

BIODIVERSITY ASSESSMENT REPORT

**ASSESSMENT OF TWO PROPOSED
REGIONAL FLOOD RETENTION AREAS
WITHIN THE SYLVAN GLEN PRESERVE**

**STATE LAND CORP. DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK**

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**BIODIVERSITY ASSESSMENT PROTOCOL
ASSESSMENT OF TWO PROPOSED REGIONAL FLOOD RETENTION AREAS
STATE LAND CORP. DEVELOPMENT**

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1.0 INTRODUCTION

During July through August 2012, a Biodiversity Assessment was completed of two freshwater wetlands (including immediately adjoining areas), which are located completely, or partially, within the boundaries of the Sylvan Glen Preserve. The Biodiversity Assessment was performed by Environmental Compliance Services, Inc. (ECSI) of Middletown, New York, on behalf of State Land Corp, a firm presently interested in developing a portion of an approximate 100 acre property site which abuts the Sylvan Glen Preserve.

Existing conditions within and immediately surrounding these two wetland areas was assessed to determine impacts associated with increasing the flood holding capacities of these two areas, as part of designing two proposed storm water retention areas to mitigate flood potentials to downgradient receiving waters. The concept of utilizing the two wetlands for flood retention is one of several mitigation measures proposed under the State Land Corp. development, currently being reviewed by the Town of Yorktown as a means to increase area flood storage capacity upgradient of historically flood prone receiving waters situated downgradient of the State Land Corp. project.

Retention basin design parameters were prepared by Site Design Consultants, of Yorktown Heights, New York. The two freshwater wetlands are situated north of the proposed State Land Corp. development project limits. One retention area is located completely upon the Town of Yorktown Sylvan Glen Park Preserve property, which abuts the State Land Corp. property north, and the other is located on a portion of the State Land Corp. property, which also abuts the Sylvan Glen Park property. Each of these areas receives storm water generated from upgradient watershed sources contained within and beyond the limits of the Preserve. Figure 1-1 presents the approximate location of each retention area in relation to the State Land Corp. property.

Information gathered under the Biodiversity Assessment was used to evaluate potential impacts associated with the incorporation of these wetlands into two regional retention areas, specifically, potential impacts related to the life-cycles of wildlife in proximity to the Sylvan Glen Park Preserve property. Available published information on vegetation (types and structure), geology, topography, soils, climate and water resources (wetlands and waterways) was reviewed to aid in identifying and describing the habitat in these areas. In addition, habitat profiles published for Westchester County and the Hudson River Estuary Corridor were used to “type” each on-site habitat.

All work was performed pursuant to a protocol entitled “Biodiversity Assessment Protocol for Assessing Two Proposed Regional Flood Retention Areas – State Land Corp. Project, Town of Yorktown, Westchester County, New York”, (Appendix A of this document), in accordance with the Town of Yorktown, Wildlife and Plant Biodiversity Assessments document (pages 1 through 3). The protocol was developed in association with and approved by the Town Environmental Inspector.

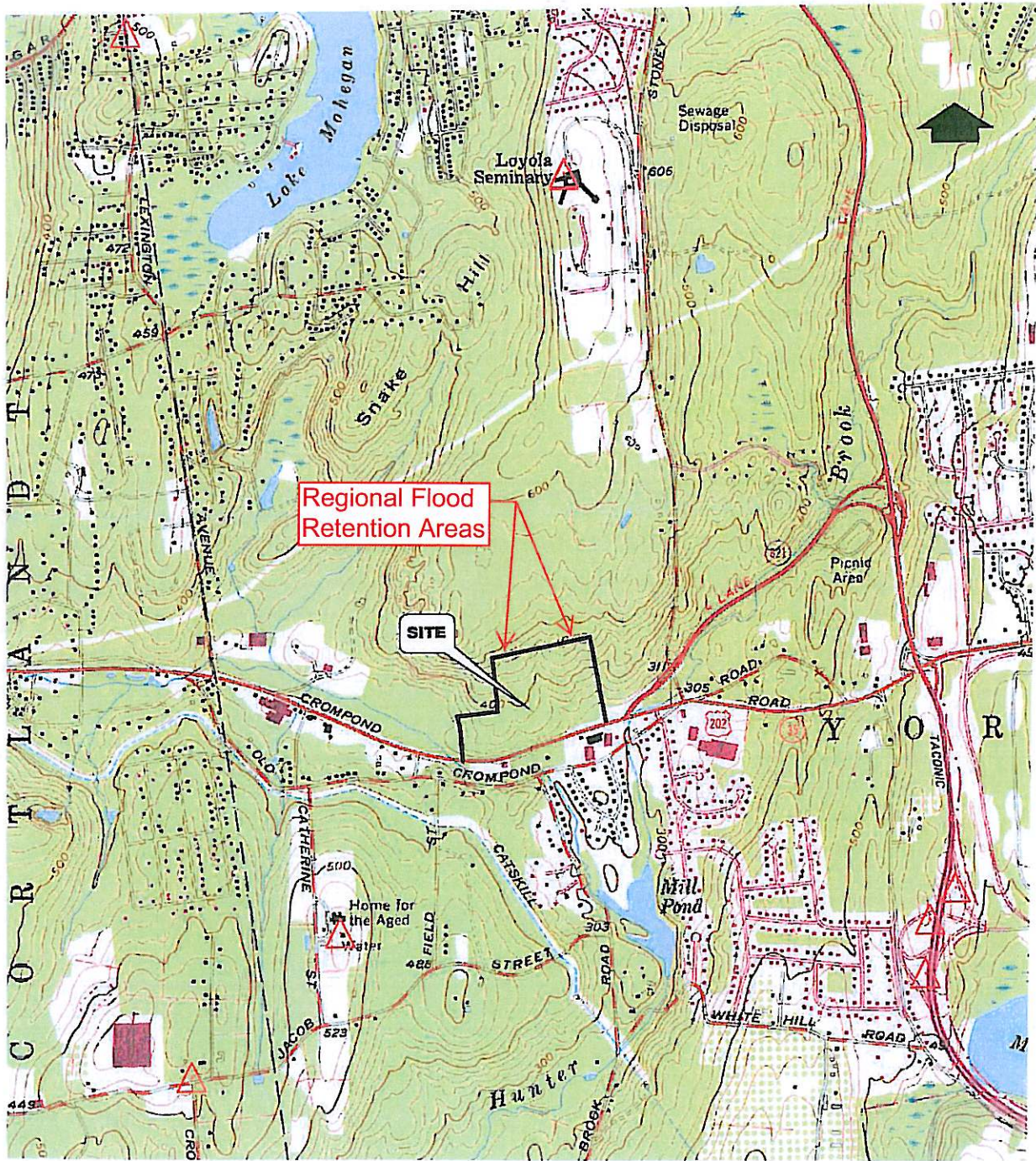


FIGURE 1-1

SITE LOCATION MAP

**STATE LAND CORP.
YORKTOWN, WESTCHESTER
COUNTY, NEW YORK**

SOURCE: USGS MOHEGAN LAKE
QUADRANGLE (1956/REV. 1981)

SCALE: 1 Inch = 1,200 FEET

1.1 Preliminary Assessment Activities

As a first step, the habitat within each of the two wetlands, and immediately surrounding areas, were characterized; a total of three (3) “survey target sites/habitat areas A, B and C” were established in the field as a function of the natural history and habitat preferences for birds and herpetofauna (reptiles and amphibians) expected to inhabit these areas. In addition, vegetation transects were located (flagged) within and near each regional flood retention area to facilitate data gathering July through August 2012. Figure 1-2, entitled “Biodiversity Survey Target Sites/Habitat Areas, A, B and C”, presents a representation of the locations where flora and fauna surveys were performed within and in the vicinity of the Sylvan Glen Park Preserve.

Survey “points”, “transects” and “walk through routes” situated within and in the vicinity of the three survey target sites/habitat areas are as follows: “b1, b2 and b3” approximates avian observation point locations, “h1” through “h4” denotes Herpetological (reptile and amphibian) walk-through routes, “v1, v2 and v3” approximates vegetation transect and circle plot locations, and “eve” denotes the two locations where an evening audio observation event was performed for a 1/2 hour period at each location. No specific locations are designated for surveying mammals and insects as these species categories were observed during each of the other types of field surveys were conducted across the site.

During each field survey, observations were recorded on habitat and species specific data sheets. For birds, reptiles and amphibians, the date, time, weather, observer, start/finish, location, how and where each species was identified (habitat), methods utilized, whether the species is a “habitat specialist” (development-sensitive) or “habitat generalist” (development-associated) was recorded, as well as the name of each species (common and scientific). Separate data sheets were utilized to record vegetation (plants) within each target site/habitat area; each sheet was formatted to record date, time, observer, aspect, weather, habitat, soil characteristics, percent cover and structure (ground, understory, canopy, dominance/co-dominance), estimated height and diameter at breast height (DBH). Mammals were recorded similarly, based on visual sightings, sounds, skull/bone remains, scat, tracks and territorial field markings during the period of July through August when other field surveys were being performed. Insects were recorded utilizing a similarly formatted data sheet; recordings were based on visual sightings made during the July and August site visits. Appendix B contains photographs of some of the areas surveyed under the Assessment during the July and August 2012.

The types of methods implemented for conducting field surveys are presented below. Various guides and field biology/ecology documents and audio recordings were utilized to identify species encountered in the field. Appendix C contains a listing of references/guides that were used for the assessment.

2.0 SURVEY METHODS

As noted, various guides were utilized during the field surveys to best observe and record sightings/observations in the field, for the period of July through August 2012. In addition, online reference materials published by State and Federal agencies (i.e. the Breeding Bird Atlas) were also utilized.

It is important to note that three locations, situated approximately in the vicinity of the three target habitat areas, were surveyed initially during early morning hours on July 17, 2012; ECSI performed avian, herpetological surveys (observation of bird, reptile and amphibian songs and calls), mammals and insects at these three locations which approximate the observation point locations b1, b2 and b3. Subsequent to July 17th, additional surveys were performed July through August 2012 to record additional visual sightings and sounds (i.e. bird song/call notes and seasonal frog and toad callings). Essentially, field surveys were conducted early in the day to observe birds, reptiles and amphibians songs/calls July 17th through August 17th. On August 21, 2012, an evening survey event was performed to observe birds, reptiles and amphibians (the songs and calls) at the two “eve” locations depicted on Figure 1-2.

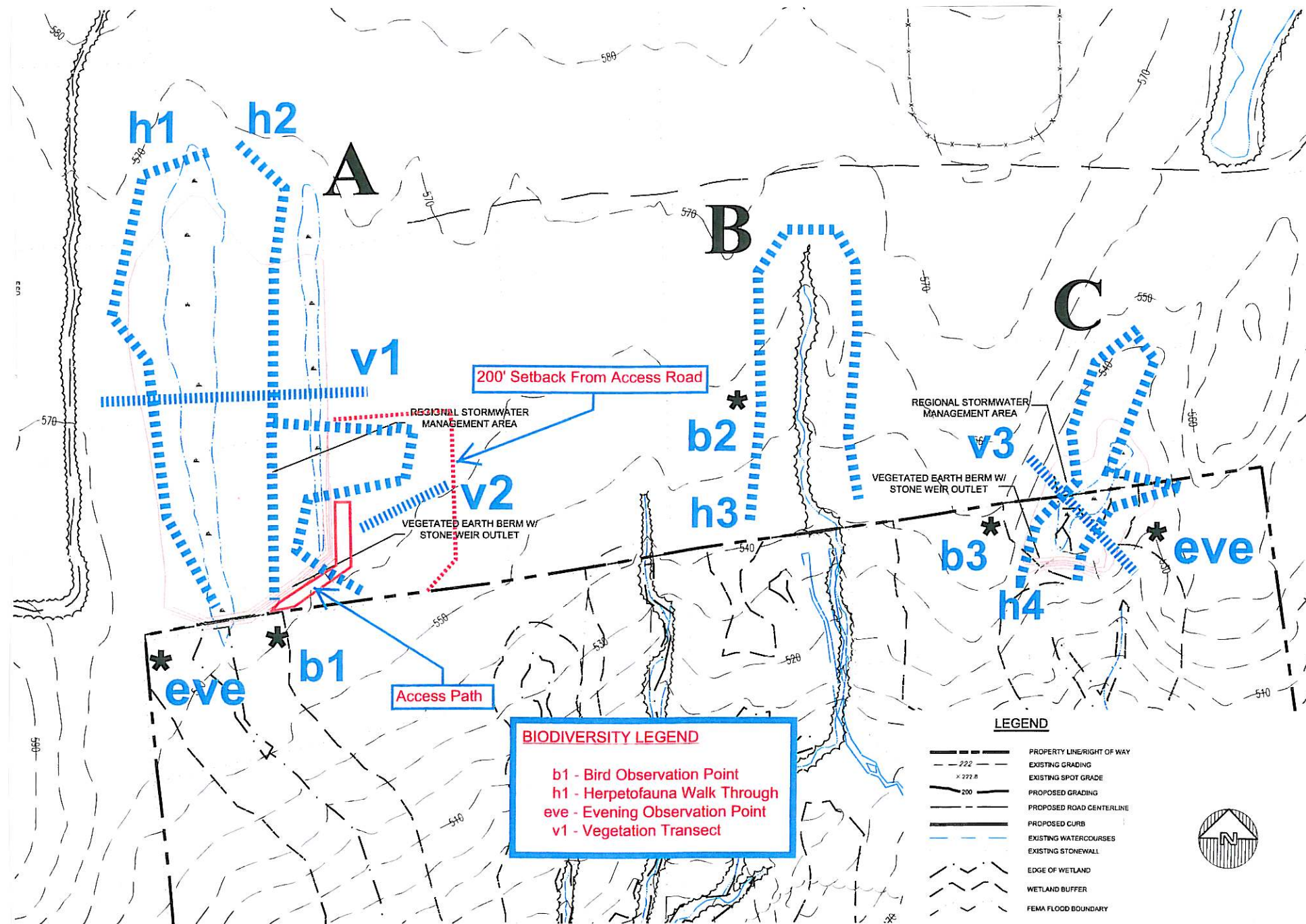
2.1 Plants

Meter quadrant transects were setup within the three target site/habitat areas to record plant species, their structure and percent cover; a square meter was used to record observations within each quadrant. A single daytime field visit was performed to record vegetation within each of the target site/habitat areas.

Information gathered in the field was recorded on vegetation specific field data sheets. These data sheets include the types of plants observed within each habitat (common and scientific name), along with date, time, observer, aspect, weather, habitat, soil type/characteristics, percent cover and structure (ground, understory, canopy, dominance/co-dominance), and estimated height and diameter at breast height (trees with a DBH greater than 1.5 inches). As necessary, a hand lens magnifier was used for close-up observations, in conjunction with utilizing various guides to help identify species in the field.

2.2 Birds

Bird surveys were performed July through August at the three designated survey “point” locations, ½ hour before dawn through 7:30 AM. This time period ensured that crepuscular (twilight) and diurnal (day-time) species would have a potential to be observed. In addition, the sounds of nocturnal bird species were observed while visiting the site during the evening of August 21st (a total period of 1.0 hour), at the two “eve” locations; efforts were also made to observe frog and toad callings (see Section 2.3, Reptiles and Amphibians below).



SOURCE: SITE DESIGN CONSULTANTS, BASEMAP FOR REGIONAL STORMWATER MANAGEMENT AREAS; STATE LAND CORP. DEVELOPMENT (JULY 2013)

FIGURE 1-2
 BIODIVERSITY SURVEY TARGET
 SITES/HABITAT AREAS A, B AND C

STATE LAND CORP.
 YORKTOWN, WESTCHESTER COUNTY, NEW YORK

The two evening observation locations were established and flagged in proximity to two of the three survey target sites/habitats areas so that each would be most representative and can be located quickly for observation. Each observation point location (b1, b2 and b3) was divided into approximate compass quadrants to help note the direction of each bird sightings on specific field data sheets. As noted, field data sheets included the date, time, observer, weather, start/finish, location, how and where each species was identified (habitat), type of observation ("h" heard, song/call; "v" visual; or both "h/v"), and whether the species is a "habitat specialist" (development-sensitive) or "habitat generalist" (development-associated). The approximate distance of each sighting was also recorded from the center of each point location; the name of each species (common and scientific) and number of individuals sighted were recorded. Binoculars and a spotting scope were the main tools for sighting birds at each observation point location.

2.3 Reptiles and Amphibians

Herpetofauna (reptiles and amphibians) were surveyed on the same day of the each bird survey during the period of July through August 2012. Prior to performing the surveys, natural history and habitat preference documents, as well as species distribution maps, were reviewed to help establish species habitat preferences. Such sites included second growth hardwood forest, rock outcrops, intermittent stream edges, and the two wetlands situated within the proposed footprint of each flood retention area; these areas were surveyed in a random manner to further observation potentials as reptile and amphibian species are highly mobile. Emphasis was placed on investigating landscapes between forested areas, and wetlands/waterways, and rock outcrops, as amphibians have been documented to frequent such areas. Again, these areas were surveyed in consideration of the proposed limits of each regional flood retention area.

The gathering of Herpetological data was based solely on visual observations. A narrow forked-hoe was used to overturn wood debris, leaf litter, matted grass and stones to facilitate observation of the "micro habitats" typical of reptiles and amphibian, within each target/habitat area. At no time was debris, matted grass, or stones overturned more than once along the herpetofauna walk through routes; this was done to maintain these types of micro habitats. The surveys took place during morning hours and in some cases early afternoon, between 9 AM and 1:00 PM; a single evening survey event was performed at the two "eve" locations to listen for the callings and sounds of frogs and toads. This event was performed for a period of 1/2 hour at each "eve" observation location.

As noted, species encountered in the field were recorded on data sheets which include date, time, observer, weather, start/finish, location, how and where each species was identified (habitat), aspect, and the number of individuals observed.

2.4 Mammals and Insects

Observations of mammals and insects were recorded on the same day bird and herpetofauna surveys were performed during the period of July through August 2012. Given that mammal and insect species are highly predacious and mobile, and may occur during varied times of the day (due to nocturnal, diurnal and crepuscular behavior), it was concluded that such species are best encountered while other surveys are being performed. Observations were recorded on separate data sheets which include date, time, observer, weather, start/finish, location, how and where each species was identified (habitat), aspect, and the number of individuals observed. Recorded mammalian observations were based on visual sightings of scat, skull/bone remains, tracks and territorial field markings.

3.0 ANALYSIS OF FIELD DATA

As noted in the protocol (Appendix A), once each habitat is “typed”, tabulations of species likely to inhabit each area were generated. As each field survey was completed, species observed in the field were added to these tabulations. Indication of the “listed status” for Federal, State and County, threatened, endangered, or species of special concern is also noted for each applicable species. Field findings were also compared to the Biodiversity Conservation Study, Town of Yorktown, Westchester County, New York, prepared by Stearns & Wheler, LLC, (updated March 2010) to include additional species for those habitat areas which are similar to the target site/habitat areas identified.

In addition, Federal and State rarity indications are noted, as well as indications as to whether a listed species is a “Development-Associated Focal Species” or a “Development-Sensitive Listed Focal Species”. These indications were generated by utilizing the Croton-to-Highlands Biodiversity Plan, the Biodiversity Conservation Study, Town of Yorktown, Westchester County, New York, the NYS Herpetological Atlas, New York Natural Heritage Program listings, the Breeding Bird Survey and Breeding Bird Atlas, the Biodiversity Assessment Manual for the Hudson River Estuary Corridor and the National Audubon Watch List.

Analysis of habitat and species profiles contained within the Biodiversity Assessment Manual for the Hudson River Estuary Corridor, the Biodiversity Conservation Study, Town of Yorktown, Westchester County, New York, The Wildlife Resources of Westchester County, and the Ecological Communities of New York State (1990 and January 2002 revision) were utilized to analyze and confirm each target site/habitat area and the species noted within each.

3.1 Nearby Reference Sites

Available species and habitat information for the Sylvan Glen Park Preserve was reviewed and compared to the Biodiversity Assessment findings for the two regional

flood retention areas, and immediately surrounding areas. An analysis of habitat fragmentation, as a function of the geographic positioning of these regional flood retention areas, is provided below to determine if habitat management options are necessary, including consideration of the proposed "open space" area. It is important to note that the Sylvan Glen Preserve is regarded as a "biotic planning unit" (BPU) in the Croton-to-Highlands Biodiversity Plan as it is "a large tract of land (at least 1,000 acres), containing significant species that are isolated from other habitat hubs and corridors by development and roads. BPUs are large enough to potentially meet the habitat and area requirements of many of the less mobile, development-sensitive species they contain".

4.0 FIELD FINDINGS

On July 17, 2012, field surveys commenced with the observation and identification of birds, reptiles and amphibians, mammals and insects. Subsequent weekly surveys commenced on August 7, 2012, and continued to August 17, 2012; these surveys included completion of additional bird, reptile and amphibian and mammal and insect observations, as well as completion of vegetation transects (Figure 1-2). On August 21, 2012, the two evening ("eve") surveys were performed to identify the presence of potential crepuscular and nocturnal species. No fish surveys were performed as no form of water resources exist in the study areas to support fisheries. Tables 4-1 through 4-4 present the various species of birds, reptiles and amphibians, mammals and insects observed in the field during each survey event, as well as species expected to inhabit the vegetation habitat communities identified; Tables 4-5 and 4-6 present the types of vegetation species observed (and expected to inhabit) as part of the completion of the three (3) vegetation transects (v1 through v3) and walk through routing. The tables present both observed (denoted with an "O") and potential inhabitants (denoted with a check mark) for the four vegetation habitat communities identified. Potential inhabitant listings were developed by ECSI utilizing reference information for other areas of the Town of Yorktown and Westchester County with similar vegetation communities and conditions, as well as resource listings maintained by the State of New York and Westchester County. Tables 4-1 through 4-6 are contained in Appendix D.

It is important to note that small amounts of water were observed to accumulate temporarily within the western wetland (flood retention) area after seasonal rainfall events; no water was observed to accumulate within the eastern area after seasonal precipitation events. Signs of seasonal inundation were evident within portions of the eastern wetland area. These conditions are likely related to the dynamics of upgradient contributory areas which are "tributary" to the two wetlands.

4.1 Vegetation

As noted, the Biodiversity Assessment focused on the evaluation of vegetation transects v1, v2 and v3, situated within and in close proximity to the limits of the proposed regional flood retention areas. Data obtained from the transects served to profile and confirm vegetation structure and distribution. In addition, photographs were

obtained in the field to depict the structure and distribution of the types of vegetation encountered in the field (Appendix B).

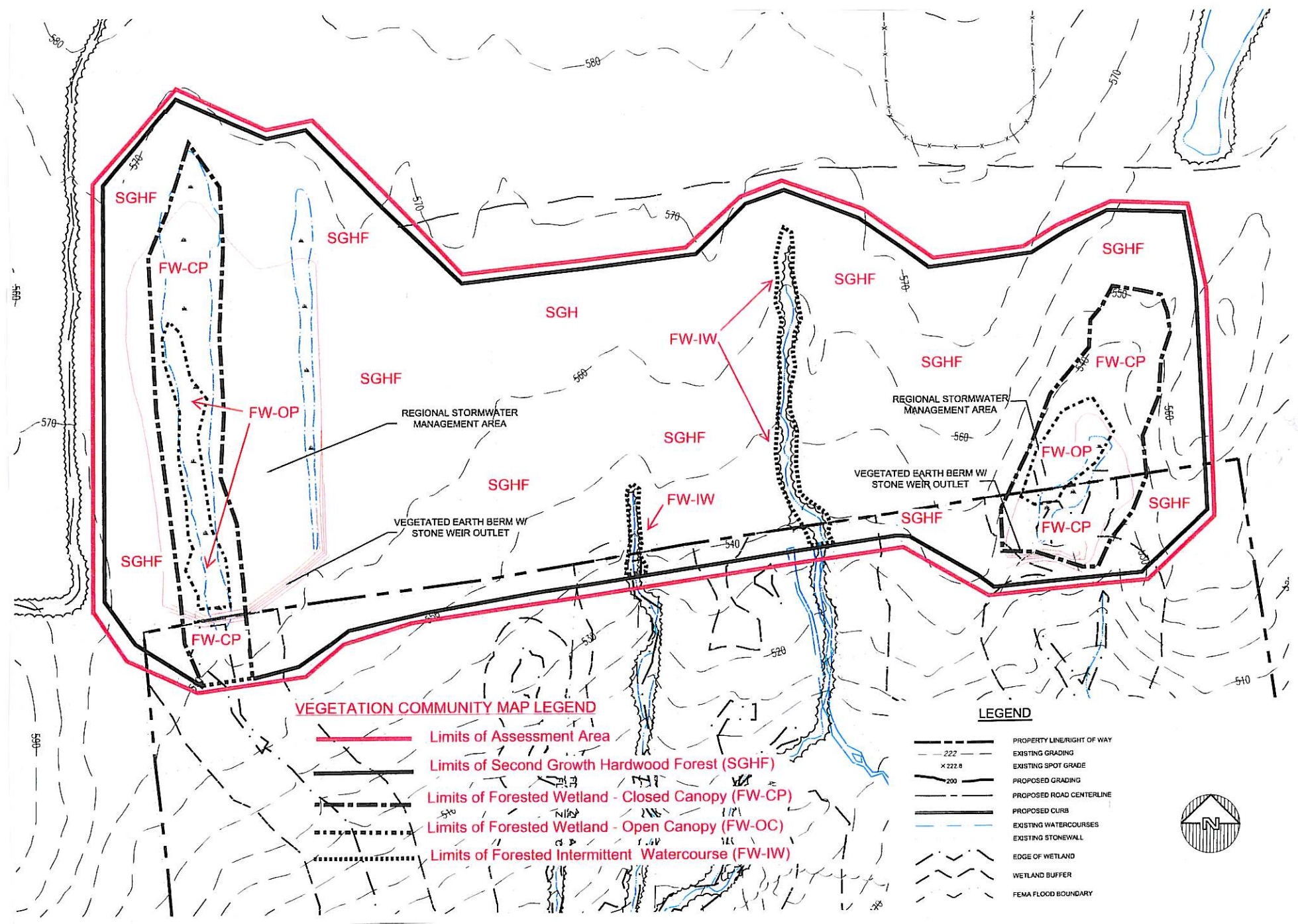
Based on the vegetation species observed, four (4) vegetation habitat communities were identified across the target habitat areas evaluated under the Assessment. These include: 1) Second Growth Hardwood Forest (SGHF), 2) Forested Wetland - Open Canopy (FW-OC), 3) Forested Wetland - Closed Canopy (FW-CC) and 4) Forested Intermittent Watercourse (FIW). Of these four communities, the Forested Intermittent Watercourse community was concluded to be the least productive as these areas are comprised of heavily eroded/sediment laden intermittent stream channels, heavily surrounded by Japanese Stilt Grass, an invasive species; these areas are not considered to provide conditions to provide or support diverse habitat for terrestrial and/or aquatic organisms. Figure 4-1 presents the approximate limits of the four vegetation habitat communities identified throughout each target habitat assessment area.

The types of predominant woody vegetation observed within these areas included American Elm, Slippery Elm, Red Maple, Shagbark Hickory, Bitternut Hickory, White Oak, Black Birch, American Hop-hornbeam, Spicebush, Gray Dogwood, Flowering Dogwood, Sugar Maple, Northern Red Oak and Black Willow. Observed herbaceous species included Tussock's Sedge, Soft Rush, Common Blue Violet, Christmas Fern, Common Greenbrier, Cinnamon Fern, Spicebush (seedlings), Skunk Cabbage, Spotted Jewelweed, Sphagnum Moss, Sensitive Fern, Stilt Grass and Touch-Me-Not.

In conjunction with identifying tree, shrub and herbaceous species, random soil samples were obtained to substantiate that the two wetland areas are comprised of wetland (hydric) soils which match soil descriptions published in the Soil Survey for Putnam and Westchester Counties, (dated 1994); soil conditions within immediately surrounding areas displayed moist conditions comprised of both silty/sand and clay textures. It is within these soils conditions that transitional tree, shrub and herbaceous species were observed.

4.2 Avian Species

Avian species observed at the three, predetermined observation locations (b1, b2 and b3) were typical inhabitants of second growth hardwood, forested wetland (open and closed canopy) settings; the most diverse of which were observed in close proximity to Forested Wetland - Open and Closed Canopy areas (FW-OC and FW-CC). Species encountered included both habitat sensitive and habitat generalist types (i.e. Red Eyed Vireo and Blue Jay, respectively). Overall species observed throughout each of the vegetation communities during the survey period included the Eastern Wood Pee Wee, American Robin, Northern Cardinal, Wood Thrush, Black-capped Chickadee, Tufted Titmouse, White-breasted Nuthatch, Mourning Dove, Veery, and the American Crow. The Red Tailed Hawk (*Buteo jamaicensis*) was the only raptor observed during the assessment; assorted woodpeckers (Picidae Family) including the Hairy, Downey, Yellow-shafted Flicker, Red-bellied and Pileated Woodpecker were also observed. Species not observed, but expected to inhabit the vegetation communities identified would include Little Brown Creeper, Northern Oriole, American Redstart, Ovenbird,



SOURCE: SITE DESIGN CONSULTANTS, BASEMAP FOR REGIONAL STORMWATER MANAGEMENT AREAS; STATE LAND CORP. DEVELOPMENT (JULY 2013)

FIGURE 4-1
VEGETATION HABITAT COMMUNITY
COVER MAP
 STATE LAND CORP.
 YORKTOWN, WESTCHESTER COUNTY, NEW YORK

Carolina Wren, Wild Turkey, Gray Catbird, Great Crested Flycatcher, Least Flycatcher, Black and White Warbler, Yellow Warbler, White Throated Sparrow, Eastern Screech Owl, Wilson's Warbler, Blue-gray Gnatcatcher, Scarlet Tanager, and the Yellow-billed Cuckoo (Table 4-1). All of these species are common to eastern North America.

4.3 Amphibian and Reptile Species

The predominant reptile observed within portions of the vegetation communities identified (not including the Forested Intermittent Watercourse) was the Garter Snake; observed amphibians included the Wood Frog, Spring Peeper, Green Frog and the Eastern Gray Frog. Species not observed, but likely to inhabit these areas would include Spotted and Slimy Salamanders, Red-spotted Newt, Fowler's Frog, Eastern Box Turtle, Marbled Salamander, American Toad, Northern Copperhead and the Northern Black Racer (Table 4-2).

4.4 Mammalian Species

Observed mammalian species included White Tailed Deer, the Eastern Chipmunk, Eastern Gray Squirrel and the Red Fox (scat). These observations were primarily made within the Second Growth Hardwood Forest community. Other species which were not observed, but are likely to inhabit these areas include the Striped Skunk, Opossum, Eastern Raccoon, Least Shrew, Star-nosed Mole, Deer Mouse, White-footed Mouse, Little Brown Bat, Northern Myotis and Coyote (Table 4-3).

4.5 Insect Species

In addition to the above, observations of insect species were recorded during the Assessment. Species observed included the Bald-faced Hornet, Brown Dog Tick, Deer Tick, and Cabbage White Moth, Deer Fly, Triangulate Cobweb Spider, Field Cricket, Honey Bee, and the Monarch Butterfly. These species were encountered within each of the four vegetation habitat communities identified (Table 4-4).

5.0 ANALYSIS

Based on the above observed species and species anticipated to be present within and immediately surrounding the western and eastern wetland areas planned for use as regional flood retention areas, these areas are regarded as yielding diverse habitat capable of supporting a large variety of avian, amphibian/reptile, mammalian and insect species. The eastern and western areas display "depressional" wetland characteristics, with observed Obligate and Facultative-Wet species, immediately surrounded by transitional tree and shrub vegetation comprised of Facultative-Wet and Facultative species; observed transitional species are bordered by species comprised of upland vegetation (Facultative and Facultative-Upland species). Overall, observations indicate the existence of a balanced ecosystem within each area.

5.1 Second Growth Hardwood Forest (SGHF)

The Second Growth Hardwood Forest is expected to be utilized by various mammalian, avian and reptile species as forage and for temporary/long-term shelter, both on the ground and within the understory. Surface soil conditions within this habitat community are irregular with various sized stones and boulders capable of providing suitable temporary and long-term shelter for small burrowing mammals and reptiles. Observed understory and herbaceous species within this community are preferred by nesting song birds and Passerines, as well as large and small mammals, including the White Tailed Deer (i.e. Mast), Eastern Gray Squirrel (Observed), Eastern Chipmunk (Observed), Star-nosed Mole (*Condylura cristata*), Little Brown Bat (*Myotis lucifugus*), Northern Myotis (*Myotis vivesi*) and reptiles (turtles and snakes) for food and shelter. The Red Tailed Hawk (*Buteo jamaicensis*) was observed in this community which hunts small mammals and is known to nest within the canopy at higher elevations; the Great Crested Fly Catcher (*Myiarchus crinitus*), also observed in this community, is likely to be a repeat inhabitant as this species is noted for hunting large insects within the canopy and it nests within cavities.

5.2 Forested Wetland - Closed Canopy (FW-CC)

This vegetation community is diverse and supplies food and shelter for a variety of wildlife. Observed understory and herbaceous species provide temporary- and long-term shelter, as well as fairly abundant sources of seed and fruit, which in turn are suitable to support large insect populations. These food sources attract small and large mammals, reptiles and various avian species.

The ecology of this habitat is diverse in that “predator and prey” relationships are somewhat stable to sustain the listed observed and expected populations. Adequate cover and ground conditions exist to enable small mammals, reptiles and birds to move freely to adjoining vegetated habitats for food and shelter. This in turn compliments and supports wildlife diversity within adjoining vegetation community habitats, including the State Land Corp. property, south of the Preserve.

As an example, large mammals such as the White Tailed Deer may utilize this habitat for bedding and protection for nurturing their young. Tree frogs and reptiles are attracted to the large variety of insects and plants available to satisfy needs for food and shelter. Songbirds are also attracted by insects and both perch and nesting sites (including cavities) are available within observed canopy and understory vegetation. Bird surveys conducted under the Assessment (locations b1 and b3) revealed that the greatest variety of species was observed in this community.

5.3 Forested Wetland - Open Canopy (FW-OC)

This habitat community contains the highest diversity of plant species and is expected to support resources favored by listed observed and expected wildlife. This vegetation community is inhabited by plants and animals which favor soil saturation and direct or partial sunlight conditions. Water accumulated within these areas support

reptile and amphibian populations with shelter, food and temperature gradients necessary for survival. (The Green Frog, Spring Peeper and Gray Tree Frog were observed in this community.) It is expected that these areas provide favorable ectothermic conditions for seasonal propagation and hibernation.

A variety of avian species have been observed inhabiting this habitat community. Woodpeckers and migratory warblers (songbirds) will feast on an abundant insect population, as well as a variety of seeds and fruits produced by adjoining diverse understory. (White Tailed Deer and a variety of song birds were observed in this community.) As with the FW-CC community, bird surveys conducted under the Assessment (location b-1 and b3) revealed that the greatest variety of species were observed in this community. In addition, some dead trees (snags) were observed in and near these habitat communities which in turn provide habitat for the types of insects sort after by several bird species and small mammals. Natural holes within decayed and standing and/or fallen tree trunks (and those excavated by Woodpeckers) are used by small mammals, amphibians and birds for nesting sites (cavity nesters).

5.4 Forested Intermittent Watercourse (FIW)

These areas were found to be the least productive, from a natural resource perspective, and do not provide or support diverse habitat conditions. This is based on observations of severe erosion and heavily laden sediment with little if any vegetation existing within the streambed and banks of these watercourses. Compounding these conditions is the existence of Japanese Stilt Grass, an invasive species, which is densely established in areas adjoining the streambed. While this species is invasive, it is capable of providing temporary shelter and food source (including insects) for a small variety of reptiles/amphibians (snakes and toads) and small mammals (i.e. field mice and voles).

6.0 ENDANGERED, THREATENED AND SPECIES OF SPECIAL CONCERN

As part of gathering information for the State Land Corp. development property, the New York State Natural Heritage Program was previously contacted to determine if any rare, threatened, and/or endangered (or of special concern) habitats, or species, exist at or near the project site. Correspondence received from the Heritage Program indicates that no rare, threatened, and/or endangered (or species of special concern) species or habitats exist for the State Land Corp. property. Tables 6-1 through 6-5 present the Federal and State status for observed and potential species presented under the Assessment. These tables are contained in Appendix D.

While ECSI field surveys, no rare, threatened, and/or endangered species were observed within the vegetation habitat communities inspected during July through August 2012. The Eastern Box Turtle is listed as a potential inhabitant of the Second Growth Hardwood Forest habitat community. According to listings maintained by the NYSDEC, the Eastern Box Turtle is designated as a species of special concern, as defined in Section 182.2(i) of 6 NYCRR Part 182. In addition, a potential inhabitant listed by ECSI, the

Marbled Salamander, is also regarded to be a species of special concern. Species of special concern warrant attention and consideration, but current information, collected by the Department, does not justify listing these species as either endangered or threatened. Comparison of potential and observed species to that of State and Federal listings revealed that none of the species listed are either endangered, or threatened.

6.1 Species Rarity

ECSI compared listings of observed and potential inhabitants to rarity indices published by the New York Natural Heritage Program. The indices were reviewed to determine if any observed or potential animal or plant species listed under the vegetation communities identified within the target habitat areas are considered rare, or most imperiled species. The listings were generated in consultation with the New York State Department of Environmental Conservation's Endangered Species Unit and Non-game Unit, Nature-serve, researches, conservation organizations and knowledgeable amateur botanists (Tables 6-1 through 6-5).

One animal, the Least Shrew, has been assigned a rarity index of "G5, SH, U". This species is listed as potentially inhabiting the Second Growth Hardwood Forest communities identified. The "G5" designation means that the species demonstratively is secured globally, but it can be quite rare in some locations. The "SH" means that it is historically in-State but has not been seen in 15 to 20 years. The "U" denotes that the species is Unprotected.

One observed plant species was, *Carex* spp., identified within the FW-CC vegetation community is listed for the Westchester County area. Depending on the actual species, the listing varies from endangered to unprotected.

Given that the Least Shrew is a listed potential species that has not been seen in 15 to 20 years, it is likely that this species does not inhabit the Second Growth Hardwood Forest communities.

6.2 Breeding Birds

ECSI compared observed and potential avian species listed for the four vegetation habitat communities identified for the target sites/habitat areas surveyed to the New York State Breeding Bird Atlas (2000 to 2005). This comparison revealed that 99% of these species are indicated as being "confirmed" or "probable" breeding birds for the Westchester County area. During the bird surveys conducted at the b1 and b3 locations, the greatest diversity of breeding birds was identified within the FW-CC and FW-OC communities. None of the avian species were observed to be paired and caring for young "on the nest". Actual breeding species observed in these communities included the Eastern Wood-peewee and the American Robin.

7.0 DEVELOPMENT-ASSOCIATED/DEVELOPMENT-SPECIALISTS

A “habitat generalist” species is regarded as one which can survive under a variety of habitat conditions, utilizing a large variety of food sources, whereas a “habitat specialist” species is one that survives on a more narrow range of habitat and food choices. “Generalists” species are known to exploit a wider range of resources, while “specialists” make more efficient use of resources and typically exist under more diverse habitat conditions. These indicators are included on the above noted tabulations, Tables 6-1 through 6-5 (Appendix D).

In an effort to better determine how potential impacts the project may pose for observed and potential wildlife species listed for the project, ECSI utilized the “Focal Species Approach” (FoSA) to evaluate species mix and its implications for ecosystem health. This approach has been developed jointly by the Wildlife Conservation Society (WCS) and the Metropolitan Conservation Alliance (MCA) and is described in the document entitled “Croton-to-Hudson Biodiversity Plan, Balancing Development and the Environment in the Hudson River Estuary Catchment” (MCA Technical Series Paper Series No. 7, 2004).

7.1 Specialists and Generalists

Under the Focal Species Approach, observed species are compared to listings of “developmental-associated focal species” (habitat generalist) and “development-sensitive focal species” (habitat specialist). ECSI also compared potential inhabitants listed for the Assessment areas surveyed. The approach provides lists of bird, reptile and amphibian species in each category to aid in evaluating ecosystem health.

Based on a review of the listings provided by WCS/MCA in their publication, some of the observed and potential bird, reptile and amphibian species listed for the target habitat areas surveyed under the Assessment match those noted under the development-associated and development-sensitive species categories. On-site species which match up under listed development-associated species include the Blue Jay and American Crow (both observed). One observed reptile, the Garter Snake (observed) is also listed.

Potential and observed development-sensitive species listed for the for the target habitat areas surveyed under the Assessment include the Least Flycatcher, Black-and-white Warbler, Worm-eating Warbler, Eastern Bluebird, Indigo Bunting, Pileated Woodpecker, Blue-winged Warbler, Prairie Warbler, Ovenbird and the Veery. Some of these species were observed during the Assessment surveys completed within the the habitat communities identified. Reptile species include the Spotted Turtle, Eastern Box Turtle, Eastern Hognose Snake and the Northern Copperhead. The Garter Snake was observed within the target sites of the Preserve; other reptile species were listed as potential inhabitants. Amphibians include the Jefferson Salamander, Spotted Salamander, Marbled Salamander, Fowler’s Toad, Gray Tree Frog and Wood Frog. Of these species, the Gray Tree Frog was observed within the FW-CC and FW-OC habitat

communities, the remainder are listed as potential inhabitants. The above noted development-associated and development-sensitive species are listed on above noted tables.

9.0 POTENTIAL IMPACTS AND RECOMMENDATIONS

Based on design parameters developed by Site Design Consultants, the proposed creation of two regional retention areas will involve damming up (construction of a low profile rock berm) the lower discharge point of each wetland to thereby allow water to periodically accumulate (backup) within the existing limits of each wetland, and immediately surrounding areas. The amount of water-holding area is expected to increase by 50 percent, an expansion which in turn will provide downgradient flood relief by 30 percent.

9.1 Potential Impacts

Existing moisture tolerant forms of observed species within these areas are expected to handle periodic flooding; these species display evidence of flooding (i.e. American Elm, Red Maple, Slippery Elm, Shagbark Hickory, American Hop-hornbeam, Spicebush, Flowering Dogwood, and Black Willow). Some of the transition species immediately surrounding existing wetland vegetation are expected to survive, while upland species may succumb to periodic flooding (i.e. Black Birch, Sugar Maple and Northern Red Oak). The extent at which upland tree and shrub will succumb to flooding is expected to be minimal as the majority of species observed are comprised of moisture and shade tolerant species (i.e. wetland and transitional species) characterized as being Obligate, Facultative-Wetland and Facultative species.

Observed and anticipated avian, amphibian/reptile and mammalian species identified in these areas are mobile and will likely relocate temporarily as a function of periodic flooding. Further, the timing of flooding and breeding periods for the amphibian species observed (and those species anticipated to exist) is not expected to be negatively affected. Flooding will be progressive, based on seasonal precipitation events, which will allow species to gradually adapt to changing conditions without severe stress or competition for remaining habitat areas due to flooding. In fact, the range of amphibian and reptile habitat is expected to expand. As an example, Wood Frog and Spring Peepers seek out both terrestrial and aquatic habitats, while the Green Frog relies more heavily upon aquatic conditions. Regardless, all three species prefer temporary, ephemeral water sources to breed (May through August).

Trees which succumb to flooding are expected to revert to “snags” (standing, dead trees) which provide additional diverse habitat conditions for a variety of insect. In fact, snags are noted for attracting several varieties of insects which are preferred by several bird species, primarily woodpeckers. Woodpeckers are also the primary excavators of nesting cavities in snags. These tree cavities are later used by other species such as Bluebirds, Wood Ducks, Titmice, Great-crested Flycatchers, Black-capped

Chickadees, White Breasted Nuthatches and Screech Owls, all of which depend on cavities for successful nesting. These species have been observed, or are anticipated to inhabit these areas.

9.2 Recommendations

Access to each regional flood retention area should be arranged along the west/northwestern and eastern areas of the State Land Corp. property site, as the topography of these portions of the property are more gradual and can easily managed and maintained, compared to other areas of the property. Narrow paths topped with wood chips should be developed to serve as both passive hiking trails and to facilitate access to the basin areas. This will serve to minimize erosion and sedimentation potentials within the portion of the State Land Corp property planned to be deeded to the Town of Yorktown as preservation land.

Minimal work is proposed to construct each retention area dam (earth and rock berm). Compact (mini) excavators and All-Terrain Vehicles (ATV's) are proposed to be used to transport materials, laborers, and tools to each area, as well as to perform limited grading required to build each dam. The use of compact excavators and ATV's is expected to significantly minimize soil erosion/sedimentation potentials, as well as result in the smallest access route practicable for accessing each area.

In an effort to minimize soil and water impacts at the western (flood retention) wetland, construction activities should consist of limited grading and only in the southern portion of the wetland, primarily in close proximity to a stone boundary wall (where the northern reaches of the site adjoin Sylvan Glen Preserve) is located. This wall marks the location of the proposed earthen/rock berm which will be constructed to retain storm water within the adjoining, upgradient wetland. These activities should be performed during months of low flow conditions, preferably during July and August. Similarly, limited grading activities should be performed near the rock berm at the eastern wetland (flood retention) area; earth/rock dam (berm) construction activities will take place solely upon State Land Corp. property and thus a similar access path should be constructed.

Based on information provided by Site Design Consultants, the proposed improvements will consist of constructing a 5 foot high earthen dam, which will be reinforced with rock and vegetation. The dam will be constructed across a lower end of the natural draw in the topography, thereby limiting the disturbance only to the area of the dam. There is no earthwork expected outside of this limit.

Trees, shrubs and herbaceous vegetation which may succumb to periodic flooding should be replaced with moisture tolerant plantings. A Preliminary Wetland Mitigation Plan has been prepared for the State Land Corp development by ECSI, as an additional mitigation measure under the project. After each retention area is dammed (bermed) and at least one season of accumulated water is observed over four (4) seasons, a final plan will be prepared to best match observed conditions. The preliminary Plan will include the planting of indigenous species comprised mostly of moisture and shade tolerant

herbaceous, shrub and tree species, along portions of the western, northern and eastern edge of each retention area. The plantings will be located as a function of water level observations and soil amelioration resulting from seasonal flooding. Indigenous herbaceous species may include Tussocks Sedge, Cinnamon Fern, Soft Rush, Royal Fern, and Rough-leaf Goldenrod; shrub species may include Red Osier, High-bush Blueberry, Arrow-wood, Green Ash, Spicebush and Silky Dogwood; trees plantings will likely include American Elm, Black Willow, Sycamore and Red Maple. These species were observed under the Biodiversity Assessment completed for each retention area, as well as existing within immediately surrounding areas; as such, only indigenous species will be considered as plantings. Appendix E contains the Preliminary Wetland Mitigation Plan (mitigation areas are highlighted in green), including planting and monitoring notes relating to the initial list of plantings developed under the Plan thus far. The Plan will be performed over a 5-year monitoring and reporting period to ensure that successful establishment of each planting within the regional retention areas. The Monitoring Program will include monitoring wetland mitigation areas, as well as in-stream improvements (stream bed and bank conditions) within the four stream sections proposed to be improved to mitigate off-site sediment, nitrogen and phosphorus discharge potentials. A target goal of achieving an 85 percent survival rate will apply for vegetation plantings implemented under the wetland mitigation plan, and for vegetation applications implemented for in-stream improvements. As implied above, access to each regional flood retention area will be established as a narrow, wood chipped path designed to accommodate small work vehicles (mini-excavator and/or ATV unit) originating from an access point along NYS Route 202/35.

Overall, increasing the flood holding capacity of the two existing wetlands areas will serve to expand wetland habitat/vegetation and thereby increase the diversity of immediately surrounding transitional and upland vegetation areas. The functional attributes of each wetland area, relative to flood holding capacity and expansion of the two wetland areas been determined under the Assessment to display a high biodiversity, will provide important benefits for Town of Yorktown residents.

APPENDICIES

APPENDIX A

BIODIVERSITY ASSESSMENT PROTOCOL FOR ASSESSING TW PROPOSED REGIONAL FLOOD RETENTION AREAS

**BIODIVERSITY ASSESSMENT PROTOCOL
FOR ASSESSING
TWO PROPOSED REGIONAL FLOOD RETENTION AREAS**

**STATE LAND CORP. PROJECT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK**

PREPARED FOR:

**State Land Corp.
3967 Provost Avenue
Bronx, NY 10466**

PREPARED BY:

**ENVIRONMENTAL COMPLIANCE SERVICES, INC.
26 SOUTH STREET
MIDDLETOWN, NEW YORK 10940**

JULY 2012

**BIODIVERSITY ASSESSMENT PROTOCOL
FOR ASSESSING
TWO PROPOSED REGIONAL FLOOD RETENTION AREAS**

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APPENDICES

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1.0 INTRODUCTION

During July and August 2012, a Biodiversity Assessment will be performed by representatives of the State Land Corp. The Assessment will provide information about off-site impact potentials within a portion of the Sylvan Glen Park Preserve, in addition to evaluating the biodiversity information gathered during the SEQR review of the Pulte Homes project (2004) for the entire State Land Corp. property site, situated south of the Park Preserve. The purpose of the assessment is to determine the level of plant and animal diversity within, and in close proximity to, two proposed regional flood retention areas situated north of the proposed State Land Corp. project limits. One retention area is located on the Town of Yorktown Sylvan Glen Park Preserve property, which abuts the State Land Corp. property north, and the other is mostly located on a portion of the State Land Corp. property, which also abuts the Sylvan Glen Park property. Figure 1 presents the approximate location of each area in relation to the project limits.

Information gathered under the Biodiversity Assessment will be used to evaluate potential impacts the addition of the two regional retention areas may have upon the life-cycles of wildlife in proximity to the Sylvan Glen Park Preserve property. As a first step, the habitat within each of the two areas, and immediately surrounding areas (including a road access with a 200 foot set-back), will be characterized. Available published information on vegetation (types and structure), geology, topography, soils, climate and water resources (wetlands and waterways) will be reviewed to aid in identifying and describing the habitat in these two areas. In addition, habitat profiles published for Westchester County and the Hudson River Estuary Corridor will be used to “type” each on-site habitat. All work will be performed pursuant to the protocols contained in the Town of Yorktown, Wildlife and Plant Biodiversity Assessments document (pages 1 through 3).

A total of two (2) “target sites/habitat areas” will be established in the field as a function of the natural history and habitat preferences which have been documented by others for birds and herpetofauna (reptiles and amphibians). Vegetation transects will be established (flagged) within each regional flood retention area to facilitate data gathering during July and August 2012. Each of the two target sites will be visited on 4 weekly dates during the remainder of July and early August to record visual sightings and sounds (bird song/call notes, including seasonal frog and toad callings) with an emphasis on breeding birds. A “walk-through” survey for reptiles and amphibians will also be performed on the same day the above activities are performed. In addition, mammals and insects will be surveyed when these other observations are being performed.

During each field survey, observations will be recorded on habitat and species specific data sheets. For birds, reptiles and amphibians, the date, time, weather, observer, start/finish, location, how and where each species was identified (habitat), methods utilized, whether the species is a “habitat specialist” (development-sensitive focal species) or “habitat generalist” (development-associated species) will be recorded, as well as the name of each species (common and scientific). Separate data sheets will be utilized to record vegetation (plants) within each target site/habitat area; each sheet will be formatted to record date, time, observer, aspect, weather, habitat, soil characteristics, percent cover and structure (ground, understory, canopy, dominance/co-dominance), estimated height and diameter at breast height (DBH). Mammals

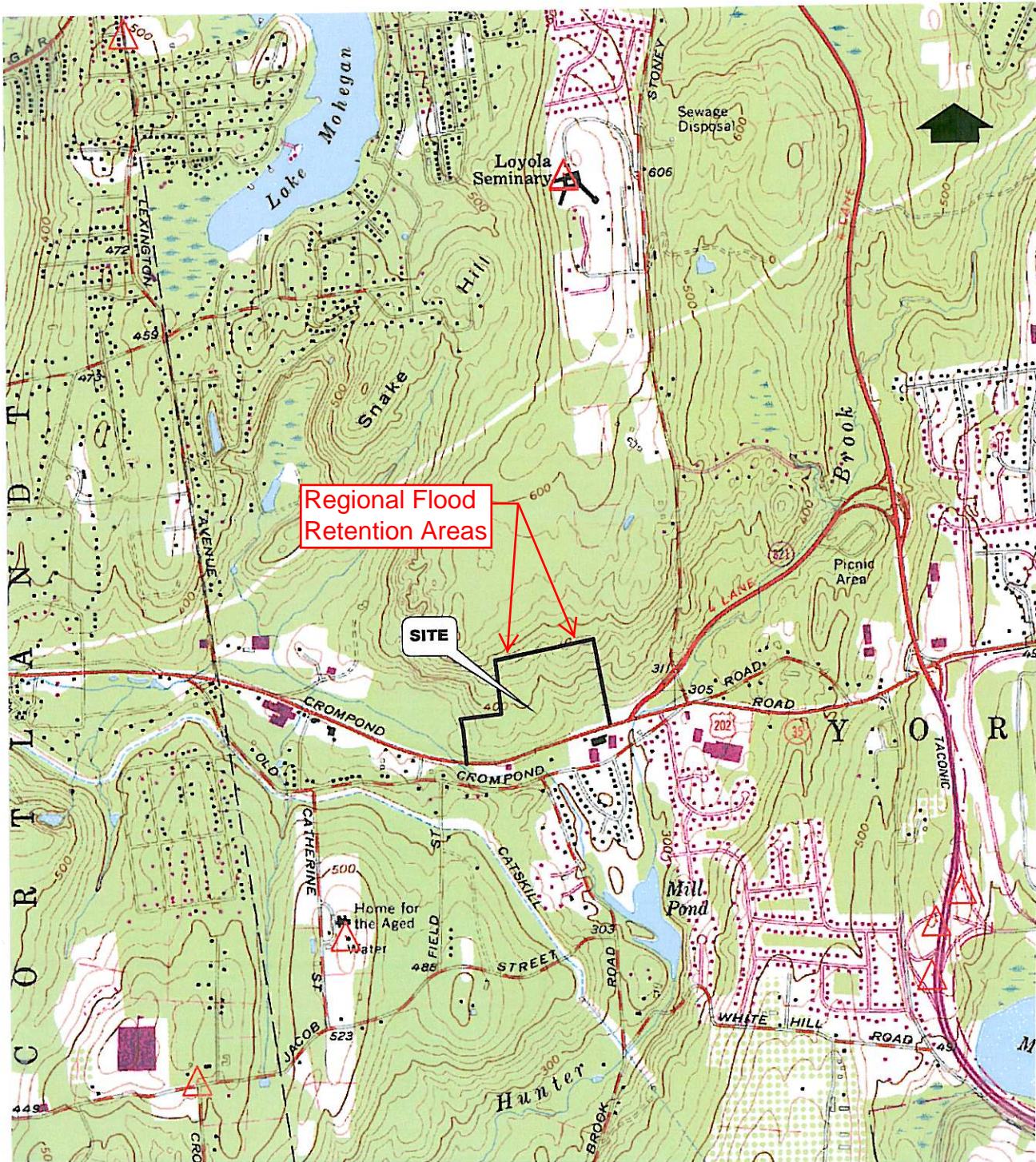


FIGURE 1

SITE LOCATION MAP

**STATE LAND CORP.
YORKTOWN, WESTCHESTER
COUNTY, NEW YORK**

**SOURCE: USGS MOHEGAN LAKE
QUADRANGLE (1956/REV. 1981)**

SCALE: 1 Inch = 1,200 FEET

will be recorded similarly; recorded data will be based on visual sightings, sounds, skull/bone remains, scat, tracks and territorial field markings. Insects will be recorded utilizing a similarly formatted data sheet; recordings will be based on visual sightings.

The types of methods to be implemented for conducting field surveys are presented below. Various guides and field biology/ecology documents and audio recordings will be utilized to identify species encountered in the field. Appendix A contains a tentative listing of references/guides to be used for the assessment; this list will be included in a final Biodiversity Assessment Report.

2.0 SURVEY METHODS

As noted, various guides and available agency published information on flora and fauna species will be utilized during the planned surveys to best observe and record sightings/observations in the field, for the assessment period of July through August 2012. The western most target site/habitat area will extend to an access road and 200 foot setback upon the Sylvan Gen Park Preserve property to assess potential impacts resulting from the construction of a proposed small access road necessary for building this retention area. The eastern retention area will not require an access road.

2.1 Plants

Meter quadrant transects will be setup within the two (2) target/habitat areas to record plant species, their structure and percent cover. Each transect location will be flagged in the field; a square meter will be used to record observations within each quadrant. It is expected that one (1) daytime field visit will be performed to record vegetation within each of the two target site/habitat areas.

Information gathered in the field will be recorded on vegetation specific field data sheets. These data sheets will include the types of plants observed within each habitat (common and scientific name) and each sheet will be formatted to record date, time, observer, aspect, weather, habitat, soil type/characteristics, percent cover and structure (ground, understory, canopy, dominance/co-dominance), estimated height and diameter at breast height (trees with a DBH greater than 1.5 inches). Various guides will be used to help identify species in the field; hand lens magnifiers will also be used for close-up observations. Photographs will be obtained to document field observations.

2.2 Birds

A bird survey will be performed during four (4) site visits tentatively scheduled for July 17 through August 7th, at least ½ hour before dawn 5:15 to 6:30 AM. Two observation point locations will be visited during each site visit. This time period will ensure that crepuscular (twilight) and diurnal (day) species will have a potential to be observed. In addition, the sounds of nocturnal bird species will be observed while visiting the site during one (1) evening July for 1.0 hour, at two locations; efforts will be made to observe frog and toad callings (see section 2.3

Reptiles and Amphibians below). The two evening observation plot locations will be established and flagged in proximity to each of the two target sites/habitat areas.

Each bird observation plot will be divided into compass quadrants to help note the direction of each sightings on survey specific field data sheets. As noted, field data sheets will include date, time, observer, weather, start/finish, location, how and where each species was identified (habitat), type of observation ("h" heard, song/call; "v" visual; or both "h/v"), and whether the species is a "habitat specialist" (development-sensitive focal species) or "habitat generalist" (development-associated species). The approximate distance of each sighting will be noted from the center of each point location; the name of each species (common and scientific) and number of individuals sighted will also be recorded. Binoculars and a spotting scope (as necessary) will be the main tools for sighting birds at each observation plot location.

2.3 Reptiles and Amphibians

Herpetofauna (reptiles and amphibians) will be surveyed (walk-through routing) on the same day of the bird survey during the month of July and August. Prior to performing the surveys, natural history and habitat preference documents, as well as species distribution maps, will be reviewed to help establish species habitat preferences. Such sites will include hardwood forests, rocky outcrops, pond and stream edges, and wetlands in proximity of each flood retention area; these areas will be surveyed in a random manner as reptile and amphibian species are highly mobile. Emphasis will be placed on investigating landscapes between upland forested areas, and wetlands, stream sections, rock outcrops and moist meadow grasses (i.e. open cover pond and stream areas), as amphibians have been documented to frequent such areas. Again, such areas will be surveyed within and in proximity to the two regional flood retention areas.

The gathering of Herpetological data will be based solely on visual observations. A snake hook, or reptile tong (or comparable), will be used to overturn wood debris, leaf litter, matted grass and stones to observe the "micro habitats" typical of reptiles and amphibian, within each target/habitat area. As necessary, a dip net will be utilized while surveying along the water's edge any ponds, and/or a perennial stream to help identify amphibians. The net will most likely be used to catch and temporarily hold tadpoles (partially submerged within water) for prompt identification and release. As necessary, binoculars will also be utilized to identify basking turtles within the target/habitat areas to facilitate observation at a distance, and thereby avoid startling.

At no time will debris, matted grass, or stones be overturned more than once in order to maintain these types of micro habitats. The surveys will take place during morning hours and early afternoon, between 9 AM and 1:00 PM; one (1) evening survey event will be performed at two locations to listen for the callings and sounds of frogs and toads. This event will be performed for a period of 1/2 hour at each observation point location.

As noted, species encountered in the field will be recorded on data sheets which will include date, time, observer, weather, start/finish, location, how and where each species was identified (habitat), aspect, soil type and number of individuals. Photographs will be obtained to document sightings.

2.4 Mammals and Insects

Mammals and insects will be surveyed on each day bird and herpetofauna surveys are being performed during July through August. Given that mammal and insect species are highly predacious and mobile, and may occur during varied times of the day (due to nocturnal, diurnal and crepuscular behavior), species are best encountered while other surveys are being performed. Observations will be recorded on separate data sheets to include date, time, observer, weather, start/finish, location, how and where each species was identified (habitat), aspect, and the number of individuals observed.

With respect to sighting mammals, recorded observations will be based on visual sightings of scat, skull/bone remains, tracks and territorial field markings. Various guide books will be used to aid species and habitat identification; photographs of encountered sightings, including scat/territorial markings, will be obtained for documentation.

2.5 Habitat and Survey Locations

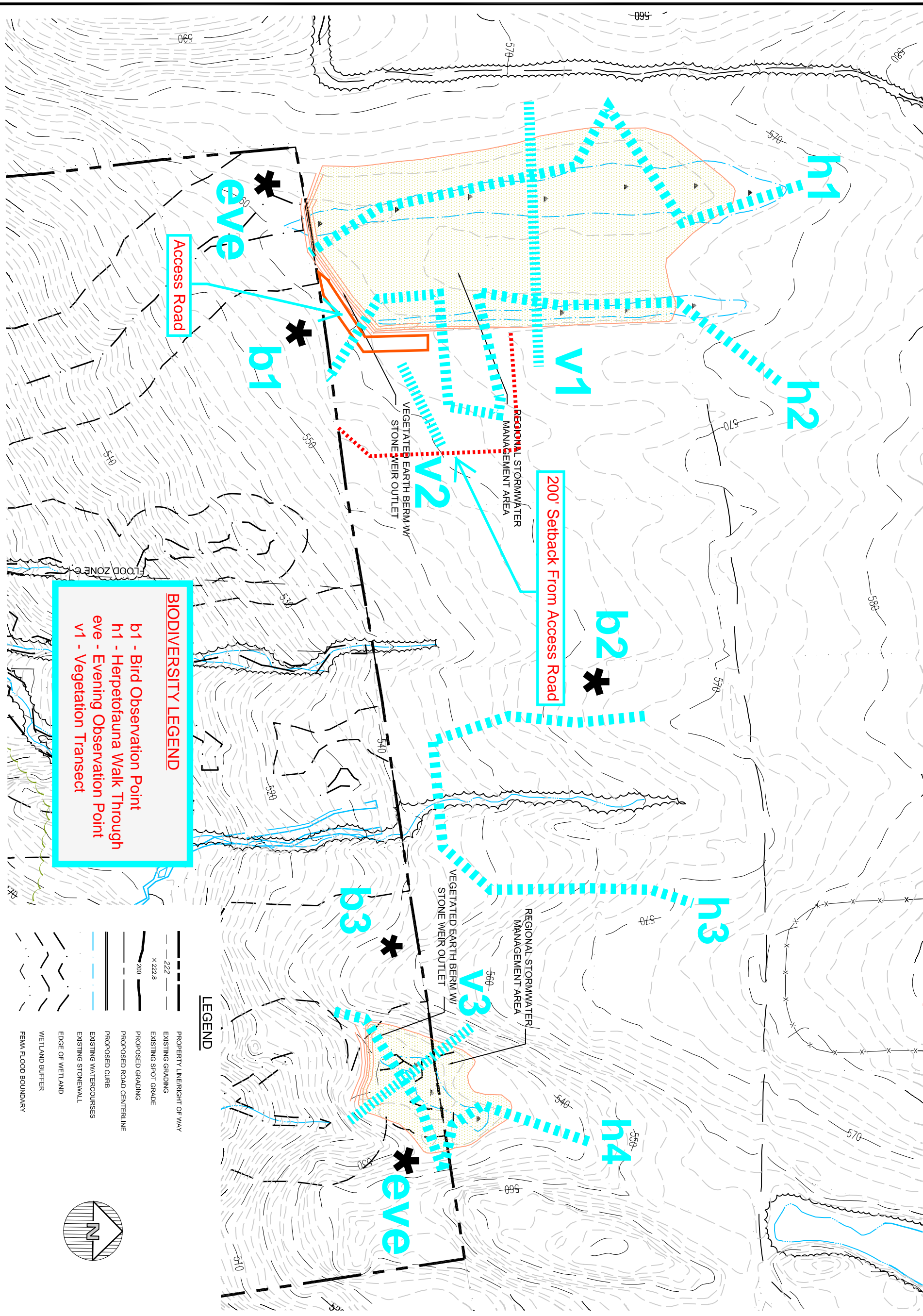
Figure 2, entitled “Biodiversity Survey Target Sites/Habitat Areas”, presents a representation of the locations where flora and fauna surveys will take place within and in the vicinity of the Sylvan Glen Park Preserve and access road/200 foot setback. At this time, the types of habitats envisioned to exist within the two target sites/habitat areas include Hardwood Forest (**HF**) consisting of Oak/Hickory forests, Forested Flood Plain (**FFP**), Perennial Stream (**PS**), Intermittent Stream (**IS**) and Forested Wetland (**FW-CC**), comprised of surrounding Closed Cover Canopy areas.

As noted, Figure 2 presents the location of planned target sites/areas within each on-site habitat. Survey points, transects and walk through routing situated within, and in the vicinity of, the two target sites/habitat areas are as follows: v1, v2 and v3 approximates three vegetation transects; circle plots b1 through b3 approximate avian observation locations; h1 through h4 denotes Herpetological (reptile and amphibian) walk-through routes; and eve denotes the location of where each “one time”, 1/2 hour evening audio observation event will take place. Again, no specific locations are designated for surveying mammals and insects as these species categories will be observed during each of the other types of field visits planned to take place across the site.

3.0 **DATA ANALYSIS**

Once each habitat has been “typed”, tabulations of species likely to inhabit each area will be generated. Once the planned field surveys are completed, species observed in the field will be added to these tabulations. Indication of the “listed status” for Federal, State and County, threatened, endangered, or species of special concern will be noted for each applicable species. Field findings will also be compared to the Biodiversity Conservation Study, Town of Yorktown, and Westchester County, New York, prepared by Stearns & Wheler, LLC, (updated March 2010) to include additional species for those habitat areas which are similar to the target site/habitat areas identified.

FIGURE 2 - BIODIVERSITY SURVEY TARGET SITES/AREAS



BIODIVERSITY LEGEND

- b1 - Bird Observation Point
- h1 - Herpetofauna Walk Through
- eve - Evening Observation Point
- v1 - Vegetation Transect

LEGEND

- PROPERTY LINERIGHT OF WAY
- EXISTING GRADING
- X-222.8 EXISTING SPOT GRADE
- PROPOSED GRADING
- PROPOSED ROAD CENTERLINE
- PROPOSED CURB
- EXISTING WATERCOURSES
- EXISTING STONEWALL
- EDGE OF WETLAND
- WETLAND BUFFER
- FEMA FLOOD BOUNDARY

NOTE: UNAUTHORIZED ALTERATIONS OR ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209 (2) OF THE NEW YORK STATE EDUCATION LAW.

FIGURE 8 - REGIONAL STORMWATER MANAGEMENT AREAS

PREPARED FOR
CHARLES MONACO
 a.k.a State Land Corp.
 ROUTE 202

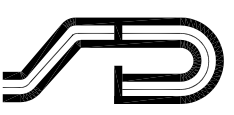
Town Of Yorktown Westchester Co., New York

Site Design Consultants

Civil Engineers • Land Planners

251 F Underhill Avenue Yorktown Heights, NY 10598
 (914) 962-4488 - Fax (914) 962-7386
 www.sitedesignconsultants.com

SCALE: NTS



DATE: 3/07/12

In addition, Federal and State rarity indications will be added to the tabulations, as well as indications as to whether a listed species is a “Development-Associated Focal Species” or a “Development-Sensitive Listed Focal Species”. These indications will be developed by utilizing, at the very least, the Croton-to-Highlands Biodiversity Plan, the Biodiversity Conservation Study, Town of Yorktown, Westchester County, New York, the NYS Herpetological Atlas, New York Natural Heritage Program listings (including indications through prior correspondence with the Heritage Program), the Breeding Bird Survey and Breeding Bird Atlas, the Biodiversity Assessment Manual for the Hudson River Estuary Corridor and the National Audubon Watch List.

Analysis of habitat and species profiles contained within the Biodiversity Assessment Manual for the Hudson River Estuary Corridor, the Biodiversity Conservation Study, Town of Yorktown, Westchester County, New York, The Wildlife Resources of Westchester County, and the Ecological Communities of New York State (1990 and January 2002 revision) will be used to analyze and confirm each target site/habitat area and the species noted within each.

Emphasis will be directed at determining if off-site changes (storm water retention) will result in changes to on-site habitats and if proposed changes to on-site watercourses will result in any habitat/biodiversity changes, as well as if proposed post-construction storm water changes will result in any changes to the Hunter Brook hydrology/habitats (trout stream conditions, reduction in base flow, etc.). Findings related to these issues will be discussed in the final report discussed below.

3.1 Nearby Reference Sites

Available species and habitat information gathered for the Sylvan Glen Park Preserve, will be reviewed and compared to the Biodiversity Assessment findings for the two regional flood retention areas, and immediately surrounding areas. An analysis of habitat fragmentation, as a function of the geographic positioning of these regional flood retention areas in relation to the proposed development, will be performed to determine if habitat management options are necessary, including consideration of the proposed "open space" area.

4.0 REPORTING

A final report will be prepared to include a habitat map and several species listings, as well as descriptions of the types of data collected and survey methods utilized to complete the Biodiversity Assessment. Habitat conditions will be described and the general location of encountered species will be noted; specific locations of encountered species will not be presented in order to avoid illegal trapping, or collection, by others. A discussion of the types of critical habitat area potentials existing within the survey limits will be presented, as well as a discussion of the types of potential wildlife life-cycle impacts expected to occur with the proposed regional flood retention areas. Further, a discussion of any threatened, endangered and/or species of special concern reported by the New York Natural Heritage Program will be provided. Potentials for habitat fragmentation will also be discussed along with preservation management options and recommendations for minimizing project impacts. A discussion of any

off-site changes (storm water retention) which may result in changes to on-site habitats, or if proposed changes to on-site watercourses will result in any habitat/biodiversity changes, will be discussed in the report. In addition, a discussion of whether or not proposed post-construction storm water changes will result in any changes to the Hunter Brook hydrology/habitats (trout stream conditions, reduction in base flow, etc.) will be presented. The final report will be discussed in the project Environmental Assessment Form (Long EAF) and referenced under separate cover.

APPENDICES

APPENDIX A

LIST OF REFERENCE GUIDES/AGENCY PUBLISHED DOCUMENTS

The following references will be utilized to conduct a Biodiversity Assessment for two proposed regional flood retention areas, and immediately surrounding areas within the Sylvan Glen Park Preserve:

Benyus, J. M. The Field Guide to Wildlife Habitats of the Eastern United States. 1989.

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APPENDIX B
PHOTOGRAPHS



Photo 1 - View of southern limits of western wetland within the limits of Sylvan Glen Preserve.



Photo 2 - Example of severely eroded and sediment laden Forested Intermittent Watercourse (FIW).



Photo 3 - View of Second Growth Hardwood Forest (SGHF) community in the vicinity of transect v2, within the limits of the Sylvan Glen Preserve.



Photo 4 - View of a portion of the eastern wetland area evaluated for flood retention (Forested Wetland - Closed Canopy Community).

APPENDIX C

LIST OF REFERENCE GUIDES/AUDIO RECORDINGS AND AGENCY PUBLISHED DOCUMENTS

LIST OF REFERENCE GUIDES/AGENCY PUBLISHED DOCUMENTS

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APPENDIX D

**TABLES 4-1 THROUGH 4-6
AND
TABLES 6-1 THROUGH 6-5**

TABLES 4-1 THROUGH 4-6

**TABLE 4-1
POTENTIAL AND OBSERVED AVIAN INHABITANTS
STATE LAND DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
JULY 2012**

Common Name	Scientific Name	Habitat			
		SGHF	FW-OC	FW-CC	FIW
Turkey Vulture	<i>Cathartes aura</i>	O			✓
Red Tailed Hawk	<i>Buteo jamaicensis</i>	✓	✓	O	
Hairy Woodpecker	<i>Picoides villosus</i>	O	O	O	
Downy Woodpecker	<i>Picoides pubescens</i>	O	O	O	
Blue Jay	<i>Cyanocitta cristata</i>	O	✓	O	✓
American Crow	<i>Corvus brachyrhynchus</i>	O			✓
Black-Capped Chickadee	<i>Poecile atricapillus</i>	O	O	O	✓
Tufted Titmouse	<i>Baeolophus bicolor</i>	O	O	O	✓
Brown Creeper	<i>Certhia americana</i>	✓			✓
Eastern Bluebird	<i>Sialia sialis</i>		✓	✓	
American Robin	<i>Turdus migratorius</i>	O		O	✓
American Redstart	<i>Setophaga ruticilla</i>		✓	✓	
Baltimore Oriole	<i>Icterus galbula</i>	✓			✓
Ovenbird	<i>Seiurus aurocapillus</i>	✓		✓	✓
Carolina Wren	<i>Thryothorus ludocicianus</i>	✓	✓	✓	✓
Rufous-Sided Towhee	<i>Pipilo erythrophthalmus</i>	✓			✓
Northern Oriole	<i>Icterus galbula</i>	✓	✓	✓	✓
Wild Turkey	<i>Meleagris gallopavo</i>	✓			
Cooper's Hawk	<i>Accipiter cooperii</i>	✓			✓
Gray Catbird	<i>Dumetella carolinensis</i>		✓	O	
Empidonax Flycatchers	<i>Empidonax spp.</i>		✓	✓	
Great Crested Fly Catcher	<i>Myiarchus crinitus</i>	✓			✓
Red-eyed Vireo	<i>Vireo olivaceus</i>	O	✓	O	✓
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	✓	O	O	✓
Black and White Warbler	<i>Mniotilta varia</i>	✓	✓	✓	
Yellow Warbler	<i>Dendroica petechia</i>		✓	✓	

**TABLE 4-1
POTENTIAL AND OBSERVED AVIAN INHABITANTS
STATE LAND DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
JULY 2012**

Common Name	Scientific Name	Habitat			
		SGHF	FW-OC	FW-CC	FIW
Black and White Warbler	<i>Mniotilta varia</i>	✓	✓	✓	✓
Yellow Warbler	<i>Dendroica petechia</i>		O	✓	
Common Yellowthroat	<i>Geothlypis trichas</i>		✓	✓	
Northern Cardinal	<i>Cardinalis cardinalis</i>	O			✓
White Throated Sparrow	<i>Zonotrichia albicollis</i>		✓	✓	
Dark-Eyed Junco	<i>Junco hyemalis</i>	✓			✓
White Breasted Nuthatch	<i>Sitta carolinensis</i>	✓	O	O	✓
Eastern Screech Owl	<i>Otus asio</i>	✓			
Pileated Woodpecker	<i>Dryocopus pileatus</i>	✓	✓	✓	✓
Veery	<i>Catharus fuscescens</i>	✓	O	O	✓
Eastern Wood-Pee wee	<i>Contopus virens</i>		O	O	
Wilson's Warbler	<i>Wilsonia pusilla</i>		O	✓	
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>		✓	✓	
Scarlet Tanager	<i>Piranga olivacea</i>	O			✓
Least Flycatcher	<i>Empidonax minimus</i>	✓			✓
Wood Thrush	<i>Hylocichla mustelina</i>	O			✓
Worm-eating Warbler	<i>Helmitheros vermivorus</i>	✓		✓	✓
Yellow-shafted Flicker	<i>Colaptes auratus</i>		O	O	O
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	✓			

Notes:

O – Observed; ✓ - Potential

SGHF – Second Growth Hardwood Forest (SGHF); Freshwater Wetlands – Closed Canopy (FW-OC)

Freshwater Wetlands - Open Canopy (FW-CC); Forested Intermittent Watercourse (FIW)

**TABLE 4-1
 POTENTIAL AND OBSERVED AVIAN INHABITANTS
 STATE LAND DEVELOPMENT
 TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
 JULY 2012**

Bird Survey Periods & Conditions:

Date (2012)	Time (AM/PM Hours)	Weather
July 17	5:15 to 6:28 AM	Partly Cloudy; 60 Degrees F; Wind Calm
August 9	5:20 to 6:39 AM	Overcast; 68 Degrees F; Wind 1 to 3 mph
August 14	5:30 to 7:45 AM	Partly Cloudy; 65 Degrees F; Wind Calm
August 17	5:35 to 6:51 AM	Clear Sky; 62 Degrees F; Wind 2 to 4 mph
August 21	7:32 to 7:52 PM	Partly Cloudy; 78 Degrees; Wind 1 to 3 mph

**TABLE 4-2
POTENTIAL AND OBSERVED REPTILE AND AMPHIBIAN INHABITANTS
STATE LAND CORP. DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
JULY 2012**

Common Name	Scientific Name	Habitat Type			
		SGHF	FW-OC	FW-CC	FIW
Salamanders					
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>		✓	✓	
Spotted Salamander	<i>Ambystoma maculatum</i>		✓	✓	
Northern Red-Backed Salamander	<i>Plethodon cinereus</i>		✓	✓	
Marbled Salamander	<i>Ambystoma opacum</i>		✓	✓	
Slimy Salamander	<i>Plethodon cinereus</i>		✓	✓	
Red Newt	<i>Notophthalmus viridescens</i>	✓			✓
Four-Toed Salamander	<i>Henidactylium sctatum</i>		✓	✓	
Two-lined Salamander	<i>Eurycea bislineata</i>		✓	✓	
Toads and Frogs					
Eastern American Toad	<i>Bufo americanus</i>	✓			
Wood Frog	<i>Rana sylvatica</i>		O	O	✓
Fowler's Toad	<i>Bufo woodhousei fowleri</i>	O			
Northern Spring Peeper	<i>Hyla crucifer</i>		O	O	
Gray Tree Frog	<i>Hyla versicolor</i>	✓	O	O	✓
Green Frog	<i>Rana clamitans</i>		O	O	
Green Tree Frog	<i>Hyla cinerea</i>		O	✓	
Pickerel Frog	<i>Rana palustris</i>		✓	✓	
Snakes					
Eastern Milk Snake	<i>Lampropeltis triangulum</i>	✓			
Eastern Garter Snake	<i>Thamnophis sirtalis</i>	✓	✓	O	✓
Northern Brown Snake	<i>Storeria dekayi</i>	✓			
Northern Redbelly Snake	<i>Storeria occipitomaculata</i>	✓			
Eastern Hognose Snake	<i>Heterodon platyrhinos</i>	✓			
Northern Ringneck Snake	<i>Diadophis punctatus</i>	✓			
Northern Black Racer	<i>Coluber constrictor</i>	✓			
Northern Copperhead	<i>Agkistrodon contortrix</i>		✓	✓	

**TABLE 4-2
 POTENTIAL AND OBSERVED REPTILE AND AMPHIBIAN INHABITANTS
 STATE LAND CORP. DEVELOPMENT
 TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
 JULY 2012**

Common Name	Scientific Name	Habitat Type			
		SGHF	FW-OC	FW-CC	FIW
Turtles					
Eastern Box Turtle	<i>Terrapene carolina</i>		✓		

Notes:

O - Observed; ✓ - Potential

Second Growth Hardwood Forest (SGHF); Freshwater Wetlands - Open Canopy (FW-OC);
 Forested Wetland - Closed Canopy (FW-CC); Forested Intermittent Watercourse (FIW)

Reptile/Amphibian Survey Periods & Conditions:

Date (2012)	Time (AM/PM Hours)	Weather
July 17	5:25 to 7:15 AM	Party Cloudy; 60 Degrees F; Wind Calm
August 9	6:43 to 7:30 AM	Overcast; 68 Degrees F; Wind 1 to 3 mph
August 14	6:25 to 9:15 AM	PartlyCloudy; 65 Degrees F; Wind Calm
August 17	7:00 to 8:15 AM	Clear Sky; 62 Degrees F; Wind 2 to 4 mph
August 21	7:04 to 7:52 PM	Partly Cloudy; 78 Degrees F; Wind 1 to 3 mph

**TABLE 4-2
POTENTIAL AND OBSERVED REPTILE AND AMPHIBIAN INHABITANTS
STATE LAND CORP. DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
JULY 2012**

Common Name	Scientific Name	Habitat Type			
		SGHF	FW-OC	FW-CC	FIW
Salamanders					
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>		✓	✓	
Spotted Salamander	<i>Ambystoma maculatum</i>		✓	✓	
Northern Red-Backed Salamander	<i>Plethodon cinereus</i>		✓	✓	
Marbled Salamander	<i>Ambystoma opacum</i>		✓	✓	
Slimy Salamander	<i>Plethodon cinereus</i>		✓	✓	
Red Newt	<i>Notophthalmus viridescens</i>	✓			✓
Four-Toed Salamander	<i>Henidactylium sctatum</i>		✓	✓	
Two-lined Salamander	<i>Eurycea bislineata</i>		✓	✓	
Toads and Frogs					
Eastern American Toad	<i>Bufo americanus</i>	✓			
Wood Frog	<i>Rana sylvatica</i>		O	O	✓
Fowler's Toad	<i>Bufo woodhousei fowleri</i>	O			
Northern Spring Peeper	<i>Hyla crucifer</i>		O	O	
Gray Tree Frog	<i>Hyla versicolor</i>	✓	O	O	✓
Green Frog	<i>Rana clamitans</i>		O	O	
Green Tree Frog	<i>Hyla cinerea</i>		O	✓	
Pickerel Frog	<i>Rana palustris</i>		✓	✓	
Snakes					
Eastern Milk Snake	<i>Lampropeltis triangulum</i>	✓			
Eastern Garter Snake	<i>Thamnophis sirtalis</i>	✓	✓	O	✓
Northern Brown Snake	<i>Storeria dekayi</i>	✓			
Northern Redbelly Snake	<i>Storeria occipitomaculata</i>	✓			
Eastern Hognose Snake	<i>Heterodon platyrhinos</i>	✓			
Northern Ringneck Snake	<i>Diadophis punctatus</i>	✓			
Northern Black Racer	<i>Coluber constrictor</i>	✓			
Northern Copperhead	<i>Agkistrodon contortrix</i>		✓	✓	

**TABLE 4-2
 POTENTIAL AND OBSERVED REPTILE AND AMPHIBIAN INHABITANTS
 STATE LAND CORP. DEVELOPMENT
 TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
 JULY 2012**

Common Name	Scientific Name	Habitat Type			
		SGHF	FW-OC	FW-CC	FIW
Turtles					
Eastern Box Turtle	<i>Terrapene carolina</i>		✓		

Notes:

O - Observed; ✓ - Potential

Second Growth Hardwood Forest (SGHF); Freshwater Wetlands - Open Canopy (FW-OC);
 Forested Wetland - Closed Canopy (FW-CC); Forested Intermittent Watercourse (FIW)

Reptile/Amphibian Survey Periods & Conditions:

Date (2012)	Time (AM/PM Hours)	Weather
July 17	5:25 to 7:15 AM	Party Cloudy; 60 Degrees F; Wind Calm
August 9	6:43 to 7:30 AM	Overcast; 68 Degrees F; Wind 1 to 3 mph
August 14	6:25 to 9:15 AM	PartlyCloudy; 65 Degrees F; Wind Calm
August 17	7:00 to 8:15 AM	Clear Sky; 62 Degrees F; Wind 2 to 4 mph
August 21	7:04 to 7:52 PM	Partly Cloudy; 78 Degrees F; Wind 1 to 3 mph

TABLE 4-3
POTENTIAL AND OBSERVED MAMMALIAN INHABITANTS
STATE LAND CORP. DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
JULY 2012

Common Name	Scientific Name	Habitat			
		SGHF	FW-OC	FW-CC	FIW
Virginia Opossum	<i>Didelphis virginiana</i>	✓			✓
Short-Tailed Shrew	<i>Blarina brevicauda</i>	✓			
Least Shrew	<i>Cryptotis parva</i>	✓			
Masked Shrew	<i>Sorex cinereus</i>	✓			
Hairy-Tailed Mole	<i>Parascalops breweri</i>	✓			
Eastern Mole	<i>Scalopus aquaticus</i>	✓			
Star-Nosed Mole	<i>Condylura cristata</i>	✓			
Little Brown Bat	<i>Myotis lucifugus</i>	✓	✓	✓	✓
Red Fox	<i>Vulpes vulpes</i>	✓		O	
Raccoon	<i>Procyon lotor</i>	✓			✓
Striped Skunk	<i>Mephitis mephitis</i>	✓			
White-Tailed Deer	<i>Odocoileus virginianus</i>	O	✓	O	✓
Eastern Chipmunk	<i>Tamias striatus</i>	O	O	✓	✓
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>	O			✓
Deer Mouse	<i>Peromyscus maniculatus</i>	✓			✓
White-Footed Mouse	<i>Peromyscus leucopus</i>	✓			
Meadow Vole	<i>Mictotus pennsylvanicus</i>	✓			
Meadow Jumping Mouse	<i>Zapus hudsonius</i>	✓			
Woodland Jumping Mouse	<i>Napaeozapus insignis</i>	✓		✓	
Coyote	<i>Canis latrans</i>	✓			✓
Northern Myotis	<i>Myotis septentrionalis</i>	✓			✓

Notes:

O - Observed; ✓ - Potential

Second Growth Hardwood Forest (SGHF); Freshwater Wetlands - Open Canopy (FW-OC);
Forested Wetland - Closed Canopy (FW-CC); Forested Intermittent Watercourse (FIW)

TABLE 4-3
POTENTIAL AND OBSERVED MAMMALIAN INHABITANTS
STATE LAND CORP. DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
JULY 2012

Mamal Survey Dates and Conditions:

Date (2012)	Time (AM/PM Hours)	Weather
July 17	5:25 to 7:15 AM	Party Cloudy; 60 Degrees F; Wind Calm
August 9	6:43 to 7:30 AM	Overcast; 68 Degrees F; Wind 1 to 3 mph
August 14	6:25 to 9:15 AM	PartlyCloudy; 65 Degrees F; Wind Calm
August 17	7:00 to 8:15 AM	Clear Sky; 62 Degrees F; Wind 2 to 4 mph
August 21	7:04 to 7:52 PM	Partly Cloudy; 78 Degrees F; Wind 1 to 3 mph

TABLE 4-4
WOODY PLANTS OBSERVED ON TRANSECT AND WALK THROUGH ROUTES
STATE LAND CORP. DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
JULY 2012

Common Name	Scientific Name	Habitat			
		SGHF	FW-OC	FW-CC	FIW
American Elm	<i>Ulmus Americana</i>	O	O	O	O
Red Maple	<i>Acer Rubrum</i>	O		O	O
Shagbark Hickory	<i>Carya ovata</i>	O		O	
Bitternut Hickory	<i>Carya cordiformis</i>	O			
White Oak	<i>Quercus alba</i>	O			
Black Cherry	<i>Prunus serotina</i>	O			
Black Birch	<i>Betula lenta</i>	O		O	O
American Beech	<i>Fragus grandifolia</i>	O			O
American Hophornbeam	<i>Ostrya virginiana</i>			O	
Green Ash	<i>Fraxinus pennsylvanica</i>		O	O	
Spicebush	<i>Calycanthus occidentalis</i>			O	
Gray Dogwood	<i>Cornus racemosa</i>		O	O	
White Ash	<i>Fraxinus americana</i>	O			
Sugar Maple	<i>Acer saccharum</i>	O		O	
Northern Red Oak	<i>Quercus rubra</i>	O			
Northern Pin Oak	<i>Quercus Palustris</i>			O	O
Sycamore	<i>Ficus sycomorus</i>		O	O	O
Black Willow	<i>Salix nigra</i>		O	O	O
Eastern Hemlock	<i>Tsuga canadensis</i>			O	O

Notes:

O - Observed; ✓ - Potential

Second Growth Hardwood Forest (SGHF); Freshwater Wetlands - Open Canopy (FW-OC);
Forested Wetland - Closed Canopy (FW-CC); Forested Intermittent Watercourse (FIW)

TABLE 4-4
WOODY PLANTS OBSERVED ON TRANSECT AND WALK THROUGH ROUTES
STATE LAND CORP. DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
JULY 2012

Woody Vegetation Survey (including Transects) Periods & Conditions:

Date (2012)	Time (AM/PM Hours)	Weather
July 17	5:25 to 7:15 AM	Partly Cloudy; 60 Degrees F; Wind Calm
August 9	6:43 to 7:30 AM	Overcast; 68 Degrees F; Wind 1 to 3 mph
August 14	6:25 to 9:15 AM	Partly Cloudy; 65 Degrees F; Wind Calm
August 17	7:00 to 8:15 AM	Clear Sky; 62 Degrees F; Wind 2 to 4 mph
August 21	7:04 to 7:52 PM	Partly Cloudy; 78 Degrees F; Wind 1 to 3 mph

**TABLE 4-5
POTENTIAL AND OBSERVED HERBACEOUS PLANTS
STATE LAND CORP. DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
JULY 2012**

Common Name	Scientific Name	Habitat			
		SGHF	FW-OC	FW-CC	FIW
Wrinkled Rose	<i>Rosa rugosa</i>		✓		
Purple Loosestrife	<i>Lythrum salicaria</i>		✓		
Goldenrod	<i>Solidago spp.</i>	✓	✓		✓
Tussock Sedge	<i>Cares stricta</i>		○	○	
Soft Rush	<i>Juncus effusus</i>		○	○	
Japanese Barberry	<i>Berberis thunbergii</i>	○		○	○
Common Blue Violet	<i>Viola sororia</i>	○		○	
Wild Onion	<i>Allium ascalonicum</i>	○			
Lilly-of-the-Valley	<i>Maianthemum dilatatum</i>	○			
Pennsylvania Sedge	<i>Carex pennsylvania</i>	○			
Garlic Mustard	<i>Alliaria petiolata</i>	○			
Solomon Seal	<i>Polygonatum communtatum</i>	○			
Japanese Honeysuckle	<i>Lonicera japonica</i>	○			✓
Christmas Fern	<i>Polystichum acrostichoides</i>	○			
Poison Ivy	<i>Toxicodendron radicans</i>	○			
Greenbrier	<i>Similax spp</i>	○			
Cinnamon Fern	<i>Osumunda cinnamomea</i>		○	○	
Blackberry	<i>Rubus spp.</i>	○			✓
Multiflora Rose	<i>Rosa multiflora</i>	○			○
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	○			
New York Fern	<i>Thelypteris noveboracensis</i>	○			
Spicebush	<i>Lindera benzoin</i>			○	
Pussy Willow	<i>Salix cabrea</i>		○		
Skunk Cabbage	<i>Symplocarpus foetidus</i>		○	○	✓

**TABLE 4-5
 POTENTIAL AND OBSERVED HERBACEOUS PLANTS
 STATE LAND CORP. DEVELOPMENT
 TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
 JULY 2012**

Common Name	Scientific Name	Habitat			
		SGHF	FW-OC	FW-CC	FIW
Sphagnum Moss	<i>Sphagnum spp.</i>			O	
Spotted Jewelweed	<i>Impatiens capensis</i>		O	O	
False Hellebore	<i>Veratrum californicum</i>			O	
Hair Cap Moss	<i>Polytrichum commune</i>	O			
Sensitive Fern	<i>Onclea sensibilis</i>			O	
Sedge	<i>Carex spp.</i>		O	O	
Stilt Grass	<i>Microstegium vimineum</i>	O			O
Touch-me-not	<i>Impatiens spp.</i>		O		

Notes:

O - Observed; ✓ - Potential

Second Growth Hardwood Forest (SGHF); Freshwater Wetlands - Open Canopy (FW-OC);
 Forested Wetland - Closed Canopy (FW-CC); Forested Intermittent Watercourse (FIW)

Herbaceous Vegetation Survey (including Tree Survey) Periods & Conditions:

Date (2011)	Time (AM/PM Hours)	Weather
April 26	8:30 to 11:45	Partly Sunny; 62 Degrees; Wind Calm
April 29	7:45 to 11:55	Clear Sky; 48 Degrees; Wind Calm
May 24	8:30 to 12:35	Partly Sunny; 65 Degrees; Wind 5 mph
June 7	7:10 to 10:10	Partly Sunny; 52 Degrees; Wind Calm
June 21 (Transects)	8:45 to 1:15	Partly Cloudy; 68 Degrees; Wind 7 mph
June 23 (Transects)	5:10 To 12:10	Cloudy; 58 Degrees; Wind Calm

**TABLE 4-6
POTENTIAL AND OBSERVED INSECTS
STATE LAND CORP. DEVELOPMENT
JULY 2012**

COMMON NAME	SCIENTIFIC NAME	SIGHTINGS
Bald- faced Hornet	<i>Dolichovespula maculata</i>	O
Black Carpenter Ant	<i>Camponotus pennsylvanicus</i>	O
Brown Dog Tick	<i>Rhipicephalus sanguines</i>	O
Cabbage White Moth	<i>Pieris rapae</i>	O
Cattail Mosquito	<i>Coquilletidia perturbans</i>	O
Clouded Sulphur Moth	<i>Colias philodice</i>	O
Common Pillbug	<i>Armadillidium vulgare</i>	O
Deef Fly	<i>Chrysops spp.</i>	O
Deer Tick	<i>Ixodes spp.</i>	O
Eastern Tiger Swallowtail	<i>Papilio glaucus</i>	✓
Elm Leaf Beetle	<i>Xanthogaleruca</i>	✓
European Mantid	<i>Mantis religiosa</i>	✓
Field Cricket	<i>Gryllus pennsylvanicus</i>	O
Firefly	<i>Photinus spp.</i>	O
Honey Bee	<i>Apis mellifera</i>	O
House Fly	<i>Fannia spp.</i>	O
Feaf-footed Bug	<i>Acanthocephala terminalis</i>	✓
Midge	<i>Chironomus plumosus</i>	O
Monarch Butterfly	<i>Danaus plexippus</i>	O
Spine-tailed Earwig	<i>Doru aculeatum</i>	O
Stealthy Ground Spider	<i>Cesonia bilineata</i>	✓
Yellow Bumble Bee	<i>Bombus fervidus</i>	✓

NOTES: "O" is Observed, "✓" is Potential

Date and Time Periods When Insects Were Observed:

Date (2012)	Time (AM/PM Hours)	Weather
July 17	5:15 to 6:28 AM	Partly Cloudy; 60 Degrees F; Wind Calm
August 9	5:20 to 6:39 AM	Overcast; 68 Degrees F; Wind 1 to 3 mph
August 14	5:30 to 7:45 AM	Partly Cloudy; 65 Degrees F; Wind Calm
August 17	5:35 to 6:51 AM	Clear Sky; 62 Degrees F; Wind 2 to 4 mph
August 21	7:32 to 7:52 PM	Partly Cloudy; 78 Degrees; Wind 1 to 3 mph

TABLES 6-1 THROUGH 6-5

**TABLE 6-1
POTENTIAL AND OBSERVED AVIAN SPECIES STATUS
STATE LAND COORP. DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
JULY 2012**

Common Name	Scientific Name	Federal/ State Listed Status	State Rarity Indicators	D/A D/S
Turkey Vulture	<i>Cathartes aura</i>	N/A	N/A	N/A
Red Tailed Hawk	<i>Buteo jamaicensis</i>	N/A	N/A	N/A
Hairy Woodpecker	<i>Picoides villosus</i>	N/A	N/A	N/A
Downy Woodpecker	<i>Picoides pubescens</i>	N/A	N/A	N/A
Blue Jay	<i>Cyanocitta cristata</i>	N/A	N/A	D/A
American Crow	<i>Corvus brachyrhynchos</i>	N/A	N/A	D/A
Black-Capped Chickadee	<i>Poecile atricapillus</i>	N/A	N/A	N/A
Tufted Titmouse	<i>Baeolophus bicolor</i>	N/A	N/A	N/A
Brown Creeper	<i>Certhia americana</i>	N/A	N/A	N/A
Eastern Bluebird	<i>Sialia sialis</i>	N/A	N/A	N/A
American Robin	<i>Turdus migratorius</i>	N/A	N/A	N/A
American Redstart	<i>Setophaga ruticilla</i>	N/A	N/A	N/A
Baltimore Oriole	<i>Ictarus galbula</i>	N/A	N/A	N/A
Ovenbird	<i>Seiurus aurocapillus</i>	N/A	N/A	D/S
Carolina Wren	<i>Thryothorus ludocicianus</i>	N/A	N/A	N/A
Rufous-Sided Towhee	<i>Pipilo erythrophthalmus</i>	N/A	N/A	N/A
Northern Oriole	<i>Icterus galbula</i>	N/A	N/A	N/A
Wild Turkey	<i>Meleagris gallopavo</i>	N/A	N/A	N/A
Cooper's Hawk	<i>Accipiter cooperii</i>	Special Concern	N/A	N/A
Gray Catbird	<i>Dumetella carolinensis</i>	N/A	N/A	N/A

**TABLE 6-1
 POTENTIAL AND OBSERVED AVIAN SPECIES STATUS
 STATE LAND COORP. DEVELOPMENT
 TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
 JULY 2012**

Common Name	Scientific Name	Federal/ State Listed Status	State Rarity Indicators	D/A D/S
Empidonax Flycatchers	<i>Empidonax spp.</i>	N/A	N/A	N/A
Great Crested Fly Catcher	<i>Myiarchus crinitus</i>	N/A	N/A	N/A
Red-eyed Vireo	<i>Vireo olivaceus</i>	N/A	N/A	N/A
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	N/A	N/A	N/A
Black and White Warbler	<i>Mniotilta varia</i>	N/A	N/A	D/S
Yellow Warbler	<i>Dendroica petechia</i>	N/A	N/A	N/A
Common Yellowthroat	<i>Geothlypis trichas</i>	N/A	N/A	N/A
Chipping Sparrow	<i>Spizella passerina</i>	N/A	N/A	N/A
Northern Cardinal	<i>Cardinalis cardinalis</i>	N/A	N/A	N/A
White Throated Sparrow	<i>Zonotrichia albicollis</i>	N/A	N/A	N/A
Dark-Eyed Junco	<i>Junco hyemalis</i>	N/A	N/A	N/A
White Breasted Nuthatch	<i>Sitta carolinensis</i>	N/A	N/A	N/A
Eastern Screech Owl	<i>Otus asio</i>	N/A	N/A	N/A
Pileated Woodpecker	<i>Dryocopus pileatus</i>	N/A	N/A	N/A
Veery	<i>Catharus fuscescens</i>	N/A	N/A	D/S
Eastern Wood-Peevee	<i>Contopus virens</i>	N/A	N/A	N/A
Wilson's Warbler	<i>Wilsonia pusilla</i>	N/A	N/A	N/A

Common Name	Scientific Name	Federal/ State	State	D/A
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**TABLE 6-1
 POTENTIAL AND OBSERVED AVIAN SPECIES STATUS
 STATE LAND COORP. DEVELOPMENT
 TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
 JULY 2012**

		Listed Status	Rarity Indicators	D/S
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	N/A	N/A	N/A
Scarlet Tanager	<i>Piranga olivacea</i>	N/A	N/A	N/A
Least Flycatcher	<i>Empidonax minimus</i>	N/A	N/A	D/S
Worm-eating Warbler	<i>Helmitheros vermivorus</i>	N/A	N/A	D/S
Yellow-shafted Flicker	<i>Colaptes auratus</i>	N/A	N/A	N/A
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	N/A	N/A	N/A
Brown Creeper	<i>Certhia americana</i>	N/A	N/A	N/A
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	N/A	N/A	N/A

Notes:

D/A - Development Associated
 D/S - Development Sensitive
 N/A - Not Applicable

**TABLE 6-2
POTENTIAL AND OBSERVED REPTILE AND AMPHIBIAN SPECIES STATUS
STATE LAND CORP. DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
JULY 2012**

Common Name	Scientific Name	Federal/ State Listed Status	State Rarity Indicators	D/A D/S
Salamander				
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	N/A	N/A	D/S
Spotted Salamander	<i>Ambystoma maculatum</i>	N/A	N/A	D/S
Northern Red-Backed Salamander	<i>Plethodon cinereus</i>	N/A	N/A	
Marbled Salamander	<i>Ambystoma opacum</i>	Special concern	N/A	D/S
Slimy Salamander	<i>Plethodon cinereus</i>	N/A	N/A	
Red Newt	<i>Notophthalmus viridescens</i>	N/A	N/A	
Four-Toed Salamander	<i>Henidactylum sctatum</i>	N/A	N/A	
Two-lined Salamander	<i>Eurycea bislineata</i>	N/A	N/A	
Frogs and Toads				
Eastern American Toad	<i>Bufo americanus</i>	N/A	N/A	
Wood Frog	<i>Rana sylvatica</i>	N/A	N/A	D/S
Fowler's Toad	<i>Bufo woodhousei fowleri</i>	N/A	N/A	D/S
Northern Spring Peeper	<i>Hyla crucifer</i>	N/A	N/A	
Gray Tree Frog	<i>Hyla versicolor</i>	N/A	N/A	D/S
Green Frog	<i>Rana clamitans</i>	N/A	N/A	D/A
Green Tree Frog	<i>Hyla cinerea</i>	N/A	N/A	
Pickerel Frog	<i>Rana palustris</i>	N/A	N/A	

**TABLE 6-2
 POTENTIAL AND OBSERVED REPTILE AND AMPHIBIAN SPECIES STATUS
 STATE LAND CORP. DEVELOPMENT
 TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
 JULY 2012**

Common Name	Scientific Name	Federal/ State Listed Status	State Rarity Indications	D/A D/S
Snakes				
Eastern Milk Snake	<i>Lampropeltis triangulum</i>	N/A	N/A	
Eastern Garter Snake	<i>Thamnophis sirtalis</i>	N/A	N/A	D/A
Northern Brown Snake	<i>Storeria dekayi</i>	N/A	N/A	
Northern Redbelly Snake	<i>Storeria occipitomaculata</i>	N/A	N/A	
Eastern Hognose Snake	<i>Heterodon platyrhinos</i>	N/A	N/A	D/S
Northern Ringneck Snake	<i>Diadophis punctatus</i>	N/A	N/A	
Northern Black Racer	<i>Coluber constrictor</i>	N/A	N/A	
Northern Copperhead	<i>Agkistrodon contortrix</i>	N/A	N/A	D/S
Turtle				
Eastern Box Turtle	<i>Terrapene carolina</i>	Special Concern	N/A	D/S

Notes:

D/A - Development Associated

D/S - Development Sensitive

N/A - Not Applicable

TABLE 6-3
POTENTIAL AND OBSERVED MAMMALIAN SPECIES STATUS
STATE LAND CORP. DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
JULY 2012

Common Name	Scientific Name	Federal/ State Listed Status	State Rarity Indicators
Virginia Opossum	<i>Didelphis virginiana</i>	N/A	N/A
Short-Tailed Shrew	<i>Blarina brevicauda</i>	N/A	N/A
Least Shrew	<i>Cryptotis parva</i>	N/A	G5, SH, U
Masked Shrew	<i>Sorex cinereus</i>	N/A	N/A
Hairy-Tailed Mole	<i>Parascalops breweri</i>	N/A	N/A
Eastern Mole	<i>Scalopus aquaticus</i>	N/A	N/A
Star-Nosed Mole	<i>Condylura cristata</i>	N/A	N/A
Little Brown Bat	<i>Myotis lucifugus</i>	N/A	N/A
Red Fox	<i>Vulpes vulpes</i>	N/A	N/A
Raccoon	<i>Procyon lotor</i>	N/A	N/A
Striped Skunk	<i>Mephitis mephitis</i>	N/A	N/A
White-Tailed Deer	<i>Odocoileus virginianus</i>	N/A	N/A
Eastern Chipmunk	<i>Tamias striatus</i>	N/A	N/A
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>	N/A	N/A
Deer Mouse	<i>Peromyscus maniculatus</i>	N/A	N/A
White-Footed Mouse	<i>Peromyscus leucopus</i>	N/A	N/A
Meadow Vole	<i>Mictotus pennsylvanicus</i>	N/A	N/A
House Mouse	<i>Mus musculus</i>	N/A	N/A
Meadow Jumping Mouse	<i>Zapus hudsonius</i>	N/A	N/A
Woodland Jumping Mouse	<i>Napaeozapus insignis</i>	N/A	N/A
Coyote	<i>Canis latrans</i>	N/A	N/A
Northern Myotis	<i>Myotis septentrionalis</i>	N/A	N/A

Notes:

G5 - Species demonstratively is secured globally, but can be quite rare in some locations

SH - Only known historically range wide (global) or not reported in NY the last 20 years

U - Unprotected

N/A - Not Applicable

TABLE 6-4
OBSERVED WOODY PLANT SPECIES STATUS
(TRANSECT & WALK THROUGH ROUTES)
STATE LAND CORP. DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
JULY 2012

Common Name	Scientific Name	Federal/ State Listed Status	State Rarity Indicators
American Elm	<i>Ulmus Americana</i>	N/A	N/A
Red Maple	<i>Acer Rubrum</i>	N/A	N/A
Shagbark Hickory	<i>Carya ovata</i>	N/A	N/A
Bitternut Hickory	<i>Carya cordiformis</i>	N/A	N/A
White Oak	<i>Quercus alba</i>	N/A	N/A
Black Cherry	<i>Prunus serotina</i>	N/A	N/A
Black Birch	<i>Betula lenta</i>	N/A	N/A
American Beech	<i>Fragus grandifolia</i>	N/A	N/A
American Hophornbeam	<i>Ostrya virginiana</i>	N/A	N/A
Green Ash	<i>Fraxinus pennsylvanica</i>	N/A	N/A
Spicebush	<i>Calycanthus occidentalis</i>	N/A	N/A
Gray Dogwood	<i>Cornus racemosa</i>	N/A	N/A
White Ash	<i>Fraxinus americana</i>	N/A	N/A
Sugar Maple	<i>Acer saccharum</i>	N/A	N/A
Northern Red Oak	<i>Quercus rubra</i>	N/A	N/A
Northern Pin Oak	<i>Quercus Palustris</i>	N/A	N/A
Sycamore	<i>Ficus sycomorus</i>	N/A	N/A
Black Willow	<i>Salix nigra</i>	N/A	N/A
Eastern Hemlock	<i>Tsuga canadensis</i>	N/A	N/A

Notes:

N/A - Not Applicable

TABLE 6-5
POTENTIAL AND OBSERVED HERBACEOUS PLANT SPECIES STATUS
STATE LAND CORP. DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
JULY 2012

Common Name	Scientific Name	Federal/State Listed Status	State Rarity Indicators
Wrinkled Rose	<i>Rosa rugosa</i>	N/A	N/A
Common Reed	<i>Phragmites australis</i>	N/A	N/A
Purple Loosestrife	<i>Lythrum salicaria</i>	N/A	N/A
Goldenrod	<i>Solidago altissima</i>	N/A	N/A
Tussock Sedge	<i>Carex stricta</i>	N/A	N/A
Soft Rush	<i>Juncus effusus</i>	N/A	N/A
Japanese Barberry	<i>Berberis thunbergii</i>	N/A	N/A
Common Blue Violet	<i>Viola sororia</i>	N/A	N/A
Wild Onion	<i>Allium ascalonicum</i>	N/A	N/A
Lilly-of-the-Valley	<i>Maianthemum dilatatum</i>	N/A	N/A
Pennsylvania Sedge	<i>Carex pennsylvania</i>	N/A	N/A
Garlic Mustard	<i>Alliaria petiolata</i>	N/A	N/A
Solomon Seal	<i>Polygonatum communtatum</i>	N/A	N/A
Japanese Honeysuckle	<i>Lonicera japonica</i>	N/A	N/A
Christmas Fern	<i>Polystichum acrostichoides</i>	N/A	N/A
Poison Ivy	<i>Toxicodendron radicans</i>	N/A	N/A
Greenbrier	<i>Similax spp.</i>	N/A	N/A
Cinnamon Fern	<i>Osumunda cinnamomea</i>	N/A	N/A
Blackberry	<i>Rubus allegheniensis</i>	N/A	N/A
Multiflora Rose	<i>Rosa multiflora</i>	N/A	N/A
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	N/A	N/A
New York Fern	<i>Thelypteris noveboracensis</i>	N/A	N/A
Spicebush	<i>Lindera benzoin</i>	N/A	N/A

TABLE 6-5
POTENTIAL AND OBSERVED HERBACEOUS PLANT SPECIES STATUS
STATE LAND CORP. DEVELOPMENT
TOWN OF YORKTOWN, WESTCHESTER COUNTY, NEW YORK
JULY 2012

Common Name	Scientific Name	Federal/State Listed Status	State Rarity Indicators
Pussy Willow	<i>Salix cabrea</i>	N/A	N/A
Skunk Cabbage	<i>Symplocarpus foetidus</i>	N/A	N/A
Spotted Jewelweed	<i>Impatiens capensis</i>	N/A	N/A
False Hellebore	<i>Veratrum californicum</i>	N/A	N/A
Umbrella Sedge	<i>Cyperus strigosus</i>	N/A	N/A
Sphagnum Moss	<i>Sphagnum spp.</i>	N/A	N/A
Hair Cap Moss	<i>Polytrichum commune</i>	N/A	N/A
Sensitive Fern	<i>Onclea sensibilis</i>	N/A	N/A
Sedge	<i>Carex spp.</i>	N/A	S1, E, S3, U
Stilt Grass	<i>Microstegium vimineum</i>	N/A	N/A
Touch-me-not	<i>Impatiens spp.</i>	N/A	N/A

Notes:

S1 - Critically imperiled in New York State because of extreme rarity (5 or fewer sites or very few remaining individuals) or extremely vulnerable to extirpation from New York State due to biological or human factors.

S3 - Rare in New York State

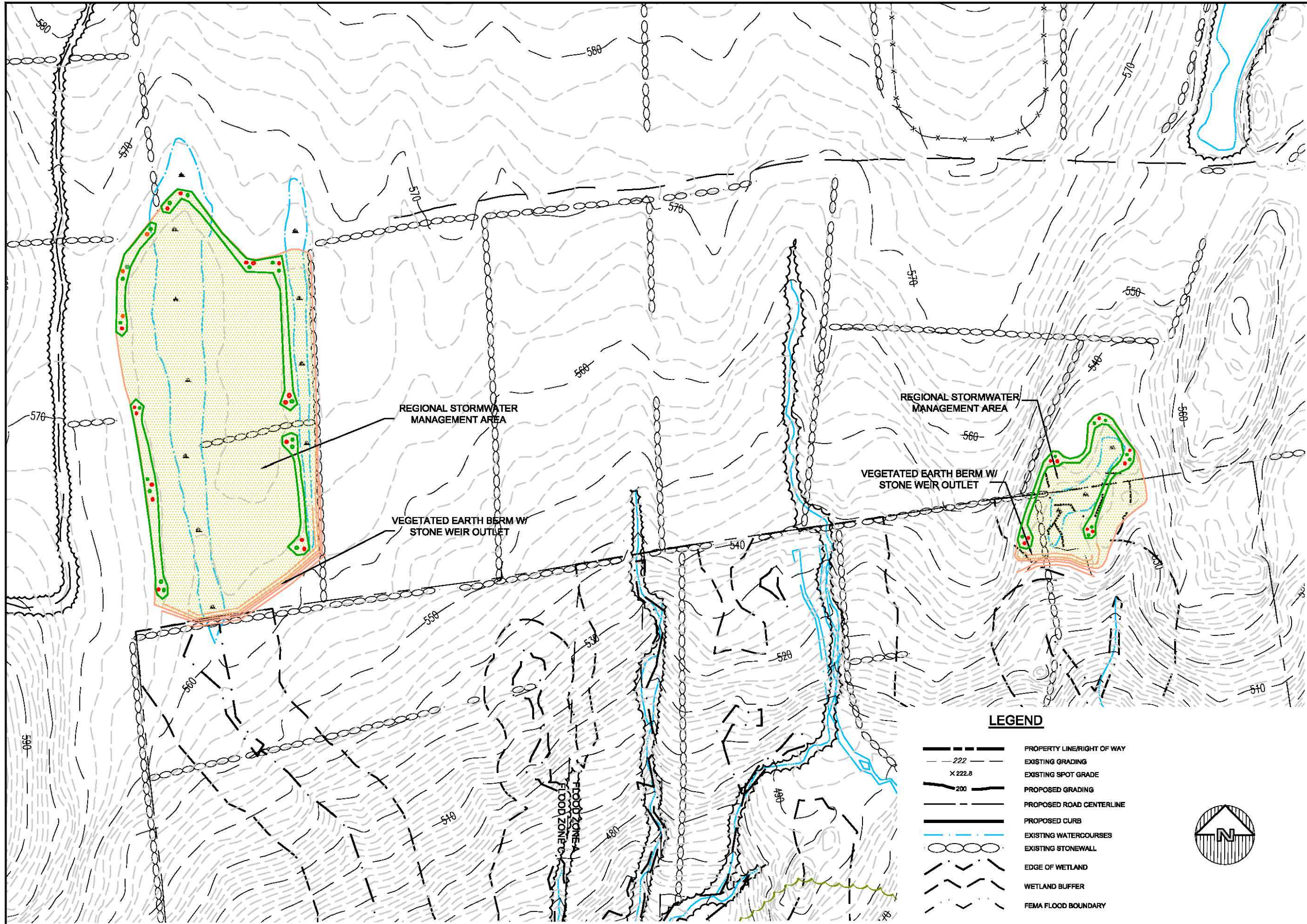
E - Endangered Species

U - Unprotected


N/A - Not Applicable

APPENDIX E

PRELIMINARY WETLAND MITIGATION PLAN



SCALE: NTS



DATE: 06/05/2013

Site Design Consultants
 Civil Engineers • Land Planners
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FIGURE 15 - WETLAND MITIGATION PLAN
 PREPARED FOR
CHARLES MONACO
 a.k.a State Land Corp.
 ROUTE 202

Westchester Co., New York

Town Of Yorktown

NOTE: UNAUTHORIZED ALTERATIONS OR ADDITIONS TO THIS DRAWING IS A VIOLATION OF SECTION 7209 (2) OF THE NEW YORK STATE EDUCATION LAW.

PRELIMINARY WETLAND MITIGATION PLAN NOTES

MITIGATION PLANTINGS

Creation areas will receive plantings of herbaceous and woody vegetation species. Every effort will be made to ensure that existing wetland vegetation, located in close proximity to each creation area, is protected from potential damage during planting. Each creation area will be manually graded to enhance drainage to thereby ensure the highest level of creation success rates.

A field evaluation of soil quality within each proposed creation area will be completed to characterize existing soil texture and other growth related properties. As necessary, hand auger soil samples will be obtained from each creation areas and visually examined to determine its acceptability for selected mitigation plantings. Existing soils deemed suitable for use within the creation areas will be utilized for base grading, primarily to achieve horizontal and vertical limits within each wetland creation area. Soils determined to be unsuitable for creation will be removed from the site. If necessary, soils with a low permeability (i.e. 1x10-6) will be imported to the site for use as a supplemental soil material in order to achieve ideal conditions for creation area plantings.

Soils placed within the creation areas will be graded to a thickness suitable to support selected species of vegetation. Appropriate siltation fencing will be installed in the field around the limits of the creation areas to offset sedimentation potentials to surrounding areas. During manual grading, every effort will be made to reduce soil compacting and ensure that soil conditions are adequate for the best growth rates required for select vegetation stock.

Vegetation growth will be established within each creation area by means of planting herbaceous root stock, shrubs and trees produced by qualified nurseries. Efforts will be made to use only hearty, indigenous species for planting stock. The planting of herbaceous root stock will be placed within moist soil conditions on 18 inch center, and in a direction which is perpendicular to flow. The species selected for mitigation have been confirmed as indigenous by documenting the types of vegetation communities observed as part of a Biodiversity Assessment completed for the two proposed retention basin areas, and nearby adjoining areas.

Vegetation plantings will be performed between April and June and August and October. Plant density for herbaceous plantings will approximate 1 plant per 3.0 square foot. Shrubs will be spaced 2 to 4 feet on center. Trees will be planted randomly, within the most idea sites to favor growth. As necessary, quick release fertilization will be utilized across the creation areas (10% Nitrogen, 6% available Phosphorus and 4% water soluble Potash) during initial planting. A minimal amount of fertilizer will be used to avoid excessive nutrient loading. Subsequently, a slow release fertilizer will be utilized in accordance with the qualified nursery chosen to supply root stock. In considering additional fertilization, emphasis will be placed on evaluating vegetation density and species diversification.

Each species will be placed within a manually pre-excavated hole with a depth and diameter of approximately 1 ½ times the root container or plug dimensions. Each planting will be prepared with fertilizer (Osmocote with peat moss and compost) to provide a "jump start" in root development. Hay mulch will be placed around each planting. As necessary, the creation areas will initially be saturated with water (by way of a portable water source) at a frequency suitable to ensure the proper level of inundation recommended by recognized practices, and as suggested by the nursery chosen to supply required root stock. Deer fencing will be installed around each creation area in order to protect young vegetation from browse potentials.

ERADICATION OF INVASIVE SPECIES

Invasive species of Stilt Grass (*Microstegium vimineum*) and Bar-berry (*Berberidaceae* spp.) observed during field activities performed under the Biodiversity Assessment, will be manually removed (as necessary) from the edge portions of the existing on-site wetland. Removed vegetation will be transported to an off-site disposal location. Efforts will be made to remove invasive forms of vegetation during the most ideal time of the growing season (i.e.: before seed propagation).

MITIGATION MONITORING NOTES


One week after completing all plantings, periodic monitoring will commence. Monitoring inspections will first be performed monthly during the initial growing season (April through October) for the first year after planting and then annually for 5 total years until at least 85 percent vegetative cover is achieved within the planting areas.

Each annual monitoring inspection will consist of gathering transect data within each creation area and evaluation of planting conditions. In the event an herbaceous plant, shrub or tree does not display successful growth conditions, then the plant will be replaced. Monitoring will include photographic documentation to document plant density, diversity and overall growing conditions, which will be combined with the transect data recordings of vegetation conditions (density, number, height and diversity), to aid in measuring survival rates over time. Information gathered during each annual monitoring inspection will be used to prepare a brief letter report on plant conditions with indication of the plant replacements (if necessary) performed in order ensure density and/or diversification. The annual report will be submitted to the Town Environmental Inspector for review. As necessary, erosion and sedimentation controls (siltation fencing) will be replaced to reduce sedimentation potentials.

SELECTED PLANTINGS
PRELIMINARY WETLAND MITIGATION PLAN

TREE SPECIES			
Common Name	Scientific Name	Northwest Basin	Northeast Basin
American Elm	<i>Ulmus americana</i>	X	
Black Willow	<i>Salix nigra</i>		X
Red Maple	<i>Acer rubrum</i>	X	X
Sycamore	<i>Plantanus occidentalis</i>	X	X
SHRUBS			
Common Name	Scientific Name	Northwest Basin	Northeast Basin
Arrowwood	<i>Viburnum dentatum</i>	X	
Green Ash	<i>Faxinus pennsylvanica</i>		X
Highbus Blueberry	<i>Vaccinium corybossum</i>	X	X
Red Osier	<i>Cornus sericea</i>	X	
Silky Dogwood	<i>Cornus amomum</i>	X	X
Spicebush	<i>Lindera benzoin</i>		X
HERBACEOUS			
Common Name	Scientific Name	Northwest Basin	Northeast Basin
Cinnamon Fern	<i>Osmunda cinnamomea</i>	X	X
Royal Fern	<i>Osmunda regalis</i>	X	X
Soft Rush	<i>Juncus effusus</i>	X	X
Tussock Sedge	<i>Carex stricta</i>	X	
Roughleaf Goldenrod	<i>Solidago patula</i>		X

SCALE: NTS



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FIGURE 15.1 - WETLAND PLANTINGS NOTES AND TABLE

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