

3.6 Ecology and Wetland Resources

3.6.1 Introduction

The project site comprises approximately 196.9 acres that are covered by a combination of second growth woodlands, open meadow, hemlock forest, wetlands and watercourses. A significant portion of the southern parcel remains developed as the Raleigh Hotel, with associated outbuildings and parking areas. The Sheldrake Stream splits the two southern parcels.

Disturbance to portions of the existing on-site natural resources to develop the residential component of this project would affect the overall wildlife habitats on the property and the existing wildlife populations of the area. For these reasons, identifying and addressing potential impacts associated with development of the Raleigh and Heiden Hotel sites is required by the New York State Environmental Quality Review Act (SEQRA).

This section of the Raleigh and Heiden DEIS describes the existing terrestrial, aquatic and wetland natural resource characteristics present on the project site, the potential for environmental impacts associated with changes in those characteristics due to the proposed site developments, and measures proposed as necessary to offset potential impacts associated with the proposed development of the property.

Ecologists from Tim Miller Associates, Inc. (TMA) conducted site assessments through May, 2011, that have included two methods of field observation: 1) stationary observation posts, and 2) a series of random/zig-zag transects with observation, listening, and/or ground searches being conducted as site specific features changed along the walking transect route (e.g. upland hardwood forest slopes to wetland, to stream corridor, to open shrubland). The nature of random transects allowed the investigators to observe and actively investigate a greater variety of features of interest along a study transect, thereby allowing data to be collected from a greater variety of micro-habitats than might be observed using either formal linear or quadrant surveying techniques.

No threatened or endangered plant or animal species, nor significant natural communities nor significant habitats were identified on or adjacent to the site by the New York State Department of Conservation (NYSDEC) New York Natural Heritage Program (NHP) or by the United States Fish and Wildlife Service (USFWS) when queried by the TMA (see Agency correspondence in Appendix A). As discussed below, site observations were consistent with the agencies' correspondence.

3.6.2 Existing Vegetation

Vegetation Observed and Expected

The project site extends across four general habitat/ecosystem types, including second growth hardwood forests, hemlock forests, successional old field and forested wetlands. These statewide community types are broadly described in the NYSDEC publication: "Ecological Communities of New York State."¹ The broad community types existing on the site are not unique to the area or the region. Figure 3.6-1 presents an aerial view of the project site showing

¹Edinger, G.J., et al (Eds.). 2002. Ecological Communities of New York State. Second Edition. NY NHP, NYSDEC. Albany, NY. 136 pp.

the existing vegetative cover within and immediately adjacent to a highlighted outline of the property. The community types of the project site are described further in this section. Table 3.6-1, below presents a list of vegetation observed on the site throughout all of the existing habitat types. The list also includes other regional species that were not observed but that may be expected to be present on the site. SEQRA does not require an exhaustive inventory of resources but only requires a reasonable review in relation to the expected significance of impacts.

Table 3.6-1 List of Observed and Expected Vegetation at Raleigh and Heiden Properties	
Common Name (Scientific Name)	
FORBS, FERNS AND GRASSES	
Alsike clover (<i>Trifolium hybridum</i>)	Jack in the Pulpit (<i>Arisaema atrorubens</i>)
American bugleweed (<i>Lycopus americanus</i>)	Lady fern (<i>Athyrium filix-femina</i>)
Annual fleabane (<i>Erigeron annuus</i>)	Mad-dog skullcap (<i>Scutellaria laterifolia</i>)
Beech-drops (<i>Epifagus virginiana</i>)	Marginal woodfern (<i>Dryopteris marginalis</i>) *
Birdsfoot trefoil (<i>Lotus corniculatus</i>) *	Marsh marigold (<i>Caltha palustris</i>)
Bladder campion (<i>Silene cucubalus</i>)	Marsh St. John's wort (<i>Triadenum virginicum</i>) *
Bloodroot (<i>Sanguinaria canadensis</i>)	Mild water pepper (<i>Polygonum hydropiperoides</i>)
Blue-stem goldenrod (<i>Solidago caesia</i>)	Moneywort loosestrife (<i>Lysimachia nummularia</i>)
Bracken fern (<i>Pteridium aquilinum</i>) *	Mugwort (<i>Artemisia vulgaris</i>) *
Broad dock (<i>Rumex obtusifolius</i>)	New England aster (<i>Symphyotrichum novae-angliae</i>) *
Broadleaf cattail (<i>Typha latifolia</i>) *	New York aster (<i>Symphyotrichum novae-belgii</i>)
Brownish beakrush (<i>Rhynchospora capitellata</i>)	Northern willowherb (<i>Epilobium glandulosum</i>)
Bur-marigold (<i>Bidens cernua</i>)	Orange daylily (<i>Hemerocallis fulva</i>)
Butter-and-eggs (<i>Linaria vulgaris</i>)	Panicled aster (<i>Symphyotrichum lanceolatum</i>)
Canada goldenrod (<i>Solidago canadensis</i>) *	Partridgeberry (<i>Mitchella repans</i>)
Canada mayflower (<i>Maianthemum canadense</i>)	Path rush (<i>Juncus tenuis</i>)
Canada thistle (<i>Cirsium arvense</i>) *	Peat moss (<i>Sphagnum</i>) *
Cespitose smartweed (<i>Polygonum cespitosum</i>)	Pennsylvania bittercress (<i>Cardamine pensylvanica</i>)
Chicory (<i>Cichorium intybus</i>)	Pilewort (<i>Erechtites hieraciifolia</i>)
Christmas fern (<i>Polystichum acrostichoides</i>)	Pokeweed (<i>Phytolacca americana</i>)
Cinnamon fern (<i>Osmunda cinnamomea</i>) *	Purple loosestrife (<i>Lythrum salicaria</i>) *
Cinquefoil (<i>Potentilla</i>) *	Purpleleaf willowherb (<i>Epilobium coloratum</i>)
Clearweed (<i>Pilea pumila</i>)	Queen Anne's lace (<i>Daucus carota</i>)
Coltsfoot (<i>Tussilago farfara</i>)	Red clover (<i>Trifolium pratense</i>)
Common blue violet (<i>Viola papilionacea</i>)	Reed canary grass (<i>Phalaris arundinacea</i>) *
Common burdock (<i>Arctium minus</i>)	Rough bedstraw (<i>Galium asprellum</i>)
Common dandelion (<i>Taraxacum officinale</i>) *	Royal fern (<i>Osmunda regalis</i>) *
Common evening primrose (<i>Oenothera biennis</i>)	Selfheal (<i>Prunella vulgaris</i>) *
Common heartleaf aster (<i>Symphyotrichum cordifolium</i>) *	Sensitive fern (<i>Onoclea sensibilis</i>) *
Common milkweed (<i>Asclepias syriaca</i>)	Shallow sedge (<i>Carex lurida</i>)
Common mullein (<i>Verbascum thapsus</i>) *	Silverrod (<i>Solidago bicolor</i>)

Table 3.6-1
List of Observed and Expected Vegetation at Raleigh and Heiden Properties

Common Name (<i>Scientific Name</i>)	
Common plantain (<i>Plantago major</i>)	Skunk cabbage (<i>Symplocarpus foetidus</i>)
Common polypody (<i>Polypodium vulgare</i>)	Small white aster (<i>Symphotrichum racemosum</i>) *
Common ragweed (<i>Ambrosia artemisiifolia</i>)	Soft rush (<i>Juncus effuses</i>) *
Common reed (<i>Phragmites australis</i>) *	Softstem bulrush (<i>Scirpus validus</i>) *
Crested woodfern (<i>Dryopteris cristata</i>)	Spinulose wood fern (<i>Dryopteris carthusiana</i>)
Deer-tongue grass (<i>Panicum clandestinum</i>)	Spotted knapweed (<i>Centaurea maculosa</i>)
Deptford pink (<i>Dianthus armeria</i>)	Spotted touch-me-not (<i>Impatiens capensis</i>)
English plantain (<i>Plantago lanceolata</i>)	Spotted wintergreen (<i>Chimaphila maculata</i>)
Evergreen wood fern (<i>Dryopteris intermedia</i>) *	Three-square rush (<i>Scirpus pungens</i>)
False hellebore (<i>Veratrum viride</i>) *	Trout lily (<i>Erythronium americanum</i>) *
Field garlic (<i>Allium vineale</i>)	Tussock sedge (<i>Carex stricta</i>)
Flattop goldenrod (<i>Euthamia gaminifolia</i>)	Virginia stickseed (<i>Hackelia virginiana</i>)
Fox sedge (<i>Carex vulpinoides</i>)	White avens (<i>Geum canadense</i>)
Fringed sedge (<i>Carex crinita</i>)*	White wood aster (<i>Eurybia divaricata</i>) *
Garlic mustard (<i>Alliaria petiolata</i>)*	Wild basil (<i>Clinopodium vulgare</i>)
Gill over the ground (<i>Glechoma hederacea</i>)	Wild lettuce (<i>Lactuca virosa</i>) *
Grape (<i>Vitis</i> spp.)	Wild strawberries (<i>Fragaria virginiana</i>) *
Greater bladder sedge (<i>Carex intumescens</i>)	Wintergreen (<i>Gaultheria procumbens</i>) *
Ground pine (<i>Lycopodium obscurum</i>)	Woolgrass (<i>Antheophora pubescens</i>) *
Hayscented fern (<i>Dennstaedtia punctilobula</i>) *	Woolly grass bulrush (<i>Scirpus cyperinus</i>)
Indian cucumber root (<i>Medeola virginiana</i>)	Wrinkled-leaved goldenrod (<i>Solidago rugosa</i>)
Indian tobacco (<i>Lobelia inflata</i>)	Yarrow (<i>Achillea millefolium</i>) *
Interrupted fern (<i>Osmunda claytoniana</i>) *	
TREES AND SHRUBS	
Allegheny blackberry (<i>Rubus allegheniensis</i>) *	Norway spruce (<i>Picea abies</i>) *
American beech (<i>Fagus grandifolia</i>) *	Northern catalpa (<i>Catalpa speciosa</i>) *
American elm (<i>Ulmus americana</i>)	Pignut hickory (<i>Carya glabra</i>)
Apple Tree (<i>Malus domestica</i>)*	Pin oak (<i>Quercus palustris</i>)
Arborvitae (<i>Thuja occidentalis</i>) *	Prickly dewberry (<i>Rubus flagellaris</i>)
Big tooth aspen (<i>Populus grandidentata</i>)	Princess pine (<i>Lycopodium clavatum</i>) *
Black birch (<i>Betula lenta</i>)	Pussy willow (<i>Salix discolor</i>) *
Black cherry (<i>Prunus serotina</i>) *	Quaking aspen (<i>Populus tremuloides</i>) *
Black gum (<i>Nyssa sylvatica</i>)	Red-osier dogwood (<i>Cornus sericea</i>)
Black oak (<i>Quercus velutina</i>)	Red maple (<i>Acer rubrum</i>) *
Black willow (<i>Salix nigra</i>) *	Red oak (<i>Quercus rubra</i>)
Bristly dewberry (<i>Rubus hispida</i>) *	Red pine (<i>Pinus resinosa</i>) *
Chokecherry (<i>Prunus virginiana</i>)	Red sorrel (<i>Rumex acetosella</i>) *
Common buckthorn (<i>Rhamnus cathartica</i>)	Rosebay rhododendron (<i>Rhododendron maximum</i>) *
Common elderberry (<i>Sambucus nigra</i>) *	Scotch pine (<i>Pinus sylvestris</i>)

Table 3.6-1 List of Observed and Expected Vegetation at Raleigh and Heiden Properties	
Common Name (Scientific Name)	
Crabapple (<i>Malus</i> spp.) *	Shadbush (<i>Amelanchier</i> spp.)
Eastern cottonwood (<i>Populus anadens</i>) *	Sheep laurel (<i>Kalmia angustifolia</i>) *
Eastern hemlock (<i>Tsuga canadensis</i>) *	Silky dogwood (<i>Cornus amomum</i>) *
Eastern hop hornbeam (<i>Ostrya virginiana</i>) *	Southern arrowwood (<i>Viburnum dentatum</i>)
Eastern red cedar (<i>Juniperus virginiana</i>)	Speckled alder (<i>Alnus rugosa</i>)
Gray dogwood (<i>Cornus foemina</i>)	Spicebush (<i>Lindera benzoin</i>)
Green ash (<i>Fraxinus pennsylvanica</i>) *	Staghorn sumac (<i>Rhus typhina</i>) *
Grey birch (<i>Betula populifolia</i>)	Steeplebush spirea (<i>Spirea tomentosa</i>)
Hawthorn (<i>Crataegus</i> spp.)	Striped maple (<i>Acer pennsylvanicum</i>) *
Highbush blueberry (<i>Vaccinium corymbosum</i>) *	Summersweet clethra (<i>Clethra alnifolia</i>)
Huckleberry (<i>Vaccinium parvifolium</i>) *	Sugar maple (<i>Acer saccharum</i>) *
Ironwood (<i>Carpinus caroliniana</i>) *	Tree of Heaven (<i>Ailanthus altissima</i>)
Japanese barberry (<i>Berberis thunbergii</i>) *	Red Trillium (<i>Trillium erectum</i>) *
Juniper (<i>Juniperus communis</i>) *	White Birch (<i>Betula papyrifera</i>) *
Larch (<i>Larix decidua</i>) *	White ash (<i>Fraxinus americana</i>) *
Leatherleaf viburnum (<i>Viburnum rhytidophyllum</i>)	White oak (<i>Quercus alba</i>)
Lowbush blueberry (<i>Vaccinium myrtilloides</i>) *	White pine (<i>Pinus strobus</i>) *
Meadowsweet (<i>Spiraea alba</i>)	Winterberry (<i>Ilex verticillata</i>)
Morrow's honey suckle (<i>Lonicera morrowii</i>) *	Witchhazel (<i>Hamamelis virginiana</i>)
Mountain laurel (<i>Kalmia latifolia</i>)	Yellow birch (<i>Betula alleghaniensis</i>) *
Multiflora rose (<i>Rosa multiflora</i>) *	
Notes: This list represents species that could potentially inhabit this site, in addition to observed species. It is not, however, an exhaustive list. * Plants identified during site visits: July 9, 2009; April 21, 2011; May 6, 2011. Source: Tim Miller Associates, 2011	

Second-growth Forests – Northern Hardwood and Hemlock

A portion of the subject site as shown on Figure 3.6-1 is vegetated with second-growth mixed forests that are typical of those across much of this region of the county. A mixed successional hardwood community develops in this region where lands had been cleared for farming, logging or otherwise disturbed in the distant past but then left fallow. The dominant overstory trees in an early Successional Northern Hardwood Forest are usually any two or more of the following: poplars and aspens (*Populus* spp.), birches (*Betula* spp.), cherries (*Prunus* spp.), red maple, ashes (*Fraxinus* spp), and elms (*Ulmus* spp.). This ecosystem type is recognized as being both globally and locally secure. Second growth Hemlock-Northern Hardwood Forests occur in ravines, on cool slopes and on moist, well-drained sites near wetlands. Hemlocks (*Tsuga canadensis*) are variable codominants in such forests, interspersed with a mix of other coniferous and/or deciduous species including American beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), red maple, black cherry (*Prunus serotina*), white pine (*Pinus strobus*), yellow birch (*Betula alleghaniensis*), black birch (*Betula lenta*), red oak (*Quercus rubra*) and basswood (*Tilia americana*). This ecosystem type is also recognized as being apparently secure

both globally and locally. On the Raleigh and Heiden sites, the dominant deciduous trees mixed in with the hemlocks are beech, red maple and yellow birch.

Each of these forest community types is represented on specific portions of the project site. On flatter areas of the site, particularly closer to wetland areas and the Sheldrake corridor, the dominant tree species is eastern hemlock. In the few areas where the canopy is not too dense, *Rhododendron maximum* and mountain laurel exist in the shrub layer. There is no herbaceous layer in these areas. In those areas of the site where there is greater slope, shallower soils and drier substrate the forest is dominated by deciduous species, including red maple, American beech and sugar maple. Understory trees and shrubs include mountain laurel, lowbush blueberry, Eastern hophornbeam and seedlings and saplings of the overstory trees. Groundcover species include lowbush blueberry, hayscented fern and poison ivy.

The lowest elevations of the parcels and the wetlands have a tree canopy layer that may be dominated by red maples and black or yellow birch or by hemlocks, with an understory that is comprised primarily of the saplings of the overstory trees.

The presence of old logging roads, decaying sawn stumps and multi-stemmed regrowth of some trees indicates that portions of the site has been partially logged in the recent past. In spite of earlier logging activities, some trees located in the areas closest to the Sheldrake Stream are present as large specimens.

Successional Old Field/Active Hotel Area

On the western properties, which for many years operated as seasonal hotels, the majority of the land to be developed is open, cleared land. The majority of the land within the proposed Area of Disturbance ("AOD") has been disturbed previously. These areas now retain structures and landscape features associated with the hotel, parking facilities, swimming pools and sewage treatment plant. Successional Old Field habitats have developed over portions of these areas, as described below. Following the demolition of the Heiden Hotel after the fire, much of this area is progressing through "old field" succession, with a mix of grasses, herbaceous vegetation and opportunistic shrub species. Successional Old Field habitat is a relatively short-lived community dominated by shrubs and grasses, with shrubs providing less than 50 percent of the cover in the community. Vegetation within this area include Queen Anne's lace, spotted knapweed, mullein, chicory and a variety of clovers, goldenrods, asters and grasses (both turf and bunch-forming).

Around the Raleigh Hotel, a diverse mix of landscape plants, including trees, shrubs and flowering plants have been maintained over the years. One area of several acres on the north end of the Raleigh property is maintained as an athletic field.

Forested and Emergent Wetlands

The on-site forested wetlands contain a mixture of tree canopy species dominated by red maple, birches and oaks (in the deciduous forested wetlands) and hemlocks in the evergreen forested wetlands. The deciduous wetlands shrubs observed include ironwood, spicebush, witch-hazel and silky dogwood. This community type generally maintains a closed tree canopy with a moderate amount of understory and herbaceous vegetation. Herbaceous plants in the wetlands include skunk cabbage, sensitive fern and sedges. Within the hemlock wetlands, there is very little herbaceous growth due to the dense canopy. The Sheldrake Stream corridor, a

tributary to the Neversink River, splits the east and west parts of the site and is associated with the hemlock wetlands.

The emergent wetland and floodplain community in the northeast part of the site supports a wider variety of hydrophytic vegetation. The transition area from wetland to upland includes red maple, rhododendrons and willows. The herbaceous layer is a mosaic of species with areas dominated by grasses, sedges, asters and goldenrods.

Agency Protected Vegetation and Communities

No federally listed rare or endangered plant species were identified for the site by the USFWS. Nor were any state-listed threatened or endangered or rare plant species or plant communities identified by the NYSDEC in the agency's NHP database noted to occur on or in the immediate vicinity of the project site. No such plants were observed during the site surveys performed for this report.

3.6.3 Existing Fish and Wildlife

A variety of wildlife habitats occur on the property within the several distinct ecological communities present across the site. None of these habitats or populations are unique to the area or specifically to the project site. Vegetative covers of these habitat areas are described above. Populations of regional wildlife species are known or can be expected to occur within these habitats, as described below. The NHP database search for endangered, threatened, or special concern species of fauna did not identify any species in the area.

Wildlife Habitat: Second-growth Hardwood Forests

This community type includes mature and semi-mature tree species that provide food as mast (beech, oaks, hickories), forage or browse for deer, black bear and other mammals and also provide cover in the leafy upper canopy for smaller wildlife species. Deadfalls from trees, including limbs and stumps, were commonly observed across the site. Populations of insects, earthworms, snails and slugs within dead and decaying wood and in the leaf litter collectively form the basis for the food chain on this site. The proximity of the woodlands to wetland areas provides additional benefit to wildlife by offering a water source and additional forage opportunities. A number of trees that are either standing dead or damaged provide potential habitat for cavity dwellers (e.g., woodpeckers, owls, flying squirrels and chipmunks).

Signs of deer and raccoon were observed throughout this habitat type, primarily near the wetland edges. It is likely that deer migrate through the wooded portion of the site, as well as utilizing the more open areas for foraging. The project site and surrounding properties contain "edge habitats" preferred by feeding deer.

Wildlife Habitat: Successional Old Field

In areas of successional field, there is no tree canopy and only isolated shrubs, which currently provides an open grassy environment and dense herb layer. These conditions provide an open canopy with habitat for smaller mammals, reptiles, some amphibians and many species of birds, particularly songbirds. Shrubber areas provide thickets made up of raspberries, blackberries, elderberries, viburnums and multiflora rose. Indicators of higher predatory species (e.g., coyote, bobcat, fox) have been found on the site, and habitat does exist that would encourage use by such species, and food sources are readily available. The open fields seasonally support large

numbers of grasshoppers, butterflies and other insects that provide forage for a wide variety of birds.

Wildlife Habitat: Forested and Emergent Wetlands

Of the larger species likely to use the site, signs of deer and raccoon were observed throughout the wooded wetland areas. It is likely that the deer migrate through the wooded wetland while also utilizing the on-site field areas and nearby residential lawn areas.

The wooded wetlands also provide habitat for a number of other animal species as identified in Table 3.6-2. Small reptiles and amphibians living within the wetland areas offer an additional food source to some of the larger omnivorous mammals that may be present (e.g., raccoons, fox). Tree coverage over portions of the wetlands provides shade that moderates temperature fluctuations on the relatively undeveloped woodland floor. In addition, the vegetation along the drainageways through the wetlands moderates other water quality characteristics as the water is conveyed to the Sheldrake Stream.

In the hemlock swamp the habitat is primarily in the canopy, with songbirds and owls using the trees for nesting and cover. The open woods below the canopy serve as open areas for animal movement but provide little in the way of cover or food.

Stream Corridor

Populations of small reptiles, amphibians and invertebrates living within the stream corridors provide additional food resources to some of the larger omnivorous mammals that may be present. The Sheldrake Stream on the project site supports smaller fish species, primarily minnows (Cyprinidae). Aquatic stream macroinvertebrates (caddisflies, mayflies) were also noted in the on-site stream associated with the floodplain and wetland in the northeast corner of the site.

Wildlife Observed and Expected

Table 3.6-2 includes a list of wildlife species observed and expected to use the project site. The DEIS wildlife list includes species observed by TMA personnel during the various site visits as well as other species that could potentially occur on the site. The wildlife surveys were based on observations made in the field and did not include trapping or other invasive techniques that would be required to attempt to estimate wildlife populations on site. Based on the field surveys and similar surveys conducted in the region, the typically dominant mammalian species on such a site would include white-tailed deer, black bear, coyote, red fox, gray squirrel, raccoon, striped skunk, chipmunk, mice, shrews and voles. As noted in the preceding section, SEQRA does not require an exhaustive inventory of resources but only requires a reasonable review in relation to the expected significance of impacts, and it is noted that no State- or Federally-listed rare or endangered species were observed on the site during recent field investigations.

Table 3.6-2 Wildlife – Observed and Regional Species	
Common name (<i>Scientific name</i>)	
Mammals	
Black bear (<i>Ursus americanus</i>)	Opossum (<i>Didelphis virginiana</i>)
Deer mouse (<i>Peromyscus maniculatus</i>)	Porcupine (<i>Erithizon dorsatum</i>) *
Eastern chipmunk (<i>Tamias striatus</i>)	Raccoon (<i>Procyon lotor</i>)
Eastern cottontail (<i>Sylvilagus floridanus</i>)	Red bat (<i>Lasiurus borealis</i>)
Eastern coyote (<i>Canis latrans</i>) *	Red fox (<i>Vulpes vulpes</i>) *
Eastern mole (<i>Scalopus aquaticus</i>)	Red squirrel (<i>Tamiasciurus hudsonicus</i>)
Gray fox (<i>Urocyon cinereoargenteus</i>)	Short-tail shrew (<i>Blarina brevicauda</i>)
Gray squirrel (<i>Sciurus carolinensis</i>) *	Southern flying squirrel (<i>Glaucomys volans</i>)
House mouse (<i>Mus musculus</i>)	Striped skunk (<i>Mephitis mephitis</i>)
Little brown bat (<i>Myotis lucifugus</i>)	White-footed mouse (<i>Peromyscus leucopus</i>)
North American Beaver (<i>Castor canadensis</i>) *	White tail deer (<i>Odocoileus virginianus</i>) *
Meadow vole (<i>Microtus pennsylvanicus</i>)	Woodchuck (<i>Marmota monax</i>)
Reptiles	
Garter snake (<i>Thamnophis sirtalis</i>)	Snapping turtle (<i>Chelydra serpentina</i>)
Green snake (<i>Liochiorophis vernalis</i>)	Wood turtle (<i>Clemmys insculpta</i>)
Painted turtle (<i>Chrysemys picta</i>)	
Amphibians	
American toad (<i>Bufo americanus</i>)	Red-backed salamander (<i>Plethodon cinereus</i>)*
Bullfrog (<i>Rana catesbeiana</i>)	Red-spotted newt or Eastern Newt (<i>Notophthalmus viridescens</i>) *
Dusky salamander (<i>Desmognathus</i> spp.)	Red salamander (<i>Pseudotriton ruber</i>)
Four-toed salamander (<i>Hemidactylium scutatum</i>)	Slimy salamander (<i>Plethodon glutinosus</i>)
Gray treefrog (<i>Hyla versicolor</i>)	Wood frog (<i>Rana sylvatica</i>) *
Green frog (<i>Rana clamitans</i>) *	Spring salamander (<i>Gyrinophilus porphyriticus</i>)
Pickerel frog (<i>Rana palustris</i>)	Spring peeper (<i>Pseudocris crucifer</i>)
Leopard frog (<i>Rana pipiens</i>)	Two-lined salamander (<i>Eurycea bislineata</i>)
Notes: This list represents many species that could potentially inhabit this site in addition to observed species. It is not, however, an exhaustive list. * Indicates species observed directly or by signs (e.g. tracks or scat) during field surveys on July 9, 2009, April 21, 2011, and May 6, 2011. Prepared by: Tim Miller Associates, Inc., 2011.	

Reptiles and Amphibians

Reptile and amphibian species were included in Table 3.6-2 either if they were directly observed on the property or if there are known populations in eastern Sullivan County (Woodridge USGS Quad) generally, as indicated in the NYSDEC Atlas of Amphibian and Reptile Atlas². The NYSDEC Atlas identifies known locations of amphibians and reptiles based on field survey observations recorded from 1990 through 1998.

Birds

Some common bird species were identified incidental to performing other environmental surveys on the site during 2009-2011. These species included American crow, black-capped chickadee, blue jay, sparrow, Northern cardinal, woodpecker, nuthatch, red-tailed hawk, Canada geese and wild turkey. Dominant avian species in this section of the county would include resident songbirds (e.g., chickadee, nuthatch, vireos, cardinals and warblers), woodpeckers, blue jay, American crow, mourning dove, mockingbird and wild turkey. Table 3.6-3 also includes bird species that were not observed but use habitat similar to that present on the property and that are also included in DEC survey information presented in their New York State Breeding Bird Atlas³ (BBA) for the area of the project site.

NYSDEC Breeding Bird Atlas

Table 3.6-3 provides a list of bird species which have been known to or could reasonably be expected to utilize habitats within the vicinity of the project site. The list of birds included in Table 3.6-3 was derived from the NYS BBA and based on the field observations of the ecological consultant and knowledge of the listed birds' distribution and habitat requirements. The BBA is a comprehensive, statewide bird survey that documents the breeding birds identified by trained volunteers in three-mile square blocks throughout two survey periods: 1980-1985 and 2000-2005.

The Raleigh and Heiden project site boundaries are contained within BBA Block 5261B. Appendix D, BBA (data and map) provides a map for this block and the individual species lists for each of the two survey periods. For each bird species observed, the survey species lists include data on the breeding behavior observed, the year the bird was observed and the state protection status for each species. It is important to note that the listing of a particular bird in a breeding block does not mean that the species would breed everywhere in that block. Therefore the list for each block would include a greater number of breeding birds than would utilize any given site within that block, as each species breeds in specific habitats most suitable to their species. The BBA lists were used to generate the broadest list of species expected to use the various habitats available on the project site.

According to the USFWS website of listed threatened and endangered species none of the species in Table 3.6-3 are afforded protection at the federal level under the Endangered Species Act. Of the birds identified on the list, three are listed by the NYSDEC as protected (Species of Special Concern). These are the Cooper's hawk, red-shouldered hawk and the sharp-shinned hawk. A Species of Special Concern is defined by NYSDEC as "any native

²NYSDEC. 2006. New York State Amphibian and Reptile Atlas Project 1990-1998.
www.dec.state.ny.us/website/dfwmr/wildlife/herp/

³New York State Department of Environmental Conservation (NYSDEC). 2007. NYS Breeding Bird Atlas
website: www.dec.state.ny.us/apps/bba/results/.

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 protection under State law and are identified on the state listings for informational purposes only.

**Table 3.6-3
Birds - Observed and Regional Species**

Common Name	Scientific Name	Common Name	Scientific Name
Alder Flycatcher	<i>Empidonax alnorum</i>	Green Heron	<i>Butorides virescens</i>
American Black Duck	<i>Anas rubripes</i>	Hairy Woodpecker	<i>Picoides villosus</i>
American Crow *	<i>Corvus brachyrhynchos</i>	Hermit Thrush *	<i>Catharus guttatus</i>
American Goldfinch *	<i>Carduelis tristis</i>	House Finch	<i>Carpodacus mexicanus</i>
American Kestrel	<i>Falco sparverius</i>	House Sparrow	<i>Passer domesticus</i>
American Redstart *	<i>Setophaga ruticilla</i>	House Wren *	<i>Troglodytes aedon</i>
American Robin *	<i>Turdus migratorius</i>	Indigo Bunting *	<i>Passerina cyanea</i>
American Woodcock	<i>Scolopax minor</i>	Killdeer	<i>Charadrius vociferus</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Least Flycatcher	<i>Empidonax minimus</i>
Baltimore Oriole *	<i>Icterus galbula</i>	Louisiana Waterthrush *	<i>Seiurus motacilla</i>
Bank Swallow	<i>Riparia riparia</i>	Magnolia Warbler *	<i>Dendroica magnolia</i>
Barn Swallow *	<i>Hirundo rustica</i>	Mallard	<i>Anas platyrhynchos</i>
Barred Owl *	<i>Strix varia</i>	Mourning Dove *	<i>Zenaida macroura</i>
Belted Kingfisher	<i>Ceryle alcyon</i>	Nashville Warbler	<i>Vermivora ruficapilla</i>
Black-and-white Warbler	<i>Mniotilta varia</i>	Northern Cardinal	<i>Cardinalis cardinalis</i>
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Northern Flicker *	<i>Colaptes auratus</i>
Black-capped Chickadee *	<i>Poecile atricapillus</i>	Northern Mockingbird *	<i>Mimus polyglottos</i>
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>
Black-throated Green Warbler *	<i>Dendroica virens</i>	Northern Saw-whet Owl	<i>Aegolius acadicus</i>
Blackburnian Warbler *	<i>Dendroica fusca</i>	Northern Waterthrush	<i>Seiurus noveboracensis</i>
Blue-headed Vireo	<i>Vireo solitarius</i>	Ovenbird *	<i>Seiurus aurocapilla</i>
Blue-winged Warbler	<i>Vermivora pinus</i>	Pileated Woodpecker	<i>Dryocopus pileatus</i>
Blue Jay *	<i>Cyanocitta cristata</i>	Pine Warbler	<i>Dendroica pinus</i>
Bobolink	<i>Dolichonyx oryzivorus</i>	Prairie Warbler	<i>Dendroica discolor</i>
Broad-winged Hawk	<i>Buteo platypterus</i>	Purple Finch	<i>Carpodacus purpureus</i>
Brown-headed Cowbird	<i>Molothrus ater</i>	Red-bellied Woodpecker *	<i>Melanerpes carolinus</i>
Brown Creeper	<i>Certhia americana</i>	Red-breasted Nuthatch	<i>Sitta canadensis</i>
Brown Thrasher	<i>Toxostoma rufum</i>	Red-eyed Vireo	<i>Vireo olivaceus</i>
Canada Goose	<i>Branta canadensis</i>	Red-shouldered Hawk	<i>Buteo lineatus</i>
Canada Warbler	<i>Wilsonia canadensis</i>	Red-tailed Hawk	<i>Buteo jamaicensis</i>
Carolina Wren	<i>Thryothorus ludovicianus</i>	Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Cedar Waxwing *	<i>Bombycilla cedrorum</i>	Rock Pigeon	<i>Columba livia</i>
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>

⁴ New York State Department of Environmental Conservation. 2006. List of Endangered, Threatened and Special Concern Fish & Wildlife Species of New York State webpage:
<http://www.dec.state.ny.us/website/dfwmr/wildlife/endspec/etsclist.html>

**Table 3.6-3
Birds - Observed and Regional Species**

Chimney Swift	<i>Chaetura pelagica</i>	Ruby-throated Hummingbird	<i>Archilochus colubris</i>
Chipping Sparrow *	<i>Spizella passerina</i>	Ruffed Grouse	<i>Bonasa umbellus</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	Scarlet Tanager	<i>Piranga olivacea</i>
Common Grackle	<i>Quiscalus quiscula</i>	Sharp-shinned Hawk	<i>Accipiter striatus</i>
Common Merganser	<i>Mergus merganser</i>	Song Sparrow *	<i>Melospiza melodia</i>
Common Raven	<i>Corvus corax</i>	Spotted Sandpiper	<i>Actitis macularia</i>
Common Yellowthroat *	<i>Geothlypis trichas</i>	Swamp Sparrow	<i>Melospiza georgiana</i>
Cooper's Hawk	<i>Accipiter cooperii</i>	Tree Swallow	<i>Tachycineta bicolor</i>
Dark-eyed Junco *	<i>Junco hyemalis</i>	Tufted Titmouse *	<i>Baeolophus bicolor</i>
Downy Woodpecker *	<i>Picoides pubescens</i>	Turkey Vulture *	<i>Cathartes aura</i>
Eastern Bluebird	<i>Sialia sialis</i>	Veery *	<i>Catharus fuscescens</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Warbling Vireo	<i>Vireo gilvus</i>
Eastern Meadowlark	<i>Sturnella magna</i>	White-breasted Nuthatch *	<i>Sitta carolinensis</i>
Eastern Phoebe *	<i>Sayornis phoebe</i>	White-throated Sparrow	<i>Zonotrichia albicollis</i>
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	Wild Turkey *	<i>Meleagris gallopavo</i>
Eastern Wood-Pewee *	<i>Contopus virens</i>	Willow Flycatcher	<i>Empidonax traillii</i>
European Starling *	<i>Sturnus vulgaris</i>	Winter Wren	<i>Troglodytes troglodytes</i>
Field Sparrow	<i>Spizella pusilla</i>	Wood Duck	<i>Aix sponsa</i>
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	Wood Thrush *	<i>Hylocichla mustelina</i>
Gray Catbird *	<i>Dumetella carolinensis</i>	Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>
Great Blue Heron	<i>Ardea herodias</i>	Yellow-billed Cuckoo	<i>Coccyzus americanus</i>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	Yellow-rumped Warbler	<i>Dendroica coronata</i>
Great Horned Owl	<i>Bubo virginianus</i>	Yellow-throated Vireo	<i>Vireo flavifrons</i>
		Yellow Warbler	<i>Dendroica petechia</i>

Notes:

This list represents many species that could potentially inhabit this site in addition to observed species. It is not, however, an exhaustive list.

* Indicates species observed directly or by song during field surveys on July 9, 2009, April 21, 2011, and May 6, 2011.

Sources: Tim Miller Associates, Inc., 2011; NYSDEC Breeding Bird Atlas Block 5261B, 1980-1985 and 2000-2005.

Agency Protected or Special Concern Wildlife

No federally listed rare or endangered wildlife species were identified for the site by the USFWS. No state-listed threatened or endangered wildlife species were identified by the NYSDEC in the agency's NHP database as occurring or possibly occurring on or in the immediate vicinity of the project site. No such wildlife species were observed during the site surveys performed for this report.

3.6.4 Wetlands

There are delineated wetlands and delineated watercourses associated with the wetlands on the project site. Table 3.6-4 lists the wetlands on site by type and dominant vegetation. Refer to

Figure 3.6-2, Wetlands Map for the location and interconnections of these wetland and watercourse resources.

Table 3.6-4 Site Wetlands				
Wetland ID	Size	Location	Type	Vegetation
A	.18	East Raleigh property	Slope/seepage	Hemlock forest
B	.03	East Raleigh property	Slope/seepage	Hemlock forest
C	.31	East Raleigh property	Riparian	Hemlock forest
D	.33	Sheldrake corridor	Riparian	Floodplain marsh
F	.39	East Raleigh property	Slope/seepage	Hemlock/deciduous forest
G	.14	East Raleigh property	Slope/seepage	Deciduous forest
H	.70	West Raleigh property	Depressional	Deciduous shrub/scrub
J1	2.54	West Raleigh property	Slope/seepage	Hemlock forest
J2	.07	East Raleigh property	Slope/seepage	Hemlock/deciduous forest
K1	.38	West Raleigh property	Slope/seepage	Hemlock forest
K2	.22	East Raleigh property	Slope/seepage	Deciduous forest
L	.29	East Raleigh property	Slope/seepage	Hemlock/deciduous forest
S	1.65	West Raleigh property	Riparian/Floodplain	Floodplain marsh
R	1.03	West Raleigh property	Depressional	Hemlock/rhododendron swamp

Wetlands A, B, F, J2, L, G and K2 are small wetlands associated with hillside seepage on the eastern property (east of the Sheldrake Stream). Groundwater seepage from the slope creates narrow drainageways that develop hydric soils and vegetation communities dominated by hydrophytic vegetation. Generally these areas are wet during the early parts of the growing season, when groundwater elevations are high and there is a significant inflow of snow melt and spring rains. By July the source of surface water is usually gone, although saturation soil conditions may persist. On the Raleigh site these areas are dominated by deciduous and coniferous tree species.

Wetlands C and D are riparian wetlands associated with the Sheldrake Stream. Saturated soil conditions adjacent to the stream and occasional overbank flow contribute adequate hydrology for the development of wetland plant communities. Shadbush, rhododendrons and other common streambank shrubs are the dominant vegetation in these areas.

Wetland H has developed in a shallow depressional area adjacent to the Raleigh Hotel development. It is presumed that historically this area was disturbed by hotel related activities. The wetland is dominated by second growth tree species (quaking aspen, red maple, tamarack) and numerous shrub species.

Wetland R is a depressional area at the east side of the Heiden Hotel property, and is dominated by hemlocks and rhododendrons. Runoff from the adjacent wooded hillside to the west contributes the requisite hydrology for the development of this wetland.

Wetland S is a floodplain marsh associated with the un-named stream that drains DEC Wetland MO-44. This is the only State regulated wetland on the site and no development is proposed within 100 feet of the wetland boundary.

Wetlands J1 and K1 are parts of a larger hemlock swamp that extends off site to the south. Most of the runoff from the Raleigh Hotel site drains through this wetland to the Sheldrake Stream just south of the site.

All surface waters of New York State are assigned rankings by the NYSDEC with those having the highest quality and value assigned to "Class A" waters and those with the lowest to "Class D" waters. Surface water classifications are presented in Title 6 of the New York State Conservation Law, Parts 800-941.

The NYSDEC classifies the adjacent reach of the Sheldrake Stream as a Class "B" water body and the un-named tributary from Wetland MO-44 as a Class "B" water body. The best usages of Class B waters are primary and secondary contact recreation and fishing. These waters shall be suitable for fish propagation and survival. The unnamed tributary from MO-44 flows through the project site in two locations; in the northeast corner behind the former Heiden Hotel and in the northeast corner of the Raleigh Hotel property.

All of the wetlands and watercourses that exist on the property provide water, food and shelter resources for birds, amphibians and mammals.

Professional Wetlands Scientists from TMA delineated the United States Army Corps of Engineers (ACOE) regulated wetlands on the project site according to the 1987 USACE Wetland Delineation Manual. This manual proscribes the currently approved techniques for the delineation of federally regulated wetlands. Figure 3.6-2 presents the surveyed boundaries of these wetlands on the property.

3.6.5 Potential Impacts

Impacts to Vegetation and Wildlife Habitat

The proposed area of new disturbance (AOD) has been restricted to approximately 62 acres of upland habitat on the 197 acre site, as depicted on Figure 3.6-3. An additional 35 acres of the site is currently developed as part of the Raleigh Hotel site and will not be significantly changed from its current condition. The new developments proposed for these areas would eliminate the existing upland woodlands and meadow on these portions of the site. Areas where development is proposed would retain limited functions as wildlife habitat. The four housing developments are proposed with ring roads, so that central areas within the ring will not be disturbed or cleared. Wooded areas a minimum of 100 feet and up to 300 feet wide will remain following grading and construction between the backs of the housing units. It is expected that animals currently living in the area of proposed disturbance would move to surrounding undeveloped wooded land. There would be maintained elements of connectivity between other open space parcels and the portions of the project site that are not to be developed. These areas would continue to provide contiguous upland habitat and movement corridors for existing wildlife to traverse.

On the former Heiden Hotel site, much of the disturbance is proposed within areas that are previously disturbed for the hotel and are now maintained as open meadow. The remainder is successional hardwood forest. No delineated wetland areas will be disturbed.

The two housing projects on the east side of the Raleigh Hotel will similarly only impact upland areas. The northern "ring" will use former baseball field, deciduous woodland and hemlock woods from west to east. A large area of the hemlock wood will be preserved within the center of the eastern part of this ring, as no grading is proposed except as immediately associated with the road and housing units.

The southern development on the Raleigh property will occur almost entirely within previously disturbed areas, including the parking lots and open areas to the east. Some hemlock woods

will be affected in the southwest corner, with deciduous trees and some conifers being preserved within the loop road. No delineated wetlands will be disturbed associated with development on the Raleigh parcel.

On the east side of the Sheldrake Stream, approximately 15 acres of the 52 acre parcel will be affected. Development is limited to the north-central and western parts of the site, avoiding wooded wetlands and contiguous areas of hemlock and deciduous forest undisturbed.

The 62 acre AOD for the project represents 31 percent of the entire 197 acre site. Newly created impervious surfaces, including roadways, driveways, parking lots and buildings, would cover portions of the site within the 62 acre AOD. The remaining disturbed area would be revegetated as lawns and landscaped areas. The existing vegetative cover and habitats of the remaining 135 acres, which includes the Raleigh Hotel site, represents 69 percent of the entire site and would not be disturbed by the project.

Potential sources of impacts to aquatic wildlife and vegetation would include sedimentation during construction, post-development increases in pollutant loading in stormwater and bed and bank erosion in receiving watercourses resulting from increased stormwater discharge velocities. Sedimentation of the receiving water bodies would result in decreased light penetration, nutrient enrichment, increased transport of dissolved or adsorbed pollutants, shielding of pathogens from natural disinfection processes, and clogging of gills or filter-feeding apparatus in aquatic organisms.

No rare, unique or unusual vegetative species or communities were observed on the site, and therefore no impact to such species or areas will occur.

Impacts to Wildlife

In general, as a project site is developed, some species would relocate to similar habitats either on- or off-site. Because approximately 62 acres of the roughly 197 acre site would be altered, it is likely that some on-site wildlife would relocate from the developed areas to adjacent undeveloped areas offering similar habitats. The composition of the wildlife population on the project site may be slightly altered immediately adjacent to developed areas, as species able to adapt to a suburban environment (e.g. squirrels, raccoons, opossum, woodchucks, mice and some songbirds) would have a greater ecological advantage in comparison to species that are less tolerant of human activity. Many species of trees and shrubs commonly chosen for landscaping use would provide both food, shelter and nesting sites for small mammals, songbirds and other avian species.

No protected wildlife have been identified or observed on the project site, thus, no impacts to these species are projected. The proposed project would limit future use of the developed portions of the property by many wildlife species, but not by species that are adaptable to such conditions.

Impacts to Wetlands

The current proposed development would not result in the direct disturbance of on-site wetlands and as a result would not impact their identified functions and values. The proposal is designed to avoid wetland impacts entirely, although some activity will occur in close proximity to Wetland H associated with widening and improving the existing roadway (Figure 3.6-4). No activity is proposed within the 100 foot setback to the one DEC wetland on site (Wetland S).

Indirect impacts to wetlands could occur from the changes in runoff characteristics from the adjacent areas. The proposed stormwater pollution prevention plan, as described below, is intended to mitigate these potential impacts.

3.6.6 Mitigation Measures

The applicant proposes to develop relatively small portions of the property outside of the Raleigh Hotel parcel, leaving significant areas of open space on the Heiden Hotel parcel, east half of the Raleigh parcel and more than half of the eastern Raleigh parcel undeveloped. No wetlands or watercourses will be disturbed. Figure 3.6-5 shows those currently undisturbed areas of the site that will remain as open space post development. The mitigation of potential impacts from construction and development activities within the AOD that could affect wildlife as a result of the erosion and sedimentation of soils is described in Section 3.1 (Geology, Soils and Topography), and in Section 3.2 (Surface Water Resources).

While much of the vegetation and wildlife habitat on the property would remain unchanged, other portions would be removed or altered. The majority of existing vegetation within the 62 acre AOD would be removed. Measures could be taken however that would mitigate this loss to some extent and provide continued habitat for some adaptable wildlife species within the AOD. The existing trees and vegetation beyond the identified AOD would be preserved by the installation of stakes and fencing which would clearly identify the limits of disturbance and restrict the movement of construction vehicles and activities from these areas. The small streams on the property would continue to provide a water and food source for local birds and mammals. The proposed development plan includes further provisions that would reduce or minimize potential impacts to wildlife habitat as described below.

The NYSDEC would need to approve and issue a Stormwater Discharge General Permit for site disturbance (see Sections 3.1 and 3.2 for a description of the permit conditions), but would not need to issue permits for impacts to State protected wetlands or State-listed threatened and endangered species as none are present on the project site.

Town engineers typically are charged with ensuring that project construction adheres to all project planning documents, including erosion control, stormwater management and maintenance of specified area of disturbance limits. Towns may engage third party engineers to inspect and oversee project construction activities. The developer would act in full compliance with all oversight administrators assigned to the project by the Town.

The proposed stormwater detention ponds are designed as “ponds” and therefore are expected to contain a certain amount of water at an elevation similar to the existing streams and wetlands on the site. As described in the NYSDEC Stormwater Management Design Manual (August 2010), the facilities were designed to remove 80% of the Total Suspended Solids and 40% of the Total Phosphorus in received stormwater prior to release. The designs would provide both flow control and water quality improvements to the stormwater prior to discharge into the off-site drainages. Flows out of the site wetlands contribute to the hydrology and water quality of the Sheldrake Stream and ultimately the Neversink River, and the conservation of existing conditions in the wetlands is expected, as the proposed developments would have no impacts to the many wetlands functions now provided.

Basin vegetation would be established by using specialized commercial planting mixtures appropriate to the intermittently flooded conditions of the basin bottoms and berms. These seed mixes are designed to include herbaceous and grassy plants that offer wildlife foraging benefits.

Application of Stormwater Management Plans

A Stormwater Pollution Prevention Plan (SWPPP) and a complete Erosion and Sediment Control plan has been developed as part of the Site Plan documents (Refer to Sections 3.1 and 3.2). The project SWPPP generally includes the following mitigation measures that serve to minimize potential impacts to vegetation and wildlife resulting from the runoff of silt, sediment, excess nutrients and erosive water flows throughout all phases of the development process:

- Clearing limit lines would be marked prior to commencing the construction activity. Land outside of this area of disturbance is to remain undisturbed and be protected from construction activities that lead to habitat loss.
- Erosion and sediment controls as required by the NYSDEC under SPDES GP-0-10-001 would be utilized throughout the construction phase of the project until all disturbed area are fully developed or soils have been stabilized through vegetation plantings or other means. These measures would reduce the cumulative impacts of soil deposition on wetlands vegetation and on aquatic animals or other animals that utilize wetland resources for foraging.
- With the implementation of the proposed SWPPP, the discharge rate of the stormwater after development would meet the criteria of the NYSDEC general permit for stormwater control. These criteria require that no increase in erosive or flooding flow rates occurs in downstream watersheds subsequent to the implementation of a SWPPP. Protection of the downstream water channel and flood plain is a primary means to maintain the existing character of downstream and off-site watersheds.
- Although there would be an increase in impervious surfaces and pollutants that run off from the developed portions of the site into the stormwater basins, the increase would be mitigated through the implementation of stormwater treatment practices set forth in the SWPPP. These treatment features (wet ponds and vegetated swales) are designed to remove approximately 80 to 85 percent of the total suspended solids, 40 to 50 percent of the total phosphorus and 35 to 50 percent of the total nitrogen from stormwater captured on the site. These reductions in the levels of specific pollutants in the stormwater leaving the site would reduce the post-development effects of pollutants on downstream water quality as well as on the vegetation and animals that are present in the downstream watersheds.

Landscape Plantings

Noninvasive native plants would be used in the landscape wherever possible. The major landscaping evergreen and deciduous tree proposed to be installed throughout the project site have been identified by species and planting location on the Landscape Plan for this project. This list would be supplemented with other minor landscape shrubs and plants that would cumulatively provide a variety of foraging, nesting and shelter benefits for the wildlife that repopulates the portions of the site within the proposed AOD.

While the existing woodland and meadow vegetation would be replaced by ornamental plants, lawns and gardens within the developed areas, the introduced plantings could still be used as forage by deer and other wildlife and many of the tree and shrub species chosen would provide habitat for songbirds and other avian species. The landscape plants proposed as part of the final development would include berry and seed-bearing trees and shrubs that would offer a food source for birds. Trees that are planted would mature in the long-term and would provide some roosting and nesting opportunities for birds that are adaptable to suburban conditions.

Typical landscape plantings would be chosen for their hardiness to the local climate and in the proposed setting of their usage on the site. Plantings would be monitored for up to two years after installation and any dead specimens would be replaced with similar species. Regionally appropriate tree plantings, such as red maples and white pine, are to be incorporated into the landscape to provide habitat benefits for some birds. Some of the regional landscape plants that could be integrated into the plan as it proceeds through the review process are listed in Table 3.6-5 below.

Table 3.6-5 Regionally Hardy Landscape Plantings	
Deciduous Trees - Major	Deciduous Shrubs
Horse chestnut (<i>Aesculus hippocastanum</i>)	Bottlebrush buckeye (<i>Aesculus parviflora</i>)
American beech (<i>Fagus grandifolia</i>)	Oak leaf hydrangea (<i>Hydrangea quercifolia</i>)
White oak (<i>Quercus alba</i>)	Common witchhazel (<i>Hamamelis virginiana</i>)
Red oak (<i>Q. rubra</i>)	Staghorn sumac (<i>Rhus typhina</i>)
Little leaf linden (<i>Tilia cordata</i>)	Red-osier dogwood (<i>Cornus stolonifera</i>)
American elm (<i>Ulmus americana</i>)	Sweetfern (<i>Comptonia peregrina</i>)
Sycamore (<i>Platanus occidentalis</i>)	Winterberry (<i>Ilex verticillata</i>)
Tupelo (<i>Nyssa sylvatica</i>)	Juneberry (<i>Amelanchier canadensis</i>)
Deciduous Trees - Minor	Beautybush (<i>Kolkwitzia amabilis</i>)
American Hackberry (<i>Celtis occidentalis</i>)	Northern bayberry (<i>Myrica pensylvanica</i>)
Paper birch (<i>Betula papyrifera</i>)	Viburnum (<i>Viburnum</i> spp.)
Crabapple (<i>Malus</i> spp.)	Elderberry (<i>Sambucus</i> spp.)
Cherry (<i>Prunus</i> spp.)	Eastern wahoo (<i>Euonymus atropurpureus</i>)
Plum (<i>Prunus</i> spp.)	Snowberry (<i>Symphoricarpos alba</i>)
Hawthorns (<i>Craetaegus</i> spp.)	Cotoneaster (<i>Cotoneaster</i> spp.)
Coniferous Trees	Jersey Tea (<i>Ceanothus americanus</i>)
White fir (<i>Abies concolor</i>)	Sweet Fern (<i>Comptonia peregrina</i>)
Colorado spruce (<i>Picea pungens</i>)	Hazelnut (<i>Corylus americana, C. cornuta</i>)
Norway spruce (<i>P. abies</i>)	Lowbush blueberry (<i>Vaccinium augustifolium</i>)
Northern white cedar (<i>Thuja occidentalis</i>)	Highbush blueberry (<i>V. corymbosum</i>)
Douglas fir (<i>Pseudotsuga mensiesii</i>)	Inkberry (<i>Ilex glabra</i>)
White pine (<i>Pinus strobus</i>)	Pussy Willow (<i>Salix discolor</i>)
Red pine (<i>P. resinosa</i>)	Spirea (<i>Spirea latifolia</i>)
Evergreen shrubs	Swamp azalea (<i>Rhododendron viscosum</i>)
White rhododendron (<i>Rhododendron album</i>)	Sweet Pepperbush (<i>Clethra alnifolia</i>)
Rosebay rhododendron (<i>R. maximum</i>)	Witch Hazel (<i>Hamamelis virginiana</i>)
Leatherleaf viburnum (<i>Viburnum rhytidophyllum</i>)	Virginia creeper (<i>Parthenocissus quinquefolia</i>)
Ground juniper (<i>Juniperus communis</i>)	
Eastern red cedar (<i>J. virginiana</i>)	
Mountain laurel (<i>Kalmia latifolia</i>)	
Source: Tim Miller Associates, Inc., 2007.	

In addition to their value as hardy plantings, many of the native plant species in Table 3.4-6 are cited by the Cornell Lab of Ornithology as providing wildlife benefits associated with their use as landscape plantings, including species within the following functional groupings:

- Deciduous Trees: Red maple (Spring fruits)
 Sugar maple (Summer fruits)
 Mulberries (Summer fruits)
 Black, Pin or Choke cherries (Summer fruits)
- Shadblow (Summer fruits)
 Flowering dogwood (Fall fruits)
 American hackberry (Fall fruits with Winter-persistent fruit)
 Crabapples (Fall fruiting with Winter-persistent fruit)
 Hickories, Oaks and Walnuts (Fall fruiting with Winter-persistent fruit)
- Coniferous Trees: Eastern hemlocks and white pine (Winter wildlife cover)
 Cedars (Fall fruiting with Winter-persistent fruit; nest sites; Winter cover)
 Spruces (Fall fruiting with Winter-persistent fruit; nest sites; Winter cover)
- Native Vines: Virginia creeper (Fall fruiting with Winter-persistent fruit)
- Shrubs: Dogwoods (Fall fruits)
 Hawthorns (Fall fruits)
 Viburnums (Fall fruiting, with fruits of some being Winter-persistent)
 Winterberry (Fall fruiting with Winter-persistent fruit)
 Northern bayberry (Fall fruiting with Winter-persistent fruit)

The Landscaping Plan may include some of the plants above that offer wildlife benefits such as nesting sites and the production of edible seasonal and Winter-persistent fruits. Not all of these plants would necessarily be used however, as their ornamental value would determine their selection by project architects for each of the sites and environmental settings to be landscaped on the property.

Tree Protection Measures

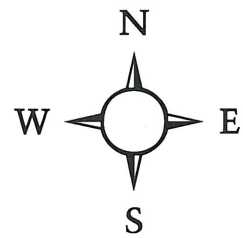
Activities to protect trees on the site would take several forms. Trees are protected by avoiding damage to their trunks and limbs as well as by avoiding disturbance of the land within the area of their root structure. For trees to be protected during construction activities there should be no disturbance of any kind within the projected root zone of each tree, which is typically considered to be within the drip line of the tree foliage. Fencing should be placed around the maximum area of the root system to prevent the destruction of roots by exposure or through the compaction of soils.

The initial means to prevent damage to trees is to establish the limits of disturbance on the site prior to commencing any land grubbing activities. No trees beyond these limits would be disturbed. These limits would be marked through the installation of erosion control fencing or other visual boundary markers.

Secondly, trees that are within the AOD and that are identified for preservation would be marked. Large trees that are to be saved would be surrounded with orange snow fence and would not be removed during the construction unless it is determined later that those trees

cannot be saved due to unplanned damage to either the tree or the surrounding grade that compromises their future survival.

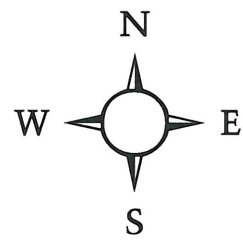
Thirdly, where practicable, large trees would be afforded post-construction protection through the use of tree wells in fill areas and retaining walls in cut areas. These wells and walls would typically be constructed with available rock from on site excavation activities. The walls and wells would be dry laid, with provision for positive drainage out of the enclosures and wells.



- SW/C - Slope wetland, coniferous
- SW/D - Slope wetland, deciduous
- SW/M - Slope wetland, mixed
- DW/C - Depressional wetland, coniferous
- DW/D - Depressional wetland, deciduous
- RC - Riparian corridor
- FP - Floodplain wetland
- SH - Successional northern hardwood forest
- HF - Hemlock forest with northern hardwoods
- SF - Successional old field
- SF/H - Successional fields with hotel development

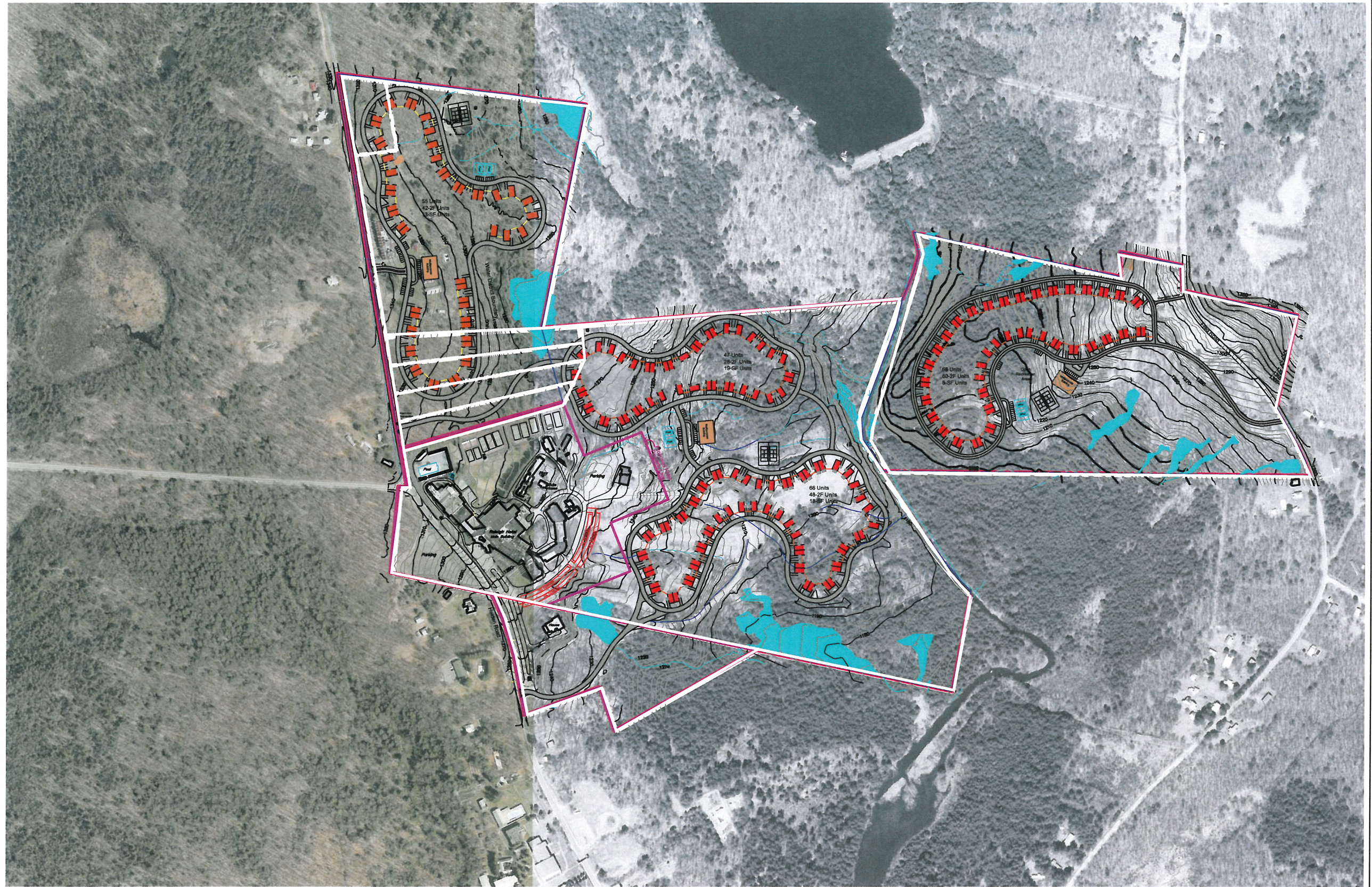
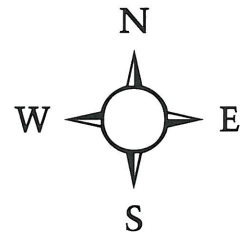
Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

Figure 3.6-1: Vegetative Associations
 Raleigh and Heiden Properties
 Town of Fallsburg, Sullivan County, New York
 Source: New York State DEC Imagery
 Date: August 18, 2008
 Scale: 1" = 400'



Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

Figure 3.6-2: Site Wetlands
Raleigh and Heiden Properties
Town of Fallsburg, Sullivan County, New York
Source: New York State DEC Imagery
Date: August 18, 2008
Scale: 1" = 400'



Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

Figure 3.6-3: Site Plan Overlay on Aerial Photo
Raleigh and Heiden Properties
Town of Fallsburg, Sullivan County, New York
Source: New York State DEC Imagery
Date: August 18, 2008
Scale: 1" = 400'

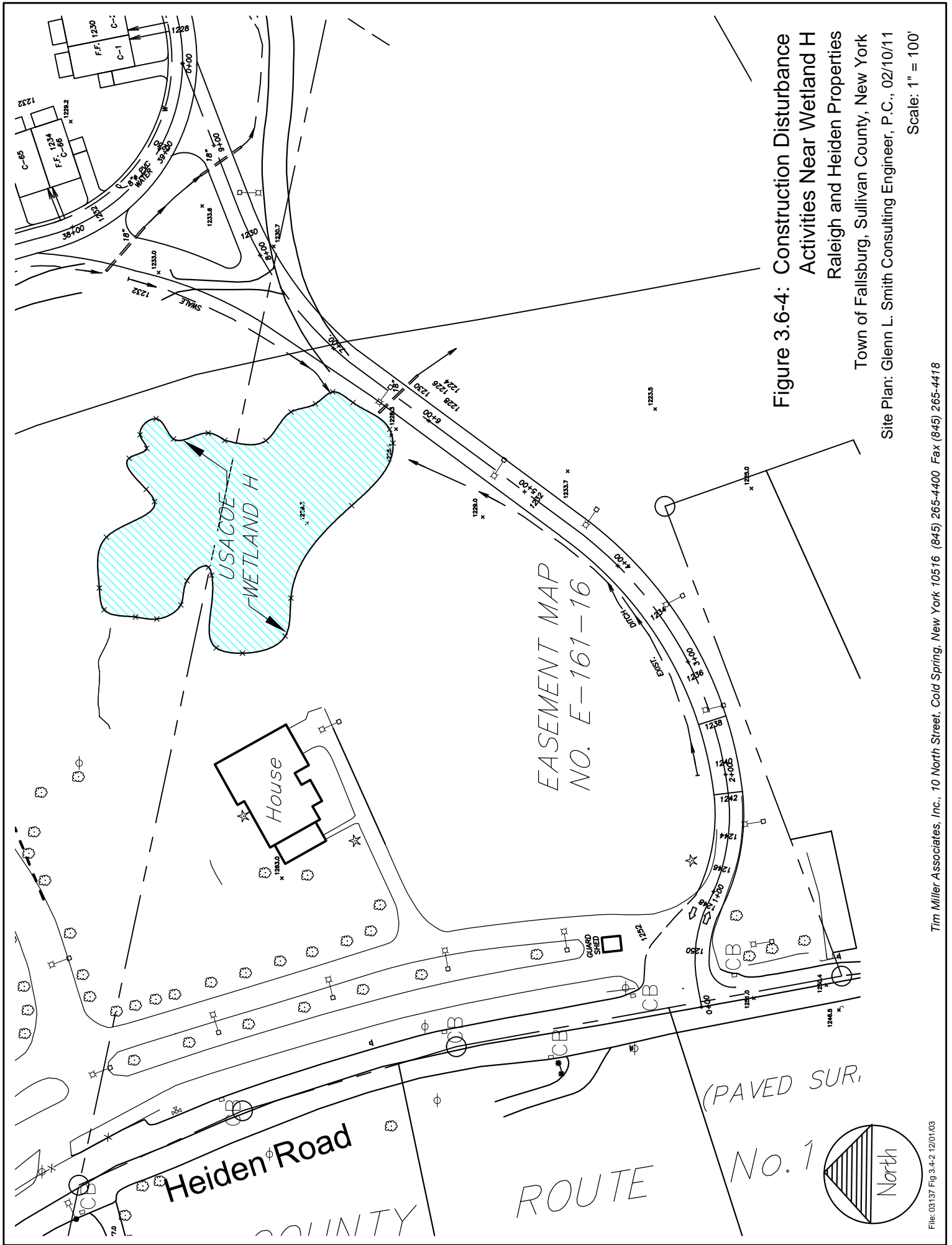
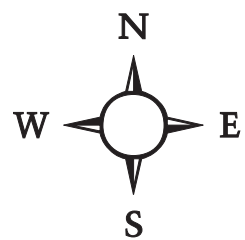


Figure 3.6-4: Construction Disturbance Activities Near Wetland H
 Raleigh and Heiden Properties
 Town of Fallsburg, Sullivan County, New York
 Site Plan: Glenn L. Smith Consulting Engineer, P.C., 02/10/11
 Scale: 1" = 100'



■ Areas of Open Space that will remain undisturbed during and following construction



Tim Miller Associates, Inc., 10 North Street, Cold Spring, New York 10516 (845) 265-4400 Fax (845) 265-4418

Figure 3.6-5: Open Space and Undisturbed Areas
Raleigh and Heiden Properties
Town of Fallsburg, Sullivan County, New York
Source: New York State DEC Imagery
Date: August 18, 2008
Scale: 1" = 400'