

3.3 Ecology and Wetlands

3.3.1 Existing Conditions Vegetation

Site evaluations for vegetation were conducted by CEA Engineers, P.C. (CEA) during March through July of 2006 and also by Tim Miller Associates (TMA) in July of 2008. A list of observed vegetation species is shown in Table 3.3-1. A total of 10 ecological communities were identified based on the classification system outlined in the New York State Department of Environmental (NYSDEC) publication "Ecological Communities of New York State" (2002)¹. The "Ecological Communities of New York State" provides generalized descriptions and classifications of the wide array of different ecological communities found within New York State. A map showing the ecological communities is shown in Figure 3.3-1.

Riverine, palustrine, lacustrine, and terrestrial communities are present on the project site. The various upland and wetland vegetative cover types found throughout the project site are characterized as Intermittent streams, ditch/artificial intermittent streams, farm pond/artificial pond, Shallow emergent marsh, Red-maple hardwood swamp, Successional old field, Oak-tulip tree forest, successional southern hardwood forest, unpaved road/path, and Interior of barns/agricultural buildings. Provided below is a description, as provided by the "Ecological Communities of New York State", and an inventory of the vegetative species observed within each of these community types during site surveys.

Riverine Communities

Intermittent Streams

Intermittent streams are located in the uppermost segments of stream systems where water flows only during the spring or after a heavy rain. Water often remains in isolated pools for most of the year. These streams typically have a moderate to steep gradient as well as hydric soils (Edinger *et al.* 2002).

Intermittent streams are found in multiple areas of the project site. In the northernmost area of the project site, an intermittent stream originates from under Route 306 and flows northwest through the northern tip of the site, crossing under Route 202, and eventually to the Mahwah River. Also in the north of the project site is an intermittent stream which establishes itself at the NYSDEC regulated wetland TH-30, and flows northwest from the wetland, crossing under Route 202, and eventually to the Mahwah River. A stream which seems to originate in the artificial pond flows off the subject property in a northerly direction and eventually to the Mahwah River.

Tree and shrub species noted in the vicinity of these intermittent streams included, but are not limited to, American beech (*Fagus grandifolia*), American basswood (*Tilia Americana*), white oak (*Quercus alba*), red oak (*Quercus rubra*), black oak (*Quercus velutina*), red maple (*Acer rubrum*), silver maple, ironwood (*Carpinus caroliniana*), green ash (*Fraxinus pennsylvanica*), multiflora rose (*Rosa multiflora*), and spicebush (*Lindera benzoin*). Herb species observed included, but are not limited, to Christmas fern (*Polystichum acrostichoides*), sensitive fern (*Onoclea sensibilis*), wood fern (*Dryopteris* spp.), skunk cabbage (*Symplocarpus foetidus*), Canada mayflower (*Maianthemum canadense*),

¹ Edinger, G.J. et al, eds. 2002. Ecological Communities of New York State. Second Edition. New York Natural Heritage Program, NYSDEC. Albany, NY. 134 pp.

jewelweed (*Impatiens capensis*), soft rush (*Juncus effuses*), arrow arum (*Peltandra virginica*), common blue violet (*Viola sororia*), wild geranium (*Geranium maculatum*), tussock sedge (*Carex stricta*), common reed (*Phragmites australis*), broad-leaved cattail (*Typha latifolia*), Canada rush (*Juncus canadensis*), as well as other sedges (*Carex vulpinoidea*, *Carex bullata*, and *Carex crinita*).

Ditch/Artificial Intermittent Stream

A ditch/artificial intermittent stream is an aquatic community that has been constructed in order to drain or irrigate adjacent lands. The sides of the ditches are often vegetated with grasses and sedges, common reed and reed canary grass (*Phalaris arundinacea*) often become established in these communities (Edinger *et al.* 2002).

Two artificial intermittent ditches are located to the south of the farm pond and are the result of runoff from surrounding properties. These ditches supply water to the farm pond during seasonal and heavy rain storms. The farm pond also receives water from an additional artificial intermittent ditch, also located southeast of the farm pond.

Species noted within the ditch/artificial intermittent stream community included, but are not limited to, slender rush (*Juncus tenuis*), sedges (*Carex* spp.) jewelweed (*Impatiens capensis*), wild geranium (*Geranium maculatum*), skunk cabbage, sensitive fern, tussock sedge, spicebush, poison ivy (*Toxicodendron radicans*), green ash, sugar maple (*Acer saccharum*), and red maple.

Lacustrine Communities

Farm Pond/Artificial Pond

A farm pond/artificial pond is an aquatic community constructed on agricultural or residential property. These ponds are often eutrophic and stocked with panfish. The biota are variable and usually reflects species that were naturally or artificially seeded, planted, or stocked in the pond (Edinger *et al.* 2002).

A 5.2 acre farm pond is centrally located in the western portion of the subject property. The pond is fed by three ditch/artificial intermittent streams. The pond was historically stocked and still contains largemouth bass and pumpkinseed sunfish.

Vegetative species noted within the farm pond/artificial pond community included, but are not limited to, green alder (*Fraxinus pennsylvanica*), red osier dogwood (*Cornus stolonifera*), paper birch (*Betula papyrifera*), red maple, white oak, red oak, gray birch (*Betula populifolia*), red cedar (*Juniperus virginiana*), American basswood, black cherry (*Prunus serotina*), weeping willow (*Salix babylonica*), arrow arum (*Peltandra virginica*), broad-leaved cattail, Pennsylvania smartweed (*Polygonum pensylvanicum*), stout blue-eyed grass (*Sisirinchium angustifolium*), garlic mustard (*Alliaria petiolata*), dame's rocket (*Hesperis matronalis*), sedges (*Carex* spp.), and rushes (*Juncus* and *Scirpus* spp.)

Palustrine Communities*Shallow Emergent Marsh*

Shallow emergent marsh is a marsh meadow community that occurs in mineral soil or deep muck soils. These communities are permanently saturated and seasonally flooded, with water depths ranging from six (6) inches to three (3) feet during flood stages. The water levels in these marshes typically drop during mid to late summer, and the substrate is exposed during an average year.

Vegetation typically found in this type of community includes cattails (*Typha* spp.), sedges (*Carex* spp.), spikerushes (*Eleocharis* spp.), bulrushes (*Scirpus* spp.), arrowhead (*Sagittaria latifolia*), goldenrods (*Solidago* spp.), smartweeds (*Polygonum* spp.), jewelweed, and in degraded communities, reed canary grass (*Phalaris arundinacea*), and purple loosestrife (*Lythrum salicaria*) are common (Edinger *et al.* 2002). A shallow emergent marsh is present along the southwest corner of the farm pond. Species noted within this community included, but are not limited to, pin oak (*Quercus palustris*), skunk cabbage, soft rush (*Juncus effuses*), tussock sedge, as well as various other sedge species (*Carex* spp.).

Red Maple-Hardwood Swamp

Red maple-hardwood swamp is a hardwood swamp that occurs in poorly drained depressions. In any one stand, Red Maple is either the only canopy dominant or is co-dominant with one or more of the following species: ashes (*Fraxinus* spp.), yellow birch (*Betula alleghaniensis*), elms (*Ulmus* spp.), and swamp white oak (*Quercus bicolor*). Other tree species which also may be present include Butternut (*Juglans cinerea*), Bitternut Hickory (*Carya cordiformis*), Black Gum (*Nyssa sylvatica*), and Ironwood. The shrub and herb layers may consist of species such as Winterberry (*Ilex verticillata*), Spicebush, alders (*Alnus* spp.), viburnums (*Viburnum* spp.), and dogwood species (*Cornus* spp.) (Edinger *et al.* 2002). NYSDEC regulated wetland TH-30 is most closely associated with a Red maple hardwood swamp. This wetland is located along the eastern border of the subject property. The ACOE regulated wetlands found to the south of the farm pond also closely resembled a Red maple-hardwood swamp.

Species noted in this community included, but are not limited to, red maple, sugar maple (*Acer saccharum*), shagbark hickory (*Carya ovata*), red oak, white oak, swamp white oak (*Quercus bicolor*), black oak, pin oak (*Quercus palustris*), gray birch (*Betula populifolia*), American beech, ashes (*Fraxinus* spp.), sassafras (*Sassafras albidum*), black cherry (*Prunus serotina*), American elm (*Ulmus Americana*), Eastern red cedar (*Juniperus virginiana*), smooth blackhaw (*Viburnum prunifolium*), multiflora rose, mayflower (*Maianthemum canadense*), mugwort (*Artemisia vulgaris*), skunk cabbage, tussock sedge, jewelweed, wild geranium (*Geranium maculatum*), common reed, common blue violet (*Viola sororia*), Japanese barberry (*Berberis thunbergii*), spicebush, black chokeberry (*Photinia melanocarpa*), common reed, weeping willow (*Salix bicolor*), Christmas fern (*Polystichum acrostichoides*), wood fern (*Dryopteris* spp.), sensitive fern, and various sedge species (*Carex* spp.)

Terrestrial Communities*Successional Old Field*

Successional old field communities are meadows dominated by forbs and grasses that occur on sites that have been cleared and plowed for farming and development, and then abandoned. Characteristic herbs which inhabit these areas include goldenrod (*Solidago* spp.), poa species (*Poa* spp.), Timothy (*Phleum pretense*), Quackgrass (*Agropyron repens*), Brome grass (*Bromus* spp.), Orchard grass (*Dactylis glomerata*), Old-field cinquefoil (*Potentilla simplex*), Wild strawberry (*Fragaria virginiana*), Queen-Anne' lace (*Daucus carota*), and ragweed (*Ambrosia artemisiifolia*). Common shrub species which may be present include dogwood species (*Cornus* spp.), raspberries (*Rubus* spp.), and sumacs (*Rhus* spp.) (Edinger *et al.* 2002).

Successional old fields are one of the dominant community types found on the subject property. These fields are predominately found in the central portions of the project site. The areas occur along the southernmost border as well as areas to the east, southeast, northeast, and north of the farm pond and are all most closely associated with successional old field communities.

Species noted included, but are not limited to, blue joint grass (*Calamagrotis canadensis*), brome grasses (*Bromus* spp.), common reed, meadow fescue (*Festuca elatior*), orchard grass (*Dactylis glomerata*), quackgrass (*Elytrigia repens*), red fescue (*Festuca rubra*), reed canary grass (*Phalaris arundinacea*), rice cut grass (*Leersia oryzoides*), stout blue-eyed grass (*Sisyrinchium angustifolium*), timothy (*Phleum pretense*), upland bentgrass (*Argostis perennans*), wild rye (*Elymus* spp.), witchgrass (*Panicum capillare*) and wool grass (*Scirpus cyperinus*), Pear (*Pyrus* spp.), apple (*Malus* spp.), autumn olive (*Elaeagnus umbellata*), rosa multiflora (*Rosa multiflora*), Japanese knotweed (*Polygonum cuspidatum*), hemp dogbane (*Apocynum cannabinum*), butter and eggs (*Linaria vulgaris*), spotted knapweed (*Centaurea biebersteinii*), Canada thistle (*Cirsium arvense*), musk mallow (*Malva moschata*), raspberry/blackberry (*Rubus* spp.), old field cinquefoil (*Potentilla simplex*), black medic (*Medicago lupulina*), ladies-thumb (*Polygonum persicaria*), poison ivy, common milkweed (*Asclepias syriaca*), swamp milkweed (*Asclepias incarnate*), goldenrod (*Solidago* spp.), Queen Anne' lace (*Daucus carota*), black-eyed susan (*Rudbeckia hirta*), wild garlic (*Allium vineale*), curly dock (*Rumex crispus*), common mullein (*Verbascum thapsus*), common wood sorrel (*Oxalis montana*), daisy fleabane (*Erigeron annuus*), Common St. John' wort (*Hypericum perforatum*), oxeye daisy (*Chrysanthemum leucanthemum*), birdsfoot trefoil (*Lotus corniculata*), white vervain (*Verbena urticifolia*), common yarrow (*Achillea millefolium*), hop clover (*Trifolium dubium*), cranesbill geranium (*Geranium sanguineum*), field bindweed (*Convolvulus arvensis*), purple loosestrife (*Lythrum salicaria*), winged loosestrife (*Lythrum alatum*), depford pink (*Dianthus armeria*), corn cockle (*Agrostemma githago*), white campion (*Silene latifolia*), Clayton' bedstraw (*Galium tinctorium*), garlic mustard (*Alliaria petiolata*), wild strawberry (*Fragaria virginiana*), buttercup (*Ranunculus acris*), red clover (*Trifolium pretense*), tufted vetch (*Vicia cracca*), Virginia creeper (*Parthenocissus quinquefolia*), giant ragweed (*Ambrosia trifida*), common ragweed (*Ambrosia artemisiifolia*), sweet white violet (*Viola blanda*), rose coreopsis (*Coreopsis rosea*), common morning glory (*Ipomoea purpurea*), Canada mayflower (*Maianthemum canadense*), meadowsweet (*Spiraea alba*), dame' rocket (*Hesperis matronalis*), meadow beauty (*Rhexia virginica*), autumn wild onion (*Allium stellatum*), bull thistle (*Cirsium vulgare*), common teasel (*Dipsacus fullonum*), and Virginia pepperweed (*Lepidium virginicum*).

Oak-Tulip Tree Forest - Successional Southern Hardwoods

Oak-tulip tree forests are mesophytic hardwood forests which occur in moist, well-drained sites in southeast New York. Dominant trees species which are found in these forests include red oak, tulip tree (*Liriodendron tulipifera*), beech, black birch (*Betula lenta*), red maple, scarlet oak (*Quercus coccinea*), black oak, and white oak. Characteristic shrubs and herbs include dogwood (*Cornus* spp.), sassafras (*Sassafras albidum*), red maple, cherry (*Prunus* spp.), viburnum (*Viburnum* spp.), northern blackberry (*Rubus allegheniensis*), New York fern (*Thelypteris noveboracensis*), Virginia creeper (*Parthenocissus quinquefolia*), and wild geranium (*Geranium maculatum*) (Edinger et al. 2002).

Three areas within the project site are most closely associated with an oak tulip tree forest community; the eastern border of the property directly east of the farm pond, a small patch of oaks and tulip trees found along the southeastern border of the property, as well as an area found within the northeastern section of the subject property, southeast of the transmission easement.

Species noted included, but are not limited to, red oak, tulip tree (*Liriodendron tulipifera*), scarlet oak (*Quercus coccinea*), black oak, white oak, American beech, shagbark hickory (*Carya ovata*), pignut hickory (*Carya glabra*) butternut (*Juglans cinerea*), witch hazel (*Hamamelis virginiana*), high-bush blueberry (*Vaccinium corymbosum*), spicebush, Canada mayflower (*Maianthemum canadense*) and wood ferns (*Dryopteris* spp.). Two areas within the project site are most closely associated with an oak tulip tree forest community but have distinctly defined co-dominant tree coverages. Both areas lack a dominant population of tulip trees and border the edge of the red maple-hardwood swamp (TH-30). The first area (oak-Beech community) is dominated by red oak, white oak, black oak, and American beech. The second area (oak-hickory) is dominated by red oak, white oak, scarlet oak, black oak, shagbark hickory and pignut hickory.

Successional Southern Hardwoods

Successional southern hardwoods is a hardwood or mixed forest which occurs on sites that have been cleared or otherwise disturbed. Characteristic trees and shrubs found within these communities include elm species (*Ulmus* spp.), white ash (*Fraxinus Americana*), red maple, box elder (*Acer negundo*), silver maple, sassafras (*Sassafras albidum*), gray birch (*Betula populifolia*), and eastern red cedar (*Juniperus virginiana*). Other introduced species which are commonly present in successional southern hardwood communities include black locust (*Robinia pseudoacacia*), and tree-of-heaven (*Ailanthus altissima*) (Edinger et al. 2002).

Successional southern hardwood communities are present to the north, west, southeast, northeast, and northwest of the farm pond. Additionally, the area which lies to the north/northwest of the transmission easement in the northernmost limits of the subject property is most closely associated with a successional southern hardwood community.

Species noted included, but are not limited to, red maple, sugar maple (*Acer saccharum*), white pine (*Pinus strobus*), Eastern red cedar (*Juniperus virginiana*), white oak, red oak, black oak, scarlet oak (*Quercus coccinea*), American basswood, yellow poplar (*Liriodendron tulipifera*), black cherry (*Prunus serotina*), ironwood, sweet birch (*Betula lenta*), gray birch (*Betula populifolia*), quaking aspen (*Populus grandidentata*), smooth alder (*Alnus serrulata*),

green ash, summer grape (*Vitis argentifolia*), multiflora rose, autumn olive (*Elaeagnus umbellata*), northern arrowwood (*Viburnum recognitum*), silky dogwood (*Cornus amomum*), steeplebush (*Spiraea tomentosa*), spicebush, Japanese barberry (*Berberis thunbergii*), blackhaw

Unpaved Road/Path

An unpaved road/path is a sparsely vegetated pathway with gravel, bare soil, or bedrock outcrop. These roads or pathways are maintained by regular trampling or scraping of the land surface. The substrate consists of the soil or parent material at the site. One characteristic plant is path rush (*Juncus tenuis*) (Edinger *et al.* 2002).

Unpaved roads and pathways are found in multiple areas of the project site. A 50-foot gas and electrical transmission easement transects the property from the northeastern corner, NYS Route 306, to the southwestern corner of the project site along NYS Route 202. Additionally, an unpaved road cuts around the southern border of the farm pond near the abandoned agricultural buildings, and then into the successional old field community to the southeast of the pond. A pathway which runs due south of the farm pond links up with the road which cuts around the southern border of this pond. Pathways to the east/northeast of the farm pond run in north-south and east-west directions.

Species noted included, but are not limited to gray birch (*Betula populifolia*), red oak, white oak, steeplebush (*Spiraea tomentosa*), silky dogwood (*Cornus amomum*), purple loosestrife (*Lythrum salicaria*), black-eyed susan (*Rudbeckia hirta*), tufted vetch (*Vicia cracca*), goldenrod (*Solidago* spp.), hop clover (*Trifolium dubium*), raspberry species (*Rhus* spp.), poison ivy, common reed, timothy (*Phleum pretense*), orchard grass (*Dactylis glomerata*), brome grass (*Bromus* spp.), meadow fescue (*Festuca elatior*), wool grass (*Scirpus cyperinus*), witchgrass (*panicum capillare*), spike rush (*Eleocharis acicularis*), twig rush (*Cladium mariscoides*), and sedge species (*Carex* spp.).

Interiors of Barns/Agricultural Buildings

Interiors of barns/agricultural buildings are considered to be any interior spaces which provide shelter for livestock, or storage space for agricultural products including hay, straw, or farm equipment (Edinger *et al.* 2002).

A total of four agricultural buildings are located on the subject site. Two (2) agricultural buildings are situated south of the farm pond, one (1) building to the southwest, and one structure to the immediate east of the farm pond. No vegetation or wildlife was observed utilizing these buildings.

Unique, Rare and/or Endangered, Threatened, and Special Concern Vegetation

The NYSDEC Natural Heritage Program (NHP) was contacted by CEA in August of 2006 and again by TMA in August of 2008 for presence of rare or state-listed plants (Appendix B, Correspondence). Their records indicate the presence of two plants, the State-listed threatened clustered sedge (*Carex cumulata*) and the State-listed endangered hyssop-skullcap (*Scutellaria integrifolia*), as being on properties adjacent to the project site.

Carex cumulata - State-listed Threatened Species

The report from the NHP indicated clustered sedge were last found on June 30, 1993 in the power line clearing near NYSDEC Wetlands TH-14 and TH-28 located to the west of the project site, across Route 202.

According to the NHP, the clustered sedge is “a sedge of open rocky habitats, particularly in damp areas on acidic bedrock or shallow soil. Also found in recently burned areas with shallow soils and exposed bedrock, power line corridors, open oak or woodlands, heathlands, and various successional habitats” (New York Natural Heritage Program 2004).

The project site was surveyed for clustered sedge by TMA on July 17 and July 31, 2008 to ensure the best chance of identification of the sedge since it fruits from mid June to mid September. The mowed power line easement, unpaved paths and successional old fields were examined for the presence of clustered sedge. While several sedge species were recorded, no State-listed threatened or endangered sedges were observed on the project site, including the clustered sedge.

Scutellaria integrifolia - State-listed Endangered Species

The NHP's last documentation in the area of Hyssop-skullcap occurred on August 19, 1993 near the same power line clearing in NYSDEC Wetlands TH-14 and TH-28 to the west of the project site as the clustered sedge. The NHP's report stated a dozen of the species were found in a grassy area between the woods and the Mahwah River, just south of the power lines.

The NHP web site indicates more information on the habitat preferences of Hyssop-skullcap in New York State is needed. It has been collected from old fields and grassy openings within upland forests, roadsides, shrub swamps, and the shorelines of artificial ponds. Many of the historical records are from Long Island and Staten Island, where presumably it occupied quite different habitats from the extant sites in the Hudson Valley (New York Natural Heritage Program 2007). Other habitats in which the plant could possibly thrive in include borders of woods, thickets and clearings (Fernald 1970) or fields and open woods along coastal plains (Gleason & Cronquist 1991).

Since the habitat requirements for the Hyssop-skullcap are similar to those of the clustered sedge, the surveys by TMA on July 17 and July 31, 2008 for clustered sedge incorporated surveys for Hyssop-skullcap. Survey dates allowed for the best chance of identification since this skullcap species flowers in June with the fruits being present from July through September. The mowed power line easement, unpaved paths and successional old fields were examined for the presence of Hyssop-skullcap. The species was not found on the project site.

Exploitably Vulnerable Species

Seven species of plants on the project site are State-listed exploitably vulnerable. Plants that are “exploitably vulnerable” are listed as protected species under 6NYCRR New Part 193, Protected Native Plants, and are defined in the state listing as, “...native plants likely to become threatened in the near future throughout all or a significant portion of their ranges within the state if casual factors continue unchecked [e.g, all orchids, most ferns].” New

York State law protects state-listed plants existing on public lands. Right of protection of exploitably vulnerable species are conveyed by the State to the private land owner on which the species are present. With the consent of the land owner, it is not a violation “for any person, anywhere in the state, to pick, pluck, sever, remove, damage by the application of herbicides or defoliant, or carry away...any protected plant.” The seven plant species identified as exploitably vulnerable are marked with an asterisk in Table 3.3-1: Observed Vegetation Species below.

Table 3.3-1	
Observed Vegetation Species	
Common name (Scientific name)	
Trees	
American Basswood (<i>Tilia americana</i>)	Pignut hickory (<i>Carya glabra</i>)
American Beech (<i>Fagus grandifolia</i>)	Pin Oak (<i>Quercus palustris</i>)
American Elm (<i>Ulmus americana</i>)	Pumpkin Ash (<i>Fraxinus profunda</i>)
Apple (<i>Malus domestica</i>)	Quaking Aspen (<i>Populus grandidentata</i>)
Black Cherry (<i>Prunus serotina</i>)	Red Maple (<i>Acer rubrum</i>)
Black Locust (<i>Robinia pseudoacacia</i>)	Red Mulberry (<i>Morus rubra</i>)
Black Oak (<i>Quercus velutina</i>)	Red Oak (<i>Quercus rubra</i>)
Black Willow (<i>Salix nigra</i>)	Red Osier Dogwood (<i>Cornus stolonifera</i>)
Butternut (<i>Juglans cinerea</i>) *	Sassafras (<i>Sassafras albidum</i>)
Crabapple (<i>Malus</i> spp.)	Scarlet Oak (<i>Quercus coccinea</i>)
Dogwood sp. (<i>Cornus</i> spp.)	Shagbark Hickory (<i>Carya ovata</i>)
Eastern Hophornbeam (<i>Ostrya virginiana</i>)	Smooth Alder (<i>Alnus serrulata</i>)
Eastern Redcedar (<i>Juniperus virginiana</i>)	Sugar Maple (<i>Acer saccharum</i>)
Gray Birch (<i>Betula populifolia</i>)	Swamp White (Oak <i>Quercus bicolor</i>)
Green Ash (<i>Fraxinus pennsylvanica</i>)	Sweet Birch (<i>Betula lenta</i>)
Ironwood (<i>Carpinus caroliniana</i>)	Sweetgum (<i>Liquidambar styraciflua</i>)
Northern Red Oak (<i>Quercus rubra</i>)	Tulip Poplar (<i>Liriodendron tulipifera</i>)
Norway Maple (<i>Acer platanoides</i>)	Weeping Willow (<i>Salix babylonica</i>)
Paper Birch (<i>Betula papyrifera</i>)	White Mulberry (<i>Morus alba</i>)
Pear (<i>Pyrus</i> spp.)	White Oak (<i>Quercus alba</i>)
Pignut hickory (<i>Carya glabra</i>)	White Pine (<i>Pinus strobus</i>)
	Witch Hazel (<i>Hamamelis virginiana</i>)
Shrubs	
American Red Raspberry (<i>Rubus idaeus</i>)	Japanese Knotweed (<i>Polygonum cuspidatum</i>)
Autumn-Olive (<i>Elaeagnus umbellata</i>)	Multiflora Rose (<i>Rosa multiflora</i>)
Black Chokeberry (<i>Photinia melanocarpa</i>)	Northern Arrowwood (<i>Viburnum recognitum</i>)
Blackberry (<i>Rubus</i> spp.)	Red-osier Dogwood (<i>Cornus sericea</i>)
Blackhaw (<i>Viburnum prunifolium</i>)	Silky Dogwood (<i>Cornus amomum</i>)
Highbush Blueberry (<i>Vaccinium corymbosum</i>)	Spicebush (<i>Lindera benzoin</i>)
Japanese Barberry (<i>Berberis thunbergii</i>)	Steeplebush (<i>Spiraea tomentosa</i>)
Japanese Knotweed (<i>Polygonum cuspidatum</i>)	Wineberry (<i>Rubus phoesnicolasius</i>)
Herbs	
Arrow Arum (<i>Peltandra virginica</i>)	Giant Ragweed (<i>Ambrosia trifida</i>)
Autumn Wild Onion (<i>Allium stellatum (cernuum)</i>)	Goldenrod (<i>Solidago</i> spp.)
Birdsfoot Trefoil (<i>Lotus corniculata</i>)	Hemp Dogbane (<i>Apocynum cannabinum</i>)
Black Medic (<i>Medicago lupulina</i>)	Hop Clover (<i>Trifolium dubium</i>)
Black-eyed Susan (<i>Rudbeckia hirta</i>)	Ladies-Thumb (<i>Polygonum persicaria</i>)
Bladder Campion (<i>Silene vulgaris</i>)	Meadow Beauty (<i>Rhexia virginica</i>)

Table 3.3-1 Observed Vegetation Species	
Common name (<i>Scientific name</i>)	
Broad-Leaved Cattail (<i>Typha latifolia</i>)	Meadowsweet (<i>Spiraea alba</i>)
Bull Thistle (<i>Cirsium vulgare</i>)	Musk Mallow (<i>Malva moschata</i>)
Butter and Eggs (<i>Linaria vulgaris</i>)	Oxeye Daisy (<i>Chrysanthemum leucanthemum</i>)
Butterfly Weed (<i>Asclepias tuberosa</i>) *	Panicled Tick Trefoil (<i>Desmodium paniculatum</i>)
Canada Mayflower (<i>Maianthemum canadense</i>)	Pennsylvania Smartweed (<i>Polygonum</i>)
Canada Thistle (<i>Cirsium arvense</i>)	Plantain-leaved Pussytoe (<i>Antennaria plantaginifolia</i>)
Clayton' Bedstraw (<i>Galium tinctorium</i>)	Purple Loosestrife (<i>Lythrum salicaria</i>)
Clearweed (<i>Pilea</i> spp.)	Queen Anne' Lace (<i>Daucus carota</i>)
Common (Oldfield) Cinquefoil (<i>Potentilla simplex</i>)	Red Clover (<i>Trifolium pretense</i>)
Common Blue Violet (<i>Viola sororia</i>)	Rose Coreopsis (<i>Coreopsis rosea</i>)
Common Buttercup (<i>Ranunculus acris</i>)	Selfheal (<i>Prunella vulgaris</i>)
Common Chicory (<i>Cichorium intybus</i>)	Skunk Cabbage (<i>Symplocarpus foetidus</i>)
Spotted Joe-Pye-Weed (<i>Eupatorium maculatum</i>)	Spotted Knapweed (<i>Centaurea biebersteinii</i>)
Common Morning Glory (<i>Ipomoea purpurea</i>)	Spotted Touch-Me-Not, Jewelweed (<i>Impatiens capensis</i>)
Common Mugwort (<i>Artemisia vulgaris</i>)	Spotted Wintergreen (<i>Chimaphila maculata</i>) *
Common Mullein (<i>Verbascum thapsus</i>)	Swamp Milkweed (<i>Asclepias incarnate</i>)
Common Ragweed (<i>Ambrosia artemisiifolia</i>)	Sweet White Violet (<i>Viola blanda</i>)
Common St. John' Wort (<i>Hypericum perforatum</i>)	Trumpetweed (<i>Eupatoriadelphus fistulosus</i>)
Common Teasel (<i>Dipsacus fullonum</i>)	Tufted (Cow) Vetch (<i>Vicia cracca</i>)
Common Wood Sorrel (<i>Oxalis montana</i>)	Virginia Pepperweed (<i>Lepidium virginicum</i>)
Common Yarrow (<i>Achillea millefolium</i>)	White Campion (<i>Silene latifolia</i>)
Corn Cockle (<i>Agrostemma githago</i>)	White Vervain (<i>Verbena urticifolia</i>)
Cranesbill Geranium (<i>Geranium sanguineum</i>)	Wild Garlic (<i>Allium vineale</i>)
Curly Dock (<i>Rumex crispus</i>)	Wild Geranium (<i>Geranium maculatum</i>)
Daisy Fleabane (<i>Erigeron annuus</i>)	Wild Strawberry (<i>Fragaria virginiana</i>)
Dame' Violet (Rocket) (<i>Hesperis matronalis</i>)	Winged Loosestrife (<i>Lythrum alatum</i>)
Depford Pink (<i>Dianthus armeria</i>)	Yarrow (<i>Achillea millefolium</i>)
Field Bindweed (<i>Convolvulus arvensis</i>)	Yellow Rocket (<i>Barbarea vulgaris</i>)
Garlic Mustard (<i>Alliaria petiolata</i>)	Yellow Wood Sorrel (<i>Oxalis acetosella</i>)
Vines	
Fox Grape (<i>Vitis labrusca</i>)	Summer Grape (<i>Vitis argentifolia</i>)
Poison Ivy (<i>Toxicodendron radicans</i>)	Virginia Creeper (<i>Parthenocissus quinquefolia</i>)
Ferns	
Christmas Fern (<i>Polystichum acrostichoides</i>) *	Marsh Fern (<i>Thelypteris thelypteroides</i>) *
Lady Fern (<i>Athyrium filix-femina</i>) *	Sensitive Fern (<i>Onoclea sensibilis</i>)
Marginal Wood Fern (<i>Dryopteris marginalis</i>) *	
Grasses	
Blue Joint Grass (<i>Calamagrotis canadensis</i>)	Reed Canary Grass (<i>Phalaris arundinacea</i>)
Brome Grasses (<i>Bromus</i> spp.)	Rice Cut Grass (<i>Leersia oryzoides</i>)
Common Reed (<i>Phragmites australis</i>)	Stout Blue-eyed Grass (<i>Sisyrinchium angustifolium</i>)
Japanese Stilt Grass (<i>Microstegium vimineum</i>)	Timothy (<i>Phleum pretense</i>)
Meadow Fescue (<i>Festuca elatior arundinacea</i>)	Upland Bentgrass (<i>Agrostis perennans</i>)
Orchard Grass (<i>Dactylis glomerata</i>)	Wild Rye (<i>Elymus</i> spp. (<i>canadensis</i>))
Quackgrass (<i>Elytrigia repens</i>)	Witchgrass (<i>Panicum capillare</i>)

Table 3.3-1 Observed Vegetation Species	
Common name (<i>Scientific name</i>)	
Red Fescue (<i>Festuca rubra</i>)	Wool Grass (<i>Scirpus cyperinus</i>)
Sedges/Rushes	
Canada Rush (<i>Juncus canadensis</i>)	Twig Rush (<i>Cladium mariscoides</i>)
Dark Green Bulrush (<i>Scirpus atrovirens</i>)	<i>Carex bullata</i>
Foxtail Sedge (<i>Carex vulpinoidea</i>)	<i>Carex crinita</i>
Slender (Path) Rush (<i>Juncus tenuis</i>)	<i>Carex intumescens</i>
Soft Rush (<i>Juncus effuses</i>)	<i>Carex lupulina</i>
Soft-stem Bulrush (<i>Scirpus validus</i>)	<i>Carex lurida</i>
Spike Rush (<i>Eleocharis acicularis</i>)	<i>Carex scoparia</i>
Tussock Sedge (<i>Carex stricta</i>)	<i>Carex stipata</i>
* NYS Exploitably Vulnerable Species	
Source: Carpenter Environmental Associates, Inc.; Tim Miller Associates, Inc. 2008	

Wildlife

CEA conducted biological field surveys during 2006. Tim Miller Associates, Inc. staff conducted multiple biological surveys of the project site during the months of June, July and August of 2008. Both these investigations focused on determining the presence/absence of birds, herptiles and mammals utilizing on-site habitats. Survey methods included direct or indirect (i.e. tracks, droppings, hair, feathers, etc.) observations, audible observations, nest searches and overturning of logs, large stones and other debris. In addition, a Summer Woodland Bat Survey was conducted relative to the Indiana Bat, by Bat Conservation and Management, Inc., on August 8 and 9, 2008, included as Appendix F; and a Timber Rattlesnake Habitat Assessment was conducted by Ecological Consulting, Inc. on July 31, 2008, included as Appendix G.

The small woodlands and open fields on the site provide wildlife habitat for a number of common species, including deer, raccoon, opossum, chipmunk, and gray squirrel. Bird species that selectively reside within tree canopies (e.g. owls, warblers and vireos) may be transients on the site. The mowed pastures on site have the potential to provide habitat for other species of birds including meadowlarks and bluebirds. The isolated nature of this habitat type along with the proximity of major roadways are likely to be limiting factors affecting the presence/absence of these species. The streams within the site were observed to typically have a sediment-fouled gravel/stone or mud substrate and could house populations of 2-lined salamanders and green frogs.

All of the dominant species at the site are considered to be highly mobile and generally adaptable to the existing suburban setting of the region. The observed wildlife population densities at the project site are considered to be in the low to normal range. This is attributable to the size, isolated nature, and predominantly low quality vegetation on the site which limits the diversity and value of the on-site wildlife habitat.

In addition to the habitat types listed above, the project site and surrounding properties also contain limited areas of "edge habitat" that occur at the interface of different habitat types (i.e. between woodlands and field areas). These edge habitats are often utilized by foraging wildlife species such as deer, especially during the early morning and evening hours.

Table 3.3-2 provides a list of wildlife species common to the area which are known to or could reasonably be expected to utilize the habitat types present on the project site. The list is not limited to direct site observations, but is a more thorough compilation of observations that have been documented throughout Rockland County in similar habitat conditions. It indicates, by asterisks, those species that were identified during project related field activities.

No federal or state-listed rare plant species, habitats or significant natural communities were identified on the by project biologists.

**Table 3.3-2
Project Site Wildlife**

Common Name	Scientific Name	Common Name	Scientific Name
Mammals		Birds	
Big brown bat	<i>Eptesicus fuscus</i>	American Black Duck	<i>Anas rubripes</i>
Eastern chipmunk	<i>Tamias striatus</i>	American Crow	<i>Corvus brachyrhynchos</i>
Eastern cottontail	<i>Sylvilagus floridanus</i>	American Goldfinch	<i>Carduelis tristis</i>
Eastern red bat	<i>Lasiurus borealis</i>	American Kestrel	<i>Falco sparverius</i>
Gray squirrel	<i>Sciurus carolinensis</i>	American Robin	<i>Turdus migratorius</i>
House mouse	<i>Mus musculus</i>	American Woodcock	<i>Philohela minor</i>
Little brown bat	<i>Myotis lucifugus</i>	Baltimore Oriole	<i>Icterus galbula</i>
Northern myotis	<i>Myotis septentrionalis</i>	Barn Swallow	<i>Hirundo rustica</i>
Opossum	<i>Didelphis virginiana</i>	Black-capped Chickadee	<i>Parus atricapillus</i>
Raccoon	<i>Procyon lotor</i>	Blue Jay	<i>Cyanocitta cristata</i>
Red fox	<i>Vulpes vulpes</i>	Brown Thrasher	<i>Toxostoma rufum</i>
Red squirrel	<i>Tamiasciurus hudsonicus</i>	Canada Goose	<i>Branta canadensis</i>
Striped skunk	<i>Mephitis mephitis</i>	Common Raven	<i>Corvus corax</i>
Whitetail deer	<i>Odocoileus virginianus</i>	Common Grackle	<i>Quiscalus quiscula</i>
White footed mouse	<i>Peromyscus leucopus</i>	Common Yellowthroat	<i>Geothlypis trichas</i>
Woodchuck	<i>Marmota monax</i>	Dark-eyed Junco	<i>Junco hyemalis</i>
Reptiles		Downy Woodpecker	<i>Picoides pubescens</i>
Box turtle	<i>Terrapene carolina</i>	Eastern Phoebe	<i>Sayornis phoebe</i>
Eastern Racer		Eastern screech owl	<i>Otus asio</i>
Painted turtle	<i>Chrysemys picta</i>	European Starling	<i>Sturnus vulgaris</i>
Garter snake	<i>Thamnophis sirtalis</i>	Flicker	<i>Colaptes auratus</i>
Amphibians		Gray Catbird	<i>Dumetella carolinensis</i>
Two-lined salamander	<i>Eurycea bislineata</i>	Great Blue Heron	<i>Ardea herodias</i>
Spring Peeper		Hairy Woodpecker	<i>Picoides villosus</i>
American toad	<i>Bufo americanus</i>	House wren	<i>Troglodytes aedon</i>
Pickerel frog	<i>Rana palustris</i>	Indigo Bunting	<i>Passerina cyanea</i>
Bullfrog	<i>Rana catesbeiana</i>	Mallard	<i>Anas platyrhynchos</i>
Green frog	<i>Rana clamitans</i>	Mourning Dove	<i>Zenaida macroura</i>
		Northern Cardinal	<i>Cardinalis cardinalis</i>
		Northern Mockingbird	<i>Mimus polyglottos</i>
		Red-bellied Woodpecker	<i>Melanerpes carolinus</i>
		Red-eyed Vireo	<i>Vireo olivaceus</i>
		Red-tailed Hawk	<i>Buteo jamaicensis</i>
		Red-winged blackbird	<i>Agelaius phoeniceus</i>
		Song Sparrow	<i>Melospiza melodia</i>
		Swamp Sparrow	<i>Melospiza georgiana</i>
		Tree Swallow	<i>Tachycineta bicolor</i>
		Tufted Titmouse	<i>Parus bicolor</i>
		Turkey Vulture	<i>Cathartes aura</i>
		White-breasted Nuthatch	<i>Sitta carolinensis</i>
		Wild Turkey	<i>Meleagris gallopavo</i>

Source: Carpenter Environmental Associates, Inc.; Bat Conservation and Management, Inc.; Ecological Consulting Inc.; Tim Miller Associates, Inc., 2008.

Protected Habitats, Natural Communities or Animal Species

Correspondence with the NYSDEC Natural Heritage Program (NHP) in August of 2006 by Carpenter Environmental Associates and again by TMA in August of 2008 indicated that the State-listed threatened timber rattlesnake has been found within 1.5 miles of the project site (see NHP letter in Appendix B, Correspondence).

The NHP also indicates a chestnut oak forest community as existing near the project within the Town of Ramapo. As stated above in the ecological communities descriptions, no chestnut oak forest communities are present on the project site.

Timber Rattlesnake (Crotalus horridus) - State-listed Threatened Species

TMA and Jason Tesauro Ecological Consulting conducted rattlesnake surveys (Appendix G) to determine the presence, or absence, of key structural and vegetative features typically associated with timber rattlesnake habitat. Rock outcrops, talus slopes, cliffs and/or ledges suitable for winter hibernation, and spring basking, of the timber rattlesnake were not observed on the site of the proposed development. Several other habitat features that might be conducive to summer time foraging by rattlesnakes were observed within the subject property, but significant obstacles block any corridors connecting the site with known rattlesnake habitat, located to the west of the project site on Ramapo Mountain. US Route 202 and a significantly wide swath of State regulated wetlands (NYSDEC TH-14 and TH-28) with vast amounts of open water associated with the Mahwah River separate Ramapo Mountain from the project site. Portions of the successional forest within the boundaries of the site may be a suitable summer foraging habitat since it is located within the home range of a local rattle snake population, typically up to 1.5 miles from the den. However, since prime basking and hibernation habitats appear to be located a significant distance from the property, and road and water features separate the site from these locations, use of the forest by snakes for foraging is considered to be unlikely.

Eastern Box Turtle (Terrapene carolina) - State-listed Special Concern Species

Of the amphibians and reptiles identified on the site, the Eastern box turtle is listed as a Species of Special Concern by the NYSDEC. A single, juvenile male was observed by TMA in the wooded area north of the power lines near Wetland Areas 3 and 3A. CEA also observed a box turtle within the gas transmission easement.

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.”² The major threats to box turtles appear to be pesticide poisoning and collection as pets. Special Concern species are not afforded any specific protection under State Law and are listed for informational purposes only.

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

² New York State Department of Environmental Conservation. 2006. List of Endangered, Threatened and Special Concern Fish & Wildlife Species of New York State.

puddles. Box turtles typically have small home ranges and may be sustained within areas of appropriate habitat as small as one acre.

Habitat potential for the other species that are State-listed as endangered, threatened or of special concern³ and that could potentially utilize the site was analyzed. The site was examined for potential use by the following species based strictly on the presence of the existing habitats available on site:

- Indiana bat - Endangered;
- bog turtle - Endangered;
- northern cricket frog - Endangered;
- eastern hognose snake - Special Concern;
- spotted turtle - Special Concern;
- wood turtle - Special Concern;

Indiana bat (Myotis sodalis)

The Indiana bat in New York overwinters in the caves or mines of five counties, all to the north of Rockland County. In springtime, migrations of 40 miles or more are made to summer roosting areas. The nearest known overwintering location for Indiana bat is located in Ulster County. Summer roosts and nursery and feeding activity are associated with forested and old field or riparian habitats. Preferred forested roosting habitat includes the presence of medium to large trees with snags or strongly exfoliating bark and/or dense stands of evergreen trees.

A Summer Woodland Bat Survey (Appendix F) was performed by Bat Conservation and Management, Inc. on August 8 and 9, 2008 to provide an inventory of summer bat species occurring in the vicinity of the proposed development. Indiana bats were not captured during this survey and are not likely to utilize any of the available on site habitat.

Bog turtle (Clemmys muhlenbergii) or (Glyptemys muhlenbergii)

The bog turtle is a semi-aquatic species, preferring habitat with cool, shallow, slow-moving water, deep soft muck soils, and tussock-forming herbaceous vegetation. Nesting typically occurs on top of relatively tall and sparsely vegetated tussocks while shrub and tree root systems are frequently associated with hibernation sites. It appears that the lack of open fen habitat, which provides the necessary basking and nesting opportunities for bog turtles is not present on site.

Northern Cricket Frog (Acris crepitans)

The northern cricket frog breeds in shallow ponds or lakes with extensive beds of submerged or floating vegetation. The farm pond on site does not appear to present structure that would be utilized by this species for maintaining breeding populations.

³ NYSDEC. 2006. Endangered, Threatened and Special Concern Fish and Wildlife Species of New York State. Website: www.dec.state.ny.us/website/dfwmr/wildlife/endspec/etsclist.html#top

Eastern Hognose Snake (Heterodon platyrhinos)

There is the possibility that habitat on-site could support the eastern hognose snake. This species is listed by New York State as being a species of special concern. It is a highly secretive species that may utilize any of the stone walls, wooded areas and pastures of the site for cover and feeding.

Spotted Turtle (Clemmys guttata)

This species may exist in wooded and meadow habitats, but typically returns to woodland vernal pools for feeding, especially when breaking dormancy in the spring months. The lack of vernal pools on this property would appear to limit its potential for supporting spotted turtle individuals.

Wood Turtle (Clemmys insculpta)

Wood turtles exploit moderate to fast flowing rivers and large cool or cold water streams, utilizing the deep bank undercuts of such waters for winter burrows and for nesting. In the summer, they exploit extensive, landscape-scale, marshy meadows and stream-side forest habitats for foraging. The absence of suitable stream corridors with sandy banks and overhangs for nesting and hibernating on this property would appear to limit its potential for supporting wood turtles.

Longtail salamander (Eurycea longicauda)

There is the possibility that habitat on-site could support populations of longtail salamanders. It is a secretive, terrestrial animal as an adult, and might utilize any of the stone walls, wooded areas and pastures of the site for daytime cover as well as during its nocturnal feeding forays. Egg deposition occurs in stony crevices or underneath cobble associated with stream beds or seeps. Since the proposed development would leave undeveloped areas of each of these habitats, the property could continue to maintain populations of longtail salamanders if they are present on this site.

Blue-spotted Salamander (Ambystoma laterale)

The site lacks the vernal pools or other significant wetland areas with appropriate hydrology and vegetation to provide breeding habitat for this species.

The USFWS has similarly been requested to provide information regarding occurrences of Federally-listed threatened or endangered species within the vicinity of the project. Their response has not been received but they have provided their current best available information regarding Federally-listed species "known or likely" to occur in Rockland County. The county list includes four species: Bog turtle (*Clemmys [=Glyptemys] muhlengerrgii* - Threatened), Indiana bat (*Myotis sodalis* - Endangered), Small whorled pogonia (*Isotria medeoloides* - Threatened) and the shortnose sturgeon (*Acipenser brevirostrum* - Endangered). One of these species, the Bog Turtle and the Indiana Bat have been discussed. The sturgeon, is only known to be present in the Hudson River and another species, the small whorled pogonia, is not listed to be known as occurring in New York State⁴.

⁴ U.S. Fish & Wildlife Service. 2008. Small whorled pogonia (*Isotria medeoloides*).
Website: <http://ecos.fws.gov/speciesProfile/SpeciesReport.do?spcode=Q1XL>

Wetlands

A detailed wetland delineation was conducted by CEA on the project site in accordance with both the US Army Corps of Engineers (ACOE) as well as the New York State Department of Environmental Conservation guidelines. The Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987) and supplemental guidelines were used to delineate federal wetlands pursuant to the ACOE. The NYSDEC Freshwater Wetland Delineation Manual (1995) was used to delineate state wetlands.

As recommended in the guidelines, available data on the site were obtained from US Geological Survey quadrangle maps, US Fish and Wildlife Service National Wetlands Inventory Maps (NWI), NYSDEC Freshwater Wetland Maps, US Department of Agriculture Soil Survey maps for Rockland County and other relevant sources.

The NWI maps show the general configuration, location and category of wetlands found within a given area of coverage. An NWI wetland map showing the project site can be seen in Figure 3.3-2.

Because the NWI maps are limited in precision by their scale and by the identification method used, the presence and boundaries of wetlands shown on the NWI maps need to be more precisely verified in the field. Commonly, small wetland areas, and, less frequently, large wetland areas are not precisely located on NWI maps and may not be wetlands that exhibit the three parameters set forth in ACOE guidance.

The NYSDEC is responsible for mapping larger freshwater wetlands that are 12.4 acres in size or greater, or some smaller wetlands that are of unusual local importance (Environmental Conservation Law, Article 24). A generalized NYSDEC Freshwater Wetlands Map for the project site is included in Figure 3.3-3. This map is also limited in precision due the scale and mapping techniques. The NYSDEC Freshwater Wetlands Map identifies two wetlands (TH-14 and TH-30) extending onto portions of the site. The portions of NYSDEC TH-14 and TH-30 that are located within the project boundaries were validated by Brian Drumm of the NYSDEC on November 21, 2006.

Wetlands were delineated on the site in June 2005, by CEA. The precise surveyed locations of these delineated wetlands are shown on Figure 3.3-4. During the delineation survey it was determined that areas of wetlands on this property were more frequent than the NWI mapping indicated.

The largest area delineated was designated Wetland 1, and is part of the NYS DEC designated wetland, TH-30. Wetland 2 is also regulated by NYS DEC as part of NYS DEC Wetland TH-14, and is located on the west side of Route 202. Four other wetlands exist on site, identified as Wetlands 3, 3A, 4 and 5, which are regulated by the United States Army Corps of Engineers (ACOE). Wetlands 3 and 3A are associated with a watercourse that flows north on the northern portion of the property. Wetlands 4 and 5 are associated with the farm pond in the center of the site. In total, there are approximately 26.9 acres of wetlands on the project site.

New York Environmental Conservation Law (NYS ECL) cites the natural resource benefits of wetlands to include various provisions of flood protection, wildlife habitat, open space uses

and water resource protection. Wetland 2 includes a portion of the Mahwah River and is the largest and only wetland with permanent surface water on this site. These characteristics allow Wetland 2 to be considered to provide greater wetlands benefits than the two smaller wetlands. Wetland area 2 is located on the north side of US Route 202 in the portion of the project site which is to be left undeveloped.

Wetland Area 1

Wetland Area 1 consists of 12.20 acres of NYSDEC Freshwater Wetland TH-30, a Class II forested wetland, and is nearly adjacent to Route 306 on the eastern edge of the property. Hydrology for the wetland is provided by a small pond and watershed located off the property. An intermittent stream flows northwesterly from the wetland, crossing under Route 202 and eventually into the Mahwah River. The NWI describes the wetland as PFO1C (Palustrine, Forested, Broad-leaved Deciduous, Seasonally Flooded) and the stream as R3UBH (Riverine, Upper Perennial, Unconsolidated Bottom, Permanently flooded).

Wetland Area 2

Wetland Area 2 is part of NYSDEC Freshwater Wetland TH-14, a Class I forested wetland. The 8.46 acre wetland is located on the west side of Route 202 where no development is proposed on this section of the property. This wetland is described by the NWI as PFO1E (Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded/Saturated).

Wetland Area 3

Wetland Area 3 is a 0.29 acre isolated ACOE wetland located within the power line right-of-way on the northern end of the property. This small wet meadow is primarily associated with the intermittent stream from Wetland Area 1 and is not mapped by the NWI.

Wetland Area 3A

Wetland Area 3A is another small isolated (0.08 acre) wet meadow located within the power line easement, east of Wetland Area 3. Wetland 3A also is not mapped by the NWI.

Wetland Area 4

Wetland Area 4 is a 5.75 acre forested wetland that is under ACOE jurisdiction. This wetland is located in the southern portion of the site and is fed hydrologically by two intermittent farm ditches. The ditch originating from the area near Scenic Drive located south of the site is listed on the NWI map as R4SBC (Riverine, Intermittent, Streambed, Seasonally Flooded). The second ditch, also originating from the area around Scenic Drive, is not identified on the NWI map.

Wetland Area 5

Wetland Area 5 is a ACOE jurisdictional wetland consisting of 0.13 acres of emergent wetland located on the southwest edge of the existing farm pond in the center of the site. The farm pond is a NYSDEC Class B pond associated with the Class B stream which discharges from it to the north. The intermittent stream outfall from the pond runs westward to and under Route 202 and through Wetland 2 to the Mahwah River. The NWI map lists the

pond as PubHh (Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded) and the outfall stream as R3UBH (Riverine, Upper Perennial, Unconsolidated Bottom, Permanently Flooded).

Table 3.3-3 Assessment of On-site Freshwater Wetland Benefits						
Freshwater Wetland Benefit	Wetland 1	Wetland 2	Wetland 3	Wetland 3A	Wetland 4	Wetland 5
1) Flood and storm control by the hydrologic absorption and storage capacity of freshwater wetlands.	Medium	High	Low	Low	Medium	Low
2) Wildlife habitat by providing breeding, nesting and feeding grounds and cover for many forms of wildlife, wildfowl and shorebirds, including migratory wildfowl and rare species such as the bald eagle and osprey.	Low	High	Low	Low	Low	Low
3) Protection of subsurface water resources and provision for valuable watersheds and recharging groundwater supplies.	Low	High	Low	Low	Low	Low
4) Recreation by providing areas for hunting, fishing, boating, hiking, bird watching, photography, camping and other uses:	N/A	Medium	N/A	N/A	N/A	N/A
5) Pollution treatment by serving as biological and chemical oxidation basins.	Low	High	Low	Low	Low	Low
6) Erosion control by serving as sedimentation areas and filtering basins, absorbing silt and organic matter and protecting channels and harbors.	Low	Medium	Low	Low	Medium	Low
7) Education and scientific research by providing readily accessible outdoor bio-physical laboratories, living classrooms and vast training and education resources.	N/A	Medium	N/A	N/A	N/A	N/A
8) Open space and aesthetic appreciation by providing often the only remaining open areas along crowded riverfronts and coastal regions.	N/A	Medium	N/A	N/A	N/A	N/A
9) Sources of nutrients in the freshwater food cycles and nursery grounds and sanctuaries for freshwater fish.	N/A	Medium	N/A	N/A	N/A	N/A
Sources: Environmental Conservation Law, Article 24, Title 1, Section 24-0105-7 & Tim Miller Associates, Inc., 2008.						

Previous Wetland Disturbances

The applicant purchased the project site in 2002. In an effort to provide drainage from the site to the man made farm pond in the center of the site, the applicant engaged in the dredging of man made drainage channels in the vicinity of the pond. The only intent on the part of the applicant was to improve drainage flow to the farm pond and clean up the brush and heavily silted areas on site. On May 17, 2004 the New York District of the ACOE issued

a Cease and Desist Order with respect to this dredging of drainage channels to Scenic Development, LLC, based on a May 12, 2004 site inspection in which an ACOE representative observed fill being inadvertently placed in ACOE regulated wetlands located on the project site without authorization. It was not the applicant's intent to conduct any activities that would affect waters of the United States. The applicant immediately complied with the Cease and Desist order. CEA responded to the Cease and Desist Order in letters dated November 27, 2006 and January 12, 2007 detailing measures taken to remediate the impacted areas. The identified remediation measures were implemented and approved by the ACOE and by the Town of Ramapo. These areas are shown on the site plan and are located in areas which remain completely undisturbed. A February 1, 2007 letter by Chief Christopher Mallery, Ph.D., on behalf of the ACOE, (Appendix B, Correspondence) rescinded the May 17, 2004 Cease and Desist Order based the implementation of the identified remediation measures, and furthermore conducted a review of the proposal for the further development of the site.

The letter from Chief Mallery states that the potential impacts from the proposed development of Patrick Farm, as detailed in the reviewed submittal, were sufficiently minor in scope as to be considered authorized under nationwide general permits, provided that the project is carried out in accordance with the general conditions of the nationwide general permit program. If, at any time during the course of construction, the project was to be modified to include additional impacts to regulated areas additional written authorization from the ACOE would be necessary. The proposed project does not include any impacts to ACOE regulated wetlands and waters. The most recent site plan, the subject of this DEIS, has been resubmitted to the ACOE for confirmation the development is eligible under a nationwide permit. The most recent submission is included in Appendix B, Correspondence.

Alterations to the On Site Dam

The farm pond dam will be improved as part of the project and will require a Dam Permit from the NYSDEC. Plans outlining the proposed improvements will be submitted to the Town in conjunction with the Site and Subdivision Plans.

3.3.2 Potential Impacts

Vegetation

Based upon the current proposed site plan the project proposes to permanently disturb approximately 113.5 acres (54.5 percent) of the project area. Ecological communities that would be directly impacted include successional old field, oak-tulip tree forest, successional southern hardwood forest, unpaved road/path, and interior of barns/agricultural buildings. No disturbance is proposed for the wetland communities on site.

Of the 113.7 acres of total disturbance, 69.1 acres of the proposed project will result in the loss of and/or change in forested habitat that connects similar habitat to the west and east of the project site. Figure 3.3-6 shows the proposed site plan and defines the limits of disturbance superimposed on the aerial photo of the site's existing conditions. As shown in Figure 3.3-5, 68.1 acres of trees will be able to be preserved on site. Construction in the center of the site, will result in the loss of approximately 45.2 acres of trees. Figure 3.3-7 shows a Sample Tree Survey Acre within the zone change area. As Figure 3.3-7 shows approximately 100 trees will be harvested from this area. However, the Landscape Plan for

the project illustrates the significant new plantings which are included in the project design. A comparison of the Sample Tree Survey Acre, with the proposed Landscape Plan indicates more than 50 trees will be replanted in this same area. It should also be noted that this Sample Tree Survey Acre is heavily wooded. Approximately 60 percent of the zone change area is wooded, the remaining 40 percent has already been cleared, thus no trees will be harvested from these already cleared areas. The loss of the on site forested and unforested uplands will alter the movement of most of the wildlife that may use this property to access the adjacent forested areas. It will also result in the loss of habitat for those individuals that currently use the site. Existing habitat along the edges of the property within the required property boundary setbacks and within the wetlands and wetland buffers would remain undisturbed. These areas, in conjunction with the adjacent hedgerows and open power line and gas easements, would continue to provide resident and local wildlife populations the opportunity, albeit modified, to move around the development to access other undisturbed forest lands in the vicinity.

Tree protection measures would be implemented to save trees that exist near the limits of disturbance on the boundaries of the development.

The Proposed Action would result in an overall net reduction in some marginal habitat of successional fields.

Approximately 113.7 acres (55.3 percent) of the existing old field habitat on the site would be disturbed, however all of the on site wetlands and the 100 foot adjacent lands around the NYS DEC wetlands would remain undisturbed.

No state listed rare or endangered plant species or communities identified on the site by the NYSDEC NHP as occurring within areas adjacent to the project site (i.e. Clustered sedge and Hyssop skullcap) were observed during visits to the site by project consultants.

Wildlife

Nearby residential and nonresidential developments along US Route 202, NYS Route 306 and Scenic Drive separate the site from the larger wetlands complex and forested habitat areas in the area. Due to the suburban landscape that surrounds the site, the overall diversity of wildlife in the area is expected to be low and dominated by generalist species capable of tolerating human contact. Such species include small mammals like chipmunk, gray squirrel, raccoon, opossum, cottontail rabbit, deer mouse and woodchuck. With the proposed development, it is likely that deer would occur less frequently on the site due to the reduction in browsing and the increased human activity. Deer would continue to pass through neighboring properties.

The old field habitat that predominates on the site is of marginal value to wildlife, as it consists of farmed areas of poor soils and low plant diversity. Areas along the on-site wetlands and wetland buffer zones provide a more diverse plant community that is not to be directly impacted by project development.

In general, as a project site is developed and habitat is reduced, some species would relocate to similar habitats off-site. The composition of the wildlife population on the project site may be altered immediately adjacent to developed areas, as species able to adapt to a suburban environment (such as raccoons, opossum, woodchucks, mice, songbirds, etc.)

would have a greater ecological advantage in comparison to species that are less tolerant of human activity.

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

Timber Rattlesnake (Crotalus horridus)

Field surveys for timber rattlesnakes and/or timber rattlesnake habitat which were conducted both by TMA and Jason Tesauro Ecological Consulting. Neither field survey observed any timber rattlesnakes on-site. The reports indicated on-site habitat was not suitable for use by the species, therefore, no impacts to timber rattlesnakes are anticipated.

Indiana bat (Myotis sodalis)

The Summer Woodland Bat Survey conducted on the project site during August of 2008 by Bat Conservation and Management, Inc. did not observe the presence of any Indian Bats on site.

No species of wildlife listed as threatened or endangered were observed on the project site, thus no impact to threatened or endangered species are anticipated.

Wetland and Buffer Area Disturbances

The proposed project would not disturb any on-site regulated NYSDEC freshwater wetlands or the 100-foot area adjacent to the wetlands or any ACOE regulated wetlands.

Short-term and Long-term Modifications to Wetlands

The project would not result in any short-term or long-term modifications to the functions of on-site wetlands.

Indirect impacts that could result from the development would include potential water quality impacts associated with uncontrolled discharge of stormwater runoff. To address this potential impact, a Storm Water Pollution Prevention Plan SWPPP which can be found in Appendix D, has been prepared and is described under "Mitigation Measures" below which provides physical and biological controls over the post-development runoff rates and water quality conditions.

Qualitative Analysis of Construction-Related Impacts

Erosion and sedimentation from lands cleared during development can cause indirect impacts to adjacent wetland areas. A Soil Erosion and Sediment Control plan is provided with the site plan and described in Section 3.1 of the DEIS.

Although construction of the project would require regrading over 55.3 percent of the site, existing drainage patterns would generally remain the same, with all drainage occurring to

the Mahwah River to the west. However, as a result of additional impervious area, more surface runoff would occur and stormwater basins would be developed to control runoff characteristics. A hydrologic analysis has been prepared to estimate the increase in runoff from the proposed development. Peak rates of surface runoff would significantly increase on both the eastern and western portions of the site if not mitigated.

The proposed development would also increase pollutant loadings found in site stormwater runoff. During construction activities, potential short-term effects from regrading and stockpiling of soil materials can impact surface water quality by the loss of sediment and suspended solids to on-site and downstream waters. Long-term impacts to surface water quality can result after developments are completed and operational. Increases in levels of pollutants typically associated with residential and commercial land use activities would occur as well.

3.3.3 Mitigation Measures

Mitigation measures can be implemented which can reduce or avoid potential significant adverse environmental impacts. The project sponsor is committed to minimizing impacts to wetlands attributable to construction and development activities. The development team has designed the project to reduce or avoid all direct impacts to wetlands and wetland buffer zones. Some of these measures are identified and addressed below, while others are derived indirectly after mitigation of other potential impacts of the project, such as alterations to surface waters, soils or the visual landscape, and are presented in other sections specific to those topics.

Stormwater Pollution Prevention Plan - SWPPP

To address impacts to surface water quality, stormwater quality measures have been engineered in accordance with NYSDEC requirements. The designs would incorporate the standards presented in the latest New York State Stormwater Management Design Manual (August 2003). Stormwater detention basins with forebays would be created on the site. The plan is presented in Appendix D of the DEIS.

The proposed water quality basins would include wetland plantings selected for enhancing water quality improvements and wildlife benefits. Although not proposed as wetland mitigation, these created ponds would provide comparable functions and values as some of the wetlands in the area, and would generally augment the function of these wetlands. All water discharged from the water quality basins would flow in a pattern similar to the pre-development drainage condition of the site.

Erosion and Sediment Control Plan

The development will require a NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities (Permit No. GP-0-08-001) as more than one (1) acre of land will be disturbed. Erosion and sedimentation will be controlled during the construction period by temporary devices in accordance with the Erosion Control Plan developed specifically for this project site as seen on drawing numbers 16-17 within the drawing set included with of this document. The details for erosion control devices are shown on drawing number 18, included within this same plan set.

The erosion control plan has been prepared by Leonard Jackson, P.C. and addresses erosion control and slope stabilization during all construction phases of the project. These plans were developed in accordance with the Erosion and Sediment Control Guidelines in the NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activities (Permit No. GP-0-08-001). The plans includes limitations on the area of disturbance and devices to be used to help control soil erosion such as silt fencing, storm inlet protection and a stabilized construction entrance.

Erosion controls include silt fencing to surround all grading activities as well as the installation of curb inlet sediment traps for the proposed stormwater drains along the access roads. The plan proposes seven (7) construction entrances which would be stabilized and used for the duration of construction. The stabilized entrances will prevent soil from being carried onto the adjacent and nearby roads. One (1) of the stabilized construction entrances is proposed on the western property boundary to access Route 202. A second is located along the eastern boundary to gain access to Route 306. The remaining five (5) minor construction entrances lead to the individual single family lots located along the southern boundary accessing Scenic Drive.

Eight (8) Construction Sections, shown on Figure 3.3-6, Construction Section Plan, are proposed for the erosion control plan.

- Section 1 includes the construction of both stabilized construction entrances as well as the construction of a total of 202 multifamily units and the road needed to access these units. Of the 202 units to be constructed, Phase 1 includes construction of the 72 units of workforce condominium flats and construction of 24 community service worker rental apartments. Phase 1 also includes the construction of 17 single family residential lots, and the roads to access these units, located along the northern portion of the project site along US Route 202. In addition a temporary sediment basin located in proximity to the single family homes shall be constructed.
- Section 2 includes the construction of 142 multifamily units and the stormwater basins proposed within the central portion of the property near the existing pond.
- Section 3 includes the construction of 66 multifamily units within the southeastern portion of the property.
- Section 4 includes the construction of 21 single family residential lots along the eastern boundary of the property.
- Section 5 includes the construction of 17 single family residential lots, and the roads to access these units, located within the southeastern portion of the property.
- Section 6 includes the construction of 14 single family residential units, and the roads to access these units, within the southwestern portion of the property.
- Section 7 includes the construction of 13 single family residential units, and the roads to access these units, along the western boundary of the property.

- Section 8 includes the construction of 5 single family residential lots along Scenic Drive and the construction entrances associated with each lot.

The stabilized construction entrances, mentioned above, will be constructed using 1 to 4-inch stone, or reclaimed recycled concrete. It will be not less than 50 feet in length, not less than 6 inches thick and 12-feet wide (minimum) but not less than the full width at points where ingress and egress occur or 24-feet in the case it is the only entrance to the site. Filter cloth will be placed over the entire area prior to the placement of stone. All surface water that is currently flowing or diverted to the construction entrance will be piped beneath the entrance. If the piping is impractical, a mountable berm with 5:1 slopes will be permitted. The entrance will be maintained in a condition to prevent tracking or flowing of sediment onto the public right of way. Any sediment that is spilled, dropped, washed or tracked onto the public right of way will be removed immediately. If washing is required it will be done in an area stabilized with stone, which drains to an approved sediment trapping device. Inspection and needed maintenance will be provided after each rain.

Silt fencing will also be placed around all proposed roads, along the northerly property line, and along but outside the 100-foot wetland buffer, during the initial phase of the erosion control process. When two pieces of filter cloth adjoin each other they will be overlapped by at least 6-inches and folded, to maintain the proper erosion control function. Maintenance will be performed on the fabric as needed and material will be removed when “bulges” develop in the silt fence.

As described in Chapter 3.1 and depicted on the full size plan, the ESC plan would include guidelines and controls for conducting construction elements such as:

- Installation of protective fencing around trees and other features to be preserved.
- Installation of a stabilized construction entrance and temporary perimeter silt fencing around the construction area.
- Construct of permanent water quality and detention basins and installation of temporary swales and berms as needed to direct runoff to the basins. The basins are to be utilized as temporary sediment traps during construction.
- Clearing and grubbing of vegetation, removal of existing structural debris.
- Provision of temporary sediment protection at all stormwater inlets.
- Maintenance of silt fence barriers, sediment traps, and other erosion control measures in working order throughout the construction period.
- Planting, seeding or paving of all disturbed areas in a timely manner to prevent or minimize erosion.
- Monitoring all provisions over time to ensure successful establishment of all landscape plantings and other permanent erosion control measures at the site, including the prompt stabilization and restoration of damaged plantings and seeded areas.

To mitigate for increased surface runoff, stormwater facilities have been engineered to prevent impacts to on-site wetlands and downstream areas. Water detention subbasins are proposed to reduce post-development peak flow rates to levels at or below existing rates.

Landscaping with Native Vegetation

Native species would be used for landscaping purposes and for revegetating the proposed water quality and stormwater detention basins where possible. This preference is based on native plant adaptability to local climatic conditions, including temperature, precipitation and length of the growing season. Many native species selected for landscape use may also be beneficial to indigenous wildlife, especially birds, by providing wildlife benefits such as nesting, cover and food. Typical landscape plantings that may be chosen for their hardiness to the local climate and to the proposed settings on the site include the native or regionally adaptable landscaping species listed in Table 3.3-4.

The landscaping plan for the project will present major evergreen and deciduous and shrub plantings to be installed throughout the project site. This list would be supplemented with other minor shrubs and plants that would provide a variety of foraging, nesting and shelter benefits for the wildlife that repopulates the site. Plantings would be determined in consultation with the Planning Board and its consultants.

Table 3.3-4 Regional Upland Condition Landscaping Plantings	
Trees	Shrubs
Deciduous Trees - Major	Deciduous Shrubs
Horse chestnut (<i>Aesculus hippocastanum</i>)	Common witchhazel (<i>Hamamelis virginiana</i>)
Red maple (<i>Acer rubrum</i>)	Staghorn sumac (<i>Rhus typhina</i>)
American beech (<i>Fagus grandifolia</i>)	Red-osier dogwood (<i>Cornus stolonifera</i>)
White oak (<i>Quercus alba</i>)	Sweetfern (<i>Comptonia peregrina</i>)
Red oak (<i>Quercus rubra</i>)	Winterberry (<i>Ilex verticillata</i>)
American elm (<i>Ulmus americana</i>)	Juneberry (<i>Amelanchier canadensis</i>)
Sugar maple (<i>Acer saccharum</i>)	Northern bayberry (<i>Myrica pennsylvanica</i>)
Deciduous Trees - Minor	Viburnums (<i>Viburnum</i> spp.)
Mulberries (<i>Morus</i> spp.)	Elderberries (<i>Sambucus</i> spp.)
Paperbark birch (<i>Betula papyrifera</i>)	Eastern wahoo (<i>Euonymus atropurpureus</i>)
Flowering dogwood (<i>Cornus florida</i>)	Cotoneasters (<i>Cotoneaster</i> spp.)
Crabapples (<i>Malus</i> spp.)	
Cherries (<i>Prunus</i> spp.)	
Plums (<i>Prunus</i> spp.)	
Coniferous Trees	Evergreen shrubs/vines
Colorado spruce (<i>Picea pungens</i>)	Rosebay rhododendron (<i>Rhododendron maximum</i>)
Northern white cedar (<i>Thuja occidentalis</i>)	Leatherleaf viburnum (<i>Viburnum rhytidophyllum</i>)
Douglas fir (<i>Pseudotsuga menziesii</i>)	Eastern red cedar (<i>Juniperus virginiana</i>)
White pine (<i>Pinus strobus</i>)	Mountain laurel (<i>Kalmia latifolia</i>)
Red pine (<i>Pinus resinosa</i>)	
Source: Tim Miller Associates, Inc., 2008.	

While the existing woodland vegetation would be replaced by native ornamental plants, lawns, and landscaped plots within the developed areas, the introduced plantings could still be used as forage by deer and other wildlife and many of the shrub species chosen for landscaping would provide immediate habitat for songbirds and other avian species. Trees that are planted would mature in the long-term and would provide roosting and nesting opportunities for birds that are adaptable to suburban conditions. Coniferous trees and

shrubs such as pines, spruces, firs, arborvitae, and junipers provide spring and summer nest sites as well as year-around shelter. Unmown grasses, meadows and stormwater berm plantings provide cover for ground-nesting birds.

If the presence of white-tailed deer in a community is unwanted, measures can be incorporated into landscaping planning that will provide limited control of the movement of deer onto a property. Deer can be discouraged from a property by utilizing plantings that are not extensively browsed by deer. Additionally, the use of deer repellents throughout a property can alter the use of a property by deer. Discouraging the movement of deer onto and through this property may limit the opportunities for deer-vehicle collisions on adjacent roads.

In addition to their value as hardy plantings, some of the native plant species in Table 3.3-4 are cited by the Cornell Lab of Ornithology as berry and seed-bearing trees and shrubs that would offer songbirds seasonal food sources incidental to their use as landscape plantings.

Summer-fruiting plants provide food during nesting season. Many native fruit-bearing plants which are adaptable to landscaping purposes are available for use, including various species of cherry, chokeberry, raspberry, serviceberry, blackberry, blueberry, mulberry, and elderberry.

Fall-fruiting plants are important for birds in building up or maintaining fat reserves during migration. Examples of these include dogwoods, cotoneasters, and buffalo-berries.

Winter-persistent plants provide season-long fruit sources for winter resident species. Adaptable members of this group include varieties of crabapple, snowberry, bittersweet, sumac, viburnums such as American highbush cranberry, eastern wahoo, and winterberry or other hollies. Oaks, hickories, buckeyes, chestnuts, butternuts, walnuts and hazels provide nutrient rich nuts and acorns as food for birds and mammals as well as providing good nesting habitat for many birds and arboreal mammals.

The following landscaping groups and plants develop seasonal fruiting characteristics that are useful as food for wildlife:

- | | |
|-------------------|---|
| Deciduous Trees: | Red maple (spring fruiting)
Sugar maple (summer fruiting)
Mulberries (summer fruiting)
Juneberries (summer fruiting)
Flowering dogwood (fall fruiting)
Crabapples (fall fruiting with winter-persistent fruit)
White oak (fall fruiting with winter-persistent fruit)
Sumacs (fall fruiting with winter-persistent fruit)
American mountain ash (fall fruiting) |
| Coniferous Trees: | Cedars (fall fruiting with winter-persistent fruit; nest sites)
Spruces (fall fruiting with winter-persistent fruit; nest sites) |
| Native Vines: | Virginia creeper (fall fruiting with winter-persistent fruit) |

Shrubs: Dogwoods (fall fruiting)
Viburnums (fall fruiting; some being winter-persistent)
Winterberry (fall fruiting with winter-persistent fruit)
White fringetree (summer fruiting)
Northern bayberry (fall fruiting with winter-persistent fruit)
Washington hawthorn (fall fruiting)

The proper bedding and positioning of landscape plants is important, as each of the species used would not thrive in all of the soils or exposures presented by the developed site. Particular plant requirements regarding planting, soil, water and sun/shade preferences would be used in determining final plant positioning.

The replacement of invasive plants with native plants would be beneficial to most wildlife species that would repopulate the site. Certain of the invasive species present such as black locust, garlic mustard, multiflora rose and Japanese barberry would be eliminated on landscaped portions of the project site, as shown on the Landscaping Plan, prior to site plan approval.

Protected Plant or Wildlife Species

No species of plants or wildlife identified on the project site are listed as endangered or threatened by Federal, State or County government. No endangered or threatened plant or wildlife species were observed on the project site.

The eastern box turtle is listed as a NYS Species of Special Concern in the area. Clearing of vegetation will result in loss of potential box turtle habitat. Since the proposed development would maintain blocks of habitat within the wetlands and wetland buffer around all of the wetlands areas, it is expected that this species' habitat requirements can continue to be met.

During construction, filter fabric fencing along the limits of disturbance will be used to keep turtles out of the work area to the extent possible. The construction manager and construction staff will be instructed by the environmental site manager to be observant for turtles. The fence line will be checked each morning by the work crew prior to commencement of earth work; this has worked well on past projects, and also allows for an ongoing tally of turtles and snakes. Crews will report any findings to the site environmental monitor on a regular basis. Any turtles that make it through or around the fence over night will be placed back outside of the fence by construction workers.

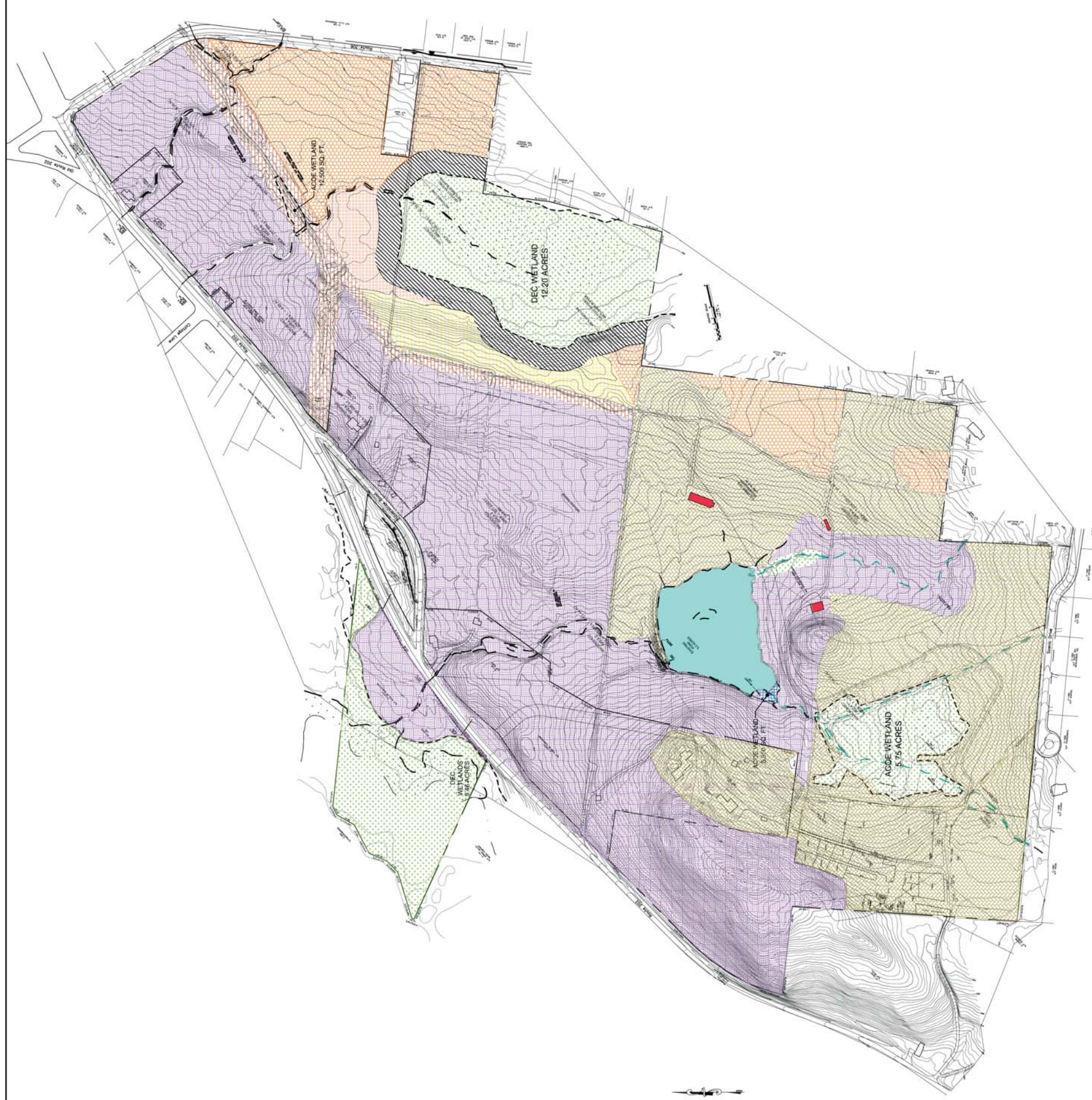
Since there is no suitable breeding habitat for marbled salamander or other vernal pool breeding species present on the project site, no mitigation measures are proposed to offset impacts to these species.

Wildlife may currently use the project site to access and travel between undeveloped forested areas to the west and east of the site but is not likely a significant wildlife corridor to off-site habitat areas due to the surrounding developed properties and roadways. US Route 202 and NYS Route 306 are highly trafficked roads that already impedes wildlife from traveling to and from the site. Therefore, no mitigation plans for wildlife movement are proposed.

Proposed Measures to Protect Trees to Remain

No trees in healthy condition beyond the field-identified limits of disturbance would be disturbed. These limits would be delineated by snow fencing or similar methods. Trees near working areas may be wrapped at the base by snow fencing to avoid accidental damage to trunks and roots.

No disturbance is planned within the projected root zone of these trees or within the drip line of the tree foliage. Snow fencing or other highly visible means of marking should be placed around the maximum area of the root system to prevent the destruction of roots by exposure or through the compaction of soils. Construction crews would be notified to exclude all equipment from these protected areas. If necessary, trees would be protected by tree wells in fill areas, and retaining walls in cut areas.



AREA	EXISTING ACREAGE
FARM POND/ARTIFICIAL POND	5.2
SHALLOW EMERGENT MARSH	.13
RED MAPLE - HARDWOOD SWAMP	26.83
SUCCESSIONAL OLD FIELD	53.02
OAK - TULIP TREE FOREST	17.26
SUCCESSIONAL SOUTHERN HARDWOODS	86.86
UNPAVED ROAD/PATH	6.5
INTERIORS OF BARN/AGRICULTURAL BUILDINGS	0.15
OAK - BEACH FOREST	2.12
OAK - HICKORY FOREST	4.11
NYSDEC BUFFER	4.92
TOTAL:	207.1

LEGEND

- FARM POND/ARTIFICIAL POND
- SHALLOW EMERGENT MARSH
- RED MAPLE - HARDWOOD SWAMP
- SUCCESSIONAL OLD FIELD
- (OAK - TULIP TREE FOREST) SUCCESSIONAL SOUTHERN HARDWOODS
- SUCCESSIONAL SOUTHERN HARDWOODS
- UNPAVED ROAD/PATH
- INTERIORS OF BARN/AGRICULTURAL BUILDINGS
- (OAK - BEECH FOREST) SUCCESSIONAL SOUTHERN HARDWOODS
- (OAK - HICKORY FOREST) SUCCESSIONAL SOUTHERN HARDWOODS
- NYSDEC BUFFER
- INTERMITTENT STREAM

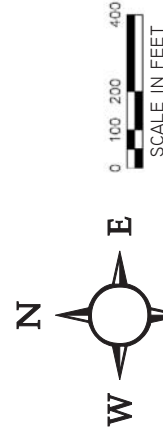


Figure 3.3-1: Ecological Communities
 Patrick Farm
 Town of Ramapo, Rockland County, New York
 Source: Carpenter Environmental Associates, Inc., 08/24/08
 Scale: 1" = 500'

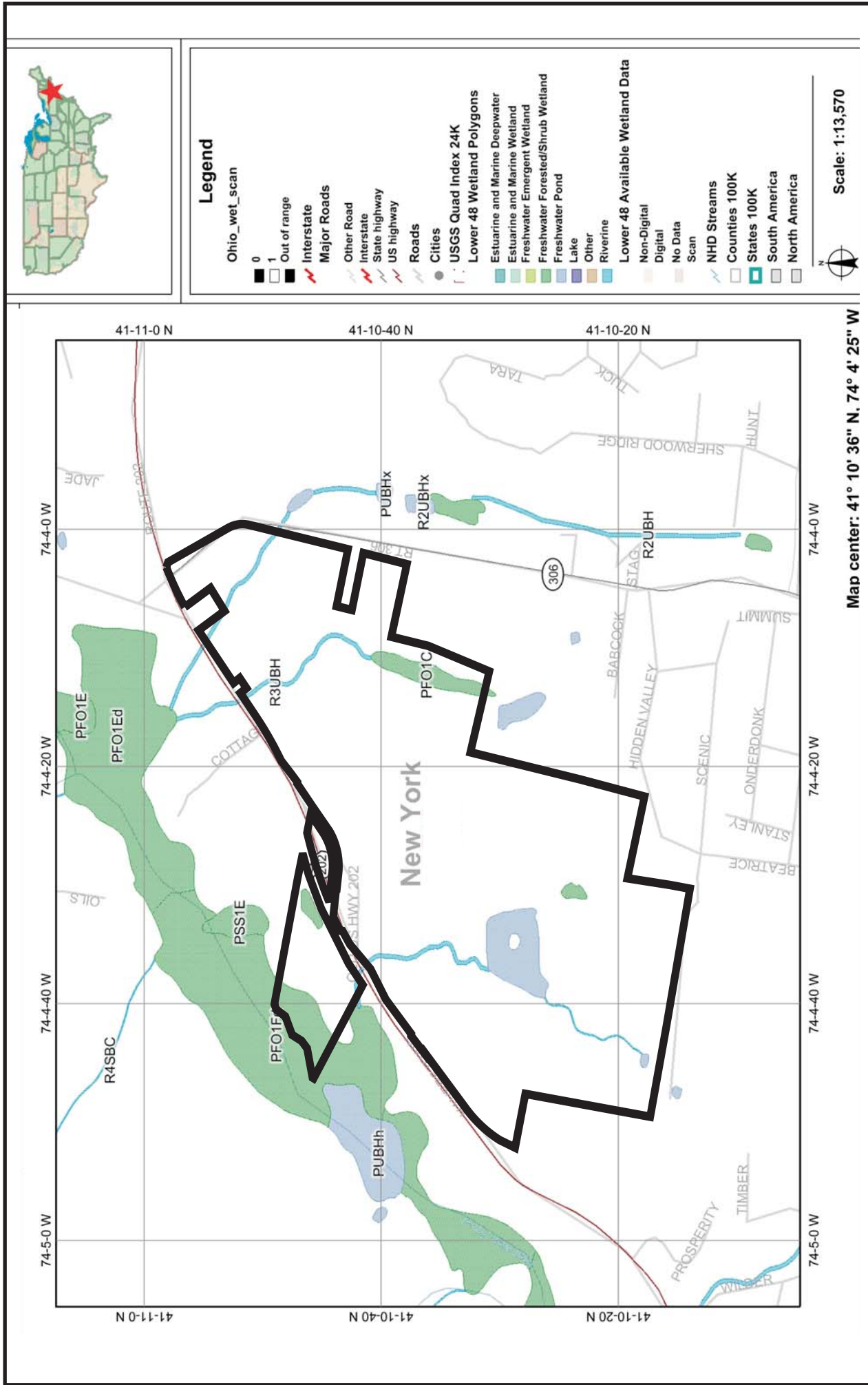
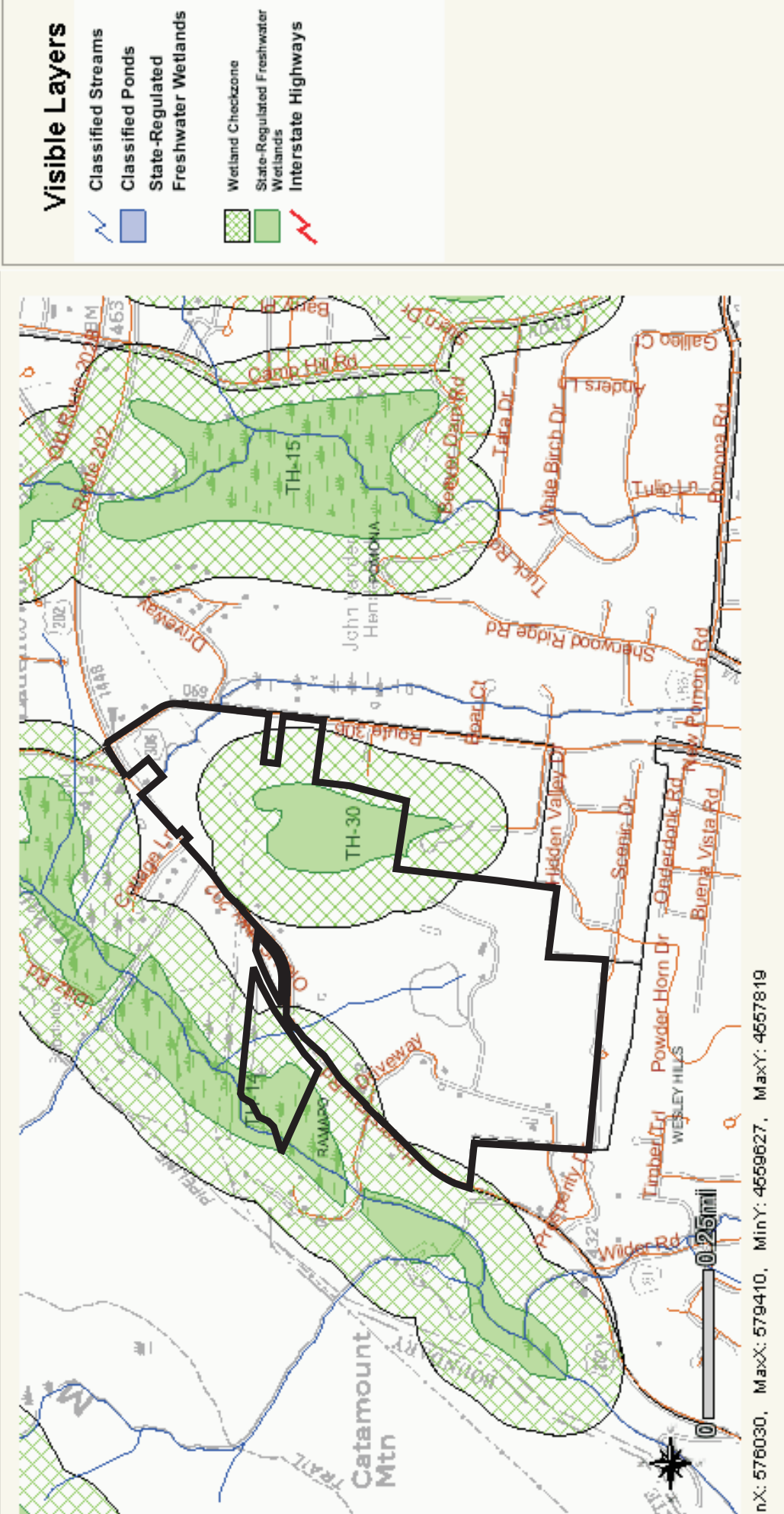


Figure 3.3-2: Site on National Wetlands Inventory Map
 Patrick Farm
 Town of Ramapo, Rockland County, NY
 Source: U.S. Dept of the Interior, Fish & Wildlife Service
 Scale: As shown

 Site Property Boundary



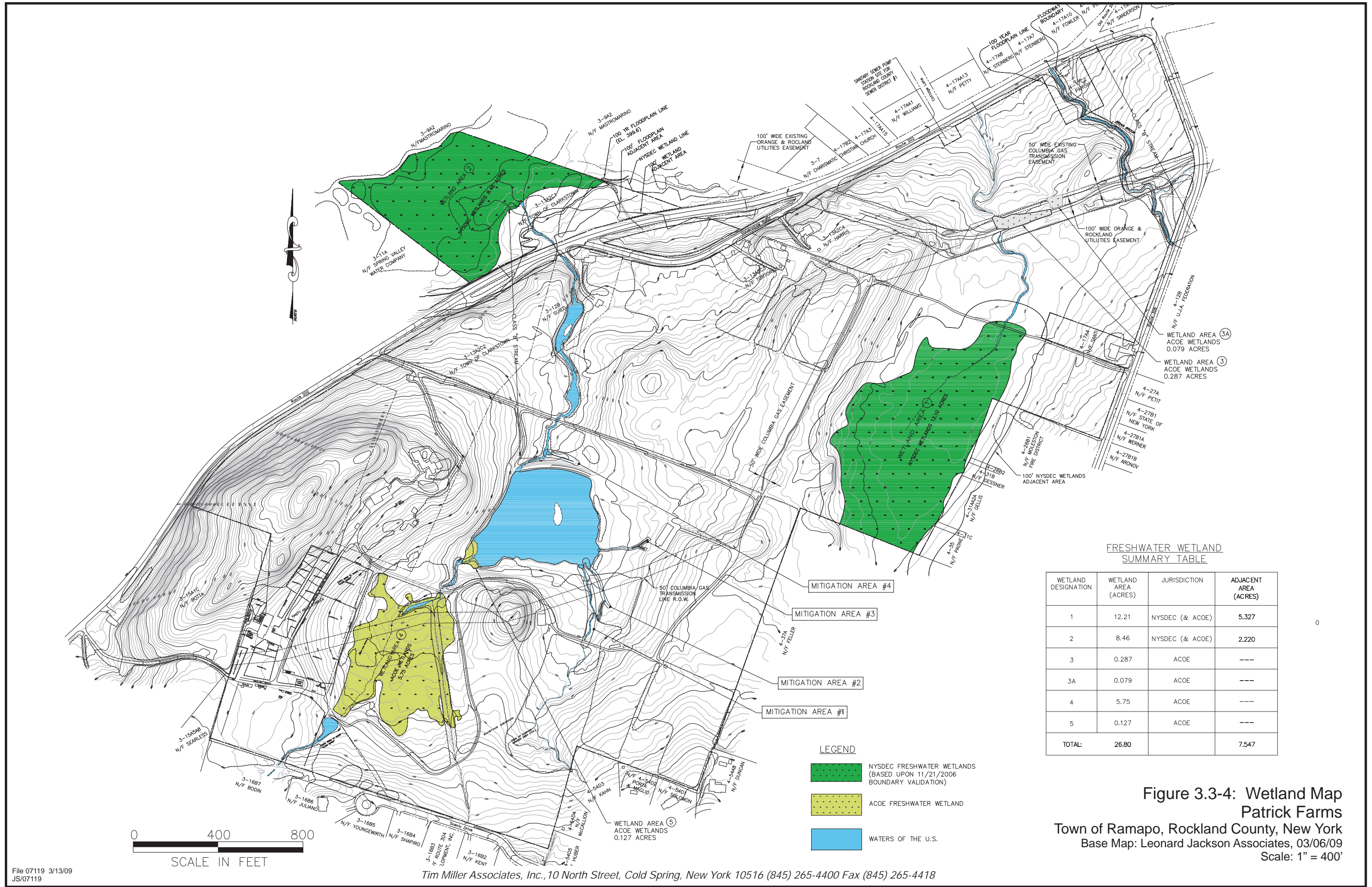
Visible Layers

- Classified Streams
- Classified Ponds
- State-Regulated Freshwater Wetlands
- Wetland Checkzone
- State-Regulated Freshwater Wetlands
- Interstate Highways

inX: 576030, MaxX: 579410, MinY: 4559627, MaxY: 4557819

□ Site Property Boundary

Figure 3.3-3: Site on DEC Freshwater Wetlands Map
 Patrick Farm
 Town of Ramapo, Rockland County, NY
 Source: NYSDEC
 Scale: As shown

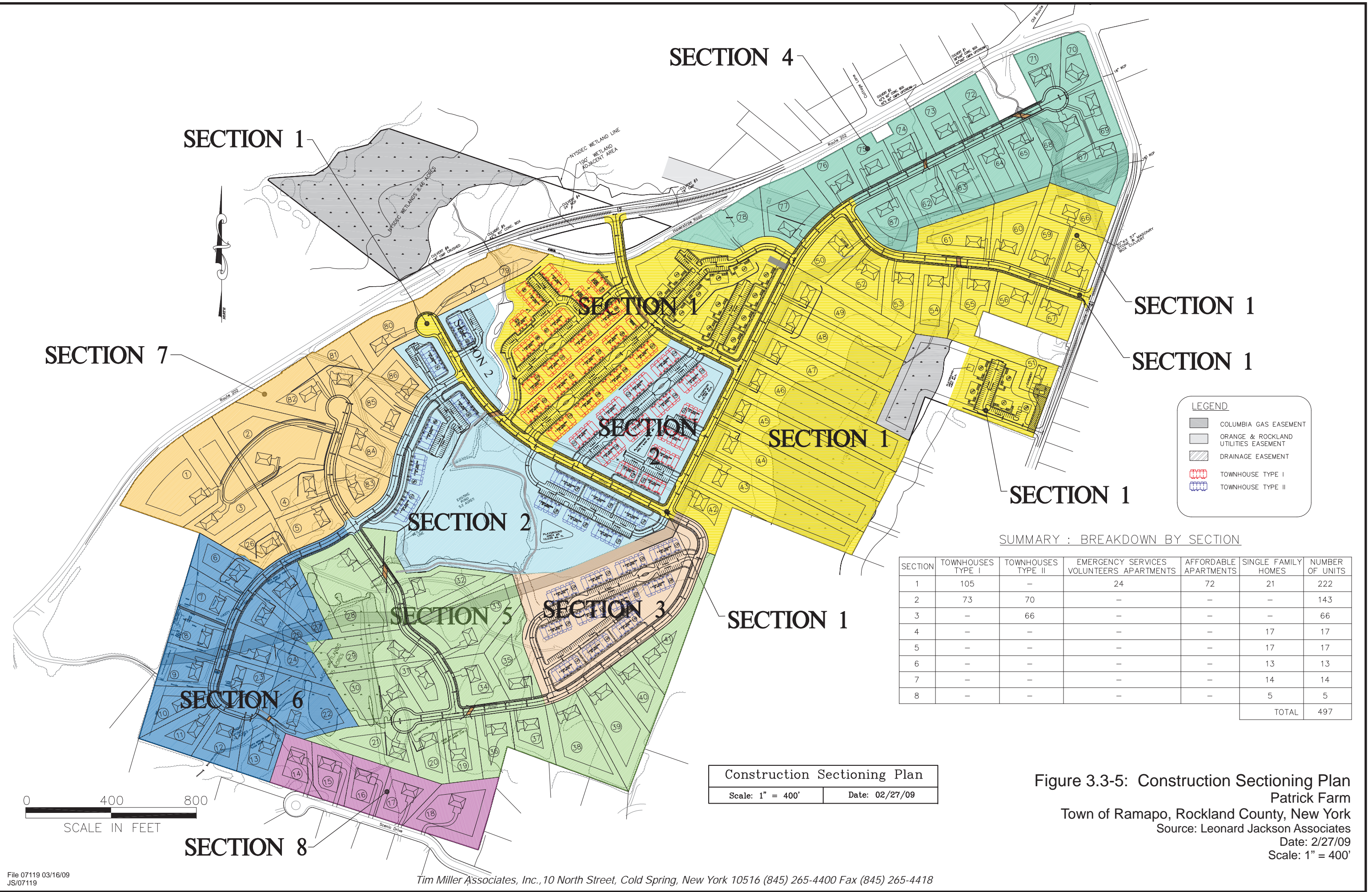


FRESHWATER WETLAND SUMMARY TABLE

WETLAND DESIGNATION	WETLAND AREA (ACRES)	JURISDICTION	ADJACENT AREA (ACRES)
1	12.21	NYSDEC (& ACOE)	5.327
2	8.46	NYSDEC (& ACOE)	2.220
3	0.287	ACOE	---
3A	0.079	ACOE	---
4	5.75	ACOE	---
5	0.127	ACOE	---
TOTAL:	26.80		7.547

Figure 3.3-4: Wetland Map
Patrick Farms
Town of Ramapo, Rockland County, New York
Base Map: Leonard Jackson Associates, 03/06/09
Scale: 1" = 400'

0 400 800
SCALE IN FEET



LEGEND

- COLUMBIA GAS EASEMENT
- ORANGE & ROCKLAND UTILITIES EASEMENT
- DRAINAGE EASEMENT
- TOWNHOUSE TYPE I
- TOWNHOUSE TYPE II

SUMMARY : BREAKDOWN BY SECTION

SECTION	TOWNHOUSES TYPE I	TOWNHOUSES TYPE II	EMERGENCY SERVICES VOLUNTEERS APARTMENTS	AFFORDABLE APARTMENTS	SINGLE FAMILY HOMES	NUMBER OF UNITS
1	105	-	24	72	21	222
2	73	70	-	-	-	143
3	-	66	-	-	-	66
4	-	-	-	-	17	17
5	-	-	-	-	17	17
6	-	-	-	-	13	13
7	-	-	-	-	14	14
8	-	-	-	-	5	5
TOTAL						497

Construction Sectioning Plan
 Scale: 1" = 400' Date: 02/27/09

Figure 3.3-5: Construction Sectioning Plan
 Patrick Farm
 Town of Ramapo, Rockland County, New York
 Source: Leonard Jackson Associates
 Date: 2/27/09
 Scale: 1" = 400'

0 400 800
 SCALE IN FEET

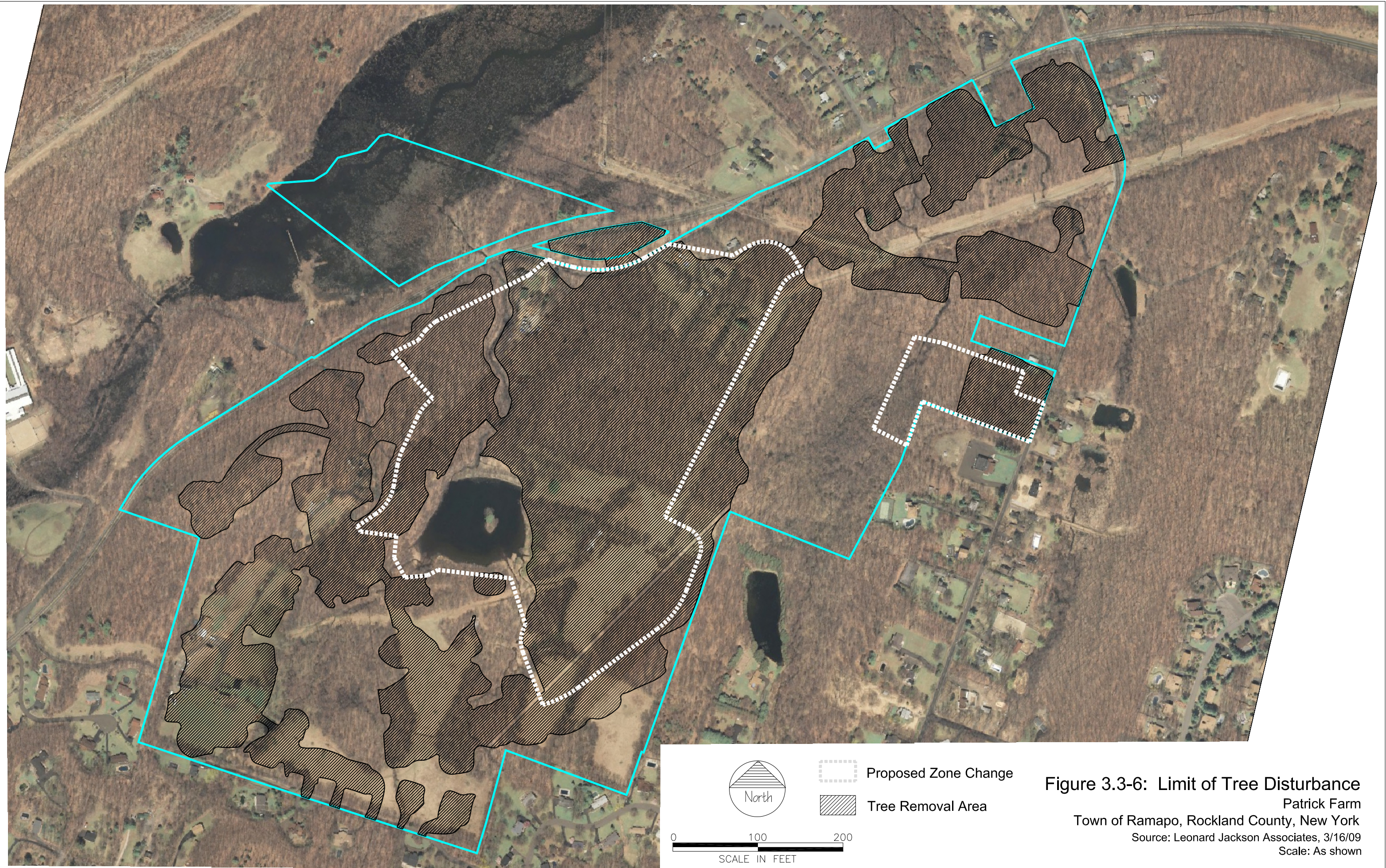
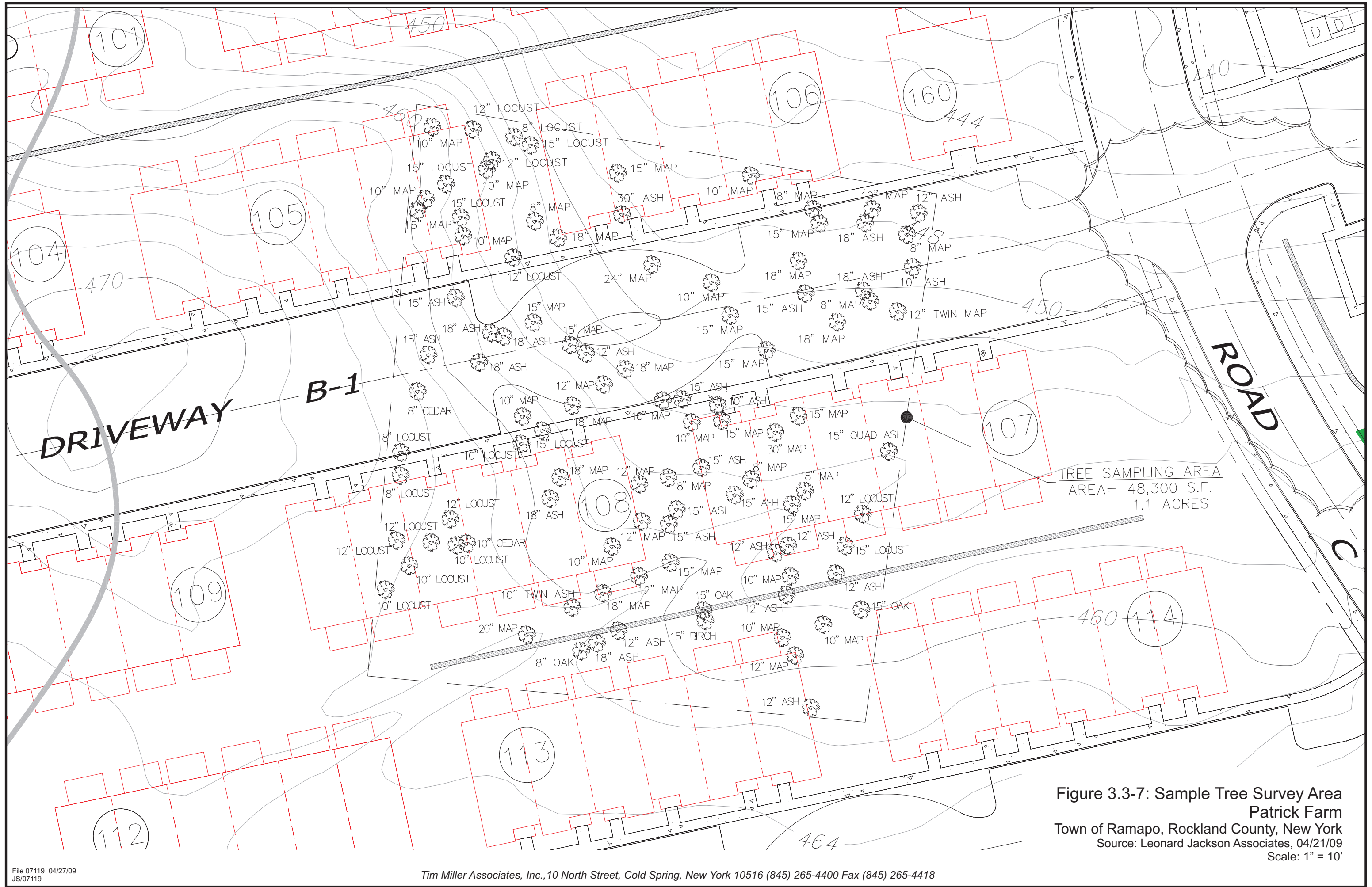


Figure 3.3-6: Limit of Tree Disturbance
 Patrick Farm
 Town of Ramapo, Rockland County, New York
 Source: Leonard Jackson Associates, 3/16/09
 Scale: As shown



TREE SAMPLING AREA
 AREA= 48,300 S.F.
 1.1 ACRES

Figure 3.3-7: Sample Tree Survey Area
 Patrick Farm
 Town of Ramapo, Rockland County, New York
 Source: Leonard Jackson Associates, 04/21/09
 Scale: 1" = 10'