E-3

ECOLOGICAL RESOURCES REPORT
WARWICK, NY

For:

World Headquarters of Jehovah's Witnesses
Watchtower Bible and Tract Society of New York, INC.
Long Meadow Road, Warwick
Orange County, New York

Prepared for:
Watchtower Bible and Tract Society of New York
25 Columbia Heights
Brooklyn, New York 11201

October 2011

Prepared by:

PS&S
integrating design & engineering
67B Mountain Boulevard Extension
Warren, Somerset County, New Jersey

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF APPENDICES

LIST OF TABLES

1.0 INTRODUCTION

This report has been prepared by Paulus, Sokolowski, and Sartor PC (PS&SPC) as supplemental information to support a township development plan and State Environmental Quality Review Act (SEQRA) Environmental Assessment or Environmental Impact Statement. Field surveys were conducted by PS&SPC on tax parcels 585B 1 L 4.1, 4.2, 5.1, and 5.2 (Site) to inventory ecological resources and evaluate the site for the presence or absence of Federal or State listed threatened, endangered, or species of special concern, and the critical habitat for these species. Surveys were conducted from April through September in 2007 and March through July 2010. The surveys includes a inventories of vegetation and wildlife, delineation of wetlands west of Long Meadow Road (C.R. 84), a tree survey on a 70-acre portion of the property, and a bat survey (See Appendix 1) conducted in June 2010.

A supplemental wetlands delineation was performed on a 70.3-acre portion of the site, where the majority of site activities are proposed, for the purpose of obtaining a Jurisdictional Determination from the United States Army Corps of Engineers (ACOE). This portion of the site contains 5.4 acres of open water, 0.3 acre of emergent wetlands and 0.6 acres of forested wetlands. Project implementation is anticipated to permanently impact less than 0.1 acres of these wetlands and waters. These impacts will likely meet applicable ACOE Nationwide Permit standards and conditions. A field inspection of the site was conducted by the USACE on July 13, 2011. The inspector verbally acknowledged agreement with the wetland delineation and that written confirmation would follow. To date there has been no further communication from the USACE and they have been unresponsive to requests for information.

As shown on Figure 1, USGS site location map, the Site is located in Warwick Township, Orange County, New York. The site is approximately 253 acres that is located on the former Kings College property. On this property, there is a 121,200 square foot building with approximately 3,500 linear feet of roadway. The former INCO plant is located adjacent to and overlooks Sterling Forest Lake (Blue Lake). The building is set to be demolished.

The existing site consists of approximately 7.8 acres of meadow/brush land; 225.1 acres of forest; 4.42 acres of wetland (1.05 acres west of Long Meadow Road delineated by PS&S and 3.37 acres east of Long Meadow Road shown on the National Wetlands Inventory); 6.8 acres of roads, pavement, structures and other impervious surfaces; and 8.9 acres of landscaped area. Although there are areas of Federal Jurisdictional wetlands on the project site, the majority are located on the portion of the tract northeast of Long Meadow Road which is proposed to remain undisturbed. Areas of wetland southeast of Long Meadow Road will remain largely undisturbed.

The project site is located on both sides of Long Meadow Road approximately one mile northwest of the intersection with Sterling Mine Road (C.R. 72). However, disturbance is only proposed on the southwest side of Long Meadow Road. The site is also located along the south shore of Blue Lake (Sterling Forest Lake. The project site is located within the Land Conservation (LC) zoning district and portions of the project are located within the Ridgeline Overlay (RL-O) district. Warwick's Zoning Law permits the remaining private lands within the LC District (i.e. those lands not under the ownership or control of the Palisades Interstate Park

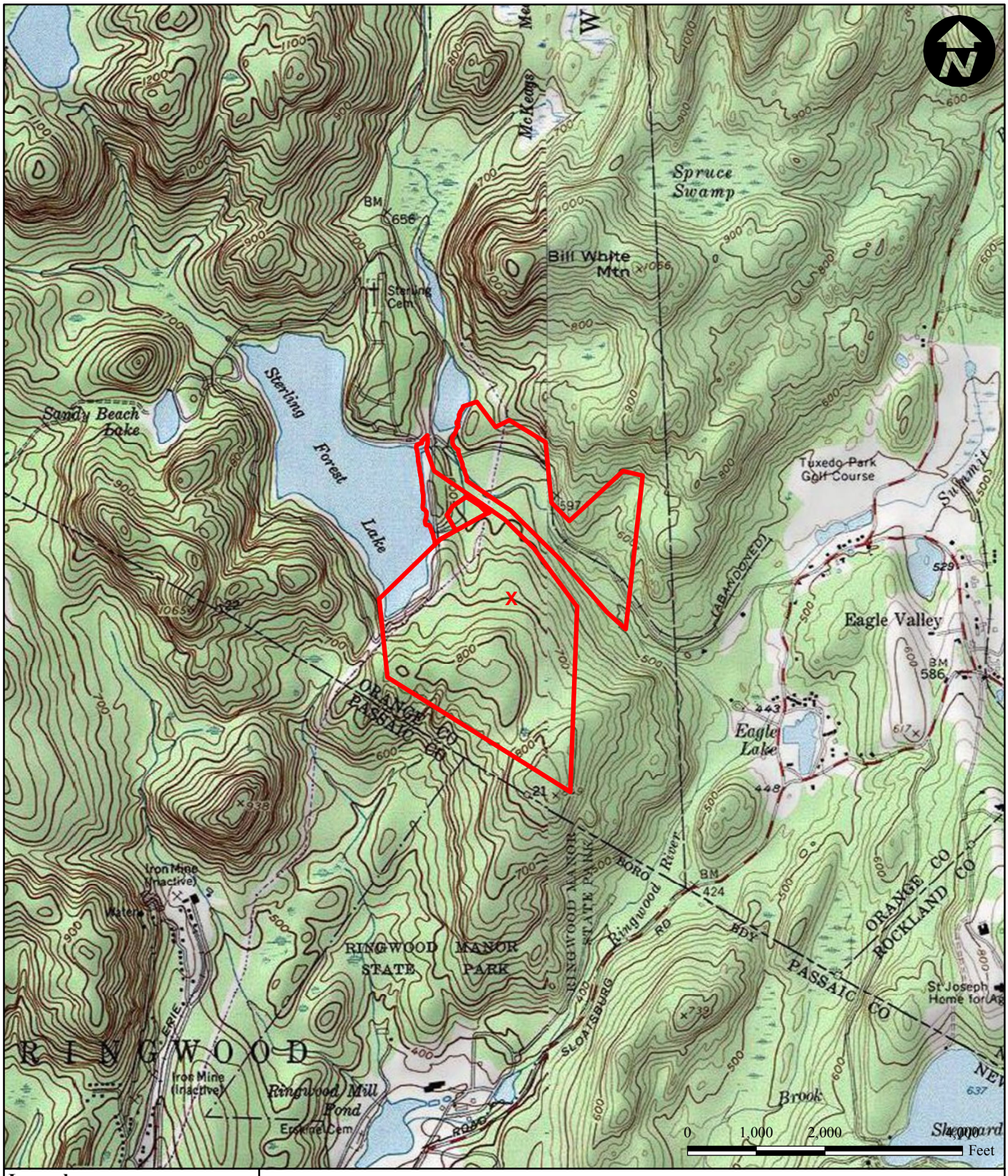
Commission) to be developed subject to the requirements of the Town's Office and Industrial Park (01) and Conservation (CO) Zoning districts.

The Watchtower Bible and Tract Society of New York, Inc., proposes to develop a portion, approximately 45 acres, (referenced above) as their new World Headquarters. We understand the proposed development will be concentrated on those areas of the site that were previously developed and will include renovations and existing INCO building(s) will be demolished and replaced substantially within the existing development footprint. There also will be new construction on the site giving way to several new green buildings. The project sponsor, Watchtower Bible and Tract Society of New York, Inc., is proposing a religious administrative campus comprised of approximately eight buildings on 45 acres of the site. The locations of these improvements are shown on Figure 2.

The campus buildings would include: an approximately 250,200-square foot Administrative Offices Building; four residential structures totaling approximately 494,000 square feet; an approximately 206,000 square foot Services Building including kitchen, dining room, laundry and support functions; a 147,000-square foot maintenance shop (including powerhouse and recreational facilities); and a 35,000-square foot vehicle repair shop (for onsite vehicles only). Several small outbuildings, totaling less than 8,000 square feet, will be distributed within the general development area for recreation, waste separation, visitor conveniences, and maintenance areas.

The campus structures would be built to three Green Globe standards promulgated by the Green Building Initiative, comparable to the LEED (Leadership in Energy and Environmental Design), and the gold standard promulgated by the US Green Buildings Council.

The majority of the 1,020 parking spaces would be accommodated by the 372,200-square foot garaged parking areas, with approximately 150 surface parking spaces, being provided for visitors and convenience. Stormwater will be treated to substantially comply with current NYSDEC stormwater management standards. On-site emergency and load reduction generators will be provided to supplement standard electrical service provided by Orange and Rockland Utilities. Community water supply and sewage treatment services are available on nearby parcels and usage will be reduced by utilization of sustainable practices such as low-flow and ultra-low-flow fixtures. Workers at the site will reside at the site, significantly reducing traffic generation associated with commuter traffic during peak hours.



Legend

Site Location

Source:
USGS Topographic Map
7.5 Minute Series
Greenwood Lake, 1961
Sloatsburg, 1961
STATE PLANE COORDINATES
E 560450
N 846710

USGS SITE LOCATION MAP

World Headquarters of Jehovah's Witnesses
Watchtower Bible and Tract Society of New York, Inc.
Warwick, Orange County, New York

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Drawn By: EB	Scale: 1" = 2,000'	Project No. 03171.001.010
Chk'd By: BSK	Date: 10/21/2011	Figure No. 1

Path: P:\03171\001\Y\N\Maps\Fig1_USGS_102111_00.mxd

Source:
Plan by Watchtower Bible and Tract Society of New York, Inc., entitled "Site Plan", dated 6/15/2011.

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PROJECT TITLE

World Headquarters of
Jehovah's Witnesses
Watchtower Bible and
Tract Society of New York, Inc.
Warwick, Orange County, New York

SHEET TITLE

SITE PLAN

PROJ. NO. **03171.001.010**

DATE	10/21/2011
DRN. BY	EB
CHK. BY	BSK
SCALE	1" = 300'

FIGURE NO. 2

Path: P:\03171\001\YNMaps\Fig2_SitePlan_102111_00.mxd

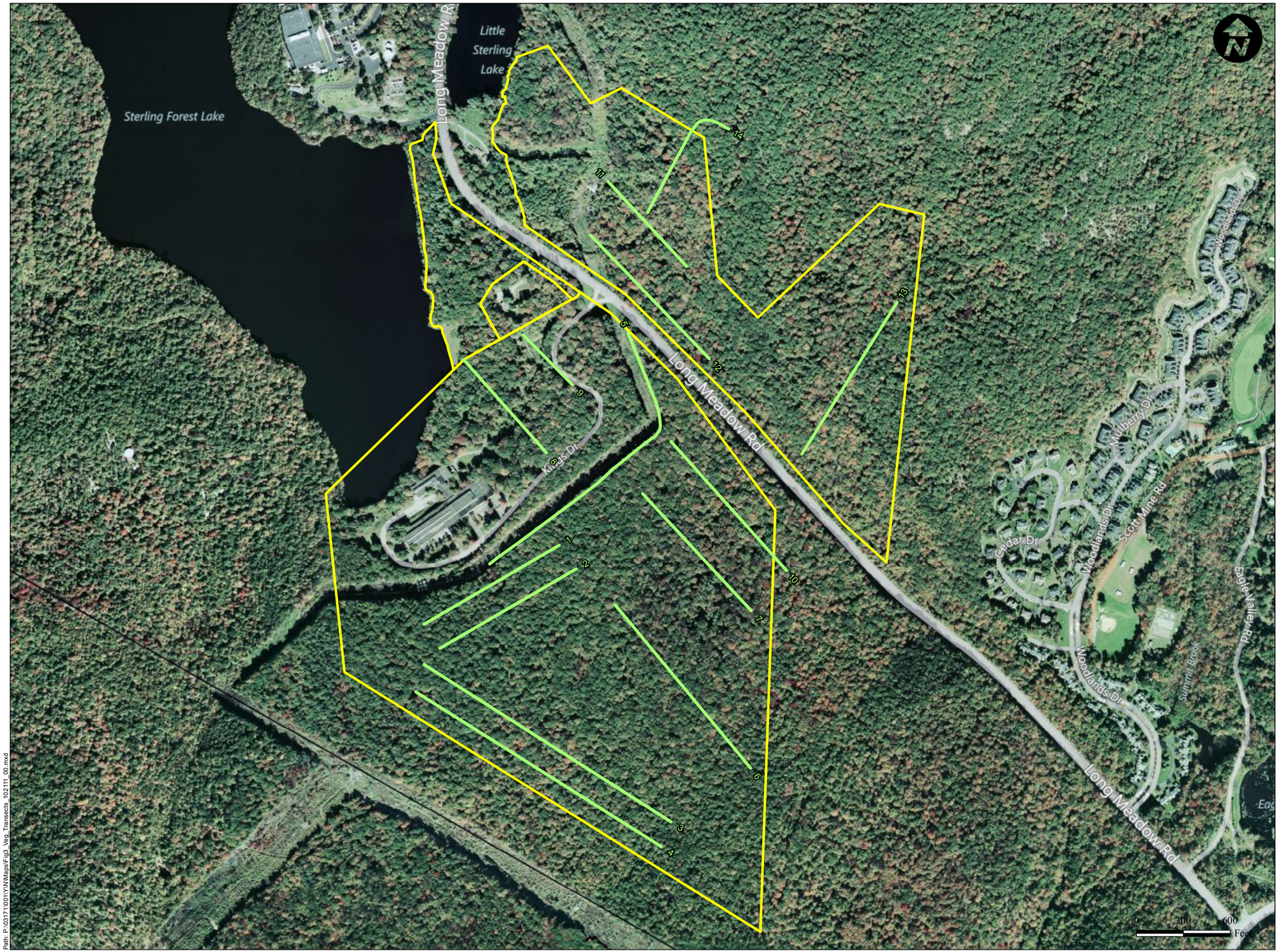
2.0 VEGETATION

Vegetation consists of the plant life or the total plant cover, found in an area whether indigenous or introduced by man. The Site falls within the Highlands Physiographic Province of New York which includes upland valleys and slopes, upland ridges, rock outcrops, and wetlands. There's a wide diversity of plant communities that can occur in a relatively small area that is characteristic of habitat conditions and plant communities occurring throughout the northeast.

Soil, slope, drainage, and exposure are important factors in the formation of the plant associations. A description of the soils is included in Section 6. The PS&S established vegetation sampling transects were designed to include each of these factors. This study includes a two (2) part investigation; the first characterization of the general vegetation communities on the site and the second to an evaluation of the presence of threatened and endangered species on the site.

A series of 14 transects were run though the different habitats on the site during 2007 and supplement with wetlands delineation along the transects and wetlands delineation, conducted in March and April 2010 and a tree survey conducted in June and July 2010. The locations of these transects are shown on Figure 3. A list of the plant species observed along each transect is included as Table 1. All plants within one (1) meter of the transect were identified and recorded. The transects were run to identify the vegetative species found on the site and to search for potential threatened and endangered species identified on the New York Natural Heritage database. Plant species recorded at sampling locations in the wetlands is provided on the data forms provided in the Jurisdictional Determination Application submitted to the USACE. Table 5 lists when the plant surveys were conducted and the number of hours invested along the transects and wetlands delineation.

The majority of the site's vegetation is characterized as a second growth upland eastern deciduous forest that likely established following historical logging operations. The dominant tree species on the Site are upland and mesic oak species, including red oak (*Quercus rubra*), white oak (*Quercus alba*), and chestnut oak (*Quercus prinus*). Co-dominant species include American beech (*Fagus grandifolia*), white ash (*Fraxinus americana*), black birch (*Betula lenta*), red maple (*Acer rubrum*) and sugar maple (*A. saccharum*) and in some areas, hemlock (*Tsuga canadensis*). While the oaks can be found throughout the Site, the distribution of the co-dominant species help define the different vegetation communities. On the northern side of the Old Sterling Road along the slopes of the Ringwood River are two (2) areas of deciduous forest and south of the existing school there are an additional two (2) areas of deciduous forest which include a Canada hemlock (*Tsuga canadensis*) association. In addition, there is a forested wetland community along the river. Another distinct community is located at the southern end of the property. Soils in this area include Rock outcrop-Hollis Complex with moderate to steep slopes (ROC and ROD). These thin soils support the characteristic chestnut oak community which dominates these ridges.



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Legend

- Site Location
- Vegetation Transects

Source:
PS&S Field Survey, August 2007
ArcGIS Online - Bing Maps Hybrid

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PROJECT TITLE

World Headquarters of
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Watchtower Bible and
Tract Society of New York, Inc.
Warwick, Orange County, New York

SHEET TITLE

VEGETATION SAMPLING TRANSECTS

PROJ. NO. **03171.001.010**

DATE	10/21/2011
DRN. BY	EB
CHK. BY	BSK
SCALE	1" = 600'

FIGURE NO. 3

Table 1
Plant Species Observed Along Sampling Transects
World Headquarters of Jehovah's Witnesses, Long Meadow Road, Orange County, New York

		Transects													
Common Name	**Scientific Name**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Field horsetail	*Equisetum arvense*								X						
Cinnamon fern	*Osmunda cinnamomea*									X		X	X		X
Bracken fern	*Plaridium aquilinum*			X	X	X	X					X	X		X
Maidenhair fern	*Adiantun pedatum*						X	X							
Ebony spleenwort	*Asplenium platyneuron*	X													
New York fern	*Thelypteris noveboracensis*	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Christmas fern	*Polystichum acrostichoides*									X	X				
Sensitive fern	*Onoclea sensibilis*					X			X	X		X			
Hemlock	*Tsuga canadensis*	X	X											X	
White pine	*Pinus strobus*					X			X						
Tuilp popular	*Lirodendron tuilpilera*					X			X						
Sassafrass	*Sassafrass albidum*			X	X	X	X					X	X		
Spicebush	*Lindera benzoin*									X	X				
Japanese barberry	*Berberis thunbergii*							X	X			X	X	X	X
Witch hazel	*Hamamelis virginiana*	X	X	X	X	X	X	X				X		X	X
Shagbark hickory	*Carya ovalis*	X								X			X	X	
Mockernut hickory	*Carya tomentosa*	X		X	X	X	X	X							
American beech	*Fagus grandifolia*	X	X	X	X	X	X	X		X	X	X	X	X	X
White oak	*Quercus alba*	X	X		X		X	X			X		X	X	
Chestnut oak	*Quercus prinus*	X	X	X	X	X	X						X	X	X
Red oak	*Quercus rubra*	X	X	X	X		X	X			X			X	
Black oak	*Quercus velutina*				X			X							
American hornbeam	*Carpinus caroliniana*		X	X	X			X				X			
Black birch	*Betula lenta*	X	X	X	X	X	X	X							
Gray birch	*Betula populifolia*					X									
Yellow birch	*Betula alleghaniensis*							X				X			X
Pennsylvania smartweed	*Polygonum pensylvanicum*					X									
Japanese knotweed	*Polygonum cuspidatum*					X									
Cottonwood	*Populus deltoids*					X			X						
Garlic mustard	*Alliaria petiolata*					X			X	X			X		X
Mountain laurel	*Kalmia latifolia*					X									
Winter green	*Gaultheria procumbens*							X							
Low bush blueberry	*Vaccinium angustifolium*	X	X	X	X		X	X		X				X	X
Indian pipe	*Monotropa uniflora*											X			
Dwarf spirea	*Spiraea latifolia*					X									
Wild strawberry	*Fragaria virginiana*					X									
Dwarf cinquefoil	*Potentilla Canadensis*					X									
Raspberry	*Rubus occidentalis*				X	X									
Multiflora rose	*Rosa multiflora*					X			X						X
Wild-black cherry	*Prunus serotina*			X											
Pin cherry	*Prunus pensylvanica*									X					
Crabapple	*Pyrus coronaria*								X						
Birds foot trefoil	*Lotus corniculatus*						X			X					
Crown vetch	*Coronilla varia*								X						
Red clover	*Trifolium pratense*								X						

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		Transects													
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Sweet yellow clover	*Melilotus officinalis*								X						
Flowering dogwood	*Cornus florida*		X	X	X		X							X	
Black gum	*Nyssa sylvatica*													X	
Wahoo	*Euonymus atropurpureus*				X		X	X				X	X		
Bittersweet	*Celastrus orbiculatus*						X		X	X	X	X	X		X
Virginia creeper	*Parthenocissus quinquefolia*				X	X		X	X	X		X		X	
Fox grape	*Vitis labrusca*			X	X	X		X				X	X		
Red maple	*Acer rubrum*	X	X	X	X	X	X	X		X	X	X	X		X
Sugar maple	*Acer saccharum*				X	X	X	X		X	X		X	X	X
Poison ivy	*Toxicodencron radicans*			X		X	X		X	X	X	X	X		X
Tree-of-heaven	*Ailathus altissima*								X						
Wood sorel	*Oxalis stricta*					X			X						
Jewelweed	*Impatiens capensis*									X		X	X		X
Queen Ann's lace	*Caucus carota*								X						
Spreading dogbane	*Apocynum androsaemifolium*					X									
Indian hemp	*Apocynum cannabinum*					X									
Common milkweed	*Asclepias syriaca*					X									
Morning glory	*Ipomoea purpurea*					X									
Scutellaria integrifolia	*Hussop skullcap*					X									
Motherwort	*Leonurus cardiac*					X									
Lance leaved plaintan	*Plantago lanceolate*								X						
Privet	*Ligustrum vulgare*					X			X						
White ash	*Fraxinus Americana*				X	X	X	X		X	X	X	X		
Common mullein	*Verbascum Thapsus*					X									
Mugwort	*Limosella aquatic*														X
Rough bedstraw	*Gallium asprellum*					X			X						
Japanese honeysuckle	*Lonicera japonica*					X									
Maple-leaved viburnum	*Viburnum acerifolium*	X	X			X	X	X		X	X				
Elderberry	*Sambucus canadenis*					X									
Ragweed	*Ambrosia artemisiifolia*					X									
Yarrow	*Achillea millefolium*					X									
Sweet goldenrod	*Solidago odora*					X									
Goldenrod spp	*Solidag spp.*					X			X						
White snakeroot	*Eupatorium rugosum*		X					X		X					
Burdock	*Arctium minus*														X
Field hawkweed	*Hieracium pretense*					X			X						
Skunk cabbage	*Sympiocarpus foetidus*								X	X		X	X		X
Jack in a pulpet	*Arisaema triphyllum*						X	X							
Soft rush	*Juncus effuses*								X						
Net Sedge	*Cyperus esculentus*					X			X						
Rye spp	*Lolium spp.*					X									
Upland bentgrass	*Agrostis hyemalis*													X	
Common reed	*Phragmites australis*					X			X						

Table 1 Plant Species Observed Along Sampling Transects World Headquarters of Jehovah's Witnesses, Long Meadow Road, Orange County, New York															
		Transects													
Common Name	**Scientific Name**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Poa spp	*Poa spp.*					X								X	
Deer-tongue grass	*Panicum cladestinum*			X		X									X
Crab grass	*Digitaria filiformis*											X			
Japanese stiltgrass	*Microstegium vimineum*											X		X	X
Cattail	*Typha latifolia*								X						
False Hellbore	*Veratrum viride*									X					
Large-flowered trillium	*Trillium grandiforum*										X				
Indian cucumber root	*Medeola virginiana*			X											
Nodding trillium	*Trillium cernuum*											X	X		
False Solomon's seal	*Smilacina racemosa*			X	X						X	X	X		X
Greenbrier	*Smilex rotundifolia*											X			

There is a riparian corridor on the northern side of Old Sterling Road. This area contains a forested wetland dominated by red maple and white ash. Understory and herbaceous species in the wetland include American hornbeam (Carpinus caroliniana) skunk cabbage (Symplocarpus foetidus), sensitive fern (Onoclea sensibilis) and jewelweed (Impatiens capensis).

Wetlands were delineated on the portion of the property south of Old Sterling Road. Forested wetlands located north of Old Sterling Road were not delineated as no development is anticipated on this portion of the site.

Tree size ranged from seedlings and sapling, 1 - 4 inch diameter at breast height (dbh), to trees 8 to 49 inches in diameter. Most of the oaks on the Site have a dbh range of between 12 and 30 inches. Maples on the Site tended to have a slightly smaller dbh of 4 to 10 inches. Other trees on the Site fell within these ranges. A tree survey for trees over 12 inches in diameter was conducted for a roughly 70-acrew portion of the site. The results of this survey are provided as Appendix 4.

During the vegetation survey, one NYSDEC threatened plant species, Hyssop skullcap was observed on the site in 2007. During the 2010 survey of the site, this threatened plant species was not observed. This is possibly due to clearing operations carried out by Orange & Rockland in the right-of-way during the intervening period.

3.0 WILDLIFE

An area's wildlife is dependent upon the characteristics of the habitat present. All organisms require food, water, cover and living space. The relative lack or abundance of each of these resources in relation to each species' life requisites help determine its presence or absence and if present, its distribution and the population dynamics for that species. Population dynamics and distribution are also dependent on the size, shape and complexity of the different vegetative communities and surrounding land use. Wildlife species tolerance of disturbance and human activity ranges from intolerant to dependent. Some species such as the white-tailed deer (*Odocoileus virginianus*) have demonstrated great adaptability and tolerance to human disturbance. A few species require disturbance in order to complete their lifecycle yet other species are intolerant of most human disturbance.

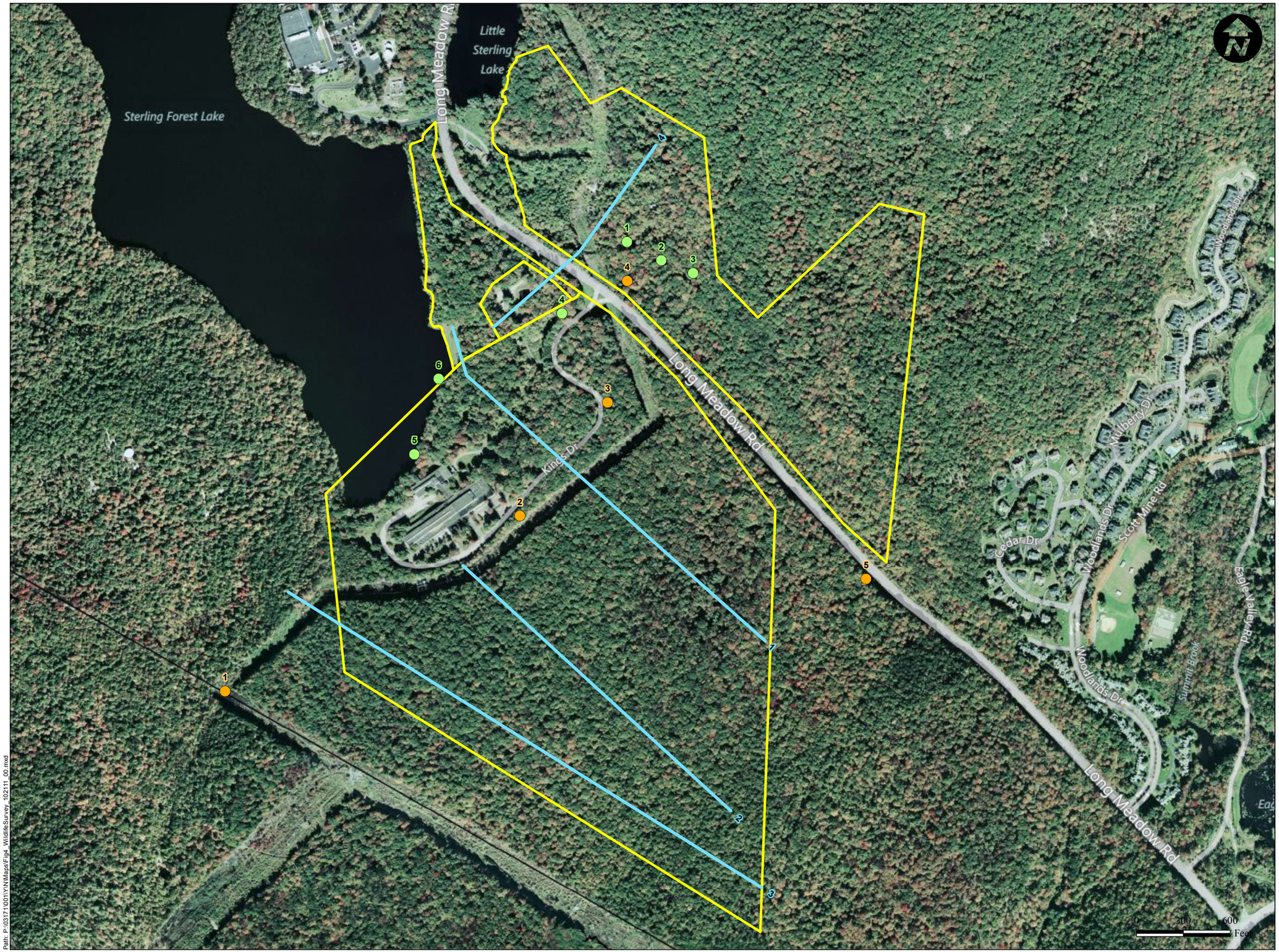
Wildlife studies were conducted to characterize the general wildlife species utilizing the Site and to evaluate the presence of threatened and endangered species on the site. Dates and times of surveys are summarized in Table 2. Locations of wildlife surveys are shown on Figure 4. As the identification of potential breeding and not population dynamics was the object of the study, counts of individual species observed were not included in the survey. Surveys included a review of existing reports, review of NJDEP and NYSDEC databases and field observations. Habitat characteristics observed during vegetation surveys, literature review and database review was used to generate a list of species likely to occur on the site and potentially suitable habitat. Field observations were used to supplement existing information. Wildlife species observed on the Site are listed in Tables 3 through 5. The observed potential for avian species to be breeding on the Site is also listed in these tables. Not all anticipated wildlife species were observed during the surveys. This may be due to the time of year the surveys were conducted, the location in which observations occurred, the amount of time spent doing wildlife observations, or some species may not have been present on the site despite the habitat suitability. Field observations and photo documentation (see Appendix 2) included the following:

3.1 Terrestrial Invertebrates

The NYSDEC lists a number of terrestrial invertebrate species as threatened, endangered, or species of special concern. These include dragonflies, moths and butterfly species. These species are typically found in open areas like the power line right-of-way or with respect to the dragonflies and damselflies utilize Sterling Forest Lake and the Ringwood River for the nymph portion of their life cycle. No activities are proposed in the lake or river, and the power line right-of-way is already regularly disturbed (mowing and herbicide application). Therefore, a detailed assessment of the use of the Site by invertebrate species was not included in this survey.

Table 2 Summary Field Investigations Sampling World Headquarters of Jehovah's Witnesses, Long Meadow Road, Warwick, Orange County, New York		
ACTIVITY	**DATE**	**HOURS/TIME OF DAY**
Raptor Survey	10 April 2007	3hrs/Morning
Avian Survey	10 April 2007	2hrs/Morning
Vernal Pond Survey	10 April 2007	3hrs/Evening
Raptor Survey	18 April 2007	3hrs/Morning/Afternoon
Avian Survey	18 April 2007	1 hr/Afternoon
Vernal Pond Survey	18 April 2007	3hrs/Evening
Raptor Survey	25 April 2007	2hrs/Morning
Herpetological Survey	25 April 2007	4hrs/ Afternoon
Vernal Pond Survey	25 April 2007	2hr/Evening
Raptor Survey	3 May 2007	2.5hrs/Afternoon
Herpetological Survey	3 May 2007	4hrs/Afternoon
Avian Survey	3 May 2007	2hrs/Morning
Vernal Pond Survey	3 May 2007	2hrs/Afternoon
Avian Survey	11 May 2007	12hrs (2 surveyors)/Morning/afternoon
Herpetological Survey	11 May 2007	4 hrs (2 surveyors)/Afternoon
Raptor Survey	22 May 2007	2.5 hrs/Morning
Avian Survey	22 May 2007	2 hrs/Morning
Herpetological Survey	22 May 2007	4 hrs/Afternoon
Vernal Pond Survey	22 May 2007	1.5 hrs/Evening
Raptor Survey	1 June 2007	2 hrs (2 surveyors)/Morning
Avian Survey	1 June 2007	10 hrs (2 surveyors)/Morning/Afternoon
Herpetological Survey	1 June 2007	2 hrs (2 surveyors)/Afternoon
Vegetation Surveys	14 June 2007	10 hrs/Afternoon
Herpetological Survey	14 June 2007	2 hrs/Morning
Vegetation Surveys	25 July 2007	8 hrs/Afternoon
Herpetological Survey	25 July 2007	3 hrs/Morning
Vegetation Surveys	17 August 2007	4 hrs/Morning
Herpetological Survey	17 August 2007	4 hrs/Afternoon
Incidental Raptor observations	17 August 2007	1 hr/Afternoon
Vegetation Survey/Wetlands	6 September 2007	12 hrs (2 surveyors)/Morning/Afternoon
Incidental Raptor observations	6 September 2007	2 hrs (2 surveyors)/Afternoon
Herpetological Survey	6 September 2007	2 hrs/Afternoon
Vegetation survey, wetlands, vernal pond	25 March 2010	6 hrs. morning/ afternoon
Vegetation survey, wetlands, vernal pond	26 March 2010	6 hrs. morning/ afternoon
Vegetation survey, wetlands, herpetological, raptor, avian	9 April 2010	6 hrs. afternoon/ evening
Vegetation, avian, herpetological, mammal, raptor	7 June 2010	5hrs. evening
Vegetation, avian, herpetological, mammal, raptor, invertebrates	8 June 2010	5hrs. evening
Vegetation, avian, invertebrates	15 July 2010	4 hours afternoon

Table 2 Summary Field Investigations Sampling World Headquarters of Jehovah's Witnesses, Long Meadow Road, Warwick, Orange County, New York		
ACTIVITY	**DATE**	**HOURS/TIME OF DAY**
Tag, measure and identify trees over 12 inches diameter @ 48 inches above ground	24 March 2010	7 hrs. midday
	30 March 2010	7 hrs. midday
	5 April, 2010	6 hrs. midday
	6 April 2010	6 hrs. midday
	7 April 2010	6 hrs. midday
	8 April 2010	6 hrs. midday
	9 April 2010	6 hrs. midday
	12 April 2010	6 hrs. midday
	13 April 2010	6 hrs. midday
	14 April 2010	6 hrs. midday
	15 April 2010	6 hrs. midday
	16 April 2010	5 hrs. midday
	19 April 2010	6 hrs. midday
	20 April 2010	6 hrs. midday
	21 April 2010	5 hrs. midday



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Legend

- Site Location
- Raptor Calling Stations
- Benthic Samples
- Avian Transects

Source:
PS&S Field Survey, August 2007
ArcGIS Online - Bing Maps Hybrid

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CERTIFICATE OF AUTHORIZATION NO: 24GA28032700

PROJECT TITLE

World Headquarters of
Jehovah's Witnesses
Watchtower Bible and
Tract Society of New York, Inc.
Warwick, Orange County, New York

SHEET TITLE

WILDLIFE SURVEY MAP

PROJ. NO. **03171.001.010**

DATE	10/21/2011
DRN. BY	EB
CHK. BY	BSK
SCALE	1" = 600'

FIGURE NO. 4

Table 3
Observed or Expected Amphibians and Reptiles
World Headquarters of Jehovah's Witnesses,
Long Meadow Road, Orange County, New York

Common Name	***Scientific Name***	**Observation Status**
Musk Turtle	*Sternotherus odoratus*	Confirmed
Box Turtle	*Terrapene carolina*	Confirmed
Painted Turtle	*Chrysemys scripta*	Confirmed
Snapping Turtle	*Chelydra serpentine*	Confirmed
Spotted Turtle	*Clemmys guttata*	Suitable
Five-Lined Skink	*Eumeces fasciatus*	Confirmed
Northern Water Snake	*Nerodia sipedon*	Confirmed
Garter Snake	*Thamnophis sirtalis*	Confirmed
Black Rat Snake	*Elaphe obsoleta*	Suitable
Black Racer	*Coluber constrictor*	Confirmed
Red-Spotted Newt	*Notophthalmus viridescens*	Confirmed
Redbacked Salamander	*Plethodon cinereus*	Confirmed
Slimy Salamander	*Plethodon glutinosus*	Confirmed
Marbled Salamander	*Ambystoma opacum*	Suitable
Two Lined Salamander	*Eurycea bislineata*	Confirmed
Spotted Salamander	*Ambystoma maculatum*	Suitable
American Toad	*Bufo americanus*	Confirmed
Eastern Spadefoot Toad	*Scaphiopus holbrookii*	Suitable
Spring Peepers	*Pseudacris crucifer*	Confirmed
Gray Treefrog	*Hyla versicolor*	Confirmed
Green Frog	*Rana clamitans*	Confirmed
Bull Frog	*Rana catesbeiana*	Confirmed
Pickerel Frog	*Rana palustris*	Suitable
Leopard Frog	*Rana pipiens*	Confirmed

Confirmed- Calling during breeding period or visually observed.
Suitable- suitable habitat available on site but not confirmed
Data acquired from the NYSDEC New York State Amphibian and Reptile Atlas Project 1999.

Table 4 Observed or Expected Birds World Headquarters of Jehovah's Witnesses Long Meadow Road, Orange County, New York		
Common Name	***Scientific Name***	**Breeding and Observation Status**
Great Cormorant	*Phalacrocorax carbo*	NOS
Canada Goose	*Branta canadensis*	Confirmed
Mallard	*Anas platyrhynchos*	Confirmed
Wood Duck	*Aix sponsa*	Suitable
Bufflehead	*Bucephala albeola*	NOS
Common Merganser	*Mergus merganser*	Suitable
Hooded Merganser	*Lophodytes cucullatus*	Suitable
Great Blue Heron	*Ardea herodias*	NOS
Wild Turkey	*Meleagris gallopavo*	Confirmed
Red-Tailed Hawk	*Buteo jamaicensis*	Suitable
Osprey	*Pandion hatiaetus*	Suitable
Turkey Vulture	*Cathartes aura*	NOS
Red-Shouldered Hawk	*Buteo lineatus*	South of Site*
Morning Dove	*Zenaida macroura*	Confirmed
Black-Billed Cuckoo	*Coccyzus erythropthalmus*	Confirmed
Yellow-Billed Cuckoo	*Coccyzus americanus*	Confirmed
Ruby-Throated Hummingbird	*Archilochus colubris*	Confirmed
Piliated Woodpecker	*Dryocopus pileatus*	Confirmed
Red-Bellied Woodpecker	*Melanerpes carolinus*	Suitable
Yellow Shafted Flicker	*Colaptes auratus*	Confirmed
Hairy Woodpecker	*Picoides villosus*	Confirmed
Great Crested Flycatcher	*Myiarchus crinitus*	Confirmed
Eastern Kingbird	*Tyrannus tyrannus*	Confirmed
Eastern Peewee	*Contopus virenes*	Confirmed
Eastern Phoebe	*Sayornis phoebe*	Confirmed
American Crow	*Corvus brachyrhynchos*	Suitable
Blue Jay	*Cyanocitta cristala*	Confirmed
Black-Capped Chickadee	*Parus atricapillus*	Confirmed
Tufted Titmouse	*Parus bicolor*	Confirmed
White-Breasted Nuthatch	*Sitta carolinensis*	Confirmed
House Wren	*Troglodytes aedon*	Confirmed
Gray Catbird	*Dumetella carolinesis*	Confirmed
Northern Mockingbird	*Mimus polyglottos*	Confirmed
American Robin	*Turdus migratorius*	Confirmed
Eastern Bluebird	*Sialia sialis*	Confirmed
Wood Thrush	*Hyiocichla mustelina*	Confirmed
Red-Eyed Vireo	*Vireo olivaceus*	Confirmed
Yellow-Throated Vireo	*Vireo flavifrons*	Confirmed
Yellow-Throated Warbler	*Dendroica dominica*	NOS
Blackpoll Warbler	*Dendroica striata*	NOS
Black-Throated Blue Warbler	*Dendroica caerulescens*	Suitable
Black and White Warbler	*Mniotilta varia*	Confirmed

Table 4
Observed or Expected Birds
World Headquarters of Jehovah's Witnesses
Long Meadow Road, Orange County, New York

Common Name	***Scientific Name***	**Breeding and Observation Status**
Yellow-Rumped Warbler	*Dendroica coronata*	NOS
Magnolia Warbler	*Dendroica magnolia*	Suitable
American Red Straling	*Setophaga ruticilla*	Confirmed
Blue-Winger Warbler	*Vermivora pinus*	Suitable
Yellow Warbleer	*Dendroica petechia*	Confirmed
Worm-Eating Warbler	*Helmitheros vermivorus*	Confirmed
Ovenbird	*Selurus aurocapillus*	Confirmed
Brown-headed Cowbird	*Molothrus ater*	Confirmed
Red-Winged Blackbird	*Agelaius phoeniceus*	Confirmed
Common Grackle	*Quiscalus quiscula*	Confirmed
European Starling	*Strmus vulgaris*	Confirmed
Baltimore Oriole	*Icterus galbulta*	Confirmed
Scarlet Tanager	*Piranga olivacea*	Confirmed
Northern Cardinal	*Cardinalis carndinals*	Confirmed
Indigo Bunting	*Passerina cyanea*	Confirmed
White-Throated Sparrow	*Zonotrichia albicollis*	Confirmed
Chipping Sparrow	*Spizella passerina*	Confirmed
Song Sparrow	*Melospiza melodia*	Confirmed

Confirmed- Calling during the nesting season, observed carrying nesting material or observed in nest.
Suitable- suitable habitat available on site but not confirmed
* - observed carrying prey items to location south of site
NOS - Not on site- either migratory species, no suitable habitat on site or no evidence of this species breeding on site.
Data acquired from the NYSDEC Breeding Bird Atlas 2000.

Table 5
Observed or Expected Mammals
World Headquarters of Jehovah's Witnesses
Long Meadow Road, Orange County, New York

Common Name	***Scientific Name***	**Observation Status**
Opossum	*Didelphis marsupialis*	Confirmed
Short tailed shrew	*Blarina brevicauda*	Confirmed
Eastern Mole	*Scalopus aquaticus*	Confirmed
Black Bear	*Ursus americanus*	Confirmed
Raccoon	*Procyon lotor*	Confirmed
Stripped skunk	*Mephitis mephitis*	Confirmed
Coyote	*Canis latrans*	Confirmed
Red Fox	*Vulpes fulva*	Confirmed
Woodchuck	*Marmota monax*	Confirmed
Chipmunk	*Tamias striatus*	Confirmed
Grey Squirrel	*Sciurus carolinensis*	Confirmed
New England Cottontail rabbit	*Sylvilagus transitionalis*	Suitable
Beaver	*Castor canadensis*	Confirmed
Muskrat	*Ondatra zibethicus*	Suitable
Deer mouse	*Peromyscus maniculatus*	Confirmed
White-footed mouse	*Peromyscus leucopus*	Confirmed
Meadow vole	*Micotus pennsylvanicus*	Confirmed
White-tailed Deer	*Odocoileus virginianus*	Confirmed
Big brown bat	*Eptesicus fuscus*	Confirmed
Little brown bat	*Myotis lucifugus*	Confirmed
Eastern red bat	*Lasiurus borealis*	Confirmed

Confirmed- Calls heard during observation, visually observed, or evidence of presence on site.
Suitable- suitable habitat available on site but not confirmed
Data acquired from the NYSDEC http://www.dec.ny.gov/animals 2011.

3.2 Reptiles and Amphibians

The NYSDEC lists timber rattlesnake (*Crotalus horridus*) as threatened in the State of New York. In addition the wood turtle (*Clemmys insculpta*), marbled salamander (*Ambystoma opacum*) and box turtle (*Terrapene carolina*) are listed as NYSDEC Species of Special Concern. In order to characterize the reptiles and amphibians utilizing the site and identify potential NYSDEC listed species usage of the site the following survey techniques were utilized:

- Slowly walking the transects and recording all species directly observed or heard calling;
- Using a snake hook, to examine suitable refugia (logs, boards, stumps, etc.);
- Conducting nocturnal road surveys of the roads with the use of headlights in the vicinity of the Site to intercept individuals crossing roadways;
- Listening for calling amphibians during evening and night hours;

Fortuitous observations of snakes and other amphibians and reptiles along the roads were recorded and referred to during the Site characterization and assessment of habitat quality. Herptiles observed on the site are listed in Table 3. Table 2 lists the dates and times that the surveys were conducted.

3.3 Birds

For raptors, an assessment of the habitat on the Site was conducted to determine the potential for these species to be utilizing the Site. Calls of red-shouldered hawks and Cooper's hawk broadcast to illicit a response. Other species of bird were identified using transects across the Site. Surveys began approximately on half hour before sunrise and continued until early afternoon. Each transect was run once during each day of the survey. Birds were identified by both sight (see Table 4) and by their individual calls. Evidence of breeding was recorded. Evidence of breeding on the Site included males calling during the nesting season, birds carrying nesting material and nests.

Raptor calling included playing taped recordings of red-shouldered hawks, red tailed hawks and Cooper's hawks to elicit a response. The calling sequence for the red-shouldered hawk consisted of consisted of three minutes of red-shouldered hawk calls, followed by three minutes of silence and 3 minutes of red-tailed hawk calls. The calling sequence was followed by five (5) minutes of silence. This was repeated twice at each calling station. The calling sequence for Cooper's hawk consisted of three minutes of Cooper's hawks calls, three minutes of silence and three additional minutes of Cooper's hawk calls. The calling sequence was followed by five (5) minutes of silence and was repeated twice at each calling station. The raptor calling locations and bird transects are depicted on Figure 4. Table 2 lists the dates and times that the surveys were conducted.

3.4 Mammals

There were no records of threatened or endangered species identified on either the NYSDEC or NJDEP Natural Heritage database reports. Fortuitous observations of mammals or mammal signs were observed during the other survey activities and were recorded in the field notes (and listed in Table 5). Signs observed included calls, scat, tracks and hair. Additionally, as discussed in Appendix 1, mist nets were set up on the site on two nights in June 2010 to evaluate the bat population.

4.0 THREATENED AND ENDANGERED SPECIES

The NYSDEC Natural Heritage Program was contacted for information concerning historic records of threatened and endangered species on and in the vicinity of the project Site. Due to the proximity of the Site to New Jersey and Ringwood Manor State Park, Natural Heritage Data was also requested from the New Jersey Natural Heritage Program. The US Fish and Wildlife Service was not contacted for a specific list of federally listed species on the site as federally listed species were included on both the NYSDCE and NJDEP lists.

Vegetation surveys followed standard transect methods as described in Miller-Dombois and Ellenberg, 1974. Specific habitat searches for threatened and endangered plant species utilized the same methodology on a site specific scale.

4.1 Plant Species

The New York Natural Heritage database lists the presence of the following threatened or endangered plant species in the vicinity of the Site:

- Terrestrial starwort (*Callitriche terrestris*);
- Green parrot's feather (*Myriophyllum pinnatum*);
- Hyssop skullcap (Scutellaria integrifolia); and
- Michaux's blue-eyed grass (*Sisyrinchium mucronatum*)

Terrestrial starwort is classified as threatened by the NYSDEC while green parrot's feather, hyssop skullcap, and Michaux's blue-eyed grass are classified as endangered. The following sections briefly discuss the habitat requirements of each species, potential habitat on site for each species and anticipated impacts to each species from the proposed project.

4.1.1 Terrestrial Starwort

The terrestrial starwort (*Callitriche terrestris*) is listed as a threatened plant species on the NYSDEC threatened and endangered species list. This species is typically found in damp shaded habitat. This is a small plant with tufted branches spreading along the ground or climbing nearby rocks or other objects. Potential habitat for this species on the Site includes along the edge of Sterling Forest Lake, the edge of Ringwood River and along the perennial stream located between the existing college and Sterling Forest Road. No terrestrial starworts were observed during this investigation. As there is no evidence that this species is on site, and there are no proposed activities anticipated along the edge of Sterling Forest Lake or in the vicinity of the Ringwood River, no impacts to this species is anticipated to result from the proposed project.

4.1.2 Green Parrot's Feather

Green parrot's feather (*Myriophillim pinnatum*) is a member of the aquatic milfoil family. It is listed by the NYSDEC as an endangered species in New York. This species is found primarily in ponds. Leaves are arranged in whorls of 3 to 5 leaves per whorl. Potential habitat for this species on the Site is generally limited to Sterling Forest Lake. Green parrot's feather milfoil was not observed during this investigation. As the project does not propose any activities in Sterling Forest Lake, no impact to this species are anticipated.

4.1.3 Hyssop Skullcap

Hyssop skullcap (*Scutellaria integrifolia*) is a summer perennial with a terminal raceme of purple-blue flowers. It is listed as a NYSDEC threatened species. This species inhabits a wide range of habitats from pine-barrens to wet meadows. Typically, hyssop skullcap is found along the edge of roadsides, woodland borders, fields, and in wet meadows. Potential habitat for this species on the Site includes the edge of Sterling Forest Road, the Site access road and the power line right-of-ways. Vegetation transects were run down the length of the power line right-of-way, the most probable location for this species on Site. Small colonies of hyssop skullcap were observed along the right-of-way portion of the Site in 2007. In the 2010 vegetation survey, this plant species was not observed possibly due to seasonal conditions. If Hyssop skullcap were to be re-observed in the power line right-of-way, mitigative action would be required to preserve this species. No project activities are proposed in the locations where this plant was last observed. No impacts to this species are anticipated to occur from implementation of the proposed project.

4.1.4 Michaux's Blue-Eyed Grass

Michaux's blue-eyed grass (*Sisyrinchium mucronatum*) is in the iris family. The flowering season for this species is summer. The six (6) petal flower is blue with a yellow center. The petals of the flowers have distinctly pointed tips. It is found in fields, meadows, bogs and along forest edges. This species prefers areas of full sun through out the day. Potential habitat for this species on Site occurs along the power line right-of-way. Vegetation transects were completed for the length of the power line right-of-way and the wetlands south of the former treatment plant. Michaux's blue eyed grass was not observed. The project will not impact known habitat for this species. Therefore, no impacts to this species are anticipated to result from project implementation.

4.2 Animal Species

In New York State, a Threatened Species is: 1) any native species likely to become an Endangered Species (i.e. in imminent danger of extirpation or extinction) within the foreseeable future in New York State; or 2) any species listed as threatened by the United

States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11. Species of Special Concern are those species which are not recognized as threatened or endangered, but for which documented concern exists for their continued welfare in New York. Species of Special Concern receive no additional legal protection under Environmental Conservation Law Section 11-0535.

The NYSDEC Natural Heritage Data Base has no records of endangered animals on the project Site. The NYSDEC data base has records of six species of special concern within one-quarter mile of the project Site (listed below). In addition, the New York data base has a record of timber rattlesnakes (*Crotalus horridus*), a New York State threatened species, within 1.5 miles of the Site.

The New Jersey Natural Heritage Program has identified the following species listed by the NYSDEC as endangered, threatened or a Species of Special Concern as occurring in New Jersey and within ¼ mile of the Site:

- Timber rattlesnake (*Crotalus horridus*) State Threatened;
- Red-shouldered hawk (*Buteo lineatus*) NYSDEC Listed Species of Special Concern;
- Wood turtle (*Clemmys insculpta*) NYSDEC Listed Species of Special Concern;
- Marbled salamander (*Ambystoma opacum*) NYSDEC Listed Species of Special Concern;
- Box turtle (*Terrapene carolina*) NYSDEC Listed Species of Special Concern;
- Cooper's hawk (*Accipiter cooperii*) NYSDEC Listed Species of Special Concern
- Eastern bluebird (*Sialia sialis*) NYSDEC Listed Species of Special Concern

Between April 10 and September 6, 2007 and April 9 and July 15, 2010, PS&S conducted Site reconnaissance surveys to determine the presence or absence of State Threatened and Endangered Species and/or the presence of suitable habitat for these species.

4.2.1 Timber Rattlesnake

The timber rattlesnake (*Crotalus horridus*) is an ectothermic reptile which undergoes an annual cycle related to seasonal changes of temperature and its environment. Thermoregulation and winter survival require most populations to undergo a period of hibernation through the winter. The major phases of the seasonal cycle are listed in Table 6.

Table 6 Seasonal Cycle of Rattlesnakes in New York (Brown, 1992)		
Phase	**Description**	**Dates**
Earliest Emergence from dens	First appearance of snakes on surface of a den in the spring	April 8
General Emergence from den	Range of dates most snakes appear on surface in the spring	May 7 - May 21
General Ingress	Range of dates most snakes appear at dens in autumn	Sept. 14 - Oct. 1
Latest Ingress	Last appearance of snakes at den in autumn	October 16

A typical hibernaculum (den) is located in a rocky area where underground crevices provided retreats for overwintering. In northeastern New York, granitic escarpments and ledges with accumulations of talus are prominent features at and around favored den sites. Elevations of the dens range between 500 and 1300 ft. A typical den site is on the southerly slope of a hill or mountain which is ledgy. Because of the rockyness of the den sites, there is typically little vegetation around the entrance. Virginia creeper (*Parthenocissus quinquefolia*) and wild grape (*Vitus* spp.) are typically the only vegetation adjacent to the dens.

There are two outcrop areas in the southern portion of the Site with southerly exposures. These outcrop areas provide a south/southwestern exposure with steep rocky slopes and ledges, rock out crops, and grassy shelf clearings. Elevations of these ridges are between 780 and 800 feet which fall within the typical range utilized by this species. Canopy vegetation observed on Site contains red oak, chestnut oak, red maple, and black birch. The shrub layer consists of maple leaved viburnum, American hornbeam and witch hazel. Ground cover is dominated by low bush blueberry. There is heavy vegetation with a closed canopy over the outcrop areas. Because of the closed canopy there is virtually no basking habitat at the outcrops for this species. The closed canopy and lack of basking habitat excludes these outcrop areas as suitable rattlesnake den habitat.

The New York database has a record of timber rattlesnakes within 1.5 miles of the Site. The New Jersey Natural Heritage Data Base has records of timber rattlesnakes sited within one-quarter mile of the Site. Aerial photographs of the surrounding areas, with the exception of the power line right-of-way, do not show open canopy outcrops immediately adjacent to the Site. During this and other surveys (Klemens, Oct & Nov. 2005) conducted on the Site, no rattlesnakes, or evidence of snakes, such as scat or shed skins were observed on the Site. In addition an NYSDEC Conservation Officer indicated that he had not observed any rattlesnakes in the vicinity of the Site (NYSDEC, 2007).

While suitable foraging habitat is located on the Site into which snakes would disperse after leaving den sites, it does not appear to support this species. Any determination of the specific regulatory implementations of the suitability of the site will be made by the NYSDEC during the SEQRA review process. Prior to

construction activities on the site, it is recommended that the construction area be fenced using silt fencing. Once the fencing is completed, the fenced area should be searched by a biologist for rattlesnakes to prevent accidentally harming any snakes that may have been using the site for foraging.

Conclusions drawn from the data collected during 2009 and 2010 rattlesnake study suggest that the proposed project would not have any negative effects on local timber rattlesnake populations. Although the Watchtower property is within the possible range (typically accepted as 2 miles) of at least five rattle snake dens. It is believed there is not any significant habitat on the property west of Long Meadow road and certainly not within the area of the proposed project. Rattlesnakes may use forested areas on the property to forage, as BL1 did, that are not proposed for disturbance. Rattlesnake utilization of the forested areas on the property would not be affected by Watchtower's use of the former industrial campus. Workers and security guards on the site grounds have not observed any rattlesnakes. If the proposed project is allowed to proceed, no rattlesnake habitat would be lost or degraded, nor would rattlesnakes be excluded from any habitat.

Watchtower does recognize that rattlesnakes are an integral part of the ecosystem and have no reservations about sharing their property with them. Just as New York State has an obligation to protect its indigenous species; Watchtower also recognizes their obligation to protect those species on their land. In the event that a rattlesnake is found in a parking lot or near the buildings where it would be unsafe, Watchtower would request NYS DEC listed Nuisance Rattlesnake Responder volunteers or staff trained in the protocols to safely relocate the snake to an appropriate location.

Watchtower's proposed redevelopment of this former industrial site, while leaving the other forested areas of the property undisturbed, is the reasonably protective use of the property from the perspective of timber rattlesnake conservation. Proposals of previous owners underscore this. Combining proposed with the state position of the owners as "rattlesnake friendly". When it comes to protecting timber rattlesnakes on private land "there is no substitute for landowner stewardship." (Michele, K. 2009/2010 rattlesnake study).

4.2.2 Red-Shouldered Hawk

The red-shouldered hawk is a striped, broad winged hawk. At the turn of the century, this species was the most common species of hawk in New England (Weidensaul, 1989, Terres, 1991). The logging of mature forests and pesticide contamination has contributed to the decline of this species. In places human activity has pushed red shoulder hawks deep into forested area. In other areas red shoulder hawks have been observed nesting and foraging in close proximity to human activity. Accordingly, red-shouldered hawks may or may not be tolerant to human disturbance.

The preferred nesting habitat for this species is mature moist woodlands (maple/hemlock forest), riparian corridors and forested wetlands (Peterson, 1980; Weidensaul, 1989; Terres, 1991). Nests of red-shouldered hawks in southwestern Quebec were located in mature, closed canopy, deciduous forest in close proximity to a natural clearing (88 feet) and to riparian or lakeshore habitat (distance to water body averaged 202 feet; Armstrong and Euler 1982). Red-shouldered hawks require large tracts of mature floodplain or riparian forests as nesting habitat (Bednarz and Dinsmore 1981); 550-acre area corresponded with 50% of maximum probability of occurrence, and 100-acre patches were the minimum used (Robbins et al. 1989). The red-shouldered hawk's nest is a large mass of sticks and twigs built close to the trunk of a tall deciduous tree.

Foraging habitat includes the wooded margins of marshes, often close to cultivated fields and forest natural openings (Bednarz and Dinsmore 1981, DeGraaf and Rappole 1995). Bednarz and Dinsmore (1981) found that marsh or wet meadow feeding areas interspersed within or adjacent to the forest typically were > 55 acres, and as small as 8 acres.

The majority of the Site is second growth upland forest habitat. Forested wetlands are present within riparian corridor are found in the northern portion of the Site. The riparian corridor parallels Sterling Lake Road through the Site and crosses the road to the south of the Site. These forested areas provide potential nesting habitat. No nests and no responses to call back tapes, however, were observed in these areas.

On July 25, 2007, a pair of red-shouldered hawks was observed along the power line right-of-way south of the Site. This pair was observed foraging along the power line right-of-way and one was carrying a prey item. The bird carrying the prey item flew south and was gone for approximately 30 minutes. When it returned it no longer was carrying anything. Based on this observation, the lack of observed nests and the lack of response to calls, this pair of red-shouldered hawks is likely nested south of the Site and foraging along the power line right-of-ways on or in the vicinity of the Site in 2007. Red shouldered hawk was not observed on the site in 2010.

Project implementation avoids disturbance of the riparian woodlands associated with the Ringwood River and concentrates activities around existing developed areas. The Site is also bounded by two State Parks, Sterling Forest State Park and Ringwood Manor State Park, which provide suitable nesting and foraging habitat for this species. It is not anticipated that this species will be significantly impacted by the proposed development.

4.2.3 Wood Turtle

The wood turtle is a species requiring high quality free flowing streams for breeding and hibernating, and adjacent wetland and upland habitat for feeding (Herpetological Associates, 1981). This species is known to travel great distances while foraging making them susceptible to impacts associated with traffic, domestic pets and other human interactions (Conant, 1975).

Typical breeding and overwintering habitat for wood turtles is shallow (up to three feet deep), streams with good water quality. Outside of the breeding and overwintering periods, the wood turtle is one of the most terrestrial species. They can be found in a variety of habitats up to a mile from the stream.

The portion of the site adjacent to the Ringwood River includes areas of emergent or forested wetlands with adjacent upland fields and forest. The Ringwood River also appears to have sufficient water and flow during the critical winter months to support hibernating turtles. Wetlands associated with the river range from broad to narrow. The wetland areas adjacent to the power line right-of-way are relatively broad while the areas along the southern and western portions of the stream are associated with upland areas dominated by steep slopes.

No wood turtles were observed on the Site during 2007 or 2010 site investigations. Wood turtles have been previously reported to occur on the site and they may utilize the portion of the Site northeast of Sterling Forest Road. No development activities are proposed within the breeding and overwintering habitat. Prior to construction activities on the site, it is recommended that the construction area be fenced using silt fencing. Once the fencing is completed, the fenced area should be searched by a biologist for wood turtles to prevent accidentally harming any turtles. Through implementation of these measures, it is anticipated that this species will not be impacted by the proposed development.

4.2.4 Marbled Salamander

The marbled salamander is part of a group of salamanders known as the mole salamanders. These amphibians spend most of their life underground. However, they congregate adjacent to temporary ponds in the fall to breed. The distance that they migrate to the breeding ponds has not been established. Marbled salamanders lay eggs in low depressions which fill with water and form temporary ponds or pools. Breeding activities are typically completed in a few nights and these amphibians disappear for another year. Encounters with marbled salamanders at times other than the breeding season are typically chance encounters. They have been encountered during excavation for foundations at depths of greater than 4 feet (Conant, 1975).

Standing water was surveyed for the presence of larva of this species. This survey was conducted through the use of a dip net and careful search of the leaf

litter in the pools. All organisms collected were returned to the pools unharmed. In addition, road cruising was conducted on rainy nights to observe frogs and salamanders crossing roadways and to listen for calling amphibians. No evidence of marbled salamanders was observed on the site.

The wetland area northeast of Sterling Forest Road and wetland area 8 contain small ephemeral ponds. These ponds were dry by May 11, 2007 and June 8, 2010. The ponded areas were sampled using a dip net in April 2007 and April 9, 2010. No marbled salamanders or past evidence of breeding in the ponds was observed. Amphibian breeding activity (spring peepers, green frogs and American toads) southwest of Sterling Forest Road was observed in emergent wetland areas. No evidence of Ambystoma salamander activity was observed in these emergent wetlands.

4.2.5 Box Turtle

Box turtles live in open woodlands, pastures and marshy meadows. They are often found near streams and ponds. They are omnivores feeding on snails, insects, berries, fungi, worms, slugs, flowers, fish, frogs, snakes and birds. The young are primarily carnivorous while adults tend to be herbivorous, although they do not eat green leaves.

Environmental temperature determines the box turtle's activity rates. In the summer, box turtles restrict their activities to mornings and after rain. They crawl into or under decaying logs, leaves, mammal borrows or mud to stay cool. In very hot weather, they will go into shady pools and puddles to cool off. Box turtles are diurnal and scoop out a shallow indentation in which to spend the night. They hibernate in the winter, borrowing up to two (2) feet deep into loose earth, mud, stream bottoms, old stump holes or mammal borrows.

The site provides suitable habitat for this species. On June 1, 2007 a female box turtle was observed in the vicinity of the existing building. Two additional box turtle shells were found in the vicinity of the existing building during Site investigations. An immature (roughly 2 inches long) box turtle was observed in the power line right of way on July 15, 2010.

In addition to maintaining much of the existing habitat along the powder line right-of-way, the proposed project includes removal of some existing development and will result in additional open field habitat that would support this species. Prior to construction activities on the site, it is recommended that the construction area be fenced using silt fencing. Once the fencing is completed, the fenced area should be searched by a biologist for box turtles to prevent accidentally harming any turtles. Through implementation of these measures it is anticipated that this species will not be impacted by the proposed development.

4.2.6 Cooper's Hawk

This crow sized blue and russet hawk has a relatively long rounded tail which is cross barred with black bars, a buffy neck nape and dark gray crown (Terres, 1991). This bird belongs to the group of hawks known as Accipiters which are the short winged hawks. Deciduous woods are the preferred habitat for Cooper's hawks although they tend to seek out a tall conifer tree for nesting (Weidensaul, 1989). Nests consist of a large platform of sticks and large chips of bark. The Cooper's hawk does not tolerate the smaller, similar and competitive sharp shinned hawk (*Accipiter striatus*) within the same woodland area where it is nesting (Terres, 1991). Primary prey for this species consists of medium sized songbirds such as woodpeckers, grackles, starlings, robins, jays and doves. When abundant, small mammals such as chipmunks, red squirrels, mice and rats will also be taken. When nesting, Cooper's hawks rarely hunt in the vicinity of their nest, preferring to hunt in other habitats (Weidensaul, 1989).

This species tends to be tolerant of human activities. They are known to patrol bird feeders in the winter and have historically taken young chickens around farms (Weidensaul, 1989), and passerines from residential bird feeders (personal observation).

The deciduous upland habitat of the Site provides suitable potential habitat for both breeding and foraging. No Cooper's hawks were observed during the field surveys nor were any nests observed.

As discussed above the Site is bounded by two State Parks, which provide suitable nesting and foraging habitat for this species. Given the amount of preserved forested habitat in the vicinity of the Site, it is anticipated that this species will not be adversely impacted by the proposed development.

4.2.7 Eastern Bluebird

The eastern bluebird is a small blue/reddish brown colored bird typically found in open country, farms, cut-over woods, gardens, parks, fields, orchards, and along roadsides. They are commonly found perched on fences or utility wires. This species nests in cavities and has encountered serious competition from introduced cavity nesting species such as starlings (*Sturnus vulgaris*) and house sparrows (*Passer domesticus*).

The eastern bluebird feeds mostly on insects and often flies from a fence, wire or low tree to catch grasshoppers, crickets, katydids or beetles which make up the largest part of its diet (Terres, 1991). They are also known to eat spiders, millipedes, centipedes, sow bugs, snails, earthworms, lizards and tree frogs. Bluebirds will also eat blackberries, bayberries, fruit of honeysuckles, Virginia creeper, red cedar, wild grapes, pokeberries, and sumac seeds.

Nests are constructed primarily by the female in natural tree cavities, woodpecker holes, holes in stumps, fence rails and bird boxes, 3 to 20 feet above the ground. Nests are constructed using dried grasses, pine needles, weed stems, and fine twigs. Nests are lined with fine grasses, hairs and feathers.

The eastern bluebird is an open country species. The only open country habitat on the Site is along the power-line right-of-way, adjacent to the dike along the eastern edge of Sterling Forest Lake and the former Kings College campus. There are numerous tree cavities in the vicinity of these open county habitat areas to provide nesting habit for this species. During the field survey, numerous bluebirds were observed at each of these locations.

Under the proposed development plan, there are no anticipated disturbances associated with the power line right-of-way habitat currently being utilized by this species. Power line maintenance will continue to maintain much of this right-of-way as old field habitat suitable for this species. Installation of nesting boxes along the power line right-of-way can provide additional nesting opportunities for this species. Additionally, removal of some existing development will provide the opportunity to create additional old field and/or wet meadow habitat.

The area surrounding the former Kings College campus and the area along the dike will be disturbed by project implementation. These areas may be limited in serving as suitable nesting habitat for this species. It is anticipated that the loss of these patches of habitat will not have an adverse impact due to additional off-site power line right-of-ways in the vicinity of the Site. In order to prevent potential impacts to individual nesting eastern blue bird; it is recommended that potential cavity trees required to be removed for the project in the vicinity of the former Kings College campus and along the dike be cut during the fall and winter (i.e., outside breading season). It is anticipated that much of the power line right-of-way will continue to serve as eastern bluebird habitat subsequent to project implementation.

5.0 AQUATIC RESOURCES

Aquatic resources on the Site include a portion of Sterling Forest Lake, a reach of the Ringwood River and wetlands associated with the river and its tributaries. Sterling Forest Lake is a deep, (approximately 120 feet) oligothrophic natural lake which is deepened by a 20 foot high dam. The Lake is State owned and is part of Sterling Forest State Park.

Surveys conducted by the NYSDEC Bureau of Fisheries, Biological Survey Unit, conducted on May 31, 2000 indicate that the lake supports a breeding population of lake trout (*Salvelinus namaycush*). In addition, rainbow (*Oncorhynchus mykiss*) and brown trout (*Salmo trutta*) were stocked in the lake while it was under private ownership. Alewife (*Alusa pseudoharengus*) had been the main forage base in the lake; however, they are, based on NYSDEC Bureau of Fisheries surveys conducted in 1998 and 2000, no longer present in the lake. The following species were collected by NYSDEC during their 2000 survey:

- Smallmouth bass (Micropterus dolomieui);
- Rock bass (Ambloplites rupestris);
- Largemouth bass (Micropterus salmoides);
- Bluegill (Lepomis macrochirus);
- Pumpkinseed (Lepomis gibbosus);
- Chain pickerel (*Esox niger*); and
- Yellow perch (*Perca flavescens*).

The Ringwood River flows through the northeastern portion of the Site. The reach of the stream which flows through the Site is identified as a Class C (T) freshwater. The NYSDEC defined best usage of Class C waters is fishing. These waters are suitable for fish propagation and survival. The water is also suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes. The (T) appearing after the standard designation indicates that the waters are suitable for supporting trout. In March, 2007 the NYSDEC stocked 290 8-9 inch brown trout in the Ringwood River. Immediately downstream of the Site, in New Jersey, the NJDEP stocks brown and rainbow trout in the river.

The proposed development is designed to avoid the aquatic habitat present on the site. Appropriate soil erosion and sediment control measures will be implemented to prevent the migration of sediment to Sterling Forest Lake and the Ringwood River during construction activities. Stormwater management controls should be implemented to reduce stormwater runoff into these water bodies subsequent to the development of the site. With appropriate soil erosion and sediment control measures and stormwater management facilities. It is anticipated that the proposed project will have no significant negative impact on the aquatic resources in the project area.

6.0 WETLANDS

A wetlands delineation was conducted and a USACE jurisdictional application submitted for a 70-acre portion of the site (Figure 5). The entire portion of the Site east of Sterling Road was examined for the presence or absence of wetlands. Each wetland delineated within the project area was classified according to habitat type. A review of the NYS Department of Transportation, Greenwood Lake and Sloatsburg Freshwater Wetland Quadrangles shows the presence of NYSDEC Freshwater Wetland area GR-18, Gr-19 and GR-120 located north of the Site (Figure 6). The NYSDEC Freshwater Wetland maps do not indicate the presence of NYSDEC regulated wetlands within the project Site.

The National Wetlands Inventory Maps (NWI), Greenwood Lake and Sloatsburg Freshwater Wetland Quadrangles indicate palustrine forested (PF01), palustrine scrub/shrub (PSS1) wetlands and palustrine open waters (POW) associated with the Ringwood River. Sterling Forest Lake is identified as lacustrine, limnetic open waters (L1OW). No wetlands are delineated on the portion of the Site west of Sterling Road.

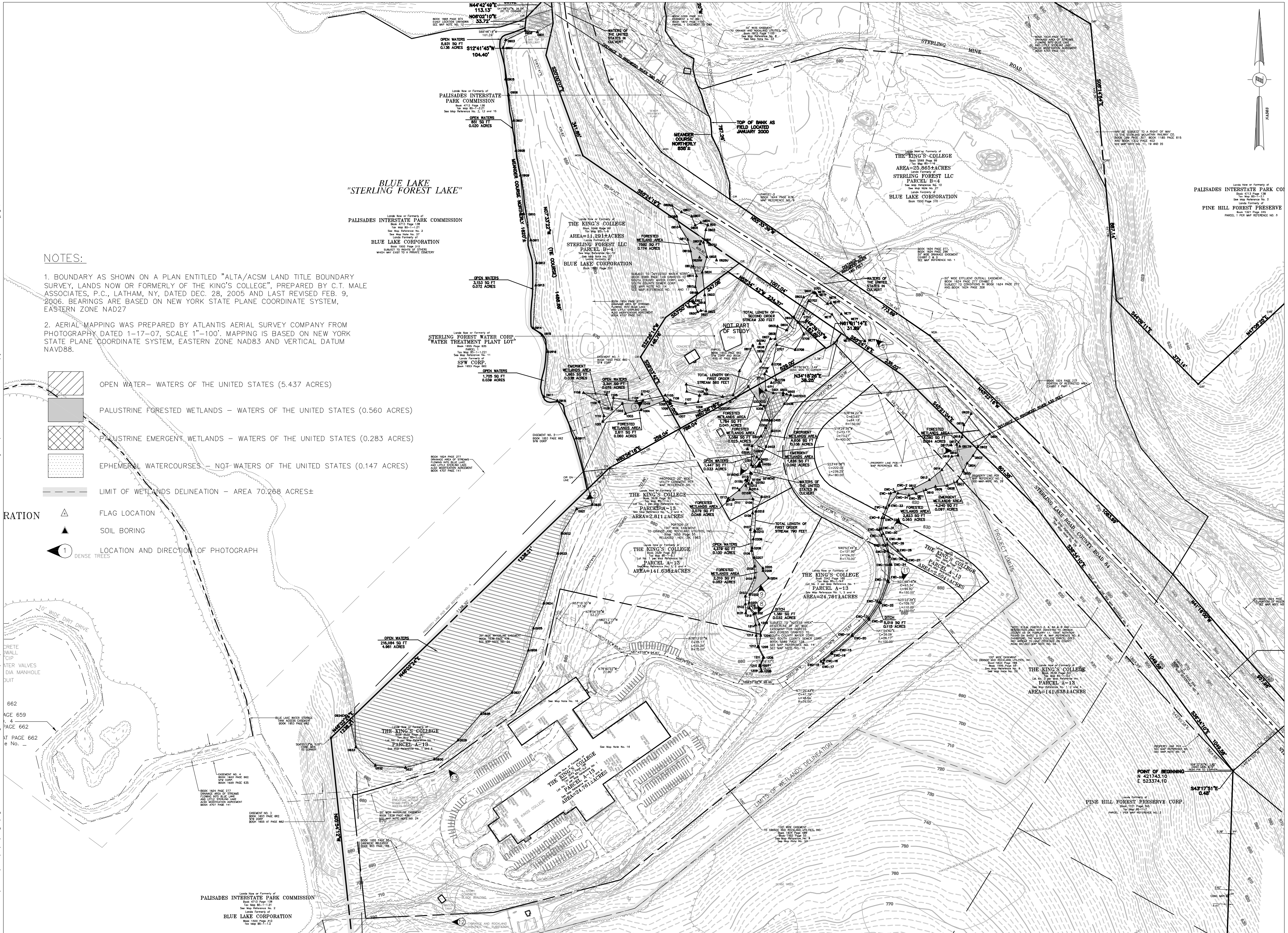
6.1 Wetland Regulations

A variety of federal and state regulations affect construction and other activities in wetlands and in areas immediately adjacent to wetlands. The principal federal laws that regulate activities in wetlands are Sections 404 and 401 of the Clean Water Act, and Section 10 of the Rivers and Harbors Act. Other federal laws that may apply include the National Environmental Policy Act, and the Swampbuster provision of the Food, Agriculture, Conservation and Trade Act of 1990.

The principal New York State regulation affecting development activities in and near freshwater wetlands is the Freshwater Wetlands Act (6NYCRR Part 663). Other state laws that may regulate activities in or near wetlands include the State Environmental Quality Review Act (SEQRA) (6NYCRR Part 617), and the Use and Protection of Waters Program (6NYCRR Part 608).

6.2 Definitions and Methodology

Jurisdictional Waters of the United States (WoUS) is a term used and defined by the US Army Corps of Engineers (USACE) in 33 Code of Federal Regulations 328. This term as defined in the federal regulations includes “wetlands.” However, for the purposes of this report the different types of jurisdictional water systems are defined as either “WoUS” or “wetlands”. WoUS will denote non-vegetated, contiguous watercourses or waterways with well-defined banks, or intermittent streams as opposed to “wetlands” as defined below.



NOTES:

1. BOUNDARY AS SHOWN ON A PLAN ENTITLED "ALTA/ACSM LAND TITLE BOUNDARY SURVEY, LANDS NOW OR FORMERLY OF THE KING'S COLLEGE", PREPARED BY C.T. MALE ASSOCIATES, P.C., LATHAM, NY, DATED DEC. 28, 2005 AND LAST REVISED FEB. 9, 2006. BEARINGS ARE BASED ON NEW YORK STATE PLANE COORDINATE SYSTEM, EASTERN ZONE NAD27

2. AERIAL MAPPING WAS PREPARED BY ATLANTIS AERIAL SURVEY COMPANY FROM PHOTOGRAPHY DATED 1-17-07, SCALE 1"-100'. MAPPING IS BASED ON NEW YORK STATE PLANE COORDINATE SYSTEM, EASTERN ZONE NAD83 AND VERTICAL DATUM NAVD88.

OPEN WATER– WATERS OF THE UNITED STATES (5.437 ACRES)

PALUSTRINE FORESTED WETLANDS – WATERS OF THE UNITED STATES (0.560 ACRES)

PALUSTRINE EMERGENT WETLANDS – WATERS OF THE UNITED STATES (0.283 ACRES)

EPHEMERAL WATERCOURSES – NOT WATERS OF THE UNITED STATES (0.147 ACRES)

LIMIT OF WETLANDS DELINEATION – AREA 70.268 ACRES±

FLAG LOCATION

SOIL BORING

LOCATION AND DIRECTION OF PHOTOGRAPH

FILE NAME: P:\03171\001\Y\N\Dwgs\Fig5_Wetlands_102111_00.dwg LAST EDIT: 10/21/2011 – 03:48:46 PM LOGIN: ebocian@ebocian XREFS: key-map ; BND-00-NAD83 ; Copy of PSS0702 IMAGE: 20100405154822.jpg ;

Source:
Plan by PS&S Survey entitled "Wetland Survey Parcel B4 and Part of Parcel A-13", dated 6/4/2010, revised 7/27/2011.

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CERTIFICATE OF AUTHORIZATION NO. 24GA28032700

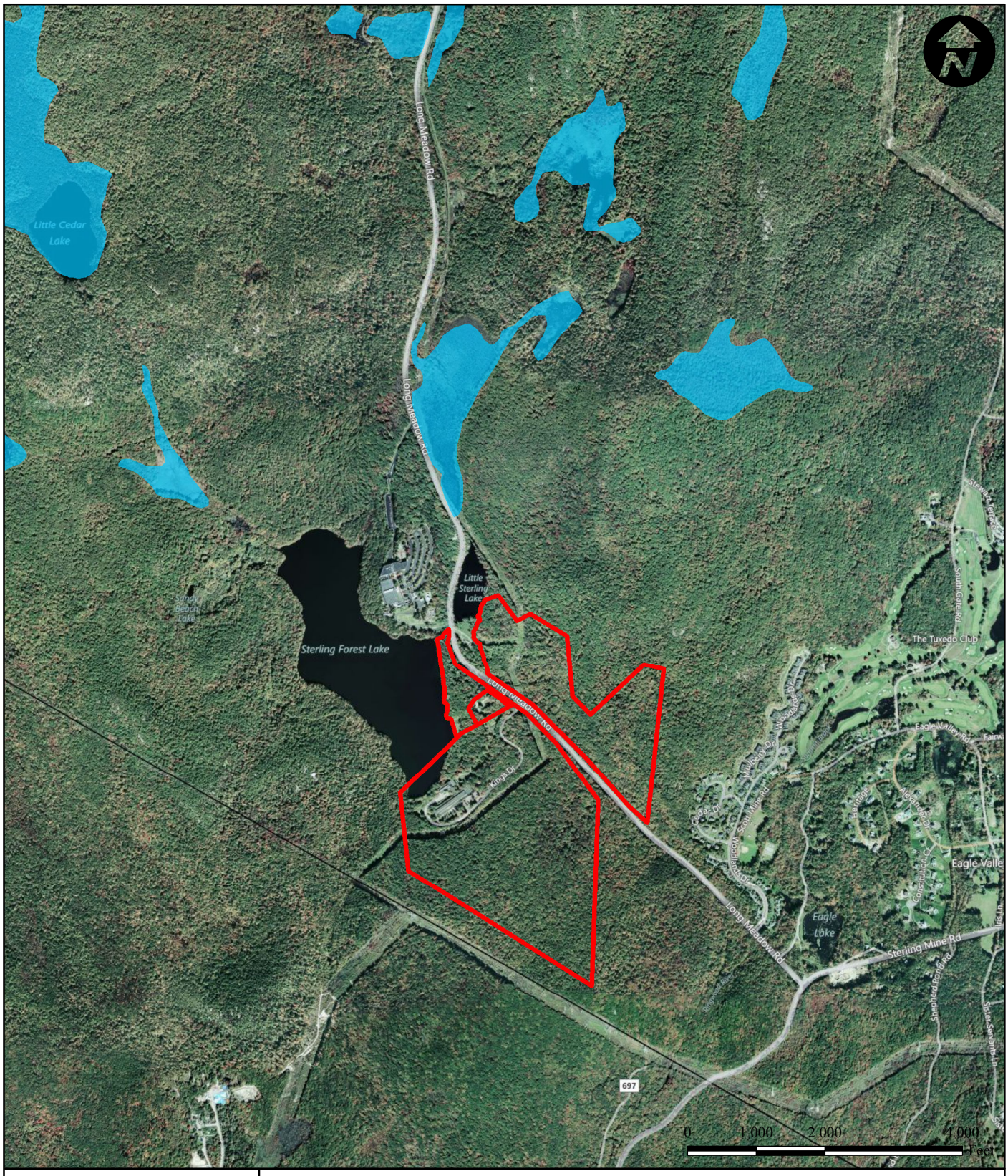
PROJECT TITLE

World Headquarters of
Jehovah's Witnesses
Watchtower Bible and
Tract Society of New York, Inc.
Warwick, Orange County, New York

SHEET TITLE

WETLANDS DELINEATION SURVEY

PROJ. NO.	03171.001
DATE	10/21/2011
DRN. BY	EB
CHK. BY	BSK
SCALE	1" = 300'
FIGURE NO.	5



Legend

- Site Location
- Wetlands

NYDEC WETLANDS MAP

World Headquarters of Jehovah's Witnesses
Watchtower Bible and Tract Society of New York, Inc.
Warwick, Orange County, New York

PS&S
integrating design & engineering

Drawn By: EB	Scale: 1" = 2,000'	Project No. 03171.001.010
Chk'd By: BSK	Date: 10/21/2011	Figure No. 6

Source:
New York State Regulatory Freshwater Wetlands For Orange County, 2011.
ArcGIS Online - Bing Maps Hybrid

Path: P:\03171\001\Y\N\Maps\Fig6_DEC_Wetlands_102111_00.mxd

6.2.1 Hydrophytic Vegetation

The initial step in the wetland delineation was to characterize the dominant vegetation in each vegetation layer. Dominant species are those that have the largest relative basal area, height, number of stems or greatest areal cover (EL, 1987). The vegetation was then compared to the National List of Plant Species that Occur in Wetlands, Northeast (Region1) (NWI, 1988) to determine of hydrophytic vegetation was present.

A "hydrophyte is any plant "growing in water, soil, or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content" (EL, 1987). Since most species can tolerate a range of growing conditions, individual species are not solely restricted to either wetland or upland communities. The USFWS has developed a classification scheme that assigns species to wetland indicator classes as listed in Table 7 (NWI, 1988).

Table 7
Plant Indicator Status Categories (NWI 1980)

Indicator Category	Indicator Symbol	% Occurrence in Wetlands	Status Categories
Obligate Wetland Plans	OBL	>99	Plants that occur almost always in wetlands under natural conditions, but which may also occur rarely in nonwetlands.
Facultative Wetlands Plans	FACW	67-99	Plants that occur usually in wetlands, but also occur in 1% to 33% in nonwetlands.
Facultative Plants	FAC	33-67	Plants with a similar likelihood of occurring in both wetlands and nonwetlands.
Facultative Upland Plans	FACU	01-33	Plants that occur sometimes in wetlands, but occur more often in nonwetlands.
Upland Plants	UPL	<1	Plants that occur rarely in wetlands, but occur almost always in nonwetlands under natural conditions.

Hydrophytic vegetation is present if greater than 50% of the dominant plant species from all strata are OBL, FACW, and/or FAC. When greater than or equal to 50% of the dominant species are FACU and/or UPL and hydric soils and wetland hydrology are present, the area is also considered to have hydrophytic vegetation. If hydric soils and wetland hydrology are lacking, and normal circumstances exist, then the area is considered to be upland.

6.2.2 Wetland Hydrology

The second step was to assess the wetland hydrology. Wetland hydrology encompasses the hydrologic characteristics of areas that are inundated or have saturated soils for sufficient duration to support hydrophytic vegetation. Hydrologic indicators are generally used to determine the presence or absence of a wetland. Of the three technical criteria, wetland hydrology is generally the least exact and most difficult to establish in the field due to annual, seasonal, and daily fluctuations (EL, 1987). An area has wetland hydrology if the soil is saturated to the surface by groundwater or ponded or flooded with surface water for one week or more during the growing season. Saturation to the surface can occur when the water table is 0.5 to 1.5 feet below the surface depending upon soil permeability.

Indicators of wetland hydrology may be divided into recorded data and field data. Recorded data may be obtained from aerial photographs, soil surveys, historical data, flood plain delineations or tide/stream gauges. In the field, wetland hydrology may be evidenced by visual observation of saturation, inundation, or depth to standing water. However, it is not necessary to directly demonstrate the hydrology.

Other field indicators of wetland hydrology include drainage patterns, morphological plant adaptations, oxidized root channels, water marks, surface scouring, water-stained leaves, sediment deposits; drift lines, moss lines, and bare areas. Unless an area has been hydrologically modified, the hydrologic parameter may also be inferred from the soil profile.

6.2.3 Hydric Soils

The third step was to assess the presence of hydric soils. "Hydric soils" are soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and revegetation of hydrophytic vegetation (USDA-SCS, 1985). Soils are considered hydric when they are (1) somewhat poorly drained and have a seasonal high water table less than 0.5 feet from the surface; or (2) poorly drained or very poorly drained and have a seasonal high water table less than 1.0 or 1.5 feet from the surface. The high water table must be present for a week or more during the growing season (EL, 1987). Soils that are ponded or flooded for long or very long duration during

the growing season are also classified as hydric. All organic soils (histosols) or mineral soils with a histic epipedon are considered hydric soils.

In the field, a hand auger was used for sampling the soil to examine indicators of hydric soils such as low chroma, colors, mottling, organic accumulation, and high water table. Soils were generally examined to a depth of approximately 16-20 inches. Hydric conditions for mineral soils with low to moderate organic content were most commonly demonstrated by gleying and mottling. Gleyed soils are a result of gleization which is manifested by the presence of neutral gray, bluish or greenish colors through the soil matrix or in mottles (spots or streaks). Mineral soils were compared to a Munsell soil chart (Kollmorgen Corp., 1975) to determine soil color. Soils were considered hydric if they were gleyed or if the top of the B horizon had a chroma of 1 or less if mottling was not present, or a chroma of 2 or less when mottling was present.

Low chroma colors are an index of the degree of soil reduction as a result of anaerobic conditions. Low chroma colors include black, various shades of grey, and the darker shades of brown and red. These criteria allow most soils to be classified as hydric or non-hydric. Hydric soils that have been effectively drained may still show low chroma colors, but are no longer considered to be hydric because they lack hydrology. Low chroma colors may not be used as an indicator of hydric soils in those soils that are sand, are deeply colored as a result of their parent material, or have recently been formed (i.e., alluvial). These soils must be evaluated more carefully under the procedures outlined by the Corps of Engineers Wetland Delineation Manual (EL, 1987).

Sandy soils may be considered to be hydric if organic materials have accumulated above or in the surface horizon. Dark vertical streaking of subsurface horizons caused by downward movement of organic matter also indicates a hydric soil. This may be associated with a spodic horizon located at the average depth of the water table.

The Soil Conservation Service (SCS), in cooperation with the National Technical Committee for Hydric Soils (NTCHS), has prepared a list of the Nation's hydric soils (USDA SCS, 1987). In addition, the SCS publishes county soil surveys for areas where soil mapping has been completed. Unlisted soils are considered to be non-hydric. However, some phases of unlisted soils may contain hydric inclusions and thus be associated with wetlands. These cases must be verified in the field. Field soil characteristics are given precedence over how a site is mapped on a county soil survey. Alluvial soils may not show hydric characteristics due to their recent formation, but may be considered to be hydric for the purposes of wetland delineation.

6.3 Results

Wetlands that were field identified within the project area were all determined to be freshwater palustrine system wetlands.

According to the vegetative succession of a wetland, a classification of habitat was assigned. These classifications include Palustrine emergent wetlands (PEM), Palustrine forested wetlands (PF01) or any combination of the two (Cowardin, 1979).

Three areas of freshwater wetlands were identified within the project area (Figure 4). They are identified as follows:

Wetland Lines 01 through 05 – Includes in intermittent stream classified as intermittents riverine cable bottom and adjacent stream bed (R4SB). Palustrine forested wetland (PF01) located south of the existing buildings. It is dominated by spice bush (*Lindera* benzoin), sensitive fern (*Onoclea sensibilis*) and red maple (*Acer rubrum*). This wetland originates from a storm sewer pipe under the parking area. The northern portion of this ditch which is relatively steep does not have hydric soils and is not classified as wetlands or waters of the US by the USACE. As the terrain becomes more level, wetland vegetation and hydric soils define the narrow wetland channel which flows toward the abandoned treatment facility. This wetland area ends at a culvert under the access road to the existing wastewater treatment facility.

Immediately south of the access road wetland lines 03 and 04 originate. This area is a palustrine emergent wetland (PEM), which is dominated by jewel weed (*Impatiens capensis*), cattail (*Typha latifolia*), purple loosestrife (*Lythrum salicaria*), tear-thumb (*Polygonum sagittatum*) and nut sedge (*Cyperus esculentus*). Water from this wetland area flows into a small basin dominated by common reed (*Phragmites australis*) and then flows east onto property owned by the water authority. Wetland line 05 connects the off property boundary of the wetland with wetland line 04 completing the wetland polygon.

Wetland lines 06 through 08 includes PF01 wetlands which follow R4SB and riverine upper perennial open water (R3OW) waters) to a culvert under Sterling Forest Road. Wetland area 08 is located between the water authority access road and the AT&T access road. This wetland area was ponded in the spring as is a vernal pond. Vegetation within the wetland area includes jewel weed, spicebush, skunk cabbage (*Symplocarpus foetidus*) and sensitive fern.

Wetland line 09 defines the edge of Sterling Forest Lake and is waters of the United States. Wetland areas 10 and 11 originate at the base of the earthen dam as a small creek and flow into the property owned by the water company. This small creek connects to wetland area 03 and 05 and 06 and 07 at property boundaries. Vegetation within these wetlands includes skunk cabbage, jewel weed and spicebush.

Areas bounded by flags 1201-1216 and EWC-1 –EWC34 are of emphermal water courses supported primarily by runoff from existing roadway. While these areas may

carry surface water early in the growing season and after precipitation and snowmelt the vegetation is similar to the adjacent uplands. During a June 2011 field inspection the USACE determined that these features are not wetlands or other waters of the U.S.

6.3.1 Hydrophytic Vegetation

Vegetation on the Site was evaluated during field investigations. Woody vegetation in the PF01 areas included red maple (FAC) and spicebush (FACW-). Herbaceous vegetation is dominated by skunk cabbage (OBL), jewel weed (FACW), common reed (FACW) and purple loosestrife (FACW+).

6.3.2 Wetland Hydrology

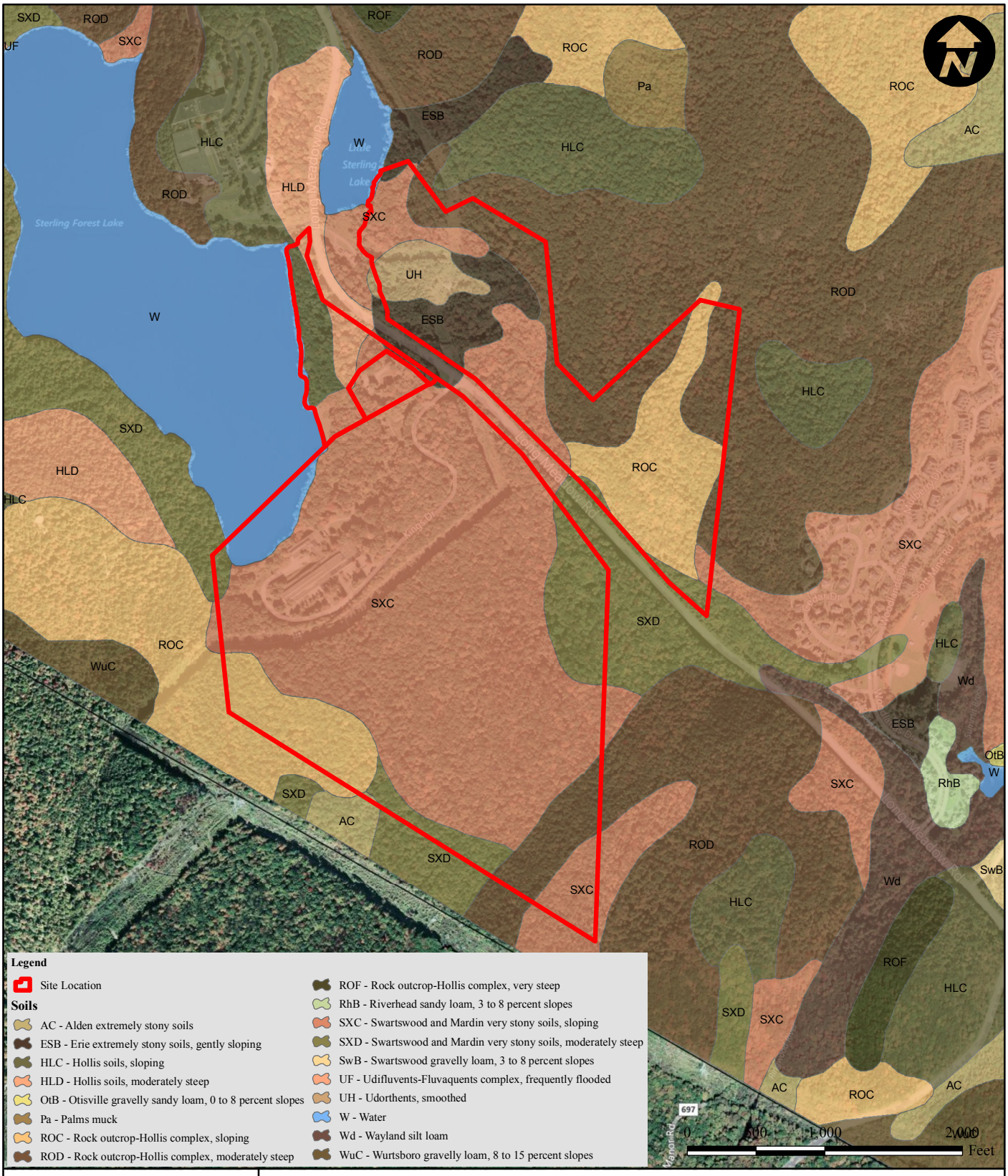
The hydrology of Wetland Areas 01 through 07 and areas 10 through 11 appear to be driven by three factors; stormwater flowing into catch basins, groundwater seeps discharging to the surface and Sterling Forest Lake discharging from below the earthen dam. Wetland Area 08 appears to be groundwater driven either through a seep or spring under the emergent portion of the wetland and stormwater runoff. Wetland area 09 is Sterling Forest Lake which is stream fed.

6.3.3 Hydric Soils

The Soil Conservation Service (SCS) publishes county soil surveys for areas where soil mapping is completed. The soils of Orange County have been mapped. None of the soils identified as occurring on the Site are listed on the Orange County List of Hydric Soils. The following soils have been mapped on the Site (Figure 7):

Erie extremely stony soils, gently sloping (ESB) – These soils are somewhat poorly drained, gently sloping soils which have a fragipan. They are formed in glacial till. The water table is perched above the fragipan during the spring months. Permeability in the surface layer is moderate and slow to very slow in the fragipan.

Rock outcrop-Hollis Complex, sloping (ROC) – This complex of exposed bedrock and shallow Hollis soils is found on hill crests, hill tops and ridges. The Hollis soil is formed from a thin layer of glacial till over shist, gneiss and granite. Slopes range from 3 to 15 percent but are predominantly in the 8 to 15 percent range. No free water is perched above the bedrock except in areas where the rock is poorly jointed. Permeability is moderate to moderately rapid and depth to bedrock is typically 10 to 20 inches.



SOILS MAP

World Headquarters of Jehovah's Witnesses
Watchtower Bible and Tract Society of New York, Inc.
Warwick, Orange County, New York

PS&S
integrating design & engineering

Source:
U.S. Department of Agriculture, Natural Resources Conservation Service, Soil Survey Geographic (SSURGO) database for Orange County, New York, 2006.
ArcGIS Online - Bing Maps Hybrid

Drawn By: EB	Scale: 1" = 1,000'	Project No. 03171.001.010
Chk'd By: BSK	Date: 10/21/2011	Figure No. 7

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Rock outcrop-Hollis Complex, moderately steep (ROD) - This complex of exposed bedrock and shallow Hollis soils is found on hill crests, hill tops and ridges. The Hollis soil is formed from a thin layer of glacial till over shist, gneiss and granite. Slopes range from 15 to 35 percent but are predominantly in the 15 to 25 percent range. No free water is perched above the bedrock except in areas where the rock is poorly jointed. Permeability is moderate to moderately rapid and depth to bedrock is typically 10 to 20 inches.

Swartswood and Mardin very stony soils, sloping (SXC) – This mapping unit consists of well drained and moderately well drained Swartswood and moderately well drained Mardin soils. These soils have a deep fragipan. They are formed from glacial till on hill crests, hill tops and ridges. Slopes range from 3 to 15 percent but are predominantly in the 8 to 15 percent range. The water table is perched above the fragipan in the early spring. Permeability is moderate above the fragipan, slow to very slow through the fragipan and slow to moderately slow below the fragipan.

Swartswood and Mardin very stony soils, moderately sloping (SXD) – This mapping unit consists of well drained and moderately well drained Swartswood and moderately well drained Mardin soils. These soils have a deep fragipan. They are formed from glacial till on hill crests, hill tops and ridges. Slopes range from 15 to 35 percent but are predominantly in the 15 to 25 percent range. The water table is perched above the fragipan in the early spring. Permeability is moderate above the fragipan, slow to very slow through the fragipan and slow to moderately slow below the fragipan.

Udorthents, smoothed (UH) – These soils formed in manmade cut and fill areas. They are generally near industrial sites, urban developments and other construction sites. They consist of excavated earth that has been stockpiled for eventual use as fill; soil and rock that has been trucked from other areas and leveled; or soil left in areas that have been excavated. These soils are excessively drained. Bedrock is typically at depths of five (5) feet. Depth to the seasonal high water table is shallow.

A review of the Site development plan indicates that less than one (1) acre of USACE wetlands will be impacted by the proposed development. USACE has completed its field inspection during the 2011 growing and verified the limits of waters of the US (including wetlands). The current design largely avoids impacts to wetlands and waters of the US.

7.0 CONCLUSIONS

Field surveys were conducted to inventory biological resources on the site and to evaluate the site for the presence or absence or Federal or State listed threatened, endangered, species of special concern and critical habitat for these species. Surveys were conducted from April through September and included a delineation of wetlands on the eastern portion of the property. Surveys included a survey of the birds potentially breeding on the site and a herpetological survey. A total of 153.5 hours of observations were conducted on the site from between April and September.

New York Natural Heritage database list the presence of one threatened plant, Terrestrial starwort (*Callitriche terrestris*) and three endangered plants, Green parrot's feather (*Myriophyllum pinnatum*), Hyssop skullcap (*Scutellaria integrifolia*) and Michaux's blue-eyed grass (*Sisyrinchium mucronatum*) known to occur in the vicinity of the site. While the site contains suitable habitat for each of these species, only the Hyssop skullcap was observed on the site in 2007 and not in 2010. These plants were observed outside of the limits of disturbance for the project.

The New York Natural Heritage database lists one threatened species, the timber rattlesnake, and six species of special concern in the vicinity of the site. The site does not contain suitable habitat to support a hibernaculum for timber rattlesnakes, a State listed threatened species. No rattlesnakes were observed on the site during these investigations. The site does provide suitable foraging habitat for snakes. Potential impacts to foraging snakes can be avoided by pre-construction fencing and monitoring during construction activities.

During the survey three (3) of the State species of special concerns, red-shouldered hawk, eastern bluebird and the box turtle, were observed on the site and a previous survey documented the wood turtle as occurring on site. Wood turtles may the portion of the Site northeast of Sterling Forest Road for breeding and hibernating. Given the terrestrial wandering tendencies of this species, the entire site may serve as suitable foraging habitat for this species. No development activities are proposed within the breeding and overwintering habitat likely utilized by wood turtles. Pre-construction fencing and monitoring is recommended to prevent impacts to these species during construction activities.

Box turtles utilize open old field habitat and wooded habitat on the site. The project will result in habitat loss for this species. Pre-construction fencing and monitoring is recommended to prevent impacts to these species during construction activities. It is anticipated that the surrounding State parks will continue to provide suitable habitat for this species in the vicinity of the Site.

The eastern bluebird is an open country species. The open habitat along the power-line right-of-way will be maintained subsequent to the proposed development. It is anticipated that this species will continue to utilize the existing habitat. Installation of nesting boxes could increases nesting opportunities for eastern bluebirds along the power line right-of-ways and other open habitat on the site.

The red-shouldered hawks will likely forage along the power line right-of-way on the site. This habitat will not be disturbed by the proposed construction. The Site is also bounded by two State Parks which provide suitable nesting and foraging habitat for this species. It is anticipated that this species will not be adversely impacted by the proposed development.

A wetland delineation was completed for the portion of the site east of Sterling Road. There are no New York State Department of Environmental Conservation (NYSDEC) mapped wetlands on this portion of the property. PS&S delineated US Corps of Engineers (USACE) regulated wetlands and waters of the United States. Based on the proposed development scenario, the project will permanently impact less than 0.1 acre of USACE regulated wetlands. Temporary wetlands impacts are anticipated to be less than 0.25 acre. No NYSDCE wetlands will be disturbed by the proposed project.

8.0 REFERENCES

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APPENDIX 1

Summer Woodland Bat Survey

Orange County, New York

Summer Woodland Bat Survey
Watchtower Project

June 7 and 8, 2010

Bat Conservation and Management, Inc.
Carlisle, Pennsylvania

Summer Woodland Bat Survey
Watchtower Project

Contents

Tables

Figures

Cover:
9m Triple-high mist net set B at Site 2

Summer Woodland Bat Survey
Watchtower Project

June 7 and 8, 2010

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Report Prepared by:

John Chenger
Aimee Haskew
June 9, 2010

General Sampling Location

Figure 1. Watchtower Project, Orange County, New York

Executive Summary

The objective of this study was to provide an inventory of summer bat species occurring in the vicinity of the Watchtower Project in Orange County, New York. Bat Conservation and Management, Inc. (BCM) of Carlisle, Pennsylvania conducted a summer mist net survey meeting the protocols set forth in the United States Fish and Wildlife Service Indiana Bat Revised Recovery Plan. Based on the acreage of the project area with suitable bat roost habitat (less than 250 acres), two (2) sites were selected for summer mist net surveys.

Six (6) individuals of three (3) species were captured including the big brown bat (*Eptesicus fuscus*), eastern red bat (*Lasiurus borealis*), and little brown bat (*Myotis lucifugus*). No Indiana bats (*Myotis sodalis*) or eastern small-footed myotis (*Myotis leibii*) were captured.

Introduction

Background

The Watchtower Project is located in Orange County New York. The project area is considered to be within the summer range of the Indiana bat. To satisfy compliance requests by the US Fish and Wildlife Service (USFWS) a summer mist net survey was completed in accordance with USFWS approved protocols. This survey investigated the study area to determine the likelihood of a summer maternity colony of Indiana bats (*Myotis sodalis*) or eastern small-footed myotis (*Myotis leibii*) in the project area.

Objective

The objective of this study is to provide an inventory of summer bat species occurring in the vicinity of the Watchtower Project. BCM conducted mist net surveys meeting the protocols set forth in the United States Fish and Wildlife Service Indiana Bat Revised Recovery Plan.

Indiana Bat

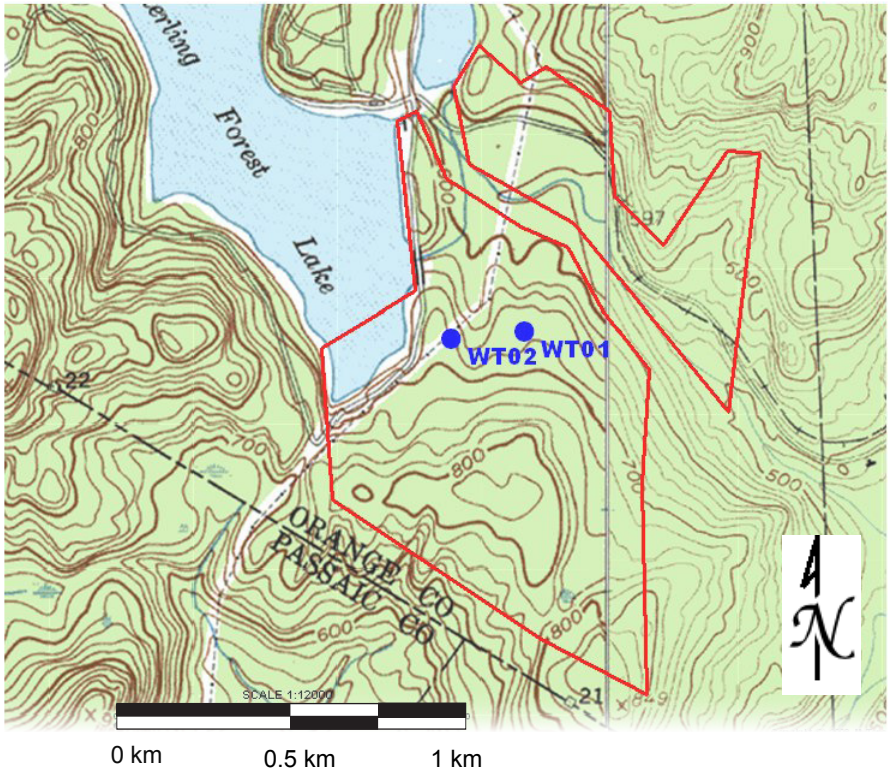
The Indiana bat (IBAT) is a rare woodland bat species with documented occurrences in Pennsylvania and all adjoining states; however, little survey data is available for this species. Indiana bats hibernate in caves and abandoned deep mines during the winter months (November-March), and use a variety of upland, wetland, and riparian habitats during the spring, summer, and fall. Female IBATs form nursery colonies under the exfoliating bark of a variety of tree species (Thomson 1982). Land clearing may adversely affect roosting bats or the quality of foraging habitat. In order to protect suitable habitat, periodic surveys for these individuals are needed. The United States Fish and Wildlife Service (USFWS) typically requests that the site developer conduct a summer Indiana bat survey between May 15 and August 15 (USFWS 2007).

Table 1: Site Co-ordinates

Trap Site	Latitude	Longitude
1	41° 09' 31.42"	74° 15' 09.78"
2	41° 09' 35.10"	74° 15' 20.30"

WGS 84 datum

Figure 2: Survey Locations



Survey site Watchtower 01 (WT01) and survey site Watchtower 02 (HC02)
For detailed, current property boundary maps, contact the developer.

Table 2: Net Night Level of Effort

Trap type	Site 1	Site 2	Totals
Triple-high	4	4	8
Totals	4	4	**8**

One net night is any size or stack of nets stretched between 2 poles.

Methods and Results

Summer sampling was conducted on June 7 and 8, 2010 and consisted of two (2) mistnet sites (Table 1) sampled for two nights each.

The sites were sampled using traditional mist netting techniques. Mist nets were manufactured by Avinet, Inc. (Dryden, NY; 38mm mesh - nylon, reduced bag, 50/2, 38mm mesh, 2.6m high, 4 shelves). Nets were set according to habitat structure at each site. “Triple-high” nets consist of three 2.6 meter high nets stacked between two poles. The net lengths utilized were determined by the physical characteristics of the site and ranged in length between 9 and 12 meters. Nets were placed over existing roads in an effort to catch bats that utilized these features as flight corridors to move through the habitat.

A net-night was defined as any configuration of mist net length and height between two poles set up for one night. Net-night level of effort totaled eight (8) net-nights (Table 2) consisting of four triple-high mist nets. The recommended level of effort for two sites as described by the Indiana Bat Revised Recovery Plan is eight (8) net-nights (Appendix C). Based on the project area being less than 250 acres, two (2) mist net sites were determined to sufficiently sample the area for Indiana bats.

Site one contained two 12m long triple-high mist nets. Site two contained two 9m long triple-high mist nets. The total survey effort at this site met the recommendations outlined by the United States Fish and Wildlife Service Indiana Bat Revised Recovery Plan (Appendix C).

The two mist net sites were selected by BCM based on existing habitat structure serving as flight corridors such as roads and streams (Figure 2). Data were collected at each mist netting site, as shown on the Bat Conservation and Management, Inc. "Bat Survey Data Form" (Appendix A). Recorded information included detailed net setup, weather conditions during sampling, and general habitat information. Data recorded on captured bats included time of capture, species, age (Brunet-Rossinni and Wilkinson 2009), sex, reproductive condition (Racey 2009), weight, forearm length, and wing score (Reichard 2008). The reproductive condition of female bats can be used to determine which species have maternity colonies in the general vicinity of the capture site during summer months.

Six (6) individuals of three (3) species were captured including two (2) big brown bats (*Eptesicus fuscus*), two (2) eastern red bats (*Lasiurus borealis*), and one (1) little brown bat (*Myotis lucifugus*). Three (50%) of the captured bats were male, two (33%) were female, and one individual escaped the mistnet before sex could be determined. Of the two (2) females, one was lactating and one was non-reproductive. High numbers of pregnant, lactating, or post lactating bats suggests that a maternity colony of these species may be nearby.

Table 3: Capture Summary

Sample Site		Total Species	Total Captures
Name	Nights		
Site 1	2	3	**6**
Site 2	2	0	**0**
Project Totals	**4**	**3**	**6**

Table 4: Mist Net Site Totals

Species		Site 1	Site 2	Totals M	F	Unk
Eptesicus fuscus	M	1	-	**1**		
	F	1	-		**1**	
	Unk	-	-			**0**
Lasiurus borealis	M	2	-	**2**		
	F	-	-		**0**	
	Unk	1	-			**1**
Myotis lucifugus	M	-	-	**0**		
	F	1	-		**1**	
	Unk	-	-			**0**
Totals		**6**	**0**	**3**	**2**	**1**
		6		**6**		

Table 5: Reproductive Condition of Female Bats

Species		Site 1	Site 2	Totals				
				NR	PG	L	PL	
Eptesicus fuscus	NR	-	-	**0**				**1**
	PG	-	-		**0**			
	L	1	-			**1**		
	PL	-	-				**0**	
Lasiurus borealis	NR	-	-	**0**				**0**
	PG	-	-		**0**			
	L	-	-			**0**		
	PL	-	-				**0**	
Myotis lucifugus	NR	1	-	**1**				**1**
	PG	-	-		**0**			
	L	-	-			**0**		
	PL	-	-				**0**	

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Appendix A

Mist Net Data Sheets

Notes and key to abbreviations used on data sheets

Instructions

All information must be completed each night. Partially complete forms will not be accepted. Completed forms are to be turned in to the Team Leader each morning.

PROJECT: Name of the entire survey project.
SITE#: The number given to every trap site in a seperate geographic location. Site # remains the same regardless of how many nights are spent at the same location.
DATE: Pre-midnight date which trapping began.
LONGITUDE/LATITUDE: Coordinates from a GPS receiver.
I.D. BY: USFWS qualified person identifying bats at this site.
MOON AFFECT: Was moon present during survey? If so what phase? Was moonlight illuminating nets? Note times.
NUMBER OF NETS/TRAPS: Description of nets, e.g. A: 3Hx9m, B: 2Hx6m, C: 1Hx9mx12m "L" configuration.
SKY CONDITIONS: General weather conditions and temperature in °F, at start, middle, and end of sampling times.
WIND CONDITIONS: Use Beauford scale and note time.
SITE DESCRIPTION: A general overview of the site, e.g. "Shallow stream with long pools surrounded by deciduous forest with maple, oak, and beech. A small clearing and residence is nearby."
ANDERSON III CODE: Use Level III codes and percentages within 1KM of site. Percentages should total 100%.
DISTURBANCE CODE: List up to three of the most significant disturbances within 500 meters. Include distance to disturbance.

Disturbance Codes and Key

PROXIMITY	TYPE		
1 Disturbance on site	**A** Dumping	**H** Unimproved roads	
	B Party spot	**I** Recreation area	
2 Disturbance within 100 meters of site	**C** Buildings	**J** Mining	
	D Agriculture	**K** Fire	
	E Utility rights-of-way	**L** Clearcut	
3 Disturbance 100-500 meters of site	**F** Railroad rights-of-way	**M** Insect defoliation	
	G Improved roads	**N** No disturbance	

Beuford Wind Scale Codes and Key

Code	Speed(m/sa)	Description	Land Condition	Comfort
0	0 - 0.5	Calm	Smoke rises	No noticeable wind
1	0.5 - 1.5	Light air	Smoke drifts vertically	
2	1.6 - 3.3	Light breeze	Leaves rustle	Wind felt on face
3	3.4 - 5.4	Gentle breeze	Wind extends	Hair disturbed, clothing flaps
4	5.5 - 7.9	Moderate breeze	Small branches in motion	Hair disarranged, raises dust & loose
5	8.0 - 10.7	Fresh breeze	Small trees w/leaf begin to sway	Force of wind felt on body
6	10.8 - 13.8	Strong breeze	Whistling in telegraph wires large branches in motion	Umbrellas used with difficulty
7	13.9 - 17.1	Near gale	Whole trees in motion	Inconvenience in walking
8	17.2 - 20.7	Gale	Twigs broken from trees	Progress impeded/difficult in gusts

Common name:	Species:
Little brown	*Myotis lucifugus*
Big brown	*Eptesicus fuscus*
Pipistrelle	*Pipistrellus subflavus*
Northern longear	*Myotis septentrionalis*
Smallfooted	*Myotis leibii*
Indiana	*Myotis sodalis*
Red	*Lasiurus borealis*
Hoary	*Lasiurus cinereus*
Silver haired	*Lasionycteris noctivagans*
Townsend's Big-eared	*Corynorhinus townsendii*
Rafinesque's Big-eared	*Corynorhinus rafinesquii*
Evening	*Nyctuceius humeralis*

Reproductive condition:	***Age:***
NR= Non Reproductive	A: Adult
PG= Pregnant	J: Juvenile
L= Lactating	
PL= Post Lactating	
SCR= Scrotal	

DO NOT WRITE IN MARGINS OF DATA SHEETS

Anderson Classification Codes first and second level categories

1	**Urban or Built-Up Land**
11	Residential
12	Commercial Services
13	Industrial
14	Transportation, Communications
15	Industrial and Commercial
16	Mixed Urban or Built-Up Land
17	Other Urban or Built-Up Land
2	**Agricultural Land**
21	Cropland and Pasture
22	Orchards, Groves, Vineyards, Nurseries
23	Confined Feeding Operations
24	Other Agricultural Land
3	**Rangeland**
31	Herbaceous Rangeland
32	Shrub and Brush Rangeland
33	Mixed Rangeland
4	**Forest Land**
41	Deciduous Forest Land
42	Evergreen Forest Land
43	Mixed Forest Land
5	**Water**
51	Streams and Canals
52	Lakes
53	Reservoirs
54	Bays and Estuaries
6	**Wetland**
61	Forested Wetlands
62	Non forested Wetlands
7	**Barren Land**
72	Beaches
73	Sandy Areas Other than Beaches
74	Bare Exposed Rock
75	Strip Mines, Quarries, and Gravel Pits
76	Transitional Areas
77	Mixed Barren Land

Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246

Project: Watchtower	County: Orange	Site #: 1	Night #: 1	Site Name: WT01	Date: 6/7/2010
Latitude: 41 09 31.42	Longitude: 74 15 09.78			Datum: WGS 84	Elevation: 206 circle: feet meters	ID By: Kevin Rhome
Observers: Risa Wright John Peaden				Actual net open time: 20:40	Actual net close time: 01:40

Sky Conditions:	dusk, note time+temp+description: 20:40 62.7°F Partly Cloudy	mid-sample, note time+temp+description: 2354, 56.1°F, clear	end, note time+temp+description: 0140, 55.7°F, clear
Wind Description:	0	0	0

Moon effect: (specify net and effect length if any) Start: Stop:

Camera:

Photos:

Number of nets/traps: (label and include size and configuration) A=3h×12m B=3h×12m

Site Description: (net placement, stream data, cover composition, surrounding habitat, dominant species) Nets A & B are set over an improved road surrounded by deciduous forest

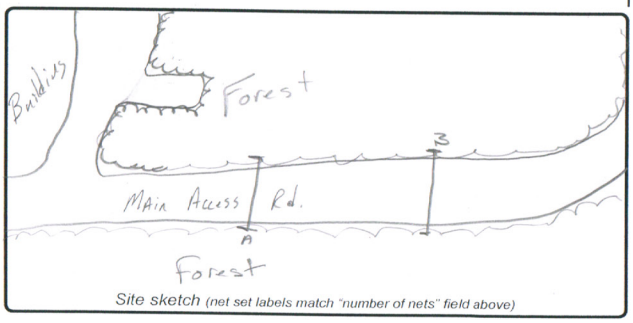
Over Water? Y (N)

Pool size: WxL (m)

Swoop zone: WxL (m)

	most common+distance	2nd common+distance	3rd common+distance
Anderson Level II:	41 | 70%	52 | 20%	15 | 10%
Disturbance codes:	G | 1	C | 2	E | 3

Remarks: (note rain event time and length, other wildlife, etc.)



Site sketch (net set labels match "number of nets" field above)

Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246 Page 1 of 1

Project: Watchtower County: Orange Site #: 1 Night #: 1 Site Name: WT01 Date: 6-7-10

Time	Species	Age (A/JV)	Sex (M/F)	Reproductive Condition	Weight (grams)	Forearm Length	Above ground	Net Set	Band/Wing Score	Comments/Photo #
2115	Lasiurus borealis	A	M	NR	12.4	36	4m	A	0	Hair sample WT01-01 1
2118	Lasiurus borealis	A	M	NR	13.4	37	3.5m	B	0	Hair sample WT01-02 2
2130	Eptesicus fuscus	A	M	NR	16.6	44	4m	B	1	3
2130	Eptesicus fuscus	A	F	L	20.9	44	4.5m	B	0	4
0015	Lasiurus borealis						3m	A		escaped net 5
0057	Myotis lucifugus	A	F	NR	9.3	36	7m	A	0	6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20

Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246

Project: Watchtower	County: Orange	Site #: 1	Night #: 2	Site Name: WT01		Date: 6-8-10
Latitude: 41 09 31.42	Longitude: 74 15 09.78			Datum: WGS84	Elevation: 206 circle: feet (meters)	ID By: Kevin Thome
Observers: Lisa Wright, John Peaden				Actual net open time: 2040	Actual net close time: 0140	

	dusk, note time+temp+description	mid-sample, note time+temp+description	end, note time+temp+description
Sky Conditions:	2040, 59.1°F Partly Cloudy	2315, 54.6°F, Clear	0140, 50.7°F, Clear
Wind Description:	0	0	0

Moon effect: (specify net and effect length if any)

Start:

Stop:

Camera:

Photos:

Number of nets/traps: (label and include size and configuration) A = 3h x 12m B = 3h x 12m

Site Description: (net placement, stream data, cover composition, surrounding habitat, dominant species) Nets A + B are placed over an improved road surrounded by deciduous forest.

Over Water? Y (N)

Pool size: WxL (m)

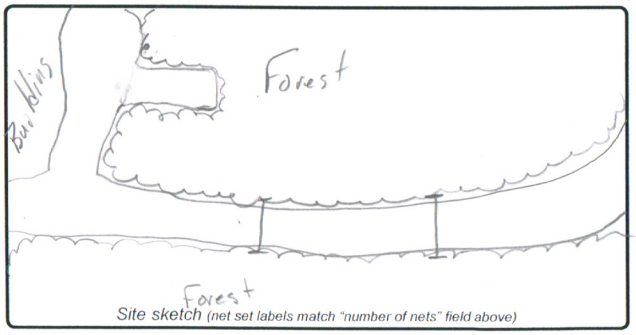
Swoop zone: WxL (m)

Maple, Oak, Beech

	most common+distance	2nd common+distance	3rd common+distance
Anderson Level II:	41 | 70%	52 | 20%	15 | 10%
Disturbance codes:	G | 1	C | 2	E | 3

Remarks: (note rain event time and length, other wildlife, etc.)

NO BATS Captured



Site sketch (net set labels match "number of nets" field above)

Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246 Page 1 of 1

Project: Watchtower County: Orange Site #: 1 Night #: 2 Site Name: WT01 Date: 6-8-10

Time	Species	Age (A/JV)	Sex (M/F)	Reproductive Condition	Weight (grams)	Forearm Length	Above ground	Net Set	Band/Wing Score	Comments/Photo #
	NO BATS Captured									1
										2
										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20

Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246

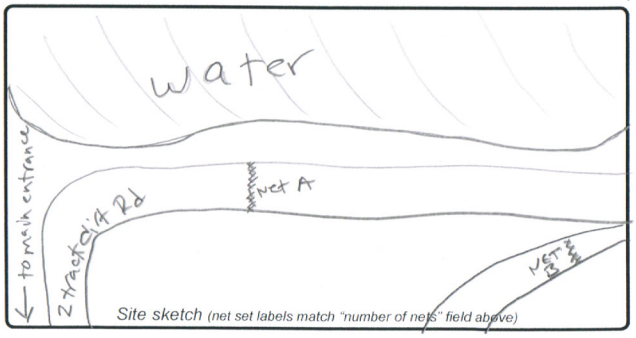
Project: Watchtower	County: Orange	Site #: 02	Night #: 1	Site Name: WT02		Date: 6/7/10
Latitude: 41° 09' 35.1"	Longitude: 74° 15' 20.3"			Datum: WGS 84	Elevation: 702 (circle: feet / meters)	ID By: Kevin Rhome
Observers: Crystal Prussick, Aimee Haskew				Actual net open time: 2040		Actual net close time: 0144

	dusk, note time+temp+description	mid-sample, note time+temp+description	end, note time+temp+description
Sky Conditions:	clear, 61.5°F, 2040	clear, 2303 57.3°F	clear, 0136, 55.2°F
Wind Description:	calm (0)	calm - 0	calm - 0

Moon effect: (specify net and effect length if any)	Start: / Stop:	Camera:	Photos:
Number of nets/traps: (label and include size and configuration)	A: 3H×9m B: 3H×9m		
Site Description: (net placement, stream data, cover composition, surrounding habitat, dominant species)	Nets A stacked over jeep trail, Nets B stacked over smaller trail; dominant spp. include oak+maple; nets are lakeside; sparse understory	Over Water? Y (N)	Pool size: WxL (m) / Swoop zone: WxL (m)

	most common+distance	2nd common+distance	3rd common+distance
Anderson Level II:	52 | 75%	41 | 20%	12 | 5%
Disturbance codes:	G | 1	C | 3	N | 3

Remarks: (note rain event time and length, other wildlife, etc.)



Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246 Page 1 of 1

Project: Watchtower County: Orange Site #: 2 Night #: 1 Site Name: WT02 Date: 7 June 2010

Time	Species	Age (A/J/V)	Sex (M/F)	Reproductive Condition	Weight (grams)	Forearm Length	Above ground	Net Set	Band/Wing Score	Comments/Photo #
	0 captures									1
										2
										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20

Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246

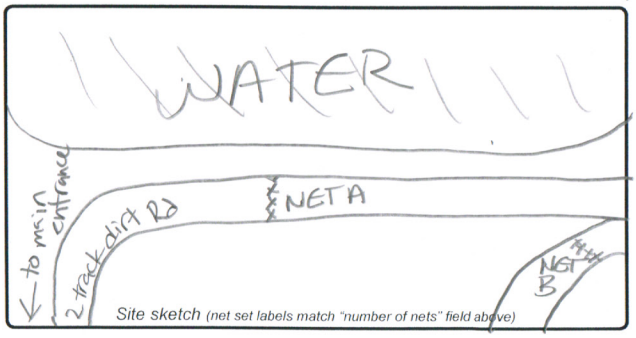
Project: Watchtower	County: Orange	Site #: 02	Night #: 2	Site Name: WT02	Date: 6/8/10
Latitude: 41° 09' 35.1"	Longitude: 74°15' 20.3"			Datum: WGS84	Elevation: circle: (feet) 702 meters
ID By: Kevin Rhome					
Observers: Crystal Prussick, Aimee Hasken				Actual net open time: 2040	Actual net close time:

	dusk, note time+temp+description	mid-sample, note time+temp+description	end, note time+temp+description
Sky Conditions:	2045, 59.0°F, clear	2304, 54.1°F, clear	0139, 50.1 °F, clear
Wind Description:	calm Ø	calm Ø	calm Ø

Moon effect: (specify net and effect length if any)	Start: Stop:	Camera:	Photos:
Number of nets/traps: (label and include size and configuration)	A: 3H×9m B: 3H×9m		
Site Description: (net placement, stream data, cover composition, surrounding habitat, dominant species)	Nets A stacked over jeep trail, Nets B stacked over smaller trail; dominant spp include oak + maple; not near lakeside; sparse understory	Over Water? Y (N)	Pool size: WxL (m) / Swoop zone: WxL (m)

	most common+distance	2nd common+distance	3rd common+distance
Anderson Level II:	52 | 75%	41 | 20%	12 | 5%
Disturbance codes:	G | 1	C | 3	N | 3

Remarks: (note rain event time and length, other wildlife, etc.)



Site sketch (net set labels match "number of nets" field above)

Bat Survey Data Form

Bat Conservation and Management, Inc. • 814-442-4246 Page 1 of 1

Project: Watchtower County: Orange Site #: 2 Night #: 2 Site Name: WT02 Date: 8 June 2010

Time	Species	Age (A/JV)	Sex (M/F)	Reproductive Condition	Weight (grams)	Forearm Length	Above ground	Net Set	Band/Wing Score	Comments/Photo #
	Ø captures									1–20

Appendix B

Representative Site Photographs

Net Site 1 - Triple-high mist net set A

Net Site 1 - Triple-high mist net set B

Net Site 2 - Triple-high mist net set A

Net Site 2 - Triple-high mist net set B

Appendix C

Indiana Bat Sampling Protocol

Note: These Guidelines are extracted from the April 2007 Draft Revised Indiana Bat Recovery Plan.

RATIONALE

A typical mist-net survey is an attempt to determine presence or probable absence of the species; it does not provide sufficient data to determine population size or structure. Following these guidelines will standardize procedures for mist netting. It will help maximize the potential for capture of Indiana bats at a minimum acceptable level of effort. Although capture of bats confirms their presence, failure to catch bats does not absolutely confirm their absence. Netting effort as extensive as outlined below usually is sufficient to capture Indiana bats if they are present. However, there have been instances in which additional effort yielded detection when the standard effort did not.

Some mist-netting projects will require modification (or clarification) of these guidelines; these situations should be resolved through coordination with the Service Field Office responsible for the state in which your project occurs. Consultation with the Field Office is always recommended, particularly for large-scale netting efforts.

The Service accepts the results of these surveys to determine presence for the purposes of Section 7 consultation. Survey results are valid for at least two years.

NETTING SEASON: May 15 - August 15

May 15-August 15 are acceptable limits for documenting the presence of summer populations of Indiana bats, especially maternity colonies. (However, see Kiser and MacGregor 2005 for precautions regarding early-season surveys between May 15 and June 1, as well as late-season surveys between August 1 and August 15). Capture of reproductive adult females (i.e., pregnant; lactating, or post-lactating) and/or young of the year during May 15-August 15 indicates that a nursery colony is active in the area. Outside these dates, data cannot be used to document the presence or probable absence of summer populations.

EQUIPMENT

Mist nets to be used for Indiana bat surveys should be the finest, lowest visibility mesh commercially available: 1) In the past, this was 1 ply, 40 denier monofilament—denoted 40/1; 2) Currently, monofilament is not available, and the finest on the market is 2 ply, 50 denier nylon denoted 50/2; 3). The finest mesh size available is approximately 38 mm (—1 1/2 in).

No specific hardware is required. There are many suitable systems of ropes and/or poles to hold nets. The system of Gardner et al. (1989) has been widely used. See NET PLACEMENT below for minimum net heights, habitats, and other netting requirements that affect the choice of hardware.

NET PLACEMENT

Potential travel corridors such as streams or logging trails typically are the most effective places to net. Place nets approximately perpendicular across the corridor. Nets should fill the corridor from side to side and from stream (or ground) level up to the overhanging canopy. A typical set is 7 m high consisting of three or more nets stacked on top one another and up to 20 m wide. (Nets of different width may be used as the situation dictates).

Occasionally it may be desirable to net where there is no good corridor. Take caution to get nets up into the canopy. The typical equipment described in the section above may be inadequate for these situations, requiring innovation on the part of the researchers.

Exercise safety precautions when placing nets. Poles and nets should be clear of overhead wires. See Kiser and MacGregor (2005) for additional discussion of net placement.

RECOMMENDED NET SITE SPACING

Stream and other linear corridors — one net site per km (0.6 mi) of stream or corridor.

Non-corridor study areas — two net sites per square km of habitat (equivalent to one net site per 123 acres).

The Service Field Office responsible for the state in which your project occurs should be consulted during survey design to resolve issues related to net site spacing for specific projects.

MINIMUM LEVEL OF EFFORT

Netting at each site should include at least four net nights, consisting of: 1) a minimum of two net locations at each site (at least 30 m apart, especially in linear habitat such as a stream . corridor); and 2) a minimum of two nights of netting (i.e., two net locations for two nights = four net nights per site). A "net night" is defined as one net set up for one night. The sample period should begin at sunset and continue for at least 5 hours (longer sample periods may improve success). For purposes of determining presence or probable absence of Indiana bats, four net nights at a site are not required if Indiana bats are caught sooner (i.e., if Indiana bats are caught on the first night of netting, a second night is not required for purposes of documenting presence).

CHECKING NETS

Each net should be checked approximately every 10 minutes. Some researchers prefer continuous monitoring (with or without an electronic bat detector); care should be taken to avoid noise and movement near the nets if this technique is used. When monitoring the site continuously with a bat detector, bats can be detected immediately when they are captured in the net. Prompt removal from the net decreases stress on the bat and potential for the bat to escape (MacCarthy et al. 2006).

APPENDIX 2

Site Photographs

Photo 1: Bluebird habitat along the power line right-of-way.

Photo 2: Potential rattlesnake foraging habitat in hardwood forested portions of site.

Photo 3: Upland deciduous forested habitat in central portion of site.

Photo 4: Bluebird habitat along the power line right-of-way looking from Sterling Forest Park toward site.

Photo 5: Bluebird habitat along the power line right-of-way west of entrance road.

Photo 6: Wet meadow/Emergent wetland southwest of abandon treatment facility. Wetland lines 03 and 04.

Photo 7: Five-lined skink observed adjacent to existing buildings.

Photo 8: Palustrine forested wetlands southwest of Sterling Forest Road. This wetland area is suitable wood turtle habitat. Note stream in background.

Photo 9: Palustrine forested wetlands southwest of Sterling Forest Road. This wetland area is suitable wood turtle habitat.

Photo 10: Ringwood River, located south of Sterling Forest Road. Pool areas provide suitable breeding and over wintering habitat for wood turtles.

Photo 11: Wood turtle habitat adjacent to Ringwood River.

Photo 12: Ringwood River, located south of Sterling Forest Road. Run areas provide suitable breeding and over wintering habitat for wood turtles.

Photo 13: Ringwood River – In addition to wood turtle habitat the river provides habitat for snapping turtles, two lined salamanders, frogs and trout.

Photo 14: Vernal pond in August – Breeding habitat for grey tree frogs, spring peepers and American toads.

APPENDIX 3

Wetlands Delineation Data Forms

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetland Delineation Manual)

Project/Site: Section 85, Block 1, Lots 4.1, 4.2, 51., and 5.2 Applicant/Owner: Watchtower Bible and Tract Society of New York, Inc. Investigator: Brian Kirkpatrick	Date: March 24, 2010 County: Orange State: NY
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain in the Wetland Determination remarks section.)	Community ID: Transect ID: Plot ID: 0115 UPL

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Cornus amomum*	Shrub	FACW	9.		
2. *Celastrus orbiculatus*	Vine	UPL	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC⁻): 100					
Remarks:					

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No Recorded Data Available

Field Observations:
- Depth of Surface Water: ☐ inches
- Depth to Free Water in Pit: ☐ inches
- Depth to Saturated Soil: >18 inches

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name(Series and Phase): SXC	Drainage Class:		
Soil Taxonomy (Subgroup):	Field Observations: Confirm Mapped Type?	No	Yes X

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12					Organic
12+		10YR 4/3	10YR 4/4	50%	Loamy

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes Wetland Hydrology Present? No Hydric Soils Present? No	Is this Sampling Point Within a Wetland? No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetland Delineation Manual)

Project/Site: Section 85, Block 1, Lots 4.1, 4.2, 51., and 5.2 Applicant/Owner: Watchtower Bible and Tract Society of New York, Inc. Investigator: Brian Kirkpatrick	Date: March 24, 2010 County: Orange State: NY
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain in the Wetland Determination remarks section.)	Community ID: Transect ID: Plot ID: 0115 WET

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Cornus amomum*	Shrub	FACW	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC⁻): 100

Remarks:

HYDROLOGY

[ ] Recorded Data (Describe in Remarks):
- [ ] Stream, Lake, or Tide Gauge
- [ ] Aerial Photographs
- [ ] Other

[ ] No Recorded Data Available

Field Observations:
- Depth of Surface Water: [ ] inches
- Depth to Free Water in Pit: [ ] inches
- Depth to Saturated Soil: [12] inches

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [X] Saturated in Upper 12 inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- [X] Oxidized Root Channels in Upper 12inches
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks:

Saturated to surface

SOILS

Map Unit Name(Series and Phase): SXC	Drainage Class:		
Soil Taxonomy (Subgroup):	Field Observations: Confirm Mapped Type?	No	Yes X

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 4/2	10YR 4/6 10YR 4/3		Loamy

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [X] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes Wetland Hydrology Present? Yes Hydric Soils Present? Yes	Is this Sampling Point Within a Wetland? Yes

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetland Delineation Manual)

Project/Site: Section 85, Block 1, Lots 4.1, 4.2, 51., and 5.2 Applicant/Owner: Watchtower Bible and Tract Society of New York, Inc. Investigator: Brian Kirkpatrick	Date: March 24, 2010 County: Orange State: NY
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain in the Wetland Determination remarks section.)	Community ID: Transect ID: Plot ID: 0215 UPL

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Acer rubrum*	Tree	FAC	9.		
2. *Fraxinus americana*	Tree	FACU	10.		
3. *Rosa multiflora*	Shrub	FACU	11.		
4. *Cornus amomum*	Shrub	FACW	12.		
5. *Celastrus orbiculatus*	Vine	UPL	13.		
6.			14.		
7.			15.		
8.			16.		
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC⁻): 100					
Remarks:					

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No Recorded Data Available

Field Observations:
- Depth of Surface Water: ☐ inches
- Depth to Free Water in Pit: ☐ inches
- Depth to Saturated Soil: ☒ >12 inches

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name(Series and Phase): SXC	Drainage Class:		
Soil Taxonomy (Subgroup):	Field Observations: Confirm Mapped Type?	No	Yes X

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 4/4			Loamy

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No Wetland Hydrology Present? No Hydric Soils Present? No	Is this Sampling Point Within a Wetland? No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetland Delineation Manual)

Project/Site: Section 85, Block 1, Lots 4.1, 4.2, 51., and 5.2 Applicant/Owner: Watchtower Bible and Tract Society of New York, Inc. Investigator: Brian Kirkpatrick	Date: March 24, 2010 County: Orange State: NY
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain in the Wetland Determination remarks section.)	Community ID: Transect ID: Plot ID: 0215 WET

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Cornus amomum*	Shrub	FACW	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC⁻): 100

Remarks:

HYDROLOGY

[ ] Recorded Data (Describe in Remarks):
- [ ] Stream, Lake, or Tide Gauge
- [ ] Aerial Photographs
- [ ] Other

[ ] No Recorded Data Available

Field Observations:
- Depth of Surface Water: [ ] inches
- Depth to Free Water in Pit: [ ] inches
- Depth to Saturated Soil: [12] inches

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [X] Saturated in Upper 12 inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- [X] Oxidized Root Channels in Upper 12inches
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks:

Saturated to surface

SOILS

Map Unit Name(Series and Phase): SXC	Drainage Class:		
Soil Taxonomy (Subgroup):	Field Observations: Confirm Mapped Type?	No	Yes X

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 4/2	10YR 4/6 10YR 4/3		Loamy

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [X] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes Wetland Hydrology Present? Yes Hydric Soils Present? Yes	Is this Sampling Point Within a Wetland? Yes

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetland Delineation Manual)

Project/Site: Section 85, Block 1, Lots 4.1, 4.2, 51., and 5.2 Applicant/Owner: Watchtower Bible and Tract Society of New York, Inc. Investigator: Brian Kirkpatrick	Date: March 24, 2010 County: Orange State: NY
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain in the Wetland Determination remarks section.)	Community ID: Transect ID: Plot ID: 0302 UPL

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Panicum rigidulum*	Herb.	FACW+	9.		
2. *Rosa multiflora*	Shrub	FACU	10.		
3. *Phragmites australis*	Shrub	FACU	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC⁻): 100

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No Recorded Data Available

Field Observations:
- Depth of Surface Water: ☐ inches
- Depth to Free Water in Pit: ☐ inches
- Depth to Saturated Soil: ☐ >18 inches

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name(Series and Phase): SXC	Drainage Class:		
Soil Taxonomy (Subgroup):	Field Observations: Confirm Mapped Type?	No	Yes X

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 4/6			Loamy fill/ gravelly

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No Wetland Hydrology Present? No Hydric Soils Present? No	Is this Sampling Point Within a Wetland? No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetland Delineation Manual)

Project/Site: Section 85, Block 1, Lots 4.1, 4.2, 51., and 5.2 Applicant/Owner: Watchtower Bible and Tract Society of New York, Inc. Investigator: Brian Kirkpatrick	Date: March 24, 2010 County: Orange State: NY
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain in the Wetland Determination remarks section.)	Community ID: Transect ID: Plot ID: 0302W

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Phragmites australis*	Herb.	FACW	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC⁻): 100

Remarks:

HYDROLOGY

[ ] Recorded Data (Describe in Remarks):
- [ ] Stream, Lake, or Tide Gauge
- [ ] Aerial Photographs
- [ ] Other

[ ] No Recorded Data Available

Field Observations:
- Depth of Surface Water: [< 1] inches
- Depth to Free Water in Pit: [ ] inches
- Depth to Saturated Soil: [< 1] inches

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [X] Saturated in Upper 12 inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- [ ] Oxidized Root Channels in Upper 12inches
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks:

Saturated to surface

SOILS

Map Unit Name(Series and Phase): SXC	Drainage Class:		
Soil Taxonomy (Subgroup):	Field Observations: Confirm Mapped Type?	No	Yes X

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6	O				Organic
6-12	A	10 YR 2/1			Muck

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes Wetland Hydrology Present? Yes Hydric Soils Present? Yes	Is this Sampling Point Within a Wetland? Yes

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetland Delineation Manual)

Project/Site: Section 85, Block 1, Lots 4.1, 4.2, 51., and 5.2 Applicant/Owner: Watchtower Bible and Tract Society of New York, Inc. Investigator: Brian Kirkpatrick	Date: March 24, 2010 County: Orange State: NY
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain in the Wetland Determination remarks section.)	Community ID: Transect ID: Plot ID: 0402 UPL

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Pinus strobus*	Tree	FACU	9.		
2. *Fraxinus americana*	Shrub	FACU	10.		
3. *Acer rubrum*	Shrub	FAC	11.		
4. *Rosa multiflora*	Shrub	FACU	12.		
5. *Solidago spp.*	Herb	FACU	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC⁻): 100

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No Recorded Data Available

Field Observations:
- Depth of Surface Water: ☐ inches
- Depth to Free Water in Pit: ☐ inches
- Depth to Saturated Soil: >18 inches

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name(Series and Phase): SXC	Drainage Class:		
Soil Taxonomy (Subgroup):	Field Observations: Confirm Mapped Type?	No	Yes X

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12					Organic
12+		10YR 4/4			Loamy

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No Wetland Hydrology Present? No Hydric Soils Present? No	Is this Sampling Point Within a Wetland? No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetland Delineation Manual)

Project/Site: Section 85, Block 1, Lots 4.1, 4.2, 51., and 5.2 Applicant/Owner: Watchtower Bible and Tract Society of New York, Inc. Investigator: Brian Kirkpatrick	Date: March 24, 2010 County: Orange State: NY
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain in the Wetland Determination remarks section.)	Community ID: Transect ID: Plot ID: 402W

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Phragmites australis*	Herb.	FACW	9.		
2.			10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC⁻): 100

Remarks:

HYDROLOGY

[ ] Recorded Data (Describe in Remarks):
- [ ] Stream, Lake, or Tide Gauge
- [ ] Aerial Photographs
- [ ] Other

[ ] No Recorded Data Available

Field Observations:
- Depth of Surface Water: [< 1] inches
- Depth to Free Water in Pit: [ ] inches
- Depth to Saturated Soil: [< 1] inches

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [X] Saturated in Upper 12 inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- [ ] Oxidized Root Channels in Upper 12inches
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks:

Saturated to surface

SOILS

Map Unit Name(Series and Phase): SXC	Drainage Class:		
Soil Taxonomy (Subgroup):	Field Observations: Confirm Mapped Type?	No	Yes X

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-6					Organic
6-12		10 YR 2/1			Muck

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [ ] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes Wetland Hydrology Present? Yes Hydric Soils Present? Yes	Is this Sampling Point Within a Wetland? YES

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetland Delineation Manual)

Project/Site: Section 85, Block 1, Lots 4.1, 4.2, 51., and 5.2 Applicant/Owner: Watchtower Bible and Tract Society of New York, Inc. Investigator: Brian Kirkpatrick	Date: March 24, 2010 County: Orange State: NY
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain in the Wetland Determination remarks section.)	Community ID: Transect ID: Plot ID: 0617 UPL

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. Rosa multiflora	Shrub	FACU	9.		
2. *Crataegus douglasii*	Shrub	FAC	10.		
3. *Celastrus orbiculatus*	Vine	UPL	11.		
4. Lonicera japonica	Vine	FAC-	12.		
5. Dichanthelium clandestinum	Herb	FAC+	13.		
6.			14.		
7.			15.		
8.			16.		
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC⁻): 100					
Remarks:					

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No Recorded Data Available

Field Observations:
- Depth of Surface Water: ☐ inches
- Depth to Free Water in Pit: ☐ inches
- Depth to Saturated Soil: ☐ >12 inches

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name(Series and Phase): SXC	Drainage Class:		
Soil Taxonomy (Subgroup):	Field Observations: Confirm Mapped Type?	No	Yes X

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12					Organic
12+		10YR 4/4			Sandy/gravelly Loam

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No Wetland Hydrology Present? No Hydric Soils Present? No	Is this Sampling Point Within a Wetland? No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetland Delineation Manual)

Project/Site: Section 85, Block 1, Lots 4.1, 4.2, 51., and 5.2 Applicant/Owner: Watchtower Bible and Tract Society of New York, Inc. Investigator: Brian Kirkpatrick	Date: March 24, 2010 County: Orange State: NY
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain in the Wetland Determination remarks section.)	Community ID: Transect ID: Plot ID: 0617 WET

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Ulmus rubra*	Shrub	FAC	9.		
2. *Salix nigra*	Shrub	FACW+	10.		
3. *Lindera benzoin*	Shrub	FACW-	11.		
4. *Onoclea sensibilis*	Herb	FACW	12.		
5. *Cuscuta gronovii*	Herb	OBL	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC⁻): 100

Remarks:

HYDROLOGY

[ ] Recorded Data (Describe in Remarks):
- [ ] Stream, Lake, or Tide Gauge
- [ ] Aerial Photographs
- [ ] Other

[ ] No Recorded Data Available

Field Observations:
- Depth of Surface Water: [ ] inches
- Depth to Free Water in Pit: [ ] inches
- Depth to Saturated Soil: [12] inches

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [X] Saturated in Upper 12 inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- [X] Oxidized Root Channels in Upper 12inches
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name(Series and Phase): SXC	Drainage Class:		
Soil Taxonomy (Subgroup):	Field Observations: Confirm Mapped Type?	No	Yes X

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 4/2	7.5YR 4/6		

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [X] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes Wetland Hydrology Present? Yes Hydric Soils Present? Yes	Is this Sampling Point Within a Wetland? Yes

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetland Delineation Manual)

Project/Site: Section 85, Block 1, Lots 4.1, 4.2, 51., and 5.2 Applicant/Owner: Watchtower Bible and Tract Society of New York, Inc. Investigator: Brian Kirkpatrick	Date: March 24, 2010 County: Orange State: NY
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain in the Wetland Determination remarks section.)	Community ID: Transect ID: Plot ID: 0825UPL

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Acer rubrum*	Tree	FAC	9.		
2. *Fraxinus americana*	Tree	FACU	10.		
3. *Lindera benzoin*	Shrub	FACW-	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC⁻): 100

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No Recorded Data Available

Field Observations:
- Depth of Surface Water: ☐ inches
- Depth to Free Water in Pit: ☐ inches
- Depth to Saturated Soil: >18 inches

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name(Series and Phase): SXC	Drainage Class:		
Soil Taxonomy (Subgroup):	Field Observations: Confirm Mapped Type?	No	Yes X

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 4/4			Stony Loam

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No Wetland Hydrology Present? No Hydric Soils Present? No	Is this Sampling Point Within a Wetland? No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetland Delineation Manual)

Project/Site: Section 85, Block 1, Lots 4.1, 4.2, 51., and 5.2 Applicant/Owner: Watchtower Bible and Tract Society of New York, Inc. Investigator: Brian Kirkpatrick	Date: March 24, 2010 County: Orange State: NY
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain in the Wetland Determination remarks section.)	Community ID: Transect ID: Plot ID: 0825 WET

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 *Acer rubrum*	Tree	FAC	9.		
2. *Lindera benzoin*	Shrub	FACW -	10.		
3.			11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC⁻): 100

Remarks:

HYDROLOGY

[ ] Recorded Data (Describe in Remarks):
- [ ] Stream, Lake, or Tide Gauge
- [ ] Aerial Photographs
- [ ] Other

[ ] No Recorded Data Available

Field Observations:
- Depth of Surface Water: [ ] inches
- Depth to Free Water in Pit: [ ] inches
- Depth to Saturated Soil: [12] inches

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [X] Saturated in Upper 12 inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- [X] Oxidized Root Channels in Upper 12inches
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks:

Saturated to surface

SOILS

Map Unit Name(Series and Phase): SXC	Drainage Class:		
Soil Taxonomy (Subgroup):	Field Observations: Confirm Mapped Type?	No	Yes X

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 4/2	10YR 4/6		Stony Loam

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [X] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes Wetland Hydrology Present? Yes Hydric Soils Present? Yes	Is this Sampling Point Within a Wetland? Yes

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetland Delineation Manual)

Project/Site: Section 85, Block 1, Lots 4.1, 4.2, 51., and 5.2 Applicant/Owner: Watchtower Bible and Tract Society of New York, Inc. Investigator: Brian Kirkpatrick	Date: March 24, 2010 County: Orange State: NY
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain in the Wetland Determination remarks section.)	Community ID: Transect ID: Plot ID: 1104 UPL

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. *Acer rubrum*	Tree	FAC	9.		
2. *Prunus serotina*	Tree	FACU	10.		
3. *Fagus grandifolia*	Tree	FACU	11.		
4. *Lindera benzoin*	Shrub	FACW-	12.		
5. *Vitis labrusca*	Vine	FACU	13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC⁻): 100

Remarks:

HYDROLOGY

☐ Recorded Data (Describe in Remarks):
- ☐ Stream, Lake, or Tide Gauge
- ☐ Aerial Photographs
- ☐ Other

☐ No Recorded Data Available

Field Observations:
- Depth of Surface Water: ☐ inches
- Depth to Free Water in Pit: ☐ inches
- Depth to Saturated Soil: ☐ >12 inches

Wetland Hydrology Indicators:

Primary Indicators:
- ☐ Inundated
- ☐ Saturated in Upper 12 inches
- ☐ Water Marks
- ☐ Drift Lines
- ☐ Sediment Deposits
- ☐ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ☐ Oxidized Root Channels in Upper 12inches
- ☐ Water-Stained Leaves
- ☐ Local Soil Survey Data
- ☐ FAC-Neutral Test
- ☐ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name(Series and Phase): SXC	Drainage Class:		
Soil Taxonomy (Subgroup):	Field Observations: Confirm Mapped Type?	No	Yes X

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 4/4			gravelly loam

Hydric Soil Indicators:

- ☐ Histosol
- ☐ Histic Epipedon
- ☐ Sulfidic Odor
- ☐ Aquic Moisture Regime
- ☐ Reducing Conditions
- ☐ Gleyed or Low-Chroma Colors
- ☐ Concretions
- ☐ High Organic Content in Surface Layer in Sandy Soils
- ☐ Organic Streaking in Sandy Soils
- ☐ Listed on Local Hydric Soils List
- ☐ Listed on National Hydric Soils List
- ☐ Other (Explain in Remarks)

Remarks:
Stony / very rocky

WETLAND DETERMINATION

Hydrophytic Vegetation Present? No Wetland Hydrology Present? No Hydric Soils Present? No	Is this Sampling Point Within a Wetland? No

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetland Delineation Manual)

Project/Site: Section 85, Block 1, Lots 4.1, 4.2, 51., and 5.2 Applicant/Owner: Watchtower Bible and Tract Society of New York, Inc. Investigator: Brian Kirkpatrick	Date: March 24, 2010 County: Orange State: NY
Do Normal Circumstances exist on the site? Yes Is the site significantly disturbed (Atypical Situation)? No Is the area a potential Problem Area? No (If needed, explain in the Wetland Determination remarks section.)	Community ID: Transect ID: Plot ID: 1104 WET-See Photo#3

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1 *Acer rubrum*	Tree	FAC	9.		
2. *Ulmus rubra*	Tree	FAC	10.		
3. *Lindera benzoin*	Shrub	FACW -	11.		
4.			12.		
5.			13.		
6.			14.		
7.			15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC⁻): 100

Remarks:

HYDROLOGY

[ ] Recorded Data (Describe in Remarks):
- [ ] Stream, Lake, or Tide Gauge
- [ ] Aerial Photographs
- [ ] Other

[ ] No Recorded Data Available

Field Observations:
- Depth of Surface Water: [ ] inches
- Depth to Free Water in Pit: [ ] inches
- Depth to Saturated Soil: [12] inches

Wetland Hydrology Indicators:

Primary Indicators:
- [ ] Inundated
- [X] Saturated in Upper 12 inches
- [ ] Water Marks
- [ ] Drift Lines
- [ ] Sediment Deposits
- [ ] Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- [X] Oxidized Root Channels in Upper 12inches
- [ ] Water-Stained Leaves
- [ ] Local Soil Survey Data
- [ ] FAC-Neutral Test
- [ ] Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name(Series and Phase): SXC	Drainage Class:		
Soil Taxonomy (Subgroup):	Field Observations: Confirm Mapped Type?	No	Yes X

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-12		10YR 4/2	10YR 4/6		Very Stony Loam

Hydric Soil Indicators:

- [ ] Histosol
- [ ] Histic Epipedon
- [ ] Sulfidic Odor
- [ ] Aquic Moisture Regime
- [X] Reducing Conditions
- [X] Gleyed or Low-Chroma Colors
- [ ] Concretions
- [ ] High Organic Content in Surface Layer in Sandy Soils
- [ ] Organic Streaking in Sandy Soils
- [ ] Listed on Local Hydric Soils List
- [ ] Listed on National Hydric Soils List
- [ ] Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? Yes Wetland Hydrology Present? Yes Hydric Soils Present? Yes	Is this Sampling Point Within a Wetland? Yes

Remarks: