such conversions. The HOA agreement will be subject to review and approval by the Lead Agency, North Salem Planning Board, and the Town Attorney.

Condominium Association

Owners of the condominiums in the active adult townhouse development would be paying members of a Condominium Association (CA) which would be responsible for the grounds of the multifamily portion of the development and for maintenance of its recreational facilities and clubhouse.

Purpose of Establishing Separate Lots

Most commonly held facilities would be contained on separate parcels of land with approved plans reflecting any improvements thereon. Cross easements for the access and use by one set of facilities, such as the water and sewer system, would be established over land related to other uses. In the event the POA fails to properly operate or maintain facilities, the Town or

other enforcement agency has the ability to issue a violation or utilize any established bonding or other surety is enhanced by the compartmentalization of uses on separate lots.

Responsibility and Maintenance

Each property owner in the POA would be responsible for a fair share portion of the taxes, operation and maintenance of common lands and facilities. The POA would be governed by the members according to their adopted by-laws. It is likely that the operation and maintenance of land and facilities and related record keeping would be done by an employee or subcontractor of the POA. However, the responsibility for decision-making and proper operation of the facilities would rest with the homeowners. Certain aspects of common facilities would be monitored or inspected by outside agencies. For example, operation of water supply and sewage treatment systems are governed by the regulations and administration of the WCDOH. Once approved by the Town and constructed, developments would be maintained in accordance with approved plans in accordance with the Zoning Ordinance (see subsection 250-51 and Article XV). Failure to comply with approved plans may result in violations, or amendments may be sought.

Water Supply and Sewage Treatment

In accordance with the zoning ordinance subsection 250-19.1, F., which would also apply to development in the proposed R-AMF/2 zone, and other county and state agency requirements, a water supply or sewage treatment system must be operated in accordance with approval of said agencies, which would involve the formation of a governing transportation corporation.

No final budgets or maintenance agreements are available at the present time. Tables 3-11 and 3-12 show cost estimates for the proposed Water and Sewer Works Corporations. Back-up Town Sewer and Water Districts would be formed for both the proposed water system and sewage treatment plant and their respective distribution facilities. If the Town wishes to review a final draft of these documents, the Town Board can mandate such a review a condition of final subdivision or rezoning approval. The applicant would post any bonds required under local law.

Table 3-11
Annual Budget Estimate Highgate-Woodlands Water Works Corporation

Licenses Operator Fees ($1,270.42/month)	$15,245
Chlorine (500 gallons @ $2.00 gallon)	$1,000
Electricity (100,000 KWH @ 0.6885)	$7,000
Maintenance Fund (Emergencies)	$2,000
TOTAL ANNUAL BUDGET ESTIMATE	**$25,245**

Table 3-12 Annual Budget Estimate Highgate-Woodlands Sewage Works Corporation	
Licensed Operator Fees ($2,041.66 per month)	$24,500
Chemical Supplies	$5,000
Electricity (500,000 KWH @ .06885)	$35,000
Maintenance Fund (Emergencies)	$5,000
TOTAL ANNUAL BUDGET	**$69,500**
Source: Prepared by Keane Coppelman Engineers, P.C	

Town operation of MIH Site Development

The former Dino and Artie's site in Croton Falls is owned by the Town of North Salem. The applicant proposes construct one multi-family dwelling consisting of up to a maximum of three apartments, parking, sewage treatment areas, and landscaped grounds. When complete, the development would be donated to the not-for profit organization A-HOME, which would manage it. Based in Mount Kisco, A-HOME rehabilitates, builds and manages affordable rental housing in northern Westchester County, NY for older adults, disabled individuals and single parent families who, because of age, disability, or family status, cannot afford market rates.

3.500 Approvals and Permits

3.510 All Approvals Necessary in Order to Begin Site Construction

A summary of permits and approvals for the review process is set forth in Table 3-13. This chart lists the administering agency, the statute or regulations which govern each phase, whether a hearing or public notice is required and the current status of each action, from the inception of the project to the start of construction.

Table 3-13
Summary of Required Permits and Approvals - Highgate-Woodlands

Review Agencies	Approvals and Permits Required	Status of Application
North Salem Town Board	Re-zoning; ; Formation of Sewer and Water Works Corporations; Approval for the designation of the property as an Open Development Area for the required frontage on a Town approved road (the project would be served by private roads)	Pending
North Salem Planning Board	Site Plan and Subdivision Approval; Zoning Referral to the Town Board; waiver for exceeding the maximum length of a cul-de-sac; waiver of road gradient; approval of a street right-of-way width in excess of the minimum standard; wetland permit; Approval of SWPPP.	Pending
North Salem Town Engineer	Water Supply System and Treatment Facility; STP, Review and Approval of Construction Drawings Review and approval of SWPPP	Pending
North Salem Building Inspector	Building permits.	TBD
Westchester County Department of Health	Permit to construct wells; Water Supply and Sanitary Sewage Disposal Systems; Subsurface Sewage Disposal Systems (SDSS); STP; Subdivision Approval;	Pending
Westchester County Department of Planning	Planning Review pursuant to Section 239 l, m, n of the New York State General Municipal Law	Pending
New York City Department of Environmental Protection (NYCDEP)	Review and approval of Sewage Treament Plant, Subsurface Disposal System (SSDS), and Stormwater Pollution Prevention Plan	Pending
New York State Department of Environmental Conservation (NYSDEC)	Water Supply; SPDES permit approval of effluent flow amount pursuant to the Environmental Conservation Law, (ECL) Article 17, Title 8, Part 750 - SPDES General Permit for Stormwater Discharge from Construction Activities (GP-0-08-001) pursuant to ECL, Article 17, Titles 7 and 8 and Article 70 of the ECL Section 401 Water Quality Certification	Pending
New York State Department of Transportation (NYSDOT)	Highway Work Permit for construction within NYS Road Right-of-Ways	Pending
New York State Attorney General's Office	Formation of the Homeowner's Association and its ownership and maintenance with regard to road parcels, the Central Water System Parcel, conservation parcels/land, stormwater management facilities, and STP and SSDS system parcels.	Pending
New York State Department of Health	Approval for Wells and Central Water Supply System	Pending
Town of North Salem Highway Department	Curb Cut Approvals; Access from Reed Road	Pending
US Army Corps of Engineers	Individual Wetlands Permit	Pending

Given the proposed roadway layout, the project will require an Individual Permit from the US Army Corps of Engineers for the filling of 87 square feet (0.002 acres) of Wetland F for the construction of Road F. Impacts to wetlands of less than 0.5 acres may qualify for Nationwide wetland permits from the ACOE, but since the project site is located in the NYCDEP watershed, an Individual Permit is required.

A prerequisite for the application for an Individual Permit is the determination by the ACOE that wetlands under the jurisdiction of the ACOE are present on the site and the determination of

their size and exact location. This "Jurisdictional Determination" process was revisited by the applicant in November 2009, since the original Jurisdictional Determination issued in January 1995 expired. An updated Jurisdictional Determination was issued by the ACOE on February 21, 2013. A copy of the jurisdictional determination is provided in Appendix 2 - Correspondence.

In its decision whether to issue an Individual Permit the ACOE will evaluate the probable impact of the activity to the public interest, including cumulative impacts. The benefit expected from the proposal must be balanced against potential detriments. Mitigation, including the expansion or enhancement of on-site wetlands will be proposed in the permit application. Applicants for either Nationwide or Individual Permits from the ACOE must obtain a water quality certification (under Section 401 of the Federal Clean Water Act) from the NYSDEC. Issuance of a Section 401 certification indicates that the NYSDEC anticipates that the applicant's project will comply with NYS water quality standards and other aquatic resource protection requirements under NYSDEC's authority.

One wetland and intermittent stream crossing is proposed for the project, where Road A and Road C intersect and cross Wetland F. The roadway crossing will consist of a open bottom arch culvert approximately 40 feet wide and 70 feet long. The culvert will be installed outside of the edges of Wetland F and the intermittent stream at that location. The arch culvert will be installed with equipment such as cranes located in the regulated 100-foot wetland buffer area, but outside of Wetland F and the intermittent stream. Concrete footings for the arch culvert will be installed from approximately 6 feet to 20 feet outside of Wetland F. A detail of the culvert and footings is provided in Full Sized Plan Sheet DS-5 Retaining Wall & Misc. Details (Drawing 34). The steambanks of the intermittent stream within Wetland F will not be disturbed. Erosion control measures, including a double row of silt fence will be installed at the edges of the Wetland F to minimize any potential construction impacts. Given that no disturbance is proposed for Wetland F, no permitting is required from the ACOE. A wetlands permit will be required from the Town of North Salem for work in the regulated 100-foot wetland buffer. The details of the culvert installation and erosion control provisions will be provided in the Town of North Salem Wetlands Permit application.

Moderate Income Housing Approvals

The Moderate Income Housing (MIH) portion of the project is subject to SEQR and conceptual review by the Town of North Salem Town Board as part of the Highgate-Woodlands at North Salem project. Specific Site Plan review and approval would be required from the North Salem Planning Board. Other approvals and agency review for the MIH parcel is provided in Table 3-14, below.

The septic system is subject to review by the NYCDEP. The septic system and construction drawings are subject to review and approval by the Town Engineer. The building plans and elevations are subject to review by the Town Architectural Review Board. Connection to the Town water district is subject to review and approval by the Town Board and WCDOH.

Table 3-14
Summary or Required Permits and Approvals
Moderate Income Housing Property

Review Agencies	Approvals and Permits Required	Status of Application
North Salem Town Board	Conceptual plan and SEQR review as part of the Highgate-Woodlands at North Salem project. Connection to Town Water District.	Pending
North Salem Planning Board	Site Plan approval, Conditional Use approval	Pending
North Salem Town Engineer	Septic System and construction drawing approval	Pending
North Salem Building Inspector	Building permits	TBD
North Salem Housing Board	Review of moderate income housing units	Pending
Westchester County Department of Health	Connection to Town Water District. Septic system approval	Pending
New York City Department of Environmental Protection (NYCDEP)	Review for septic system.	Pending
New York State Department of Transportation (NYSDOT)	Highway Work Permit for construction within NYS Road Right-of-Ways, Curb cut approval/ modification	Pending

Distribution List:

Involved Agencies:

1. Town of North Salem Town Board
   Attn. Supervisor Warren Lucas
   Town of North Salem
   266 Titicus Road
   North Salem, New York 10560

2. Veronica Howley, Town Clerk
   Town of North Salem
   266 Titicus Road
   North Salem, New York 10560

3. Town of North Salem Planning Board
   Cynthia Curtis, Chair
   266 Titicus Road
   North Salem, New York 10560

4. Dawn Onufrik
   Town of North Salem, Planning Board Secretary
   266 Titicus Road
   North Salem, New York 10560

5. Town of North Salem Wetland Inspector
   Dr. Joseph Bridges, Ph.D., Senior Biologist
   Matthew D. Rudikoff Associates, Inc.
   1208 Old Post Road
   New Paltz, New York 12561

6. Bruce K. Thompson
   Town of North Salem Building Inspector and
   Zoning Enforcement Officer
   266 Titicus Road
   North Salem, New York 10560

7. Ward Hanaburgh, Highway Superintendent
   Town of North Salem Highway Department
   266 Titicus Road
   North Salem, New York 10560

8. Westchester County Department of Health
   145 Huguenot Street, 8th Floor
   New Rochelle, New York 10801

9. Westchester County Planning Board
   Michaelian Office Building
   148 Martine Avenue, Room 432
   White Plains, New York 10601

10. Edward Bouroughs, AICP – Commissioner
Westchester County Department of Planning
432 Michaelian Office Building
148 Martine Avenue
White Plains, New York 10601

11. William Janeway, Regional Director
New York State Department of Environmental Conservation
Region 3 - 21 South Putt Corners
New Paltz, New York 12561

12. Commissioner Pete Grannis
New York State Department of Environmental Conservation
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13. Joan Dupont, PE, Regional Director
New York State Department of Transportation, Region 8
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14. John Drake
New York City Department of Environmental Protection
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Valhalla, New York 10595

15. Victor Pisani
John Dunn, P.E., Assistant Director
Bureau of Public Water Supply Protection
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Flanigan Square
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Troy, New York 12180-2216

16. Mike Vissichelli, Chief
Eastern Permits Section
US Army Corps of Engineers
Jacob K. Javits Federal Building
New York, NY 10278

17. Philip Bein
NYS Attorney General's Office
The Capitol
Albany, NY 12224

Interested Agencies:

1. Brian Bartsch, Chair
   Town of North Salem Conservation Advisory Council
   266 Titicus Road
   North Salem, New York 10560

2. Michael Palma, Chairman
   Town of North Salem Architectural Review Board
   266 Titicus Road
   North Salem, New York 10560

3. Brian Ivanhoe, Chairman
   Town of North Salem Zoning Board of Appeals
   266 Titicus Road
   North Salem, New York 10560

4. Marion Falk
   Fire Commissioners
   Croton Falls Fire District
   P.O. Box 5
   Croton Falls, New York 10519

5. Lisa Vasilakos**,** Environmental Planner
   Westchester County Soil and Water Conservation District
   148 Martine Avenue, Room 432
   White Plains, New York 10601

6. Tony Hay, Supervisor
   Town of Southeast
   1360 Route 22
   Brewster, NY 10509

7. John Lynch, AICP, Commissioner
   Putnam County Planning Department
   841 Fair Street
   Carmel, New York 10512

8. Kathleen Pacella, Town Clerk
   Town of Somers
   335 Route 202
   Somers, New York 10589

9. Frances Tuoti, Chairman
   Historic Preservation Commission
   266 Titicus Road
   North Salem, New York 10560

10. Kenneth Freeston, Ph.D.
    Superintendent of Schools

North Salem Central School District
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North Salem, New York 10560

Town Representatives:

1. Roland A. Baroni, Jr., Esq. – Town Attorney
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4. Frank Annunziata
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2. Tim Miller, AICP
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   Mount Kisco, New York 10549

4. Rich Williams, P.E.
   Insite Engineering, Surveying & Landscaping Architecture, PC

3 Garrett Place
Carmel, New York 10512

Official Publications:

Library:

Ruth Keeler Memorial Library (2)
276 Titicus Road
North Salem, New York 10560

Newspapers:

The Journal News
(Official Newspaper - Notice Only for Publication)

4.0 ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION

4.1 Geology, Soils and Topography

4.110 Subsurface

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.

The majority of the site is underlain by coarse grained igneous rock known as the Croton Falls Complex. Rock types include gabbro and diorite, which are dark, coarse grained crystalline rocks formed at great depth (Fisher, et. al. 1970, Geologic map of New York, lower Hudson Sheet", New York State Museum and Science Service, Map Series 15). Malcome Pirnie described small areas of microcline granite in their water supply investigations in the 1980's. Lower portions of the site bordering Reed Road are underlain by metamorphic rocks of the Manhattan formation, consisting of pelitic schists and amphibolite.

Bedrock outcrops on the Highgate-Woodlands property are numerous and are found in the central portion of the site and in areas of steeper slopes. Bedrock outcrops are typically found in areas of slope greater than 12% (see Full Sized Plan Sheet SM-1 Soils Map/Existing Conditions (Drawing 5) and Full Sized Plan Sheet SA-1, Slope Analysis (Drawing 4). The location of the site and local setting are shown in Figure 4.1-1 Local Topography.

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 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 central portion of the site. Based upon soil testing conducted at the site the depth to bedrock ranges from 0 to 25 feet in depth. The surficial deposits which were encountered by Malcolm Pirnie, Inc. appear to have relatively high permeability. According to Malcolm Pirnie, the glacial till deposits at the Highgate-Woodlands site contain little clay.

The bedrock in the Hudson Valley has undergone several deformations associated with ancient tectonic (mountain building) activity. These deformations result in the folded and faulted nature of the geology, including joints and fractures. Bedrock fractures provide pathways for the storage and transmission of groundwater supplies. The Chazen Companies recently completed a groundwater study for the Town of North Salem (*Municipal Groundwater Resource Report*, 2008). The report provides maps of linear features, which could reflect underlying bedrock fractures. The report shows linear features along Reed Road and Interstate 684, and an east west feature which crosses the site above Wetland A. These features are not readily apparent at the ground surface when walking the site, but are mapped from aerial photographs and interpreted from topographic features. The potential bedrock fractures are covered with soil horizons and present no limitations on the proposed use of the site.

Subsurface Material on the MIH Property

The Moderate Income Housing (MIH) property is located in the hamlet of Croton Falls and is similarly underlain by bedrock, but appears to be underlain by outwash sands and gravels, as mapped in the Surficial Geologic Map of New York (Cadwell, D.H., 1989). The bedrock underlying the MIH parcel is mapped as coarse grained igneous rock known as the Croton Falls Complex. Rock types include gabbro and diorite, which are dark, coarse grained crystalline rocks (Fisher, et. al. 1970, Geologic map of New York, lower Hudson Sheet", New York State Museum and Science Service, Map Series 15). No bedrock outcrops were observed on the MIH property and none were observed in the vicinity (adjoining properties). No limitations to development or potential impacts are anticipated from the underlying bedrock at the MIH property.

4.120 Surface

Preliminary mapping of the Highgate-Woodlands soils on the site was accomplished by using the maps provided by the Soil Conservation Service of Westchester County Soil and Water Conservation District (SCS). Soils identified on-site are in accordance with the soil descriptions from the 1994 SCS Soil Survey for Westchester County and are shown in Figure 4.1-2 Soils Map and Full Sized Plan Sheet SM-1 Soils Map/Existing Conditions (Drawing 5). These soils were field verified to confirm and further define the presently mapped units.

On-Site Soils

The acreage for each soil as well as their percentage totals are presented in Table 4.1-1 and described below.

Table 4.1-1
Soil Acreage

Soil Type*	Symbol	Percent	Acres
Chatfield-Charlton Complex, hilly, very rocky	CsD	41.0%	66.25
Chatfield-Hollis-Rock Outcrop Complex, hilly	CuD	22.0%	35.1
Chatfield-Hollis-Rock Outcrop Complex, rolling	CtC	28.0%	44.0
Charlton-Chatfield Complex, rolling, very rocky	CrC	5.0%	8.45
Leicester Loam - 3-8% slopes, stony	LcB	1.0%	2.05
Sun Loam**	Sh	2.0%	2.95
Hollis Rock Outcrop Complex, very steep	HrF	1.0%	1.20
TOTAL		100.0%	± 160.0

* Westchester County Soil and Water Conservation District, 1994. Soil units mapped by B. Laing Associates during field investigations in 1990 and updated in 2005
** Soil unit mapped during field investigation.

Off Site Soils

The Westchester County Soil Survey shows eight (8) soil units adjacent to and surrounding the Highgate-Woodlands project site:

ChB - Charlton Loam, 2 to 8 percent slopes
Ff - Fluvaquents - Udifluvents complex, frequently flooded
HrF - Hollis - Rock outcrop complex, very steep
PnB - Paxton Fine Sandy Loam, 2 to 8 percent slopes
SuB - Sutton Loam, 3 to 8 percent slopes
Ub - Udorthents, smoothed
Uc - Udorthents, wet substratum
WdB - Woodbridge Loam, 3 to 8 percent slopes

Soil Characteristics

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.

CtC - Chatfield - Hollis - Rock Outcrop Complex, Rolling

This unit consists of the rolling, moderately deep, well drained and somewhat excessively drained Chatfield soil, the shallow, well drained and somewhat excessively drained Hollis soil, and areas of rock outcrop (predominantly granite, schist, and gneiss.) The unit is on hilltops and narrow ridges in bedrock-controlled landscapes. The texture of the soils ranges from a loam to a silt loam for Chatfields and from a sandy loam to a fine, sandy loam for Hollis. Granite, schist or gneiss bedrock, fractured or folded, is the parent material for both soils. Erosion hazard is slight on Chatfield and moderate on Hollis soils. This depends as well on the slope where it occurs. Slopes range from 3 to 15 percent. This mapped soil may include areas of poorly drained Leicester, Sun and Palm soils and moderately well drained Sutton soils. Well drained Charleton soils are in scattered areas throughout the soil unit.

CsD - Chatfield-Charlton Complex - Hilly, Very Rocky

This unit consists of the very deep and moderately deep, well drained and somewhat excessively drained Chatfield soils and well drained Charlton soils. It is on the tops and sides of hills that are underlain by folded bedrock. Exposed bedrock covers 2 to 10 percent of the surface of this mapped unit. The texture of the soils ranges from a loam to a silt loam for Chatfields and from a loam to a loamy sand for Charlton. Granite, schist or gneiss bedrock, fractured or folded, is the parent material for both soils. Erosion hazard is slight on Chatfield and moderate on Charlton soils. This depends as well on the slope where it occurs. Slopes range from 15 to 35 percent. Areas are irregular in shape and range in size. They are about 45 percent Chatfield soil, 35 percent Charlton soil, and 20 percent other soils with rock outcrop. This mapped soil may include areas of moderately well drained Sutton soils and poorly drained Leicester and Sun soils. Also included are areas of very poorly drained Carlisle and Palms soils. Well drained Hollis soils are in scattered areas throughout the unit, mostly on hilltops.

CrC - Charlton – Chatfield Complex, Rolling, Very Rocky

This unit consists of very deep and moderately deep, well drained and somewhat excessively drained Chatfield soils. It is on the tops and sides of hills that are underlain by highly folded bedrock. Slope ranges from 2 to 15 percent. Areas are highly irregular in shape and range from 3 to 100 acres. This map unit consists of about 50 percent Charlton soils, 30 percent Chatfield soils and 20 percent other soils and exposed bedrock. Exposed bedrock covers 2 to 10 percent of the surface. The texture of the soils ranges from a loam to a silt loam for Chatfields and from

a loam to a loamy sand for Charlton. The Charlton and Chatfield soils and areas of rock outcrop are in such an intricate pattern that they were not mapped separately county wide but were separately mapped on-site. Included in the mapping are areas of Sutton, Leicester and Sun soils. Also included are areas of Carlisle and Palms soils, as well as Hollis soils.

CuD - Chatfield - Hollis - Rock Outcrop Complex, Hilly

This unit consists of moderately deep, well drained and somewhat excessively drained Chatfield soils; shallow, well drained and somewhat excessively drained Hollis soils; and areas of exposed bedrock (dominantly granite, gneiss and schist.) The unit is on hillsides in bedrock controlled landscapes. The slopes are dominantly 15 to 35 percent. Bedrock outcrops and very steep to nearly vertical bedrock escarpments are common in this landscape. The texture and erodability of these soils is provided above. The unit is typically about 30 percent Chatfield soils, 10 percent Hollis soils, 25 percent rock outcrop and 15 percent other soils. Areas of rock outcrop are in such an intricate pattern that they were not separated in county wide mapping but were separately mapped on-site. Areas of this unit are mostly long and narrow in shape and range from 2 to hundreds of acres. This mapped soil may include areas of poorly drained Leicester, Sun and Palm soils and moderately well drained Sutton soils. Well drained Charleton soils are in scattered areas throughout the soil unit.

The U.S. Army Corps of Engineers manual defines wetland (hydric) soils as those that, in an undrained condition are saturated (within 18 inches of the surface), flooded or ponded long enough during the growing season to develop anaerobic conditions in the upper stratum. Wetter conditions of somewhat poorly drained soils are included as hydric soils, if wetland indicators are present. The wetland soils occurring on site are described below.

Wetland soils on-site were identified along watercourses and in locations where the topography flattens out. These soils were determined to be a combination of Leicester and Sun loam. It should be noted that Ridgebury soils are expected as inclusions in these soil groups on the channel ways and the higher portions of the site's ridges. They are described as follows:

LcB - Leicester Loam

This soil is gently sloping, very deep, and somewhat poorly drained. It is on the lower parts of hillsides and along small drainage ways. The surface to 8 inches deep is very dark grayish brown loam. From 8 to 18 inches it is dark grayish brown sandy loam with yellowish brown mottles. The water table is 0 to 1.5 feet below the surface from November to May. Permeability is moderately rapid with a medium surface run-off potential. These soils are deeper than the above Charlton's etc. to bedrock but the bedrock itself is the same granite, schist or gneiss. Erosion hazard is slight on Leicester soils. This always occurs on slight to moderate slopes and erosion hazard varies very little. Inclusions with this unit are areas of poorly drained and very poorly drained Sun soils in depressions and moderately well drained Sutton soils in the higher elevations. Also, there exists inclusions of well drained Charlton soils in higher elevations and very stony Leicester soils. These inclusions generally occupy areas of 1 to 3 acres. This soil dominates in Wetlands B through F on-site.

Sh - Sun Loam

This soil is nearly level, very deep and poorly drained to very poorly drained. It occurs in small depressions and along drainage ways on till plains. The texture of the soils ranges from a loam

to a fine, sandy loam to a fine, sandy loam with gravel. Erosion hazard is slight on Leicester soils. This always occurs on slight to moderate slopes and erosion hazard varies very little. Inclusions of this soil unit are areas of very poorly drained Palms soils, somewhat poorly drained and poorly drained Leicester and Ridgebury soils, and areas with a layer of water-deposited material. Palms soils are located in the center of depressions. Ridgebury and Leicester soils are usually located in areas of higher elevation. These inclusions make up about 15 percent of the unit and can total several acres in size. This soil underlies almost all of Wetland A.

HrF - Hollis Rock Outcrop

This unit consists of shallow, very steep, well drained and somewhat excessively drained Hollis soil and areas of rock outcrop (dominantly granite, gneiss, or schist). This soil is mapped in the northeastern edge of the site, above Reed Road. The surface is 0 to 1 inch below the ground surface and consists of dark brown fin sandy loam. Slopes can rage from 35 to 60 percent making the surface runoff rapid and the erosion hazard severe. The water table may be found more than 6 feet below the ground surface. Permeability is considered moderate or moderately rapid through the entire soil profile. The depth to bedrock can be 10 to 20 inches below the ground surface. This soil can also be accompanied with narrow areas of somewhat poorly drained Leicester soils found within drainage ways. Deep or very deep Charlton soils can also be found within this soil type, mainly along the base of the slopes. Areas of moderately deep Chatfield soils can accompany this unit on the upper part of the slopes. No development or grading is proposed in Hollis Rock Outcrop Soil.

Soil characteristics, including depth to bedrock, hydraulic group, and depth to the water table is provided in Table 4.1-2, below.

Table 4.1-2
Soil Characteristics

Soil Symbol	Soil Type	Depth to Bedrock	Hydrologic Group	Depth to Water Table
CtC	Chatfield - Hollis - Rock - Outcrop Complex - rolling - 8 - 15% slopes	0-40" inches	B/C	3-6' feet
LcB	Leicester Loam - 3 - 8% slopes, - stony	60"+ inches	C	0-1.5' feet
CuD	Chatfield-Hollis-Rock Outcrop complex, hilly	0-60"+ inches	B/C	3'+ feet
Sh	Sun Loam -0 - 3% slopes	0-60"+ inches	C	0' feet
CsD	Chatfield-Charlton-Complex, hilly, very rocky - 15 - 25% slopes	10-60"+ inches	B	3'+ feet
CrC	Charlton-Chatfield Complex, rolling, very rocky - 8 - 15% slopes	4-7' feet	B	3-6' feet
HrF	Hollis-Rock outcrop complex, very steep	10 to 20 inches	C/D	>6 feet

Sources: Westchester County Soil and Water Conservation District, 1986. Soil units were mapped by B. Laing Associates, Inc. during 1990 and 2005 field investigations. Recorded samples from the 1990 efforts were presented in the Highgate DEIS and 2005 samples/test pits and percolation results are presented in the SWPPP Appendices E and F.

Note: Soils in Hydrologic Soil Group B exhibit moderate infiltration rates when thoroughly wetted and consist chiefly of moderately deep to deep, moderately well to well-drained soils with moderately fine to moderately coarse textures. These soils have a moderate transmission rate. The finer-textured, glacial outwash soils and glacial till soils that are deep and well-drained compose this group.

Soils in Hydrologic Soil Group C exhibit slow infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture. These soils have slow transmission rate. In Westchester County, the hardpan soils and seasonal high water table soils are included in this group. Both of these soil groups have low runoff potential.

Soil Limitations

Soil limitations for individual soils mapped on the site are provided in Table 4.1-3, 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 4.1-3
Soil Limitations For Selected Uses

Soil Symbol	Soil Unit	Two & Three Story Buildings With Basement	Two & Three Story Buildings Without Basement	Streets and Parking Lots	Lawns	Permeability	Erodibility	Surface Runoff
CrC	Charlton-Chatfield complex, rolling, very rocky, 8-15% slopes	Severe: Rock Outcrops, Depth to Rock	Moderate to Severe: Rock Outcrops, Depth to Rock	Moderate to Severe: Rock Outcrops, Depth to Rock	Moderate to Severe: Rock Outcrops, Depth to Rock	Moderate to moderately rapid	Moderate	Medium
CsD	Chatfield-Charlton complex, hilly, very rocky, 15-25% slopes	Severe: Slope Depth to Rock, Rock Outcrops	Severe: Slope, Rock Outcrops	Severe: Slope, Depth to Rock, Rock Outcrops	Severe: Slope, Depth to Rock, Rock Outcrops	Moderate to moderately rapid	Severe	Rapid
CuD	Chatfield-Hollis-Rock Outcrop complex, hilly	Severe: Slope, Depth to Rock	Severe: Slopes, Floods	Severe: Slope, Frost Action	Severe: Slope, Floods	Moderate to moderately rapid	Severe	Rapid
LcB	Leicester loam, 3-8% slopes, stony	Severe: Wetness	Moderate: Slope Wetness, frost action severe	Moderate: Slope Wetness, frost action severe	Moderate: Slope	Moderate to, Moderately rapid	Moderate	Medium
*Sh	Sun loam	Severe: Wetness, Large Stones	Severe: wetness	Severe: Wetness	Severe: Wetness	Very slow, slow to moderate	None to slight	Very slow
CtC	Chatfield-Hollis Rock Outcrop Complex rolling, 8-15% slopes	Severe: Slope Depth to Rock	Severe: Slope	Severe: Slope Depth to Rock	Severe: Slope	Moderate to moderately rapid	Severe	Rapid
HrF	Hollis-Rock Outcrop complex, very steep	Severe: Slope, Depth to rock	Severe: Slope, Depth to Rock	Severe: Slope, Depth to Rock	Severe: Slope, Depth to Rock	Moderate or moderately rapid	Very Severe	Very Rapid

* Soil unit mapped as inclusion by B. Laing Associates during field investigation

As noted in Table 4.1-3, 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.

The Subsurface Septic Disposal Systems (SSDS) are proposed in areas of Chatfield-Charlton complex (CrC), and the Chatfield-Hollis-Rock-Outcrop complex (CtC). The Chatfield soils are listed in the SCS Soil Survey as having severe limitations for “septic absorption fields”, due to

depth to rock. Charlton complex soils are listed as having have severe limitations for septic fields due to slope. CtC Hollis soils are listed as having have severe limitations due to depth to rock.

The Soil Conservation Service maps are assembled from several data sources including field testing, observations regarding bedrock, vegetation and slopes, as well as aerial photographs. The SCS Survey indicates that soils "have a characteristic variability in their properties"...and "thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class". Such variable properties may include depth to bedrock and slope in a specific mapped soil area. The New York State Department of Environmental Conservation (NYSDEC) and the Westchester County Department of Health (WCDOH) require deep hole testing and percolation testing to confirm the suitability of soils for septic fields and the drainage capacity of soils.

Soil Testing for Drainage

Soil testing for the proposed SSDS areas was completed by Keene Coppelman Engineers in July, 1997 and additional testing was completed by B. Laing Associates, Inc. In the Spring of 2005 for stormwater management facilities (see discussion below). The testing for the septic systems involved 18 deep hole test pits excavated to depths ranging from 96 inches to 132 inches. No bedrock or groundwater was encountered during the testing. Percolation tests were completed in each of the 18 test pit locations. The results of testing are provided in Appendix 6 - Soil testing report and on Full Sized Plan Sheet ST-1, Soil Testing Location (Drawing 16) and Full Sized Plan Sheet ST-2, Soil Testing Data (Drawing 17). The soil testing confirms that sufficient area and drainage characteristics for the proposed wastewater disposal systems for the project. In addition, a groundwater mounding analysis was completed for the proposed SSDS areas to further demonstrate the hydrogeologic capacity of on-site soils to manage the project's wastewater. The results of the mounding analysis are further described below.

In the Spring 2005, B. Laing Associates retested the soils at the Highgate-Woodlands site to confirm the capacity of on-site soils for specific stormwater management facilities. The soil column at each location was recorded and logged. The pits were located in areas proposed for storm water basins and in locations expected to be needed for infiltration on individual lots which would not drain to proposed basins (i.e., "out" lots). Test pit results are presented in Full Sized Plan Sheet ST-1, Soil Testing Location (Drawing 16) and Full Sized Plan Sheet ST-2, Soil Testing Data (Drawing 17).

A typical storm water test hole from the western portion of the site is test hole number D4 which coincides with proposed Lot E. The soils in that location were deep and well drained. Excavation was halted by the inspectors at a depth of 66 inches. The soil profile is described as follows:

0-6" organic
6-30" yellow brown sandy loam
36-66" finer loam some mottling
No bedrock/ledge
No water

A typical storm water test hole from the eastern portion of the site is test hole number D16 within proposed Lot 32. The soils at this location are moderately deep and well drained. The profile is described as follows:

0-4" organic
4-11" yellow brown loam
11-36" black sandy decomposed rock
Refusal at 36"
No water

When test pits yielded soils which were four feet deep or deeper, the site was then subjected to a percolation test. The percolation test results are presented in Appendix F of the SWPPP in Appendix 13 of this DSEIS. Where percolation rates were suitable and soil drainage exceeded 0.3 inches per hour, the Hydrologic soil drainage classification (HSG) was assigned at A. However, the majority of the site falls into HSG B. These soils have a moderate rate of water transmission at 0.15-0.30 inches per hour.

Soil Pesticide Sampling for Former Suspected Orchard Area

Aerial photographs from the 1960's and a USGS Quadrangle map indicate that an "orchard" may have existed in two fields (approximately ten acres) on the site's western boundary, immediately south of Juengst Road. The USGS maps provide a stippled symbol to indicate orchards or areas of planted trees.

The former suspected orchard area is currently a mixed hardwood deciduous forest. The overstory is dominated by red maple (*Acer rubrum,* FAC), gray birch (*Betula populifolia,* FAC), and American beech (*Fagus grandifolia,* FACU). The understory is mostly comprised of Japanese barberry (*Berberis thunbergi,* FACU), cat briar (*Smilax rotundifolia,* FAC), and poison ivy (*Toxicodendron radicans,* FAC). The surface is gently sloping towards the north at 5 to 10 percent. Stone walls enclose a majority of the former orchard area, as shown in Figure 4.1-4, Pesticide Sampling Location Map. No fruit trees including no apple trees or apple tree stumps were observed in the former "orchard" area. No large conifers, either mature trees or stumps in rows were observed to indicate previous planting.

In order to verify the occurrence of an "orchard" (or other, patterned, linear plantings such as a Christmas tree farm) and the possible residual effects of any pesticide use (if any) at this location, a soil sampling investigation was undertaken by B. Laing Associates, Inc. In March, 2005. The investigation included the testing and analysis of soils for pesticide residues and heavy metals associated with orchard pest control (i.e., arsenic, cadmium, and lead). The sampling scheme included 14 soil samples. One water sample was collected and tested for pesticides and/or "residue", from the northerly "spring."

The results of the March, 2005 soil sampling indicated no concentrations of pesticides above the laboratory detection limit, for those pesticides that were analyzed. The metals results were within ranges typical for background metals concentration for metals in soils of the northeastern US (per NYSDEC guidance). Consultants for the Town of North Salem commented that the list of pesticide parameters analyzed in 2005 did not include organochlorine pesticides including DDT and its breakdown products, DDD and DDE or Aldrin and Dieldrin, all compounds commonly used in orchards of the 1940's though the early 1970's. Organochlorine pesticides are insoluble and are extremely persistent in the environment. Their use was banned by the

USEPA in the early 1970's. The Town recommended retesting the suspected orchard area and include the analysis for organochlorine pesticides.

Prior to sampling, a Pesticide Sampling Protocol was developed by TMA, and was reviewed and agreed upon by the Town. The sampling protocol specified the number of samples, the sampling locations, methodology for sample collection, handling and documentation, and the list of parameters to be analyzed. A copy of the approved Sampling Protocol is provided in Appendix 9).

Pesticide Soil Sampling

Soil samples were collected according to the Sampling Protocol on April 1, 2010 by Jon Dahlgren, Senior Geologist with TMA. In summary, samples were collected using the following procedures:

- The mapped area of the suspected former orchard is approximately 10 acres in size. The Sampling Protocol proposed a minimum of one (1) soil sample per acre be collected and analyzed in order to assure adequate coverage and analysis. Therefore a total of 10 samples were collected, as shown in Figure 4.1-4 Pesticide Sampling Location Map. Prior to sampling, the proposed sampling locations were reviewed by the Town's consultant MDRA. The sampling locations were marked in the field with stakes. Locations with steep slopes, rock outcrops and saturated soils were avoided.
- One soil sample, designated as B-1, was collected outside the *area of concern* and analyzed to serve as background reference for metals (See Figure 4.1-4).
- Soil samples were collected at agreed upon locations at 0 – 6-inches below the ground surface. Surface leaves, twigs and partially decomposed material were removed from the surface prior to sampling. The pesticides of main concern (DDT, DDE, arsenic, cadmium and lead) are not readily mobile in soil and therefore the top 6 inches of soil was an appropriate soil depth sampling range. Samples were collected from unsaturated soil utilizing dedicated (single use) stainless steel hand shovels at each sampling location. This method avoided the potential for cross contamination of the samples and did not require the decontamination of sampling equipment.
- Collected soil samples were delivered on the same day to a New York State Certified laboratory for analysis. Based upon the laboratory requirements for soil volume, samples were collected in 8-ounce (237 milliliter) sterilized glass jars provided by the laboratory. Soil samples were transported to the lab in coolers with ice to maintain temperature below 4 degrees Celsius. The chain-of-Custody form for the samples is provided in Appendix 9).
- Soil samples were analyzed for Pesticides EPA 8081 parameters, as well as for arsenic, cadmium, chromium and lead. The background reference sample was analyzed only for arsenic, cadmium, chromium and lead.

Sampling Analytical Results

The laboratory analytical results for metals are provided in Table 1, Appendix 9. The table provides background levels for metals listed in NYSDEC Technical Administrative Guidance Memorandum (TAGM) 4046 and in the New York State soil clean-up objectives (NYS SCO Subpart 375-6). The metals results for the 10 soil samples (arsenic, cadmium, chromium and lead) were within ranges typical for natural concentrations of metals in natural soils in the

northeast. The results were also consistent with the background sample B-1, which was collected outside of the designated former orchard area.

The analytical results indicate that no pesticides were detected above the laboratory detection limits, with the exception of one sample, S-7. Sample S-7 contained 21 ppb of 4,4' DDT. No other pesticide compounds were detected in the sample. As shown in Table 4.1-4, the result is below the NYSDEC TAGM recommended soil cleanup objective, but above the new NYSDEC Division of Environmental Remediation Program (Subpart 375-6) unrestricted residential use soil clean-up objective (NYS SCO).

These NYSDEC soil clean-up objectives provide guidance for specific remediation programs administered by the NYSDEC. The soil clean-up objectives do not necessarily require specific remediation (clean-up) if a clean-up objective value is exceeded in a certain soil sample result. Rather, the objectives provide guidance and a framework for potential remediation, based upon site specific conditions and future uses of the site.

Given that no concentrations of 4.4'-DDT or its breakdown compounds (DDE, DDD), or other organochlorine pesticides were found at any of the other nine sampling locations, it is the professional opinion of TMA that pesticides were not routinely used at the property as part of an active orchard operation. Impacts and mitigation for the pesticide sampling conditions are described below.

Table 4.1-4
Pesticide Sampling Result

Constituent	TAGM Recommended Soil Cleanup Objectives (ppb)	Subpart 375-6 Unrestricted Use Soil Cleanup Objectives (ppb)	Subpart 375-6 Restricted Use Soil Cleanup Objectives (Residential) (ppb)	Result (ppb)
4,4'-DDT	2,100	3.3	1,700	21

Location and Extent of Rock Outcrops

As described above, the property contains numerous rock outcrops throughout the site. Outcrops are more prevalent in areas with steeper slopes, but can also be found in more level areas. Prominent rock outcrops, also known as "ledge" were surveyed by project surveyor Bunney Associates, and are shown in Full Sized Plan Sheet SM-1 Soils Map/ Existing Conditions (Drawing 5). Bunney Associates identified and mapped rock outcrops through a series of field visits during the preparation of the site survey in 2003. The rock outcrops were not identified through aerial photographs, but were field verified. This drawing also shows stone walls on the property. No unique geologic features such as prominent cliffs are present on the site. A prominent glacial erratic was observed on bedrock located west of Wetlands D/E.

The site was inspected by the project engineer in April, 2010 and rock outcrops not shown on the survey were added to the Site Plan on Full Sized Plan Sheet SM-1, Soils Map/Existing Conditions (Drawing 5), including a prominent outcrop located north of Wetland A. In addition to outcrops, the property contains numerous cobbles (3" to 12") and boulders ranging in size from 12" to greater than 3 feet. These boulders are often found at the soil surface or embedded in

soil at the base of slopes or in drainage depressions, for example in Wetland F. Distinguishing large boulders from actual rock outcrops is difficult due to the presence of both on the site and the fact that the local bedrock is generally the source of the boulders.

4.130 Topography

The project site occurs in a physiographic region known as the Hudson Highlands (see Figure 4.1-1 Local Topography). This is an area of topographic relief resulting from bedrock ridges stretching from Rockland County eastward through Putnam and northern Westchester Counties. In the last glacial age, the glacial ice came as far south as northern New Jersey and the north shore of Long Island. When the glaciers retreated, their melt waters cut valleys in the softer bedrock materials and dropped sediment loads in lakes and ponds impounded behind more resistant materials.

The site topography of the approximately 159.52 acres Highgate-Woodlands property is predominantly rolling to steep, with a number of rock outcrops. The maximum elevation, 646 feet, occurs in the northeastern corner of the site. The lowest elevation, 340 feet, occurs near the southeasterly property boundary. The property contains two prominent hill tops, one in the southwest portion and one in the northeast portion of the site. A cellular tower is located off-site, near the crest of the hill in the southwest portion of the site. Between the two hills is an area of more level topography, and this central portion of the site contains the majority of land on the site with slopes less than 15 percent. The large Wetland A and B are located in this central portion of the site. The area of Wetland A appears to be a natural depression, although natural drainage may have been altered by farmers in the 1900's. Natural drainage follows the site topography and generally runs from the hilltops to the central portion of the site and then towards the northwest and the southeast of the site.

Slopes and topography on the property is shown in Figure 4.1-3 Existing Slopes Map and in Full Sized Plan Sheet SA-1 Slope Analysis (Drawing 4). Full Sized Plan Sheet SA-1 provides a slopes analysis and distribution. The drawing illustrates 0 to 6 percent, 6 to 12 percent, 12 to 25 percent and greater than 25 percent slopes. The slope distribution for the site is presented in Table 4.1-5 below. As shown in the Figure 4.1-3 Existing Slopes Map, areas of steep (>25 percent) slopes occur mostly in the southern and southeastern portion of the site parallel to Reed Road but are also found throughout the site including, the southwest corner, northwest corner and in the east-central portion of the site, north and east of Wetland B.

Table 4.1-5
Slope Distribution

Percent Slope	Total Acreage	Percentage of Site
0 to 6 %	21.91 acres	13.7%
6 to 12%	39.59 acres	24.8%
12 to 25 %	62.91 acres	39.4%
Greater than 25%	35.11 acres	22.0%

Impacts and Mitigation

The physical features of the site have influenced the design of the project. However, no development is without impact to the geology, soils and slopes of the site. The installation of the access road, the 42 single family homes, the active adult townhomes, utilities, and stormwater retention basins, all require some topographic modifications. The stonewalls, large boulders, ledges, and rock outcroppings on the Highgate-Woodlands site would be incorporated into the landscape design wherever feasible. (See the appended Full Sized Plan Sheets LS-1 and LS-2, Landscaping (Drawings 23 and 24)).

Clearing and Grading Limits

The construction of the access roadways, parking areas, underground utility systems, multi-family building footings, foundation walls and residential homes would physically alter the existing topography because of the excavation and fill requirements of the proposed construction. However, the site road system and proposed residential lots have been designed to avoid steep slopes and areas of rock outcrop to the maximum extent possible. The active adult townhome buildings have been located in the area of the site with the most shallow slopes (<15 percent) to minimize on-site and off-site potential impacts.

Based on the CAD drawings, the total disturbance to the site would result in approximately 82.13 acres of disturbance. Lawn and landscaping and plantings for stormwater management features would total approximately 63.13 acres, following the full build-out of the project. Impervious surface for buildings and roadways would total approximately 19.00 acres. The limits of grading are shown in Figure 4.1-5 Steep Slope Disturbance Map and in Full Sized Plan Sheet SA-1 Slope Analysis (Drawing 4). As shown in this Full Sized Plan Sheet, areas of existing vegetation will be preserved to the extent possible, including in locations within the overall development "footprint".

As shown in Full Sized Plan Sheet OS-1 Overall Site Plan (Drawing 3), areas or islands of existing vegetation and trees will be retained on individual lots such as 9, 18, 19, and 38. The retention of existing vegetation will provide screening and privacy for certain homes, from the street, and reduce the overall tree clearing and change in surface cover. The limits of disturbance will be marked in the field with construction fencing and no tree cutting or grading will be permitted beyond the limits of disturbance, as shown on the Site Plans.

Cut and Fill

Project construction would result in a significant amount of earthwork. Based on the Layout and Grading Plans for the project, grading for the residential development, road system, and stormwater facilities would require approximately 340,321 cubic yards (c.y.) of cut and 307,205 c.y. of fill. The “cut” materials include the “ripped” or blasted rock material which will be reused on-site to the extent possible. The preliminary earthwork estimates result in approximately 33,116 cubic yards that will require transport and removal from the site, if an on-site use for the soil cannot be found. The topsoil removed would be stockpiled on-site for reuse.

To the extent possible, excavated soil and rock will be reused on-site to avoid off-site transport and disposal. Raising the grade in the area of the multi-family buildings slightly could utilize a portion of the estimated excess fill material. Excavated rock will be utilized as construction

material for road beds, building foundations and as backfill. Excavated bedrock and field stone will also be used in landscaping and in the construction of retaining walls on the site.

The detailed grading plans define the approximate limit of the grading operation (See Full Sized Plan Sheet EC-1 through EC-4 Erosion Control Site Plans (Drawings 19 through 22). Road profiles for the proposed Highgate road system and driveways are shown are shown on the "Roadway Profiles" Full Sized Plan Sheets PR-1 through PR-5 (Drawings 10 through 14).

Grading Impacts for Moderate Income Housing (MIH) Site

As described in Section 3.310 General Site Description, the MIH site has been completely graded and filled to complete a NYSDEC directed soil remediation project on the site. Fill soils comprise all surface soils at the property. The property has nearly level topography and all slopes are less than 10 percent.

Based upon the proposed preliminary site plan for Moderate Income Housing, approximately 80 percent of the site will be re-graded for the construction of the residential building, parking area and septic system. The grading will not result in the disturbance of steep slopes.

Potential Slope Impacts

The most substantial alteration to topography would occur in two locations.

The first would be at the site's entry where an entry roadway (Road A) would be cut into the hillside from Reed Road westward. This area is currently a steep hillside with existing slopes of greater than 25 percent. At this location, there would be approximately a 30 foot cut from existing grade (Sta. 2+50). Cut slopes would extend upward from the toe for up to a 60 foot vertical rise. The grade for the road would decrease from 10 percent to 4 percent. The material is expected to be rock and would be largely utilized on the project site. It would be used in the infiltration basins, wet basin gabions, spillway protection, inlet protection, outlet protection, and would be placed at the RMF-2 site.

The second location would be in the vicinity of Road C as it rises in elevation from its intersection with Road A. In this area, a maximum cut of approximately 25 feet would be required (Sta. 6+00).

Other portions of the site with slopes ranging from 12 to 25 percent and greater than 25 percent will require grading and disturbance, including single family homes in the west central portion of the site and in the northeastern portion of the site. An analysis of potential impacts to slopes is shown in Full Sized Plan Sheet SA-1 Slope Analysis (Drawing 4) and also in Figure 4.1-5 Steep Slopes Disturbance Map. The Slopes Disturbance Map shows those areas of the site with slopes from 12 to 25 percent and greater than 25 percent that will be disturbed and shows specific roads, driveways, buildings and stormwater management features in those areas. Proposed impacts to slopes and topography are summarized in Table 4.1-6. Below.

Table 4.1-6 Proposed Slope Impacts		
Percent Slope	**Total Acreage**	**Proposed Disturbance**
0 to 6 %	21.91 acres	12.23 acres
6 to 12%	39.59 acres	25.65 acres
12 to 25 %	62.91 acres	32.38 acres
Greater than 25	35.11 acres	11.87 acres

Construction and grading on steep slopes has the potential to result in soil erosion during storm events. Once vegetation is removed, exposed soils have the potential to be transported and eroded during storm events. In addition, grading of the site for construction will result in the alteration of drainage patterns within individual existing drainage areas. In general, post-development drainage areas will be similar in size and location to pre-development drainage areas. Modification to site drainage are fully described in Section 4.220 Surface Water. The detailed, site specific soil erosion control plan developed for the site will provide mitigation for potential impacts from grading on steep slopes and minimize the potential for erosion during construction. Soil erosion control methods are described below.

Steep Slopes Mitigation

The preferable mitigation for steep slopes disturbance is avoidance. As described above, disturbance to steep slopes for the Highgate-Woodlands project is unavoidable, given the sloping topography on the site and limited road frontage and access into the site's interior. Nevertheless, the site road system and residential lots have been designed to avoid steep slopes and rock outcrops. The active adult townhome development has been sited in the most level portion of the property, in the central portion of the site. The single-family residences have been designed and positioned to avoid steep portions of the site, including a steep rocky area east of Wetland B, and the slopes in the southwest portion of the site (Parcel D). Where avoidance is not possible, the potential impacts of slope disturbance (erosion, vegetation loss), will be minimized by detailed erosion control procedures, outlined below.

The proposed limits of disturbance are shown in Full Sized Plan Sheet SA-1 Slope Analysis (Drawing 4) and in Figure 4.1-5. These limits of disturbance will be marked and maintained in the field during construction with construction fencing. Defined limits of disturbance will result in the avoidance of unnecessary grading and loss of existing trees and vegetation.

Comparison of Road Grade Construction

The current project design proposes a 12 percent road grade for Road A for a distance of approximately 800 lineal feet (Station 34+50 through 43+00). The roadway was designed with a 12 percent gradient, specifically to reduce the grading and site disturbance impacts that would result with a road constructed with a 10 percent gradient. The applicant would seek a waiver for road grade greater than 10 percent. A detailed analysis of the gradient and grading requirements is provided in Section 3.360 Roads. A road grade comparison including a Plan View, are shown in Figure 3-6 Road A Grade Comparison. The comparison is also provided in the Full Sized Plan Sheets RG-1 Road A Comparison 10% vs. 12% (Drawing 39).

In summary, the grading analysis indicates that the grading and disturbance required for a 10 percent grade on Road A would result in an additional 2.01 acres of site disturbance, including an additional 1.21 acres of disturbance of the Wetland F buffer (100 foot area of control) and 0.8 acres outside of the buffer. The plan and profiles demonstrate that a 10% slope would result in unnecessary site disturbance and fill in the wetland buffer, without a substantial safety benefit

Soil Sampling for Pesticides Impacts and Mitigation

Ten soil samples were collected for laboratory analysis for organochloride pesticides and for specific metals related to pest control in orchards. The metals results were within ranges typical for the northeast and within published NYSDEC guidelines. At nine sampling locations, no pesticide compounds were found above the laboratory detection limits.

At location S-7, Sample S-7 contained 21 ppb of 4,4' DDT. No other pesticide compounds were detected in the sample. As shown in Table 4.1-4, the result is below the NYSDEC TAGM recommended soil cleanup objective, but above the new NYSDEC Division of Environmental Remediation unrestricted residential use soil clean-up objective value for 4,4 DDT (NYS SCO, Subpart 375-6). These clean-up objectives provide guidance for specific remediation programs administered by the NYSDEC, such as the Brownfields Program and the Hazardous Waste Sites program.

The S-7 sample location is in the southwestern portion of the development, on proposed Lot 14. Under the current plan, the sample location would be at the edge of a proposed driveway under approximately 2 to 3 feet of fill. The proposed driveway will be shifted to the sampling location, to ensure that there will be no potential for future direct physical contact with the existing soil at this location after construction.

The applicant provided the pesticide sampling results to the WCDOH and the NYSDEC. A letter was sent to the WCDOH dated January 24, 2011 and was copied to the NYSDEC. On April 12, 2011 the Westchester County DOH Office of Health Risk Control collected soil samples from locations previously sampled by TMA to confirm the sampling results. To date, the results have not been provided to the applicant. Westchester County Department of Health review of the results and concurrence with the proposed mitigation of preventing contact with soil by covering the location with soil fill and a driveway is pending. A copy of the January 24, 2011 letter is provided in Appendix 9 Pesticide Soil Sampling Investigation Results.

Potential Soils Impacts and Mitigation Measures

When surface soils are exposed during construction, they become subject to erosion. The erosion potential is greatest in areas with steep slopes. The most severely sloping areas on the site are the Chatfield-Hollis-Rock Outcrop Complex. In addition, the potential for soil erosion and sedimentation increases in relation to the amount of disturbance due to construction activities. Soil erosion on the Highgate-Woodlands site would be minimized by implementing the Erosion Control Site Plan, (See attached Full Sized Plan Sheets EC-1 through EC-4 (Drawings 19 through 22)), and by avoiding the most steeply sloping areas on the property.

Grading, site disturbance and the removal of existing vegetation will be limited to the disturbance shown on the site plan drawings. Construction fencing will be installed in

conjunction with erosion control methods to clearly mark the limits of grading. As shown in the Erosion Control Site Plan drawings (Drawings 19 through 22) the limits of disturbance are shown, as well as areas of vegetation to be retained.

Soils with high erosion potential CsD, CuD and CtC would be limited during construction and soils within the HrC area are not planned to be disturbed at all. Erosion of surface soils, which are exposed during construction, would be controlled by implementing soil erosion and sedimentation control measures. Erosion control methods described below include:

- The sequencing of construction and grading, to minimize the amount of exposed soil at any one time.
- Installing and maintaining erosion control devises such as silt fence, inlet control devices and temporary stormwater management facilities.
- Quickly stabilizing exposed areas of soil with temporary mulch as well as both temporary and permanent vegetative cover.
- Inspecting and maintaining erosion control methods on a routine and scheduled basis. The NYSDEC General Permit for Stormwater Discharges from Construction Activities (GP-0-10-001) requires routine inspections by trained and qualified inspectors. This required routine inspection reduces the potential for major problems with erosion control measures.

Specifically, the erosion and sedimentation control measure implemented are summarized below.

Erosion Control Measures

Temporary Erosion Control Measures

Areas would be cleared and developed in four phases as described above. In all cases, except (possibly) the entry roadway, five acres or less of the site would be disturbed and unstabilized. More than five acres of the site may be disturbed at any one time but only if the area disturbed in excess of five acres is stabilized. Stabilized areas include those which (a) are seeded or mulched to specification, (b) are rock face (ledge), (c) are covered with a base course of gravel/paved or (d) are landscaped.

Erosion of surface soils, which are exposed during construction, would be controlled by implementing soil erosion and sedimentation control measures. Specifically, the erosion and sedimentation control measures implemented would be as follows:

Anti-Tracking Pads

At the project entrance, at roadway intersections and driveway/lot entrances, an anti-tracking pad would be added. This pad would be constructed of at least 0.75 inch or larger gravel. The gravel pads would act to strip unconsolidated materials from the tires and tracks of construction equipment. These materials would then be trapped in the interstitial spaces in the gravel for later use on-site.

Siltation Screen/Fence

Siltation screen/fence would be secured by hardwood or metal posts spaced a maximum of ten feet on center (O.C.) on the downhill side of the trench. The sediment control fabric would be a woven polypropylene material treated to resist degradation from exposure to sunlight. The toe-in flap of fabric would be 4 to 6 inches below grade along intended fence line. This silt screen barrier would be combined with hay bales when occurring within 100 feet of wetlands.

The erosion control for cut and fill slopes would consist of hay bales placed at top of slope, if necessary, to divert and impede runoff. Silt screens with hay bales would always be placed at toe of slope to divert and impede runoff.

Removal of deposited silt and resetting of this control measure would be implemented as the construction efforts reveal the locations where such efforts could be needed. (See Section 4.1 of the SWPPP in Appendix 13).

Hay Bale Staking

Hardwood stakes would be used to hold hay bales set 6 inches into the ground. When not used, hay bales would be stored under vinyl or canvas covering. Hay bales laid in conjunction with the silt screen/fence as specified above, as per site plan or as inlet protection as described below and as modified by field investigation. Removal of deposited silt and resetting of bales would be implemented as the construction efforts reveal the locations where such efforts could be needed (see Section 4.1 of the SWPPP in Appendix 13).

Stream Filters

Two layers of chicken wire mesh would be set on posts 2 inches by 4 inches at each end for support. These posts would be set 18 inches into the ground on stream banks. Loose hay would be placed between two layers of chicken wire. The hay would be replaced bi-weekly to prevent organic loading.

Erosion Control Swales

Erosion control swales would be added on the site's roadways and across several single lot development areas where extended exposed slopes would occur. These V-shaped swales would carry water in gravel-lined surface depressions to the site's temporary sediment basins prior to installation of the subsurface storm water control system and Stormceptors®. Each erosion control swale would have perpendicular "check dams" installed every 150 feet. Such check dams would be either silt screen/filter with hay bales (see above) or loose stone gravel walls with filter fabric placed within the gravel. Both control measures would be placed perpendicular to the direction of water flow.

Inlet and Outlet Protection

Inlets to the storm water basins would be protected by placing (and staking) hay bales around each or piling one foot of 3/8 to 3/4 inch gravel at least one foot high entirely around same. Outlets to these storm basins which would also be used as construction sediment traps would be stabilized with stone riprap to guard against erosion as shown on individual basin plans. Downspout or sump pump discharges must have acceptable outfalls that are protected by

splash blocks, sod, or piping as required by site conditions (i.e., no concentrated flow directed over fill slopes). These discharges would be directed toward other, site-wide erosion control practices.

Soil Stockpiles

The principal staging and stockpile areas for project construction are to be located as shown in Full Sized Plan Sheet PP-1 Phasing Plan (Drawing 26) (attached). Each proposed individual lot would have a smaller stockpile area at a location to be determined during construction. The locations for the stockpile areas for the condominium complex are also shown in the Highgate-Woodlands at North Salem plans (attached). The stockpile areas are to be encircled with a siltation screen/fence as described above to prevent sediments from being transported into undisturbed areas. When activities temporarily cease during construction, soil stockpiles should be stabilized by seed, mulch or other appropriate measures as soon as possible, but in no case more than 14 days after construction activity has ceased.

Pre-treatment and Basins

The permanent stormwater treatment and management system would be installed during each phase of construction as described in Section IV. Construction and Maintenance Operations (SWPPP Appendix 13). The stormwater treatment system would initially operate as a secondary level or tertiary level control system for sediments contained in storm water runoff from disturbed and exposed construction areas.

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The previously discussed erosion control measures would be installed at the Highgate-Woodlands site, as listed in Table 4.1-7, with the construction entrance (anti-tracking strip) and siltation screen/fence to be installed prior to or concurrent with significant clearing on the site entry road or for building locations. The remaining measures would be installed at the appropriate time (usually at commencement of or during the site's rough grading) as noted in the sequence of disturbance (See Appendix 13 - SWPPP Section IV. Construction and Maintenance Operations), in accordance with the specifications and details listed in the New York State Guidelines for Urban Erosion and Sediment Control and the Westchester County Best Management Practices Manual.

Vegetative Ground Cover

The cut slope would be stabilized by rapidly reestablishing vegetative ground cover. This would be accomplished by applying contractors-mix seed or ryegrass at 30 pounds per acre, and certified winter or cereal rye at 100 pounds per acre. (New York State Guidelines for Urban Erosion and Sediment Control.) Additional plantings of slope stabilizing materials include: tufted vetch (Vicia cracca), red osier dogwood (*Cornus stolinefera*), and honey locust (*Gleditisia triacanthos*).

Promptly following the conclusion of construction in a particular area, permanent vegetative cover would be established over the disturbed area to minimize the potential for post-construction erosion. This is accomplished using a quick-germinating contractor's mix of annual rye grass seed, perennial grass seed and mulched with straw. Typically, cover is established in about one week to ten days following application of the materials.

In addition, the erosion control measures would be regularly inspected and maintained, particularly following major storms. Removal of silt, additional stabilization of any areas exhibiting excessive sedimentation, and repair or replacement of any measures which have been damaged, would be routinely carried out as described in the specifications and construction drawings. Any modifications to the approved plan due to field conditions shall be made only after consultation with and approval by the preparer of the erosion control plan and the appropriate Town official and agencies. Table 4.1-7 lists the erosion control measures to be utilized under various conditions and the location in which each would be used.

Table 4.1-7
Erosion Control Measures

Measure	Location	Purpose
Construction Entrance (Anti-Tracking Strip)	At intersection of proposed access road and driveways to each lot.	Reduce amount of sediment carried off site.
Sediment Barrier (Siltation Fence)	Downhill edge of all disturbed areas and around stockpile areas. At culvert inflow and outflow.	Control sediment, prevent silt from flowing into wetlands. Install velocity break.
Diversion	Uphill from areas to be disturbed.	Control run-off and sediment; install velocity break.
Dust Control (Water, gravel or calcium hydroxide)	All disturbed areas (during extended dry period).	Stabilize soil, sediment control, reduce wind erosion.
Culvert and/or Outlet Protection	All culvert inflow and outflow areas.	Stabilize soil, energy diffuser, sediment control.
Rip-Rap (Boulder slope stabilization)	On all slopes greater than 1' vertical in 2' horizontal, and at all culvert inflow and outflow.	Stabilize soil, sediment control, velocity break.
Temporary Mulching (June Netting)	All steeply sloping areas, or areas to be left unvegetated longer than 30 days.	Stabilize soil, sediment control, provide cover and for grass seed.
Temporary Vegetative Cover	All disturbed areas around building sites exposed for periods of up to 12 months.	Stabilize soil, sediment immediate cover for slopes and drainage.
Vegetative Stream Bank	Eroded stream bank and all inflow and outflow areas.	Stabilize soil, sediment control, energy diffuser, storm water filtration.
Topsoiling	All disturbed areas with slopes 2:1 or less and areas where existing soil is shallow or poor.	Facilitate vegetative growth, stabilize soil.
Permanent Vegetative Cover (Seeding)	All disturbed areas not sodded, culverts inflow and outflow areas.	Stabilize soil, sediment control, runoff control, velocity break.
Tree Protection	All desirable trees within construction area.	Ensure survival of desirable trees for erosion and sediment control.
Sodding and Hydroseeding	All disturbed areas with slopes 2:1 or greater, diversion channels.	Stabilize soil, sediment control immediate cover for slopes and drainageways.

Erosion Control for the MIH Parcel

The MIH parcel is relatively level, in a developed portion of Croton Falls. The soils on the property have been extensively excavated and graded for the site clean-up work which has been completed. Standard erosion control features would be utilized during the development on the site and the construction of parking areas, the single residential structure and the septic system. Specifically, silt-fencing and haybales would be installed at the limits of grading and construction on the property. A detailed, site specific soil erosion control plan will be required for the development and will be subject to review and approval by the Planning Board and Town Engineer as part of the site plan review process for the MIH parcel.

Potential Blasting Impacts

It is anticipated that some blasting would be required to develop the Highgate-Woodlands site. The presence of bedrock at or near the surface is of concern to a developer. Ripping or blasting rock for roads and lot improvements can considerably lengthen the site preparation period.

For these reasons, the layout of the Woodland's roadway network, although necessarily encompassing a limited amount of the site's soils with shallow depths to bedrock, has been designed to limit cuts. No impacts with regard to rock removal are expected for the construction of the roadway within any of the soils except the Chatfield-Charlton Complex Series. As stated previously, the characteristics of these two soil types indicate the probable existence of shallow bedrock within 20 to 40 inches of the land surface.

The proposed roadways are designed to minimize cutting and filling. While blasting is anticipated, it has been minimized to the extent necessary to construct the project to meet the Code requirements for road grades. The project engineer has developed a Blasting Plan which shows areas of potential blasting, based upon known rock outcrops and the extent of required excavation or cut. The Blasting Plan is provided as Figure 4.1-6 Potential Areas of Blasting.

In addition, excavation for a portion of the driveways and basements of some of the residences may require blasting depending upon the detailed soil characteristics of those particular areas. The extent of blasting cannot be accurately determined until construction activities commence and the depth to bedrock for each section of roadway, driveway, town houses and homesite is more accurately defined. Areas of anticipated blasting are those areas where bedrock is at or near the surface and include:

1. Front entrance road station 0+00 to station 20+00
2. Two locations on Roadway A
3. An area of Roadway C, east of the Road A intersection
4. The cu-de-sac at the end of Roadway B
5. Individual Lot 34

Where blasting is found to be required, its impacts are likely to be confined to noise. A discussion of construction noise is provided in Section 4.3.20 Noise Levels. The potential dust impacts are expected to be limited, and can be mitigated with the use of water to spray exposed surfaces. Although the charge explosions would be noticeable, they are likely to be intermittent over the period of initial excavation and grading, as further described, below. All necessary blasting will be conducted in conformance with North Salem's Blasting Code (Chapter 48 - Blasting and Explosives Law of the Town of North Salem).

Any required blasting will be performed as part of the excavation and site preparation process. Overall construction is anticipated to last approximately five years. A construction sequence is provided in Full Sized Plan Sheet PP-1 Phasing Plan (Drawing 26). The construction period is divided into four phases, each lasting approximately one year to eighteen months. Each of the four construction phases will affect different portions of the site, and therefore will result in noise impacts from blasting in different portions of the site at different phases of construction. The establishment of rough grades, and any required blasting will occur at the beginning of each of the construction phases.

The blasting and excavation for the entrance roadway near Reed Road will occur in Phase 1 of construction and may extend over a period of 3 to 6 months. The actual blasting will occur intermittently over that construction phase period. The blasting required for Road A, Road C and the Road B cul-de-sac are smaller in size and scale compared to the entrance construction. The blasting for these four areas will occur over a period of 3 to 6 weeks, again, intermittently.

In general, a detonated blasting charge crushes rock over an area twice the diameter of the charge hole itself. An additional zone of cracking extends radially from the charge hole over an area with a radius five or six times that of the crush zone. A charge exploded in a typical three-inch charge hole may then crack rock over an area of a radius of about three feet. Any blasting required as part of development of the proposed subdivision would therefore not have off-site impacts.

Typically, where blasting is necessary, a drill rig with compressor is utilized to drill the core or charge hole. Depending on the nature of the rock, charge holes may be drilled every six inches or as far apart as every three feet. The noise generated by a blasting operation is directly related to the number of charge holes drilled, and is primarily attributable to the noise generated by the drill rig. The blasting charges themselves would be muffled by steel mats placed over the blasting surface to capture debris loosened by the explosions.

Proposed Mitigation and Blasting Program

A Blasting Protocol has been prepared for the project and is provided in Appendix 8 of this DSEIS.

Where rock removal cannot be avoided, it would be conducted by a blasting contractor holding a valid license to handle and detonate explosives in New York State. The licensed contractor will perform blasting operations in accordance with the provisions, regulations and requirements of the Labor Law and of the codes, rules and regulations and any and all amendments thereto. The blasting contractor will possess the required insurance coverage to perform blasting work in the State of New York. In addition, they will perform such blasting operations in accordance with Chapter 48 - Blasting and Explosives Law of the Town of North Salem, and the recommended good practices employed in the industry.

Construction-related blasting activities are routinely inspected. Actual blasting specifications and regulatory compliance requirements are rigorous and would be determined following identification of blasting needs. Such standards considerations include time of day, frequency and size of blasts, dust and noise levels, and material to be used. Blasting is a highly controlled operation that is subject to strict regulation by the New York State Department of Labor and the

Federal Government's Occupational Safety and Health Administration (OSHA), as well as the monitoring by the professional staff of the Town of North Salem.

The Blasting Protocol, provided in Appendix 8, explains that a pre-blast survey will be performed on all structures within 1000 feet of any proposed blasting. The survey will be conducted by the blasting contractor or professional insurance representative. The purpose of the pre-blast survey is to document the existing condition of homes and foundations, including any existing cracks, separations or structural issues. If any damage to private homes or structures is documented, the blasting contractor will be responsible for the damage and any resultant claims.

In summary, blasting operations would be strictly controlled to maintain vibrations within the limits specified by federal, state and local regulations. Blasting charges would be kept at a level such that vibrations would fall well below any level at which damage might occur and further would keep the noise levels to as low as practical. The applicant would comply with the required blasting procedures established by the Town (Chapter 48 - Blasting and Explosives Law of the Town of North Salem).

4.200 Water Resources

4.210 Ground Water

Existing Conditions

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, which consist of complexly folded and faulted metamorphic and igneous rocks. The property is covered by relatively thin glacial till deposits with exposed bedrock in the highest portions of the property. The site geology is further described in Section 4.1 Soils, Geology and Topography.

The bedrock in the Hudson Valley has undergone several deformations associated with ancient tectonic (mountain building) activity. These deformations result in the folded and faulted nature of the geology, including joints and fractures. Bedrock fractures provide pathways for the storage and transmission of groundwater supplies. The Chazen Companies recently completed a groundwater study for the Town of North Salem (*Municipal Groundwater Resource Report*, 2008). The report provides maps of linear features, which could reflect underlying bedrock fractures. The report shows linear features along Reed Road and Interstate 684, and an east west feature which crosses the site above Wetland A.

Locally water supply is generally provided by individual wells installed into the bedrock. A community water supply well is located near the northwest corner of the site, on Juengst Drive. Local wells in the vicinity of the project site were identified for a well pumping test completed in July and August, 2008. Local private well locations and the on-site well locations are shown in Figure 4.2-1 Well Location Map.

Previous Well Investigations

In 1986, Malcolm Pirnie, Inc. conducted groundwater testing on the property, including a fracture trace analysis, field mapping, water well drilling, and aquifer mapping. Seven wells were drilled on the property in the 1980's. A new well and water supply study has been completed by Tim Miller Associates, Inc. and SSEC to evaluate groundwater supply for the property. The results of the study are provided in the *Highgate-Woodlands at North Salem Water Supply Report*, (see Appendix 7), and is summarized below.

Well Investigation and Pumping Test

Seven (7) existing wells were drilled during the 1980's on the Highgate-Woodlands property and are shown on Figure 4.2-1. An air rotary well rig was employed to drill two replacement wells (Wells 3A and 5A) for this project. Well 3 was found to be damaged by vandalism and its replacement Well 3A was drilled to a depth 884 feet and had a total yield of 60 gallons per minute (gpm) upon completion. Well 5 was located too close to a wetland when originally drilled in the 1980's. The replacement Well 5A was drilled to a depth of 1,134 feet and had a final yield of 15 to 20 gpm upon completion.

A summary of the former wells and more recently drilled wells is provided in Table 4.2-1 Well Summary. The table provides details regarding the date of installation, well depth, and static water level, where available. The drillers well logs for the on-site wells are provided in Appendix 7 - Highgate Woodlands at North Salem Water Supply Report. As indicated in Table 4.2-1,

on-site Wells 2, 3A, 4 and 5A are proposed to be used as water production wells in a future water supply system. Wells 1, 3, and 5- will be properly abandoned, per New York State Department of Environmental Conservation (NYSDEC) Water Supply Well Decommisioning Recommendations, following Site Plan approval.

Table 4.2-1
Highgate-Woodlands Well Summary

Well Number	Status	Year Installed	Well Depth	Well Yield	Fracture Depths	Static Water Level
Well 1	To be Abandoned	1984	1005 ‘	30 gpm	unknown	Not tested
Well 2	**Production Well**	**1984**	**685 ‘**	**16+ gpm**	**unknown**	37’
Well 3	Well damaged. To be Abandoned	1986	658 ‘	42 gpm	130’	25‘
Well 3A	**Production Well**	**2008**	**884 ‘**	**60 gpm**	**240’, 300’**	25’
Well 4	**Production Well**	**1986**	**883 ‘**	**60 gpm**	**660’, 733’**	22’
Well 5	To be Abandoned	1986	605 ‘	2 gpm	unknown	21’
Well 5A	**Production Well**	**2008**	**1134 ‘**	**16+ gpm**	**210’, 950’**	23’
Well 6	- Not Located	1986	760 ‘	2 gpm	350’, 655’, 760’	Not tested
Well 7	Not Located	1986	unknown	unknown	unknown	Not tested

Notes: Well information is from available well logs. Wells with Bold text are proposed as water production wells for the project. A 72 hour pump test on Wells 2, 3A, 4 and 5A provided the well yields for those wells. The wells yields for the remaining wells is based upon drillers estimate or preliminary testing done in the 1980’s.

In July and August 2008, two 72-hour pumping tests were completed on four wells (Wells 2, 3A, 4 and 5A) to determine the proposed well yields and to identify any potential off-site well impacts. The pump testing protocol and pumping rates were reviewed and agreed upon by the Town and Westchester County Department of Health (WCDOH). Well loggers were placed in thirteen off-site private wells, including the Juengst Farm community water supply well. These wells were monitored for change in water levels prior to, during and following the pumping tests.

The project requires that a total of 40 gpm be proven to meet the average daily demand (design flow). Subsequent to the pump testing, the number of residential units was reduced, thereby reducing the estimated project water demand. The testing was performed to the original water demand estimates. To meet the NYSDEC and the New York State Department of Health (NYSDOH) requirements the project wells must meet twice the average daily demand (maximum-day based on site storage] or 80 gpm. The Town requested that the test be run with an additional demand of 15 percent (above the 80 gpm, twice the daily demand) to “accommodate the fact that the test is occurring during a seasonally wet time of the year.” Although the test was delayed from March to July and August, the well test was performed at the 92 gpm rate instead of the 80 gpm rate.

The pumping test results show that Well 4 can produce 60 gpm, and that together Wells 2, 5A and 3A can provide 92 gpm, providing the necessary capacity redundancy required by NY State law for community water systems. Based upon the well monitoring data, none of the monitored wells showed any connection to the pumping test wells. The use of the Highgate-Woodlands wells is not expected to impact the long term use of off-site wells.

Future Water Supply System

A central water supply system will be constructed on site, and the details of the system are further described in Section 4.840 Utilities. The system will contain the following components:

1) Drilled Rock Wells (already completed)
2) Pump House
3) Chlorination
4) Storage Tanks
5) Pressure Tanks
6) Emergency Power
7) Distribution Piping

A Water Works Corporation would be formed to administer the water district and follow all the procedures set forth in Article 4 of the New York State Transportation Corporation Law. All the water facilities would be located on a separate parcel.

A water supply district would be formed by the Town of North Salem Board of Trustees. Initially it would be privately owned. In the event that the ownership is abandoned, bankrupt, or in some other way not able to function, the Town can take over the district for $1, then tax the residents of the district and operate the facilities as per applicable permits.

The Applicant notes that an application for a Water Supply Permit will be made to the NYSDEC, and approval for the plant design will also be required from the WCDOH and the Town of North Salem Town Engineer.

Groundwater Recharge

The recharge area for the project site generally corresponds to surface water drainage areas. As precipitation falls upon the site, a portion of that drainage will enter the soil and eventually drain to fractures in the bedrock. Since the project site occupies a topographic ridge, only a small off-site area provides surface water run-off onto the site. No off-site streams flow onto the site. Surface water drainage areas contributing to groundwater recharge are shown in Figure 4.2-2 Surface Water Drainage Map. In order to provide a conservative analysis, the recharge analysis considered the groundwater contribution from the actual property boundaries only, or 159.52 acres.

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 watersheds in Dutchess County New York, the

model can be applied to other drainage areas and properties. The Chazen Companies applied recharge models developed for Dutchess County in the *North Salem Aquifer Report, January, 2008.* The Chazen studies indicate that rates of groundwater recharge are primarily constrained by rainfall and local specific soil types in a watershed or on a property.

Table 4.2-2, Highgate-Woodlands 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. Further discussion of recharge rates and analysis is provided in Chapter 4.21 Groundwater.

Table 4.2-2
Highgate-Woodlands Property Soils 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	62.4	14.7	74.4	68,464
Group C	89.6	7.6	74.4	50,777
Group D	8.0	4.2	74.4	2,500
Total	160			**121,741**

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 4.2-3 On-site Aquifer Recharge Calculations provides a summary of available rainfall for the Highgate-Woodlands site and an estimation of recharge to the aquifer, on an annual and daily basis.

Table 4.2-3
On-site Aquifer Recharge Calculations

Acres	160
Square Feet	6,987,024
Average rainfall per year (inches) *	48
Average rainfall per year (feet)	4
Cubic feet of precipitation per year	27,948,096
Gallons of precipitation per year	209,051,758
Amount, in gallons, available for recharge per day *(Estimated per Table 4.2-2 , above)*	**121,741**
Amount, in gallons, available for recharge per minute	**84.5**

Source: Tim Miller Associates, Inc.
* 30 year average for 1951-1980 per *Mean Annual Runoff, Precipitation and Evapotranspiration in the Glaciated Northeast, 1951 - 1980, Allan D. Randall, USGS.*

Based upon the Chazen model, current groundwater recharge rates to the bedrock aquifer are estimated to be 121,741 gallons per day or 84.5 gpm. Under drought conditions (an estimated 30 percent reduction), recharge would be 85,219 gallons per day (gpd) or 59.2 gpm.

The proposed average daily water demand for domestic purposes previously was 37,500 gpd or 26.0 gpm. Due to a reduction in the number of proposed residential units and bedroom mix, the current average daily demand is 33,000 gpd or 23.0 gpm. The pump testing and groundwater analysis completed for this DSEIS assumes the more conservative average daily demand of 37,500 gpd. Seasonal water demand for landscaping may add an additional 20,000 gallons per day for a total of up to 57,500 gpd or 40 gpm. Therefore, based upon the Chazen recharge model, adequate groundwater is available from precipitation on the project site to supply project water demands during normal and during drought conditions.

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.

Existing Water Quality

Following the pumping test, described below, groundwater samples were collected for each of the four production wells. The samples were hand delivered to Orange County Laboratories, a NY State certified laboratory. The samples were analyzed for parameters specified by the WCDOH, which included NYSDOH of Health Subpart 5.1 parameters for public water supplies. The analytical results of sampling are provided in Appendix 7 - Water Supply Report. Summary tables are provided in the report.

The quality of the water sampled on the property meets the New York State Drinking Water Standards, with the exception of coliform bacteria found in Well 2. 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.

In addition, Microscopic Particulate Analysis (MPA) was performed on samples from three wells that are located within 150 feet of a wetland, Wells 3A, 4 and 5A. These samples contained no giardia or cryptosporidium organisms, however, the three samples contained diatom and algae particles. These particles may be an indication of connection to surface water or may be contamination of the sample during sampling. Biological particles could be filtered as part of a community water supply system. The need for filtration would be determined by the WCDOH, as part of the water treatment plant permitting process. At the writing of this DEIS, a water treatment plant permit application has not yet been submitted to the WCDOH, and the Department has not yet reviewed the analytical results. In general, microfiltration is provided as part of the water treatment process, in addition to chlorination, at the on-site water treatment facility.

Off-site Water Quality

Based upon communication with two Town consultants and the Town Supervisor, local groundwater has exhibited elevated levels of radiological compounds gross alpha activity and uranium[1]. Annual Drinking Water Quality Reports for the Sunset Ridge Water District and the Croton Falls Water District indicate that water from both districts contained levels of radium,

[1] Communication with Leggette Brashears & Graham, and VRI, Water District Operator. Annual Drinking Water Quality Reports for 2007 through 2009.

gross alpha and uranium above State water quality standards. The 2009 report from the Sunset Ridge District indicates that radiological compounds are within drinking water standards. In the summer of 2010, two new wells were drilled and put on-line for the Croton Falls Water District, replacing those wells impacted by radiological compounds. According to Mr. Warren Lucas, Town Supervisor, the new wells meet all State water quality requirements[2].Based upon correspondence with the Town Supervisor and VRI, the technical operator of the Sunset Ridge Water District, the Croton Falls wells are located in a sand and gravel aquifer and the four Sunset Ridge wells are located in bedrock. Sand and gravel deposits are the accumulation of weathered local and regional bedrock. Depending upon the source bedrock, radiological compounds can accumulate in such sediments.

The radiologic compounds found in the current samples from the Highgate-Woodlands property were within NYS drinking water standards. The water supply wells for a small community water system, the Juengstville Farm Association system, are located adjacent to the Highgate Woodlands property, near the northwest corner. These wells are installed in a similar geologic formation as the Highgate Woodlands wells. According to published water quality results for the Juengstville Farm Association, the drinking water meets all state standards for water quality, including radiological compounds[3].

The Highgate Woodlands wells are installed into a different geologic formation and material than the off-site community wells. The Highgate-Woodlands water supply wells are installed into the bedrock underlying the project site, while the Croton Falls district wells are sand and gravel wells and the Sunset Ridge district wells are installed in a different geologic formation than the Highgate-Woodlands wells. This difference in geology, is the most likely explanation regarding the elevated radiological levels in samples from the Sunset Ridge wells and the more typical results in samples from the Highgate Woodlands wells.

Potential Project Impacts and Mitigation

A well pumping test was conducted in July and August 2008 and is described in the Highgate-Woodlands at North Salem Water Supply Report (Appendix 7). The testing demonstrates that four designated production wells on the property can provide the necessary capacity redundancy required by NY State law for community water systems. The pumping test results show that Well 4 can produce 60 gpm, and that together Wells 2, 5A and 3A can provide 92 gpm. This rate includes a provision for potential drought periods. The conservative recharge analysis indicates that a greater volume of groundwater is available through groundwater recharge on the site, than the project water demand.

Based upon the well monitoring data, none of the off-site private monitored wells showed any connection to the pumping test wells. A slight water level fluctuation was observed in the Brook's well, located approximately 1,750 feet southwest of test Well 4. Upon close examination of the water level data, it does not appear that the fluctuation observed in the Brook's well was the result of the Well 4 pump test. A detailed discussion of the pumping test data and results, including the Brook's well, is provided in Appendix 7 - Highgate Woodlands Water Supply Report.

The use of the Highgate-Woodlands wells is not expected to impact the long term use of off-site wells. The pump testing and mounding analysis completed to date support the conclusion that

[2] Telephone communication with Town Supervisor, Mr. Warren Lucas, January 25, 2011.
[3] New York Times article: http://projects.nytimes.com/toxic-waters/contaminants/ny/westchester

the project will not impact off-site wells. Nevertheless, post-construction operation of the subsurface wastewater discharge area may result in unforeseen off-site impacts (see discussion of potential wastewater impacts below). Therefore, the applicant has agreed to provide for the monitoring of the Vasilevsky well, which is the only private well downgradient/ cross gradient from the on-site subsurface wastewater disposal area. If the Vasilevsky well is impacted by the project, the applicant will either install a new deeper well, or connect the home to the Highgate-Woodlands water supply, subject to the approval of the homeowner. To connect the Vasilevsky home to the project water supply, a line would be run in the right-of-way of the access road, from the area of the active adult recreation building, down the road and across to the Vasilevsky lot near the project entrance on Reed Road. The total distance of piping would be approximately 2,500 feet. Approximately 70 feet of vegetation lie between the access road and the Vasilevsky lot.

The details of this proposed mitigation will be developed in consultation with the Town, as part of the project Findings Statement.

Water Supply for the MIH Property

The source of water for the Moderate Income Housing (MIH) property will be the Croton Falls Hamlet Water supply, a Town Water District. The hamlet of Croton Falls is served by the Croton Falls Water District. The water connection will require approvals from the North Salem Town Board and the Westchester County Department of Health. According to a Town representative, the district has allocated sufficient capacity for the MIH units. The Town indicated that the Town is in the process of drilling new wells for the District due to water quality issues related to radiological parameters, as well as lead and copper, in existing water supplies.

4.220 Surface Water

Existing Conditions

The 159.52 acre property is located within the Croton River drainage basin. Surface water features and wetlands on and adjacent to the site are shown in Figure 4.2-2 Surface Water Drainage Map. On-site drainage features and the direction of flow off-site is shown in Figure 4.2-4 Wetlands Map.

Three watercourses exist on the project site. A perennial stream (Watercourse # 1) originates in Wetland A and flows southeast through Wetland B before leaving the property. From there, the stream flows through a culvert under a dirt road extension of Reed Road before emptying to an unnamed tributary to the Croton River between Reed Road and I-684. The stream's substrate is composed of sand, gravel, and medium sized stone. The second stream is intermittent (Watercourse # 2) and originates in Wetland C and flows south where it connects to Wetland A after approximately 200 feet. The substrate in this stream consists of sand and leaf litter. The third stream is also intermittent (Watercourse # 3) and it originates in Wetland F and flows off of the project site to the northwest where it connects to an unnamed tributary to the Croton River via a culvert underneath Route 202. The intermittent tributary's substrate composition is primarily sand and leaf litter, with some small rocks and gravel.

As described in Section 4.4 Terrestrial and Aquatic Ecology, six wetland areas were identified on the project site. Wetland A is the largest of on-site wetlands and consists of 3.43 acres. Wetlands B, C, D, E and F total 3.34 acres. Wetlands B, C, D, E and F are a combination of

palustrine forested systems and water courses. These systems are dominated by red maple. All wetlands on the site have been delineated and surveyed and are shown in Figure 4.2-4 Wetlands Map, and in more detail in Full Size Plan Sheet Soils Map / Existing Conditions SM-1 (Drawing 5).

The drainage patterns on the site reflect its division by drainage divides. A large portion of North Salem, including the entire Highgate-Woodlands site, lies within the Croton River Drainage Basin and discharges to the Muscoot reservoir. Within the Highgate-Woodlands property, stormwater exits the property at a total of 12 discharge or "design" points. These design points were considered in the preparation of the SWPPP which is attached as Appendix 13. Current on-site drainage is shown in Figure 4.2-5 Pre-Development Drainage. Refer to the stormwater pollution prevention plan (SWPPP) for a detailed discussion of existing and proposed design points. Existing stormwater flows to each design point are shown in Table 4.2-4.

Table 4.2-4
Summary of Pre-development Peak Discharge Rates

Storm Event	1 yr	2 yr	10 yr	25 yr	100 yr
Design Point	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
DP-1A	1.06	2.81	12.17	22.76	39.12
DP-1B	0.14	0.36	1.42	2.59	4.33
DP-2	0.70	1.81	8.64	16.25	27.93
DP-3	0.76	1.82	7.40	13.32	22.45
DP-4	0.54	1.38	6.70	12.78	21.99
DP-5	0.15	0.38	1.90	3.55	6.11
DP-6	0.50	1.30	6.12	11.53	19.84
DP-7	9.74	17.31	46.31	74.70	115.88
DP-8	5.33	8.46	19.57	29.96	44.60
DP-9	1.70	2.66	6.00	9.09	13.41
DP-10	1.42	2.43	6.10	9.62	14.64
DP-11	32.45	50.52	113.91	173.04	255.62

The section of the East Branch of the Croton River proximate to the site is classified by NYSDEC as Class A. The current NYSDEC classification of the watercourse along Reed Road is C. No classification of the watercourse in wetland B has been assigned by the State per 6 NYCRR 859.1 Subchapter B: Classes and Standards of Quality and Purity Assigned to Fresh Surface and Tidal Salt Waters.

The closest NYSDEC regulated wetland to the project site is wetland F-16, associated with the West Branch of the Croton River, located approximately 5,300 feet downstream of the point where site discharge drains to the existing tributary along Reed Road. This wetland and its location relative to the Highgate-Woodlands site is shown in Figure 4.2-3 NYSDEC Freshwater Wetlands Map. Wetland F-16 is classified as a Class 1 wetland by the DEC, in consideration of its location as part of the floodplain for the West Branch of the Croton River (aka the Muscoot River). The Muscoot River ultimately becomes identified as the Muscoot Reservoir, and part of the New York City drinking water supply system. The Reed Road tributary is not classified as a State protected watercourse by the DEC. This tributary enters Wetland F-16 and connects to the Muscoot River at the southern (downstream) mapped end of the wetland.

No impacts to Wetland F-16 or the Muscoot River are anticipated. The applicant is proposing a stormwater pollution prevention plan that will meet all State requirements and standards, so that water quality is treated for and mitigated prior to leaving the site. Discharge from the site sewage treatment plant will also be treated by subsurface discharge, and enter the base flow as treated groundwater. The discharge point from the site is over one mile from the confluence with F-16/Muscoot River, and there are several segments of this connecting tributary that have impoundments and fringing wetlands, which will provide additional polishing of the flows as they are conveyed to Wetland F-16. These intervening wetlands and the additional aeration that occurs during topographic drops over the one mile distance serve to provide important water quality benefits between the Highgate-Woodlands site and Wetland F-16.

A newly designated State wetland (F-74) is located approximately 2,000 feet east of the site on Hardscabble Road, across Interstate 684.

Springs or seasonal seeps are also located on the Highgate-Woodlands Project site, primarily in the northwest corner of the site. In these areas, shallow groundwater seeps to the surface during periods of seasonal high water, mostly during the spring and fall months. These springs/seeps are not used as a water supply source either on-site or locally off-site. The springs/seeps may have been used as a water source locally when the area was farmed in the 19th and early 20th centuries. The approximate location of the spring/seep features are shown in Figure 4.2-4 Wetlands Map.

A community water supply well, the Crosby-Juengst Farm well is located near the northwest corner property boundary. This well serves a number of homes along Juengst Road, but its construction and depth are not known. The well was monitored during the Highgate-Woodlands pumping test, and no influence from the testing was recorded in the well.

Surface Water Sampling Program

Surface water samples were collected from two locations for analysis in September 1984 and July 1995. The results of the surface water quality analyses were presented in the Highgate DEIS Table 4-11. The applicant has agreed with the Town to collect additional surface water samples. A protocol for surface water sampling has been agreed upon by the Town and their technical consultants and is provided in Appendix 15 Surface Water Sampling Results. The purpose of surface water sampling program is to provide a baseline of pre-development water quality, that can provide a basis for comparison of future surface water quality conditions.

Based upon the sampling protocol, samples were to be collected three times during the growing season. Two sets of samples were collected in spring and fall, due to dry weather and lack of precipitation in the summer of 2010. The site was visited in July and August 2010, and insufficient water was found at all three of the designated sampling locations. The pond in the east central portion of the site was completely dry. Sampling locations are shown in Figure 4.2-4 Wetlands Map.

Table 4.2-5
Highgate-Woodlands Surface Water Sampling Results

Sampling Parameter	June 10, 2010			November 18, 2010		
	SW-1	SW-2	SW-3	SW-1	SW-3	SW-3
Field Measurements						
Temperature	NS	16.4 C	15.5 C	NS	6.7 C	8.1 C
pH	NS	6.29	6.45	NS	6.0	6.35
Turbidity	NS	10	NM	NS	10	10
Specific Conductance	NS	0.054 uohms	0.071 uohms	NS	0.053 uohms	0.54 uohms
Dissolved Oxygen	NS	7.34 mg/L	10.47 mg/L	NS	4.0 mg/L	9.34 mg/l
Laboratory Analysis						
Nitrate as N	NA	0.01	0.18	NS	0.01	0.01
Total Phosphorus	NA	0.14	0.36	NS	0.10	0.1
Alkalinity	NA	24	22	NS	11	13
Total Dissolved Solids (TDS)	NA	68	820	NS	74	98
Total Suspended Solids (TSS)	NA	11	170	NS	3.0	5.4
Ammonia	NA	1.0	1.0	NS	1.0	1.0
Dissolved Oxygen	NA	7.2	6.3	NS	5.1	8.6
Biological Oxygen Demand (BOD)	NA	4.0	4.0	NS	4.0	4.0
Total Coliform Count	NA	10 /100mL	2400 /100mL	NS	present/100mL	present /100mL

Source: Tim Miller Associates, Inc., and Envirotest Laboratories, Inc. 2010
NS - No Sample, insufficient water.
NM - No measurement. Problem with instrument.

In both the spring and summer sampling events, insufficient water was present at designated sampling location SW-1 to collect a sample. Location SW-1 is located in the northwest corner of the property, near Juengst Road. Samples were collected at SW-2, at the outlet of the pond and at SW-3, located on the perennial stream, close to the eastern property border above Reed Road.

As indicated in the table, a number of field measurements were collected with a Horiba U-10 Water Quality Meter. Samples for laboratory analyses were collected appropriate, laboratory supplied containers and were properly preserved, prior to delivery to the laboratory. Analyses was completed by EnviroTest Laboratories, a NELAP accredited and NYSDOH certified lab.

The field and analytical results from the surface water sampling were within a range of generally acceptable water quality. Water quality can be affected by a variety of chemical and physical factors, some natural and others man-made. The NYSDEC provides surface water and groundwater quality standards for water that is discharged to different NYS classified streams (6 NYCRR 703 -Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations). These standards are typically used for SPDES permit administration, but can be used for water quality comparison and guidance. Per the Woodlands at North Salem Surface Water Sampling Protocol, the results above are compared to the Class D water quality Standards. The NYSDEC standards do not provide limitations for Nitrate, Total Phosphorus, or total suspended solids. Ranges of water quality in natural streams are published in environmental technical studies and references such as A Guide to the Study of Environmental

Pollution, Andrews, et al. 1072, Prentice hall, Inc. Englewood Cliffs, NJ. Table 4.2-6 provides a summary of water quality standards for comparison to the Highgate-Woodlands results.

Table 4.2-6
Surface Water Quality Standards

Standard	NYSDEC Class D Surface Water Quality Standards *	Technical Reference Standards **
pH	Not less than 6.0 or more than 8.5	NS
Nitrate as N	10 (Class AA -A streams)	NS
Total Phosphorus	None in amounts that will result in growths of algae, weeds and slimes that will impair the waters for their best use. (Class AA - D streams)	0.015
Alkalinity	NS	50 - 200
Total Dissolved Solids (TDS)	Shall be kept as low as practicable to maintain best usage of waters. In no case exceeding 500 (Class AA - C streams)	NS
Total Suspended Solids (TSS)	None from sewage or wastes that will cause deposition or impair waters for their best use. (Class AA-D streams)	NS
Ammonia	NS	NS
Dissolved Oxygen	Not less than 3.0 (Class D streams)	NS
Biological Oxygen Demand (BOD)	NS	1 to 5 ppm from very clean to poor
Total Coliform Count	The monthly geometric mean from a minimum of 5 examinations shall not exceed 200	NS

NS - No standard provided.
* 6 NYCRR 703 -Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations
*** A Guide to the Study of Environmental Pollution, Andrews, et al. 1972, Prentice Hall, Inc. Englewood Cliffs, NJ*

As indicated above, the surface water quality results generally fall within surface water quality standards and ranges typical for natural streams. Nitrate levels were relatively low. Phosphorus levels were higher than recommended in the technical reference. The result of 820 mg/L of Total Dissolved Solids at SW-3 on June 10, 2010 is high and can not be explained based upon conditions observed during the sampling event. The results for dissolved oxygen (DO) were moderate (5.1 ppm) to good (8.6 ppm).

Impacts and Mitigation

Groundwater Impacts

The applicant proposes to construct a sewage treatment plant (STP) to treat the wastewater generated by the proposed development. The STP would be designed to treat a maximum flow

of 33,000 gallons per day (gpd) of effluent.[4] This design flow allows sufficient capacity for all of 42 single family homes and the 76 active adult townhouse condominium units, as well as any peaking factor. The average flow is described below and the design engineer's report is included in Appendix 5 in its entirety.

Fully treated effluent from the WWTP would be discharged to a subsurface disposal system located on the eastern portion of the site. The system will be subject to WCDOH and New York City Department of Environmental Protection (NYCDEP) review and approval. Projected effluent concentrations, as well as, untreated effluent concentrations, are shown in Table 4.2-7.

Table 4.2-7
Wastewater Discharge Limitations
Prior to Subsurface Discharge (mg/l)

Parameter	Treated Effluent Limit Concentration	Untreated Effluent Concentration
5 Day Biological Oxygen Demand ($BOD_{5)}$	5.0	200
Ammonia (NH)	2.0	25
Phosphorus (P)	1.0	10
Total Nitrogen (N)	2.2	36 - 45 *
pH	6.75 – 7.5	6 – 9
Fecal Coliform	200/100 ml	2400/100 ml
Chlorine Residual	0.05	-
Settleable Solids	0.10	10
Dissolved Oxygen	7.0	0

Source: Keane Coppleman Engineers, 2008 - 2011
Note: The table does not reflect the quality of the effluent following additional treatment achieved during its movement through the soil.
* - Septic Systems Handbook, O.B. Kaplan, 1988

The WWTP has been designed to meet all applicable effluent standards. The treatment process would consist of primary settling; equalization; biological contact (rotating disc); a secondary clarifier with alum treatment; and aeration. Following treatment, the effluent would be discharged subsurface.

As noted, fully treated effluent from the WWTP will be discharged to subsurface infiltration chambers (see Site Plan, one inch to fifty feet scale Full Sized Plan Sheets CS-1 to CS-4 (Drawings 6 to 9). Treated wastewater will be discharged to the surrounding unconsolidated surface materials in Subsurface Wastewater Disposal Systems (SSDS), located in the south central portion of the site. From there, the effluent will combine with shallow subsurface groundwater flows and migrate easterly toward topographic low points near the Route I-684 corridor. The extended movement of the treated effluent through the soil prior to reaching this corridor is expected to further treat the effluent. As such, the effluent is not expected to impact off-site wetlands or watercourses in the Route I-684 corridor.

The applicant has completed an analysis of the potential impacts of nitrate on both on-site wells and nearby off-site wells. The analysis was completed by Leggette, Brashears & Graham, Inc.

[4] This design flow is based on "Design Standards for Wastewater Treatment Works" (1988), published by the New York State Department of Environmental Conservation.

and is provided in the supplemental report dated January 19, 2011 (see Appendix 14). Based upon treatment system information, the average total nitrogen concentration for treated effluent entering the ground in the winter months (worst case) will be 2.2 mg/L. This concentration is less than the NYSDOH drinking water standard of 10 mg/L. The dilution analysis indicates that the nitrate-nitrogen concentration leaving the property would be approximately 1.3 mg/L.

Although the potential impact of the subsurface disposal system is quite low, the applicant has agreed to provide mitigation for the Vasilevskey property, which is the only private well downgradient/ cross gradient from the on-site subsurface wastewater disposal area. As described above, the applicant has agreed to provide for the monitoring of the Vasilevskey well. If the Vasilevskey well is impacted by the project, the applicant will either install a new deeper well, or connect the home to the Highgate-Woodlands water supply, subject to the approval of the homeowner. The details of this proposed mitigation will be developed in consultation with the Town.

Septic Mounding Analysis

A septic mounding analysis was completed by Leggette, Brashears & Graham, Inc. to assess the proposed subsurface wastewater disposal areas (SSDS)(two primary and one secondary). As described above, the design flow to the SSDS areas is conservatively estimated at 33,000 gpd. The mounding analysis consisted of completed soil borings, installing shallow groundwater monitoring wells, and conducting a computer modeling of potential wastewater flows using the "Modular Three-Dimensional Finite-Difference Ground water Flow Model" (MODFLOW). The results indicate that groundwater will not cross a property boundary, enter a surface water body or breakout at the identified locations before 21-days of travel time is reached. The Septic Mounding Analysis report is provided in Appendix 14.

As requested by the Town, shallow groundwater levels were monitored during periods of seasonal high levels in the Spring of 2009. The mounding analysis was reevaluated using the additional groundwater data. This data is described and included in the updated Septic Mounding Analysis report. (Appendix 14)

As described above, the applicant has completed a limited analysis of the potential impacts of nitrate on the future on-site water supply wells and nearby off-site private wells. The nitrate concentration is estimated to be 2.2 mg/L entering the subsurface wastewater disposal system, following treatment. This concentration is below the NYSDEC drinking water standard of 10 mg/L. Transport of groundwater through the unconsolidated glacial till material will further reduce concentrations of nitrate.

Potential Impacts to Surface Water

Adequacy of Water Supply for Fire Protection

The water distribution system at Highgate Woodlands is not designed for fire fighting purposes. Following consultation with the Croton Falls Fire District, the Fire District requested either lined ponds or underground storage tanks be installed to provide for fire fighting capacity. The applicant has agreed to provide these facilities, subject to review and consultation with the Fire District regarding the location and total capacity of this supplemental water supply. Such storage features can be filled and maintained with the project water supply system.

The following fire protection measures are included on the site plan:

- Two (2) 21,000 gallon underground fire protection storage tanks.
  - One (1) Near the intersection of Road A and Road D to the west of the Multi-family Recreation Center
  - One (1) At the intersection of Road C and the Emergency Access Drive from Road D.

- Dry Hydrants from lined stormwater ponds
  - Basin ED-K5 – Located at the end of Road D, providing 7,600 gallons of storage in the permanent pool.
  - Basin ED-K6 – Located on Lot 35, providing 7,000 gallons of storage in the permanent pool.

There are no additional impacts on the property that will result from the construction and installation of the underground fire protection storage tanks or lined stormwater ponds. The fire protection tanks are proposed to be constructed in areas that are proposed to be disturbed during the construction of the roadways and the ponds will be constructed as part of the stormwater management system. As a result, no additional mitigation measures are proposed.

General maintenance of the fire protection systems will be the responsibility of the Homeowner's Association. Maintenance and upkeep of the system will be performed on an annual basis as required by the Croton Falls Fire District.

Impact to On-site and Off-site Springs/Seeps

An area of seasonal springs and seeps is located in the northwest corner of the property near Juengst Road. In the springtime or following periods of heavy precipitation, shallow groundwater breaks out into seeps at the ground surface. Several shallow intermittent streams collect this water where it flows off-site towards the northwest. As described above, the springs/ seeps are not used for drinking water.

Grading for the stormwater management facility on Parcel E will likely reduce the amount and frequency of surface springs/seeps in this portion of the property. Grading during construction has the potential to impact water quality (turbidity, TSS) in the springs/seeps. Adherence to the SWPPP and soil erosion control plan for construction will minimize the potential for water quality impacts. The SWPPP and soil erosion control procedures during construction are further described below.

Impacts to Waterways, Waterbodies Wetlands and Controlled Areas

Impacts to surface water resources may occur as a result of changes to water quality and/or to water quantity during storms resulting in soil erosion, turbidity and the transport of soil in stormwater. The potential impacts may affect the on-site pond and the perennial stream that flows off-site at the eastern edge of the site near Reed Road, as well as the on-site wetlands and associated adjacent upland 100-foot wetland control areas. These potential impacts may occur during construction and potentially post-construction. The discussion below provides a description of facilities and methods to reduce these potential impacts.

Impacts of MIH Property Development to Surface Water Quality

The MIH property in Croton Falls has no streams, waterbodies or wetlands on the property. The property is within approximately 300 feet of the West Branch of the Croton River. The MetroNorth railroad tracks lie between the site and the river.

Impacts to surface water quality may occur as a result of soil erosion during construction on the MIH property. Mitigation measures including soil erosion control will minimize potential water quality impacts from the site.

Construction Impacts

The project has the potential to impact on-site surface streams, the pond and off-site water bodies during grading and removal of vegetation for construction. Exposed soil has the potential to be eroded and carried in run-off during storms. The removal of vegetation has the potential to increase stormwater velocity and the volume running off-site. The Stormwater Pollution Prevention Plan (SWPPP) prepared for the project will reduce the potential impacts of soil erosion during construction. All soil erosion and sedimentation control practices will be installed in accordance with the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities (Permit No. GP-0-10-001) best management practices and Town of North Salem code. Specific procedures and methods of erosion control in the SWPPP are further described below.

Post-Construction Impacts

Following construction and full project build out, the project has the potential to impact surface water quality, both on-site and off-site. Water quality in stormwater run-off has the potential to be impacted by impervious surface introduced to the project site, such as rooftops, roads and driveways, new areas of lawn and landscaping. The introduction of developed land may result in increased phosphorus, nitrates, TSS, and oil and grease from vehicles and pesticides from landscape maintenance. These potential impacts are addressed by the SWPPP.

As required by NYSDEC and Town of North Salem stormwater regulations, the applicant is required to manage and treat stormwater to minimize the potential impacts to water quality outlined above. The Stormwater Pollution Protection Plan prepared for the project will reduce, but not totally eliminate water quality impacts following construction. The treatment effectiveness of proposed stormwater facilities for water quality parameters including nitrate, phosphorus and TSS is described in the Water Resources section (4.200).

Potential impacts from pesticides are most effectively reduced by eliminating the use of pesticides and fertilizers to the absolute minimum necessary to maintain healthy lawn and landscaping material. The homeowners association will be responsible for maintenance of all landscaping in the adult townhouse parcel and all common areas (roadway right-of-way, stormwater management facilities, and the single family residence recreational facility. Individual homeowners will be encouraged by the Homeowners Association to minimize the use of pesticides on individual lots.

Streambank Protection

The project will involve no direct impact to streams. As described above, the project site contains three streams: 1) an intermittent stream through Wetland F, 2) an intermittent stream seasonally flowing between Wetland C and Wetland A, and 3) a perennial stream flowing from the pond and Wetland A easterly through Wetland B to eastern edge of the site. None of the on-site streams is classified by NYSDEC on published maps or per 6 NYCRR 859.1 Subchapter B: Classes and Standards of Quality and Purity Assigned to Fresh Surface and Tidal Salt Waters.

One wetland and intermittent stream crossing is proposed for the project, where Road A and Road C intersect and cross Wetland F. The roadway crossing will consist of a open bottom arch culvert approximately 40 feet wide and 70 feet long. The culvert will be installed outside of the edges of Wetland F and the intermittent stream at that location. The arch culvert will be installed with equipment such as cranes located in the upland 100- foot wetland control area, but outside of Wetland F and the intermittent stream. Concrete footings for the arch culvert will be installed from approximately 6 feet to 20 feet outside of Wetland F. A detail of the culvert and footings is provided in Full Sized Plan Sheet DS-5 Retaining Wall & Misc. Details (Drawing 34). The steambanks of the intermittent stream within Wetland F will not be disturbed. Erosion control measures, including a double row of silt fence will be installed at the edges of Wetland F to minimize any potential construction impacts. Given that no disturbance is proposed for Wetland F, no permitting is required from the ACOE. A wetlands permit will be required from the Town of North Salem for work in the upland 100 foot wetland control area. The details of the culvert installation and erosion control provisions will be provided in the Town of North Salem Wetlands Permit application.

Proposed Stormwater Management

The proposed action includes the construction of 42 single-family residences, 76 active adult townhouse units in nineteen (19) townhouse buildings, ancillary structures such as recreational facilities, roadways, driveways, parking lots/spaces, decks, and pools on the site. The construction of these impervious surfaces could result in greater volumes of stormwater being discharged from the site, as well as increases in the peak rates of discharge and pollutant loads in the stormwater. The NYCDEP, Town of North Salem and the NYSDEC have promulgated rules and regulations that address stormwater. These regulations require preparation of Stormwater Pollution Prevention Plans (SWPPPs) to control post construction changes in peak discharge rates and pollutant loading.

The SWPPP provided herein is intended to provide water quality treatment to minimize the project's impacts to surface water quality for on-site wetlands and waterways, as well as off-site waterways, and the New York City Watershed, in general. The stormwater management program, will maintain stormwater flow rates to at or below existing stormwater rates, thereby minimizing impacts to off-site waterways and springs.

HydroCAD Modeling of Proposed Action

The proposed subdivision of approximately 159.52 acres will increase the property's impervious coverage from approximately four acres (as rock outcrops) to approximately 19.00 acres and landscaped areas and stormwater basin coverage will be increased to approximately 63.13 acres. The total amount cleared is therefore, 82.13 acres as shown on Full Sized Plan Sheet

PP-1 Phasing Plan (Drawing 26). Clearing for individual residential pools is expected to be minimal on-site as two recreational facilities are proposed, each with its own pools. The increase in impervious and landscape coverage resulting from the proposed development will increase the peak discharge rate, peak volume, and pollutant load of runoff from the site.

The quantification of increase and how it is mitigated is the basis of this section. The results of the site modeling indicate that the proposed development of the Highgate-Woodlands as a whole will have peak stormwater runoff rates that are at or below those of existing conditions for all storms at the 1, 2, 10, 25 and 100-year frequency. This will not adversely impact receiving waters or downstream properties.

Surface Hydrology/Drainage Analysis

The drainage analysis was performed to fulfill both the SEQR Environmental Review and SWPPP requirements. Keane Coppelman Gregory Engineers, P.C. prepared the drainage report to analyze the impacts of stormwater runoff at the 12 design points on the property. The impacts of overall development on existing drainage patterns were evaluated for both the single family and the multi-family developments.

Areas where detention basins could be provided and individual lots where infiltration could be provided were designed and modeled with HydroCAD.

Information and data to run the model and prepare this report was obtained from the following sources:

1. Topographical data from USGS map entitled Croton Falls, N.Y.
2. Site Plan Sheets as prepared by Keane Coppelman Gregory Engineers, P.C., Mount Kisco, N.Y. as derived from CAD calculations of acreage, distance and topography.
3. The site soil information from Westchester County Soil Conservation Service (SCS).
4. Site inspections and test pit observations as carried out by personnel of Keane Coppelman Gregory Engineers, P.C. and B. Laing Associates, Inc.

The Soil Conservation Service's TR-55 method as incorporated in the HydroCAD software was used to determine the pre-development and post-development runoff rates at each of the 12 design points identified on the property.

Runoff calculations using HydroCAD modeling for pre-development and post-development have been completed and are included herein as prepared by Keane Coppelman Gregory Engineers, P.C. A detailed discussion of the storm systems and modeling results is presented in the SWPPP (Appendix 13). The drainage calculations and details of the stormwater structures are included in Appendix D of the SWPPP.

Construction details, soil erosion and sediment controls, and other temporary and permanent measures to control stormwater are also provided in the SWPPP in Appendix 13 of this DSEIS, as well as the accompanying construction plans. Proposed stormwater drainage is shown in Figure 4.2-6 Post-Development Drainage.

To mitigate potential impacts on surface waters associated with post construction changes in stormwater, the Highgate-Woodlands SWPPP specifies a network of stormwater conveyance,

collection, and treatment facilities. The post-development rates of runoff for each of the sub-basins is provided below in Table 4.2-8.

Table 4.2-8
Summary of Post-development Peak Discharge Rates

Storm Event	1 yr	2 yr	10 yr	25 yr	100 yr
Design Point	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
DP-1A	0.59	1.28	8.17	17.32	37.21
DP-1B	0.13	0.33	1.34	2.44	4.08
DP-2	0.56	1.38	6.22	10.63	25.82
DP-3	0.45	1.02	3.51	9.00	20.72
DP-4	0.47	1.20	5.85	11.15	19.19
DP-5	0.15	0.37	1.42	2.50	4.12
DP-6	0.50	1.23	5.24	9.64	19.81
DP-7	4.27	7.72	19.91	41.86	110.71
DP-8	5.13	8.00	18.55	29.05	42.70
DP-9	1.70	2.61	5.74	8.61	12.61
DP-10	1.42	2.43	6.10	9.62	14.64
DP-11	17.56	27.86	79.54	129.72	202.08

The goal of stormwater runoff peak discharge rate management for the Highgate-Woodlands Residential Project is to reduce post-construction peak rates of stormwater runoff to levels at, or less than, the existing peak rates for the overall site. Run-off rates will be reduced by practices including: surface sand filters, micropool extended detention ponds, infiltration basins and infiltration trenches. These practices will be located, and constructed, as detailed in the SWPPP. Figure 4.2-6 shows the post-development site drainage areas. Appendix B of the SWPPP, the developed condition drainage area map, shows all basin locations at a larger scale. Pocket wetlands, sand filters and other practices will provide both water quantity and quality treatment.

Infiltration will provide some detention and stormwater treatment for individual lots, as well as in the area of the townhouse units. A variety of green infrastructure practices, including rain gardens will be used to treat runoff from all individual lots that do not have Underground Infiltration Practices. Vegetated swales are used extensivley to convey stormwater flows to practices, adding additional treatment and water quality volume.

A comparison of the pre- and post development peak discharge rates for each design point is provided below in Table 4.2-9.

Table 4.2-9 Comparison of Pre- and Post-development Peak Discharge Rates					
Storm Event	**1 yr**	**2 yr**	**10 yr**	**25 yr**	**100 yr**
Design Point	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
DP-1A pre	1.06	2.81	12.17	22.76	39.12
DP-1A post	0.59	1.28	8.17	17.32	37.21
% change	-44.34	-54.48	-32.87	-23.90	-4.88
DP-1B pre	0.14	0.36	1.42	2.59	4.33
DP-1B post	0.13	0.33	1.34	2.44	4.08
% change	-7.14	-8.33	-5.63	-5.79	-5.77
DP-2 pre	0.70	1.81	8.64	16.25	27.93
DP-2 post	0.56	1.38	6.22	10.63	25.82
% change	-20.00	-23.76	-28.01	-34.58	-7.55
DP-3 pre	0.76	1.82	7.40	13.32	22.45
DP-3 post	0.45	1.02	3.51	9.00	20.72
% change	-40.79	-43.96	-52.57	-32.43	-7.71
DP-4 pre	0.54	1.38	6.70	12.78	21.99
DP-4 post	0.47	1.20	5.85	11.15	19.19
% change	-12.96	-13.04	-12.69	-12.75	-12.73
DP-5 pre	0.15	0.38	1.90	3.55	6.11
DP-5 post	0.15	0.37	1.42	2.50	4.12
% change	0.00	-2.63	-25.26	-29.58	-32.57
DP-6 pre	0.50	1.30	6.12	11.53	19.84
DP-6 post	0.50	1.23	5.24	9.64	19.81
% change	0.00	-5.38	-14.38	-16.39	-0.15
DP-7 pre	9.74	17.31	46.31	74.70	115.88
DP-7 post	4.27	7.72	19.91	41.86	110.71
% change	-56.16	-55.40	-57.00	-43.96	-4.46
DP-8 pre	5.33	8.46	19.57	29.96	44.60
DP-8 post	5.13	8.00	18.55	29.05	42.70
% change	-3.75	-5.44	-5.21	-3.04	-4.26
DP-9 pre	1.70	2.66	6.00	9.09	13.41
DP-9 post	1.70	2.61	5.74	8.61	12.61
% change	0.00	-1.88	-4.33	-5.28	-5.97
DP-10 pre	1.42	2.43	6.10	9.62	14.64
DP-10 post	1.42	2.43	6.10	9.62	14.64
% change	0.00	0.00	0.00	0.00	0.00
DP-11 pre	32.45	50.52	113.91	173.04	255.62
DP-11 post	17.56	27.86	79.54	129.72	202.08
% change	-45.89	-44.85	-30.17	-25.03	-23.73

Runoff from the proposed access road will be collected by a series of catch basins, located at regular intervals along the pavement edge, and discharged to the proposed treatment facilities. The stormwater drainage system, including the proposed detention basins, has been designed in a manner that would maintain, or reduce, existing stormwater runoff rates discharging downstream from the property.

Stormwater Basins and Water Quality Control

As set forth in the SWPPP, a variety of stormwater quality practices are proposed as the primary means of controlling post construction changes in stormwater runoff quality from the site. The Stormwater Management Plan is based on the analysis of the changes in runoff

characteristics between existing and developed stormwater conditions discussed in the previous section of this report, and upon the design criteria of the stormwater management practices described below. The SWPPP has been designed to treat the Water Quality Volume (WQv) at the site. The WQv is defined in the NYS Stormwater Management Design Manual (2010) as the storage needed to capture and treat 90 percent of the average annual stormwater runoff volume. An outline of the varying stormwater quality management practices, both structural and non-structural to be implemented both during construction and/or after project completion is presented below.

1. Filter Strips (green infrastructure practice)

The purpose of a filter strip is to provide a buffer between impervious surfaces and water bodies. Permanent grasses and legumes filter runoff water by intercepting or trapping sediment, organics, nutrients, and other potential pollutants before they are able to reach a body of water. A few benefits of grass buffer strips include uptake and transformation of soluble contaminants by soil microbes and grass. The vegetation can also provide habitat for small birds and animals. The Design Manual provides criteria for the design of these practices, and site use will be in compliance with these criteria.

Grassy areas are proposed adjacent to the roadways and provide a disconnectedness between the buildings and the drainage system to further treat runoff. In addition portion of the property would be comprised of either lawn, meadow, or woodland. These areas would contribute to the overall treatment of stormwater from the development. These areas would capture and collect road deicing sand, sediment and debris prior to being discharged to the receiving streams and wetlands.

2. Swales (green infrastructure practice)

Swales are proposed to run adjacent to many of the interior roadways and driveways. These swales will be designed as vegetated swales in accordance with the Manual, and will contribute to the overall treatment of stormwater from the roadways as well as a portion of the rooftops. The swales would capture and collect road deicing sand, sediment and debris prior to it entering the stormwater conveyance system and being discharged to the river. The swales would be cleaned out periodically to remove the dirt and debris as part of routine maintenance.

3. Surface Sand Filters (F-1)

Stormwater filtering systems capture and temporarily store the water quality volume (WQv) and pass it through a filter bed of sand, organic matter, or soil. Filtered runoff may be collected and returned to the conveyance system, or allowed to partially exfiltrate into the soil. The surface sand filter is a multi-chamber structure designed to treat stormwater runoff through filtration, using a sediment forebay, a primary filter media and, typically, an underdrain collection system. All surface sand filters have been designed as off-line practices.

4. Micro-pool Extended Detention Ponds (P-1)

Micropool extended detention ponds are proposed to treat the required water quality volumes. The treatment system includes a sediment forebay, rip-rap berm, micropool, outlet control structure, and emergency overflow weir. The micropool extended detention pond would treat the one-year, 24-hour storm event through pollutant fall-out and biological uptake.

5. Underground Infiltration Practice (I-1)

Underground Infiltration practices capture and treat the water quality volume within subsurface systems, where infiltration into the ground is the primary means of treatment. These practices utilize a pre-treatment vault for removal of suspended sediments prior to discharge into Cultec units for dispersion and infiltration. Where underground infiltration practices are employed, both the water quality volume (WQv) and run-off coefficient (Rv) requirements for the tributary areas are met.

6. Infiltration Basins (I-2)

Stormwater infiltration basins capture and temporarily store the water quality volume (WQv) before allowing it to infiltrate into the soil over a two-day period. The basin is used to capture and allow infiltration of stormwater runoff into the surrounding soils from the bottom of the basin. Pretreatment of runoff is required to reduce fines that may clog the soil over time, decreasing infiltration. Where infiltration basin practices are employed, both the water quality volume (WQv) and run-off coefficient (Rv) requirements for the tributary areas are met.

For both I-1 and I-2 practices, soil testing is required to ensure that there is adequate depth to bedrock and adequate separation from seasonal high ground water. Testing has occurred at numerous locations throughout the site as shown on plan set Sheet 16 of 39; results of that testing is provided on the data sheets included on Sheet 17 of 39.

7. Pocket Wetlands (W-4)

Stormwater wetlands (a.k.a. Constructed wetlands) are structural practices that incorporate wetland plants into the design to both store and treat runoff. As stormwater runoff flows through the wetland, pollutant removal is achieved through settling and biological uptake within the practice.

Stormwater quality and quantity has been analyzed in accordance with the guidelines set forth in the New York State General Permit for Storm Water Discharge, GP-0-10-001 (Appendix F of the SWPPP). The water quality volume (WQv) is typically designed to capture and treat 90% of the average annual stormwater runoff volume. The calculation establishes a direct relationship between rainfall depth and the amount of impervious surfaces created with the associated development. For water quality treatment, the water quality volume (WQv) was computed using the NYSDEC equation WQv = (P x Rv x A)/12, where: P=90% rainfall event number as taken from Figure 4.1 in the DEC Stormwater Manual; Rv=0.05+0.009(I), where I is percent impervious cover; A= drainage area tributary to treatment facility.

However, as stated above, the subject project is located in the New York City East-of-Hudson Croton Watershed, which is listed as a phosphorus-limited watershed. Therefore, the stormwater management practices have been designed in accordance with the *Enhanced Phosphorus Removal Standards* (Chapter 10) of the NYSSMDM to extent practicable. These standards, adopted in April of 2008, require that the water quality volume be calculated using a 1-year storm event (3.1 inches in Westchester County) rather than the 90% rainfall event previously used (in this case, 1.15 inches). This essentially triples the volume required for capture and treatment. Table 4.2-10 provides information regarding the water quality volume (WQv) that is required for each sub-basin and that which is provided.

Table 4.2-10
Summary of Water Quality Volumes

Contributing Area	Basin/Structure	Required WQv (1-yr storm) (ac-ft)	Required WQv (1-yr storm) (cf)	Total Provided WQv (cf)	Stormwater Management Practice
A2 (3.28 ac)	Hydrodynamic separator	0.101	4400	0[(1)]	Hydrodynamic separator and Vegetated swale
A3a (.70 ac)	SF-A3a	0.003	1394	1408	Surface sand filter
A4a (2.10 ac.)	SF-A3b	0.090	3920	4784	Surface sand filter
A4 (6.93 ac)	ED-A4	0.344	14941	20348	Micropool extended detention basin
B2 (4.53 ac)	SF-B2	0.224	97578	10520	Surface sand filter/dry basin
C1 (2.63 ac)[2]	Hydrodynamic separator				Hydrodynamic separator and vegetated swale
C2 (4.03 ac)	PW-C2	0.172	7492	12635	Pocket wetland
F2 (.56 ac)	Sub Lot 16	0.035	1481	3180	Infiltration trench
F3 (.49 ac)	Sub Lot 15	0.031	1350	2134	Infiltration trench
F4 (.76 ac)	Sub Lot 14	0.040	1742	1786	Infiltration trench
F5 (.32 ac)	Sub Lot 13	0.028	1176	1786	Infiltration trench
G1 (2.36 ac)	SF-G1	0.161	7013	7125	Surface sand filter/Dry basin
G2 (6.67 ac)	I-G2	0.511	22259	22259	Infiltration basin
G3a (3.34 ac)	I-G3a	0.334	14549	14549	Infiltration basin
G3b (3.72 ac)	I-G3b	0.197	8581	8581	Infiltration basin
G5a (2.15 ac)	SF-G5	0.122	5314	5322	Surface sand filter/dry basin
G5b (.153 ac.)	Sub-lot 17	0.037	1611	1611	Infiltration trench
G5c (.143 ac.)	Sub-lot 21	0.029	1263	1263	Infiltration trench
G6 (3.52 ac)	SF-G6	0.353	15333	16470	Surface sand filter/dry basin
G7 (1.54 ac)	SF-G7	0.154	6708	7504	Surface sand filter/dry basin
H2 (.35 ac)	Sub Lot 18	0.044	1917	1917	Infiltration trench
H3 (.29 ac)	Sub Lot 19	0.037	1611	1611	Infiltration trench
H4 (.41 ac)	Sub Lot 20	0.047	2047	2047	Infiltration trench
K2 (2.05 ac)	SF-K2	0.116	5052	5225	Surface sand filter
K3 and K4 (total 11.03 ac)[3]	SF-K3 and ED-K3	1.537	66951	140227	Surface sand filter/Micropool extended detention basin
K5 (8.37 ac)[3]	SF-K5 and ED-K5	0.970	42253	85219	Surface sand filter/Micropool extended detention basin
K6 (8.60 ac)	ED-K6	0.697	30361	37171	Micropool extended detention basin

1 Due to topographic constraints, shallow bedrock conditions and road geometry it is not possible to place a full size treatment practice in this location. However, it is expected that the use of a hydrodynamic separator discharging to a vegetated swale prior to discharge at the design point will accomplish the water quality goals. The flow capacity for the practice will be greater than or equal to the calculated peak runoff for the one-year storm, Therefore, providing this practice, although it is a deviation form the State standards, will treat the WQv.
2 There is no increase in impervious surface for this subcatchment. Therefore, in accordance with Chapter 9 "Redevelopment" of the Manual, a hydrodynamic separator will be installed and connected to any future drainage improvements on Sun Valley Drive. The proposed hydrodynamic separator has been sized to capture and treat the water quality volume peak flow as required.
3 Two NYSDEC compliant practices are provided to treat one subcatchment if the percent imperviousness exceeded 20% and the SMP provided is not infiltration. This was provided to address the additional requirements of the NYCDEP.

As noted in the table above, the site topography and shallow depth to bedrock within the lower reaches of sub-catchment B2 make it difficult to locate a practice that will physically capture the runoff quality volume. Much of the disturbed area is for grading purposes and will be restored and re-vegetated after construction. That portion of the basin that will be impervious, i.e., runoff from the initial section of the access road from Reed Road (approximately 6,500 sf) will be captured and treated within a hydrodynamic separator unit and discharged to a vegetated swale along Reed Road before it gets to the design point. While this is a deviation from the State standards, the local MS4 can determine that a flow-through practice of this type is acceptable if the deviation is justified, and the practice has the capacity to treat the peak rate of runoff at the water quality volume (WQv) storm (in this case the one-year storm).

Stormwater Runoff During Construction

Prior to and throughout the construction phase, four basic principles of stormwater runoff management will be applied at the site to control runoff.

(1) stabilization of disturbed areas,
(2) containment of sediments,
(3) treatment of turbid water, and
(4) diversion of clean water.

Implemented, monitored, and enforceable Best Management Practices (BMP) will be utilized during the construction phase as the primary means of instituting controls for erosion and sediment control. The greatest potential watershed impacts associated with this project relative to soils disturbance would be from erosion and sedimentation during construction.

An Erosion and Sediment Control Plan (Appendix E in the SWPPP) is provided which incorporates both structural and nonstructural (i.e. operational) provisions. The primary aim of this plan is to minimize the potential for soil erosion from areas exposed during construction and prevent sediment from reaching the downgradient streams, lakes and wetlands.

All soil erosion and sedimentation control practices will be installed in accordance with the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities (Permit No. GP-0-10-001) best management practices and Town of North Salem code.

Soil Erosion Control Measures

Both temporary and permanent erosion control facilities and activities will be applied over the duration of project related activities on the site. Implementation of the soil erosion control plan will be based on the latest New York State Guidelines for Urban Erosion and Sediment Control.

A plan for phasing and sequencing of site construction has been prepared and is submitted with the SWPPP. Overall, a total of four phases are proposed. Each phase will stand alone with regards to erosion controls, use of best management practices and site stabilization. This plan, as prepared, is intended to meet the requirements of the NYS General Permit.

In general, the following temporary methods and materials will be used to control erosion from the project site:

- Stabilized construction entrances

- Diversion swales and/or berms
- Silt fence barriers
- Stone check dams
- Storm drain inlet protection
- Sediment basins.

Disturbed areas will be permanently stabilized within 14 days of establishing final grading to limit the length of time that the temporary facilities must be utilized. The use of a planned sequence of phased construction activities across the site will limit the maintenance requirements for temporary facilities during the construction phase.

Permanent methods of erosion control will be accomplished by diverting stormwater runoff from steep slopes, controlling or reducing stormwater runoff velocities and volumes, and installing vegetative and structural features which will act to stabilize soil surfaces. All of the permanent facilities will be selected from options which feature low-maintenance requirements and long-term exposure stability.

Basin and swale BMP features are manmade and the result of years of engineering research and design as well as actual in-situ case histories. They function as “natural” removal systems which are featured to blend into the other proposed landscaped and natural features of the property.

The applicant will be responsible for ensuring all stormwater management practices are adhered to. Responsible parties for the implementation and maintenance of each of the erosion control measures and stormwater facilities will be specifically identified and documented in the final SWPPP to be prepared by the Applicant and approved by the NYSDEC prior to construction activity.

Soil Erosion Control for the MIH Property

Standard erosion control features would be utilized during the development on the MIH site and the construction of parking areas, the single residential structure and the septic system. Specifically, silt-fencing and haybales would be installed at the limits of grading and construction on the property. A detailed, site specific soil erosion control plan will be required for the development and will be subject to review and approval by the Planning Board and Town Engineer as part of the site plan review process for the MIH parcel.

Future Monitoring of Basins and Stormwater Discharged From Site

Each swale and basin, when stabilized, is designed to allow for sediments to accumulate for a period of 10-20 years before the functional capacity of the structure will be impacted. Sediment removal at this time will restore the structure to its original over-design capacity. Entry to the basins for performing scheduled maintenance activities will be through stabilized basin accesses.

During construction, all basins and sedimentation and erosion controls must be inspected on a weekly basis, in compliance with GP-0-10-001. Monitoring reports will be left at the site construction trailer for inspection and will be forwarded to the local jurisdiction, if requested. Inspections will also occur on a random basis following storm events. These inspections include observation of storm water leaving the site.

4.300 Air Resources[1]

4.310 Air Quality

Existing Air Quality Condition

Air quality is a relative measure of noxious substances in the air caused by natural or human processes. Certain airborne gases and particulate can cause deterioration and/or destruction to biological life as well as property damage. Air contaminants or pollutants can be defined as solid particles, liquid particles, and vapors or gases, which are discharged into or may form in the outdoor atmosphere. Air quality in any particular location is influenced by pollutants discharged into the atmosphere and by regional and local climatic and weather conditions. Atmospheric conditions such as sunlight, rainfall and humidity, air turbulence, temperature differences, and wind speed and direction can disperse intensity or chemically change or alter the compositions of air contaminants.

Both the United States Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC) have promulgated Ambient Air Quality Standards (AAQS) intended to protect the public health and welfare. These standards are designed to protect the most vulnerable population such as children, the elderly and the infirm, which are more susceptible to respiratory infections and other air quality related health problems. Locations of sensitive receptors that would be considered in a determination of potential air quality impacts would include but are not limited to schools, hospitals and nursing homes.

Major pollutants for which there are Ambient Air Quality Standards are listed in Table 4.3-1 and discussed below.

Table 4.3-1
Principal Sources of Community Air Pollutants

Pollutant	Principal Source
Sulfur Dioxide (SO_2)	Electric power generation (40%) Space heating (30%) Other combustion of fuels in industrial processes (30%)
Carbon Monoxide (CO)	Motor vehicles (90%) Other combustion sources (10%)
Nitrogen Oxides (NO_x)	Stationary source combustion (50%) Motor vehicles (50%)
Particulates (part)	Many sources, (stationary and mobile) including crushing and grinding operations and natural sources
Hydrocarbons (HC)	Motor vehicles (60%) Industrial process & evaporative losses from storage facilities (40%)
Oxidants (primarily Ozone)	Produced by the action of sunlight on HC and NO_x compounds in the atmosphere

Source: Annual Reports Council on Environmental Quality - The percentage figures represent approximate contributions for the sources mentioned in middle latitude urban areas. For more specific information, please refer to the annual reports of the Council of Environmental Quality.

[1] This section is derived from and in addition to the previous DEIS and FEIS prepared for the GAFOL Corporation for the Ramada Renaissance Hotel Project on August 8, 1985 by Jason M. Cortell and Associates Inc.

The sources of contaminants are generally characterized as mobile (transportation related) or stationary. The primary air pollution sources in the project area are characteristic of suburban to rural areas: space heating and automotive traffic. The proposed project's potential impact on air quality would stem primarily from its effect on traffic flow in the area.

Local ambient concentrations of carbon monoxide (CO) and suspended particulates are largely the result of vehicular emissions and create impacts close to the emission point. CO is the dominant vehicular emission and so is the focal point of any mobile source pollution discussion.

Pollutants generated by traffic include carbon monoxide (CO) and ozone precursors; hydrocarbons and nitrogen oxides. Fine particulate matter (PM10) also is emitted in vehicle exhaust and generated by tire action on pavement. Sulfur oxides and nitrogen dioxide also are emitted by space heating and motor vehicles, but concentrations of these pollutants are not high except near large industrial facilities.

The New York State Department of Environmental Conservation Division of Air Resources maintains a network of air quality monitoring stations throughout the State of New York. In general, these stations are located where there may be air quality problems, and so, are often near urban areas or close to specific large air pollution sources. Other stations located in more remote areas provide an indication of regional or background air pollution levels.

The data included in this section of the DSEIS is derived from the data from the closest monitoring stations to the Highgate-Woodlands Site. This data was re-examined in 2010 to the latest available annual report in 2008.

Ambient Air Quality Data and Compliance

The Highgate-Woodlands property is located in the Metropolitan Air Quality Control Region (MAQCR), Region 3. The latest published data regarding air quality was obtained from the New York State Department of Environmental Conservation (NYSDEC).

National and State Ambient Air Quality Standards (NAAQS) have been established for six criteria air pollutants – particulates (including fine and ultra fine particulates), sulfur dioxide, nitrogen oxides, carbon monoxide, ozone (measured by its volatile organic compounds and nitrogen oxides) and lead.

Primary standards have been established for each of these pollutants. Primary standards are designed to protect the public health. Secondary standards are established to prevent other adverse environmental impacts and to protect the public welfare.

The goal of the Clean Air Act is to achieve compliance with both primary and secondary standards as set forth in the NAAQS. With the establishment of the NAAQS, all states are required by the EPA to conduct ambient air monitoring for a number of years to determine if ambient air quality in various geographical areas meet these standards. If compliance with the standards is demonstrated, the air quality region is said to be in attainment. If the standard is exceeded, then the air quality region is said to be in non-attainment. Table 4.3-2 illustrates both New York State and National Ambient Air Quality Standards.

The NYSDEC maintains continuous air quality monitoring stations which are situated within the Metropolitan Air Quality Control Region, which includes the New York City Metropolitan Area,

Rockland, Nassau, Suffolk, Westchester, Orange and Putnam Counties. Different air quality monitoring stations collect different parameters in the region. The closest monitoring station to the Highgate-Woodlands site is Mt. Ninham in Carmel, New York. Sulfur dioxide, inhalable particulates, and ozone levels are measured at the Mt. Ninham station. Air quality data collected by NYSDEC Region 3, (2008 data) is summarized in Table 4.3-3. The data collected at the Mt. Ninham station, located closest to the Highgate-Woodlands site is indicated in **Bold**.

Table 4.3-2
Federal and State Air Quality Standards

Pollutant	Avg. Period	Federal Air Quality				New York Standards	
		Primary Standard		Secondary Standard			
		Level	Statisitc	Level	Statisitc	Level	Statistic
Carbon Monoxide	8-hour	9 ppm	Maximum	None		9 ppm	Maximum
	1-hour	35 ppm	Maximum			35 ppm	Maximum
Lead[1]	Quarterly Average	1.5 ug/m^3	Maximum	Same as Primary		None	
Particulate Matter (PM_{10})	24-hour	150 ug/m^3	Maximum	Same as Primary		None	
Particulate Matter ($PM_{2.5}$)[2]	Annual	15 ug/m^3	Arithmetic Mean	Same as Primary		None	
	24-hour	35 ug/m^3 (3)	3 Year Avg.	Same as Primary			
Ozone (O_3)	8-hour (2008 std)	0.075 ppm	3 Year Ave.	Same as Primary		None	
	8-hour (1997 std)	0.08 ppm	3 Year Ave.	Same as Primary		0.08 ppm	Maximum
	1-hour	0.12 ppm	Not Applicable in NYS	Same as Primary		0.12 ppm	Maximum
Sulfur Dioxide	Annual	0.03 ppm	Arithmetic Mean	None		0.03 ppm	Arithmetic Mean
	24-hour	0.14 ppm	Maximum			0.14 ppm	Maximum
	3-hour	None		0.5 ppm	Maximum	0.50 ppm	Maximum

NOTES:
(1) Federal standard for lead not yet officially adopted by NYS, but is currently being applied to determine compliance status.
(2) Federal standard for PM_{10} not yet officially adopted by NYS but is currently being applied to determine compliance status.
(3) Federal standard was changed from 65 to 35 ug/m^3 on December 17, 2006. Compliance with the Federal standard is determined by using the average of 98th percentile 24-hour value during the past three years, which can not exceed 35 ug/m^3.
(F) Federal Reference Method.
(T) TEOM (Tapered Element Oscillating Microbalance).

Table 4.3-3
2008 Regional Air Quality Data Summary

Monitoring Location	Pollutant	Concentration	Air Quality Standard	Within Standard?
White Plains	Ozone (O_3)	0.024 ppm (1)	0.075 ppm (1)	Yes
Valley Central (Hud. Valley)	Ozone (O_3)	0.026 ppm (1)	0.075 ppm (1)	Yes
Millbrook	Ozone (O_3)	0.027 ppm (1)	0.075 ppm (1)	Yes
Mt. Ninham	**Ozone (O_3)**	**0.027 ppm (1)**	**0.075 ppm (1)**	**Yes**
Belleayre	Ozone (O_3)	0.030 ppm (1)	0.075 ppm (1)	Yes
Mt. Ninham	**Sulfur Dioxide (SO_2) (12 months)**	**1.3 ppb (2)**	**30 ppb (2)**	**Yes**
Mt. Ninham	**Sulfur Dioxide (SO_2) (24-hour)**	**7.3 ppb**	**140 ppb**	**Yes**
Belleayre	Sulfur Dioxide (SO_2) (12 months)	1.2 ppb (2)	30 ppb (2)	Yes
Belleayre	Sulfur Dioxide (SO_2) (24 hour)	7.3 ppb	140 ppb	Yes
White Plains (T)	Inhalable Particulates ($PM_{2.5}$) (5)	8.6 ug/m^3	150 ug/m^3	Yes
Mamaroneck (F)	Inhalable Particulates ($PM_{2.5}$) (5)	11.0 ug/m^3	150 ug/m^3	Yes
Newburgh (T)	Inhalable Particulates ($PM_{2.5}$) (5)	9.5 ug/m^3	150 ug/m^3	Yes
Newburgh (F)	Inhalable Particulates ($PM_{2.5}$) (5)	9.6 ug/m^3	150 ug/m^3	Yes
Wallkill (3566-02)	Lead (Pb)	0.029 ug/m^3	1.5 ug/m^3	Yes
Wallkill (3566-09)	Lead (Pb)	0.062 ug/m^3	1.5 ug/m^3	Yes
Scotchtown	Lead (Pb)	0.07 ug/m^3	1.5 ug/m^3	Yes

NOTES:
(1) Annual Arithmetic Mean in parts per million (ppm).
(2) Annual Arithmetic Mean in parts per billion (ppb).
(F) Federal Reference Method.
(T) TEOM (Tapered Element Oscillating Microbalance).

The general air quality in the Town of North Salem is considered to be excellent.[2] The Town's geographic location away from more urban centers (White Plains, Yonkers) in the Hudson River valley and the New York City metropolitan area, relatively high elevations, and an abundance of vegetation combine to maintain the integrity and quality of the present air resources. This fact is borne out by the data collected from the monitoring network provided above, where all values collected from the Hudson Valley and environs (i.e., excluding New York City stations) show values below the State and Federal standards with the exception of ozone.

Prior Analyses

To evaluate background conditions at the Highgate-Woodlands site, short term CO monitoring was conducted at four locations near the site on September 5th and 6th, 1984. Ambient concentrations of carbon monoxide (CO) is expressed in parts per million (ppm). These results can be found in the previous DEIS and EIS prepared for the GAFOL Corporation for the Ramada Renaissance Hotel Project on August 8, 1985 by Jason M. Cortell and Associates Inc. The project was also modeled using The U.S. Environmental Protection Agency's (USEPA) HIWAY-2 Highway and MOBILE3 Air Pollution Models. All intersections were found to be compliant with the current and former Carbon Monoxide standards.

[2] This section is derived and updated from the previous submitted DEIS prepared by Jason M. Cortell and Associates, pages 3-17 through 3-20.

The prior air quality analyses, contained in the previously prepared GAFOL DEIS and FEIS prepared by Jason M. Cortell and Associates for the Ramada Renaissance Hotel Proposal for the Highgate-Woodlands site, have validity for the current proposal (the Highgate-Woodlands Residential Proposals) due to a variety of additions and reductions to the air and traffic parameters since 1986. Peak traffic for the AM and PM Peak Hours for the proposed combined residential project is 51 and 59 vehicles per hour, respectively. This is a substantial decline from the 432 and 421 vehicles utilized in that modeling analysis.

Further, while emissions in terms of grams per vehicle mile traveled have dropped dramatically in the past decades, these two factors combine to cause the prior analyses to be extremely environmentally conservative.

Potential impacts from the Highgate-Woodlands Proposal were divided into two types of impacts: indirect source emissions and direct source emissions. Both of these impacts were discussed in the DEIS in connection with the proposed office building project.

Air Quality Impacts and Mitigation

Indirect Source Emissions (Current Analysis)

The first level of "air quality screening" as provided in NYSDOT's Environmental Procedures Manual (EPM) Chapter 1.1 is actually a traffic analysis consistent with the Highway Capacity Manual (HCM). The traffic analysis was provided by Michael Marris Associates, Inc. of April 2005 and is also Appended to this DEIS. In the Traffic Impact Study prepared by Michael Marris Associates, Inc. intersections were analyzed in the Existing Condition plus in the 2007 and 2010 Build conditions. NYSDOT's EPM "Section 9 - Projects Needing Air Quality Analysis," EPM, provides the guidance that intersections be screened for overall Level of Service (LOS). If the LOS is A, B, or C, no further analyses are required. Further, if any intersection (at poorer LOS) has increases in traffic of 5 percent or less, no further analyses are required. In this case, the heaviest impact to any local intersection will be to Reed Road at Hardscrabble road at 51 vehicles in the peak AM and 59 vehicles in the peak PM. This represents a maximum of 4.8 percent of the AM traffic in 2007 and declines with time. It also represents a maximum of 3.6 percent of the PM traffic in 2007 and declines with time.

In addition, potential sensitive receptors (i.e. schools, hospitals, etc.) are taken into consideration for air quality analysis regardless of LOS levels. However, no such receptors occur in proximity to the project site. Receptors located close to the project include residential homes and a few businesses.

The SAAQS and NAAQS are set to protect the public health and welfare. In other words, the pollutant standards described above are low enough to ensure that both healthy and impaired people will not suffer significant adverse effects at pollutant levels below the SAAQS or NAAQS. Further, the general welfare (i.e., private property, wildlife, plant life, etc.) is also protected by the same standards. Thus, if the SAAQS and NAAQS standards are achieved (as they will be in the Highgate-Woodlands' case with respect to this particular mobile/indirect "sources"), potential receptors (sensitive or otherwise) are protected.

If the project would significantly affect traffic conditions over a large area, it is also appropriate to consider regional air quality effects of the project by way of a mesoscale analysis. Such analyses are generally required for projects which include significant construction of or

improvements to limited access highways (i.e., I-84). No such construction will occur in relation to this project. (See NYSDOT-EPM Chapter 1.1, page 31 for specific criteria). Thus, no mesoscale analysis is required for the project.

Further, air quality analysis is not necessary since this project will not significantly increase traffic volumes, reduce level of service operating conditions in the analyzed intersections, reduce source-receptor distances or change other existing conditions to such a degree as to have the potential to jeopardize attainment of the State or National Ambient Air Quality Standards.

Direct Source Emissions

Direct Source Emissions with the potential for air quality impacts, include those related to the heating system boilers, cooling tower operations and any potential diesel powered emergency generation equipment. It is anticipated that some homes will incorporate, geothermal heating and cooling systems, solar panels or other alternative energy sources that do not result in emissions, although the proportion of such sources is expected to be small.

New York State air quality regulations and permitting procedures do not apply to heating systems fired by low sulfur content No. 2 fuel oil, whose maximum heat input does not exceed 250 million BTU per hour. Since there are now only residential uses on the site, it is not anticipated that any permits or analyses will be needed or is required.

The heating systems at the Highgate-Woodlands project are anticipated to result in the generation of CO2, sulfur dioxide and other greenhouse gases in the low concentrations associated with highly efficient, modern heating systems, furnaces and appliances. The operation of 42 new single family homes and 76 townhouse units will result in a cumulative impact on local and regional air quality, although this impact is anticipated to be minor, given the residential uses.

Construction Related Air Quality Impacts

The short term use of heavy equipment operations at the site will result in a temporary minor increase in pollutant emissions from the various equipment used in the construction process for an approximate five (5) year phased duration. However, the major concern during the construction operation will be the control of fugitive dust during site clearing, excavation, demolition and grading operations. Fugitive dust is essentially airborne soil particles caused by heavy equipment operations entraining the soil into the air. To a lesser extent, some fugitive dust emissions will arise from wind erosion of the exposed soil after the groundcover is removed. All construction related air quality impacts will be of relatively short duration and not in close proximity to public receptors. The phasing of the proposed residential project will reduce the intensity of any impacts. Also best construction management practices will be employed to reduce possible sources of fugitive dust as provided in the project's Storm Water Pollution Prevention Plan (SWPPP). (See Section 3.410 of the DEIS and DSEIS.)

In summary, no violations of National or NY Ambient Air Quality Standards are anticipated from the Highgate-Woodlands residential project. The Clean Air Act Amendment of 1990 (the Act/CAAA) requires the reduction of emissions in Westchester County and the surrounding non-attainment areas was discussed in the DEIS when the office project was proposed. Since

the revised proposed action only deals with residential uses, no further discussion is required in the DSEIS.

4.320 Noise Levels[3]

Existing Noise Conditions

Sound is created and received when changes of pressure (vibrations) are produced in the air. These pressure changes occur at many frequencies that are detectable to the human ear. Frequency is a measure of vibrations per second or hertz (Hz). The average person's ear can detect sounds ranging from 20 to more than 20,000 hertz (Hz). Each frequency is detectable at different pressure levels measured in decibels. And so, the system for sound measurement which mimics the human ear is an A-weighted decibel system or dB(A)'s. The human ear can barely detect (and remember) a 3 dB(A) change in sound levels whereas a 6 dB(A) change is easily detectable and a doubling of sound wave pressure.

At the Highgate-Woodlands Project Site, the major source of noise is the roadway and highway network, especially I 684 to the east and Route 22 to the west. The description of the noise environment presented here was developed as a result of 2007 monitoring data and partially derived from the GAFOL DEIS in order to assess the existing noise environment at and near the Highgate-Woodlands Project Site in the Town of North Salem.

A noise characterization study and noise level readings were recorded at and near the property during weekday, mid-day hours on November 19, 2007 and during the peak hours of September 5 and 6, 1984 by Jason M. Cortell and Associates Inc. and can be found in the JoFlo DEIS. Noise monitoring was carried out at five locations in 2007 (and eight locations 1984 – see footnote). The five locations were two along Reed Road, one on Sun Valley Court, one on Route 22 (opposite Dino and Artie's) and one in the Jeungst residential area (west of the site).

The 1984 noise recordings were made with a genera Community Noise Analyzer. This device monitors the A-weighted sound pressure level continuously, and automatically calculated L_{10}, L_{20} and L_{90} noise levels. In 2007, sound (noise) levels were observed using Bruel & Kjaer's Model 884, Type s2A, noise meter to measure A-weighted decibel levels as a mimic of the average human ear.

Noise levels recorded in the area were projected onto the Highgate-Woodlands property and were presented in Figure 4-13 of the Jason M. Cortell and Associates Inc. DEIS (see footnote, below). Noise levels projected throughout the site ranged from 43 decibels to a high of 75 decibels. The highest projections are due to cars and trucks passing by the site on Route I-684.

Noise levels at the monitoring 2007 and 1984 stations closest to I-684 are higher than those stations away from I-684. In 2007, the high values range from 72 to 77 dB(A) and in 1984, the high L10 values range from 69 to 75 dB(A), showing little difference between peak or off-peak traffic. Noise levels projected westward onto the developed portions of the site are expected to be less, ranging from 55 to 48 decibels. This is consistent with the 2007 readings taken at the

[3] This section is derived from the previously prepared GAFOL DEIS for the GAFOL Corporation for the Ramada Renaissance Hotel on August 8, 1985, prepared by Jason M. Cortell and Associates, Inc. This noise study presented the worst case scenario for a hotel and the impacts identified will be significantly reduced by a residential project. Locations A through D were the same locations used for carbon monoxide monitoring. Locations E, F, G and H were located on-site 10, 250, 1,000 and 2,000 feet from Reed Road as indicated in Figure 4-12 (from the previous GAFOL DEIS).

northern end of Sun Valley Court. At this location, values range from 50 to 57 dB(A). Thus, that site and the proposed residential location will be in the upper range of "quiet residential" as the noise from I 684 is and will be clearly audible but not loud.

Noise in the Jeungst neighborhood is steady at 53 to 54 dB(A) but peaks to 62 to 63 dB(A) with traffic along Route 22 and the passing Metro North trains. Noise at Dino and Arties is steady at 50 to 55 dB(A) but peaks well up to 80 to 84 dB(A) with traffic along Route 22. Both areas are removed from any audible influence from I 684.

Noise Levels Impacts and Mitigation

Construction Related Noise

Construction activities at the proposed Highgate-Woodlands site will generate most of the noise for this project but this impact will be temporary. Traffic associated with facility operation will have only minimal effect. Table 4.3-4 sets forth construction equipment noise levels and ranges of noise levels for various construction activities at 50 feet from the equipment.

Construction-related noise can be divided into 3 major components: equipment operating noise, construction traffic on local roadways, and blasting noise. Typically, the two noisiest periods of construction occur during grading and blasting operations (when earthmoving equipment is used) and foundation work (when compressors and drills may be in use). These impacts are of a temporary nature, and limited to the construction phase only. Blasting will occur during normal work hours and those permitted under the Code of the Town of North Salem. (8 A.M. to 5 P.M. Monday to Saturday). It is anticipated that the existing vegetation on-site will somewhat mitigate the short-term construction related noise. (see topography sections of the DSEIS for further blasting discussions).

Table 4.3-4 indicates the range of noise levels produced by various pieces of construction equipment. The equipment listed in the table provides a summary of equipment that may potentially be used on the site for construction. This equipment will be used as required, depending upon the stage of construction, specific need, and site conditions. In the early stages of construction during site clearing and grading activities, backhoes, graders, and dump trucks will be required. During the construction of homes, the water and sewer facilities, and recreation facilities, concrete trucks, delivery trucks, generators and hand tools will be utilized.

In each case listed in Table 4.3-4, the noise levels provided are at a reference distance of 50 ft. With the exception of the access road, most construction will be occurring a minimum of 400 feet from any existing residence. In general, local noise, such as that is caused by construction equipment is reduced by 5 dBA for each doubling of distance from the source. Noise levels become attenuated by 15 dB(A) with a distance of 400 feet. Along the access road (coming off Reed Road), most construction will be occurring a minimum of 200 feet from any existing residence, reducing noise levels by 10 dB(A) with that distance.

Several pieces of equipment operating at a combined dBA level of 85 at 50 ft, for example, will produce a noise level of 70 dBA at 400 ft and 75 dBA at 200 ft. As a heavy truck enters the site during construction and proceeds up the entry road grade, it will emit sound at a level of 79 to 80 dBA (USDOT, FHWA STAMINA 2.0 Users Manual). Per the above discussion, the source would be attenuated to 65 to 70 dBA with a separation of approximately 200 to 400 feet. What this means on the project site is that the increased noise sources on the project site will be

somewhat diminished to levels equivalent to the influence of I-684 to the east and Route 22/Metro North to the west by the distances to the neighboring residences. In general, an increase of 3 dBA is the smallest noise increment which can be reliably perceived by people, and an increase of 10 dBA is perceived as a doubling of noise levels. Thus, the construction noise will be audible but not much out of the range experienced on the project site's perimeter at present. Construction noise, while audible at the property boundary and adjacent residences, will be limited to working hours, and will be limited in duration.

Construction is anticipated to last approximately five years. A construction sequence is provided in Full Sized Plan Sheet PP-1 Phasing Plan (Drawing 26). The construction period is divided into four phases, each lasting approximately one year to eighteen months. Each of the four construction phases will affect different portions of the site, and therefore will result in noise impacts in different portions of the site at different phases of construction. Construction of Phase 1 will affect the southern portion of the site with the construction of the entrance road three single family homes and the southernmost portion of the active adult townhouse development. Noise impacts during Phase 1 of construction will mostly affect residents on Reed Road and at the end of Sun Valley Drive. Phase 2 and Phase 3 involving the construction of residences in the northwest portion of the site will most affect residents bordering the western portion of the site and along Juengst Road. Phase 4, involving the construction of single family residences in the northern portion of the site will most affect off-site residents north of the project site.

The undesirable effects from blasting, namely ground and air vibration can be measured and scientifically predicted. They can also be controlled by safe blasting practices which involve the careful selection of a number of variables. The most important of them include: the blast round size (amount of explosive used in pounds); the use of millisecond delay caps; and the time and method of initiation.

At the present time, the use of explosives in New York State is governed by legislation set forth in Industrial Code Rule No.39. The Town of North Salem adopted a local ordinance (Chapter 48 - Blasting and Explosives Law of the Town of North Salem) that regulates blasting within the Town. However, neither document comprehensively addresses safe blasting practices and the guidelines set forth in the Code of Federal Regulations Title 30 which should be implemented to insure the safety and well being of the neighboring home owners and their properties.

The blasting procedures the builder will follow include the following:

1. A pre- and post- blast survey of structures and water wells within a half mile radius of the blast site should be conducted for residents who elect to participate. Structural surveys should include identification of visible structural damage, plaster cracks, settling, etc.
2. Peak particle velocities should not exceed 1.25 ips at a distance of 300 feet from the blast site. This figure should be modified if geologic/seismic evidence so dictates. (No data indicates the potential for such exceedances at present.)
3. Noise/airblast levels should not exceed 128 decibels at any residential structure within a half mile radius of the blast area.
4. All blasts should be recorded with respect to ground velocity and airblast levels to insure that threshold criterion values are not exceeded.

Operational Noise

Once the Highgate-Woodlands residential project is constructed and occupied, the site will generate noise associated with a residential development. Noise sources may include, residential traffic, dogs barking, and truck traffic from deliveries. Deliveries of mail and packages to the Highgate-Woodlands development are expected to occur during business hours (8:00 am to 5:00 pm), Monday through Saturday, one to three times per day.

The future residents of the Moderate Income Housing site may hear some road noise, the metro north trains, as well as pedestrians frequenting the hamlets stores and shops. Acoustic materials between the units should limit the noise impacts from adjacent dwellings and vice versa.

Table 4.3-4
Construction Noise Impacts

Equipment Description	Impact Device?	L_{max} @ 50 feet (dBA, slow)	Actual Measured L_{max} @ 50 feet (dBA, slow)
All Other Equipment > 5 HP	No	85	N/A
Auger Drill Rig	No	85	84
Backhoe	No	80	78
Bar Bender	No	80	N/A
Blasting	Yes	94	N/A
Boring Jack Power Unit	No	80	83
Chain Saw	No	85	84
Compactor (ground)	No	80	83
Compressor (air)	No	80	78
Concrete Batch Plant	No	83	N/A
Concrete Mixer Truck	No	85	79
Concrete Pump Truck	No	82	81
Concrete Saw	No	90	90
Crane	No	85	81
Dozer	No	85	82
Drill Rig Truck	No	84	79
Drum Mixer	No	80	80
Dump Truck	No	84	76
Excavator	No	85	81
Flat Bed Truck	No	84	74
Front End Loader	No	80	79
Generator	No	82	81
Generator (<25KVA, VMS Signs)	No	70	73

Table 4.3-4 Construction Noise Impacts			
Gradall	No	85	83
Grader	No	85	N/A
Grapple (on backhoe)	No	85	87
Horizontal Boring Hydraulic Jack	No	80	82
Hydra Break Ram	Yes	90	N/A
Jackhammer	Yes	85	89
Man Lift	No	85	75
Mounted Impact Hammer (hoe ram)	Yes	90	90
Pavement Scarifier	No	85	90
Paver	No	85	77
Pickup Truck	No	55	75
Pneumatic Tools	No	85	85
Pumps	No	77	81
Refrigerator Unit	No	82	73
Rock Drill	No	85	81
Roller	No	85	80
Sand Blasting (single nozzle)	No	85	96
Scraper	No	85	84
Sheers (on backhoe)	No	85	96
Slurry Plant	No	78	78
Slurry Trenching Machine	No	82	80
Soil Mix Drill Rig	No	80	N/A
Tractor	No	84	N/A
Vacuum Excavator (Vac-Truck)	No	85	85
Vacuum Street Sweeper	No	80	82
Ventilation Fan	No	85	79
Vibrating Hopper	No	85	87
Vibratory Concrete Mixer	No	80	80
Warning Horn	No	85	83
Welder/Torch	No	73	74
Source: FHWA Highway Construction Noise Handbook, 2006			

Air Quality and Noise - MIH Property Impacts and Mitigation

Construction of the MIH residential building on the Croton Falls property has the potential to result in temporary air quality impacts related to dust from exposed soils. Noise from construction equipment and activity will be a temporary impact during construction.

The MIH development will consist of a single residential building approximately 3,100 square feet in size and its associated parking and landscaping. Since the site has been graded for remediation, only limited site work (grading and excavation) will be necessary for construction. The potential for dust and noise impact to neighbors will be minimized by the relatively modest scale and size of construction and by best management practices during construction.

4.400 Terrestrial and Aquatic Ecology

4.410 Vegetation

Upland Vegetation

The 159.52 acre site has 152.75 acres of uplands (95.7 percent of the site) and 6.77 acres of wetlands (4.3 percent of the site). Upland communities dominate the site. However, wetlands are considered the more ecologically sensitive and are described in this DSEIS. Old stone boundary walls found onsite offer evidence that this area was once used as farmland or orchard. Given the size of the second growth trees identified on the property, the property has not been farmed since the mid-1900's or earlier. The site has become re-forested for many decades and some of the larger specimen trees were not cut and are remnants from earlier forests on site. During the SEQRA review of this application, the Town Board requested that B. Laing Associates investigate whether the whole site or a portion of the site had been an orchard.

The Highgate-Woodlands at North Salem site was traversed for several weeks through the month of September 1994 and again in the summer of 1995 to sample and inventory each vegetative community. Vegetation on site was been confirmed during field inspections in the spring and summer of 2004 and 2005 by B. Laing Associates as a part of the SWPPP test pit observations to assess whether or not there were no new or additional species on site. General vegetative species lists and vegetative samples were compiled. Table 4.4-1 lists the vegetative species observed in the upland sampling on the subject site.[1]

The site's vegetation was quantitatively sampled in 100 square foot plots at nine locations. This analysis of upland vegetation included speciation and estimates of the density, height and coverage per layer (ground layer, shrub and various tree strata) of these plant species. The results are described further below.

The sampling identified two principal habitats or vegetative communities, which correspond to the broadly described "Ecological Communities of New York State"[2]

1. Successional Northern Hardwood Forest
2. Red Maple Hardwood Swamp.

The successional northern hardwood forest community (described below) occupies the vast majority of the site and is present in its western, southern and northeast sections surrounding the red maple hardwood swamp community. A vegetative communities map is provided as Figure 4.4-1 Site Specific Vegetation Map. This map shows the locations of the sampling plots.

The forested upland community is dominated by hickory (Carya sp.), sugar maple (Acer saccharum), oaks (Quercus sp.), birch (Betula sp.), white ash (Fraxinus americana), and beech (Fagus grandifolia) in the overstory. Virginia creeper (Parthenocissus quinquefolia), garlic mustard (Alliaria petiolata), grape (Vitis sp.), and violets (Viola sp.) in the herbaceous layer, Japanese barberry (Berberis thunbergii), honeysuckle (Lonicera sp.), meadowsweet (Spiraea latifolia), and dogwood (Cornus florida) in the shrub layer.

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[1] An additional vegetation list was provided by MDRA Biologist Joseph Bridges, Ph.D. (1994).
[2] Edinger, G.J. et al (Eds.) 2002. Ecological Communities of New York State. Second Edition. NYSNHP, NYSDEC. Albany, NY. 136 pp.

The deciduous upland community is a in a woodland and has a dense overstory, with a moderately distributed understory and herbaceous layer. The community is variable in terms of the dominant species. The overstory in this community is dominated by sugar maple, northern red oak (Quercus rubra), tulip tree (Liriodendron tulipifera), red maple (Acer rubrum), black birch (Betula lenta), white ash (Fraxinus americana) and American elm (Culmus americana), American beech (Fagus grandifolia) and red maple saplings occur frequently in the sub-canopy and herbaceous layer. The understory is dominated by arrowwood (Virburnum recognitum), maple leaf viburnum (Viburnum acerifolium), ironwood (Carpinus caroliniana), flowering dogwood (Cornus florida), European matrimony vine (Lycium halimifolium), Japanese barberry (Berberis thunbergii), multiflora rose (Rosa multiflora), tartarian honeysuckle (Lonicera tartarica) and sassafras (Sassafras albidum). The herbaceous layer is composed of only a few scattered species such as Virginia creeper (Parthenocissus quinquefolia), Christmas fern (Polystichum acrestichoides), smartweed (Polygonum cespitosum), and spotted wintergreen (Chimaphila maculata).

Trees to be removed were identified on-site as a part of the steps needed to prepare the SWPPP (outlined above). These trees are itemized in Table 4.4-3 Trees to be Removed. The current site plan will require the removal of 506 trees having a diameter at breast height of 8 inches or greater. The clearing of upland vegetation from the site with the project will total approximately 82.13 acres or 51.5 percent of the upland woodlands.

Protected Native Plants

A number of plant species have been listed as exploitably vulnerable by the New York State Department of Environmental Conservation (NYSDEC) (6 NYCCR Part 193.3, Protected Native Plants, adopted June 22, 1989, list of species updated May, 2010). Plants listed as exploitably vulnerable are so classified because of their danger to exploitation, meaning that these plants can and are used as landscaping plants or may be collected for commercial or personal use. Of the exploitably vulnerable plants listed, the following plants were observed on the site:

- American bittersweet (Celastrus scandens),
- flowering dogwood (Cornus florida),
- downy rattlesnake plantain (Goodyera pubescens)
- spotted wintergreen (Chimaphilia maculata)
- ebony spleenwort (Asplenium platyneuron)
- ground pine (Lycopodium obscurum)
- running pine (Lycopodium digitatum)
- cinnamon fern (Osmunda cinnamomea)
- common wood fern (Dryopteris intermedia)
- Lady fern (Athyrium filix-femina)
- Common polypody (Polypodium virginianum)
- Winterberry holly (Ilex verticillata)
- Swamp azalea (Rhododendron viscosum)

The cat-tail sedge (Carex typhina), identified in Wetlands D/E**,** is a plant listed as a threatened species in New York State (included in Title 6 NYCRR Part 193.3 in New York State). In November 2005, the NYSDEC Natural heritage Program was asked to update its previous report concerning the potential for New York State, or federal, listed endangered, threatened or otherwise imperiled species to occur on the project site. The State's November 28, 2005 response identified cat-tail sedge (discussed in the wetland descriptions below). Fauna

Species of Special Concern and unique or locally rare species are further discussed below (see Section 4.420 Fish and Wildlife).

The NYSDEC Protected Native Plant List contains a list of native plants that are protected by state law. However, this listing does not necessarily indicate rarity. Exploitably vulnerable plants are under Subdivision (d) of 6 NYCCR Part 193. The list categorizes plants as rare, endangered, threatened, or exploitably vulnerable. Only those plants listed as endangered under 193.3 (b) may require remedial action to prevent extinction. No such endangered plants occur on this property. Exploitably vulnerable plants do not fall under this category and therefore are not accorded jurisdictional mitigational requirements. The protected ranking is given to protect plants from pilfering and the protected plants are the property of the landowner.

Table 4.4-1
Upland Vegetative Plots **

Plot	Herbaceous	Percent Cover	Mean Height	Shrub Saplings	Percent Cover	Mean Height	Tree	Percent Cover	Mean* Height
1	Violets, Garlic Mustard, Strawberry, Christmas Fern	60	4-6 inches	Japanese Barberry, Honeysuckle	35	3 feet	Hickory, Sugar Maple	95	>35 feet
2	CarexSp, Starsedge, Oriental Bittersweet, Maple Seedlings	15	4-6 inches	Maple, Hickory	10	10 feet	Hickory, Sugar Maple	95	>35 feet
3	PoisonIvy, VirginiaCreeper, MapleSeedlings ,Hickory Seedlings	10	6 inches	Overcup Oak,Hickory, Black Oak, Black Cherry	50	10 feet	Overcup Oak, Hickory, Black Oak, Black Cherry	85	>30 feet
4	Sassafras, Grape, Carex Sp, Maple Seedlings, Hickory Seedlings	70	4-6 inches	Black Cherry, \Meadowsweet, Dogwood, Hickory	80	10 feet	Red Oak, White Oak, Birch, Sugar Maple	90	>30 feet
5	Carex Sp, Grape, Goldenrod, Virginia Creeper, Prickly Dewberry	60	4-6 inches	BlackCherry, Meadowsweet, SugarMaple, Birch	25	10 feet	White Oak, Red Oak, Birch, Hickory	90	>30 feet
6	Virginia Creeper, Red Maple, Sugar Maple	10	6 inches	SugarMaple, Spice Bush, Birch, Meadowsweet	15	8 feet	Birch, Hickory, Ash, Sugar Maple	90	>30 feet
7	Maple, Hickory, Carex Sp	10	6 inches	SugarMaple, Spice Bush, Spirea	15	10 feet	Birch, Beech, Hickory, Ash	95	>30 feet

Table 4.4-1 Upland Vegetative Plots **									
8	Sassafras, American Hazelnut, Hickory, Maple	15	6 inches	Hazelnut, Red Maple, Spirea	35	10 feet	Sugar Maple, Red Oak	95	>30 feet
9	Garlic Mustard, Violets, Virginia Creeper	80	6 inches	Japanese Barberry, Cherry Maple	20	7 feet	Sugar Maple, Ash, Hickory, Oak	95	>30 feet

Source: Prepared by B. Laing Associates, based on site investigation
* See tree and rock survey map for dbh ranges; trees in some instances may be as high as 75'-80'.
Note: All plots are associated with the Successional Northern Hardwood Forest vegetative community.

Table 4.4-2 Successional Northern Hardwood Forest Community Observed On-Site	
Common Name	Scientific
Red Oak	Quercus rubra
Black Oak	Quercus velutina
Chestnut Oak	Quercus prinus
White Oak	Quercus alba
Grey Oak	Quercus borealis
Shagbark Hickory	Carya ovata
Black Cherry	Prunus serotina
Red Maple	Acer rubrum
Sugar Maple	Acer saccharum
Black Birch	Betula lenta
American Elm	Ulmus americana
Norway Maple	Acer platanoides
White Pine	Pinus strobus
Eastern Red Cedar	Juniperis virginiana
Eastern Hemlock	Tsuga canadensis
American Beech	Fagus grandifolia
Tulip Tree	Liriodendron tulipifera
White Ash	Fraxinus americana

Table 4.4-2
Successional Northern Hardwood Forest Community Observed On-Site

Common Name	Scientific
Cottonwood	Populus deltoides
Ironwood	Carpinus caroliniana
Flowering Dogwood	Cornus florida
Highbush Blueberry	Vaccinium corymbosum
Tall Huckleberry	Gaylussacia frondosa
Multiflora Rose	Rosa multiflora
Milkweed	Asclepias syriaca
Tartarian Honeysuckle	Lonicera tartarica
Pokeweed	Phytolacca americana
Sassafras	Sassafras albidum
Virginia Creeper	Parthenocissus quinquefolia
Smartweed	Polygonum sp.
Blackberry	Rubus allegheniensis
Low-bush Blueberry	Vaccinium vacillans
Bracken Fern	Pteridium aquilinum
Bristly Dewberry	Rubus hispidus
Kidney-leaved Violet	Viola renifolia
Gray Goldenrod	Solidago nemoralis
Japanese Honeysuckle	Lonicera japonica
Deerberry	Vaccinium stamineum
Panic Grass	Panicum sp.
Field Garlic	Allium oleraceum
Downy Rattlesnake Plantain	Goodyera pubescens
Spotted Wintergreen	Chimaphila maculata
Beech Drops	Epifagus virginiana
Christmas Fern	Polystichum acrostichoides
Common Wood Fern	Dryopteris intermedia

Table 4.4-2
Successional Northern Hardwood Forest Community Observed On-Site

Common Name	Scientific
Common Polypody	Polypodium virginianum
Ebony Spleenwort	Asplenium platyneuron
Hay-scented Fern	Dennstaedtia punctilobula
Ground Pine	Lycopodium obscurum
Running Pine	Lycopodium digitatum
Maple-leaf Viburnum	Viburnum acerifolium
Male-Berry	Lyonia ligustrina
Sugar Huckleberry	Vaccinium pallidum
Grape	Vitis sp.
Tree-of-heaven	Ailanthus altissima
Service-berry	Amelanchier sp.
Witch Hazel	Hamamelis virginiana
Meadowsweet	Spirea sp.
Japanese Barberry	Berberis thunbergii
Greenbrier	Simlax sp.
European Matrimonial Vine	Lycium halimifolium
American Bitter-sweet	Celastrus scandens
Aster	Aster sp.
Spotted Wintergreen	Chimaphila maculata
Field Daisy	Chrysanthemum leucanthlemum
Prostrate Tick Trefoil	Desmodium rotundifolium
Shinleaf	Pyrola elliptica
Corn speedwell	Veronica aevensis
Hawkweed	Hieracium spp
Wild licorice	Galium circaezans
Sweet vernal grass	Anthoxanthum odoratum
Wild madder	Galium mollugo

Table 4.4-2 Successional Northern Hardwood Forest Community Observed On-Site	
Common Name	Scientific
False Solomon's seal	Smilacina racemosa
Sessile-leaved bellwort	Uvularia sessilifolia
Panicled-Leaf Tick-Trefoil	Desmodium paniculatum

Table 4.4-3 Trees to be Removed		
Species Identified On Site	**Number**	**Percent**
Oak	244	48.2 %
Maple	72	14.2 %
Black birch	62	12.2 %
Ash	54	10.7 %
Hickory	25	4.9 %
Northern red oak	20	4.0 %
Elm	10	2.0 %
Sugar maple	5	1.0 %
Shagbark hickory	3	0.6 %
Red Maple	3	0.6 %
White oak	3	0.6 %
Pine	3	0.6 %
Black locust	2	0.4 %
TOTAL=	**506**	**100%**
Sources: B. Laing Associates, Inc., Keane Coppelman Engineers, P.C. Prepared by: Tim Miller Associates, 2008		

Moderate Income Housing Site Vegetation

In April, 2010 the Moderate Income Housing site was inspected by TMA staff for existing conditions. At the time of the inspection the property was completely graded and devoid of vegetation. It appeared that the site had been graded in the recent past and heavy equipment was on-site. An environmental remediation has been completed at the site under the supervision of the NYSDEC related to previous auto repair uses (see Section 3.310 General Site Description). The site will be seeded and stabilized, per Town and NYSDEC requirements. Until such time that the site is developed and landscaped, the property will support grasses.

4.420 Fish & Wildlife

B. Laing Associates conducted a formal survey on the subject site in the 1990's and during the test hole work for the SWPPP in 2005. This survey involved searching for mammal tracks, looking beneath debris for reptiles, and searching for birds with the use of binoculars and calls. Additionally, New York State Natural Heritage Program database searches were assessed and The Atlas of Breeding Birds in New York State (Andrle, R.F. and J.R. Carroll, Eds.) was consulted in the compilation of the bird list. This atlas was consulted on a species by species

basis within the 5 km. block for the project site. It was determined that no species of special concern exists within this 5 km. block. The wildlife list obtained is a combination of observations made by B. Laing Associates and Dr. Joseph Bridges.[3]

The State's November 28, 2005 response from the Natural Heritage Program identified the eastern small-footed myotis (*Myotis leibii)*, a state-listed species of special concern. However, the small-footed bat's critical habitat, its hibernacula, does not occur on site. Rather, it was determined to be present in the abandoned Brewster Mine, some 0.5 miles north of the site.

The small-footed myotis is particularly interesting in that is does not generally use trees for roosting, rather preferring rock fissures and crevices in fractured rock ledge. Due to some areas of exposed bedrock on this site, the property does provide potential summer habitat for the species. The majority of the rock and ledge encountered is in the eastern and northeast corner of the site, where little or no development is proposed. Much of this area will be included in the open space associated with the portions of the multi-family and water conservation parcels that will remain undeveloped. In other words, those parts of the site that are least suitable for development due to exposed rock and steep slopes represent the best potential habitat for small-footed myotis. Limited blasting is expected to be required for the construction of the site entrance road, as well as internal roads; exposed ledge that will be located on individual lots is expected to remain (see Figure 4.1-6 Potential Areas of Blasting). Therefore, if these bats do utilize this site it is unlikely that there will be any impacts to habitat.

The red-maple swamp, emergent wetlands, and upland woodland communities on the subject site provide a diversity of wildlife habitats. The wooded uplands and wetlands provide suitable habitat for woodland species. Woodland habitats provide niches for wildlife according to the habitat structure. That is, a woodland may be composed of an overstory (the tree canopy), an understory (the shrub layer and holes of mature trees) and the herbaceous layer (shrubs and non-woody vegetation less than 1 meter in height plus the ground surface).

Bird species observed in the red-maple swamp and upland woodland communities include the insect/herbivorous American robin (Turdus migratorius), black-capped chickadee (Parus atricapillus), brown creeper (Certhia americana), pileated woodpecker (Dryocopus pileatus), blue jay (Cyanocitta cristata), Northern cardinal (Cardinalis cardinalis), ruffed grouse (Bonasa umbellus), woodthrush (Hylocichla mustelina), dark-eyed junco (Junco hyemalis) and common grackle (Quiscalus quiscula). Woodland birds will mostly occupy the tree canopy and shrub layers but some will feed (brown creeper) or nest (oven bird, Seiurus aurocapillus) on the forest floor.

Westchester County possesses one of the densest populations of confirmed breeding worm-eating warbler (Helmintheros vermissrous). Statewide, confirmed breeding for this bird is largely concentrated in, and limited to, five counties of the Lower Hudson Valley. It is a spring-summer ground-nesting warbler that builds a small, hard to find nest and was heard (not-seen) on-site in the summers of 1994 and 1995. The golden-winged warbler (Vermivora chrysoptera) is also a rare, ground-nesting warbler with only two (2) confirmed breeding blocks (Breeding Bird Atlas for New York State), in Westchester County, one of which is located near the project site.

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[3]The Town's Wetland Biologist, Dr. Joseph Bridges, had submitted review commentary to the Town, but did not assist directly in the preparation of the Highgate DEIS text, reports, Tables or Figures as presented in the DEIS [see Highgate DEIS Appendix 2 (correspondence) containing Memoranda submitted to the Town on July 25, 1994 and July 10, 1995 by Joseph Bridges, PhD.

The predatory red-tailed hawk (Buteo jamaicensis) was observed soaring over the woodland habitat. Other predatory bird species expected to occur within the woodland habitat include the sharp-shinned hawk (Accipiter striatus), broad-winged hawk (Buteo platypterus), turkey vulture (Catharses aura), eastern screech owl (Otus asio) and long-eared owl (Asio otus).

The Westchester County's list of endangered, threatened and species of special concern listed several bird species which may occur on site but have not been observed to date. These species include the wood thrush (*Hylocichla mustelina*) and the worm-eating warbler (*Helmitheros vermivorus*). In the case of the worm-eating warbler and the wood thrush, these species will lose some 82.13 acres of woodland habitat. However, 77.39 acres of woodlands will be preserved, especially to the north and east of Wetlands A and B. Another species of special concern which could occur on site but has not been observed is the American black duck (*Anas rubripes*). Its potential habitat is Wetland A, which will be permenently preserved. These and other species of special concern, unique and locally rare species are further discussed below.

Mammals observed in the upland/wetland woodlands include the herbivorous eastern gray squirrel (Sciurus carolinensis), insect/herbivorous eastern chipmunk (Tamia striatus), omnivorous raccoon (Procyon lotor), the predatory red fox (Vulpes fulva) and the herbivorous white-tailed deer (Odocoileus virginianus). Other mammals expected to occur in the upland/wetland woodland habitat include meadow vole (Microtus pennsylvanicus), short-tailed shrew (Blarina brevicauda), eastern cottontail rabbit (Sylvilagus floridanus), woodchuck (Marmota monax), long-tailed weasel (Mustela frenata) and omnivorous striped skunk (Mephitis mephitis).

Woodland mammals have a greater tendency than the birds to utilize the forest floor for resting and/or feeding. Some will, however, use the shrub (middle) layer for nesting (raccoon) and/or the forest canopy for nesting or feeding (squirrels).

The insectivorous red-backed salamander (Plethodon cinereus) is an amphibian observed in the upland/wetland woodland habitat as well as wood frog (Rana sylvatica), green frog (Rana clamitans), pickerel frog (Rana palustris), and gray tree frog (Hyla versicolor). Other reptiles/amphibians expected to occur in this habitat include the carnivorous eastern painted turtle (Chrysemys picta), worm snake (Carphophis amoenus), northern brown snake (Storeria dekayi), northern two-lined salamander (Eurycea bislineata) and American toad (Bufo americanus). Forest amphibians and reptiles are limited to the shrub and herbaceous layers of the woodland for nesting, feeding and shelter. In the case of amphibians, proximity to at least a seasonal source of surface water (a temporary stream or vernal pond as provided by wetland A) is a necessity.

The emergent wetland provides an open canopy habitat with dense herbaceous/emergent vegetation and shallow water. Bird species observed in this habitat include the insect/herbivorous swamp sparrow (Melospiza georgiana), carnivorous northern waterthrush (Seiurus noveboracensis), Louisiana waterthrush (Seiurus montacilla), and red-winged blackbird (Agelaius phoeniceus). Other bird species expected to occur in this habitat include the insect/herbivorous yellow warbler (Dendroica petechia), American woodcock (Scolopax minor), picivorous green-backed heron (Butorides virescens) and wood duck (Aix sponsa).
Mammals expected to occur in this habitat include the omnivorous opossum (Didelphis virginiana) and predatory mink (Mustela vison). Amphibians observed in the emergent wetland

habitat include the carnivorous wood frog, green frog, and spring peeper (Hyla cracifer). Other amphibian/reptiles expected to occur in this habitat include the carnivorous pickerel frog (Rana palustris), and northern water snake (Nerodia sipedon).

Moderate Income Housing Site

As described above, the Moderate Income Housing (MIH) or Dino and Arties site was inspected at the end of April, 2010. At that time the site was totally graded and stripped of vegetation for the on-going environmental remediation at the property. In addition, the property is located within an established hamlet, between a heavily traveled road and a commuter railroad. Currently, the property offers no vegetative cover or food source to provide habitat for local wildlife.

When developed, the Dino and Arties site will be landscaped with lawn and native shrubs and vegetation. Following development, the lawn and native vegetation will provide limited food and cover for passing birds and possibly small mammals.

Table 4.4-4 provides a summary of wildlife having the potential to occur on the Highgate-Woodlands site.

Table 4.4-4
Wildlife Having Potential to Occur On-Site

Common Name	Scientific Name
Amphibians	
Marbled Salamander	Ambystoma opacum
Common or American Toad	Bufo americanus
Fowler's Toad	Bufo woodhousei
Two-lined Salamander	Eurycea bislineata
Four-toad Salamander	Hemidactylium scutatum
Red-spotted Newt	Notophthalmus viridescens
Bull Frog	Rana catesbeiana
Spring Peeper	Hyla Crviceter
Spotted salamander	Ambystoma maculatum
Reptiles	
Snapping Turtle	Chelydra serpentina
Stinkpot	Stenotherus odoratus
Box Turtle	Terrapene carolina
Painted Turtle	Chrysemys picta

Table 4.4-4
Wildlife Having Potential to Occur On-Site

Common Name	Scientific Name
Spotted Turtle	Clemmys gutatta
Northern Copperhead	Agkistrod contortrix mokeson
Black Racer	Coluber constrictor
Ringneck Snake	Diadophis punctatus
Black Rat Snake	Elaphe obsoleta
Milk Snake	Lampropeltis triangulum
Northern Brown Snake	Storeria dekayi
Eastern Ribbon Snake	Thamnophis sauritus
Worm Snake	Carphophis amoenus
Eastern Hognose Snake	Heterodon platyrhinos
Birds	
Canada Goose	Branta canadensis
Black Duck	Anas rubripes
Ruby-throated Hummingbird	Archilochus colubris
Chimney Swift	Chaetura pelagica
Common Nighthawk	Chordeiles minor
Killdeer	Charadrius vociferus
Herring Gull	Larus arentatus
American Woodcock	Philohega minor
Great Blue Heron	Ardea heodias
Wood Duck	Aix sponsa
Green-backed Heron	Butorides virescens
Pigeon	Columba livia
Belted Kingfisher	Megaceryle alcyon
Yellow-billed Cuckoo	Coccyzus americanus
Black-billed Cuckoo	Coccyzus erythropthalmus

Table 4.4-4
Wildlife Having Potential to Occur On-Site

Common Name	Scientific Name
Cooper's Hawk	Accipiter cooperii
Sharp-shinned Hawk	Accipiter striatus
Broad-winged Hawk	Buteo platypterus
Black Vulture	Coragyps atratus
Wild Turkey	Meleagris gallopavo
Ring-necked Pheasant	Phasianus colchicus
Cedar Waxwing	Bombycilla cedrorum
Common Redpoll	Acanthis flammea
Pine Siskin	Spinus pinus
American Goldfinch	Spinus tristis
House Finch	Carpodacus mexicanus
Evening Grosbeak	Coccothraustes vespertinus
Song Sparrow	Melospiza melodia
Savannah Sparrow	Passerculus sandwichensis
Fox Sparrow	Passerella iliaca
Indigo Bunting	Passerina cyanea
Rose-breasted Grosbeak	Pheucticus ludovicianus
Rufous-sided Towhee	Pipilo erythropthalmus
American Tree Sparrow	Spizella arborea
Field Sparrow	S. pusilla
White-throated Sparrow	Zonotrichia albicollis
White-crowned Sparrow	Z. leucophrys
Barn Swallow	Hirundo rustica
Tree Swallow	Iridoprocne biocolor
Bank Swallow	Riparia riparia
Rough-winged Swallow	Stelgidopteryx ruficollis
Northern Oriole	Icterus galbula

Table 4.4-4
Wildlife Having Potential to Occur On-Site

Common Name	Scientific Name
Orchard Oriole	I. spurius
Brown-headed Cowbird	Molothrus alter
Northern Mockingbird	Mimus polyglottos
Brown Thrasher	Toxostoma rufum
Black-throated Blue Warbler	Dendroica caerulescens
Prairie Warbler	D. discolor
Blackburnian Warbler	D. fusca
Chestnut-sided Warbler	D. pensylvanica
Yellow Warbler	D. petechia
Black-throated Green Warbler	D. virens
Worm-eating Warbler	Helmitheros vermivorus
Black-and-White Warbler	Mniotilta varia
Louisiana Waterthrush	Seiurus motacilla
American Redstart	Setophaga ruticilla
Tennessee Warbler	Vermivora peregrina
Blue-winged Warbler	V. pinus
Nashville Warbler	V. ruficapilla
Canada Warbler	Wilsonia canadensis
House Sparrow	Passer domesticus
Red-breasted Nuthatch	Sitta canadensis
Starling	Sturnus vulgaris
Blue-gray Gnatcatcher	Polioptil caerulea
Golden-crowned Kinglet	Regulus satrapa
Scarlet Tanager	Piranga olivacea
Carolina Wren	Thryothorus ludovicianus
House Wren	Troglodytes aedon
Winter Wren	T. troglodytes

Table 4.4-4
Wildlife Having Potential to Occur On-Site

Common Name	Scientific Name
Veery	Catharus fuscescens
Hermit Thrush	Catharus guttatus
Eastern Bluebird	Siala sialis
Eastern Wood-pewee	Contopus vivens
Great-crested Flycatcher	Myarchus crinitus
Eastern Phoebe	Sayornis phoebe
Eastern Kingbird	Tyrannus tyrannus
Yellow-throated Vireo	Viero flavifrons
White-eyed Vireo	V. griseus
Red-eyed Vireo	V. olivaceus
Solitary Vireo	V. solitarius
Pileated Woodpecker	Dryocopus pileatus
Red-bellied Woodpecker	Melanerpes carolinus
Yellow-bellied Sapsucker	Sphyrapicus varius
Long-eared Owl	Asio otus
Great-horned Owl	Bubo virginianus
Screech Owl	Otus asio
Barred Owl	Strix varia
Mammals	
Mink	Mustela vison
Short-tailed Shrew	Blarina brevicauda
Eastern Coyote	Canis latrans
Star-nosed Mole	Condylura cristata
Opossum	Didelphis virginiana
Flying Squirrel	Glaucomys sp. sabrinus
Bobcat	Lynx rufus
Woodchuck	Marmota monax

Table 4.4-4
Wildlife Having Potential to Occur On-Site

Common Name	Scientific Name
Striped Skunk	Mephitis mephitis
Meadow Vole	Microtus pennsylvanicus
Woodland (Pine) Vole	Pitymys pinetorum
Long-tailed Weasel	Mustela frenata
White-tailed Deer	Odocoileus virginianus
Norway Rat	Rattus norvegicus
Eastern Mole	Scalopus aquaticus
Masked Shrew	Sorex cinereus
Red Squirrel	Tamiasciurus hudsonicus
Gray Fox	Urocyon cinereoargenteus
Meadow Jumping Mouse	Zapus hudsonius
Deer Mouse	Peromyscus maniculatus

Species of Special Concern and Unique or Locally Rare Species

Unusual or Locally Rare Birds

American Woodcock (*Philohela minor*)

- Westchester County Threatened Species

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.

Marginal habitat for woodcocks exists on the project site, although no observations of woodcock have been documented. The absence of open fields or brushland within close proximity to the site reduces the probability of the species inhabiting the area.

Cooper's Hawk (*Accipiter cooperii*)

- Westchester County Endangered Species
- NYSDEC Special Concern

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 forested communities on the project site. Along with opportunities offered by the project site, the probability of bird-feeders at any of the numerous residential developments in the surrounding area provide potential hunting habitat. Potential nesting habitat is also provided throughout the on-site forested communities.

Sharp-shinned Hawk (*Accipiter striatus*)

- Westchester County Endangered Species
- NYSDEC Special Concern

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.

Since this species habitat requirements are very similar to those of the Cooper's hawk, the project site offers habitat for both species.

Cerulean Warbler (*Dendroica cerulea*)

- Westchester County Endangered Species

The cerulean warbler, a *Westchester County endangered species*, is typically found in large, old-growth tracts of deciduous floodplain forest associated with a river or stream valley. 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.

Ecological communities on the project site are not expected to meet the habitat requirements of cerulean warbler.

Kentucky Warbler (*Oporornis formosus)*

- Westchester County Endangered Species

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 within patches of the on-site hardwood forest that contains a higher density of shrub species. However, presence of the species on the project site is unlikely due to the developed nature of the surrounding parcels.

Wood Thrush (*Hylocichla mustelina*)

- Westchester County Species of Special Concern

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 forested communities that exist on the project site. Nesting opportunities are present throughout the site as well.

Worm-eating Warbler (*Helmitheros vermivorus*)

- Westchester County Species of Special Concern

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 dry, 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.

Potential habitat for the worm-eating warbler is present on the project site, most notably along the eastern slopes adjacent to Reed Road.

Canada warbler (*Wilsonia canadensis*)

- Westchester County Species of Special Concern

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.

With the exception of stopover habitat, the project site does not meet the habitat requirements commonly associated with this species.

Louisiana waterthrush (Seiurus motacilla)

- Regionally Rare

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 along the stream outflow of Wetland A/B. As noted previously, this species was observed during early biological surveys by BLA.

Amphibians and Reptiles

Eastern Box Turtle (Terrapene carolina)

- NYSDEC Special Concern
- Westchester County Threatened Species

The Eastern box turtle is listed as a Species of Special Concern by the NYSDEC. 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."[4] 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.
Suitable habitat for box turtle is provided within the wetland communities, their associated 100 foot buffer, and within portions of upland forests with sandy soils. While no observations of the species were documented by the BLA surveys, an adult male box turtle of unknown age was observed by a scientist from TMA during a September 8, 2008 site visit. During a June 2010 visit, a second box turtle (a mature female) was also observed on the site. A map showing the location of these two observations is included as Figure 4.4-2.

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

Both of these observations were made within second growth forest areas with rocky substrate, which are abundant on this site. The 2008 sighting was between Wetland A and the Wetland F watercourse corridor. The June 2010 observation was south of Wetland F near a ledge outcrop.

Spotted Turtle (*Clemmys guttata*)

- Westchester County Threatened Species
- NYSDEC Special Concern

The spotted turtle, a *NYS species of special concern* and *Westchester County threatened species*, inhabits wet forests, marshes, bogs, and shallow, muddy streams where they feed upon snails, slugs, spiders and other invertebrates. They typically spend the daylight hours basking and foraging and evening hours are spent submerged. Summer vegetation typically hides much of their existence, but in the early spring they can often be seen sunning while the ground is still covered with snow and ice.

In May, females will leave the breeding pools and travel great distances to open sites, such as a field, meadow or road edge, to nest.

Wetland A/B on the project site provides adequate habitat for spotted turtle and the species may inhabit the wetland. This species was not observed during biological surveys.

Eastern Hognose Snake (*Heterondon platirhinos)*

- Westchester County Species of Special Concern
- NYSDEC Special Concern

The Eastern hognose snake, a *NYS species of special concern* and *Westchester County threatened species*, prefers to inhabit open areas with sandy soils. The snake is a highly secretive species that may utilize stone walls, wooded areas and pastures for cover and feeding. This species also is adaptable to new fields and suburban areas.

Suitable habitat is found throughout much of the project site. Stone walls throughout the property provide good cover habitat for the snake.

Northern Copperhead (Agkistrodon contortrix)

- Westchester County Species of Special Concern
- NYSDEC Special Concern

The northern copperhead, a New York State special concern species, is a generally small pit viper with a copper colored, diamond-shaped head. It is known to occur in eastern Westchester County. Typically, copperheads use rock outcrops or rocky areas with talus slopes for cover, feeding and as entrance ways to subterranean hibernating quarters. Like all reptiles, basking in the sun is important for the regulation of body temperature and metabolic processes. Thus, over-wintering and basking areas are usually located where the snakes can receive maximum sunlight exposure. They may overwinter alone or with other species such as timber rattlesnakes. Unlike timber rattlesnakes, copperheads have for the most part adapted well to habitat conditions created by people's activities. They can be found in wood slab piles, sawdust piles, rock piles and brush piles created by land clearing, or along utility rights of way. These areas provide foraging, basking and sheltering habitat. Abandoned farms, auto junkyards and foundations of barns or old homesteads, especially those with brushy fields and old fence rows, provide prime habitat for copperheads and their prey.

Suitable habitat is found throughout much of the project site. Exposed rock outcroppings and the wet conditions associated with Wetlands A and B provide suitable habitat. No copperheads have been observed on the site during extensive site walks.

Eastern worm snake (Carphopis amoenus)

- Westchester County Species of Special Concern
- NYSDEC Special Concern

The Eastern Worm Snake prefers a dark, moist environment. This secretive snake is rarely found out in the open; instead, it lurks under rocks or in decayed logs, usually near deciduous woodlands. Under hot conditions, such as summer, worm snakes burrow and spend most of their time underground. Porous, sandy soil is preferable for burrowing. During the winter, worm snakes hibernate underground.

Sandy soil is found through out the Highgate-Woodlands site, but due to the shallow depth to bedrock in large areas of the site it is unlikely that the site represents suitable habitat for worm snakes. No worm snakes were observed during site surveys.

Marbled salamander (Ambystoma opacum)

- NYSDEC Special Concern

The marbled salamander, a *NYS species of special concern*, is a fall breeding mole salamander species. Marbled salamanders are generally found in moist environments close to a source of fresh water. Adults can usually be found in burrows and under leaf litter and rotting logs. Unlike the spring vernal pool breeding salamanders, courtship, breeding, and egg-laying of the marbled salamander all occur on land. A female will lay eggs in September or October under logs, sphagnum moss, leaves, or debris along the fringes of vernal pools. When autumn rains fill the pool and inundate the eggs, the female leaves and the eggs hatch. The aquatic larvae overwinter in the pond, growing to maturity the following spring.

Wetlands on the project site, in particular Wetlands D/E, C, and a small vernal pool within A/B, provide habitat that may be utilized by marbled salamanders.

4.430 Wetlands

Wetland Delineations

On-site wetland delineations were performed by B. Lange Associates in accordance with the following federal, State, and municipal criteria.

Army Corps of Engineers (ACOE)

The ACOE defines wetlands as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support hydrophytic vegetation, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. According to the ACOE, wetlands generally include swamps, marshes, bogs and similar areas.

The 1987 ACOE Wetland Delineation Manual establishes technical guidelines for identifying wetlands and distinguishing them from aquatic habitats and non-wetlands. The manual defines wetlands based on three parameters; hydric soils, wetland hydrology, and hydrophytic vegetation, and imposes specific criteria to determine whether or not each parameter meets the wetlands definition. The manual also provides step-by-step procedures for routine, and comprehensive, delineations of wetlands, guidelines for evaluating disturbed and/or problem area wetlands (such as man-induced wetlands and natural events such as beaver dams), recommendations for determining whether normal environmental conditions are present, and forms for recording data.

The ACOE methodology was used to delineate the wetlands on the Highgate-Woodlands site. Isolated wetlands are not included as federal waters of the United States.

A Jurisdictional Determination of wetlands on the project site was issued by the ACOE on January 25, 1995. In that Determination, Wetland A was designated as regulated under federal jurisdiction. Jurisdictional determinations remain valid for five years after the date of issuance. Therefore, the ACOE was contacted by TMA in November 2009 to update their determination. A formal request for an updated Juisdictional Determination was submitted to the ACOE on November 5, 2009. ACOE and TMA staff inspected the site on November 24, 2008. Additional information was requested by the ACOE and was provided by TMA in January, 2010.

An updated Jurisdictional Determination was issued by the ACOE on February 21, 2013. The determination confirms the wetland boundaries as defined in a modified wetland delineation, shown in the drawing, “Existing Conditions, The Woodlands at North Salem”, prepared by Keane Coppleman Engineers, PC and dated January 12, 2010. The determination confirms that all mapped wetlands on the property (Wetlands A, B, C, D, E and F) are designated as regulated by the ACOE. This determination is valid for five years after the date of issuance. A copy of the jurisdictional determination is provided in Appendix 2 - Correspondence.

New York State Department of Environmental Conservation (NYSDEC)

New York State regulated wetlands are defined according to species-specific vegetation. This definition was refined in the NYSDEC April 1986 "Freshwater Wetlands Mapping Technical Manual". While the parameter is also called hydrophytic vegetation, its definition of jurisdiction also slightly varied from the US Army Corps' definition. Generally, to be regulated by NYSDEC a wetland must have a minimum area of 12.4 acres.[5] There are no NYSDEC regulated wetlands on the Highgate-Woodlands site.

The closest NYSDEC regulated wetland to the project site is wetland F-16, associated with the West Branch of the Croton River, located approximately 5,300 feet downstream of the point where site discharge drains to the existing tributary along Reed Road. This wetland and its location relative to the Highgate-Woodlands site is shown in Figure 4.2-3 NYSDEC Freshwater Wetlands Map. Wetland F-16 is a Class 1 wetland, is associated with the West Branch of the Croton River and its flood plain, and performs an important water quality function as part of the New York City reservoir system. Hydrologically, Wetland F-16 is approximately 6,500 feet downstream of Wetland A on the Highgate-Woodlands site. Site hydrology flows through channels on site and along Reed Road and Hardscrabble Road before passing under Route 22 and entering Wetland F-16. Based upon updated (2000) NYSDEC maps, no NYSDEC mapped

[5] The New York City Department of Environmental Protection (NYCDEP) only regulates wetlands which have been mapped by NYSDEC. No Such wetlands are present on the Highgate Woodlands site.

linear wetlands connect drainage from the project site to Wetland F-16. A newly designated State wetland (F-74) is located approximately 2,000 feet east of the site on Hardscabble Road, across Interstate 684.

Town of North Salem

Chapter 107 - Freshwater Wetlands of the Town Code , defines watercourses as "Rivers, streams, brooks and waterways which are delineated on the latest edition of the USGS 7.5 minute series quadrangle maps covering the Town of North Salem" and as "any other streams, brooks and waterways containing running water more than three months a year, and any other stream, brook and waterway which are delineated on the Town Surface Hydrology Map. Lakes, pond, marshes, swamps, bogs and all other bodies of water, natural or artificial, which are fed by, or have surface discharge to, a wetland or another watercourse."

The Town of North Salem wetland inspector conducted an inspection of the on-site wetlands with B. Laing Associates, Inc (BLA) on January 18, 2007 to determine if wetland boundaries had changed, or if additional wetlands had formed, since the wetland boundaries were last confirmed by the Town in 1996. The inspection confirmed that the initially delineated boundaries of the five wetlands remained largley the same. However, during the inspection additional areas of wetlands were found and the boundaries of previously delineated wetlands appeared to have changed somewhat in several locations. The changes to the delineation were relatively minor extensions of the originally delineated wetlands. The following new wetlands, and modifications to previously delineated wetlands, were adjusted and re-surveyed. A previously undelineated spring, and its associated watercourse/wetland east of the northerly end of Wetland F was delineated and added to the plan.

- The watercourse, which discharges off-site from the north end of Wetland F, is also now depicted on the plan. Wetland D/E was slightly expanded and an intermittent connection to Wetland C was added.
- A small finger of wetland was added to the west side of Wetland F. An additional area of wetlands was added to northwesterly corner of Wetland A.
- The westernmost boundary of Wetland A was slightly expanded.
- The southerly, mid-portion of Wetland B was expanded southward.

The confirmed wetland boundaries are reflected on the survey by Bunney Associates and as shown in the site plan drawings (Full Sized Plan Sheet SM-1 Soils Map/ Existing Conditions (Drawing 5) and Full Sized Plan Sheet OS-1 Overall Site Plan (Drawing 3). The surveyed wetland flags are also shown on the site plans attached to this DSEIS.

The noted wetland boundary revisions did not alter the vegetation, or soils, descriptions in the 1995 Wetland Delineation Report. To the extent hydrology has changed (a few new springs and a new intermittent connection), these changes are noted in the text of this DSEIS. Therefore, a new, separate Wetland Delineation Report is unnecessary to convey the added information, since the relatively small wetland changes have been incorporated in the site plans and DSEIS text.

The Town of North Salem wetland inspector visited the project site once again on December 16, 2009 with staff from TMA to verify all determinations made during the January 18, 2007 inspection with BLA were re-delineated. The modifications to the Town wetland line include:

- A small finger of wetland was added to the west side of Wetland F.
- Wetland F was connected to a unnamed "spring wetland", in the northwest corner of the property.

The Town-regulated wetlands map for the project (Full Sized Plan Sheet SM-1 Soils Map/ Existing Conditions (Drawing 5) reflects the changes made during both of these inspections by the Town wetland inspector.

Wetland Functions and Vegetation

The Highgate-Woodlands at North Salem site contains approximately 159.52 acres of which 152.75 acres are upland and 6.77 acres are occupied by six field delineated wetlands. The NYSDEC Wetland Maps do not indicate any State regulated wetlands on-site and the Town of North Salem does not maintain maps of Town-regulated wetlands. The Town requirement for a draft wetlands permit has been satisfied and a copy of that application is contained in Appendix 1 of this DSEIS. The application was submitted in the fall of 2005.

Wetland studies were conducted in September 1994 by staff from B. Laing Associates, Inc. A total of 6.77 acres of wetlands were mapped or about 4.3 percent of the site. In March 2005 (and again in 2006 through 2007), the site was inspected by staff from B. Laing Associates, Inc. to field verify these findings and resurvey the Highgate-Woodlands site. The wetlands were re-inspected on November 24, 2008 with staff from TMA and the ACOE, and on December 16, 2009 with staff from TMA and the Town Wetland Inspector. In 1994, wetland and upland samples were collected to make wetland boundary determinations (see Highgate DEIS Appendix 9, Wetland Delineation Report). Many samples were observed in the current efforts but none were recorded. The site's wetlands are predominantly wooded swamps and palustrine systems with the largest system (Wetland A) being a small open pond with an emergent marsh and a hardwood swamp boundary.

Six wetland areas were identified on the project site. Wetland A (the largest) consists of 3.43 acres and will be permanently preserved. The site's wetlands B, C, D, E and F total 3.34 acres. Wetlands B, C, D, E and F are a combination of palustrine forested systems and water courses. These systems are dominated by red maple. Areas where there are water courses or where the topography flattens out and has supported hydrophytic vegetation, have been designated wetlands. Wetland E functions as a habitat for the threatened NYSDEC listed plant cat-tail sedge (*Carex typhina*). The on-site wetlands are summarized in Table 4.4-5, below. Wetland vegetation observed in the Red Maple Hardwood Swamp Community is summarized in Table 4.4.6, below.

Table 4.4-5
Wetland Summary

Wetland ID and Jurisdiction	Area	Soil Type	Dominant Vegetation
A (ACOE/Town of North Salem)	3.43	LcB/Sh*	Red Maple/Emergent
B (ACOE/Town of North Salem)	0.83	LcB	Red Maple
C (ACOE/Town of North Salem)	0.61	LcB	Red Maple
D (ACOE/Town of North Salem)	0.14	LcB	Red Maple
E (ACOE/Town of North Salem)	0.15	LcB	Red Maple
F (ACOE/Town of North Salem)	1.61	LcA	Red Maple
*LcA/LcB - Leicester Loam; Sh - Sun Loam			

The site also contains three watercourses as defined by the New York City Department of Environmental Protection (NYCDEP) Section 18-16, Rules & Regulations. Two of these water courses drain to and through wetlands A, B, (NYCDEP Watercourse #1) and C (NYCDEP Water Course #2) eastward to Reed Road. The third drains through Wetland F, westward. The entire site drains to the Croton River, with the intermittent water course in Wetland F doing so directly via Juengst Road. The remainder of the site consists of approximately 152.75 acres of secondary growth, and deciduous, upland forest.

Wetland A Functions

Wetland A is located in the site's eastern central portion and is a dominantly open pond-emergent marsh with a hardwood swamp edge dominated by red maples. It is an area of mostly emergent vegetation and shallow open water surrounded by gently rising slopes. The amount of open water has declined by at least half since 1995 (the vegetated fringe has increased by the same amount).

This wetland is effective for sediment stabilization and nutrient removal/transformation. The area is also a location for ground water discharge. Production export is high when water levels are high, which is usually in all months except July and August. Aquatic and wildlife diversity is high because of the complexity of the environment and the presence of standing water. As noted below, Wetland A has a high diversity of wetland and transitional vegetation in and adjacent to the wetland boundary. This diversity provides well-developed habitat for wetland dependent animal species. It is noted that several wetland dependent bird species, including Virginia rail (*Rallus limicola),* belted kingfisher *(Ceryle alcyon)* and wood duck *(Aix sponsa)* have been observed within or in close proximity to Wetland A. Common herpetile and several species of unidentified dragonflies were also observed.

Wetland A Vegetation

Wetland A is the largest wetland system delineated on the site. The wetland is dominantly an open pond-emergent marsh with a diverse vegetative community. The border of the marsh is a traditional hardwood swamp with a shrub/scrub wetland extending west. The following species have been identified in this wetland: red maple, ironwood, smooth alder (*Alnus rugosa*),

winterberry, tussock sedge (*Carex stricta*), swamp milkweed (*Asclepias incarnata*), marsh fern (*Thelypteris thelypteroides*), bur-reed (*Sparganium sp*), beggar-ticks (*Bidens sp*.), meadow sweet (*Spirea salicifolia*), maleberry (*Lyonia ligustrina*), water horehound (*Lycopus americanus*), marsh marigold (*Caltha palustris*), false nettle (*Boehmaria cylindrica*), and jewelweed (*Impatiens capensis*).

Wetlands B, C, and F Functions

These three wetlands are mostly composed of narrow watercourses with flanking areas of hydrophytic vegetation and hydric soils. The three (3) New York City watercourses also delineated on site run approximately down the middle of these wetlands (with one interconnecting wetland C to wetland A).These wetlands are areas of ground water discharge and recharge (storm water). Effectiveness in sediment stabilization is low, particularly when flows are elevated. Because sediment stabilization is low, so is nutrient removal and transformation. When these wetlands flow, time of contact of nutrients with surface areas are reduced. This reduces the potential for nutrient removal/transformation. Aquatic and wildlife diversity is limited because water levels are variable and intermittent. Production export is also limited by water volumes but has high potential when levels increase.

Wetlands B, C, and F Vegetation

These wetlands are mostly composed of narrow watercourses that drain the majority of the property. The red maple-hardwood swamp wetland communities are wooded wetland communities with a dense over story and moderately distributed understory and herbaceous layer. The over story is dominated by red maple. Other species dominant in the overstory, but to a lesser extent, include American elm, swamp white oak (*Quercus bicolor*) and white ash. The canopy layer is relatively dense, or closed, allows only minimal light to the sub-surface. The shrub layer is denser in the wetlands than the uplands. The understory is dominated by barberry, red-osier dogwood (*Cornus stolonifera)*, arrowwood, winterberry, spicebush (*Lindera benzoin*), and some highbush blueberry (*Vaccinium corymbosum*). Saplings of red maple also occur frequently in the understory. The herbaceous layer is even further diminished by the interception of light in the shrub layer, but where present, is dominated by cinnamon fern (*Osmunda cinnamomea*), sedges (*Carex sp*.), sensitive fern, and jewelweed with some sphagnum moss (*Sphagnum sp*.) and trout lily (*Erythronium americana*). These palustrine, forested, vegetative communities are described above but the understory is very limited in steep areas by the shallow soil and alternating very wet and very dry conditions associated with these steeper watercourses. In areas where the topography flattens out and the soils deepen, the understory becomes more pronounced.

The overstory ranges from 35' to 80' in height with nearly 100% canopy cover in most locations. Additionally, the herbaceous layer has many seedlings from dominant trees.

Wetland D and E Functions

These two wetlands are small, pocket wetlands that occur in areas of topographic relief and areas of groundwater discharge. These wetlands are connected once every few years (i.e., only once to-date in more than 13 years of observation) by a very small, intermittent flow which has been insufficient to create an organized channel. These areas are not Federal wetlands (see above) but remain Town of North Salem wetlands. Sediment stabilization is high and nutrient removal/transformation is potentially high depending on hydrological conditions. Production

export is low because of the topographic relief and minimal connections. Aquatic and wildlife diversity is limited due to the areal limits of these wetlands and limited inflows and outflows which reduces the effectiveness for supporting aquatic wildlife. Additionally, one of the functions of Wetland E is that it provides habitat for a large assemblage of the New York State threatened cat-tail sedge *(Carex typhina)* that will be preserved on a conservation parcel. These functions are limited by a substantial, existing use by off-road vehicles (see discussion of endangered and threatened species').

Wetlands D and E Vegetation

These two wetlands are small, isolated, pocket wetlands that occur in areas of topographic relief. Wetlands E is also dominantly emergent per A above but is unique because it contains the species cat-tail sedge *(Carex typhina),* a species listed by the NYSDEC and the Natural Heritage Program as threatened.

The Natural Heritage Program was contacted concerning distribution and they have indicated that this site is one of approximately 6 other sites containing an assemblage of this plant. They have also indicated that this site does contain the largest assemblage.

Because of the rarity of this plant, little is known or has been studied about the plants' ecology and physiology. Therefore, a statement about indirect impacts to the plant as a result of temperature changes, air quality changes, etc. is not possible at this time. However, the *Carex typhina* will be preserved and protected by maintaining a minimum 100-foot buffer from the plant assemblage itself.

The applicant notes that wetland D/E complex is already subject to disturbance by off-road vehicles illegally utilizing the now vacant parcel. One substantial, eroding trail already cuts through the wetland D's western to northern edge. This activity has caused open, eroded locations within the wetlands. This, in turn, causes accelerated, sedimentation in the wetland. The degree to which this has impacted the cat-tail sedge to date is unknown, but the effects have been negative.

A summary of the wetland function benefits as defined by the Town of North Salem Town Code is provided in Table 4.4-6.

Table 4.4-6
Summary of Wetland Functions*

Wetland ID	Primary identified functions
A/B	Stormwater runoff control; Protection of wildlife habitat; Pollution treatment; Erosion control; Source of nutrients for freshwater systems; Unique and diverse vegetation
C/D/E	Stormwater runoff control; Pollution treatment; Erosion control; Source of nutrients for freshwater systems; Unique and diverse vegetation
F	Protection of wildlife habitat; Pollution treatment; Source of nutrients for freshwater systems
Functions and benefits of wetlands as described in Chapter 107 of the Town of North Salem Town Code, Sec 107-2F.	

Wetland Regulatory Jurisdictions On-site

Wetland A is a Town and federally regulated wetland encompassing approximately 3.43 acres. Wetland A occurs in the east central portion of the site and is the most extensive wetland on-site. Wetlands B, C, D, E and F total 3.34 acres and are both Town and federally regulated wetlands. These wetlands occupy a series of narrow, steep channels extending north to south across the site. Wetland B is an intermittent watercourse that drains Wetland A. Wetland C has an intermittent watercourse that drains into Wetland A. Wetlands D/E has an intermittent flow toward wetland C. Wetland F contains an intermittent watercourse that drains westward to Juengst Road. Wetland F is a palustrine watercourse which varies from narrow rocky swales to wider hardwood swamp patches. An intermittent watercourse forms the center of Wetland F. Water flow is frequently slowed by a decrease in slope and/or man-made stone walls. In these areas, the wetlands broaden out to form palustrine, wooded systems. These wetlands are shown in Figure 4.2-4 Wetlands Map and Full Sized Plan Sheet SM-1 Soils Map/Existing Conditions (Drawing 5).

As indicated above, Wetlands A, B, C, D, E and F are regulated by the Army Corps of Engineers, per the updated Jurisdictional Determination dated February 21, 2013 (see Appendix 2 - Correspondence.

No on-site wetlands meet the criteria for designation as a NYSDEC wetland (minimum of 12.4 acres), and no NYSDEC mapped wetlands are located on or in the immediate vicinity of the site.

Wetland Soils

Wetland or hydric soils are those that are in an undrained condition, saturated within 18 inches of the surface, and/or flooded or ponded long enough during the growing season to develop an anaerobic condition in the upper stratum. Wetter conditions of somewhat poorly drained soils, poorly drained and very poorly drained soils are included as hydric soils. Alluvial floodplains or filled soils may be included as hydric soils if wetland indicators are present.

The wetland limits also include all federal wetlands which exhibit the three parameters of hydric soils, wetland hydrology and predominance of hydrophytic vegetation.

Intermittent watercourses with defined channels were included in the flagging of waters of the United States. The federal wetlands “flagging” was confirmed by the Army Corps of Engineers after a site walk on January 19, 1995. The wetlands were re-inspected on November 24, 2008 with staff from TMA and the ACOE, and on December 15, 2009 with staff from TMA and the Town Wetland Inspector. An updated Jurisdictional Determination was issued by the ACOE dated February 21, 2013.

The soils on site which can be described as "wetland soils" are the Leicester Loam and Sun Loam (with Ridgebury inclusion) where water tables from one to one and one half feet below the surface. These soil series have seasonally high water tables at or near the surface which may drop to between one and four feet during the drier parts of the year. All these soils exhibit moderate permeability in the surface with varying permeability in the subsurface and substratum.

North Salem's wetland rules and regulations call for jurisdictional areas on uplands adjacent to wetlands. This local jurisdiction extends 100 feet upland from the wetland boundary. The delineation methodology and sampling were provided in detail in the Highgate DEIS Appendix 9.

Impacts and Mitigation

Potential Impact to Upland Vegetation

The Highgate-Woodlands project will involve the removal of existing successional northern hardwood forest vegetation. Based upon the grading plan, the total area to be impacted would be approximately 82.13 acres. The development would result in the construction of approximately 19.00 acres of impervious surfaces (houses, driveways, roads, patios) and approximately 63.13 acres of regraded/re-vegetated area *(i.e.* storm water basins, side slopes, lawns, and landscaping).

Approximately 77.39 acres (or approximately 48.5 percent) of the existing vegetation on the site would be retained following construction. Mitigation for the loss of existing vegetation is discussed in Mitigation, below. Potential water quality impacts associated with post construction changes in storm water, and the mitigation proposed in the SWPPP, are discussed in Section 4.220 of this DSEIS.

The limits of grading and vegetation removal are generally shown in Figure 3-3: Highgate-Woodlands Site Plan and are represented by the tree line. The limit of disturbance is shown in more detail in Full Sized Plan Sheet EC-1 to EC-4, Erosion Control Site Plans (Drawings 19 through 22). As shown in Figure 3-3, existing trees and vegetation have been retained where possible between homes and driveways and on individual lots. For example, a buffer of existing vegetation, including mature trees will be maintained between homes on Lots 13, 14 , 15 and 16. Similarly, groups of mature trees and existing vegetation will be retained in the front yards of Lots 18, 19 and 20.

Potential Impacts to Wetlands and Watercourses

Development of the property has the potential for direct and indirect impacts to wetlands and associated surface water resources (streams or intermittent water courses on site) The "direct impacts" involve loss of habitat through grading, filling or clearing of vegetation in the wetland. These impacts could affect ACOE regulated wetlands, Town wetlands, and NYCDEP intermittent water courses. The indirect impacts derive from the loss of wetland functions originally associated with a habitat, and result in degradation of a natural resource. Indirect impacts may result from the clearing of vegetation within the wetland buffers (regulated 100-foot buffer).

Direct and indirect impacts to on-site wetlands and their regulated 100 foot buffers have been minimized to the extent practical. Wetland buffer mitigation planting and enhancement has been designed to mitigate and replace those unavoidable wetland buffer impacts (see Mitigation, below). A summary of the potential impacts to individual wetland systems and the mitigation measures that are proposed is presented in Table 4.4-7.

Table 4.4-7
Summary of Wetland Impacts and Mitigation

Wetland ID	Potential direct and indirect impact to identified functions	Mitigation to offset potential impacts
A/B	Encroachment into buffer for stormwater basins; possible deterioration of water quality from stormwater runoff; possible changes to hydrology of inflow; potential impact of proximity of human activity to wildlife	Use of water quality basins to treat runoff prior to discharge; Use of numerous basins so that hydrology is dispersed rather than concentrated at one outlet; Use of a retaining wall directly behind the active adult units to separate daily human activity; provide access to interested residents for enjoyment of open space and wildlife watching; preserve large area of open space around wetlands; Wetland buffer enhancement and invasive species management program
C/D/E	Encroachment into buffer for emergency access road; possible deterioration of water quality from stormwater runoff; possible changes to hydrology of inflow	Use of water quality basins to treat runoff prior to discharge; Use of numerous basins so that hydrology is dispersed rather than concentrated at one outlet; Provide access to interested residents for enjoyment of open space and wildlife watching; Preserve large area of open space around wetlands; Wetland buffer enhancement and invasive species management program
F	Encroachment into buffer for stormwater basins; possible deterioration of water quality from stormwater runoff; possible changes to hydrology of inflow	Use of water quality basins to treat runoff prior to discharge; Use of numerous basins so that hydrology is dispersed rather than concentrated at one outlet; Size all culverts to ensure continued flow patterns; Wetland buffer enhancement and invasive species management program

Direct Wetland Impact

The single direct wetland impact from the project involves the filling of 87 square feet or 0.002 acres of Wetland F, and is required for the construction of Road C, near the intersection with Road A. The stream crossing of Wetland F, at the intersection of Roads A, B and C will involve no direct impacts to the streambed or the wetland resource, since a structure will span the stream. No fill will be placed in the stream or wetland at this location.

Indirect Wetland Impact

The native vegetation fringing a wetland serve to filter stormwater runoff, visually screen wildlife in the wetland habitat, control soil erosion and provide biotic diversity for the wetland system. Grading, filling, or clearing in the wetland setback area can potentially reduce these benefits, and reduce the effectiveness of the wetland "buffer zone" (regulated 100-foot buffer). The proposed Highgate-Woodlands residential development will require grading or filling in this

wetland buffer area. The total area of wetland buffer impacts will be 5.73 acres. The majority of buffer impacts involve: 1) roadway (Roadway A, B and C, in the Wetland F buffer) or 2) relate to stormwater management facilities.

The impacts to and the description of Highgate-Woodlands regulated 100-foot wetland buffers follows:

Wetland A and Wetland B The largest wetland on the site is bordered by the sewage treatment plant to the south, and the active adult townhomes to the west, and an emergency access drive and the water treatment facility to the north. Approximately 79,720 sf or 1.83 acres disturbance to this wetland buffer will result from construction of stormwater basins, and the emergency access road at the north side of Wetland A. The location of the basins at the edge of the wetland buffer was unavoidable since stormwater flows from the multifamily development to a low point in this area. In addition, an small area of buffer will be disturbed for the grading related to the wastewater treatment plant building, at the southern edge of Wetland B.

Wetland C, D/E The impacts to this wetland buffer, which total 56,644 sf or 1.30 acres are related to an emergency access road connecting the active adult townhouse development with Road B, and the cul-de-sac in the northeast corner of the property. The impacts to the buffer were minimized to the extent possible, including pushing the location of the emergency access road further west of Wetland D/E, onto a portion of Lot 36.

Wetland F As described above, the only direct impact to wetlands for the project will occur at a finger of Wetland F, located on the edge of Road B. The direct wetland impact will total 87 sf or 0.002 acres.

A total of 113,337 sf or 2.60 acres of wetland buffer impact (Wetland F) will result from the project. The Wetland F buffer impact is necessary for the construction of the primary access road to the single family residential development: Road A and its intersection with Roads B and C. In addition, stormwater management basins were located at a topographic low point at the northwest edge of the active adult townhomes, and at a similar low point on the east side of Road A, at the edge of the Wetland F buffer.

The proposed stormwater facilities will treat the stormwater for quantity and quality aspects prior to its discharge. Wetland mitigation and enhancement planting is shown in the landscaping plans, Full Sized Plan Sheets LS-1 and LS-2 (Drawings 23 and 24), and is further described below.

As noted above, Wetland A provides water quality functions as well as habitat functions due to its size, diverse cover types and landscape location. The proposed plan will disturb approximately 1.83 aces of wetland buffer in the A/B system for the construction of a stormrwater basin and emergency access road. Five water quality treatment facilities are proposed to capture and treat run-off from developed areas prior to discharge to the Wetland A/B system. The development closest to the wetland, the active adult units, will be physically separated form the wetland by a retaining wall that will be constructed along the eastern edge of these units. Wetlands A, B, C, D and E will all be part of approximately 40 acres of contiguous existing vegetation that will remain post-development.

Approximately 0.76 acres of Wetland D/E buffer will be impacted for the construction of the emergency access road, between the multi-family development and Road C. Wetland D/E in

which a population of the threatened plant species *Carex typhina* was identified will not be directly impacted and the 100 foot wetland buffer will be retained to the extent possible.

Secondary impacts associated with runoff (sedimentation, eutrophication, etc.) are further mitigated by the proposed use of erosion controls during construction and the implementation of the Storm Water Pollution Prevention Plan (SWPPP). These mitigating measures include siltation fences during construction and the permanent stormwater management facilities designed to treat stormwater during the project's operation. The operational benefit of the basins proposed in the SWPPP was modeled for pollutant loadings before and after the project. The modeling is discussed in greater detail in the surface water sections of the DSEIS (see Section 4.220). The DEC Wetland F-16, which is 6,500 feet downstream of the site, will also be protected from water quality impacts by these best management practices.

Sewage Treatment Plant

As noted elsewhere in this DSEIS, the applicant is proposing to build a sewage treatment plant for the treatment of residential wastewater. This wastewater will then be discharged to a subsurface disposal area after tertiary treatment. DEP Watershed Regulations prohibit surface discharges in the watershed. As shown in the grading plan (Sheet No. CS-1 Comprehensive Site Plan, Drawing 6), the subsurface disposal area is located in a different drainage area than Wetlands A/B. The disposal area generally slopes towards the south and away from Wetlands A/B, and therefore is not expected to have a direct or indirect impact on the wetlands.

Development of the disposal area will require the clearing and grubbing of the area, and excavation for the installation of the leaching fields. Appropriate erosion controls will be in place during this construction.

Fish and Wildlife

The impact that the development will have on wildlife species is related to the disturbance of vegetative communities which provide habitat. The proposed development adequately protects freshwater wetland habitats, both wooded and shrub wetlands. The wildlife species most affected by this development are species requiring a wooded, upland habitat. The development involves the construction of impervious surfaces which provide little or no habitat value. The lawns associated with each development alternative would provide habitat value to suburban-adapted species not sensitive to the clearing of herbaceous and shrub vegetation *(e.g.,* robin, starling, blue jay).

The project involves the spreading of the development along the western and northern borders of the site. The Active Adult townhouses will be created on the previously disturbed, central portion of the property. Development in the western section of the site is limited to mostly residential lots, thereby preserving much more of the mature woodland habitat.

The loss of wildlife habitat will be a function of the extent of removed vegetation, which is approximately 82.13 acres or 51.5 percent of the 159.52 acre site. This clearing, as illustrated in the site's grading plan, is based on grades established without any rock cuts. If and when rock cuts occur, clearing may actually be less than expected due to increased grades on the side slopes, as described in the soil and geology section above.

Animal species ill-adapted to populated environments such as some owls, diurnal birds of prey, and pileated woodpeckers may suffer from displacement due to loss of habitat. In the active adult townhouse portion of the site, all layers of the site's woodland habitat will be disrupted and the impact will be proportional to the acreage cleared. In the residential portion of the site, however, only portions of the lot will be cleared. In these cleared portions, the shrubs and soil layers will be disturbed but the canopy will be maintained partially intact. Thus, those species which occupy the herbaceous soil layer will experience greater impact than those in the shrub layer will experience a lesser impact and those in the forest canopy will generally experience the least impact. The presence of communal recreation facilities for the single family residential units will also serve as a mitigating feature over time. That is, when such facilities are provided in common, the individual homes have a lesser tendency to have such amenities separately. Thus, the amount of clearing on individual lots is limited.

Further, animal species common in populated environments such as deer, fox, small mammals, and birds will take up residence within the subdivision. The carrying capacity of an area can largely determine that areas wildlife population, thus revealing whether it is capable of providing habitat for additional species relocating from nearby sites. A lack of information regarding the carrying capacities of existing animal populations on adjacent undeveloped land handicaps the effort to predict how many of the site's animal residents will find forage, cover, and breeding grounds on adjacent lands. The results can generally be predicted to be in direct proportion to the area expected to be cleared. However, it seems probable that in those areas with limited development (as with residential portions of the site) most of the species adapted to wooded environments will be able to relocate to lands off site.

It is necessary to distinguish between "primary" and "secondary" habitat. Some amphibians, for example, require surface water for the larval life stage. Therefore, even though an adult salamander might occupy a dry site, this could not be considered adequate habitat unless reproduction were possible such as the species having an upland area and wetland in proximity to each other. Similarly, a mammal may use clear cut areas but is not known to meet all of its life functions on these sites. Primary habitat is distinguished on the grounds that a species can meet all of its life history functions on such a site. It can be reasoned, therefore, that although a reduction in numbers of some "primary habitat" species may occur, other species will move in and fill the new niche created by a "secondary habitat."

For example, amphibians will be largely protected from this impact by the preservation or re-vegetation over time of upland buffers adjacent to the vast majority of the site's wetlands and the addition of the storm basins. Smaller mammals will experience greater impacts due to lesser mobility and greater reliance on primary habitats, which occur on the forest floor. Finally, most birds use the forest canopy and are more mobile, therefore being less susceptible to these impacts as individuals. However, those avians which are more dependent on the shrub and herbaceous layers will experience greater impacts. Several of these avians which may experience the greater impacts because of the loss of ground shrubs and herbaceous species, including the worm-eating warbler, ovenbird and several other warblers which now occur on the site.

Eastern Box Turtle

Eastern box turtle, a State listed "species of special concern" and Westchester County listed as a "threatened species" was observed on the project site in two locations, both of which are proposed for development. The September, 2008 observation was located in the area of the

proposed active adult units, which are located between Wetlands A and F. This proposed development is relatively high density and will require significant grading; therefore box turtle habitat will be eliminated from this part of the site. The June, 2010 sighting was in the vicinity of proposed Lots 1 and 2 and the primary development road. This area will likewise be altered during construction, although a number of trees and undisturbed areas will remain. If this particular turtle typically utilizes the Wetland F corridor, this corridor will be preserved in the proposed condition.

Ample areas of the site with suitable habitat for box turtles will remain in the proposed condition. More than 41 contiguous acres in the eastern part of the site will remain undeveloped, and most of this undisturbed during construction. This includes Wetlands A, B, C, D and E as well as large expanses of second growth woodlands similar to the two locations where box turtles were observed. The key to preservation of box turtles on this site is the preparation and education of the construction crews during development activities. As final development plans progress, the phasing plan will consider the strategic use of silt fence along limits of disturbance and a regular program of inspection at the fence line prior to daily construction activities to find and relocate turtles outside of work areas.

Threats to box turtles include roadway mortality, loss/predation of nesting sites and removal/disturbance of over-wintering areas. Regarding roadway mortality, the closed nature of this development and speed controlling measures will mitigate the loss of turtles to vehicles. Leash laws are in effect in the Town of North Salem and should minimize predation of turtles and nesting sites. No specific over-wintering areas were identified on the property, but a large area of the site including the wetlands on the eastern portion exhibit characteristics that could be utilized by over-wintering turtles, and as noted above at least 40 acres of open space in the eastern part of the site will be preserved.

The effects of blasting on wildlife will likely be minimal and temporary. That is, local wildlife will experience the primary impact from a loss of habitat as described above. They may also be disturbed by the vibration caused by the blasting but this will be a secondary and temporary effect.

Wetland Mitigation

Wetland mitigation is proposed to off-set the project related impacts, including the 87 sf (0.002 acres) direct impact to Wetland F and the 5.73 acres of disturbance to wetland buffers on the property. Two methods of wetland mitigation are proposed, as follows.

1) Invasive Species Management Invasive species, including Barberry, Rugosa Rose and Burning Bush were observed in the on-site wetland buffers. A program is proposed to remove invasive species from the a portion of the Wetland F buffer, with an area of approximately 7.5 acres in size (see landscaping plans, Full Sized Plan Sheets LS-1 and LS-2 (Drawings 23 and 24)). Invasive plants in this area will be removed by hand. Remaining stems will be treated with an herbicide to prevent regrowth. The invasive species management is intended to improve the functioning of existing, non-disturbed wetland buffer.

2) Wetland Buffer Enhancement Enhancement planting is proposed in specific wetland buffers disturbed by grading or in areas adjacent to existing buffers (outside the buffer), as shown in the landscaping plans, Full Sized Plan Sheets LS-1 and LS-2 (Drawings 23 and 24). These areas, with a total area of 2.1 acres, will be planted with seed and with individual native plants.

The intent of the planting is to replace and enhance existing buffers. The plants complementing the seed mix will be native woody perennial plants, installed at a rate of 40 trees and 80 shrubs per acre, thereby achieving nearly fully wooded conditions at the maturity of the plants. Proposed plants for the enhancement planting are provided in the landscaping plans (Full Sized Plan Sheets LS-1 and LS-2 (Drawings 23 and 24)).

Table 4.4-8
Red Maple-Hardwood Swamp Wetland Community
Vegetation Observed On-Site

Common Name	Scientific
Red Maple-Hardwood Swamp Wetland Community (Wetlands B, C, D and E)	
Red Maple	Acer rubrum
American Elm	Ulmus americana
Swamp White Oak	Quercus bicolor
White Ash	Fraxinus americana
Black Oak	Quercus velutina
Red-osier Dogwood	Cornus stolonifera
Highbush Blueberry	Vaccinium corymbosum
Swamp Azalea	Rhododendron viscosum
Northern Arrowwood	Viburnum recognitum
Silky Dogwood	Cornus amomum
Speckled Alder	Alnus rugosa
Common Elderberry	Sambucus canadensis
Swamp Rose	Rosa palustris
Winterberry	Ilex verticillata
Pussy Willow	Salix discolor
Spicebush	Lindera benzoin
Black Cherry	Prunus serotina
Skunk Cabbage	Symplocarpus foetidus
Aster sp.	Aster sp.
Rice-cut Grass	Leersia oryzoides
Sensitive Fern	Onoclea sensibilis
Tussock Sedge	Carex stricta

Table 4.4-8 Red Maple-Hardwood Swamp Wetland Community Vegetation Observed On-Site	
Cat-tail Sedge	Carex typhina
Sphagnum Moss	Sphagnum sp.
Woolgrass	Scirpus cyperinus
Cinnamon Fern	Osmunda cinnamomea
Lady Fern	Athyrium filix-femina
Larger Blue Flag	Iris versicolor
Jewelweed	Impatiens capensis
Clearweed	Pilea pumila
Ground Pine	Lycopodium obscurum
Poison Ivy	Rhus radicans
Pignut Hickory	Carya glabra
Mockernut Hickory	Carya tomentosa
Shagbark Hickory	Carya ovata
Staghorn Sumac	Rhus typhina
Hornbeam (Ironwood)	Carpinus caroliniana
Grey Birch	Betula populifolia
Green Bulrush	Scirpus atrovirens
Spotted St Johnswort	Hypericum punctatum
Yellow-fruit Sedge	Carex annectens
Pointed Broom Sedge	Carex scoparia
Blunt Broom Sedge	Carex tribuloides
Three-seed Sedge	Carex trisperma

Terrestrial and Aquatic Ecology - MIH Property Impacts and Mitigation

The MIH property is located in the hamlet of Croton Falls between Route 22 and the MetroNorth railroad lines. The property has been completely graded for a NYSDEC supervised soil remediation project. Vegetation on the property consists of recently planted grasses, bushes and several existing larger trees at the edges of the site (eight trees identified on the survey). The property provides limited potential for bird and small mammal habitat and cover given its

proximity to surrounding development and human traffic. No adverse impacts to the local terrestrial and aquatic ecology are anticipated by the redevelopment of the property for residential use.

Table 4.4-9
Emergent Marsh Wetland Community
Vegetation Observed On-site

Common Name	Scientific
Emergent Marsh Wetland Community (Wetland A)	
Purple Loosestrife	Lythrum salicaria
Red-oiser Dogwood	Cornus stolonifera
Pussy Willow	Salix discolor
Swamp Rose	Rosa palustris
Speckled Alder	Alnus rugosa
Sensitive Fern	Onoclea sensibilis
Tussock Sedge	Carex stricta
Penciled Aster	Aster simplex
Skunk Cabbage	Symplocarpus foetidus
Woolgrass	Scirpus cyperinus
Watercress	Nasturtium officinale
False Nettle	Boehmeria cylindrica
New England Aster	Aster novae-angliae
Hog Peanut	Amphicarpea bracteata
Swamp Milkweed	Asclepias incarnata
Bearded Sedge	Carex comosa
Fringed Sedge	Carex crinita
Slender Rush	Juncus tenuis
Soft Rush	Juncus effusus
Three-way sedge	Dulichium arundinaceum
Spikerush	Elocharis sp.
Great Bulrush	Scirpus validus
Water-Horehound	Lycopus sp.
Bur-Marigold	Bidens cernua
Broad-leaf Cattail	Typha latifolia
Duckweed	Lemna sp.

Table 4.4-9 Emergent Marsh Wetland Community Vegetation Observed On-site	
Burreed	Sparganium sp.
Common Reed	Phragmites australis
Jumpseed	Polygonum virginianum

4.500 Transportation

This analysis is prepared by Tim Miller Associates, Inc. (TMA) as a part of the Draft Supplemental Environmental Impact Statement (DSEIS) for the Highgate-Woodlands at North Salem Coordinated SEQR Evaluation. It draws from and is based upon prior research and studies by other firms and new investigation, analysis, and projections by TMA. It is designed to meet the requirements of the Final Scoping Outline for the DSEIS as adopted by the Town Board of the Town of North Salem, March 22, 2005. In addition, it responds to comments made by the firms of Matthew D. Rudikoff Associates, Inc. and John Collins Engineers, P.C., in their Completeness Reviews of the Draft SEIS for the Town Board.

The proposed Highgate-Woodlands Development consists of 42 single family residences and 76 attached senior-residential dwelling units in 19 buildings of 4 units each. Separate recreational amenities are proposed for the single family and attached units complexes.

4.510 Existing Conditions

Introduction

A Traffic Impact Study for the Highgate-Woodlands at North Salem was conducted by Michael Maris Associates, Inc. in April, 2005. This section of the DSEIS summarizes the results of that study and subsequent investigation, analysis, and projections by TMA. The full Maris Traffic Impact Study is included as Appendix 12 of this DSEIS. Subsequent data is provided at the beginning of Appendix 12. The traffic study and analysis described herein, was conducted assuming 49 single-family residences and 76 attached senior townhouses. The currently proposed project with 42 single family residences and 76 attached townhomes will result in the generation of less traffic than analyzed in this traffic study.

The development site is located on Reed Road near its intersection with Hardscrabble Road in the town of North Salem, Westchester County, New York. The site is situated northwest of Interstate 684, which has an interchange with Hardscrabble Road approximately two-tenths of a mile from the site. The development would be served by a single access roadway intersecting with Reed Road. The roadway would be gated west of the intersection with Reed Road and would be privately maintained throughout the development. The roadway between the entrance at Reed Road and the access gates would be dedicated to the Town.

The proposed project consists of the development of 42 single family homes, each to be located on at least one acre and a second complex of 76 residences designed as active adult townhouses. The development is proposed to be located within two zones, an existing R-1 zone for the single family homes and an RMF zone for the multifamily development.

Study Area and Methodology

The study area for this analysis includes the following intersections:

- Hardscrabble Road and I-684 Northbound Ramps
- Hardscrabble Road and Reed Road
- Hardscrabble Road and I-684 Southbound Ramps
- Hardscrabble Road and NYS Route 22
- NYS Route 22 and Front Street

- Reed Road and Site Driveway

The potential traffic impact of the proposed project was determined by documenting the existing traffic conditions in the area, projecting future traffic volumes, including the peak hour trip generation of the site, and determining the operating conditions of the study area intersections after development of the proposed project. Where indicated, potential improvements were identified and intersection capacities with the improvements were analyzed.

The Traffic Impact Study assesses traffic volumes at the study locations under three scenarios:

- Baseline traffic conditions comparing volumes to existing intersection capacities;
- No Build traffic conditions comparing future volumes without the project's traffic to the existing intersection capacities;
- Build traffic conditions comparing future volumes including the project's traffic to existing intersection capacities.

The "Build" year used in the Traffic Impact Study (see Appendix 12) was consistent with the Final Scoping Outline approved for the project (see Appendix 1). Supplemental traffic analysis has been done to validate a Build year of 2015. This analysis is described in Section 4.520 Future Traffic Volumes.

Potential improvements were identified and additional analyses performed where the capacity analyses indicated traffic flow problems.

The following tasks were undertaken in accordance with the scope and accepted methodology as recommended by the Institute of Transportation Engineers (ITE):

1. Field observations were performed at each study location to collect data showing intersection geometry and traffic controls.
2. Sight distances at the Hardscrabble Road/Reed Road and Reed Road/site driveway intersections were analyzed.
3. Three-year accident data for the Hardscrabble Road/Reed Road intersection was collected and summarized.
4. At the recommendation of the Town's consultant, base traffic volumes at some study locations were taken from a study prepared by Adler Consulting as that study included projections of traffic generated by other proposed developments in the area.
5. Study locations that were not included in the Adler study were counted and then increased to conform with the projections in the Adler study.
6. The baseline traffic volumes were increased by an annual growth rate to the design year, resulting in the No Build traffic volumes.
7. The traffic generated by the proposed project and the distribution of that traffic on surrounding roadways was estimated based upon accepted methodology and added to the design year No Build volumes, resulting in the Build volumes.
8. Capacity analyses were performed for each of the scenarios identified above.
9. For the study locations where the analyses indicated existing or potential traffic delays,

improvements were identified and additional analyses were performed to identify traffic conditions with the improvements.

The following measures of effectiveness analyses were prepared for this study:

Level of Service Criteria, Unsignalized Intersections

The Highway Capacity Manual, 2000, published by the Transportation Research Board, and the Highway Capacity Software procedures document the methodology used for modeling Levels of Service, average vehicle delay, and volume to capacity ratios at both signalized and unsignalized intersections. The use of this manual and the software is consistent with the approved scope (Appendix 1). 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 definitions of delays consider all delays including startup, deceleration, and acceleration delays. The New York State Department of Transportation prefers use of the Highway Capacity Manual methodologies over other traffic capacity methodologies.

Table 4.5-1 presents the Levels of Service criteria for unsignalized intersections.

Table 4.5-1
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.

Level of Service Criteria, Signalized Intersections

Table 4.5-2 shows the Levels of Service criteria for signalized intersections. The New York State Department of Transportation (NYSDOT) generally seeks a minimum Level of Service D (delay of 55 seconds or less for a signalized intersection) for all lane groups. The NYSDOT Highway Design Manual (page 5-92) notes, “In some cases, it may be necessary to accept Level of Service E or F on individual lane groups due to unreasonable costs or impacts associated with improving the Level of Service.”

The Highway Capacity Software model results apply to 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 adequate and much better than the modeled peak hour results. During peak periods the experience of individual drivers can vary, because the model calculates average 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.

Table 4.5-2
Signalized 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 20
C	greater than 20 and less than or equal to 35
D	greater than 35 and less than or equal to 55
E	greater than 55 and less than or equal to 80
F	greater than 80

SOURCE: Highway Capacity Manual, National Academy of Sciences, Transportation Research Board, National Research Council, Washington, DC, 2000.

Sight Distance Analyses

The methodology used to perform sight distance analyses consists of a survey and field observations to identify the available sight distances on the approaches to an intersection and comparison of the require sight distances recommended by the American Association of State Highway Transportation Officials (AASHTO) in a publication entitled A Policy on Geometric Design of Highways and Streets, 2011. Sight distance analysis was completed for Reed Road and the site driveway and Reed Road and Hardscrabble Road.

Existing Roadway and Traffic Conditions

Roadway Network Availability

A number of regional and local roadways will provide access to the proposed project. Following are brief descriptions of these roadways:

- Interstate Highway 684 is a major north-south expressway, extending from the Cross Westchester Expressway (Interstate 287) to Interstate 84. In the vicinity of the site, Interstate 684 is a six lane, divided, limited access highway whose original posted speed limit of 55 miles per hour was increased to 65 miles per hour. This roadway provides excellent regional access to the site via Interchange Number 8 with Hardscrabble Road.
- New York State Route 22 is a north-south roadway that, in the North Salem area,

parallels Interstate 684 between Croton Falls and Interstate 84. From Croton Falls, NYS Route 22 extends southeast to Purdys. The roadway has one travel lane in each direction, with additional turning lanes at major intersections, and has a posted speed limit of 50 miles per hour.

NYS Route 22 provides access to the Moderate Income Housing (MIH) site in the hamlet of Croton Falls. In this section of Route 22, the roadway has two travel lanes and the posted speed limit is 35 miles per hour.

- Hardscrabble Road runs east-west through North Salem between NYS Route 22 to the west and June Road to the east. The roadway has one travel lane in each direction and the posted speed limit is 35 miles per hour. As noted above, Hardscrabble Road has access to Interstate 684 near the development site.
- Reed Road is a local street that will provide access to the proposed development. It has a T intersection with Hardscrabble Road to the south of the site and terminates in a dead end to the northeast of the site. It presently serves several single-family dwelling units and consists of one travel lane in each direction. All access to the Highgate-Woodlands development will be via Reed Road.

Train Service Availability

In addition to vehicular access, the area surrounding the proposed project is served by the Metro-North Railroad's Harlem Line, providing service between Grand Central Terminal and Brewster and Wassaic to the north. Rail stations in the vicinity of the site are located in the Hamlet of Croton Falls and at Purdys.

The Croton Falls station is located approximately 1.2 miles southwest of the site in the vicinity of NYS Route 22 and Mahopac Avenue/Croton Falls Road. The Purdys station is approximately 2 miles south of the site. Both stations are served by more than 30 trains from Grand Central Terminal weekdays and more than 20 on Saturdays and Sundays.

Observed Pedestrian Activity

Observations of pedestrian activity in the study area indicate that the pedestrian traffic is generally limited to the Croton Falls business district and to the Croton Falls train station. Little pedestrian activity was observed on other roadways.

Existing Conditions at the Study Locations

Field observations were performed by representatives of Michael Maris Associates. The observations were to collect updated data regarding intersection and roadway geometry, traffic controls, signal operations, and other information pertinent to intersection capacities. The following are brief descriptions of the study locations and the field observations:

- Hardscrabble Road and Northbound Interstate Highway 684 Ramps

  The northbound Interstate 684 on and off ramps form a four-leg intersection with Hardscrabble Road. The eastbound and westbound Hardscrabble Road approaches consist of one lane in each direction permitting all turning movements, while the Interstate 684 northbound exit ramp has a left turn lane and a through/right turn lane. The intersection is unsignalized with stop signs controlling the Interstate 684

exit ramp.

- Hardscrabble Road and Reed Road

  Reed Road and Hardscrabble Road form an unsignalized T intersection with Reed Road having its southern terminus at Hardscrabble Road. The Hardscrabble Road eastbound approach has one lane serving both as a left turn lane to Reed Road and as a through lane on Hardscrabble Road. The westbound approach on Hardscrabble has one lane for both through and right turns. The southbound Reed Road approach has one lane for left and right turns onto Hardscrabble. Traffic from Reed Road is controlled by a stop sign.

  According to the AASHTO guidelines shown in Table 4.5-4, the required sight distances for traffic exiting Reed Road, based on the 35 mile per hour posted speed limit for Hardscrabble Road traffic, would be a distance of 390 feet in both directions. The stopping sight distance is 250 feet.

  Field surveys and a sight distance diagram indicate that the actual intersection sight distance to the east is 210 feet (as measured 14.5 feet behind the edge of the travel lane, as recommended by AASHTO). A sight distance diagram is provided as Figure 4.5-2. The sight distance from Reed Road, to the west along Hardscabble Road is greater than 500 feet for the posted speed limit.

  As shown in the Sight Distance Diagram, an existing chain-link fence (9 feet in height) and a steel guide rail obscures the sight-distance to the east. The guide rail and fence are safety features for the bridge on Hardscabble Road that crosses Interstate 684. The end of the fence (and bridge) are approximately 100 feet east of the Reed Road intersection. Drivers attempting to observe approaching traffic on westbound Hardscabble Road can pull their vehicles closer to the edge of Hardscrabble Road (within approximately 6 feet) and then have a sight distance of over 500 feet. Based upon the sight distance diagram, the sight distance to the east from Reed Road does not meet the AASHTO recommendations. Given the location of the bridge and safety fence, removing the sight distance obstruction is not feasible. Mitigation measures for this existing condition are described at the end of this Section.

  Traffic collision data from the Traffic Impact Study[1] indicated one collision at Hardscrabble Road and Reed Road in 1999. Updated accident data was ordered from the NYSDOT for this intersection. There were two accidents reported at the Hardscrabble Road and Reed Road intersection in the three-year period between July 27, 2007 and July 27, 2010. These two collisions were in December of 2007 on dry and dark road. The injury collision was a run off the road collision hitting earth involving a 16 year old male with apparent factors of unsafe speed and alcohol involvement. This accident occurred on a Saturday after 11 p.m. The property damage collision was an eastbound Hardscrabble Road vehicle turning left against a westbound vehicle on Hardscrabble Road. Apparent factors were turning improperly and failure to yield right of way.

[1] *see Appendix 12* (Michael Maris Associates, Inc., *Traffic Impact Study Woodlands Development*, Hackensack, NJ, April 2005, p 15)

Table 4.5-3
Collision Frequency - Hardscrabble Road and Reed Road Intersection

Hardscrabble Road and Reed Road intersection	# of Collisions	Fatalities	Injuries	Property Damage Only	Non-Reportable	Daylight*	Wet Road*	Fixed Object*
July 27, 2007 to July 27, 2010**	2	0	1	1	0	0	0	1

* Excludes Non-Reportables.
** complete data available through March 31, 2010. Source: New York State Department of Transportation, Accident Verbal Description Report, 2010.

- Hardscrabble Road and Southbound Interstate Highway 684 Ramps

  The southbound Interstate 684 on and off ramps form a "T" intersection with Hardscrabble Road. Hardscrabble Road forms the north and south legs of the intersection. The northbound approach consists of one through lane and one right turn lane. The southbound approach has one through and one left turn lane, and the westbound approach has one left only and one combined left and right turn lane. The intersection is controlled by a traffic signal that provides an advance phase for the southbound approach.

- Hardscrabble Road and New York State Route 22

  Hardscrabble Road forms the east leg and NYS Route 22 forms the south and west legs of this "T" intersection. The westbound Hardscrabble Road approach consists of a left turn lane and a through lane. The northbound NYS Route 22 approach has a left turn lane and a right turn lane. The eastbound NYS Route 22 approach has a through lane and a channelized right turn lane. The intersection is controlled by a traffic signal that provides an advance phase for the westbound approach.

- New York State Route 22 and Front Street

  Front Street forms the south leg and NYS Route 22 the north and east legs of this "T" intersection. Both NYS Route 22 approaches consist of one lane serving all turns, while the Front Street approach has one left turn lane and one right turn lane. The intersection is controlled by a stop sign facing the Front Street approach. A Metro-North Railroad line overpass parallels Front Street just east of the intersection, limiting visibility to vehicles exiting Front Street.

- Reed Road and Site Driveway

  Reed Road at the location of the proposed site driveway has one lane in each direction. The proposed driveway will have one entering and one exiting lane that will be under stop sign control.

  Sight distance measurements were taken at the location of the proposed driveway and compared to the AASHTO guidelines shown in Table 4.5-4. According to the guidelines, with traffic traveling on Reed Road at 30 miles per hour, vehicles exiting

the proposed driveway would require a 335 foot sight distance in each direction. Based on field measurements, the available sight distance exceeds 500 feet in both directions of Reed Road and is, therefore, considered acceptable. A sight distance diagram for the entrance Road A and Reed Road is provided as Figure 4.5-1.

Table 4.5-4
Recommended Sight Distance Standards

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

Source: A Policy on Geometric Design of Highways and Streets, American Association of State Highway and Transportation Officials, 6th ed., 2011. Table 9.6 Left Turn From Stop

The three internal road intersections (Road A and Road D, Road A and Roads C/D, Road D and Road E), will all have full stops at each intersection approach. Given the stops in all directions, sight distance is not an issue for internal roads, per AASHTO Guidelines.

Impacts and Mitigations

4.520 Future Traffic Volumes

In order to establish the No Build traffic volumes, the Baseline traffic volumes were increased by the annual growth rate of two percent for each year or six percent over a three year period. The annual growth rate was calculated based on a comparison of the 2004 Adler traffic counts and the traffic counts performed earlier by Michael Maris Associates, Inc. Table 4.5-5 is a summary of the comparison at intersections where counts were performed in both study years.

Table 4.5-5
Traffic Volume Comparisons, 1994 and 2004*

Intersection	Counted Volumes		Percent Increase	
Peak A.M. Highway Hour	**1994****	**2004*****	**Total**	**Annual.**
Hardscrabble Road and I-684 Northbound Ramps	742	964	30.0%	3.0%
Hardscrabble Road and I-684 Southbound Ramps	1,734	1,815	5.0%	0.5%
Hardscrabble Road and New York State Route 22	1,928	2,432	26.0%	2.6%
Peak P.M. Highway Hour				
Hardscrabble Road and I-684 Northbound Ramps	1,293	1,641	27.0%	2.7%
Hardscrabble Road and I-684 Southbound Ramps	1,408	1,702	21.0%	2.1%
Hardscrabble Road and New York State Route 22	1,656	1,857	12.0%	1.2%

Sources: **see Appendix 12* (Michael Maris Associates, Inc., *Traffic Impact Study Woodlands Development*, Hackensack, NJ, April 2005, p 7).
** Michael Maris Associates, Inc. 1994.*
***Adler, 2004.*

The traffic volumes comparisons show an average growth rate of 2 percent. The Baseline traffic volumes were increased by 6 percent, resulting in the "No Build" traffic volumes.

The two traffic counts taken by Michael Maris Associates, Inc., for the Traffic Impact Study indicated that the estimated Baseline data were high[2]. Table 4.5-6 shows NYSDOT NYS Route 22 traffic counts taken in 2009 (see Appendix 12) and Tim Miller Associates, Inc. traffic counts taken at the intersection of the Interstate 684 southbound ramp and Hardscrabble Road in 2010 (see Appendix 12). Table 4.5-6 provides a comparison of the actual traffic counts in 2009 and 2010 to the Baseline volumes from the Maris Associates, Inc. Traffic Impact Study (Appendix 12). The 2009 and 2010 traffic count data was 21 percent to 44 percent lower than the original Baseline volumes.

If the Highgate-Woodlands project generated traffic and a two percent growth factor was added to the 2009 and 2010 traffic counts, the projected 2015 traffic volumes would still be less than the original Baseline volumes at those locations. These projected traffic volume increases could be doubled (12 percent background growth, and twice the project generated traffic), and the 2015 estimated traffic would still be less than the original Baseline traffic volumes. Much of the traffic passing through the 2009 and 2010 traffic count locations also travels through the

[2] *Traffic Impact Study Woodlands Development*, Michael Maris Associates, Inc., Hackensack, NJ, April 2005, p 2.

other network intersections, indicating that the volumes over the entire network are over-estimated in the Traffic Impact Study.

Table 4.5-6
Traffic Volume Comparison
of Baseline to 2009/2010 Counts

Location	Time Period	Total Entering Volumes: Projected Baseline*	TIS Build Condition Increase from Baseline*	2009 and 2010 Counts	Percent Change from Baseline* to the 2009/2010 Counts
Interstate-684 Southbound Ramp at Hardscrabble Road	AM	2,160	165	1,476**	**- 32%**
	PM	2,106	166	1,422**	**- 33%**
NYS Route 22 - Northbound (NYS Route 116 overlap to Hardscrabble Road)	AM	241	17	149***	**- 38%**
	PM	819	53	628***	**- 23%**
NYS Route 22 - Southbound (Hardscrabble Road to NYS Route 116 overlap)	AM	1,533	99	862***	**- 44%**
	PM	278	24	222***	**- 21%**

Source: Tim Miller Associates 2010.
*Michael Maris Associates, Inc., *Traffic Impact Study Woodlands Development*, Hackensack, NJ, April 2005.
**Counts conducted by Tim Miller Associates, Inc., 2010.
*** NYSDOT Traffic Data Viewer, Count Date 4/13/2009.

Proposed Project Traffic Generation

Trips Generated

In accordance with the approved scope, the traffic that would be generated by the proposed project was estimated based upon information contained in the Institute of Transportation Engineers (ITE) Trip Generation, 7th Edition, 2003. The ITE report is based on surveys of similar developments and presents trip generation rates that can be applied to new developments to project the traffic that will be generated.

The traffic impact study[3] projects traffic generated by the proposed development based on 49

[3] See Appendix 12 (Michael Maris Associates, Inc*., Traffic Impact Study Woodlands Development*, Hackensack, NJ, April 2005, Exhibit 6).

single family detached units and 76 senior attached units[4] at 51 trips during the peak a.m. hour and 59 trips during the peak p.m. Hour. No reductions in traffic volumes were taken for potential use of mass transit or the attached active adult townhouses. Further, the original traffic impact study does not reflect the recent reduction in the number of single family detached housing from 49 to 42 units.

Trip Distribution

The arrival and departure distribution of the projected traffic generated by the proposed development is shown in Table 4.5-7. The distributions are based on a review of existing traffic volumes and travel patterns in the area of the site.

Table 4.5-7
Arrival and Departure Traffic Distribution
Projected Trips Generated by the Proposed Project

Route	Percent Distribution	AM Trips	PM Trips
I-684 to and from the North	20%	10	12
I-684 to and from the South	45%	23	26
New York State Route 22 to and from the South	17%	9	10
Hardscrabble Road to and from the East	8%	4	5
Mahopac Ave./Croton Falls Road to and from the West	10%	5	6
Total	100%	52	59

Source: See Appendix 12 (Michael Maris Associates, Inc., Traffic Impact Study Woodlands *Development*, Hackensack, NJ, April 2005, p 9).

Levels of Service Analyses

Table 4.5-6 indicates the projected traffic volumes under all conditions are conservatively high estimates and that the actual future Build Conditions may be less than the Baseline estimates. Table 4.5-8 shows the Levels of Service and volume capacity ratios for the original Baseline condition for the intersections studied. Table 4.5-8 and subsequent level of service tables have been modified from the Traffic Impact Study to reflect the current southbound ramp lane configuration. In summary, left turns are allowed from both ramp lanes, which improves the level of service and volume capacity ratios for that intersection.

Table 4.5-9 shows the No Build Condition for these intersections with the Baseline condition being inflated by the 2 percent annual growth established above. Table 4.5-10 shows the Build Condition with the inclusion of the projected traffic from the proposed development. The Level of Service Build Condition with improvements is shown in Table 4.5-11.

[4] The proposal has since been reduced to 42 detached units and 76 senior attached units which would lower the trips generated.

Table 4.5-8
Baseline Condition
Level of Service Summary

Intersection	Approach[1]	AM		PM		Volume/Capacity Ratio	
		LOS[2] Average Delay [3] (Seconds/Vehicle)		LOS[2] Average Delay [3] (Seconds/Vehicle)		AM	PM
Hardscrabble and I-684 Northbound Ramps	EB - L, T	a	9.7	b	11.7	0.26	0.53
	NB - L	f	202.6	f	6979.0	1.18	16.03
	NB - L, R	b	10.5	c	20.0	0.16	0.58
	Overall	-	-	-	-	-	-
Hardscrabble Road and Reed Road	EB - L, T	a	8.9	a	9.7	0.00	0.00
	SB - L, R	b	12.7	c	23.8	0.00	0.02
	Overall	-	-	-	-	-	-
Hardscrabble Road and I-684 Southbound Ramps**	WB - L	C	32.8	B	19.7	0.83	0.49
	WB - L, R	C	23.5	B	19.1	0.67	0.41
	NB - T	C	30.4	F	221.5	0.79	1.42
	NB - R	D	38.4	B	17.8	0.87	0.29
	SB - L	B	11.5	B	12.4	0.59	0.51
	SB - T	B	10.1	B	14.0	0.46	0.70
	Overall	C	25.5	F	91.0	-	-
Hardscrabble Road and New York State Route 22	EB - T, R	F	94.7	C	20.6	1.13	0.62
	WB - L	F	892.5	B	12.9	2.93	0.49
	WB - T	A	8.4	B	19.3	0.35	0.84
	NB - L	B	18.6	C	30.1	0.18	0.72
	NB - R	A	9.9	C	20.4	0.25	0.78
	Overall	F	385.5	C	20.7	-	-
New York State Route 22 and Front Street	WB - L, T	a	9.0	a	8.2	0.06	0.03
	NB - L	d	27.8	e	43.4	0.25	0.26
	NB - R	b	13.3	b	10.7	0.13	0.06
	Overall	-	-	-	-	-	-

Notes: 1. EB = eastbound, WB = westbound, NB = northbound, SB = southbound, L = left, T = through and R = right.
2. LOS - Level-of-Service. Uppercase letters represent Levels-of-Service for signalized intersections, while lower-case letters represent those for unsignalized intersections.
3. Delays are the average for each lane group in seconds per vehicle. For signalized intersections, the average delay per vehicle for the entire intersection is also included. For unsignalized intersections, the average delay per vehicle for the entire intersection is not meaningful.

See Appendix 12 for level of service worksheets.
** Revision based on geometry change of southbound ramp and elimination of westbound right with southbound phase.

Table 4.5-9
No Build Condition
Level of Service Summary

Intersection	Approach[1]	AM		PM		Volume/Capacity Ratio	
		LOS[2] Average Delay [3] (Seconds/Vehicle)		LOS[2] Average Delay [3] (Seconds/Vehicle)		AM	PM
Hardscrabble and I-684 Northbound Ramps	EB - L, T	a	9.9	b	12.5	0.29	0.58
	NB - L	f	317.2	f	9726.0	1.46	22.00
	NB - L, R	b	10.7	d*	32.9	0.18	0.75
	Overall	-	-	-	-	-	-
Hardscrabble Road and Reed Road	EB - L, T	a	9.0	a	9.9	0.00	0.00
	SB - L, R	c*	16.8	c	24.4	0.01	0.03
	Overall	-	-	-	-	-	-
Hardscrabble Road and I-684 Southbound Ramps**	WB - L	D	38.5	C	20.1	0.88	0.52
	WB - L, R	C	25.0	B	19.3	0.71	0.44
	NB - T	C	33.9	F	258.6	0.84	1.51
	NB - R	D	45.4	B	18.1	0.92	0.31
	SB - L	B	14.0	B	12.9	0.67	0.54
	SB - T	B	10.3	B	15.2	0.48	0.74
	Overall	C	29.0	F	105.0	-	-
Hardscrabble Road and New York State Route 22	EB - T, R	F	121.7	C	21.7	1.19	0.66
	WB - L	F	973.2	B	14.4	3.11	0.54
	WB - T	A	8.6	C*	23.0	0.37	0.89
	NB - L	B	18.7	C	32.4	0.19	0.76
	NB - R	A	9.9	C	23.0	0.26	0.82
	Overall	F	426.5	C	23.3	-	-
New York State Route 22 and Front Street	WB - L, T	a	9.1	a	8.3	0.07	0.04
	NB - L	d	31.7	f*	52.3	0.29	0.31
	NB - R	b	13.8	b	10.9	0.15	0.07
	Overall	-	-	-	-	-	-

Notes: 1. EB = eastbound, WB = westbound, NB = northbound, SB = southbound, L = left, T = through and R = right.
2. LOS - Level-of-Service. Uppercase letters represent Levels-of-Service for signalized intersections, while lower-case letters represent those for unsignalized intersections.
3. Delays are the average for each lane group in seconds per vehicle. For signalized intersections, the average delay per vehicle for the entire intersection is also included. For unsignalized intersections, the average delay per vehicle for the entire intersection is not meaningful.
* Indicates decline in Level of Service from previous condition.

See Appendix 12 for level of service worksheets.
** Revision based on geometry change of southbound ramp and elimination of westbound right with southbound phase.

Table 4.5-10
Build Condition
Level of Service Summary

Intersection	Approach[1]	AM		PM		Volume/Capacity Ratio	
		LOS[2]	Average Delay [3] (Seconds/Vehicle)	LOS[2]	Average Delay [3] (Seconds/Vehicle)	AM	PM
Hardscrabble and I-684 Northbound Ramps	EB - L, T	b*	10.0	b	12.7	0.30	0.59
	NB - L	f	375.1	f	10755.0	1.59	24.24
	NB - L, R	b	10.7	e*	35.4	0.18	0.77
	Overall	-	-	-	-	-	-
Hardscrabble Road and Reed Road	EB - L, T	a	9.0	b*	10.1	0.01	0.02
	SB - L, R	c	18.4	e*	35.6	0.14	0.28
	Overall	-	-	-	-	-	-
Hardscrabble Road and0 I-684 Southbound Ramps**	WB - L	D	38.5	C	20.1	0.88	0.52
	WB - L, R	C	25.3	B*	19.4	0.71	0.45
	NB - T	C	34.5	F	263.7	0.85	1.52
	NB - R	D	45.4	B	18.1	0.92	0.31
	SB - L	B	16.1	B	13.9	0.72	0.59
	SB - T	B	10.4	B	15.7	0.50	0.76
	Overall	C	29.2	F	106.3	-	-
Hardscrabble Road and New York State Route 22	EB - T, R	F	122.9	C	22.8	1.20	0.66
	WB - L	F	983.6	B	14.9	3.14	0.56
	WB - T	A	8.7	C	23.4	0.37	0.89
	NB - L	B	18.7	C	32.4	0.19	0.76
	NB - R	B*	10.0	C	23.3	0.26	0.83
	Overall	F	431.2	C	23.6	-	-
New York State Route 22 and Front Street	WB - L, T	a	9.2	a	8.3	0.07	0.04
	NB - L	d	32.5	f	53.0	0.30	0.31
	NB - R	b	13.9	b	10.9	0.15	0.07
	Overall	-	-	-	-	-	-
Site Access and Reed Road	NB - L, T	a	7.2	a	7.3	0.01	0.02
	EB - R	a	8.4	a	8.5	0.04	0.04
	Overall	-	-	-	-	-	-

Notes: 1. EB = eastbound, WB = westbound, NB = northbound, SB = southbound, L = left, T = through and R = right.
2. LOS - Level-of-Service. Uppercase letters represent Levels-of-Service for signalized intersections, while lower-case letters represent those for unsignalized intersections.
3. Delays are the average for each lane group in seconds per vehicle. For signalized intersections, the average delay per vehicle for the entire intersection is also included. For unsignalized intersections, the average delay per vehicle for the entire intersection is not meaningful.
* Indicates decline in Level of Service from previous condition.

See Appendix 12 for level of service worksheets.
** Revision based on geometry change of southbound ramp and elimination of westbound right with southbound phase.

Table 4.5-11
Build Condition with Improvements
Level of Service Summary

Intersection	Approach[1]	AM		PM		Volume/Capacity Ratio	
		LOS[2] Average Delay [3] (Seconds/Vehicle)		LOS[2] Average Delay [3] (Seconds/Vehicle)		AM	PM
Hardscrabble and I-684 Northbound Ramps	EB - L	B	17.2	E	61.2	0.58	1.01
	EB - T	A	8.5	B	11.7	0.24	0.33
	WB - T	C	33.5	E	69.3	0.76	0.94
	WB - R	B	19.6	C	32.6	0.09	0.27
	NB - L	C	27.9	E	74.6	0.35	1.03
	NB - T, R	C	27.5	C	32.0	0.31	0.66
	Overall	C	23.6	D	53.5	-	-
Hardscrabble Road and I-684 Southbound Ramps**	WB - L			C	33.8		0.76
	WB - L, R			C	28.5		0.66
	NB - T		No Change	D	54.6		1.03
	NB - R		Proposed	B	10.5		0.21
	SB - L			C	31.2		0.82
	SB - T			A	9.2		0.64
	Overall			C	32.0	-	-
Hardscrabble Road and New York State Route 22	EB - T, R	F	140.7	C	25.5	1.22	0.60
	WB - L	F	215.0	B	14.0	1.40	0.45
	WB - T	A	4.2	C	22.3	0.27	0.83
	NB - L	D	41.6	D	36.5	0.39	0.68
	NB - R	B	11.3	C	27.0	0.23	0.80
	Overall	F	133.9	C	25.2	-	-

Notes: 1. EB = eastbound, WB = westbound, NB = northbound, SB = southbound, L = left, T = through and R = right.
2. LOS - Level-of-Service. Uppercase letters represent Levels-of-Service for signalized intersections, while lower-case letters represent those for unsignalized intersections.
3. Delays are the average for each lane group in seconds per vehicle. For signalized intersections, the average delay per vehicle for the entire intersection is also included. For unsignalized intersections, the average delay per vehicle for the entire intersection is not meaningful.

See Appendix 12 for level of service worksheets.
** Revision based on geometry change of southbound ramp and elimination of westbound right with southbound phase. Retiming for p.m. peak hour only.

Capacity Analyses Findings

The following are brief descriptions of the results of the capacity analyses for each of the study locations, the amount of traffic expected to be added by the proposed project, and, where feasible, improvements that would eliminate or reduce the projected problems. The Levels of Service, average delays, and volume/capacity ratios are summarized in the tables above.

Recent traffic counts completed by TMA indicate that future traffic levels projected to 2015, will be lower than the original Baseline conditions.

The re-analysis of Hardscrabble Road and Interstate 684 southbound ramps intersection,

involved the redistribution traffic in the two lanes. The analysis did not include the over 30 percent reduction in traffic based on current counts. The analysis was based upon the established procedure for Baseline traffic, provided in the Scope. Similarly, the other network intersections were not reanalyzed using the more recent lower counts from Tim Miller Associates Inc., and NYSDOT.

A summary of the capacity analysis is as follows:

1. *Hardscrabble Road and I-684 Northbound Ramps*

- The Hardscrabble Road approaches consist of one lane serving all movements and the Interstate 684 northbound ramp has one lane left and one through/right turn lane, with traffic controlled by stop signs facing the I-684 exit ramp. Capacity analyses with the Baseline traffic volumes show that all movements along Hardscrabble Road and the right turns from the I-684 exit ramp operate at acceptable Levels of Service. However, the left turns from the I-684 ramp experience very long delays and operate at unacceptable Level of Service F.
- Analyses with the No Build traffic volumes indicate similar operating conditions as those with the original Baseline traffic volumes.
- The proposed project will add 18 and 24 new trips to this intersection during the peak a.m. and p.m. hours, respectively, which would represent less than 1.5 percent of the total intersection traffic. This increase is not considered significant. Analyses with the Build traffic volumes verify that the additional traffic would not have any significant impact and show similar traffic operations as those with the Baseline and No Build volumes.
- The delays could be substantially reduced by the installation of a traffic signal and by re-striping and/or widening the eastbound and westbound approaches to provide separate right and left turn lanes. Analyses comparing the Build traffic volumes to the intersection geometry with the improvements indicate that the Level of Service F delays could be eliminated and that all movements through the intersection would operate at Level of Service C or better during the peak a.m. hour and at Level of Service E or better during the peak p.m. hour.

2. *Hardscrabble Road and Reed Road*

- All approaches to the intersection consist of one lane permitting all movements and traffic is controlled by a stop sign facing the Reed Road approach. Capacity analyses with the Baseline traffic volumes indicate that all movements at the intersection operate at acceptable Levels of Service during both the morning and afternoon peak hours.
- Capacity analyses with the No Build traffic volumes indicate that all movements would continue to operate at acceptable Levels of Service during the peak hours.
- All of the traffic from the proposed project would pass through this intersection, representing an increase of 51 and 59 new trips during the a.m. and p.m. peaks, respectively. This is between 3.3 and 4.3 percent of the total intersection traffic. Capacity analyses with the Build traffic volumes indicate that the additional traffic would not have a significant impact and that traffic exiting Reed Road would not

exceed its capacity or experience unacceptable delays.

3. *Hardscrabble Road and I-684 Southbound Ramps*

- The northbound Hardscrabble Road approach consists of one through lane and one right turn lane. The southbound approach has one through and one left turn lane. The southbound I-684 ramp approach has one left only lane, one combined left and right turn lane, and traffic is controlled by a traffic signal that provides an advance phase for the southbound approach. Capacity analyses with the Baseline traffic volumes indicate all movements experience acceptable delays (Level of Service D or better) during the peak a.m. hour, while the southbound through traffic experiences Level of Service F delays during the p.m. peak hour.
- Capacity analyses with the No Build traffic volumes indicate similar operating conditions as those with the Baseline traffic volumes.
- The proposed project will add 34 and 39 new trips to this intersection during the a.m. and p.m. peak hours, respectively. These volumes represent an increase of less than 2 percent of the total intersection traffic volumes. This increase is not considered significant and the capacity analyses with the Build traffic volumes indicate similar operating conditions as those with the Baseline and No Build traffic volumes.
- A review of the existing and future traffic volumes at the intersection indicate that the p.m. delays could be reduced by adjusting the signal operations. Analyses comparing the Build traffic volumes to the intersection geometry with the suggested p.m. retiming improvement show that the intersection would operate at acceptable Levels of Service during the peak hours.

4. *Hardscrabble Road and New York State Route 22*

- The westbound Hardscrabble Road approach consists of a left turn lane and a through lane. The northbound NYS Route 22 approach has a left turn lane and a right turn lane. The eastbound NYS Route 22 approach consists of a through lane and a channelized right turn lane. Movement is controlled by a traffic signal that provides an advance phase for the westbound approach. Capacity analyses with the Baseline traffic volumes indicate that the eastbound and westbound approaches experienced Level of Service F delays during the morning peak, while all movements operated at acceptable Levels of Service during the afternoon peak.
- Capacity analyses with the No Build traffic volumes indicate similar operating conditions as those with the Baseline volumes.
- The proposed project would add 16 and 18 new trips to this intersection during the a.m. and p.m. peak periods, respectively. This represents less than 1 percent of the total volume of the intersection. The increase is not significant and analyses with the Build volumes indicate similar traffic operating conditions as those with the Baseline and No Build volumes.
- A review of the existing and future traffic volumes at the intersection indicates that the delays during the a.m. peak hour are caused by the very heavy left turns (843 trips) on southbound Hardscrabble Road onto NYS Route 22 that would be opposed by very heavy through (701 trips) on the eastbound NYS Route 22 approach. It does

not appear that the a.m. peak delays could be completely eliminated without very extensive roadway widening. However, additional analyses show that the delays could be reduced substantially by changing the signal cycle and the green time allocation.

5. *New York State Route 22 and Front Street*

- Front Street forms the south leg and NYS Route 22 the north and east legs of this "T" intersection. Both NYS Route 22 approaches consist of one lane serving all turns, while the Front Street approach has one left turn lane and one right turn lane. The intersection is controlled by a stop sign facing the Front Street approach. Capacity analyses with the Baseline traffic volumes indicate that, other than the northbound left turns during the a.m. peak, all other movements generally operate at acceptable Levels of Service. However, it must be noted that problems were observed at the intersection to the north, with left-turning vehicles from New York State Route 22 to Croton Falls Road queuing and blocking traffic at this intersection. Problems were also observed due to the poor visibility caused the railroad overpass and by the sharp turns to and from Front Street and New York State Route 22.
- Analyses with the No Build traffic volumes indicate similar operating conditions as those with the Baseline traffic volumes.
- The proposed project will add 6 and 7 new trips to this intersection during the a.m. and p.m. peak periods, respectively. These additional trips represent approximately 0.5 percent of the total intersection traffic, which is not a significant impact. Capacity analyses with the Build traffic volumes indicate similar operations as those with the Baseline and No Build traffic volumes.
- Installation of a traffic signal might eliminate the problems at this intersection. However, a review of the projected traffic volumes indicates that they would not meet the required signal warrant criteria and no analyses were performed for the New York State Route 22/Croton Falls intersection to determine what improvements would be required to eliminate the problems at that location.

6. *Reed Road and Highgate-Woodlands Driveway*

- All of the traffic from the proposed project would pass through this intersection. The volume would be about 50 trips during each of the peak hours, or less than one vehicle per minute. This would not represent a significant impact and unsignalized intersection capacity analyses with Build traffic volumes show that all movements through the intersection will operate at acceptable Levels of Service during both the morning and afternoon peak hours.

Any Work done in the State right-of-way will be subject to NYSDOT review and a Highway Work Permit.

Transportation - MIH Property Impacts and Mitigation

As indicated, a Traffic Impact Study was completed by Michael Maris Associates, Inc. In 2005 for the Highgate Woodlands project. The traffic estimates in the study have been updated by TMA through 2010. The traffic impacts from the MIH parcel were not specifically analyzed in the Maris traffic study. The MIH residential building will contain either three one-bedroom apartments or one one-bedroom and one two-bedroom apartments. Five parking spaces are required by the Town Code and two additional spaces will be provided for visitors for a total of seven spaces. No adverse impacts to the local traffic network are anticipated by the five anticipated vehicles associated with the MIH development.

Mitigation Measures

The following mitigation measures may be necessary to alleviate the traffic conditions that will be exacerbated by the proposed development:

1. *Hardscrabble Road and I-684 Northbound Ramps*

   Delays could be substantially reduced by the installation of a traffic signal and by re-striping and/or widening the eastbound and westbound approaches to provide separate right and left turn lanes. The Level of Service F delays could be eliminated and all movements through the intersection would operate at Level of Service C or better during the peak a.m. hour and at Level of Service E or better during the peak p.m. Hour with these improvements.

2. *Hardscrabble Road and I-684 Southbound Ramps*

   Delays could be reduced to acceptable levels by adjusting the signal operations. With the suggested improvements the intersection would operate at acceptable Levels of Service during the peak hours.

3. *Hardscrabble Road and New York State Route 22*

   Delays during the a.m. peak hour are caused by the very heavy left turns (843 trips) on southbound Hardscrabble Road onto NYS Route 22 that would be opposed by very heavy through (701 trips) on the eastbound NYS Route 22 approach. It does not appear that the a.m. peak delays could be brought to acceptable levels without very extensive roadway widening. However, additional analyses show that the delays could be reduced substantially by changing the signal cycle and the green time allocation.

4. *New York State Route 22 and Front Street*

   Installation of a traffic signal might eliminate the problems at this intersection. However, a review of the projected traffic volumes indicates that they would not meet the required signal warrant criteria and no analyses were performed for the New York State Route 22/Croton Falls intersection to determine what improvements would be required to eliminate the problems at that location.

Sight Distance at Reed Road and Hardscrabble Road

As described in the Existing Conditions section, the sight distance for drivers looking east from Reed Road at its intersection with Hardscrabble Road does not meet the AASHTO recommendations for intersection sight distance or for stopping distance. Sight Distance is limited by a guide rail and chain link fence providing safety for the bridge crossing Interstate I-684. These obstructions cannot practically be moved. At a minimum, appropriate warning signs would increase awareness for drivers on westbound Hardscrabble Road to be alert for drivers entering Hardscrabble Road from Reed Road. Any new signs on Hardscrabble Road would need to be coordinated with Westchester County Highway Department (WCHD) and the New York State Department of Transportation (NYSDOT).

4.600 Land Use and Zoning

The proposed Highgate-Woodlands at North Salem development (hereinafter Highgate-Woodlands), is for a residential development that would provide 42 market rate single family dwellings and 76 active adult townhouses and related recreational facilities on a 159.52 acre parcel currently zoned R-1 Residential. In addition, up to 3 affordable apartments would be provided in Croton Falls on the former Dino and Artie's site, herein referred to as the "Moderate Income Housing" site.

The key elements of the proposed development include:

- **76 Active Adult Townhomes** clustered on an approximately 38.65 acre parcel in the approximate center of the property. The active adult townhomes will be located in 19 buildings, each containing four (4) residential units. The active adult townhomes will have a recreation and community building located near the entrance of the active adult townhouse development.
- **42 Single-Family residences** on individual lots ranging in size from 1.01 to 6.4 acres (total size). All of the single family lots comprise an area of 71.97 acres. The single family homes will all be market rate and will range from approximately 2,500 square feet to 4,500 square feet in size. The single family residences will have a recreation and community building located on a separate parcel at the end of Access Road "A", in the northwest portion of the site (Parcel R).
- **Private Road System** The development will be served by a private road system (Roads "A", "B" and "C"), with access provided from Reed Road. The internal roads will be 22 feet in width with 4-foot shoulders and a 50 foot right-of-way. The private road system will be contained on a lot (Parcel C) comprised of 12.75 acres.
- **Public Road Portion** The first approximately 650 feet of the access road will be dedicated to the Town of North Salem on a separate lot (R.O.W. Town Road) consisting of 0.95 acres. The public portion of the access road will provide a turn-around for school buses and will be maintained by the Town.
- **Sewage Treatment Plant** A private community sewage treatment plant will treat wastewater from the entire Highgate-Woodlands development (active adult townhomes and single family residences). The sewage treatment plant will be located on a 14.13 acre parcel in the south-central portion of the site. Treated wastewater will be disposed of into subsurface sewage disposal system (SSDS) areas. The SSDS areas are located on the sewage treatment plant parcel, and one SSDS area is located on a separate 1.01 acre parcel (Parcel J).
- **Water Treatment Plant** The Highgate-Woodlands development will be provided water from a community water treatment plant located on a 3.10 acre parcel in the north central portion of the site.
- **Additional Parcels** Parcels D, E and F, identified on the proposed Plat and listed in Table 4.6-1, below, will be used for the following uses:
  Parcel D, (9.37 acres) located in the southwest portion of the site is designated as a conservation parcel, and will contain a portion of the emergency access drive connecting Sun Valley Drive to "Private Road A",
  Parcel E, (3.13 acres) in the northwest portion of the site will be utilized for stormwater management facilities, and

Parcel F, (3.36 acres) located at the intersection of Road "A" and Road "C", is designated as a conservation parcel, and will also contain stormwater management facilities and a wastewater pump station.

- **Moderate Income Housing** The above described development is proposed for the project site. Moderate Income Housing development is proposed for an off-site parcel located in the hamlet of Croton Falls. As described above, Moderate Income Housing parcel in Croton Falls will be developed with up to three affordable apartments, and associated parking, and utilities.

Table 4.6-1
Proposed Parcels in Highgate-Woodlands Development

Parcel	Size (acres)	Use
Single Family Lots 1-42	Total 71.97	Single family residences
Active Adult Townhomes (R-AMF-2) Parcel	38.65	Active adult townhomes. Includes cul-de-sac access roads, recreation building and undeveloped land.
R.O.W. Town Road	0.95	Town Road
Parcel C	12.75	Private Road
Parcel D	9.37	Conservation
Parcel E	3.13	Drainage
Parcel F	3.36	Drainage, Pump Station, Conservation
Parcel I	14.13	Sewer (sewer treatment plant and 4 SSDS fields)
Parcel J	1.01	Sewer (SSDS field)
Parcel R	1.10	Single family home recreation building
Parcel W	3.01	Water treatment and pump house
Total Area	**159.52 acres**	

The development of the site will involve the following zoning and land development approvals:

- Adoption of **zoning amendments and rezoning** of a portion of the site from R-1 Residential district to the R-AMF/2 zoning district to permit the active adult townhouse portion of the project;
- **Subdivision** approval to create the single-family lots, the parcel for the active adult townhouse development, and lots for roads, water, sewer facilities, recreation and conservation parcels;
- **Site development plan** approval to address layout of buildings, parking, access, stormwater, recreational and other improvements for the active adult portion of the project.

The existing zoning on the site and in the vicinity is shown in Figure 4.6-1.

The proposed action is discussed in detail in Section 3.0 including specifics about improvements and additional required approvals and permits. This section will address aspects

of the project as they relate to land use, zoning and other regulations and local, county and regional planning policies.

4.610 Existing Land Use and Zoning

Existing Land Use

The Town of North Salem covers an area of 22.9 square miles. The Town is located in the northeastern section of Westchester County, bordering the State of Connecticut on the east, the Town of Southeast in Putnam County on the north, the Town of Lewisboro on the south, and the Town of Somers on the west.

The Highgate-Woodlands site consists of 159.52 acres of land in 3 tax parcels located in the northwest quadrant of the Town of North Salem in the Croton Falls Hamlet area. The site's frontage is on Reed Road adjacent to Route I-684 (a major north/south Interstate Highway) and Hardscrabble Road (a major east/west County Highway). The property's northern site boundary follows the Towns of North Salem/Southeast municipal line. The Highgate-Woodlands property is entirely vacant and is primarily wooded with some areas of wetland. There are a number of stone walls that traverse the site. There are no structures on the site, however, there are several existing easements over the site for access and utility purposes.

In the northwestern corner of the site, adjacent to the Juengstville Road neighborhood, there is an existing driveway to neighboring properties (lots owned by N/F Crosby Juengst Associates and others). An easement on the Highgate-Woodlands property, on the northern boundary of the proposed Drainage/Recreation lot (Parcel E), follows this driveway. The easement has a varying width of 20 to 30 feet (20'-30') and will remain.

In the southwestern corner of the site, originating from Sun Valley Drive, there is an existing driveway to a neighboring property (owned by N/F Croton Falls Fire Department) and a 50 foot wide right-of-way. The right-of-way will remain.

The original site surveyor, Richard Gorr, researched the County Land Records for the Highgate-Woodlands property and has identified the easements shown in Table 4.6-2.

Table 4.6-2
Easements and Rights for the Property Owned by JOFLO of North Salem Inc.

Description	Liber	Page
Utility Company Agreement	4584	302
Easement	4937	57
Easement	5089	426
Easement	6400	382
Right to use extension of Jeungst Road	7553	455
Reservations and easement	1691	441
Reservations and easements	4855	153
Reservations and easements	5045	113
NYNEX		
Rights of others to the natural and unobstructed flow of the brook crossing said premises and any pipes of water system	* ** ***	* ** ***
Easement	4409	117

Source:
* Deed - Iorio to JOFLO Corporation, September 1, 1981, Liber 7724, cp 352
** Deed - Mowat to JOFLO Corporation, February 22, 1980, Liber 7621, cp 490
*** Deed - Town of North Salem to JOFLO Corporation - October 1983, Liber 1874, cp 359

The most prevalent land uses in the area surrounding the site are single family residences on individual lots, primarily at a medium- to low- density of 1/4 to 1 acres per dwelling unit. An aerial view of the project site and vicinity is shown Figure 4.6-2. These homes are located in three neighborhood areas interspersed with a few vacant lots on the northwestern, western and southwestern boundaries of the site. The neighborhoods are identified by their primary roads, including: Hillside Avenue and Juengstville Road to the northwest; Close Hill Road and Warner Drive to the west; and Sun Valley Heights Road and Sun Valley Drive to the southwest. Directly south of the site opposite Route I-684 is a large medium-to-low-density single-family neighborhood defined by Daniel Road and Sunset Drive, which continues through on Overlook and Oakridge Roads to Titicus Road (NYS Route 116). There are a number of homes off a narrow cul-de-sac originating from Reed Road on the southeastern boundary of the site. The existing road joins Reed Road just north of the proposed site access.

There are also a number of non-residential uses, such as agricultural, commercial, retail, business and office, in the project vicinity. On the end of Reed Road, southeast of the site, is a vacant residential property formerly used and proposed for a retail nursery. To the east of the site on Guinea Road in the Town of Southeast is an orchard and farm stand. Along Fields Lane are a number of large-scale offices and warehousing businesses. These range in size from 3,000 to 10,000 square feet and some of the office buildings are divided into smaller occupancies. There are also smaller-scale office buildings. Some of the frontage on Fields Lane is related to an existing farm and orchard, however, some of the farm fields are overgrown with brush. A gas station is located at the intersection of Fields Lane and Hardscrabble Road.

The North Salem Ambulance Corps building is located near the intersection of Daniel and Hardscrabble Roads. To the east of Daniel and Fields Lane on Hardscrabble Road are additional non-residential and business uses: a wholesale nursery; an orchard and farm stand; and a contractor's business (earthmoving and clearing equipment and construction materials).

To the south and southwest of the site along Harscrabble Road/NYS Route 22 are a number of non-residential uses including: business offices, a utility company, a gas station and convenience store, and a restaurant.

To the west, alongside and just off Route 22, is the hamlet of Croton Falls with numerous businesses, services, train station, parking and other facilities. The businesses in Croton Falls include grocery, wine and coffee retail shops, a hardware and lumber store, dry cleaning, professional, medical and dental offices, a delicatessen and restaurant. The Croton Falls Post Office, a fire station, and churches are also located in the hamlet. A small theater is located on Owens Road. There are a number of multi-family and single-family residences in and around the hamlet area.

According to data from the Comprehensive Croton Watershed Water Quality Protection Plan (hereinafter the Croton Plan, prepared by Westchester County Department of Planning, September, 2009) approximately 30 percent of land in the Town is in residential use; 39 percent is parks and open space or agriculture; and 22 percent is undeveloped. Only 1 percent of the Town's land area is in use as a business (office, retail, service, mixed use, industrial, etc.).

Existing Zoning

The Code of the Town of North Salem, Chapter 250, Zoning (hereinafter the Zoning Ordinance) establishes 13 mapped zoning districts, 8 of which are designated for residential use. The densities in these districts range from one-quarter acre to 4 acres for single-family lots or 4 to 8 dwelling units per acre in districts where multi-family development is permitted. The Planned Development (PD) District, which is shown as "possible areas" on the zoning map, permits mixed use development including single-family attached and detached dwellings and multi-family dwellings. The PD district was developed to provide a greater variety of housing choice for the community.

According to data from the Croton Plan, approximately 88 percent of land in the Town is in residential zoning districts, while only 1 percent is in business or office zoning districts (11 percent of the Town's land consisting of reservoir area and rights-of-way are not included in the above categories).

According to the latest zoning map for the Town of North Salem the entire Highgate-Woodlands site is in the R-1 (Medium Density Residential) zoning district, which is a single-family district with a minimum lot size of 1 acre. The project site is also designated as a possible Planned Development (PD) District. The Zoning Ordinance, which was last updated April 15, 2008, contains tables describing the general use and bulk requirements for each zoning district. The lot area and bulk requirements for the R-1 District are provided below (see Table 4.6-3).

Land uses permitted as-of-right in the R-1 District include: single-family detached dwellings; churches or other places of worship; convents; local municipal and other governmental uses; public schools; and railroad rights-of-way and passenger stations including customary accessory services. The proposed single-family detached dwellings in the Highgate-Woodlands proposal are considered an 'as-of-right' use (see Zoning Ordinance, Table of General Use Requirements, R-1 District, Column B).

Various Conditional Uses are permitted on land in the R-1 District, with Planning Board approval. These uses include: recreational grounds and facilities operated by nonprofit

organizations; membership clubs; golf and country clubs; museums and art galleries; single-family attached dwellings; volunteer fire and ambulance facilities; bed and breakfast establishments; and communication towers and facilities.

In the R-1 zoning district, there are also a number of Special Permit Uses which come under the review of several local boards. Special Permit Uses under Town Board review include: multifamily dwellings for elderly and handicapped persons operated by nonprofit organizations; hospitals or sanatoriums; private secondary or elementary schools, nursery schools or day-care centers; universities, seminaries or colleges; dormitories as accessory to private schools, seminaries, universities or colleges; libraries; public utility buildings, water supply reservoirs, wells, sewage treatment plants, water treatment facilities and transmission lines; towers for electric power, telephones and gas; and convalescent or nursing homes.

Special Permit Uses under Zoning Board of Appeals review include: accessory apartments in main dwellings or in garages; the keeping of more than 1 horse; satellite dish antennas; the serving of food; and the keeping of more than 3 dogs.

Table 4.6-3
R-1 (Medium Density Residential) Zoning District
Bulk and Area Requirements for Single-Family Detached Dwellings*

Features	**Minimum Required**
Lot Area	1 acre
Lot Width	150 feet
Front Yard	35 feet
Side Yard/Both Side Yards	20/50 feet
Rear Yard	50 feet
Street Frontage	120 feet
Features	**Maximum Permitted**
Building Height	35 feet
Development Coverage	20%
Building Coverage	10%
Floor Area Ratio	0.2

Source: Town of North Salem Zoning Ordinance (Section 250-15)
*Single-family dwellings are in "Use Group" e in accordance with the Table of General Use Requirements for the R-1 zoning district

The Zoning Districts adjoining and within the surrounding area to the Highgate-Woodlands Project site are as follows (see Figure 4.6-1):

- Two R-1/2 (Medium Density Residence) districts are located to the southwest adjacent to the site and to the south across I-684;
- An RO (Research-Office) district is located to the east across Route I-684 on Fields Lane;

- An R-MF/6 (Residential-Multi-Family/High-Density) district is also located to the east across Route I-684 on Fields Lane;
- An R-2 (Low Density Residence) district is located to the southeast across I-684 and adjacent to the site to the east on Reed Road;
- An R-1/4 (Medium-High Density Residence) district is located to the southeast along Hardscrabble Road; and
- GB (General Business) District and PO (Professional Office) Districts are located to the southwest of the site in and around the Croton Falls hamlet area.

Three of the four residential zoning districts surrounding the Highgate-Woodlands site (R-2, R-1/2 and R-1/4) permit single-family dwellings and other as-of-right uses similar to the R-1 district, except that the R-2 zone permits a number of agricultural uses as well. The R-1/4 district also permits multi-family dwellings by right. Otherwise the additional as-of-right, conditional use and special permit uses in these three residential districts are very similar to the types of uses permitted in the R-1 zone.

The R-MF/6 (Residential-Multi-Family/High-Density) district permits multi-family dwellings, single-family detached and attached dwellings as-of-right. Single-family units with attached one-family dwellings are permitted as a conditional use. The maximum density for these as-of-right and conditional uses is 6 dwelling units per acre with 20% of all units required to be Moderate-Income Housing (MIH) units. Multi-family dwellings for senior citizens and disabled persons are permitted by Special Permit of the Town Board at a density of 8 dwelling units per acre with 20% of all units required to be MIH units.

The RO district permits business and professional offices, churches and government uses as-of-right. Conditional uses in this district include research and medical/dental laboratories; while special permit uses include utilities and philanthropic business offices.

Proposed R-AMF/2 Zoning

The Applicants have petitioned the Town of North Salem to create a multi-family zoning district for active adult residents at a density of 2 dwelling units per acre and to rezone an approximately 39 acre portion of the Highgate-Woodlands to this district. A draft of these zoning amendments (last revised April 21, 2005) proposes the creation of the R-AMF/2 (Residential-Adult Multi-Family/Medium-Density) zoning district. The draft amendments provide tables of use and density and revisions to related supplemental requirements (see Appendix 11). The draft zoning amendments include provisions regarding the age restriction for the proposed district (persons who are age 55 years or older).

Multi-family dwellings for active adults would be permitted as-of-right in the R-AMF/2 zoning district. Single-family units with attached one-family dwellings and single-family detached and attached dwellings, all for active adults, would be permitted as conditional uses. The as-of-right and conditional uses would be permitted at a density of 2 dwelling units per acre. Single-family dwellings that are not age-restricted units would only be allowed by Special Permit of the Town Board at a density of one dwelling on a 1-acre lot. The supplemental requirements for the R-AMF/2 district would be the established supplemental requirements for the existing R-MF/4 (Residential-Multi-Family/Medium-Density) and R-MF/6 (Residential-Multi-Family/High-Density) zoning districts, which are described below. The bulk requirements for development in the R-AMF/2 zoning district are outlined in Table 4.6-4 below.

Table 4.6-4 **Proposed R-AMF/2 (Residential-Adult Multi-Family/Medium Density) Zoning District** **Bulk and Area Requirements for Multi-Family Dwellings***	
Features	**Minimum Required**
Lot Area	5 acre
Lot Width	400 feet
Front Yard	50 feet
Side Yard/Both Side Yards	50/100 feet
Rear Yard	50 feet
Street Frontage	50 feet
Features	**Maximum Permitted**
Lot Area	50 acres
Building Height	35 feet
Development Coverage	40%
Building Coverage	20%
Floor Area Ratio	0.3
Source: Town of North Salem Zoning Ordinance *Multi-family dwellings are in "Use Group" r in accordance with the Table of General Use Requirements for the R-AMF/2 zoning district. The bulk requirements above apply to the overall development within the entire site on which the multi-family dwellings are located as per zoning subsection 250-19.1, A. Internal separation distances are addressed in the supplemental requirements for this use.	

The current Zoning Ordinance for the Town of North Salem was last updated in September, 2012. In 2000, three new multi-family zoning districts were created and four parcels were rezoned for multi-family uses in response to the Continental Decision. These four parcels, which were rezoned to permit a wider variety of housing types in the Town, permit multi-family and single-family residential developments with an inclusionary requirement that at least 10 to 20 percent of the units built must be MIH units. The zoning districts created were the R-MF/4 (Residential- Multi-Family/Medium Density), R-MF/6 (Residential - Multi-Family/High Density) and PD-CCRC (Planned Development-Continuing Care Retirement) zoning districts. These permit a variety of types of residential units at densities varying from 4 to 8 dwelling units per acre. The uses permitted in these districts and the corresponding bulk requirements are spelled out in the general use tables for each district and the bulk table.

Section 250-18(B)(2) requires that all subdivisions of 10 or more lots shall be required to provide for the construction of moderate income housing units on 10 percent of the total number of approved lots. This provision applies to both the R-1 and proposed R-MF/2 zoning districts. The provision of moderate-income housing for the Highgate Woodlands project is subject to the Stipulation of Settlement (Amendment 1)(3) Additional and Further Amendments to the Stipulation of Settlement. The Stipulation requires the applicant to acquire from the Town the off-site parcel formerly known as Dino and Arties and construct "no more than five (5) moderate income housing units...and may be any lesser number below five (5) as the land

engineering and Board of Health allows and permits...". Therefore, the number of moderate income units to be provided is dependent upon the septic capacity of the parcel. The applicant is required by the Stipulation to fulfill the Town's moderate income housing requirement through development of the former Dino and Arties parcel. The moderate income housing proposal is further described in Section 3.310 General Site Description.

Section 250-19.1 provides the supplemental requirements for uses, density and design within the multi-family districts, which will also apply to development in the proposed R-AMF/2 zone. Section 250-19.2 provides the supplemental requirements for the PD-CCRC district. All three districts require a proportion of dwellings to be MIH units. The supplemental requirements for these districts address separation distances between structures, central water and sewer improvements, ancillary facilities, including recreation, parking and other amenities. In addition, the supplemental requirements for the PD-CCRC district addresses assisted living facilities and permitted non-residential uses (services, stores and health care, etc.).

Special Permit Uses reviewed by the Town Board include various educational uses such as private elementary and/or secondary schools; nursery schools and/or day-care centers; and universities, seminaries and/or colleges. Various public utility buildings are also subject to Special Permit review by the Town Board. Multi-family dwellings as well as multi-family dwellings earmarked for the elderly and handicapped require a Special Use Permit from the Town Board. Other special uses include the following: restaurants and other food service establishments; barbershops and beauty parlors; shoe repair and tailor shops; medical and dental clinics; small retail stores operated by sole proprietors which do not exceed 3,500 square feet. Many of these uses do not have specific bulk requirements as per the use and bulk table and instead are governed by supplemental requirements in the Zoning Ordinance section 250-19.

Subdivision and Other Local Regulations

Aspects of the proposed development are governed by the following additional regulations as per the Code of the Town of North Salem:

- Chapter 107, Freshwater Wetlands;
- Chapter 200, Subdivision of Land (Subdivision Regulations); and
- Chapter A267, Site Development Plan Rules and Regulations.

The Freshwater Wetlands law regulates disturbance and other activities in controlled areas (wetlands and 100' adjacent areas) by permitting certain activities, but minimizing affects on wetlands. The subdivision regulations provide procedures, standards and requirements for the division of land into lots and the construction of associated roads and other improvements. The site development plan regulations provide procedures, standards and requirements for the development of land for specific uses; the construction of buildings for such uses and associated parking areas, access ways and other improvements. All these regulations include requirements and standards for proper site layout, grading, drainage, erosion and sedimentation control and the protection of natural resources.

The subdivision regulations, in subsection 200-29, include provisions for easements to provide access to land or to place restrictions on the use of land. The Highgate-Woodlands project plans delineate easements, which must be filed with the project plans and subdivision plat, to address the following aspects of the project:

- Amendments to existing easements related to: access from Sun Valley Drive to the Croton Falls Fire Department property; the road to the four (4) existing residential lots, located outside the site's southeastern boundary, to allow continued access to Reed Road; and the asphalt drive from existing lots, located outside the site's northwestern boundary, to allow access to Juengst Road;
- Necessary "cross easements" for access to facilities and improvements for: water, sewer and other utilities; stormwater management; emergency access; and recreation.

Local regulations require development improvements to comply with approved plans. Failure to do so may result in violations. Alternatively amendments to the approved plans may be sought. Refer to Code subsections 107-11-13; 200-45; and 250-9, 250-45, B., 250-51 and 250-81 for details on regulatory control for implementation and maintenance of approved development. Therefore future owners and/or associations will be compelled to maintain improvements.

Additionally the provisions for site development plans contained in the zoning; and the separate site plan regulations (Code Chapter A267) and provisions in the subdivision regulations address bonding or other surety in the event of improper construction, lack of completion or maintenance of improvements. Refer to Code subsections 107-6, D,(6); 200-15; and A267-8. The project sponsor will file the requisite bonds or other surety related to site improvements.

Most of the commonly held facilities proposed for the Highgate-Woodlands development will be located on separate parcels of land. Cross easements for the access and use of common facilities, such as the water and sewer system. In the event the HOA fails to properly operate or maintain facilities, the Town or other authorized enforcement agency may issue a violation or utilize bonding or other surety to compel appropriate operation and maintenance.

In accordance with the subdivision regulations, subsection 200-9, E., and other county and state agency requirements, a water supply or sewage treatment system must be operated in accordance with approval of said agencies. Among other regulations, the formation of a governing transportation corporation will be required.

Chapter 200 Subdivision regulations of the Town Code require that each lot have access to a State highway, County road or Town Street, or a private street authorized by the Town Board in an open development area under Section 280-a, Subdivision 4 of the NYS Town law. Given that the site will have private streets, the project will require such authorization by the Town Board. In addition, the proposed private road right-of-way of 50 feet is greater than the minimum width right-of-way of 30 feet cited in the Town Code (Section 200-23(C)(4). According to the Town Code: "Streets shall have the following minimum width of right-of-way according to their classification, or a greater width and as approved by the Planning Board as necessary for anticipated traffic capacity, type of traffic, turning movements and construction requirements." Approval of the Planning Board is required for a width greater than the allowed minimum width.

4.620 Conformance with County and Local Land Use Plans

North Salem Comprehensive Plan

The Town of North Salem Comprehensive Plan was adopted by the Town Board in December, 2011. The Comprehensive Plan was prepared in conformance with NYS Town Law Section 272-a as a guide for the growth and development of the Town of North Salem. The current

Comprehensive Plan updates the Town of North Salem Master Plan adopted in 1985. (hereinafter referred to as the 1985 Plan).

The proposed Highgate-Woodlands development has been before the Town of North Salem Town Board and Planning Board, since 1994. The Final Scoping Document for this Draft SEIS was approved by the Town Board on March 22, 2005, which included conformance with existing County and Town of North Salem Land Use Plans. This Section discusses the conformance of the project with both the 1985 Master Plan and the current Comprehensive Plan.
This DSEIS considers current physical and environmental conditions on the property, and impacts on adjoining land, as appropriate, 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.

The 2011 Comprehensive Plan identifies a primary objective of Town residents to: "maintain and enhance North Salem's rural residential character and identity". The proposed project is consistent with recommendations in the Comprehensive Plan including:

- Preserving ecologically sensitive land by minimizing impacts to wetland buffers, and providing mitigation in the form of wetland buffer enhancement,
- Incorporating new development into natural landforms, to the extent possible, by avoiding steep slopes and reducing grading where feasible (Road A),
- Include the use of "dark sky" lighting fixtures and reduce the number of fixtures to minimize lighting impacts and energy use.

The Comprehensive Plan of 2011 does not reference the proposed R-AMF/2 zoning proposed for the Highgate Woodlands property.

North Salem Master Plan of 1985

The 1985 Plan involved the work of the Town's Planning Board and Town Board with the assistance of its planning consultant. The 1985 Master Plan included a "Master Plan Map" that illustrates the Land Use Plan, a key part of the Plan's text. The Plan "sets forth a future development policy for the Town", which is intended to guide growth "over the next several years". The 1985 Master Plan involved an initial phase resulting in the Basic Studies Update report providing an analysis of physical resources, population, land use, the transportation system, community facilities, utilities and other issues. A series of maps were prepared for use by decision-makers and the consultant involved in the preparation of the Basic Studies Update, however, these are large scale maps and were not produced at smaller scales to be included in the plan. As noted above, the 1985 Plan included a Land Use Plan.

After an assessment of the Town's existing resources and systems, the 1985 Plan section on "Development Goals and Objectives", the Land Use Plan and other sections, included statements of general and specific objectives for the future development of the Town.

The 1985 Plan described the last phase of the planning process, including implementation methods such as "comprehensive revision of the existing zoning" and changes to the subdivision regulations. Although these implementation measures were described in detail in the Plan, they were developed and adopted in later years.

The objectives of the adopted Plan stressed the importance of maintaining open space and guiding future population growth and development to maintain North Salem's rural, residential character. Some relevant development goals and objectives set forth in the 1985 Plan include:[1]

- Establish adequate land-use planning policies to ensure a balanced and orderly pattern of future growth and economic stability.
- Accommodate North Salem's present and future population by encouraging the development of an appropriate variety and quantity of sound housing which will serve various age groups, in accordance with local, county and regional considerations.
- Encourage the orderly but limited expansion and addition of land uses consistent with the predominant character of the community.
- Provide for a safe, adequate and efficient roadway network that will serve the various types and intensities of traffic generated by the proposed pattern of land use within the Town.
- Preserve the natural features of North Salem - its parks, lakes, ponds, waterways, and wooded hills - which give it a pleasant, open setting and which serve, collectively as an attractive background for the more developed areas of the Town and region.
- Preserve, rehabilitate and strengthen existing activity centers such as the Croton Falls Central Business District.
- Encourage higher-density developments to locate in or adjacent to existing activity centers. As a corollary, concentrate higher density uses predominantly within the Route I-684 corridor.
- Preserve and rehabilitate the existing circulation system to maintain the links between major population concentrations and the regional network, and each other.
- Provide a pleasant community in which people can live, work and pursue leisure activities.

The Plan specifies future residential development should have sufficient flexibility to serve all segments of the population while preserving the rural character of the outlying areas and the stability of existing neighborhoods.

A summary of land use pattern described in the 1985 Master Land is presented in Table 4.6-5 below:

[1] Town of North Salem, Westchester County, New York, Master Plan As Adopted by the Planning Board September 4, 1985, prepared by Manuel S. Emanuel Associates, Inc., pages 9 - 12.

Table 4.6-5 Summary of Land Use Patterns (1985 Master plan)		
	Existing Acres	**Percentage**
Vacant & Undeveloped	6,372	43.5
Cultivated or Agricultural	2,005	13.7
Residential	1,912	13.0
Commercial	65	0.04
Office/Research	37	0.02
Public/Semi Public	205	1.4
Parks, Recreation & Conservation	1,582	10.8
City of New York Land – Streets & Highway and Railroad Rights-of-way	2154	14.7
TOTAL	**14,332**	**100+**
Source: Town of North Salem Master Plan Summary Fact Sheet		

An updated summary of land uses is provided below in Table 4.6-6, as set forth in the Croton Watershed Water Quality Protection Plan, Westchester County Department of Planning, and revised in accordance with the Parcel Based Land Use Map from Westchester County GIS and the Town's tax maps. A comparison of the two tables shows how development has affected the Town since 1985. There is less vacant land and significantly more residential development. An interesting change is the increase in parks, recreation and conservation land area. Overall the Town has retained undeveloped and open lands to a notable degree.

Table 4.6-6 2005 Type of Use Summary of Town Land Use		
	Existing Acres	**Percentage**
Vacant & Undeveloped	3099	22
Cultivated or Agricultural	2320	16
Residential	4316	30
Commercial/Retail/Service/Mixed Use	63	*
Automotive/Manufacturing/Industrial	27	*
Office/Research	5	*
Public/Semi Public	299	2
Parks and Open Space (including private recreation)	3330	23
Town Land Area Outside of Watershed	168	1
City of New York Land - Streets & Highway and Railroad Rights-of-way	734	5
TOTAL	**14,361**	**99**
*Less than 1 percent. All commercial, industrial and office type uses combined (95 acres) make up 1 percent of the Town's land area. **Sources:** Comprehensive Croton Watershed Water Quality Protection Plan, Westchester Department of Planning, Draft March 2003; Parcel Based Zoning Map, WCGIS, June 2002; and Tax Maps, Town of North Salem, June 2003.		

Very little of the Town's land use is currently devoted to commercial, industrial and/or office and research uses. Although the area identified as New York City watershed land is not developed, taxes are paid to the Town and its helps the Town preserve additional open space without taking it off the tax rolls.

The 1985 Plan proposes that retail business development should continue to serve primarily the local community. Future business establishments should locate in the hamlet areas where there are existing commercial centers with convenient access. The specific policy guideline for the Croton Falls Central Business District is stated as follows: "Preserve, rehabilitate and strengthen existing activity centers such as the Croton Falls Central Business District (CBD)."

Large-scale shopping facilities in nearby communities address some of the shopping needs of town residents. The Master Plan also supports some limited areas for expansion of nonresidential development to "provide for necessary community facilities."

The 1985 Plan encourages the development of high quality, low density office and research uses, in parts of the Town which are served by major transportation routes. The major area in the Town which the Plan recommends for non-local office and industrial development is the area along Fields Lane on the Route I-684 corridor. In response to the Plan recommendation, the North Salem Town Board created a new zoning district, the RO (Research Office) district. The RO zone, which is located along Fields Lane allows primarily office business and research uses.

Conformance with Local Land Use Plans

The proposed R-AMF/2 rezoning will result in changes to the types of dwellings permitted and an increase in the permitted residential development density on a portion of the Highgate-Woodlands site and will thus add to the variety of housing that is permitted in the Town. The proposed zoning is focused on the need for senior housing and the anticipated development will address the contemplated demand for an active adult townhouse neighborhood. As noted above, the proposed inclusionary zoning will require any future site that is rezoned to the R-AMF/2 to provide a proportion of the dwellings constructed to be affordable (MIH) housing units.

The location of the proposed R-AMF/2 zoning district on Reed Road on the outskirts of the Croton Falls hamlet will add population to this community. This will result in the potential for increased use of the businesses and services located in the hamlet. The R-AMF/2 district is also adjacent to the I-684 corridor.

The proposed zoning and intended development will house a portion of the area's senior population that desire to live in an all-adult community, and who desire to live independently. They will generally not need services associated with an assisted living facility or other similar types of housing.

The 1985 Master Plan Map and the related text identify the site and the surrounding area as being suitable for medium density residential development, to "provide a greater variety of housing types, particularly for the Town's mature households". The intended density for medium density development is 1 unit per acre or 1 unit per half acre (equivalent to 2 units per acre). The subdivision to create 42 single-family lots at a density of at least 1 acre per lot, with lots up to

2 to 5 acres, is consistent with the objective of medium density development. Even with the proposed R-AMF/ zoning at 2 d.u.'s per acre, the objective of medium-density residential use is still achieved. The overall proposed density on the site, which is 1 d.u. per 1.3 acres (123 total d.u.'s on 159.52 acres), is consistent with this Master Plan objective and the character and density of surrounding neighborhoods.

The designation of a Parcel D (9.37 acres) as conservation land will provide the residents in the Sun Valley Drive neighborhood with a new permanent open space amenity. Parcel D is not likely to be accepted by the Town as public parkland, and it will most likely remain as privately held open space for conservation purposes or passive recreational use. It is wooded, hilly and contains some wet areas, therefore providing it as a conservation parcel is consistent with the 1985 Plan objective of preserving natural features.

In summary, the proposed action is in conformance with the 1985 plan in that it maintains open space, provides development that will accommodate the Town's future population growth and in part maintains North Salem's rural, residential character. The project is consistent with a number of the objectives including the following:

- "Accommodate North Salem's present and future population by encouraging the development of an appropriate variety and quantity of sound housing which will serve various age groups ...", in that the project adds townhouse-style multi-family housing to a primarily single-famly area, thus adding to the variety of housing. The townhouses are proposed at medium density (2 dwelling units per acre per zoning) for active adults consistent with surrounding local land use densities.
- "Provide for a safe, adequate and efficient roadway network that will serve the various types and intensities of traffic ..." This objective is addressed by an efficient, safe on-site road layout and appropriate improvements to Reed Road.
- "Preserve the natural features of North Salem - its parks, lakes, ponds, waterways, and wooded hills - which give it a pleasant, open setting ..." The various open space and conservation parcels and buffers provided as part of the site development will serve to create an appearance of wooded, open areas within more developed areas near the site.
- "Preserve, rehabilitate and strengthen existing activity centers such as the Croton Falls Central Business District." The location of this residential development will locate a future population in proximity to Croton Falls businesses and services.
- "Encourage higher-density developments to locate in or adjacent to existing activity centers. As a corollary, concentrate higher density uses predominantly within the Route I-684 corridor." The project location on the I-684 corridor and immediately near exits thereto places this medium-density project near existing activity centers (I-684 and Croton Falls).
- "Provide a pleasant community in which people can live, work and pursue leisure activities." The nature of this mixed residential development (single-family and active adult townhouses), the provision of open spaces and recreational facilities on-site and the relationship of open space and buffer areas to the perimeter of the site and surrounding neighborhoods adds to the socioeconomic variety of the community and provides for passive and active leisure opportunities.

Patterns for Westchester

Development in the Town of North Salem can be guided in part by considering the policies, guidelines and strategies offered in *Patterns for Westchester: The Land and the People* (hereinafter *Patterns*) adopted by the Westchester County Planning Board. Below is an overview of points raised in *Patterns* that pertain to North Salem's consideration of appropriate directions to pursue in encouraging additional medium-density residential development in the community.

Through the northwestern area of North Salem runs Interstate 684 (I-684), considered by *Patterns* to be a "Principal Corridor", which serves as a major transportation route, a scenic corridor and an avenue for development. The *Patterns* map similarly identifies lands alongside I-684 as having "Open space Character". The "Areas of Open Space Character" are lands that add to open space character but are not specifically protected and may include low density areas.

The recommended development density ranges, as shown on the *Patterns* map, for the Highgate-Woodlands site and nearby include two categories of "Medium Density Suburban" (MDS) and provide for Floor Area Ratios (FAR, or Floor Area per Lot Area) and densities (GRD or Gross Residential Density) as follows:

0.05-0.2 FAR/MDS 2-4 - This density is recommended immediately adjacent to Reed Road and I-684 and constitutes a small part of the front portion of the Highgate-Woodlands site. This category is equivalent to 2-7 dwelling units per acre (du/acre) or 2.5% to 10% building coverage (building footprint) assuming 2-story development.

0.025-0.1 FAR/MDS 1-3 - This density is recommended for most of the Highgate-Woodlands site, including the northern areas of the site and is equivalent to 1-3 du/acre or 1.25% to 5% building coverage (building footprint) assuming 2-story development.

The density proposed for the active adult townhouse portion of the site (R–AMF/2 zoning permitting 2 du/acre) is consistent with the recommended development densities on the *Patterns* map. The density in the proposed zoning amendment is designed to produce medium-density residential development in this area of Town.

The "north county" area, which includes the Town of North Salem, and its corridors are identified as parts of the county where there are opportunities for development. *Patterns* recommends that zoning and design techniques be used to address the potential for development of privately-owned lands to retain open space character. The R-MF zoning districts, which the R-AMF/2 zoning district is based on, include significant setbacks to define the outer boundary of the sites and the Zoning Ordinance generally requires buffering and landscaping for these and other types of site development.

The proposed site development includes areas along Reed Road and I-684 that will not be disturbed or cleared; and tree, shrub and other plantings in areas that are to be disturbed. Also, plantings in stormwater basins and at the entryway will soften the view of the developed site as viewed from the adjacent roadways.

Greenprint: The Westchester County Compact Plan

In March of 2005, the Town of North Salem enacted a local law to adopt the Westchester County Greenway Compact Plan, also known as *The Greenprint for a Sustainable Future... the Westchester Way* (hereinafter *Greenprint*). The plan was prepared by Westchester County in accordance with the Hudson River Greenway Act of 1991. *Greenprint* is the Westchester County Greenway Compact Plan, which provides guidance for municipalities participating as Greenway Compact communities. North Salem is a Greenway Compact community.

At the same time the Town adopted the Greenway Compact Plan, there were related changes to some of the Town's local laws to address the purposes of the Greenway Act, including Chapter 200, Subdivision of Land and Chapter 250, the Town's Zoning Ordinance. The purpose of the Greenway Criteria is to promote natural and cultural resource protection, regional planning, compatible economic development (agriculture, tourism and revitalization of community center), public access to natural and cultural resources, and heritage and environmental education.

The New York State legislation known as the Hudson River Valley Greenway Act involves voluntary regional cooperation among the 13 counties bordering the Hudson River and the communities that are part of the Hudson River Valley region. Westchester County's *Greenprint* is based on and incorporates by reference *Patterns for Westchester* to "create an approach to regional economic development that promotes tourism while incorporating natural, cultural and historic resource protection and increasing Hudson River access opportunities."

North Salem's 1985 Plan, the ongoing comprehensive planning activities and other land use and environmental planning efforts, local laws and regulations and policies for review of land development are generally consistent with three of "The Five Greenway Criteria," which address:

- Natural and cultural resource protection;
- Regional planning; and
- Economic development.

The petition for the R-AMF/2 zoning amendment, and related medium-density residential development, is compatible with certain aspects of the Greenway Criteria regarding economic development, which reads as follows:

> "Encourage economic development that is compatible with the preservation and enhancement of natural and cultural resources with emphasis on agriculture, tourism and the revitalization of existing community centers and waterfronts."

The zoning amendment will permit various types of medium-density residential development on a site located within 1 mile of the Croton Falls downtown area and ½ mile from other businesses in the outer area of the hamlet. The Highgate-Woodlands project is within ¼ to ½ mile of commuter routes I-684 and NYS 22 and 1 mile from the train station in Croton Falls. The new residents that will inhabit the proposed single-family and active adult townhouse development, including a mix of families and older adults, will add to the population participating in the local economy, particularly by frequenting the businesses in Croton Falls. The project will thus contribute to the revitalization of an existing community center (Croton Falls). This is consistent with the *Patterns* policy as referenced in *Greenprint*:

> "Channel development whenever possible to centers where infrastructure can support growth, where public transportation can be provided efficiently and where redevelopment can enhance economic vitality."

Although all proposed dwelling units to be constructed on the Highgate-Woodlands site will be market rate single-family and multi-family (townhouse) units, the project also involves the development of up to 5 affordable (MIH) dwelling units. They have been proposed for a site in Croton Falls known as the Dino & Artie's site. This is consistent with *Greenprint's* and *Patterns'* objective to:

> "Encourage a range of housing types that are affordable to renters and home buyers, with each municipality addressing its needs for affordable housing as well as a share of the regional need."

The development of the affordable units on a remediated brownfields site in Croton Falls also contributes to the revitalization of the hamlet area by cleaning up and redeveloping a vacant and previously unsightly property.

The designation of a Parcel D (9.37 acres) as conservation land will provide the future residents of the project and the residents in the Sun Valley Drive neighborhood with a new permanent open space amenity. It is wooded, hilly and contains some wet areas, therefore providing it as a conservation parcel is consistent with the *Greenprint's* objective of preserving natural resources.

Westchester 2025

Westchester 2025: *Plan Together* is an updated general expression of land use policies and a framework for more detailed planning for the future development of the County to the year 2025. The Westchester County Planning Department webpage describes *Westchester 2025* as being "underway". The "Context and Policies" section sets forth general objectives addressing the protection of community character; defining appropriate development intensity; managing stormwater; responding to housing needs; and reducing travel through land use decisions and other general objectives.

In the section regarding "Policies to Guide County Planning", the *Patterns* policies are reiterated including the objective to channel development to centers. The framework for *Westchester 2025* encourages municipalities to define the character of areas such as "Commercial Corridors" and mixed use areas such as a "Walkable Downtown" or "Walkable Hamlet". According to the Westchester County Planning Department webpage, an updated land use map similar to the map in *Patterns* is anticipated to be part of *Westchester 2025*.

The proposed Highgate-Woodlands development, including the proposed zoning amendment will permit various types of medium-density residential development on a site located within 1 mile of the Croton Falls downtown area. The Highate-Woodlands project is within ¼ to ½ mile of commuter routes I-684 and NYS 22 and 1 mile from the train station in Croton Falls. The project is consistent with the objective of channeling development to existing centers. The new residents that will result from the development will add to the population participating in the local economy, particularly by frequenting the businesses in Croton Falls.

Westchester County Housing Allocation

A detailed study of the affordable housing need in Westchester County for the years 2000 to 2015 has been conducted by the Center for Urban Policy Research (CUPR) for the Westchester County Board of Legislators, resulting in the final report entitled, *Westchester County Affordable Housing Needs Assessment*. The report was prepared, using detailed analysis, by the Center for Urban Policy Research for the Westchester County Board of Legislators. It is an examination of existing and projected housing demand, income constraints, overcrowding, physically deficient housing and many other factors related to the supply of, demand for, and cost of housing in comparison to the population of the County and key socioeconomic characteristics.

The next step in the County's look at housing need was the preparation of the *Draft Affordable Housing Allocation Plan* (July 14, 2005), which was subject to a public hearing in August 2005. The *Draft Affordable Housing Allocation Plan* (hereinafter Draft Allocation Plan), prepared by the Westchester County Housing Opportunity Commission (WCHOC) is a plan that allocates "to each municipality the share of the County's total affordable housing need that can be reasonably expected of it". The *Draft Allocation Plan* is based on the *Housing Needs Assessment*, noted above, and the *Allocation Plan* prepared to address the period from 1990 to 1999. It provides an updated allocation for the period from 2000 to 2015. Each municipality is expected to address the number of housing units allocated to it in the *Draft Allocation Plan* by encouraging the development of affordable housing or by causing such housing to be developed. The *Draft Allocation Plan* can be viewed on the county's website (www.westchestergov.com).

In accordance with the *Draft Allocation Plan*, the Town of North Salem's new affordable housing allocation plus its unmet obligation for the earlier *Allocation Plan* (1990-1999) is 152 affordable dwelling units. The *Draft Plan* accounts for 4 units that are identified as being recently completed or under construction and the resulting affordable housing that the Town is expected to produce for the period from 1990 to 2015 is then 152 affordable dwelling units. A number of affordable units have been developed in North Salem that have not been accounted for in the *Draft Allocation Plan*, which will be addressed as part of the ongoing review of the Draft Plan.

As is discussed above, in the section on Existing Zoning and Proposed R-AMF/2 Zoning, the Town of North Salem rezoned four sites to create the opportunity for the development of affordable housing using "inclusionary" zoning techniques (requiring that a proportion of developed dwelling units be affordable housing). As per the Draft Generic EIS (DGEIS) and Final GEIS (FGEIS) for the Continental zoning amendments, the four rezoned sites were projected to yield 427 dwelling units including 68 MIH units. At the time the Town was conducting its environmental review of the rezoning, there were 8 existing affordable housing units. Although 76 units may result from the development of MIH units from the rezoned sites combined with the existing 8 units, this is only half of the 152 affordable dwelling units expected of the Town. This may require the Town to identify additional strategies and possible sites for medium to high-density residential development to provide opportunities for the development of affordable housing.

The Highate-Woodlands project involves creation of the R-AMF/2 district, which is an inclusionary zoning district consistent with the intent and format of the existing R-MF/6 and R-MF/4 zones. Although it includes a requirement for the creation of MIH dwelling units, the project sponsor will create MIH units at an off-site location in accordance with the amended

stipulation of settlement. The creation of these MIH units is consistent with the objectives of the *Draft Allocation Plan*.

Westchester County Open Space Policies

The Westchester County Planning Department website includes a page entitled Open Space Policies, which states its policies acting as a facilitator with municipalities, state agencies and private organizations in the acquisition of open space. Also on the website is the Open Spaces map completed in 2006. These documents are found at:

http://www.westchestergov.com/planning/

Also on this webpage is the Open Spaces map prepared in 2004, which shows parklands, preserves, recreation and institutional lands, farms, water supply lands and other land which makes up the many aspects of open space character in Westchester County. There are no open space elements shown on the Highgate-Woodlands site. The closest identified open spaces are farms to the east along the north and south sides of Hardscrabble Road.

The Open Space Policies express the County's desire to facilitate the preservation and protection of open space elements. The first policy objective regarding open space character is to:

> "encourage preservation of open space as an important element in shaping Westchester's development pattern and in preserving its aesthetic and environmental quality."

Other policies encourage the creation of recreational opportunities; links between aspects of open space; protection of waterfront areas, natural and scenic resources; and preservation of historic resources.

The designation of a Parcel D (9.37 acres) as conservation land will provide the future residents of the development and residents in the Sun Valley Drive neighborhood with a new permanent open space amenity. It is wooded, hilly and contains some wet areas, therefore providing it as a conservation parcel is consistent with the County's Open Space Policies objective of preserving natural features.

Eastern Westchester Biotic Corridor

The Town of North Salem has been participating in meetings with nearby Towns to consider creation of the "Eastern Westchester Biotic Corridor" (EWBC), which is contemplated to be an Overlay District, and related regulations to govern disturbance and development in the proposed EWBC Overlay District. The EWBC is a specific geographic area located on the eastern side of the Town containing exceptional or unique biological, ecological and environmental characteristics, which may be designated as an area for special regulation by the Towns of Lewisboro, North Salem and Pound Ridge to protect, preserve and enhance this biotic corridor, its wildlife habitat areas, its habitat hubs and the corridors that connect them. The objective is to decrease to the greatest extent possible the biological fragmentation of the EWBC Overlay District so that natural processes are not disrupted and biodiversity is not diminished.

North Salem and its neighboring Towns had begun review of an initial draft of a proposed local law for the EWBC Area Overlay District in the early 2000's. The Towns may continue their review of the proposed local law and consider adoption of the law in the next few years.

While not studied as part of the biodiversity assessment of the Highate-Woodlands 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 east and smaller areas of vacant land to the west. Its importance as a significant wildlife corridor to off-site habitat areas is believe to be limited due to the surrounding neighborhoods, developed properties and major roadways. The preservation of the wetlands, wetland buffers and the setbacks along the property lines 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, particularly on the eastern side.

The site is located almost three miles, at its closest point, 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.[2]

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 Wetland A and wooded areas to the east of this wetland. However, the movement of wildlife that travel through the area may be altered somewhat.

Croton Watershed Planning

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 Westchester County Department of Planning has worked with the Towns and Villages in this watershed area to create a comprehensive water quality protection plan in accordance with the "New York City Watershed Memorandum of Agreement (MOA)". 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 Watershed.

The *Croton Plan* provides information about the Watershed's geography, population, natural resources, land use and development, local zoning and other regulations, including mapping of many of these features. The plan goals and recommended strategies address:

- Land use and community character, including open space and specific land uses such as homes, farms, golf courses, and businesses;
- The protection of water quality, including wastewater (sewage) treatment, stormwater management, the condition of streams and groundwater; and
- Regulation, enforcement and governmental coordination.

[2] Miller, 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.

A revised Draft of the *Croton Plan* (June 2007) is under review by the New York City Department of Environmental Protection (NYCDEP). Following NYCDEP review, the cooperating communities will agree to follow the *Croton Plan*, however, it is not necessary that they adopt the plan. Based on information and findings in Chapters 1 through 5 of the *Croton Plan*, seven strategies are identified in Chapter 6 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."

Specific recommendations have been developed for implementing each strategy, which are set forth in Chapter 6 of the *Croton Plan*. Many of the strategies, such as stormwater management; open space planning; and land development regulation, are meant to be implemented by the cooperating municipal governments to address the effects of land disturbance and impervious surfaces.

Many of the recommendations in Section 6.6 of the *Croton Plan* regarding environmentally sound design are already incorporated in the various chapters of the Code of the Town of North Salem as listed below:

- A stormwater law is found in Chapter 193 and is referenced in other Code Chapters;
- Building and lot coverage requirements are addressed in the zoning ordinance (Chapter 250); and
- Erosion and sedimentation control provisions are found in the stormwater law (Chapter 193); the subdivision regulations (Chapter 200); and the site development plan regulations (Chapter A267).

The Highgate-Woodlands project plans illustrate how the proposed development design addresses stormwater management; erosion and sedimentation control and coverage requirements and standards. Additionally, the conservation parcels address open space objectives of the *Croton Plan*. Wetland and steep slope avoidance, tree preservation and wetland enhancement areas serve to preserve and restore these natural resources. New landscape improvements add to the open space character of the site; reduce stormwater runoff; and provide further erosion and sedimentation control.

Conformance with Westchester County and Regional Land Use Plans

Each of the specific sections above summarizes county and other regional planning studies and describes how the Highgate-Woodlands development is consistent with the varied policies of each. In summary, the Highgate-Woodlands development proposal is in general conformity with the above-described county and other regional planning studies.

4.630 Development Trends

In the previous DEIS for the former Highgate development, three proposed developments were selected to be discussed in this section of the DEIS. Two of the projects, Cherry Hill Subdivision and the Hamlet Site Plan are located in the Town of North Salem. The other project, the Campus at Field's Corner, is located in the Town of Southeast. The Field's Lane Road Improvement District and its related growth potential were considered in the traffic section (See Section 4.500 of the previous DEIS and the Traffic Impact Study which is included in its entirety in Highgate-Woodlands EIS, Appendix 12 for other information).

These three projects are discussed below with updated information about their status. Additional current projects in the vicinity of the project site are also described.

Projects in the Town of North Salem

The Marriott/Fairfield Inn Hotel is a 62-room hotel proposed on an approximately 12-acre site in the GB (General Business) zoning district, which use would be allowed by Special Permit of the Town Board. The site is located on NYS Route 22 in the Croton Falls hamlet area adjacent to other primary business uses (a restaurant and gas station). A Draft EIS was submitted and determined to be incomplete by the Town Board in 2007. The project is currently on hold.

The location of the hotel in the Hamlet of Croton Falls makes it compatible with nearby business uses. It is situated in close proximity to the I-684 exit to Croton Falls. Hotel customers and the new residents resulting from the Highate-Woodlands development are likely to use nearby restaurants, stores and other services and businesses in the hamlet area.

The application for the “Salem Chase” subdivision on NYS Route 22 (also known as “Cherry Hill Estates”), was submitted in December 1983 and the project has been modified over time. The first subdivision plat proposal consisted of 67 lots on the 133.4 acre parcel. The final plat consisted of 53 single family building lots in the R-4 and R-1 zoning districts, including 16 bonus units. The project is a cluster plan and was approved by the Town Board as an open development area as permitted under Section 280-a 4 of Town Law. The project was fully developed as a cluster subdivision, to preserve the environmentally sensitive features on the site, i.e. steep slopes and wetlands, which is served by a town road with each cluster of building lots served by a private road.

Five of the lots were constructed with affordable units for families at middle income levels. All the units are served by subsurface disposal systems and a public water supply. Because of the affordable units and the clustering plan, the applicant was not required to provide any public infrastructure to serve the development. Private recreational facilities on the site include a swimming pool, cabana, a tennis court and a children's play area and a donation of ± 3 acres of parkland.

The existing “Salem Chase” development is compatible with other nearby residential neighborhoods along NYS Route 22. Since it is located in the Rt 22 corridor, this development has access to commuter routes and train stations in Purdys and Golden’s Bridge.

Before 1996, the Hamlet at North Salem a 56-unit single-family attached development was proposed in the former R-1/4 Medium High Density Residence District located in the southwestern corner of the Town of North Salem opposite the existing Morris Road/Valeria

Circle neighborhood. The project is located near and had anticipated tying into the Wild Oaks Sewer Company and Wild Oaks Water Service Area (in the neighboring Town of Lewisboro).

The site was later rezoned to the R-MF/4 zoning district as part of the zoning amendments to address the Continental Decision, which permitted multi-family dwelling units as-of-right and other residential uses at a density of 4 d.u.'s per acre. However, the land is now held by the Westchester Land Trust and will not be developed.

The "Bridleside" or former "Salem Hunt" residential project consists of 65 rental units in 8 buildings. The project site contains approximately 40 acres and is located on June Road, near Starlea Road, on the border of the Town of Southeast, and Putnam County. The project is compatible with the R-MF/4 Medium-Density Residence Zoning District, in which it lies. The development will consist of 100 percent affordable income housing units consistent with standards and requirements of the Federal, State and Westchester County funding sources being used to complete the project. The project is consistent with Article XXII of the Town Zoning Ordinance. The project is currently under construction.

Projects in the Town of Southeast

The 327 acre Fields Corners Commons (formerly Campus at Field Corners) site is located on Pugsley and Barrett Roads in the Town of Southeast in Putnam County, just northwest of the Village of Carmel, and is owned by the Putnam Seabury Limited Partnership. Pugsley Road is north of NYS Route 312. It is over 4 miles from the Highate-Woodlands site.

The project was the subject of a full EIS and a Statement of Findings adopted by the Town of Southeast Town Board. The site was rezoned to the OP3 zoning district which generally permits the following:

- Offices and single-family residential detached and attached units as-of-right; and
- Restaurants, recreational uses, hotels/motels/conference centers, retail, service and light industrial uses by special permit.

The construction of the project Campus at Field Corners was to be phased over a number of years. Approval has been granted for the development of 143 single-family homes on a portion of the site. The single-family aspect of the development includes the construction of an on-site wastewater treament plant (WWTP).

Under the original plan various phases would have included: 237,000 square feet of office space and Town House units; a 300 room hotel; and 60,000 square feet of supporting convenience stores. An intensive study was conducted to assess the impacts of the development on traffic, including a coordinated traffic improvement study. Then the project was inactive for a number of years. In April 2007 a concept plan was presented to the Town of Southeast including the following: four office buildings of 29,500 SF each with retail occupancies on the first floor and offices on the second floor; and a 150-seat restaurant. There has been no activity on this aspect of the project since that time according to a phone conversation with the Town of Southeast Planning Board Secretary on September 24, 2008.

The single-family aspect of the Fields Corners Commons project is consistent with the primarily single-family and residential character of southern Putnam and northern Westchester counties. The Fields Corners site is remote (4 miles) from the Highate-Woodlands site and the Croton

Falls and Fields Lane areas. Therefore, it is unlikely to affect development trends in the area of the Highate-Woodlands site.

There are several other projects in the Town of Southeast that are known to be approved or are pending in the vicinity of the project site, which are summarized in Table 4.6-7 below.

Table 4.6-7
Proposed Projects in the Town of Southeast

Project Name, Description	Proposed Land Use	Location
Western 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

Source: Town of North Salem, Westchester County and Town of Southeast, Putnam County

The residential and agricultural projects noted in the table above are consistent with the predominantly residential and notable agricultural land uses in southern Putnam and northern Westchester counties. The warehouse and office projects are appropriately located on Fields Lane, a commercial connector road with access to I-684 as opposed to being near a hamlet or residential area.

Impacts and Mitigation

Neighborhood Land Use

The proposed residential subdivision component of the Highgate-Woodlands Project will conform to or be somewhat less dense than the existing residential density of the surrounding neighborhoods. The multi-family development surrounded by the single-family component is consistent with nearby R-1/2 (Medium Density Residential) zoning. The overall proposed density of the Highgate-Woodlands site will be approximately 1 dwelling units per 1-1/3 acre (118 total d.u.'s on 159.52 acres), which is consistent with residential density in the surrounding neighborhoods.

The project is not anticipated to result in cumulative impacts to property in the vicinity of the site. Land uses surrounding the Highgate-Woodlands property, in addition to residential development, include an undeveloped parcel to the southeast of the site on Reed Road. It is

possible that the owners of this undeveloped parcel may decide to develop their holding. Since the adjacent parcel is in the R-2 (Low Density Residential) zoning district and has somewhat steep and rocky terrain, it is likely to be developed for single-family lots with a density of one dwelling unit per 2 acres or possibly larger lots. The impacts of any future development proposals will be analyzed by the Town, as required by SEQRA and/or Town site plan and subdivision regulations.

As noted above and in other DSEIS sections, significant areas of the site will remain undisturbed; wetland areas will be avoided and/or enhanced; and stormwater management and erosion/sedimentation control measures are proposed to address the effects of site disturbance.

The project has been designed to preserve areas of existing vegetation, in part to maintain the wooded character of the property and to provide a visual buffer between existing residential development and the project. The vegetation may also provide mitigation for construction noise for project neighbors. The project's limits of disturbance (removal of vegetation and grading) are shown in Figure 3-3 Highgate-Woodlands Site Plan. The figure illustrates those areas where existing vegetation and trees will be maintained, following construction.

A strip of existing vegetation, ranging from 60 to 150 feet in width will be maintained along Reed Road. Along the western property border, a buffer of existing vegetation averaging approximately 90 feet in width will be maintained. Along the northern property border, a buffer of existing vegetation averaging approximately 150 feet in width will be maintained (see Figure 3-3 Highgate-Woodlands Site Plan). In most locations to the north and west of the project site a buffer of 100 feet or more between the proposed residences and the property line would be provided. As shown in Figure 3-3, a large portion of the east side of the property, which includes Wetland A and dense woods on steeply sloping topography, would remain undisturbed. This area borders several existing residences along Reed Road. Maintaining existing vegetation on this eastern slope will preserve the wooded character of the site for drivers on Interstate 684 and Hardscrabble Road. Project visual impacts are further described in Section 4.910 Visual Resources.

The overall development shown with proposed street trees and landscaping is illustrated on the landscaping plans Full Sized Plan Sheet LS-1, (Drawing 23) and Full Sized Plan Sheet LS-2, (Drawing 24). The proposed wetland mitigation treatments are shown on the landscaping plan Full Sized Plan Sheet LS-1 (Drawing 23) and proposed wetlands and buffer enhancement areas are shown on Full Sized Plan Sheet OS-1, Overall Site Plan (Drawing 3). The erosion control site plan (Full Sized Plan Sheets EC-1 through EC-4 (Drawings 19 through 22)) shows preservation of many existing trees within areas of disturbance.

These features are intended to enhance the character and quality of the Highgate-Woodlands Project and help to mitigate potential disturbance, visual, noise and other development impacts from the Proposed Action as seen from adjacent roadways and as experienced by adjoining residential property owners.

Single Family Residential Development

The proposed preliminary subdivision plat, conforms to all density and bulk requirements set forth in the Town's Zoning Ordinance (Chapter 250) (see Full Sized Plan Sheet PS-1, Preliminary Subdivision Plat (Drawing 2)). The R-1 (Medium Density Residential) zoning district permits single-family dwelling units on lots with a minimum size of 1 acre, and a maximum

building coverage of ten percent per lot. The basic dimensional requirements of the R-1 District and the proposed dimensions of proposed lots are provided in Table 4.6-8, below.

The single family residential lots have been designed in consideration of the road layout, site topography, and areas of wetlands, watercourses and regulated Controlled Areas (wetlands and associated 100-foot upland buffer therefrom). Each of the lots has been designed to be consistent with all area and bulk requirements provided in the Town Zoning Code regulations for the R-1 Residential District. The single family lots range in size from 1.01 to 6.4 acres in size (total lot area).

Consistent with the Zoning Code, steep slopes and wetlands were evaluated on each lot to determine the minimum lot area. Table 3-6 Lot Area Calculations shows the areas of steep slopes and wetlands that were deducted to determine lot size. The bulk requirements listed in the Town Zoning Code and the bulk, area and coverage information for each of the 42 single family residential lots is provided in Table 3-7 Bulk and Area Data for Individual Single Family Lots (see Section 3.320 - *Proposed Uses and Project Site Layout; Area and Setback Design Standards).*

The design layout of lots and houses is amenable to neighborhood character, while providing some sense of privacy for each home. Residences were situated on each lot considering topography and zoning setback requirements. Individual driveways will provide access to each of the residences. Each of the proposed driveways has grades of less than 14% per Sections 200-22C(2)(b) and 200-23H(5) of the Land Subdivision Regulations. Homes will be located at varying distances from the access roads. Existing trees and vegetation will be retained on the sides of driveways and around each of the residences, as shown in Figure 3-3 Highgate-Woodlands Site Plan. Areas of lawn and landscaping have been designed around each home. An area with a radius of approximately 40 feet around the rear of each home has been provided. Typical landscaping for single family homes are shown in Full Sized Plan Sheet LS-2, Landscape Plan Details (Drawing 24).

Table 4.6-8
Proposed R-1 (Medium Density Residential) Zoning District
Bulk and Area Requirements for Single-Family Detached Dwellings*

Features	Minimum Required	
Lot Area	1 acre	1.001- 4.837 acres**
Lot Width	150 feet	150 -283 feet
Front Yard	35 feet	41 - 272 feet
Side Yard/Both Side Yards	20/50 feet	25/65 - 77/95 feet
Rear Yard	50 feet	51 - 418 feet
Street Frontage	120 feet	120 - 303 feet
Features	**Maximum Permitted**	**Proposed**
Building Height	35 feet	35 feet
Development Coverage	20%	3.94 - 16.02%
Building Coverage	10%	1.68 - 8.81%
Floor Area Ratio	0.2	.03 - 0.16

Source: Town of North Salem Zoning Ordinance (Section 250)
Note: The proposed single-family lots conform to all bulk and area requirements of the R-1 Medium Density Residential District.
*Single-family dwellings are in "Use Group" e in accordance with the Table of General Use Requirements for the R-1 zoning district
** - The proposed minimum lot area includes deductions for slopes and wetlands per the Code (250-16A)

Active Adult Townhouse Development

A new zoning district, R-AMF/2 is proposed to permit multifamily adult housing for occupancy by one or more persons 55 and older. The active adult townhouse development will consist of 76 residential units in 19 buildings. Each of the buildings will have four units and will be two stories in height. The active adult townhouse buildings are located along two cu-de-sacs, with the main cu-de-sac (Road D) extending from Road A in the south-cental portion of the site. The layout of the active adult townhouse development is shown in Figure 3-3 - Highgate-Woodlands Site Plan.

The active adult townhouse buildings meet all bulk, area and setback requirements of the proposed R-AMF/2 (Residential-Adult Multi-Family/Medium Density) Zoning District. The bulk and area requirements of the proposed zoning and the proposed dimensions of the current site plan are shown in Table 4.6-9, below.

Table 4.6-9
Proposed R-AMF/2 (Residential-Adult Multi-Family/Medium Density) Zoning District
Bulk and Area Requirements for Multi-Family Dwellings*

Features	Minimum Required	Proposed
Lot Area	5 acre	38.65 acres
Lot Width	400 feet	746 feet
Front Yard	50 feet	51 feet
Side Yard/Both Side Yards	50/100 feet	62/157 feet
Rear Yard	50 feet	214 feet
Street Frontage	50 feet	732 feet
Features	**Maximum Permitted**	**Proposed**
Lot Area	50 acres	38.65 acres
Building Height	35 feet	35 feet
Development Coverage	40%	16.35 %
Building Coverage	20%	7.18 %
Floor Area Ratio	0.3	0.132

Source: Proposed Draft zoning amendments, Town of North Salem
*Multi-family dwellings are in "Use Group" r in accordance with the Table of General Use Requirements for the proposed R-AMF/2 zoning district. The bulk requirements above apply to the overall development within the entire site on which the multi-family dwellings are located as per zoning subsection 250-19.1, A. Internal separation distances are addressed in the supplemental requirements for this use.

Development in the R-MF/6, R-MF/4 and the proposed R-MF/2 High and Medium Density Residential districts are subject to Chapter 250-19.1 - Supplemental Requirements for high and medium density residential development, of the Town Zoning Code. These supplemental requirements relate specifically to area, density and setbacks for multifamily buildings and related amenities in such developments.

The Highgate-Woodlands project meets all requirements of Supplemental Requirements as listed in Chapter 250-19.1. Table 4.6-10 Supplemental Requirements in the R-MF/2 Zoning District provides a summary of both the Code requirements and those dimensions provided in the proposed site plan.

The Supplemental requirements provide for a separation distance between multi-family buildings of 1.5 times the building height. The proposed active adult townhouse buildings are designed with a height of 28 feet and therefore a minimum separation distance of 42 feet is required. This separation distance is provided between all multi-family buildings.

Table 4.6-10
Supplemental Requirements in the Proposed R-AMF/2 Zoning District
(Chapter 250, Section 250-19.1)

Features	Minimum Required	Proposed
Distance between multifamily structures	1.5 X Height of building	42 feet
Distance from front of multifamily structure to street	20 feet	20+ feet
Distance from multifamily structure to parking	25 feet	95 feet
Distance from Parking Areas to Buildings (Recreation Bldg.)	25 feet	25 feet

Source: Town of North Salem subsection 250-19.1

As described above, uses permitted "by-right" in the existing R-1 Residential District include: single-family detached dwellings, churches, convents, uses of the Town of North Salem or other governments, and railroad rights-of-way and passenger stations. The proposed 42 single family residences are in conformance with the permitted uses, while the senior townhouse development with multi-family dwellings is not a permitted use in the existing Zoning District. The proposed rezoning of the R-MF/2 portion of the site would allow the senior townhouse development.

The Amendment #1 to the Stipulation of Settlement (November 29, 2004) provided thresholds for proposed development on the Highgate-Woodlands at North Salem property. The Amendment modified the original December 8, 1992 Stipulation, which provided for the construction of "an office building or office buildings, having a total gross floor area of 250,000 sq. ft" on approximately 40 acres and the construction of 49 single family homes on the remaining approximately 120 acres. The project was subject to a complete and thorough site specific planning, engineering and environmental review. The 2004 Amendment provided for "an active adult, multi-family residential community, specifically intended for occupancy by persons 55 years of age or older, for at least but not more than 76 such residential dwellings" and such number of additional lots as may be required to operate and maintain each of the utilities, buffers and/or recreation areas which will serve all of the 49 residential lots and all of the active adult, multi-family residential community, and such ancillary structures, amenities, roadways, parking areas and landscaping, as determined by the Planning Board, consistent with the zoning ordinance.

Chapter A267 Site Development Plan Rules and Regulations of the Town Code, provide procedures for the preparation of Preliminary and Final Site Plan, for review by the Town. The site plan drawings for the property have been prepared in compliance with Chapter A267 Site Development Plan Rules and Regulations. Preliminary plans have been submitted to the Town, as part of this SEQRA document. The Town will review the Site Plans for consistency with the Chapter A-267 of the Town Code, during the SEQRA and, following the adoption of Findings, during the Site Plan and Subdivision review process.

Chapter 200 - Article 3 Design Standards and Required Improvements, provides procedures for the preparation of maps and plans for the subdivision of land. This portion of the Code provides for the planning, design, and construction of subdivision plats. It provides requirements for plat

elements such as lots, street design and layout, natural features and storm drainage planning and design. Article 4 - Standards and Requirements for Plat Maps and Construction Plans provides specific requirements for the format and content of subdivision plat maps and construction plans.

Similar to the site plan drawings described above, a preliminary plat drawing has been provided as part of this DSEIS and is being reviewed by the Planning Board, in conjunction with the overall project SEQRA review. The propose Plat for the Highgate-Woodlands project has been prepared in compliance with Article 3 and 4, of the Town Subdivision Code.

The roads in the Highgate-Woodlands project would be constructed in conformance with Town of North Salem Town Road Standards (Chapter 200-23 Street Planning and Design of the Subdivision regulations), with the exception of: 1) a portion of Road A and 2) the turnarounds at the ends of Road D and E in the Active Adult Townhouse development. Due to the existing steep grades at the project entrance, a portion of Road A will have grades of 12 percent, instead of the Town Standard of 10 percent. According to the Code (Chapter 200-23 H. Grade), the maximum grade for a local street is 10 percent, "except that grades up to 12 percent may be approved for short distances, primarily on tangents". A waiver from the Planning Board will be required for the proposed road grade. A waiver will also be required for proposed 80 foot diameter turnarounds at the end of Roads D and E, since the Town Standard is 100 feet minimum. The cul-de-sacs at the ends of Roads B and C are 100 feet in diameter.

The number of proposed lots and condominium units falls within the thresholds established in the Stipulation of Settlement governing the review of the Woodlands project.

Approval for Cul-de-sacs

The applicants are seeking an approval or in essence waivers for the length of the proposed cul-de-sacs. The Code of the Town of North Salem, Chapter 200, Section 200-23, J., indicates that unless approved by the Planning Board proposed cul-de-sac should not exceed a maximum length of 1,000 linear feet. The proposed development includes an entry road (Road A) from Reed Road to the intersection with the western and eastern cul-de-sacs with a length of 4,300 linear feet. The western cul-de-sac (Road B) is 900 linear feet; and the eastern cul-de-sac (Road C) is 2,260 linear feet. Therefore the total length of each cul-de-sac including the entry road plus the cul-de-sac length is as follows:

- From Reed Road to the end of Road B is 5,200 linear feet; and
- From Reed Road to the end of Road C is 6,560 linear feet.

Both exceed the 1,000 foot maximum length standard. However, Section 200-23, J., allows the Planning Board to approve roads exceeding this standard by evaluating for safe vehicular circulation including access for emergency vehicles. The proposed road layout includes the following features as a result of comments from the Town:

- A portion of the proposed road will be a public road from the site's entry at Reed Road running for a length of 650 linear feet with a turnaround and bus shelter before the gated entry to the rest of the development;
- A pullout area is provided on Reed Road at the site's entry;

- An emergency only access road is provided to Sun Valley Drive;
- An emergency only access road is provided from the northern area of the active adult townhouse development to Road C (eastern cul-de-sac); and
- Circular turnarounds are proposed at the ends of Roads B and C (the western and eastern cul-de-sacs, respectively).

These design features are proposed to mitigate impacts associated with roads longer than the standard in the subdivision regulations to facilitate vehicular access within the site for residents and visitors; and provide safe, efficient access for emergency services.

In accordance with the applicable requirements of the zoning ordinance and subdivision regulations, applicants must provide on-site recreation, a park set-aside, or pay recreation fees. In this instance, the applicant would provide both -- the two on-site recreational facilities as well as the recreation fees. For the single family portion of the development the amount of the recreation fee is not to exceed a $3,500 per lot (or $147,000) and for the active adult townhouse development the fee is not to exceed $5,000 per unit (or $380,000).

Additionally, the proposed action will conserve a 9.37-acre parcel on the western side of the site as privately held open land and other lands described herein. This parcel can serve as open space for passive recreation.

Ownership and Maintenance

In accordance with the Zoning Ordinance, subsection 250-19.1(L), the proposed Highgate-Woodlands project commonly held land and facilities shall be held in common ownership by an approved Homeowner's Association (HOA) and Condominium Association. Commonly held properties and facilities will include the proposed private and emergency access roads, land associated with the multifamily units, the central water and sewer system, stormwater management improvements, recreation amenities, and conservation land. All property owners will be members of the master HOA. The master HOA will be responsible for facilities benefiting both single family and multi family owners, such as the water and sewer facilities, stormwater system, and roads. A separate HOA representing only the 42 single family homeowners will control facilities benefiting only them such as their recreation amenities.

In addition, a Condominium Association will control lands associated with and benefiting only the multifamily units such as their recreation amenities and the land surrounding their units. Each member of the master HOA, single family HOA and Condominium Association will be responsible for a fair share portion of the taxes, operation and maintenance of common lands and facilities controlled be these separate entities.

The HOAs and Condominium Association will be governed by the members according to their adopted by-laws. It is likely that the operation and maintenance of land and facilities and related recordkeeping will be done by an employee or subcontractor of the HOAs and Condominium Association. However, the responsibility for decision-making and proper operation of said facilities will rest with the homeowners. Certain aspects of common facilities will be monitored or inspected by outside agencies. For example, operation of water supply and sewage treatment systems are governed by the regulations and administration of the Westchester County Department of Health. Once approved by the Town and constructed, developments are maintained in accordance with approved plans and the Zoning Ordinance (see subsection

250-51 and Article XV). Failure to comply with approved plans may result in violations or amendments may be sought.

Section 200-15 of the subdivision regulations requires bonding for completion and maintenance of streets and other plat improvements. The creation of separate lots for various improvements and facilities provides defined properties that can be effectively governed by HOA's and addressed by bonds specific to those parcels and improvements thereon.

Conservation of Buffers

Aside from the requirements of the Town's regulations, the proposed Highgate-Woodlands project is a high-quality development incorporating a number of design elements. The proposed subdivision aspect of the Highgate-Woodlands project will produce 42 new residential lots that range in size from a minimum of approximately 1 acre to a maximum of approximately 6.4 acres (total lot area). The residential subdivision has been designed to work with the site's environmental features and has attempted to avoid impacting them as much as practicable. The project would result in wetland loss, limited to a 0.002 acres, and as discussed throughout the DSEIS document, appropriate wetland mitigation and enhancements are proposed to mitigate this minimal wetland intrusion.

The Highgate-Woodlands project will result in the preservation of almost 21 acres of the site as open space in relation to the following proposed lots or areas:

- Conservation land (Parcel D), which is 9.37 acres near Sun Valley Drive;
- Approximately 12 or more acres of undisturbed land consisting of the eastern one-third of the R-AMF/2 zoning district land (RMF Parcel) and containing Wetlands A and B surrounding buffer areas and western upland areas.

In addition, there are undisturbed and/or enhanced natural areas consisting of undisturbed portions of the road and sewer lots (Parcels C, I and J) and the rear portions of many of the single-family lots that add to the open space character of the development. Approximately 77.39 acres of the 159.52 acre site, or approximately 48.5 percent of the land area, will remain undisturbed. The undisturbed areas in the rear portions of the proposed single-family lots are wooded and thus will provide screening of the proposed development from neighboring properties.

Land Use and Zoning - MIH Property Impacts and Mitigation

The applicant proposes to provide up to three (either three 1- bedroom units or a combination of one 1-bedroom and one 2-bedroom) affordable rental units at the Moderate Income Housing site in Croton Falls. The site for this proposed MIH is located within a "GB" General Business District site in central area of the hamlet of Croton Falls. These units would comply with the standards and uses described for this district in the Town Code, particularly for group o, multifamily moderate income dwellings (See Table 3-3). The residential apartments would be compatible with the mixed residential and commercial uses in the hamlet of Croton Falls. No adverse land use impacts are anticipated by the proposed development.

4.700 Demography

4.710 Population Characteristics

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. Westchester County had a total population of 923,459 persons in 2000, according to the US Census Bureau. The 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 4.7-1 summarizes select US Census 2000 population characteristics for the Town of North Salem.

Table 4.7-1
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, the 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 lowest 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.

Impacts and Mitigation

The Highgate-Woodlands development proposes construction of 76 two-bedroom condominium units in the active adult townhouse development and 42 single family residences.

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.

The above referenced demographic multipliers have been updated using 2000 census data and are provided in Residential Demographic Multipliers - Estimates of the Occupants of New Housing. Center of Urban Policy Research. June 2006. The population which could be expected as a result of the construction of the single family units in the Highgate-Woodlands development is based upon the 2006 study from the Center for Urban Policy Research.

The types of residential units (single-family detached and senior townhouse) and associated multipliers from the CURP study, are provided in Table 4.7-2, below. The multipliers used are specific for New York State, residential unit type, and estimated sale value (2005 - Latest data available).

Table 4.7-2
Estimated Number of Project Residents and School Age Children

Bedrooms per unit	Units Proposed	Population Multiplier	Total persons generated	School age Children Multiplier per dwelling unit	School age Children generated
Single Family* Residence 4 BR	26	3.67	96	1.05	27.3
Single Family ** Residence 5 BR	16	4.23	68	1.47	23.5
Total Single Family	**42**		**164**		**51**
Active Adult *** Townhouse 1 BR	28	1.91	53	0	0
Active Adult *** Townhouse 2 BR	48	1.91	92	0	0
Total Active Adult	**76**		**145**		**0**
Total Woodlands Project	**118**		**309**		**51**
Total Woodlands Population = 309 Total school age children = 51					

Source: Multipliers from Rutgers University, Center for Urban Policy Research, Residential Demographic Multipliers, 2006.
* Single family detached 4 bedroom - "More than $329,500" multiplier used for proposed dwellings.
** Single family detached 5 bedroom - "More than $749,500" multiplier used for proposed dwellings.
*** 2-4 Units, 2 BR, "More than $132,000", multiplier used. Total persons: 2.63/unit. Subtract multiplier factor of 0.72/unit for persons under the age of 18 from total (2.63/unit), results in multiplier of 1.91. In order to be conservative this same multiplier was used for the 1 bedroom units.

Based on multipliers of 3.67 for 26 four-bedroom single family homes and 4.23 for 16 five-bedroom single family homes , the estimated total number of new residents for the single family portion of the development is 164 persons. This would include 51 school-aged children, based on multipliers of 1.05 and 1.47 for the, four-bedroom and five-bedroom residences, respectively.[1]

A multiplier of 1.91 persons per unit has been used to estimate the population of the one and two-bedroom active adult townhomes because these units would typically be occupied by couples or senior citizens living alone. The 2006 CUPR study does not provide multipliers for active adult or senior residential units. To estimate the population of the active adult townhomes, the multiplier for a standard multi-family (2 to 4 unit) 2 bedroom unit was used (2.63), and the estimated population under the age of 18 (0.72) was subtracted to provide an estimated multiplier of 1.91 persons per unit. In order to provide a conservative analysis this same multiplier was also used for the 17 one bedroom units, although this is likely overestimated. Therefore, it is estimated that the 76 units in the active adult townhouse development would add 145 residents to the population of the Town of North Salem. The total estimated population for the entire project is 309 persons.

These 309 residents added to the Town population would represent approximately 5.8 percent of the projected 2010 total Town population, estimated to be 5,300. The 2010 population

[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.

projection for the Town of North Salem was developed by the Westchester County Planning Department.

The proposed Highgate-Woodlands 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. As outlined in the fiscal analysis in Section 4.860 of this DSEIS, tax revenues generated by the project are expected to offset the project-related educational expenditures that would be incurred by the Town of North Salem Central School District. As no significant impacts are anticipated, no mitigation measures are proposed.

MIH Demographics - Impacts and Mitigation

Two to three proposed apartments (three one-bedroom apartments or one two-bedroom and one one-bedroom apartments) would result in an additional five to six residents, including 2 school age children, added to the Town population (according to CUPR multipliers for one or two bedroom rental apartments, greater than 5 units (since the CUPR study does not include rental units of less than 5 per building), with a price range of $750 to $1,100). Affordable housing is a goal of both the Town of North Salem and Westchester County. The community benefits of up to three new affordable housing units in the Town are expected to off-set the expenditures incurred by the Town and the North Salem School District.

4.800 Community Services

4.810 Educational Facilities

Existing Facilities in the Project Vicinity

The Highgate-Woodlands development would be in the North Salem Central School District, the larger of two school districts within the Town of North Salem. The District maintains two facilities: Pequenqkonck Elementary School and North Salem Middle/High School.

Other educational facilities in that area include parochial schools, several boarding schools and facilities for handicapped students. Approximately six percent of the District's student population attended private schools during the 2008-2009 school year, based on the transportation provided by the District.[1]

The North Salem Free Library provides reference, reading and cultural functions to the community. Access to additional items is available through the Westchester Library System. The North Salem Library is located on Titicus Road (Route 116) and is part of the Town's public building complex.

Current Student Enrollment and Capacity: Public Schools

The North Salem Central School District was contacted to determine the current District enrollment.[2] The North Salem Pequenakonck Elementary School has 598 students enrolled in kindergarten through grade five in the 2009-2010 school year. Enrollment in the North Salem Middle and High School is 745 students, as shown in Table 4.8-1 below.

Table 4.8-1
North Salem School District
2009/2010 School Year

School	Grades Served	Approximate Student Age	2008-2009 Enrollment
North Salem Pequenakonck Elementary School	K-5	5 to 10	598
North Salem Middle School / High School.	6-12	11 to 18	745
TOTAL			1,343

Source:North Salem Central School District Business Office (April , 2010)

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. According to Louise Lynch, Director of Business Administration, enrollment is currently stable, or possibly declining slightly, but not more than one percent. On the other hand, changes in programming over time have resulted in different usage of the space in the District facilities such that the District is currently operating at or about capacity.

[1] Louise Lynch, Director of Business Administration, phone conversation and correspondence October 16, 2008.

[2] Tiffany Navarro, District Business Office, phone conversation and correspondence April 13, 2010.

The District currently has no plans for expanding the school facilities. Program expansion is possible based on student need.

School Transportation Service

In addition to public school students, North Salem School District Number 1 provides transportation to children who attend private and parochial schools who request it and are within a specified area of approximately 12 miles.

Projected Number of School Age Children from the Proposed Project

The addition of 42 single family residences would be anticipated to result in an increase in the number of school children attending school in North Salem. A total of 26 four-bedroom residences and 16 five-bedroom residences are proposed. Based upon ULI multipliers of 1.05 school aged children for each four-bedroom residence and 1.47 children for each five-bedroom residence, the project would result in an estimated 51 school-aged children attending the North Salem School District. [3]

While a portion of those children would be expected to attend private schools, to provide a conservative estimate, this analysis included all 51 children that could attend the North Central School District. There would be no children in the active adult townhomes.

An analysis of the projected costs and revenues due to the anticipated increase in school age population from the Highgate-Woodlands single family residential component is provided in Section 4.860 below.

MIH Projected School Age Children

Two to three proposed apartments (three one-bedroom apartments or one two-bedroom and one one-bedroom apartments) would result in an additional 2 school-age children, added to the Town population. Based upon ULI Multipliers of 0.3 for each one bedroom apartment and 0.51 for the two bedroom apartment.

4.820 Police Protection

Police protection in the Town of North Salem is provided by the North Salem Police Department, located at 266 Titicus Road, and the New York State Police Troop K Headquarters at 2541 Route 44, Salt Point.

The North Salem Police Department is located approximately five miles from the project site. Estimated response time to the site would be approximately eight minutes. The service area of the North Salem Police is the entire Town of North Salem. The Department also provides mutual aid to the Towns of Lewisboro and Somers, and occasionally assisting Somers with accidents on I-684.

According to Chief Thomas S. Howley of the North Salem Police Department, the Department currently has adequate manpower, but needs more vehicles and a better-equipped

[3] 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.

headquarters to provide necessary services. Currently there are no plans to expand the facilities or staffing. One new vehicle is expected to be acquired in 2009. No expansion of the Department would be expected to be necessary as a result of the proposed development.

Chief Howley expressed concern regarding the potential use the proposed emergency access on Sun Valley Drive for regular ingress and egress, given the current rush hour traffic at the intersection of Sun Valley Drive and Route 22. It should be noted that the emergency access road would be gated, and therefore would not be used for non emergency access.

According to Major-Troop "K" Commander William Carey of the New York State Police, while "the proposed subdivsion will likely increase the number of calls for police service in the Town of North Salem, the New York State Police does have the capacity to respond to the proposed project without an adverse impact on the department's ability to respond to emergencies elsewhere within Westchester County, and more specifically, in the Town of North Salem." [4] There are currently no plans for expansion of facilities, equipment, or staffing at Troop K Headquarters of the State Police.

Impacts and Mitigation

It is anticipated that the servicing of the Highgate-Woodlands project would not require any additional police protection equipment or personnel. No mitigation is proposed.

4.830 Fire Protection/Emergency Services

The Highgate-Woodlands site is served by the Croton Falls Fire District, an all volunteer department with a service area of approximately 6,000. There are currently 100 members, 50 of them active. The Department participates in a mutual aid agreement with the surrounding communities of Brewster, Somers, Goldens Bridge, Mahopac, Katonah, and South Salem. Under this agreement, the location of the call determines which fire department is called first. If a confirmed structure fire occurs, the closest fire department is called and is on the scene within minutes.

The Croton Falls station, on Front Street, is located about one mile from the site. There is also a substation at 301 Titicus Road in North Salem, to which the Department has plans to add a new building. According to Marion Falk, secretary of the Croton Falls Fire Department, the estimated response time to the site would be 4 minutes.

The Department has ten pieces of equipment currently available including 1 tanker/pumper with a 2,750 gallon water capacity; 3 pumper trucks, with 750 to 1,000 gallon capacity; two mini-attack/rescue vehicles each holding approximately 250 to 400 gallons of water; 1 rescue truck; 1 utility truck; and 2 motorized boats. There are also 3 chief cars. The pumper trucks have 35 foot ladders. The maximum height of building the Department's firefighting equipment can accommodate is 35 feet.

The project water distribution facilities have not been designed for fire fighting purposes, and therefore water pressure related to fire service is not applicable. As described below, the applicant and project engineer met with the Croton Falls Fire District to review project plans and solicit comments. Fire District comments are further described below.

[4] Correspondence dated September 8, 2008.

Fire Impacts and Mitigation

The applicant and the Chair of the North Salem Planning Board met with the Croton Falls Fire District to discuss the proposed development and address concerns relating to the site plan and the capacity of the Department to serve the project. As a result of this meeting, the Fire Department provided the following comments:

1. The Fire District requests that the emergency access drive from Sun Valley Drive be maintained with a 15 percent grade, instead of the currently proposed 20 percent grade. The applicant has agreed to provide the 15 percent grade for the entirety of the emergency access drive, although providing the 15 percent grade would require additional area of disturbance for grading.
2. The Fire District requested either underground tanks or a lined pond to supplement water supply for fire fighting emergencies. The applicant has agreed to provide these features, subject to review and consultation with the Fire District regarding the location and total capacity of this supplemental water supply.

   The following fire protection measures are included on the site plan:

   Two (2) 21,000 gallon underground fire protection storage tanks.

   -One (1) near the intersection of Road A and Road D to the west of the multifamily Recreation Center

   -One (1) at the intersection of Road C and the Emergency Access Drive from Road D.

   Two (2) Dry Hydrants from lined stormwater ponds

   Basin ED-K5 located at the end of Road D providing 7,600 gallons of storage in a permanent pool.

   Basin ED-6 located on Lot 35 providing 7,000 gallons of storage in a permanent pool.

   No additional impacts are anticipated from the construction and installation of the underground fire protection storage tanks or lined stormwater ponds. The fire protection tanks are proposed to be installed in areas already inside the development footprint and the ponds will be constructed as part of the needed stormwater management system. As a result, no additional mitigation measures are proposed.

   General maintenance of the fire protection systems will be the responsibility of the Homeowners Association. Maintenance and upkeep of the system will be performed on an annual basis as required by the Croton Falls Fire District.

1. The Fire District requested that the cul-de-sacs and turn-arounds provide adequate turning radius for fire fighting equipment. The main cul-de-sacs on Private Roads B and C provide 60 foot turning radius. The two turn-arounds in the senior condominium development (Roads D and E) provide a 40 foot radius for turning. The applicant has agreed to demonstrate adequate turning radius for turn-arounds D and E, in consultation with the Fire Department.

Other Emergency Services

Emergency Life Support

The North Salem Volunteer Ambulance Corps would provide emergency basic life support services to the project site. Advanced life support is provided by Westchester EMS.

The Volunteer Corps is located at 14 Daniel Road, which is approximately one half mile from the project site. According to Captain Beth Sanger, the response time to the site would be approximately 11 to 14 minutes, since the volunteers do not remain in the building.[5] The Corps has two ambulances. It is currently running at full capacity given the annual call volume of 430, according to Chief Sanger.

Westchester EMS provides Advanced Life Support Services to nearly 100,000 residents in a consortium of eight towns in the Northern Westchester area -- New Castle, North Castle, Mt. Kisco, Bedford, Pound Ridge, Lewisboro, North Salem, and Somers. For this service it provides three Paramedic Fly Cars, which are staffed 24 hours per day, and employs 14 full time and 13 per diem Paramedics.

According to Quality Manager Donald Cottle, Fly Cars[6] responding to this site would in most cases be originating from the post in Somers at the Lincolndale fire house. The average response time to this area has been approximately 9 minutes. The Fly Cars are strategically placed in three locations around the coverage area and adjust their positions as necessary to maintain optimal response times as units are utilized on calls.

Call volume in this system has been increasing at a rate of nearly 9 % per year for the past 3 years. For the year 2007, there were 4597 total system requests for Advanced Life Support (ALS). North Salem's total ALS call volume was 321 for year 2007 and represents a 7% increase over the past 3 years. Anticipated needs to meet future demand would include resources to meet the growing call volume system wide. This would be based on actual impact to medic availability and response times. Westchester EMS currently has no plans for expanding staffing or operations.

Medical Facilities

Several medical facilities serve the project area and are described below.

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 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

[5] Correspondence, October 10, 2008.
[6] Correspondence, October 10, 2008

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 309 persons in the Town of North Salem results in potential added demand for 0.05 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 12 calls by the proposed project annually. Based on the ULI multipliers, the proposed project would not have a measurable impact on emergency services.

According to Donald Cottle of Westchester EMS[7] the potential impact on emergency services would be estimated as follows: The Highgate-Woodlands development would consist of 118 units. Assuming a population of 309, and a range of ages residing at the development (including seniors), the project could result in an increase in calls of approximately 10 to 18 per year. This in addition to the 7 percent annual call volume increases experienced by North

[7] Correspondence, October 10, 2008.

Salem over the past 3 years would represent a 13-15 percent increase for North Salem the first year. These additional calls would amount to less than a 1 percent system increase.

According to Mr. Cottle, this estimated added number of Advanced Life Support requests alone would not greatly impact the operation or service delivery of Westchester EMS. The approximately 14 added calls also would not significantly affect the allocated annual and percentage cost to North Salem for the Advanced Life Support Services.

Chief Sanger of the North Salem Ambulance Corps stated that the impact of the project, given the active adult townhouse component, would depend on the overall health of the residents, but that it would most likely result in the need to hire one paid Emergency Medical Technician 24 hours per day, 7 days per week.[8]

Additionally, the ULI indicates that four hospital beds should be provided per 1,000 persons. Based on this standard, the projected population increase associated with the Highgate-Woodlands development (309 persons) has a potential to increase the need for beds in hospitals serving the Town of North Salem by approximately 1.3 beds. However, of the 309 residents projected for the proposed development, 145 would be 55 or older. Therefore the potential impacts on emergency medical services would be anticipated to be higher.

As the project would 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. Additional revenues to the Town would be anticipated to cover additional costs associated with the development.

Mitigation Measures

No mitigation measures specific to Health Care Facilities are proposed.

4.840 Utilities

4.841 Water

Since no public Town Water District currently services the proposed site, the applicant will provide a central water supply system to serve both the residential and office components of the Highgate-Woodlands development. The 1985 Master Plan recommended that new privately managed central water systems should be provided for new projects in area where municipal water was not available.[9]

Although the Croton Falls Water District is nearby and serves 230 customers. The Highgate-Woodlands Project Engineers have determined connection for the Highgate-Woodlands Proposal is not feasible. (The Croton Falls Water District was discussed in greater detail in Section 3.340.) The pumping test conducted in July and August 2008 and described in the Highgate-Woodlands at North Salem Water Supply Report (Appendix 7), demonstrates that four designated production wells on the property can provide the necessary capacity redundancy required by NY State law for community water systems.

[8] Correspondence, October 10, 2008.

[9] The Town of North Salem Master Plan, page 26.

The water system has been designed to produce 57,500 gallons per day or 40 gpm (average daily demand). The previous average daily water demand for domestic purposes was 37,500 gpd or 26.0 gpm. Due to a reduction in the number of proposed residential units and bedroom mix, the current average daily demand is 33,000 gpd or 23.0 gpm. The pump testing and groundwater analysis completed for this DSEIS assumes the more conservative average daily demand of 37,500 gpd. Seasonal water demand for landscaping may add an additional 20,0000 gallons per day for a total of up to 57,500 gpd or 40 gpm. The pumping test demonstrates that on-site wells can produce up to 132,480 gpd or 92 gpm.

The water facilities have been over designed to supply water over and above the requirements for sanitary facilities. Therefore, there is capacity to serve the recreation facilities such as replenishment of pool water, cleaning of common areas, and watering of landscape features. Since the water system has not been designed for fire fighting, water demand for fire fighting does not apply to the project.

Based upon the well monitoring data obtained during a 72 hour pumping test, none of the off-site private monitored wells showed any connection to the pumping test wells. The use of the Highgate-Woodlands wells is not expected to impact the long term use of off-site wells. The wells were tested at a rate that was intended to simulate drought conditions (92 gallons per minute), and the testing was done in July and August, typically a period with low precipitation.

The Highgate-Woodlands water system will be constructed and operated by the applicants and/or their successor(s) in title in compliance with the New York State Sub-Part 5 Regulations and Westchester County Public Health Law. Routine sampling would be performed to insure a safe potable water supply.

The four proposed supply wells have a 100 foot area of control and a 200 foot radius of ownership, as required by the NYS Department of Health and Westchester County Department of Health.

It should be noted that the water system is designed to supply twice the project's daily requirements with the best well out of service. In addition, the applicant would construct a water storage tank, capable of storing one day's water demand.

Additional information on the capacity and availability of water onsite and potential impacts on neighboring wells provided in Section 4.2 Water Resources and the Water Supply Report provided in Appendix 7.

Impacts and Mitigation

Regularly scheduled and proper maintenance of the septic tanks and system will also protect groundwater resources.

4.842 Sewer

Wastewater Collection

The proposed residential development would be served by an advanced Wastewater Treatment plant (STP) and the treated effluent would be discharged into a common leaching field. As shown on Full Sized Plan Sheet UT-1, Utility Layout (Drawing 18) the waste water would be

collected from the residential dwellings in a separate central sanitary sewer piping system. The system, would consist of 8" P.V.C. “push joint mains and pre-cast concrete manholes. The sewage will be directed to the STP for treatment.

There is one proposed pump station in the Senior Condominium portion of the complex that will lift the sewage in order to reach the treatment plant. A minimum of 100 feet would be maintained between the Leaching system areas and existing streams and wetlands. All sewer mains will maintain a 10 foot distance from any water lines. In the event that, due to site constraints & crossings, a 10 foot distance can not be maintained, a concrete encasement would be provided.

For the central treatment system, wastewater would be collected in a separate 8" P.V.C. piping system with pre-cast manholes. The sewage would be directed to the STP for treatment. For all waste treatment facilities, a minimum distance of 100 feet uphill and 200 feet down stream of all septic system separation would be maintained. Furthermore, 100 feet is maintained between the septic areas and streams and wetlands. This standard applies to both on-site and off-site systems. All sewer mains would maintain a 10 foot distance from any water lines.

Wastewater Collection Treatment

The on-site treatment process for the Highgate-Woodlands project is a three stage method that would provide primary clarification, secondary treatment using trickling filters or biological contactors, and tertiary treatment involving sand filter beds and disinfection. These processes are all flexible enough so that the recommended system can be designed to meet stringent New York State BOD and ammonia nitrogen removal standards.

1. Primary Settling

Primary Settling Tank(s) would be installed at the influent end of the plant to allow the solids in the effluent to settle via gravity to the bottom of the tank. Reinforced concrete tanks would provide sufficient volume to allow a detention period in conformance with all pertinent regulations for the projected average daily flow. The septic tanks are sized for a minimum one-day flow and are of sufficient size to allow for proper sludge storage.

2. Rotating Biological Contactor

Rotating Biological Contactors (RBC's) would be utilized in order to achieve sufficient biological oxygen demand reduction and ammonia nitrogen removal. The discs would be sized to treat the projected effluent flow and placed in a reinforced concrete compartmentalized tank. The effluent would be aerated in the first disc chamber to provide an aerobic environment. A building would be constructed over the discs and heated to maintain a consistent 52 degrees Fahrenheit temperature in all weather conditions.[10]

3.Secondary Clarifier

A Solids Contact Clarifier would be utilized for secondary treatment and would be sized for 600 GPD/SF and three (3) hours of detention time. Liquid alum would be injected to a center settling cone which would provide for the removal of phosphorous. The settleable solids would be given

[10] The reason for the application of heat is that the degree of biological treatment diminishes severely when the temperature falls below 50 degrees Fahrenheit.

the opportunity to settle via gravity, with the sludge collected at the bottom of the tank. A sludge return pump would allow recirculation or discharge of the sludge to the head of the plant or the sludge holding tank which is manually controlled by the Plant Operator.

4. Rapid Sand Filtration

Two Dual Rapid Sand Filters, each with a capacity of 25 square feet, would be utilized in order to provide tertiary treatment (polishing) of the effluent. The filters would be provided with automatic backwash capabilities, thus insuring proper operation at all times. This rapid sand filtration would be provided at a rate of 1.0 PPM/SF/AVERAGE FLOW OR 3.0 GPM/SF at the peak period.

5. *Disinfection*

Proper disinfection, if mandated by permit, would occur by utilization of ultra violet light. This process allows for an effective bacteria kill without producing a harmful effluent parameter such as chlorine residual.[11]

6. RE-Aeration

Re-aeration would occur in order to provide a supply of dissolved oxygen in sufficient quantity so that the aquatic life in the effluent would not experience a lack of oxygen. A reinforced concrete tank would be utilized with a diffuser pipe network, which introduces air that contains a sufficient input of oxygen to reach the goal of 7 mg/liter.

The post-aeration chamber would provide 20 minutes of detention time and provide excess capacity to provide for the backwash water for the rapid sand filters. The air diffuser would be designed to provide a 7% transfer rate of 27 cfm.

7. Back-up Systems

Two ultra-violet units are required, each with a capacity to treat the daily flow. A disinfection treatment would follow rapid sand filtration. The effluent quality should not pose a problem as far as clarity of the water being treated. The plant would use two units manufactured by Ultra-Violet Purification Systems.

The Expected Hydraulic Loading Rates (as shown in Table 4.8-2 below) are based on uses and/or number of users. For residential construction, the flow rates are based on the number of bedrooms in a residence. These design standards[12] set forth a worst case scenario and do not take into account the new toilets which use as little as 0.5 gallons of water per flush or other new technologies which exist to further reduce wastewater flows.

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[11] There is a limiting factor for the allowable level of chlorine level in the effluent of the plant discharge. Ozonation or the use of ultra-violet light has had operating problems in the past. Therefore, stand-by chlorinators are proposed as a back-up system.

[12] These minimum guidelines are derived from the following sources:

• "Recommended Standards for Wastewater Facilities", Great Lakes-Upper Mississippi River Board of State Public Health and Environmental Managers, 1990 Edition.

•New York State Department of Environmental Conservation (NYSDEC) Division of Water, Bureau of Wastewater Facilities Design, "Design Standards for Wastewater Treatment Works", 1988. Intermediate Sized Sewerage Facilities.

Table 4.8-2 Expected Hydraulic Loading Rates	
Type of Facility	**Flow Rate Per Unit (Gallon/day)**
2 bedroom townhouse	300
1 bedroom townhouse	200
4 bedroom house	400
5 bedroom house	475

Processed solid waste ultimately would be removed from the sewage treatment area by periodic carting to an approved disposal site or processing facility. Processing of sludge involves removal of organic and specified inorganic elements, followed by drying and ultimately off-site disposal.

The discharge quality would meet all Class D standards with the exception of phosphorus where the effluent limit is 1.0 mg/l compared to the standard of 0.3 mg/l. Table 4.8-3 lists the waste discharge limitation prior to subsurface discharge.

Table 4.8-3 Wastewater Discharge Limitations Prior to Subsurface Discharge* (mg/l) Components of Sewage Effluent		
Parameter	**Treated Effluent Limit of Concentration**	**Untreated Effluent Concentration**
5 Day Biological Oxygen Demand ($BOD_{3)}$	5.0	200
Suspended Solids	10.0	200
Ammonia (NH3)	2.0	25
Phosphorus (P)	1.0	10
pH (units)	6.75 – 7.5	6 – 9
Fecal Coliform	200.1/100 ml	2400/100 ml.
Chlorine Residual	0.05	---
Settleable Solids	0.10	10
Dissolved Oxygen	7.0	0
Does not include mitigation resulting from horizontal movement of the effluent through surficial geologic materials and soils.		

Separation Distance between Facilities

In all instances the following minimum distances would be observed for the leaching fields:

- a minimum of 100 feet from all wells, including those on neighboring properties;
- a minimum of 10 feet from all property lines;
- a minimum of 20 feet from all dwellings;
- a minimum of 35 feet from all storm drains.

Compliance with Permitting Standards and Regulations

The following agencies have the right to review and approve the proposed treatment facilities:

- New York State Department of Environmental Conservation
- Westchester County Department of Health
- New York City Department of Environmental Protection
- Town of North Salem Town Engineer

All sewage facilities would be designed in accordance with the latest New York State Department of Environmental Conservation (NYSDEC), Westchester County Department of Health (WCDOH, New York State Department of Health (NYSDOH) and New York City Department of Environmental Protection (NYCDEP) Regulations (see the Wastewater Treatment Report prepared by Keane Coppelman Engineers P.C. and included as Appendix 5). The wastewater effluent would be discharged to a subsurface SSDS System. An expansion area for the subsurface disposal system for the STP is shown on Full Sized Plan Sheet PS-1, Preliminary Subdivision Plat (Drawing 2), and the appended revised site plan.

The WCDOH and NYCDEP would review and approve the Wastewater Facility Report and the detailed design drawings for the STP. The review by these agencies includes an analysis of the capabilities of the proposed STP and the construction details to ensure the STP would treat the project wastewater to a level yield a quality product that would be acceptable for subsurface disposal.

The STP Facility would require a State Pollution discharge Elimination System (SPDES) permit from the NYSDEC, and approval from the WCDOH and NYCDEP. An application has been filed with the WCDOH and NYCDEP; there would be additional site testing under the auspices of these two agencies. The agency reviews may lead to some adjustment of the locations of the subsurface sewage disposal systems proposed to handle the treated effluent. Proposed sewer connections and the common subsurface disposal areas have been added to the site plans. The SPDES permit would contain specified parameters with respect to the quantity and quality of the effluent flow that is discharged. The STP would be operated in conformance with the various permit requirements. These include routine testing according to a specified schedule and monthly reports to be submitted to the requisite governmental agencies.

Compliance with NYCDEP Standards

As previously stated, the applicant has proposed an advanced wastewater treatment followed by subsurface discharge. Thus the proposed project is in conformance with the NYCDEP adopted regulations.

Mounding Analysis

A septic mounding analysis was completed by Leggette, Brashears & Graham, Inc. to assess the proposed subsurface effluent disposal areas (PSED) (two primary and one secondary). As described above, the design flow to the PSED areas is conservatively estimated at 33,000 gallons per day (gpd). The mounding analysis consisted of completed soil borings, installing shallow groundwater monitoring wells, and conducting a computer modeling of potential wastewater flows using the "Modular Three-Dimensional Finite-Difference Ground water Flow Model" (MODFLOW). The results indicate that groundwater would not cross a property

boundary, enter a surface water body or breakout at the identified locations before 21-days of travel time is reached. The Septic Mounding Analysis report is provided in Appendix 14.

4.843 Electric, Telephone, Cable and Lighting

The project site is served by New York State Electric and Gas (NYSEG) for electricity, Cablevision for cable network, and a variety of providers for telephone service. Existing services are at Reed Road an Sun Valley Drive. There is no natural gas provided in the project area. NYSEG was contacted for information regarding service for the proposed project. According to Jason Malizia, Lead Analyst-Marketing & Sales, NYSEG would evaluate the project when they receive an approved site plan.[13]

A portion of the site is within the boundaries of the Town's Croton Falls Lighting District. A line running north-south divides Parcel 15 approximately down the middle, and to land west of the line falls within the District as does a small portion on the edge of Parcel 19.

Impacts and Mitigation

All new utility service would be installed underground as required by Town Code. Utility easements are shown on the site plans. The existing services, including electrical, telephone, and cable are expected to be capable of servicing the Highgate-Woodlands development. In Phase I of the construction, sufficient area would be cleared and graded to allow for Road A, lots 1, 2 and 3 and all of Road D to allow access to project utilities.

It is possible that both residential components would be required to join the Town Lighting District, subject to consultation with the Town.

4.850 Solid Waste Disposal

The Town of North Salem does not have a sanitary landfill of its own. In the Town all local carters must be licensed to collect refuse, in addition to various recyclables such as newspapers, glass and plastic.

Town solid waste is collected by a private carter, Bria Carting Corp.,located in Somers under contract to the Town. Weekly collection services for both “solid waste” and “recycled materials” are available. Each household is entitled to dispose of 4 cans of garbage a week.

The solid waste is taken to a the Somers Transfer Station and then to the Seneca Meadows Landfill in Rochester, NY.

Impacts and Mitigation

The proposed 309 Highgate-Woodlands residents would generate approximately 16.5 tons of solid waste per month, based on the Urban Land Institute multiplier of .00175 tons per day per person. Tax revenues generated by the project would help defray the cost of this municipal service, and are detailed in the following section. All of the units would have garages large enough to hold garbage cans and recycling containers until collection day.

[13] Correspondence, October 17, 2008.

4.860 Fiscal Impact Analysis

The fiscal analysis for the proposed project analyzes the costs and benefits for the development, which comprises 76 townhouse condominiums for active adults and 42 single family residences. 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.

Potential Costs

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. The 2009 municipal budget for North Salem totaled $7,137,308. Of this amount $4,726,866 was raised by the tax levy. Dividing this amount by the New York State Data Center estimated population for 2008 of 5,219 provides an estimate of per capita municipal costs of $906.

The proposed Highgate-Woodlands development is projected to increase the population of North Salem by 309 persons (see Section 4.700 Demography for population estimates). Population estimates are summarized in Table 4.8-4, below. As noted above, the estimated annual per capita property tax levy for municipal services is $906. Using this as a basis for projections, the additional costs payable through the property tax that would be induced by the proposed Highgate-Woodlands project, are projected to total $279,954.

North Salem Central School District Fiscal Impact

The costs to the North Salem Central School District associated with the addition of 51 school age children was examined. The estimate of the number of school age children that would be generated by the project is based on the number and type of single family units. Since the active adult townhouse development would be restricted to individuals 55 years or older, no increase in school age children would result from that portion of the proposed development.

Table 4.8.4
Estimated Number of Project Residents and School Age Children

Bedrooms per unit	Units Proposed	Population Multiplier	Total persons generated	School age Children Multiplier per dwelling unit type	School age Children generated
Single Family * Residence 4 BR	26	3.67	96	1.05	27.3
Single Family ** Residence 5 BR	16	4.23	68	1.47	23.5
Total Single Family	**42**		**164**		**51**
Active Adult *** Townhouse 1 BR	28	1.91	53	0	0
Active Adult *** Townhouse 2 BR	48	1.91	92	0	0
Total Active Adult	**76**		**145**		**0**
Total Highgate-Woodlands Project	**118**		**309**		**51**
Total Highgate-Woodlands Population = 309 Total school age children = 51					

Source: Multipliers from Rutgers University, Center for Urban Policy Research, Residential Demographic Multipliers, 2006
** Single family detached 4 bedroom - "More than $329,500" multiplier used for proposed dwellings.
*** Single family detached 5 bedroom - "More than $748,500" multiplier used for proposed dwellings.
**** 2-4 Units, 2 BR, "More than $132,000", multiplier used. Total persons: 2.63/units. Subtract multiplier factor of 0.72/unit for persons under the age of 18 from total (2.63/unit), results in a multiplier of 1.91. In order to be conservative this same multiplier was used for the 1 bedroom units.

The School District's budget for the 2009-2010 school year is $37,616,948[14]. According to Tiffany Navarro, at the District Business Office, the District's enrollment for the 2009-2010 school year is 1,343 students. The total tax levy for the District schools for the 2009-2010 school year is $32,346,545. Based on this, the per student cost from the tax levy is $24,085.

Based on the $24,085 figure calculated above, School District costs to educate the additional 51 students introduced by the Highgate-Woodlands development would be approximately $1,228,335.

Potential Benefits

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. Two parcels generate taxes to the Croton Falls Light District. Table 4.8-5 provides the tax revenues by taxing jurisdiction generated by the property at this time. The current assessed value of the subject property to Westchester County, the Town of North Salem, and the Croton Falls Fire District is $248,300, and the current assessed value of those parcels to the Lighting District is $124,800.

[14] Tiffany Navarro, North Salem Central School District Business Office, April 13, 2010

Table 4.8-5 2009 Taxes Generated by Highgate-Woodlands Project Site		
Taxing Authority	**2009 Tax Rate***	**Current Taxes**
Westchester County	35.673208	$8,485
Town of North Salem	30.349781	$7,693
Croton Falls Fire District	4.877024	$1,264
CrotonFalls Light District	0.0000	$76
North Salem Central School District**	165.55	$39,534
TOTAL		**$57,053**
*Tax Rate per $1,000 of Assessed Valuation. **School Tax is for 2009-2010 school year.		

Potential Impacts

The proposed Highgate-Woodlands development would be taxed based on the developed assessed value. This would result in an increase in tax revenues to each of the taxing jurisdictions, as compared to existing tax revenues.

As shown in Table 4.8-6, the one-bedroom townhouses (28 units) proposed for the active adult townhouse development would be 2,600 square feet in size, and the two-bedroom townhouses (48 units) would be 3,000 square feet in size. Based upon information provided by the developer the average market value of the 2,600 square foot townhouse units would be $650,000 per unit and the 3,000 square foot townhouses would have a market value of $750,000 per unit, for a total market value of $54,200,000 for the active adult townhouse development.

The single family residences would have the following market values: 12 four bedroom, 2,500 square foot units, valued at $875,000; 14 four bedroom, 3,500 square foot units valued at $1,075,000; and 16 five bedroom, 4,500 square foot units valued at $1,350,000. The total market value for the single family residential portion of the proposed development would be $47,150,000. Market value for the project overall would be $101,350,000.

Table 4.8-6
Market Values of Proposed Residential Units

Unit Type	Square Feet	# of Units	Market Value	Total
1 BR Townhouse Condominium	2,600	28	$650,000	$18,200,000
2 BR Townhouse Condominium	3,000	48	$750,000	$36,000,000
4 BR Single Family Residence	2,500	12	$875,000	$10,500,000
4 BR Single Family Residence	3,500	14	$1,070,000	$15,050,000
5BR Single Family Residence	4,500	16	$1,350,000	$21,600,000
Total Highgate-Woodlands Market Value				**$101,350,000**

Source: JoFlo of North Salem

Based on the projected market value and the Uniform Percentage of Value of 8.88 (equalization rate) used by the Town to establish the project's assessed value, the proposed project would generate substantially greater revenues than currently, as shown in Table 4.8-7, below.

Table 4.8-7
2009 and Projected Taxes Highgate-Woodlands

Taxing Authority	Tax Rate*	Current Taxes	Projected Taxes	Difference
Westchester County	35.673208	$8,485	$321,055	$312,569
Town of North Salem	30.349781	$7,693	$273,144	$265,451
Croton Falls Fire District	4.877024	$1,264	$43,893	$42,629
Croton Falls Light District	0.0	$76	$0	$76
Total Town Tax		**$9,033**	**$317,037**	**$308,004**
North Salem Central School District**	165.55	$39,534	$1,489,930	$1,450,396
	TOTAL	$57,053	$2,128,022	$2,070,969

*Tax Rate per $1,000 of Assessed Valuation.
**School Tax for 2009-2010 school year

Based upon the projected market value of future residences, the project would generate a total of approximately $638,092 in Town and County property tax revenues annually, $620,574 more than currently generated. The Croton Falls Fire District taxes would be $43,893, an increase of $42,629. The estimates provided in this section are based upon 2009 Town tax rates and 2009-2010 school tax data.

The property tax revenues to be generated to the School District would total $1,489,930 annually, which is $1,450,396 more than current revenues from the property. As shown in Table 4.8-7 the combined tax revenues after development for the Highgate-Woodlands development would be $2,128,022, an increase of $2,070,969.

Table 4.8-8 Revenue & Cost Summary: Highgate-Woodlands			
Jurisdiction	**Projected Taxes**	**Projected Costs**	**Surplus**
Town of North Salem	$317,037	$279,954	**$37,083**
North Salem Central School District	$1,489,930	$1,228,335	**$261,595**
TOTAL	**$1,806,967**	**$1,508,289**	**$298,678**
Source: Tim Miller Associates, Inc.			

Table 4.8-8 shows the projected costs and revenues for the Highgate-Woodlands project. A total of $317,037 is projected to be generated in taxes payable to the Town of North Salem. Costs to the Town for municipal services are projected to be $279,954, and therefore a revenue surplus of $37,083 would be expected after development. For the North Salem Central School District the projected taxes would be $1,489,930, the projected costs $1,228,335, and the revenue surplus $261,595.

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 would benefit commercial businesses in the local area and the region. No secondary impacts are anticipated from the project due to changes in area properties' assessed value as a result of the proposed action.

Further, it should be noted that project construction inspections by the Town would 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 would be provided by the applicant.

MIH Fiscal Impacts and Mitigation

Two to three proposed apartments (three one-bedroom apartments or one two-bedroom and one one-bedroom apartments) would result in an additional five to six residents, including 2 school age children, added to the Town population (according to CUPR multipliers). The additional residents and school age children will result in expenditures by the Town for Town services and educational costs to the North Salem School District. Affordable housing is a goal of both the Town of North Salem and Westchester County. The community benefits of up to three affordable housing units in the Town are expected to off-set the expenditures incurred by the Town and the North Salem School District.

On-Site Water, Sewer and Roadway Improvements

As outlined previously, the project's roadways would be privately owned and maintained under the terms and conditions of the residents' Homeowners' Association. The Association would be responsible for the maintenance of all roadways within the development, including snow plowing, general upkeep of roadway surfaces, and associated infrastructure. The added tax

revenues generated annually for the Town of North Salem Highway Department would be a direct financial benefit to the department, as there would be only minor increase in department services as the result of the Highgate-Woodlands Development (plowing the initial 650 feet of the entrance road, which is proposed to be public).

A Sewer Works Corporation (Transportation Corporation) would be formed and a Town Sewer District would be created by the Town Board of the Town of North Salem. Provisions for backup services, taxation, and municipal ownership are provided within the transportation laws of the State of New York. The District would initially be privately owned. In the event that the ownership is abandoned, bankrupt, or in some other way unable to function, the Town would be able to take over the district for $1 pursuant to a Turnover Agreement between the applicant and the Town, then tax the residents of the district and operate the facilitates as per applicable permits.

A Water Supply District would be formed by the Town Board of the Town of North Salem. Initially it would be privately owned. In the event that the ownership is abandoned, bankrupt, or in some other way not able to function, the Town would be able to take over the district for $1 pursuant to a Turnover Agreement between the applicant and the Town, then tax the residents of the district and operate the facilities as per applicable permits.

Mitigation Measures

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

4.870 Recreational Facilities

Existing Recreational Facilities and other Amenities in North Salem and Vicinity

The Town of North Salem includes a variety of parks and facilities used by its residents for active and passive recreation. There are 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 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 Fahnstock 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 5,335 for the Town of North Salem in 2010[15], 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 include approximately 329 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.

The Town *Comprehensive Plan Update* (2006) notes that the Town's *Parks and Recreation Plan* (1994) "states a need for additional recreational facilities and recreation land so as to maintain the high standards established locally and to address potential population growth. Since the preparation of the Parks and Recreation Plan, the 13 acre Volunteers Park, was created on June Road."[16] This town park includes a soccer field, baseball field, basketball court, and children's play area.

Potential Impacts

Description of Proposed On Site Recreational Facilities

Residents of the proposed Highgate-Woodlands development would have access to recreational facilities on site and within the Town. Both portions of the development would have swimming facilities, and the site would include informal trails for passive recreation.

The proposed recreational facilities for the single family neighborhood and active adult townhouse development would each include a swimming pool and clubhouse. For the active adult townhouse development a sports area would be provided. Each clubhouse would include a large gathering room, changing room facilities and a kitchen.

Dedicated Parkland

While there is no "dedicated parkland" as referenced in the Scope, the project does include one Conservation Parcel. Conservation Parcel D is approximately 9.37 acres (see Subdivision Plat P-1). Additional land of approximately 12 acres in the active adult townhouse Parcel (R-AMF/2) would remain undeveloped, with existing vegetation including the largest wetland on the property. Access to these parcels would be for residents. An informal loop trail is proposed to be installed around the central wetland (see Site Plan Drawings).

[15] Comprehensive Plan Update, adopted December 12, 2006, and recalled on February 12, 2008 (Resolution #59) p.43.
[16] Comprehensive Plan Update, adopted December 12, 2006, and recalled on February 12, 2008 (Resolution #59) p.63.

Maintenance

Each of the recreational facilities would be located on a common lot and controlled by the homeowners association. These common areas would meet the requirements of §250-19.1- L of the Town of North Salem Code.

Projected future need for recreational facilities and plans to meet needs

As described above, the Town currently has more than adequate acreage of recreational land according to population projections to the Town of North Salem and NPRA standards. Based on the existing acreage of parks in the Town of North Salem and the Town's 2010 projected population, the Town has approximately 329 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. The actual amount of parkland would be higher, as this estimate does not take into consideration the additional North Salem Central School District's recreation facilities or State parkland in the vicinity.

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 4.8-9 below along with the required amount of recreational open space needed for the proposed development based on these standards.

Table 4.8-9
Parkland Requirements for Highgate-Woodlands

Type of Facility	Acres per 1,000 persons	Acres Required
Minipark	0.25-0.5	0.08~0.17
Neighborhood park	1-2	0.34~0.67
Community Park	5-8	1.69~2.70
Aggregate Area	6.25~10.5	02.11~3.54
Source: ULI Development Impact Assessment Handbook, page 262.		

Future residents of the proposed Highgate-Woodlands development would add a projected 309 persons. Based on this projected population, a total of 1.7 to 2.7 acres of parks would meet the recreational demand for this project according to the NPRA standards cited previously, while the ULI standard would require 2.1 to 3.5 acres.

Other Community Service Needs

In addition to recreation area, the single family community will require infrastructure including water, sewer, street lighting walkways and roadways. The layout and construction details of the project infrastructure are described in Section 3.0 Project Description. Project utilities are further described above, in this Community Services section. The recreation buildings will not result in a significant demand for water. As described above, the project water demand estimate includes provisions for water use by the two recreation facilities, including for the pools and landscaping. The pumping test completed for the project demonstrated that the future

project water usage, including from the recreation facilities will not result in off-site groundwater capacity problems or impacts (see Appendix 7 - Water Supply Report).

Mitigation Measures

In accordance with the applicable requirements of the zoning ordinance and subdivision regulations, applicants either provide: 1) on-site recreation or a park set-aside or 2) pay recreation fees. In this instance, the Applicant is providing both on-site recreation facilities and providing a recreation fee. Under the terms of the Stipulation of Agreement, the applicant would provide a recreation clubhouse and recreation area for the 42-lot single family residential subdivision and an additional recreation area for the active adult townhouse units. In addition, the applicant would pay recreation fees for the single family portion of the development in an amount not to exceed $3,500 per lot (or $147,000) and an amount for the active adult townhouse development not to exceed $5,000 per unit (or $380,000).

Additionally, the proposed action will conserve a 9.37-acre parcel on the western side of the site as privately held open land and other lands described herein. This parcel can serve as open space for passive recreation.

4.900 Cultural Resources

4.910 Visual Resources

Potential Significant Aesthetic Resources

A literature review was conducted to identify scenic and aesthetic resources potentially within the project vicinity considered to be significant according to the guidelines of the New York State Department of Conservation (NYSDEC), Westchester County, and the Town of North Salem. No scenic vistas in the Town of North Salem identified on the Westchester County Atlas, prepared by the Westchester County Department of Planning (WCDOP) are near the project site. The Town Master Plan and the Town Comprehensive Plan do not delineate Critical Environmental Areas (CEA's). No Westchester County CEA's is located near the Highgate-Woodlands site.

The North Salem Comprehensive Plan (December, 2011) identifies Hardscrabble Road, a county road to the east of the site, as a scenic roadway. From roadways to the east of Route 22 the generally undeveloped ridge that includes the project site may be considered to have scenic value.

Impacts and Mitigation

While the development of the Highgate-Woodlands project would not impact any scenic vistas in the area, identified in the Westchester County Atlas or the Town Master Plan, it is anticipated that some views of the proposed residential development would be possible from area roads east of the site. These views would include houses, portions of the access road and retaining walls proposed on the east of the site near Reed Road. However, views of these features would be minimized by road setbacks, vegetative buffers and topographic orientation. An assessment of the potential impacts of the proposed project on the views from Hardscrabble Road and other roads in vicinity of the site is included in the Visual Analysis provided below in Section 4.930.

4.920 Historic Resources

Introduction

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.

A Phase IA Literature Review and Sensitivity Analysis and Phase I B Archaeological Field Reconnaissance Survey (January 2008) and a Phase II Site Investigation (September 2008) were prepared by STRATA Cultural Resource Management, LLC for Tim Miller Associates. See Appendix 10 for the full report.

Existing Conditions

Historic Resources in the Vicinity of the Site

A site file search conducted at the Office of Parks, Recreation and Historic Preservation (OPRHP) identified ten OPRHP sites and no New York State Museum sites within one mile of the Project Area.

National Register Properties

There are no National Register listed properties adjacent to the property mile of the Project Area. The National Register eligible Marriot-Fairfield Inn site lies approximately 3000 feet south of the Project Area alongside the Croton River.

Phase 1A Analysis

In the Phase 1A Analysis, the location and environmental conditions of the site were assessed, and a literature review and historic maps were consulted to identify the potential for historical resources on the site. Previous residences on the site included the E. Crosby Residence, Brown Residence and Brown's Corners, Chamberlain Residence, and the Juengst Residence. Prehistoric and historic sensitivity assessments were conducted to determine the degree of sensitivity for the presence of prehistoric and historic cultural remains.

According to the Phase I A Report, the Project Area is considered to have moderate sensitivity for the presence of prehistoric cultural remains. The nearby Marriot Fairfield Inn site indicates a late Archaic-Late Woodland presence in the immediate vicinity. Precontact groups are known to prefer locations near the confluence of major streams, such as the East and West Branch of the Croton River. However, the rugged topography of the Project Area and lack of potable water (prior to the modern creation of the central pond) would have made the area less than ideal for habitation. Additionally, no usable lithic materials or rockshelters were observed amongst the various rock outcrops.

The Project Area is considered to have moderate to high sensitivity for the presence of historic cultural remains. A complex of building foundations in the northwest corner of the Project Area indicates previous agricultural and/or industrial usage of this part of the Project Area. Stone walls divide the site into more than a dozen enclosures, suggesting farming and/or livestock pasturage.

Based on these assessments subsurface archeological testing was recommended for the entirety of the Area of Potential Effect, excepting wetlands and areas of slope in excess of 12%.

Phase 1B

Analysis

A field survey of structures and cultural remains on the site was conducted. It identified two archeological sites, the Juengst Barn Complex Historic Site and the Juengst Dump Historic Site. While the Project Area was large, the steep slope and shallow depth to bedrock was less than inviting for occupation. The only exceptionally attractive natural resource within the Project Area is the small pond but this was artificially constructed in the recent past.

Recommendations

The Phase IA/IB Archeological Investigation of the proposed Highgate-Woodlands development identified the Juengst Barn Complex Historic Site, the Juengst Dump Historic Site, and the Lyle Gun Test Site in the northern portion of the Project Area. The Project Area did not otherwise contain significant cultural resources. A Phase II Site Evaluation was completed for two of the historic archeological sites. A Phase II evaluation was recommended for the Juengst Barn Complex, if it cannot be avoided through modifications of the current development plan.

Phase II Site Investigation

The Phase I/II Archeological Investigation and Site Evaluation of the proposed Highgate-Woodlands at North Salem development identified three historic archeological sites:

The Juengst Barn Complex Historic Site, The Juengst Dump Historic Site, and The Lyle Gun Test Historic Site; an OPRHP Historic Archeological Site Form has been completed for each site (Appendices 8-10 of the Cultural Resources Report). A Phase II Site Evaluation was performed on the latter two sites, providing useful data for interpreting both sites. They do not appear to be eligible for the State or National Registers of Historic Places and no further archeological work is recommended for either site. The Juengst Barn Complex site, at the northwestern edge of the Project Area, was considered for avoidance. However, the current design suggests potential impacts to the site related to a proposed roadway, Detention Basin No. 8, and the house and landscaping associated with Lot #19. If the current design cannot be modified and the Juengst Barn Complex Site cannot be avoided, a Phase II Site Evaluation is recommended for this site.

Moderate Income Housing (MIH) Site

The Moderate Income Housing site was formerly used as a vehicle repair shop. Soil at the site was impacted by petroleum use and underground storage tanks. The remediation of petroleum on the property required demolition of existing structures and extensive excavation and grading. Seven tanks were removed from the site in the late 1990's. The site has been extensively disturbed and therefore archeological resources are not likely to be present on the site. No mitigation related to historic resources is warranted for the MIH site.

Proposed Mitigation

The applicant will assess the proposed layout and determine whether the current design can be modified to avoid the Juengst Barn Complex. If the site cannot be avoided, a Phase II Site Evaluation will be completed by a qualified historic resource consultant.

4.930 Community Character

Existing Visual Character

The Highgate-Woodlands Property is located in the northwest quadrant of North Salem on Reed Road and adjacent to Route I-684, a major north/south interstate highway, and Hardscrabble Road, a major east/west County highway. The property's northern site boundary follows the North Salem/Southeast municipal line. It is isolated from most of the Town, with the exception of several residential subdivisions on the western and southern sides.

The site is entirely vacant, as is much of the land immediately abutting its boundaries. The most prevalent land use in the area of the site is single family residential. Existing houses are generally two stories and moderate in size, on 1/2 to 1 acre lots. The residential areas along the winding roads on the steep hillsides between Route 22 and on the west and south are older settlements, with a mix of housing that includes structures from the 19th and 20th centuries. Sunset Ridge is a newer residential development to the south of the site across Interstate 684.

To the west along Route 22, is the hamlet of Croton Falls, with denser housing and both business and public facilities. The business district around the Metro North Train Station includes one, two, and three story structures, generally from the late 19th and early 20th centuries. Along Front Street, a well-maintained streetscape includes decorative bollards and streetlights, and brick paved sidewalks.

NYS Route 22 is the main artery through the district and serves the various developments abutting the roadway as well as other communities in northwest Putnam County. The roadway south of the site is narrow and winding, with wooded, residential properties between the retail business district on west and the commercial area near the intersection with Hardscrabble Road on the east.

On the eastern side, across I-684, are several small office buildings, ranging in size from 3,000 to 10,000 square feet, several large agricultural parcels, supporting both row crops and orchards, and newer residential development in the Sunset Ridge area.

Viewshed Analysis

Introduction and Methodology

The visual assessment that is presented below has been conducted in accordance with the New York State Department of Environmental Conservation (NYSDEC) guidelines[1] relating to the assessment and mitigation of visual impacts. A visual assessment is an analytical technique that determines the viewshed of a particular project, identifies aesthetic resources within the viewshed, determines the potential impact of the project on aesthetic resources, and identifies strategies to avoid, eliminate or reduce impacts. The visual assessment will often incorporate use of line-of-sight profiles or photographs to demonstrate potential visibility of the facility from a sensitive viewpoint.

"Viewshed" is defined as the geographic area from which a "facility" or project may be seen. An aesthetic resource is a formally designated place visited by the public for the purpose of enjoying its beauty. For the purpose of this assessment, that resource may be designated by a local jurisdiction, a state agency, or a federal agency. Additionally, other scenic resources may be considered significant aesthetic resources for the purposes of the visual assessment based on their unique characteristics.

As described above in Section 4.910 Visual Resources, Hardscrabble Road is the only scenic resource in the project vicinity identified by the Town of North Salem or Westchester County. It is listed as a scenic road in the North Salem Comprehensive Plan (2011).

Variables associated with the actual visual experience are often presented in a visual analysis, such as 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 development, even startling visibility, does not automatically mean it has a visual impact. An impact occurs when there is a demonstrated detrimental effect on the public enjoyment of an aesthetic resource and when design-oriented strategies, or the mitigating effects of perspective, do not adequately reduce the visibility from an aesthetic resource to an insignificant level.

Visual Field Survey

Visual field resource surveys were conducted in the project study area in March, May and August 2008 to identify local viewpoints from which the project site is visible, in addition to the scenic viewpoints listed previously. Photos taken during these surveys, presented below, show

[1] NYSDEC Program Policy, Assessing and Mitigating Visual Impacts, 2000.

conditions in winter when many trees were substantially bare, as well as in spring and summer when they were in leaf.

Prior to conducting the visual field survey, the limits of the study area were determined through inspection of U.S. Geological Survey (USGS) topographic maps, which reveal the potential visibility of the project site based on topography alone. Based on this review, the potential viewshed from which the site may be visible extends approximately one half mile to the east and south, and approximately one mile to the east, less than one half mile north, west and south of the project site.

In the field survey other factors that may serve to limit or block views of the site, such as intervening vegetation or buildings were observed and documented. The survey established the following publicly-accessible locations from which portions of the site are visible. This list includes the key viewpoints required by the Town of North Salem Planning Board for analysis in terms of the visibility of the site and the type and quantity of viewers at each location.

- Interstate Route 684
- NYS Route 22
- Reed Road
- Hardscrabble Road
- Fields Road
- Sunset Drive and nearby neighborhood roads
- Sun Valley Road

A key map to these viewpoint locations is shown in Figure 4.9-1.

Analysis of Key Viewpoints

Interstate Route 684

The site is visible from the north and southbound lanes of Interstate Route 684, which is in a valley between two ridges at this location. The highway carries a high volume of local and long distance motorists. The speed limit is 65 miles per hour. From the highway near the site and from the exit ramp onto Hardscrabble Road motorists have a brief view of the steep wooded slopes on the eastern portion of the property. See Figure 4.9-2 for a springtime view of the site from I-684.

NYS Route 22

Views of the site for the local and regional motorists along heavily traveled NYS Route 22 west and south of the site are generally limited, due to the steep topography and the winding, narrow nature of the road. This roadway is characterized by a mixture of dense commercial development in the center of the business district in Village of Croton Falls and a mix of residential and commercial development beyond this to the east. Northbound motorists on Route 22, traveling at speeds in the range of the posted limit of 50 miles per hour approaching Hardscrabble Road (County Route 138), have a brief view of the trees on the high point located on the south of the site, approximately one half mile away (Figure 4.9-3).

Reed Road

The undeveloped woods and steep terrain on the eastern frontage of the site can be viewed by travelers on Reed Road (Figure 4.9-4). Reed Road is a dead end road parallel to Interstate 684 that is visually separated from it by dense vegetation when the trees area in leaf. There are several existing two story houses on small lots along an unpaved road that runs parallel to Reed Road, set back and screened by the existing vegetation.

Hardscrabble Road

Hardscrabble Road is a County road listed in the Town of North Salem Comprehensive Plan Update as a scenic roadway. Southeast of the site, motorists traveling north on Hardscrabble Road approach the project site at speeds in the range of the posted limit of 35 miles per hour. A small portion of the woods on the undeveloped, southeast facing slopes on the subject property are visible from this vantage point. The views from this heavily used section of Hardscrabble Road, near the I-684 access ramps, are limited due to the steep topography in this portion of the site.

From the ridge east of the site on Hardscrabble Road, views of the site are obscured by the intervening topography on either side of the road and dense evergreen and deciduous woods. Motorists approaching the bottom of the hill near Fields Road have a broad view of the subject property directly across I-684 (Figure 4.9-5). Views of the site are also possible from Fields Road. Views from these locations are somewhat limited by intervening vegetation when the trees are in leaf and would be more open when the trees are bare.

Sunset Drive and Nearby Neighborhood Roads

From several locations along the roads in the Sunset Ridge neighborhood, pedestrians and motorists have views of the east side and ridgeline of the subject property, one mile or less away (see Figure 4.9-6). Slow moving traffic on these local roads consists of local residents and visitors to the Joe Bohrdrum Park. Views of the site from high terrain are possible from the southern part of Alice Road, the intersection of Park Lane and Sunset Drive, and from Sunset Drive near the park. Views of the site from Westview Cross Road are substantially obstructed by deciduous and evergreen vegetation and residences. From lower elevations on Sunset Drive and Alice Road, views of the southern portion of the project site are possible when the trees are bare, but are substantially obstructed during leaf-on conditions.

Sun Valley Drive

An old driveway on the property, which is currently gated to prohibit access, extends to Sun Valley Road, a dead end road on the south of the property (Figure 4.9-7). Views of the site are limited at this location due to dense vegetation and steep topography. Nearby, along Sun Valley Heights, intervening residential properties and steep topography limit views of the subject property.

Potential Impacts to Visual Existing Character

The proposed project would convert currently vacant woods to a residential development and therefore change the character of the site. Clearing of trees and grading for construction and the addition of two story single family and townhouse dwellings, retaining walls, and access

roads would allow some views of the proposed development from area roadways. New lawns and landscaping would replace existing woods in developed areas. Natural buffers would be preserved along area roads to enhance and integrate the development with the existing character of the locale, and new landscaped buffers would be provided to screen views of the development from offsite.

Changes to the identified viewpoints on area roadways are discussed below. Cross sections and photosimulations have been prepared to illustrate the discussions of the visibility of the proposed project from several of these locations, which are shown on the Key Map in Figure 4.9-8.

Interstate Route 684

Cross section A in Figure 4.9-9 shows a line of site profile from Interstate 684. A steep rocky slope on the east side of the site would prevent views of the residences, which are proposed at the higher elevations on the site. Figure 4.9-10 is a photosimulation of the post development view from I-684. It illustrates the steep slope on the southeast corner of the property and the retaining wall along the site entrance. A buffer of existing woods would be preserved between Hardscrabble Road and the lower of the proposed retaining walls to be constructed along proposed Road A. Limited views of the retaining walls would be possible through the trees from I-684 in off leaf conditions. The wall would be constructed of concrete in a natural earth tone color that would blend with the surroundings.

NYS Route 22

Cross section D in Figure 4.9-11 illustrates the potential views from NYS Route 22 of new residences to be constructed at the higher elevations on the south side of the property. Based on topography alone, views of several houses would be possible from this location, but thick intervening woodlands to remain after construction would be anticipated to substantially limit views into the site during off leaf conditions and prevent views when trees area in leaf.

Reed Road

After development, partial views of the proposed site access road and the retaining walls on the east side of the property would be visible from the location where the access road meets Reed Road (see landscaping plan, Full Sized Plan Sheet LS-1 (Drawing 23)). Near the site entrance a four foot serpentine retaining wall of concrete block would be constructed in front of a small stormwater basin. This basin, like others proposed, would be planted with native grasses and flowering plants (see Full Sized Plan Sheet LS-1 (Drawing 23)).

South of this, a larger basin would be constructed between taller walls. The first tier wall for both basins would be set back from Reed Road beyond a wooded buffer that ranges from 50 feet to over 100 feet deep. For the larger basin, the wall would be 15 feet high at the highest point, and it would be 30 feet above the elevation of Reed Road. Farther south a series of retaining walls would be constructed along the proposed entrance road. The high portion of the first tier in this series, at the turn in the road beyond of the entry booth, would be 10 feet tall and approximately 60 feet above the level of Reed Road.

Most of the existing woods within the buffer along Reed Road would be preserved, limiting views of the retaining walls from this location in leaf off conditions. When trees are in leaf views into the site across the buffer would be substantially obscured.

After construction, newly graded areas along the series of walls to be constructed along the entrance road would be landscaped with a mix of evergreen shrubs and forest trees that would be anticipated to further obscure views of the walls from those locations on Reed Road where they may be visible immediately after construction.

Hardscrabble Road

Figure 4.9-9, Cross section B, illustrates how the intervening topography would prevent views of the proposed residences from Hardscabble Road. Views of the retaining walls along the proposed basins and roadway would be possible from Hardscrabble Road in off leaf conditions. The views would be filtered through the trees between Interstate 684 and Reed Road and the trees within the buffer on the site, along Reed Road. When in leaf, these trees would be expected to obscure views of the walls and roadway area.

Sunset Drive and nearby neighborhood roads

From the Sunset Ridge area east of the site, views of some houses to be constructed on the highest elevations on the site would be possible, while the topography and intervening vegetation would limit views of residences farther to the west and north. Figure 4.9-11, Cross section C illustrates houses screened by intervening topography. Views of houses on the northwest end of the site, along Road C, would be screened by the substantial vegetation that would be preserved.

Sun Valley Drive

The visual character of the existing access to the site from Sun Valley Drive would undergo some changes due to minor regrading and paving required to use it as an emergency access. This would require clearing of vegetation approximately 15 feet beyond each side of the existing driveway. As shown on landscaping plan, Full Sized Plan Sheet LS-1, (Drawing 23), on the steep slope between the Sun Valley Drive neighborhood and the nearest houses in the proposed development, most of the existing woods would remain. Views of these houses and a portion of Road A would be possible through the woods when the trees are bare, and would be anticipated to be substantially obscured when they are in leaf. Similarly, where Road A would pass closest to Sun Valley Drive, approximately 300 feet away, views of cars, new landscape planting, and the retaining wall on the south side of the road may be possible from locations on Sun Valley Drive through the woods when the trees are bare. They would be substantially prevented in leaf-on conditions. It is anticipated that the trees and shrubs proposed to be planted along the retaining wall would effectively screen the wall, road, and cars within several years after installation.

Mitigation Proposed for Visual Impacts

No significant impacts to visual resources are anticipated to occur as a result of the proposed development, therefore, no mitigation is proposed.

Potential Construction Impacts

During construction it is anticipated that there would be some increase in the levels of noise, dust and vibration due to the necessary excavation and earthmoving and the operation of equipment. However most of the construction activity would be separated from the property boundaries by wooded buffers, which would be expected to reduce dust, and noise impacts. Work on the project would take place only during normal daylight working hours, 8 A.M. to 5 P.M. Monday through Saturday. Deliveries requiring the use of large vehicles or trailers would be scheduled to avoid peak hours.

Increased Intensity of Development

The Highgate-Woodlands project would add 118 residences to the Croton Falls area and introduce a range of housing types for a mixed age population. The project would be located in a secluded setting, away from the intensely developed hamlet of Croton Falls, and would not be expected to impact the character of the hamlet. The development would be integrated with the existing wooded hillside and the older residential development on the lower slopes. The Middle Income Housing site would provide up to three units of affordable housing in the hamlet of Croton Falls on site that is currently vacant. Overall the project would contribute to increasing the diversity of housing choices in the Croton Falls area and make a positive contribution to the local economy.

Lighting Impacts on Surrounding Residential Uses

Exterior lighting would be provided in three areas of the proposed development for safety purposes. Decorative pole mounted fixtures with four sided lanterns with clear panels and reflectors would be installed at the entrance, on the switchback section of Road A, and along the internal road within the active adult townhouse development. (See the attached Lighting Plan and fixture details). Building mounted lighting will also be provided at the two recreation buildings (single family residential and active adult townhomes), as well as at the water and sewer plant buildings. A single pole mounted light will be provided for the single family residential recreation building parking area. This light would have a manual light switch from the recreation building and would only be used when the building is in use during evening hours.

The proposed pole mounted fixtures would be antique style, Hadco Reflective Globe, or similar, pole mounted lanterns. The lighting would be "Night Sky" compliant and would have downward light directing shields to minimize off-site impacts. Lamps are proposed with one or two 100 watt metal halide bulbs. The fixtures would be laid out in a pattern to provide adequate light to safely illuminate the travel ways for pedestrians and motorists. The proposed lighting would conform to all applicable regulations.

The lighting in this project (street lighting as well as lights at individual residential units) is expected to create minimal nighttime visibility of portions of the project from several nearby properties, specifically on Sun Valley Drive and at the project entrance on Reed Road. Due to the dense vegetation and distance that would separate these areas from the new light sources, 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 neighborhoods is anticipated.

Protection of Areas of Archaeological, Historic, or Local Community Importance

The proposed project has been designed so that stone walls on the site would remain intact following construction to the extent practicable. Where feasible, these stone walls would be used along property lines, for walls in the residential development, and along the proposed project roadways. See Section 4.920 for a discussion of archaeological and historic resources. Apart from the visual impacts previously detailed, no potential impacts to areas of community importance were identified.

Landscaping and Exterior Materials

Landscaping for the project would include naturalistic plantings for the site at large and the stormwater basins, with more formal treatments along the entry road and at the recreational facilities. Clusters of evergreen and deciduous trees and flowering shrubs would provide screening between houses in the active adult townhouse development, on the sloped terrain along the entry road, and in front of the retaining walls. The single family residences would have open lawn areas surrounded by existing trees. See Full Sized Plan Sheet LS-1, Landscaping (Drawing 23) for the overall landscape plan.

Street trees are proposed for the sides and center of the boulevard style entrance. A dense planting of shrubs and trees would be provided to the west of the entrance. Trees, evergreen shrubs, and seasonal flowers would be planted at the entry booth. The stormwater basins to the east of the entrance would be planted with native grasses and wildflowers. This would be typical of the basin plantings on the site.

Plantings and landscape elements for the active adult townhouse development are shown on the landscaping plan, Full Sized Plan Sheet LS-1 (Drawing 23). Walkways and terraces would be paved with concrete unit pavers. Shrubs, ornamental grasses, and annuals would be used in the planting beds.

Landscaping for both the active adult townhouse development and single family recreation facilities would include a combination of shade, evergreen, and small flowering trees with shrubs, grasses and perennials. Existing stone walls would be retained to the extent practicable. Landscape details would include natural stone walls, wood trellises, pasture fence, and Belgium block curbing. The retaining walls would be constructed of interlocking concrete units in a natural color.

Architecture

The Town of North Salem Zoning Code XVI 250-103. B. describes "excessive similarity" among structures in the same permit application as a characteristic that would contribute to a "harmful effect" per § 250-98 of the same chapter, and thereby would be recommended for disapproval by the Architectural Review Board. The single family portion of the proposed Highgate-Woodlands project would include a variety of housing styles and sizes. The architecture for the single family homes will include adaptations of traditional Colonial, Arts and Crafts, and Adirondack styles.

In the active adult townhouse development, highly detailed architecture, with various patterns of window, door, roof and railing treatments would be repeated to create unity within the complex, appropriate to a townhouse community (Figure 4.9-12). A floor plan for the active adult

townhomes is provided as Figure 4.9-13. The architecture for the active adult townhomes will be further developed during the site plan review process.

Visual Impacts of proposed MIH

The Moderate Income Housing site (Dino and Artie's site) is currently a vacant grassy lot surrounded by fencing. It slopes away from the site frontage on NYS Route 22 towards the rear, where it abuts an unpaved parking area along the Metro North Railroad tracks. Older two story houses are located on the adjacent lots to the north and south. The site is highly visible from Route 22. It can be seen from the train platform through the row of trees along the property line.

The proposed housing and ancillary parking and walkway would be visible from off site locations. The design of this housing has not yet been proposed. The architecture and design of the building will be subject to Town of North Salem review, comment and approval.

5.0 ADVERSE ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED OR ABSOLUTELY MITIGATED IF THE PROJECT IS IMPLEMENTED

The proposed Highgate-Woodlands Residential Project would have some adverse impacts upon the environment that cannot be avoided regardless of the mitigation measures that are provided. Some of these are short-term impacts that would occur primarily during the construction phases when the land is the most disrupted. These temporary construction impacts include the noise from construction equipment and blasting. See Appendix 8 for a discussion of the proposed Blasting Protocol. Chipping of rock would be used on site wherever possible and rock excavated on site would also be processed on site as shown on the Project Site Plan. (See the Full Sized Plan Sheets appended to the DSEIS for the areas of the site affected.)

Soils would be disturbed and/or replaced during the course of this development. In areas proposed to be covered by buildings and paving, the existing vegetation would be removed and soil covered. Where grading is necessary, the topsoil would first be stripped and stockpiled for later spreading in landscaped areas. Soil stockpiling sites would be selected with care to protect the on-site wetland areas and intermittent streams. (Safeguards for mitigating potential impacts to on-site soils and best management practices are discussed in detail in the Stormwater Pollution Prevention Plan (SWPPP) in Appendix 13 and shown on drawings appended to this DSEIS.)

Vegetation would be lost and other vegetation would be removed during the course of recontouring the land for the necessary roads, driveways, houses and lawns. The existing forested vegetation and the wildlife habitat that it provides would be lost. Woodland vegetation would be replaced by lawn, landscaping and plantings for the new project. Landscaping for the project is illustrated in the Landscaping Plans attached to this DSEIS (Full Sized Plan Sheets LS-1 and LS-2, (Drawings 23 and 24)).

The development would change the existing views of the property, with increased visibility of the new residential units greatest in winter when deciduous foliage would be absent. There would be a loss of the open space/forest views from some adjoining areas, particularly to the east and south viewing north along the Interstate Route I-684 corridor. After the completion of the project the areas of more open views of the development would be expected to decrease over time as the woods form new "edges" and as the landscape plantings and buffers mature.

Surface run-off would be altered due to the impervious surfaces added and the loss of vegetative surface area on which water collects and is detained. The SWPPP prepared for the project provides stormwater management facilities to address post construction changes in stormwater flow rates and quality.

Existing land use within the Town of North Salem would be intensified with the addition of 42 single-family dwelling units and 76 townhouse units. The new residences are estimated to add approximately 309 new residents to the Town including approximately 51 school age children. The 76 active adult townhouse units would be age restricted to active adults 55 years of age or older and would generate no school children.

It is anticipated that this residential use from both residential projects would generate 51 vehicles during the Peak A.M. Hour and 59 vehicles during the Peak P.M. Hour.

There would be a small direct impact to the site's wetlands of approximately 0.002 acres; and an estimated 5.73 acres of existing wetland buffer would be lost. The drainage basins on site would be planted. See the SWPPP in Appendix 13 for further details on stormwater practices and plantings. Additional planted wetlands and buffer areas would be added to the site to compensate for the loss of these wetland resources.

A minor increase in the number of police and emergency calls from both the single family residences and active adult townhouse may occur over time. However, these impacts would be partially mitigated by the taxes that both residential communities would pay. It is unlikely that there would be a significant demand for town recreational services since both components each would have its own on-site recreational facilities and clubhouses.

6.0 ALTERNATIVES

Introduction

The currently proposed Highgate-Woodlands at North Salem (hereinafter Highgate-Woodlands) project is an all residential development consisting of 42 lots for single-family homes surrounding a community of 76 active adult townhouse units in nineteen (19) townhouse buildings. There is no longer a commercial office component as was included in the previously proposed action (the Highgate project), which consisted of 49 lots for single-family homes surrounding a 250,000 square-foot office development. Therefore, the alternatives reviewed below are considered in comparison to the currently proposed Highgate-Woodlands all-residential project, however, observations in regard to the previous office and residential development are included when appropriate.

Most of the alternatives that follow have been repeated from the previously accepted DEIS from the former Highgate project (office and single-family) and as outlined in the approved Scoping Document. The alternatives from the previous Highgate DEIS are summarized and included in Table 6-1 at the end of this introductory section and are thereby incorporated by reference (as agreed by the Town of North Salem and acknowledged in the Final Scoping Document). Each of these alternatives includes a residential subdivision consisting of 49 lots in compliance with the zoning requirements of the R-1 District (the current residential zoning classification for the entire site). The repeated Highgate alternatives, some of which include office and residential components, were discussed in detail in the Highgate DEIS, include the following (with reference to the subsection of the adopted scoping outline):

- An office development with three buildings (Section 6.110);
- An office development with one building (Section 6.120);
- Three (3) two-story office buildings with a reduced height (2 occupied floors) (Section 6.130);
- A plan which fully utilizes a central wastewater treatment plant (WWTP) connecting both the office buildings and all 49 single family homes (Section 6.210);
- A reduced scale development consisting of both components reduced at a 25% lower density (190,000 square feet of office space and 37 single family homes) (Section 6.310);
- A higher scale development consisting of both components at a 25% higher density (312,500 square feet of office space and 61 single family homes) (Section 6.320);
- An all single-family residential plan in accordance with existing zoning (Section 6.410);
- A 49 lot single family residential subdivision with a 134 room hotel (Section 6.420);
- An alternative access plan with a permanent loop road joining the active adult townhouse and residential components of the project (Section 6.510);
- An alternative drainage plan which would not use any of the site's wetland for on-site detention (Section 6.610); and
- An alternative construction plan with different phasing (Section 6.710).

Additionally, the following alternatives are more specifically comparable to the currently proposed Highgate-Woodlands (all-residential) development:

- A single-family cluster development (Section 6.430);
- An adult active and single-family with the requisite number of Moderate-Income Housing (MIH) units on-site (Section 6.440);
- The previously proposed action with office and single-family residential development (Section 6.800);
- An all active adult townhouse development (Section 6.900); and
- No action (Section 6.1000).

The roadway length, disturbed area, impervious surface, building size in square feet, number of parking spaces and total traffic generated have been discussed for each of the various alternatives, as appropriate, and compared with the current Proposed Action in Table 6-1 that is at the end of this introduction. Each of the various office buildings scenarios are developed in accordance with the proposed RO (Research Office) zoning requirements that were discussed at length in the accepted Highgate DEIS.

Similarly, the above alternative development plans that involve lots for single-family homes are in accordance with the R-1 zoning requirements in the accepted Highgate DEIS. In relation to such single-family lot development, the same variances are required from the Zoning Board of Appeals and the same waivers are required from the Planning Board.

All houses and condominium units will have a garage and at least 2 parking spaces per unit. Both the former Highgate office and residential development; and the current Highgate-Woodlands all residential Proposed Action are assumed to be completely served by a common central wastewater treatment plant (WWTP).

The amount of traffic to be generated by each Alternative Development was estimated on information contained in the ITE "Trip Generation", Fifth Edition and is presented in Traffic Impact Statement prepared for the Highgate DEIS (See Highgate DEIS, Exhibit 21). This was the Trip Generation edition applicable at the time of the Highgate traffic study. The traffic study was updated in 2008 and 2010 and the revisions, pertaining to the revised proposed action, can be found in this SDEIS Appendix 12.

As shown in the Highgate Traffic Impact Study (TIS) prepared by Michael Maris Associates, Inc., the traffic generation of the Alternative Development Plans will vary depending on the proposed use and density. Some of the Alternatives will generate the same traffic and others will generate more or less traffic than the proposed action. The No Action Alternative would result in no new traffic.

The traffic arrival and departure distributions for the various Alternatives Developments are expected to be similar to that of the Proposed Action with all components having a strong orientation to Route I-684. A summary of the traffic generated for each alternative is provided in Table 6-1. A brief discussion of impacts associated with each alternative is included, as appropriate, with the discussion of each of the proposed alternatives and as well as in the Traffic Impact Study (see Appendix 12).

It is anticipated that NYCDEP will require subsurface sewage disposal fields for the treated effluent for any of the uses and that a central wastewater treatment plant (WWTP) would be used in all of the alternatives.

Revised Table 6-1
Alternative Comparison Chart

Proposed Action or Alternative	Traffic Generated (Total Vehicles) AM/PM Peak	Site Disturbance (acres)	Impervious Surfaces (acres)	Total Building (sq. ft)	Paved Area of Road (linear feet)	Number of Parking Spaces
Highgate- Woodlands Residential Proposed Action	51/59	82.13	19.0	392,600	9,480	318
Highgate Proposed Action	432/421	62.5	56	250,000	7,400	1,000
Section 6.110 - Research/Office Development with Three (3) Buildings	432/421	62.5	56	250,000	7,400	1,112
Section 6.120 - Research/Office Development with One (1) Building	432/421	60	53.5	250,000	7,400	1,112
Section 6.130 - Alternative Height of Office Building - 2 occupied floors	432/421	65	58.5	250,000	7,400	1,241
Section 6.210 - Alternative Central Sewage Treatment Plant (STP) Connection - all single-family homes connected	432/421	58	56	250,000	7,400	1,112
Section 6.410 - All Single Family Homes - 120 lots	95/127	59	54	420,000	7,400	240
Section 6.310 - Scaled-down development - 190,000 sq. ft. - 37 homes	349/342	59	54	190,000	7,400	946
Section 6.320 - Larger-scale development - 312,500 sq. ft. – 61 homes	515/501	73	69	312,500	7,400	1,390
Section 6.420 - 49 Single Family homes and hotel of 81,889 square feet	118/157	50	43.5	81,889 (Hotel)	7,400	255
Section 6.510 - Permanent Loop Road Alternative	432/421	63.6	57.1	250,000	9,000	1,112
Section 6.610 - Alternative Drainage - no use of wetlands	432/421	62.5	56	250,000	7,400	1,112
Section 6.710 - Alternative Construction Plan	432/421	62.5	56	250,000	7,400	1,112
Section 6.800 - No Action	0/0	0	0	0	0	0

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6.100 Alternative Design/Layouts

The three alternatives presented in this section address requested alternate design schemes for the office component of the previously proposed Highgate project. For all three alternatives below, it is assumed that the office component is surrounded by the originally proposed 49 lots for single-family development.

The office concept architect for the Highgate project, Koenen Associates, prepared a number of design schemes, as required under the Highgate Scoping Document, for the office building

component of the Highgate project. These design schemes were presented in various figures and included in Section 6 of the previous Highgate DEIS at reduced sizes for each of the alternatives. These figures are provided in this SDEIS, as noted herein, corresponding to previous Highgate DEIS alternatives also at reduced sizes, as appropriate.

In these alternative illustrations, the buildings have been placed on the land to best insure the least impact to site slopes, and thereby minimize the cut and fill requirements. Building locations have been chosen to avoid wetlands and buffer areas as much as practicable. In some alternative design schemes, the architect has tried to minimize site excavation, although some minimal intrusions into the wetland buffers and wetlands permits may be required to construct some of the buildings as shown.

The lengths of the buildings have been placed on existing site contours, where feasible, to reduce the need for grading of the property. Proposed parking areas have been placed on flat areas of the property or sited parallel to existing slopes to minimize cut and fill and to create terraced areas for parking lots. Layouts that would ignore the site's topography have been avoided.

At the driveway, the office and residential components of the subdivision share a single entry road. The residential entry road branches off from the shared road at approximately 600 feet. In each design scheme, the individual office building is served by its own loading area as well as a screened service court. All of the design schemes conform to the zoning requirements and most wetland buffer setbacks. The architect's intention is to place most of the required mechanical equipment for each office building on its roof.

If basements are built in the office buildings, this space will be used for tenant storage, utility rooms and possibly some mechanical equipment; the basement building areas will not be used for tenant office space. Depending on the office user(s) or owner(s), it is possible that some of this basement area could be used for various types of site amenities, such as a newsstand, snack bar, vending machines, cafeteria, a health club, etc. Since neither tenant(s) nor potential owner(s) were known at the time the DEIS was prepared, a detailed discussion of site amenities would be premature.

The revised wetland delineation by B. Laing Associates discussed in this SDEIS has reduced the relatively flat buildable area of the site by approximately 30,000 square feet and required the realignment of the emergency road for the proposed action and would have had the same effect on some of the alternatives. These changes limit planning flexibility to varying degrees for the proposed action and for each alternative fairly equally. For example, parking would have to be relocated to areas where cut and fill conditions can still be minimized and in some cases closer to the building perimeter reducing the landscape area around each building.

6.110 Research/Office Development with Three Office Buildings

The alternative office development with three office buildings is depicted in Figure 6-1 herein, which shows two buildings of 83,500 square feet (SF) each and one building of 83,000 SF. All three buildings have 2 floors and are spaced appropriately within the central area of the site. Upon examination of the figure as compared to the plan for the currently proposed development, the primary differences are:

- There are now 19 multi-family residential structures proposed, which are spaced closely and evenly through the proposed R-AMF/2 zoning district in contrast to three larger office buildings spaced farther apart; and
- There are now driveways adjacent to each proposed residential structure in contrast to large expanses of parking between the office buildings.

While significant in comparison to the current residential proposal, the amount of parking provided does not change in this alternative compared to the originally proposed office building layout with 2 buildings, since the building area and coverage requirements are the same. The footprint of each of the office buildings is smaller making it easier to place the buildings on the site contours. The amount of required parking and the related road system would not change from the original proposed action. The traffic impacts and mitigation do not change in this alternative. The roadway lengths, number of parking spaces, site disturbance area and a comparison of this alternative with the originally and currently Proposed Action is presented in Table 6-1.

A wooded 75-foot wide buffer was proposed as part of the Highgate project that would separate the office structures from the rear lot lines of the single-family lots. The placement of the third building is closer to the proposed residential subdivision than in the other design schemes of only two office buildings. All three buildings are placed on the perimeter of the parking area, thereby minimizing the walking distances from the cars to the buildings.

The view from the residential road would be at or over the roof line of the three proposed two-story buildings so that they would be visually unobtrusive. The visual impact of the office buildings on the surrounding residential community and proposed residential subdivision would have been minimal because of the buffer. There is less need for any visual screening between the active adult townhouse development and the single-family component of the currently proposed project as they are both residential uses. However, some vegetation will remain in the buffer of Wetland F and plantings in the associated buffer enhancement area to soften the view of the active adult townhouse development from the single-family lots.

The smaller office buildings were an undesirable alternative to the applicant as they would pose problems of marketability for office leasing since many potential tenants prefer larger floor plan areas.

The proposed layout for the single-family lot aspect of the project does not change in this alternative.

6.120 Research/Office Development with One Office Building

The alternative office development with one office building is depicted in Figure 6-2 herein, which shows one three-story building of 250,000 square feet. The single office building is located farther from the wetland and closer to but not immediately adjacent to the residential road in the central area of the site. Upon examination of the figure as compared to the plan for the currently proposed development, the primary differences are:

- There are now 19 multi-family residential structures proposed, which are spaced closely and evenly through the proposed R-AMF/2 zoning district in contrast to a single large office building surrounded by parking areas; and

- There are now driveways adjacent to each proposed residential structure in contrast to large expanses of parking around the single office building.

The same amount of parking is required for this office alternative as the previous office alternative. All parking can be created at grade without major cut or fill requirements. Because of the larger footprint of the proposed building, it is more difficult to place on the sloping site. This one building alternative requires the most cut and fill of the various office building development configurations. Walking distances from the parking lot to the office building are less efficient in this design scheme than in any other of the other suggested development scenarios. The orientation of the building on the site, parallel to the slope, helps to minimize the required site grading. The traffic impacts and proposed mitigation are the same for this alternative as for the office alternative with three buildings. However, much less parking is required for the active adult townhouse development and related traffic generation is significantly less.

The larger office building was considered to be more marketable for office leasing since many potential tenants prefer larger interior floor areas. The construction of one building would have increased the disturbed area by about ten percent or result in a total amount of site disturbance of 60 acres as compared to the originally proposed office development.

Visually a single long building set parallel to the slope would have been seen as a "wall" from within the site. From the surrounding residential neighborhood the top floor of the building would be at or below the elevation of the residential street; thus the visual impact of this long building is minimized as much as possible. In contrast, there is little need for any visual screening between the active adult townhouse development and the single-family component of the currently proposed project as they are both residential uses. However, as noted above, some vegetation will remain in the buffer of Wetland F and plantings in the associated buffer enhancement area to soften the view of the active adult townhouse development from the single-family lots. The proposed layout for the residential subdivision component of 42 lots (discussed in the Proposed Action) does not change in this alternative.

The roadway lengths, number of parking spaces, site disturbance area and a comparison of this alternative with the Proposed Action is presented in Table 6-1.

6.130 Alternative Height of Office Buildings

The alternative office development with 2 occupied floors is the same as the alternative with three office buildings, which is depicted in Figure 6-1 herein, showing two buildings of 83,500 SF each and one building of 83,000 SF. All three buildings have 2 floors and are spaced appropriately within the central area of the site. It is estimated that the height of the two-story buildings would be 25 feet, although depending on the architectural style, the buildings could reach a maximum height of 30 feet. These heights are less than the maximum permitted height (35 feet) for structures in accordance with North Salem's zoning ordinance. The comparison of this alternative with the previously proposed action and the currently proposed action is provided above in the alternative identified as: "Research/Office Development with Three Office Buildings".

More parking is needed for three two-story buildings, even though the total building area is still 250,000 square feet, because of zoning requirements. More parking spaces are required for this alternative than compared to the single story office plan and the Proposed Action.

Therefore, an additional paved acre for the parking lot is required over the other 250,000 square foot alternatives as well as more site grading and drainage improvements. Potential construction impacts are also increased because the site work is more extensive. However because of the smaller building footprints, less grading is needed to locate each office building. In this alternative, all of the office buildings are more easily installed on the sloping site.

As noted above, the smaller office buildings pose problems of marketability for office leasing since many potential tenants prefer larger floor plan areas. Also, since two-story buildings require elevators, they are inherently not as cost effective when compared to elevators serving three-story buildings.

The traffic impacts and mitigation do not change in this alternative. The roadway lengths, total impervious surface, traffic generated, number of parking spaces, site disturbance area and a comparison of this alternative with the Proposed Action is presented in Table 6-1. The same residential subdivision of up to 42 lots is also included in this alternative.

6.200 Alternative Central Sewage Treatment Connection

6.210 Connection of all of the Detached, Single-Family Homes to the Central Sewer System

The connection of the proposed subdivision to the central wastewater treatment plant (WWTP), which is depicted in Figure 6-3 herein, was anticipated to be feasible. The previous and current site design afforded ample room in the central area of the site to expand the subsurface disposal fields and expansion area to serve these additional homes. The connection of the residential lots to the WWTP provides greater flexibility for the locations of homes on single-family lots since no individual SSDS (septic) systems are needed. However, it is anticipated that the cost for future homeowners for operating and maintaining the WWTP would increase the common charges of the accompanying Homeowner's Association and make the housing less affordable. This cost aspect for single-family lots would be true in relation to either the previously proposed office development or the currently proposed active adult townhouse development.

While there would need to be a larger subsurface sewage disposal field and future expansion area for the WWTP, this is a trade-off since the individual lots would not have the disturbed areas related to individual septic systems and related construction costs. Moreover, connection to a central WWTP eliminates the variable of proper septic system maintenance by individual lot owners. Other differences in impacts between either of the proposed actions and this alternative would be minimal.

The currently proposed action involves the connection of all single-family homes and active adult townhouses to a central sewer system. The latest version of the previous Highgate development that was reviewed by the Town also involved the connection of all single-family homes and the office development to a central sewer system. A discussion of the WWTP required to serve the site is addressed in Subsection 4.842 of this DSEIS regarding sewer facilities.

6.300 Alternative Size/Density

6.310 Scaled-Down Development

This alternative evaluates the impacts of two office buildings totaling 190,000 square feet instead of the two office buildings in the originally Proposed Action totaling 250,000 square feet (which is discussed in detail in the previously accepted DEIS for the Highgate project). An illustration of this alternative is provided in Figure 6-4. Any lower density would be inconsistent with the office development approved in the original Stipulation of Settlement and would be economically infeasible because of the considerable expense required for site work, off-site traffic improvements and other required infrastructure to serve the originally proposed project. With respect to impacts, they would be slightly less than the office component of the originally Proposed Action.

Two buildings, each with 3 floors, are planned in this alternative. Each building would have 95,000 square feet of floor area, less than other alternatives. The reduction of office space would allow for 166 less parking spaces. This reduces site grading and related stormwater run-off requirements. Because of the smaller floor plan footprint, these buildings are easier to place in regard to existing slopes.

In this alternative, the residential subdivision is reduced to 37 lots, therefore a decrease in tax revenues and demand for community services. It is anticipated that the Phasing Plan would either be reduced to two residential phases or depending on residential market demand, the number of homes under construction at a single point in time would be reduced with a some related mitigation to construction related impacts. If the residential homes were built on larger lots, these homes are likely to be more expensive.

The visual impact from within the site is less for this alternative because of the smaller dimensions and relative mass of the two office buildings. Again, the office buildings are sited down-slope from the residential lots and are screened by the wooded buffer zone. The marketability of these buildings for office leasing is negatively impacted by the smaller floor plan area. The number of Peak Hour trips is reduced by about 20 percent in this alternative to 349 and 342 in the peak A.M. and P.M. hours, respectively. The proposed traffic mitigation does not change. Part of the land, formerly devoted to residential lots and west of the office buildings, provides a larger buffer for the office buildings. In other instances, some of the remaining lots will be enlarged.

Upon examination of the scaled down development alternative, depicted in Figure 6-4, as compared to the plan for the currently proposed development, including an active adult townhouse development instead of office development, the primary differences are:

- There are now 19 multi-family residential structures proposed, which are spaced closely and evenly through the proposed R-AMF/2 zoning district in contrast to two larger office buildings spaced farther apart (even with the reduced office floor area); and
- There are now driveways adjacent to each proposed residential structure in contrast to large expanses of parking between the office buildings.

It is clear that with all of the potential decreased impacts noted above in relation to the decreased office and residential construction, including less land disturbance and coverage, traffic, water demand and sewage flow, it would generally have less adverse impacts when

compared to the previously proposed office project. However, the scaled down office and residential development would still have greater traffic impacts when compared to the total residential development of 118 units (42 single-family homes and 76 active adult townhouses) as is indicated in Table 6-1.

6.320 Larger-Scale Development Alternative Plan

This alternative has 4 commercial buildings of 78,125 square feet each for a total of 312,500 square feet, which is depicted in Figure 6-5. Parking requirements would be greater with 1,390 spaces or 278 more spaces than in the proposed scheme discussed in detail in the accepted DEIS for the former Highgate project. To get all of this parking on-site, garage parking below each building is required. Because of the site slope conditions, the additional 278 spaces would have to be placed on land requiring either extensive fill area or deep cuts into the slopes. With the building site area further reduced by the new wetlands delineation, it would be harder to find suitable areas for parking lots. More below grade parking would be required to minimize the impact on the topography. This would increase the cost of providing parking and raise the total construction costs.

In this alternative, the residential subdivision is increased to 61 lots and more lots would be served by the WWTP. There is a corresponding increase in the demand for public services but more taxes are generated for the Town and County.

It is anticipated that the Phasing Plan would be changed to build more residential homes in each of three residential phases. Consequently, the number of homes under construction at a single point in time would be increased with a corresponding increase in construction related impacts. Alternatively, an additional construction phase might be added to the phasing plan. Refer to Figure 6-6, which presents an alternative phasing plan.

This alternative would have a greater impact on site disturbance and would be more expensive than the originally proposed action. However, the smaller building footprints can be placed on the sloping sites without excessive grading. Having four (4) office buildings on the site does reduce the individual building massing and reduces the visual impact. The walk from car to building would be a more comfortable distance. This site could handle a larger scale project when basement or structured parking is introduced. This design scheme is more expensive to build than the originally proposed action, making the buildings harder to market.

The amount of buildable site area is limited in all alternative design schemes by the slope conditions. Phasing would be most efficient by constructing the first building on the low land site so the entrance road system and parking construction are minimized. The number of peak hour trips is increased in this alternative to 515 and 501 in the peak A.M. and P.M. Hours, respectively. Compared to the Proposed Action, this represents an increase of 464 trips during the peak A.M. hour and 442 trips during the peak P. M. hour. When distributed to the local roadway system, these trips have a negligible impact and the proposed traffic mitigation does not change.

Approximately 40,000 to 50,000 gpd (gallons per day) of water will be required to serve these office buildings. The water treatment plant would not require any significant changes to accommodate these additional homes. The total sewage generated by the 61 homes would be about 27,500 gpd (61 x 450). Waste water disposal of these amounts would be by tertiary treatment with subsurface discharge and the WWTP would require plant expansion to treat the

maximum of approximately 80,000 gpd of sewage generated by this alternative. This amount includes the "peaking" factor.

See Table 6-1 for the quantification of disturbed area, building coverage, amount of impervious surface, parking spaces, roadway length, traffic impacts, as well as for the comparison of this alternative with the Proposed Action as well as other alternatives.

Upon examination of Figure 6-5 as compared to the plan for the currently proposed development, including an active adult townhouse development instead of office development, the primary differences are:

- There are now 19 multi-family residential structures proposed, which are spaced closely and evenly through the proposed R-AMF/2 zoning district in contrast to four larger office buildings spaced farther apart, including an increase in total office gross floor area and related increased parking; and
- There are now driveways adjacent to each proposed residential structure in contrast to large expanses of increased parking between the office buildings.

Additionally, the potential increased impacts related to traffic and water demand and sewage flow for this alternative, would be greater than compared to the Proposed Action of 118 units (42 single-family homes and 76 active adult townhouses).

6.400 Alternative Uses

6.410 Single Family Development According to Existing Zoning of Site

A previous EIS[1] stated that the existing residential zoning for the site would support a subdivision of 120 single family homes, which is illustrated in Figure 6-7. It was anticipated that such a development would yield a mixture of 3 to 5 bedroom homes with an average occupancy of 3.2 to 3.4 persons per unit, or a total of 384 to 408 persons.[2] Such a development would add approximately 100 children to local school enrollment, if all the eligible children attended public schools.

A residential development of 120 single family dwelling units would generate 95 trips during the peak A.M. hour and 127 trips during the peak P. M. hour. No additional road surface would be created under the cluster scenario, in fact, it would be slightly reduced. If common driveways were used, impervious surface could be further minimized. Since there would be more residents in the proposed subdivision, it can be anticipated that there would also be more demand for some public services depending on the ages and needs of the residents.

A single family home on average uses between 100 and 110 gallons of water per bedroom per day. The water needed for this alternative would range from 40,000 to 45,000 gallons per day, depending on the actual sizes of the homes constructed. There would be some potential water quality degradation from road and lawn runoff which could be ameliorated through appropriate stormwater management and erosion controls.

[1] Both a DEIS and a FEIS were prepared for the Joflo Corporation for the Ramada Renaissance Hotel Project on August 8, 1985 by Jason M. Cortell and Associates Inc. These reports are incorporated by reference into Highgate DEIS and into this Highgate-Woodlands SEIS.

[2] Robert W. Burchell, David Listokin, William R. Dolphin, The New Practicioner's Guide to Fiscal Impact Analysis, the Center for Urban Policy Research, 1985 (fifth printing 1993), see Exhibit 14, page 64.

The proposed WWTP discussed elsewhere in this DSEIS would be adequate to handle the flows generated by these new homes. Since these would all be detached single-family homes with no age restrictions, the tax revenues gained versus the municipal services required, make this residential alternative the least beneficial to the Town of North Salem of any of the residential alternatives considered.

When compared to the currently proposed total residential development of 118 units (42 single-family homes and 76 active adult townhouses) it is noted that the distribution of residential development over the site is somewhat similar. However, the concentration of multi-family dwellings in the central, more level area of the site reduces impacts on other more steeply sloped areas of the site. Additionally, the 120-unit single-family concept involves significantly more wetland disturbance especially in regard to Wetland F. The compact development of the 76 condominiums allows avoidance of wetland areas.

The predominance of age-restricted dwelling units, 76 out of 118 (over 60 percent) greatly reduces the potential number of school-age children that will result from this aspect of the proposed action when compared to 120 non-age-restricted dwellings.

6.420 Single Family Homes (49 lots) and Hotel

The previously referenced Jo-Flo EIS analyzed the impacts of a hotel on a 22.8 acre portion of the property. The current applicants, in conjunction with Prime Motor Inns, Inc., had planned to construct a 134 unit Ramada Inn with 3 meeting rooms to serve 300 people and a restaurant with seating for 200. The 134 bedroom units would have been constructed in a three story L shaped wing and served by a 92 space parking lot. The hotel was a total of 81,889 square feet; a total of 255 parking spaces to serve the motel and its ancillary facilities were planned (see Figure 6-8).

A hotel or motel of similar scale could be built on the site in lieu of the two proposed office buildings, and there would be sufficient undeveloped land to permit the construction of a residential subdivision of at least 42 single family homes on one-acre lots. These homes would be served by the proposed central water system and a central WWTP could be designed that would likely be adequate to handle the sewage flows. It is noted by the applicants that the Town is unwilling to rezone the site for hotel use and the original Stipulation provided for a rezoning of a portion of the site for two 125,000 square feet office buildings for a total of 250,000 square feet of office space and up to 49 single family residential homes.

The hotel alternative would be served by a central water supply and served by a central WWTP. Three detention basins for the proposed stormwater runoff were sized for a capacity of 160,000 cubic feet of storm water and located to serve the hotel.

The former hotel proposal was estimated to generate 137 vehicles in the peak morning hour and 110 vehicles in the peak evening hour. This is still a reasonable estimate for the traffic impact of a hotel or motel built today. The previously prepared traffic report estimated that the total number of vehicles utilizing Reed Road would be 87 vehicles entering and 44 vehicles exiting during the peak A.M. hour and 54 vehicles entering and 56 exiting vehicles during peak P.M. period.

Based on the original traffic study, Michael Maris Associates, Inc. (MMA) estimated that a combination of residential and hotel use on the site would generate 118 trips during the peak A.M. hour and 157 trips during the peak P. M. hour.

As mitigation to this traffic impact, a recommendation had been previously made to widen Reed Road to provide separate left and right turn lanes onto Hardscrabble Road. It is possible that an appropriate mitigation would be required for any new hotel or motel proposal.

Such a hotel facility would help to satisfy the demand for hotel and meeting facilities in northern Westchester, Putnam and Dutchess Counties and benefit offices located in the neighboring communities. Such a regional facility would create approximately 120 permanent jobs and a range of 200 to 300 construction jobs.

In this alternative, the demand by the hotel on most municipal services would be minor, except under certain emergency situations for police and ambulance calls. The demand for services by the residential subdivision and the generation of taxes would be the same as the Proposed Action.

When compared to the currently proposed total residential development of 118 units (42 single-family homes and 76 active adult townhouses), some of the primary observations are as follows:

- There are now 19 multi-family residential structures proposed, which are spaced closely and evenly through the proposed R-AMF/2 zoning district in contrast to one 81,889 square foot hotel building in the central area of the site, which presents the possibility of a more compact development in the center of the site;
- The hotel use is a more intensive, commercial use than the active adult townhouse development, which is less consistent with nearby residential uses, yet more consistent with the site's location adjacent to a highway and additional highway-type commercial development on Fields Lane on the opposite side of I-684;
- The hotel development would create property tax revenue as a commercial development, but would not likely increase the demand for services that residents of a new condominium development are likely to place on the community; and
- There are now driveways adjacent to each proposed active adult residential structure in contrast to an expanse of parking adjacent to the hotel building.

6.430 Single-Family Cluster Development

The concept of a single-family cluster plan was discussed during the review of the Highgate site, among other issues, in its initial and continuing review. However, there was no single-family cluster alternative in the accepted DEIS for the Highgate project.

A single-family cluster plan might be feasible with all residential units connected to a central sewage treatment system. One of the reasons that the cluster concept was not included in the DEIS is that there are significant limitations to designing a layout with units in closer proximity in most areas of the site. The Slope Analysis and Soils Map/Existing Conditions Full Sized Plan Sheet SA-1 (Drawing 4) and SM-1 (Drawing 5), respectively, show the site's topography, wetland areas and rocky (exposed ledge) areas, which pose limitations to locating single-family home sites.

The site includes a relatively level to moderately sloped area in the center of the site between wetlands A and F and to the south of the central area (south of both wetlands). This is the key area for location of the subsurface discharge area and required reserve discharge area for the effluent from the WWTP as a result of the NYCDEP regulations prohibiting surface discharge of treated effluent in the New York City watershed. These siting priorities makes this area partially unavailable for siting of a larger number of single-family dwelling units. After the subsurface discharge and required reserve areas are located, as many dwelling units as can be accommodated should be located in this area of the site.

The remainder of the site surrounding this central area provides a variety of moderately to steeply sloped areas in which it is possible to locate roads and a large number of distinct single-family home sites. Roads can and have been designed to follow topography and to minimize extensive cut-and-fill and grading, to the extent practicable. Home sites in the proposed plan are similarly located on available areas of moderate slopes and oriented to minimize the need for extensive grading. However, the area of each home site is limited and typically not extensive enough to accommodate two or more single-family detached homes to effectively cluster these types of dwellings.

There are a few somewhat more extensive moderately sloped areas that might accommodate two or three homes in closer proximity in the northern central and northeastern areas of the site along the proposed eastern cul-de-sac (Road C). However, these areas may only afford attached dwelling units, which are not consistent with the objective of the project sponsors to provide lots for development of detached single-family dwellings. Additionally, in order to gain access to these areas to cluster a few homes, the construction of the entire length of proposed Road C would be required. This would defeat one of the primary purposes of clustering home sites, which is to reduce the length of road and related disturbance necessary to create home sites.

The proposed all residential Highgate-Woodlands development with active adult townhouses in the central gently sloped area of the site maximizes the use of this area for a concentration of a substantial number of dwelling units. Attached units are a more efficient and environmentally sensitive way to locate dwellings in the most developable area of the site than the location of a number of single-family detached units. The limitations of the remainder of the site lend themselves to the layout of single-family detached units on distinct home sites.

The development as designed is consistent with the objectives of the project sponsors and addresses two aspects of the area housing market for active adult housing and single-family lots. The project sponsors perceive that there is still a strong market for single-family detached residences, but that the desire for homeowners to purchase detached homes in close proximity or even with shared driveways is very limited.

Therefore the proposed action with numerous attached units in the most developable area of the site and distinct home sites in the remainder of the site addresses quality residential development design; minimizes disturbance in areas of the site with limitations (slopes, rockiness and wetlands); and partially addresses the Town's desire to consider clustered development.

6.440 Proposed Development with Requisite Number of MIH Dwelling Units On-site

The original Stipulation of Settlement for this project was first put into effect in 1992 and the applicant has proceeded in this review, changing the project over time in response to a lack of market demand for office space. The amended Stipulation was set forth in 2004 as a result of consultation with the Town and its representatives in response to the community's objectives. The currently proposed action was deemed to be consistent with the Town's desire to remain residential in character and yet address a variety of housing needs including adult housing and MIH units on a site in Croton Falls. During the course of the project review, North Salem developed, reviewed and adopted zoning amendments to address a separate litigation matter, the Continental Decision. The new zoning imposes an affordable requirement in response to that decision and in response to the Westchester County *Draft Affordable Housing Allocation Plan*. The Continental Decision identified sites in Town that were to be considered for rezoning to create the opportunity for the development of affordable housing, which did not include the former Highgate site.

In accordance with the zoning amendments to address the Continental decision the following inclusionary requirements must be met on sites rezoned for multi-family development as part of the decision and on subdivision sites in general:

- In the R-MF/4 and R-MF/6 zoning districts 20 percent of dwelling units are required to be Moderate Income Housing (MIH) dwelling units, however, these districts permit 6 to 8 senior dwelling units per acre, respectively; and
- In subdivisions of 10 or more lots, the residences on 10 percent of the lots so created are required to be MIH dwelling units.

If the requirements of these districts were applied to the Highgate-Woodlands project, 15 of the active adult townhouses (20 percent of the 76 units) and 4 of the single-family lots (10 percent of the 42 units) would be required to be MIH units. The provision of 19 MIH units on the site may be feasible from a site development standpoint. However, given the cost of construction of the water and sewer systems, roads and other improvements, the construction of 19 units at less than the market price would not be economically feasible. It may be feasible to produce 20 percent MIH units on a site that permits 6 to 8 senior dwelling units per acre such as in the R-MF/4 and R-MF/6 zoning districts, respectively. The proposed R-AMF/2 zone proposed for the Highgate-Woodlands site, however, only permits 2 active adult dwelling units per acre. At this medium density, which is comparable to nearby single-family zones and neighborhoods, the provision of 20 percent MIH units is not economically feasible.

Moreover, the applicant's objective in previous and current stipulations has been to produce a development that meets his objectives, addresses market demand and includes mitigating aspects desired by the Town such as: conservation of certain lands for open space and to protect wetlands; payment of recreation fees in addition to providing on-site recreational and passive open space amenities for its residents; payment of fees related to potential impacts on the Croton Falls shopping area, the fire district and the water district; and development of up to 3 MIH units on a site the Town identified as an appropriate location for MIH units. The Description of Action addresses the development of the "Dino & Arties" site. The project depicted in the current stipulation is feasible. Imposition of an additional requirement for MIH units on site would necessitate reconsideration of the conditions of the stipulation to balance the Town's and applicants objectives.

6.500 Alternative Access

6.510 Permanent (Regular) Loop Road Joining Office and Residential Developments

During the history of the former Highgate project, there were discussions about the possibility of an interconnecting loop road system for the site. Figure 6-9 illustrates the potential connections between the proposed on-site roads and nearby existing roadways as well as in interconnection within the site as follows:

- A possible connection between the proposed main residential road and the end of existing Sun Valley Drive;
- A possible connection between the proposed main residential road at its intersection with the proposed cul-de-sacs and the Juengstville neighborhood area roads via an existing easement; and
- A possible connection between the proposed office development from the northern parking area through to the upper eastern cul-de-sac.

Over a period of years in review of the former Highgate project by the Town Board, Planning Board and its consulting planner and engineer, it was determined that permanent road connections between the proposed site development and existing neighborhood roads are not desirable because of the traffic and disruption that would result. However, it was determined that emergency-only access connections would be needed and could be accommodated on the site as follows:

- An emergency-only connection will be provided between the proposed main residential road and the end of existing Sun Valley Drive; and
- A emergency-only connection will be provided between the proposed office development from the northern parking area through to the upper eastern cul-de-sac.

Although it might have been feasible to change the emergency access loop road that connects the office parking lot to the upper, eastern cul-de-sac (Road "C") into a permanent road connection, this was not desired for a number of reasons. Under this alternative, a single roadway would be constructed to serve both the office and residential uses. This has the disadvantage of combining incompatible traffic movements. As tenants arrive at the office buildings, they would encounter some residents and school children leaving the site. It would be preferable to separate these uses.

The applicant does not wish to pursue this alternative since permanent routing of office traffic through the proposed residential subdivision would have an adverse effect on the residences. The routing of residential traffic through the office parking areas would be similarly disruptive. In fact, the applicant has gone to great lengths and expense to keep the access for the two uses as distinct and far apart as feasible. Additionally, a permanent road would create a wider area of disturbance within the wetland area linking Wetland C with Wetlands D and E.

6.600 Alternate Drainage Plan

6.610 No Alteration to Central Wetland

When the Scoping Document for the Highgate DEIS was drafted, the applicants originally expressed a desire to create a pond in the Wetland A area. The applicants' former Wetland Consultant, B. Laing Associates, has indicated that the creation of this pond and its use for stormwater detention would degrade and seriously impact existing wetland vegetation and its current natural water level variations. Therefore, Wetland A will remain undisturbed as per the plans for the currently proposed all residential development. The wetlands will not be used for stormwater detention. Since the central wetland will be left undisturbed, discussion of this alternative is no longer necessary.

6.700 Alternate Construction Plan

6.710 Phased Project: Mixed Use Initial Phase

The accepted DEIS for the Highgate project included and alternative which addressed the desire of a potential tenant, user or purchaser desires to proceed immediately with the construction of one or more office buildings and how the Phasing Plan presented in the Highgate DEIS would be modified. A potential result of a change in phasing would mean that some of the associated impacts of construction would occur earlier than currently anticipated under the former proposed action. Under this scenario more of the site would be disturbed at a single point in time since both condominiums and residential homes would be under construction at the same time. The points in the discussion of this alternative from the Highgate DEIS are summarized below.

The demand for the residential homes might result in other phasing scenarios; or the demand for office space might result in construction of the office buildings first. Since any of these scenarios are market driven, more detail is not available at this time. A typical three year phasing plan was presented in the DEIS and is show below as Table 6-2.

Table 6-2
Former Highgate Project Possible Alternative Construction Phasing

Phase	Year	Number of Homes per Phase	Size of Office Units (Sq. Ft)	Other Facilities
Phase I	1995		125,000	WWTP; Office and Entry Roads; and Central Water Supply
Phase II	1996	24 homes	125,000	Phase II Residential Road - Southwest cul-de-sac
Phase III	1997	25 homes		Phase III Residential Road 2,300 linear feet – Northeast cul-de-sac

In this alternative scenario, one or two office buildings would be built in Phase 1. This would require that both the central water supply and WWTP and related systems be constructed at the same time. Depending on the demand for the residential homes, it was presumed that at least some of the entry and office road would be constructed. After the construction of the WWTP, the applicant would also construct the homes on the lots along the first leg of the residential road and closer to the office complex.

The remainder of the Highgate construction activity which could be completed in Phases 2 and 3 would be either single family homes or single family homes and the remaining office building (if two buildings were not completed in Phase 1). The number of homes constructed at any point in time would be market driven. Depending on the market demand, it is possible that only a portion of the residential road would be constructed and the lots sold would be served by the section completed. The traffic impacts and the amount of land disturbed are the most notable changes in the intensity of the impacts. For a comparison of the various impacts, which addresses alternative phasing of the Highgate project with offices, see Table 6-1.

The currently proposed Highgate-Woodlands project includes four phases to address environmental concerns regarding disturbance, stormwater management, and erosion/sedimentation impacts, and addresses anticipated market demand. The Project Phasing Plan is included on Full Sized Plan Sheet PP-1 (Drawing 26). As with the alternate phasing plan for the Highgate project, the potential result of a change in phasing to two or three phases for the Highgate-Woodlands project, as per the scoping outline, would mean that some of the associated impacts of construction would occur earlier than currently anticipated under the Proposed Action. First it should be noted that the phasing plan for the Highgate-Woodlands project already includes mixed-use development (condominium and single-family housing) in Phases 1 and 2. One aspect of the requested alternative per the scoping outline is addressed by the proposed action's phasing plan.

Under this alternative scenario with two or three phases, more of the site would be disturbed at a single point in time since there would be one or two fewer phases and each would involve more construction of roads, dwelling units and related grading, drainage and other disturbance. For example, in the first two phases both condominiums and single-family homes would be under construction at the same time. The first phase would involve construction of: the entry road up to and for some length beyond the entry to the active adult townhouse development; the water supply plant; and the entirety of the WWTP.

Depending on the demand for the residential homes, the applicant would also construct the homes on the lots along the first leg of the residential road up to the intersection with the eastern and western cul-de-sacs and closest to the active adult townhouse development in the first phase. A possible second phase would follow with additional condominium development and single-family lot development on the western cul-de-sac. A possible third phase might involve remaining condominium units; the emergency road to the eastern cul-de-sac; and single-family lot development of the eastern cul-de-sac. It is also possible, that the remainder of the condominiums would have been constructed in the second phase depending on market demand.

The number of homes, either single-family or condominium, constructed at any point in time would be market driven. Depending on the market demand, it is possible that only a portion of the residential road would be constructed and the lots or units sold would be served by the section completed. The traffic impacts and the amount of land disturbed are the most notable changes in the intensity of the impacts with increased numbers of units in fewer development phases. From the standpoint of the applicant, the four-phase plan presented in the project plans, noted above, properly addresses environmental concerns regarding disturbance, stormwater management, and erosion/sedimentation impacts, and also allows construction to proceed in response to market demand.

6.800 Previous Proposed Action

This alternative is the originally proposed Highgate project with office and single-family residential development, as discussed in the accepted Highgate DEIS and set forth in the original Stipulation of Settlement. As with the other alternatives, this provides for a residential subdivision of up to 49 residential lots (plus lots for ancillary uses) on approximately 109 acres of the site including the residential entry road and two cul-de-sacs. The office building aspect of this alternative occurs on approximately 41.6 acres of the approximately 160-acre vacant Highgate parcel. The development would consist of two components: a 49 lot residential subdivision and the construction of two office buildings, each 125,000 square feet in size. The office buildings, situated on a 41.6± acre portion of the site, would be made possible by rezoning of this portion of the site to the RO (Research-Office) office use and served by its own private entry road. The Previous Proposed Action is depicted in Figure 6-10.

In summary, many residential and commercial alternatives to the proposed action exist, both for the entire 159.52 acre parcel and for the 41.6-acre portion of the site slated for rezoning to the RO District. These are addressed in the alternatives above with various building configurations, heights and total square footage options.

The previously proposed action involves greater impervious surface than the currently proposed Highgate-Woodlands project because of the parking area needed for the office buildings (1,000 spaces) to meet the zoning requirements. The 76 condominiums would result in 152 spaces, plus 24 spaces for the recreation building. Additionally, the traffic generated for the Highgate project would be much higher than that for the active adult townhouse development. It is assumed that the single-family component of the previous and currently proposed actions would have similar impacts and the primary difference in the two alternatives is related to the office versus active adult aspects.

6.900 All Active Adult

The Applicant and his representatives discussed an all active adult townhouse development concept with the Town and its consultants, which is included herein an additional alternative. This alternative consists of 149 active, age-restricted, multi-family, condominium units clustered primarily in the center of the property with another area of clustered units in the northeastern corner of the site. As with the proposed action, this would be a private, gated community, yet with a fully equipped, multi-family clubhouse with recreational facilities, including a pool. The proposed alternative would involve creation of central water supply and sewage treatment systems and would utilize the proposed entry road shown on the Highgate-Woodlands site development plans.

The conceptual plan, included herein as Figure 6-11, illustrates how the proposed development is focused on the central and northeastern areas of the site. This alternative would leave the western side of the site mostly undisturbed with a large wooded areas near the Sun Valley Drive and Juengstville Road neighborhoods. Also, the central wetland (Wetland A) and woodlands to the east of this wetland remain undisturbed thus providing a buffer to Reed Road, the homes thereon and retain open area alongside I-684.

A comparative analysis is provided below in Table 6-3.

Table 6-3 Proposed All Active Adult Alternative		
Item	**Proposed Action**	**Active Adult Plan**
Number of Units	76 Townhomes 42 Single Family	149 Townhomes
Length of Roads	9,480 linear feet (LF)	7,200 LF
Tree Clearing and Disturbance	82.13 acres	73.2 acres
Dedicated Open Space	9.37 acres	41.8 acres
Impervious Area	19.00 acres	24.0 acres
School Children	51	0
Population	309 residents	280 residents
Density	0.74 dwelling units (DU)/acre	0.93 DU/acre
Traffic - AM Peak	51 trips	12 trips
Traffic - PM Peak	59 trips	17 trips
Wastewater (Sewage) Flow	33,000 gallons per day (gpd)	34,500 gpd

In summary, the proposed all active adult alternative would result in a larger number of units on the site than the proposed action, yet they would be clustered closer together. This alternative would result in shorter roads, less disturbed area and more open space than the proposed action. Other impacts that would be reduced when compared to the proposed action would be less traffic and fewer school children.

6.10 No Action

Under the No Action Alternative, the immediate physical site impacts would be avoided for the short term. It is likely that the demand for the proposed facilities, buildings suitable for office and research uses; or active adult or other types of multifamily housing; and single-family homes will still exist over time. Therefore, it is probable that other proposals, on this site or other sites along the Route 1-684 corridor, will continue to be considered for mixed-use or residential development. The economic stimulus to the area and region, in terms of jobs available and dollars expended for services, will be deferred or transferred several miles to the north or south and tax benefits would not accrue to the Town of North Salem or its School District.

The No Action Alternative represents no development and therefore, would result in no new traffic. Traffic levels, as they are primarily a function of external generators, would remain similar to existing conditions increasing over time in response to other area development.

The No Action alternative would preserve the site and environs in their respective existing conditions and leave the site vacant. The advantages of this alternative include an elimination of most of the land disturbance and development, traffic and utility impacts discussed in this DEIS. Disadvantages include the loss of potential tax revenues; employment opportunities; and a loss of the potential improvement in the variety of housing in North Salem and the Croton Falls area. The No Action alternative would be inconsistent with the Amended Stipulation of Settlement and the proposed residential development.

Dino and Arties - No Action Alternative

In regard to the Dino and Arties site as part of the No Action Alternative, the site would remain in its current vacant state (after the environmental clean-up) and would not contribute to the variety of affordable housing units in the hamlet of Croton Falls as per the settlement with the Town of North Salem. In this instance, the no-action alternative would not be leaving the site in a vacant, natural condition because the site has already been developed and later disturbed to remove contaminants from the soils. Since the development of up to five units of affordable (MIH) housing would be an attractive needed addition to the hamlet, the No Action alternative would remove a beneficial rehabilitation option from the site and Croton Falls.

The No Action Alternative represents no development and therefore, would result in no new traffic. Traffic levels, as they are primarily a function of external generators, would remain similar to existing conditions in the hamlet of Croton Falls, changing only in response to background growth factors.

This alternative would preserve the site and environs in their respective existing conditions and leave the site vacant. The advantages of this alternative include an elimination of most of the traffic and utility impacts discussed in this DSEIS. Disadvantages include the loss of potential tax revenues and the lack of up to five units of MIH housing. This no-action alternative would be inconsistent with the Amended Stipulation of Settlement.

7.0 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

The irreversible and irretrievable commitment of resources is a component of any new construction project. The commitment of the land as described in the proposed action will preclude future and further development. Other current area resources such as groundwater supply, wastewater assimilative capacity and road network capacity will not be available to serve future development.

7.1 NATURAL RESOURCES CONSUMED, CONVERTED OR MADE UNAVAILABLE FOR FUTURE USE

Existing open space will be traded for buildings, roads, driveways and landscaped areas. Existing soils will be altered and replaced with paving materials and structural foundations. Some of the present wildlife habitat, including a limited quantity of forest and wetland vegetation, will be irretrievably lost.

The proposed project will commit approximately 82.13 acres of vacant land to the development of a residential community containing 42 new homes and an active adult townhouse development containing 76 units in 19 townhouse buildings as well as the necessary infrastructure that will be needed to support the residential development. In addition, there will be two sets of recreational facilities for each of the residential components including a club house for each and accessory parking.

The Highgate-Woodlands Residential Development will consume, convert or otherwise make unavailable for further use, certain natural and manmade resources. These irreversible and irretrievable commitment of resources include:

1. Natural resources to produce the following materials for the construction of the roads, infrastructure, home and condominium townhouse sites:

    - Concrete
    - Soil and topsoil
    - Field stone
    - Asphalt
    - Glass
    - Steel
    - Timber
    - Processed fill and stone
    - Brick and ceramic
    - Paint

    Some of the materials listed above such as field stone, asphalt, glass, and wood will contain recycled material and may be recycled and reused in the future.

2. Conversion of approximately 63.13 acres of upland forest vegetation and 0.002 acres of wetland vegetation to grassed, vegetated embankments, maintained landscapes and permeable surface. Approximately 19.00 acres of the existing vegetation will be covered by impermeable surfaces such as roofs, driveways, roads and walkways.

3. Manpower/labor resources from the various trades required during construction will be unavailable for other uses. The need for construction workers must be viewed as a beneficial impact to the construction industry since it creates jobs. Employment of lawn maintenance, solid waste and road maintenance companies will also benefit from the Highgate-Woodlands Residential Project as soon as the first of the four phases is completed. There will also be a small number of permanent jobs created (approximately 5) to maintain the two residential communities. It is also anticipated that local service businesses will benefit from the influx of the new residents (estimated to be 309 persons) when the last of the four phases are complete. It is estimated that some of these jobs will be created with a year to a year and a half from the final approval date.

4. Energy resources such as fossil fuels and electricity will be consumed to operate construction equipment, heat the homes and condominium units as well as to power the automobiles of the new residents.

5. The loss of field stone walls may occur in construction or adaptive reuse of the material for the home and condominium site.

6. Groundwater resources will be consumed by the new residents from the construction of the new water system which will use the four existing on-site wells as its water supply source. Between 80 and 90 percent of the water used by the new residents of the two residential communities will be returned to the ground as treated effluent discharged to the common leaching field.

7. Wildlife habitat resources will be reduced, primarily for forest birds, forcing a reduction in the numbers by displacement of some avians to off-site, park, open space or conservation parcels. However, the vast majority of breeding birds will continue to find habitat, and migratory birds will continue to use the site.

8. Air quality will be insignificantly impacted from contaminants introduced into the air from additional auto use, home and condo heating and construction operations.

9. A limited quantity of forest and wetland vegetation, will be irretrievably lost; some of it may be currently used as habitat. Many of the detention/retention basins on the Highgate-Woodlands site will be enhanced with additional wetlands plants that will serve as replacement habitat.

7.2 MANMADE RESOURCES CONSUMED, CONVERTED OR MADE UNAVAILABLE FOR FUTURE USE

The use of non-renewable fossil fuels will be permanently lost both by the grading and construction equipment during construction and by the use of some petrochemical materials in the structures. Occupancies of the homes and condominium units will generate increased demand for heating fuel and electricity.

Commitments will be made for the use of Town services such as police, fire, EMTs, schools, as well as that of renewable and/or recyclable resources such as construction and building materials – timber, steel, concrete and glass. Labor resources will be committed to the need for construction jobs.