

APPENDICES

APPENDIX A
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APPENDIX B

AGENCY CORRESPONDENCE



Westchester County

Federally Listed Endangered and Threatened Species and Candidate Species

This list represents the best available information regarding known or likely County occurrences of Federally-listed and candidate species and is subject to change as new information becomes available.

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Atlantic sturgeon ¹	<i>Acipenser oxyrinchus oxyrinchus</i>	C
Bald eagle ²	<i>Haliaeetus leucocephalus</i>	D
Bog turtle	<i>Clemmys [=Glyptemys] muhlenbergii</i>	T
Indiana bat (S)	<i>Myotis sodalis</i>	E
New England cottontail	<i>Sylvilagus transitionalis</i>	C
Shortnose sturgeon ³	<i>Acipenser brevirostrum</i>	E

Status Codes: E=Endangered T=Threatened P=Proposed C=Candidate D=Delisted

W=Winter S=Summer

¹Primarily occurs in Hudson River. Principal responsibility for this species is vested with the National Oceanic and Atmospheric Administration/Fisheries.

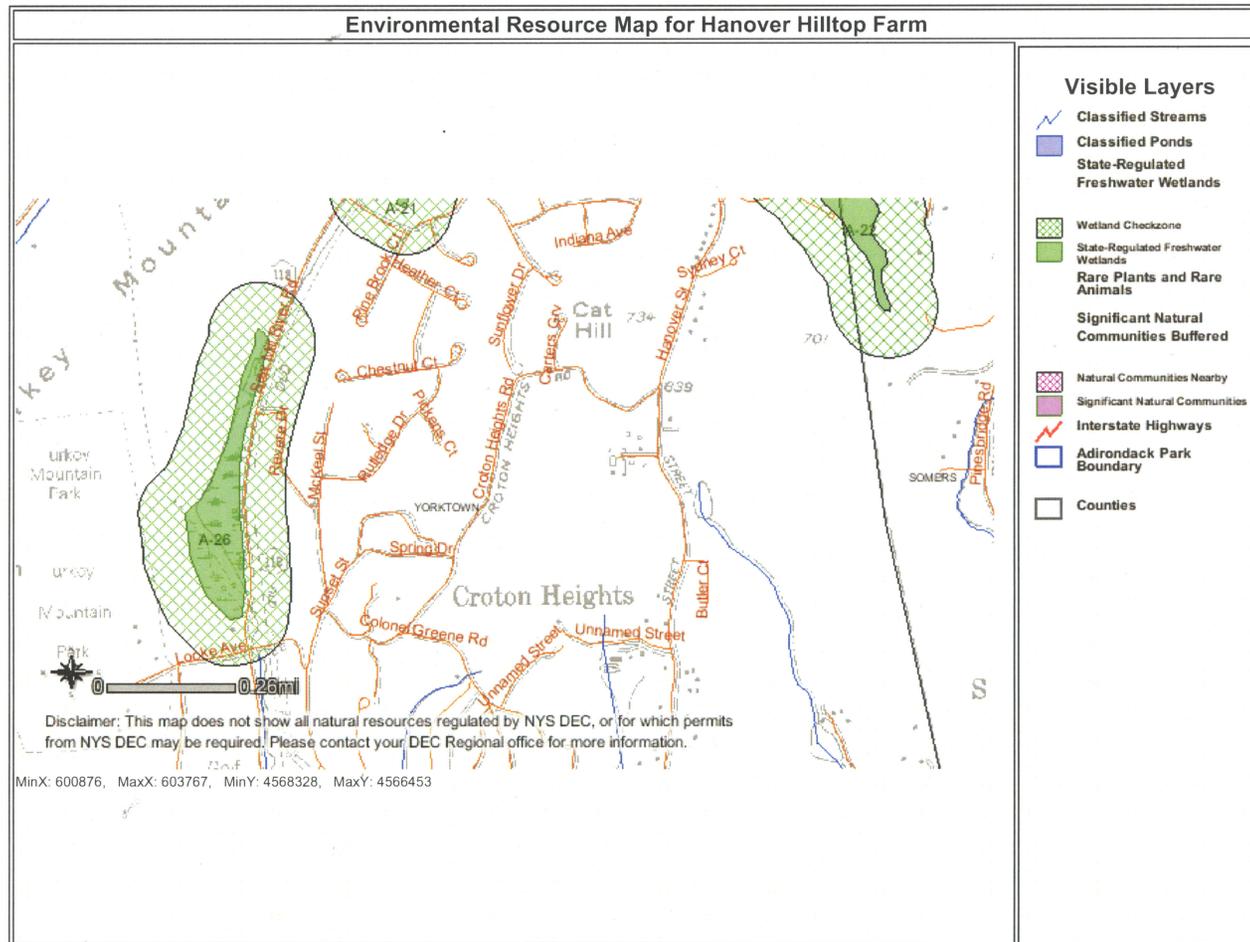
²The bald eagle was delisted on August 8, 2007. While there are no ESA requirements for bald eagles after this date, the eagles continue to receive protection under the Bald and Golden Eagle Protection Act (BGEPA). Please follow the Service's May 2007 Bald Eagle Management Guidelines to determine whether you can avoid impacts under the BGEPA for your projects. If you have any questions, please contact the endangered species branch in our office.

³Primarily occurs in Hudson River. Principal responsibility for this species is vested with the National Oceanic and Atmospheric Administration/Fisheries.

Information current as of: 1/29/2009

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Disclaimer: This map was prepared by the New York State Department of Environmental Conservation using the most current data available. It is deemed accurate but is not guaranteed. NYS DEC is not responsible for any inaccuracies in the data and does not necessarily endorse any interpretations or products derived from the data.

[\[print page\]](#)[\[close window\]](#)**The Coordinates of the point you clicked on are:**

NYTM	E : 602999	Longitude/Latitude	W : 73.770
	N : 4567254		N : 41.250

Classified Streams

Regulation	Standard	Classification
864-109	B	B

USGS Quadrangle

USGS Quadrangle Name
MOHEGAN LAKE

If your project or action is within or near an area with a rare animal, a permit may be required if the species is listed as endangered or threatened and the department determines the action may be harmful to the species or its habitat.

If your project or action is within or near an area with rare plants and/or significant natural communities, the environmental impacts may need to be addressed.

Please refer to the "Need a Permit?" tab for permit information or other authorizations regarding these natural resources.

Disclaimer: If you are considering a project or action in, or near, a wetland or a stream, a NYS DEC permit may be required. The Environmental Resources Mapper does not show all natural resources which are regulated by NYS DEC, and for which permits from NYS DEC are required. For example, Regulated Tidal Wetlands, and Wild, Scenic, and Recreational Rivers, are currently not included on the maps.

[\[print page\]](#)[\[close window\]](#)**The Coordinates of the point you clicked on are:**

NYTM	E : 602968	Longitude/Latitide	W : 73.771
	N : 4567321		N : 41.250

Classified Streams

Regulation	Standard	Classification
864-111	C	C

USGS Quadrangle

USGS Quadrangle Name
MOHEGAN LAKE

If your project or action is within or near an area with a rare animal, a permit may be required if the species is listed as endangered or threatened and the department determines the action may be harmful to the species or its habitat.

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[\[print page\]](#)[\[close window\]](#)**The Coordinates of the point you clicked on are:**

NYTM	E : 601418	Longitude/Latitude	W : 73.789
	N : 4567169		N : 41.249

State-Regulated Freshwater Wetlands

Wetland ID	Wetland Class	Wetland Size (Acres)
A-26	2	26.9

USGS Quadrangle

USGS Quadrangle Name
OSSINING

If your project or action is within or near an area with a rare animal, a permit may be required if the species is listed as endangered or threatened and the department determines the action may be harmful to the species or its habitat.

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APPENDIX C

**WILDLIFE PREDICTIVE MATRIX
(POSSIBLE SPECIES IN THE TOWN)**

Appendix C: Wildlife Predictive Matrix (Possible Species in Yorktown)

B=Breeding; NB= Non-Breeding; F=Foraging; W=Wintering

Species	Eastern Hemlock	Eastern White Pine	White Pine Red Oak Red Maple	Northern Red Oak	Red Maple	Northern Hardwoods	Derilict Building Debris
Mudpuppy - <i>Necturus m. maculosus</i>							
Marbled Salamander - <i>Ambystoma opacum</i>			B-W		B-W		
Jefferson Salamander - <i>Ambystoma Jeffersonianum</i>					B-W	W	
Blue-spotted Salamander - <i>Ambystoma laterale</i>					W	W	
Spotted Salamander - <i>Ambystoma maculatum</i>	W	W	W	W	B-W	W	
Eastern Newt - <i>Notophthalmus v. viridescens</i>	W	W	W	W	W	W	
Northern Dusky Salamander - <i>Desmognathus f. fuscus</i>	W	W	W	W	W	W	
Mountain Dusty Salamander		B-W			B-W	B-W	
Redback Salamander - <i>Plethodon cinereus</i>	B-W	B-W	B-W	B-W	B-W	B-W	B
Slimy Salamander - <i>Plethodon g. glutinosus</i>	W		W		B-W	B-W	
Four-toed Salamander - <i>Hemidactylium scutatum</i>	B-W		B-W	B-W	B-W	B-W	
Northern Spring Salamander - <i>Gyrinophilus p. porphyriticus</i>	B-W			B-W	B-W	B-W	
Northern Two-lined Salamander - <i>Eurycea b. bislineata</i>	B-W	B-W	B-W	B-W	B-W	B-W	
Eastern American Toad - <i>Bufo a. americanus</i>	W	W	W	W	W	W	
Fowler's Toad - <i>Bufo woodhousii fowleri</i>		W	W		W		
Northern Spring Peeper - <i>Hyla c. crucifer</i>	W		W	W	W	W	
Gray Treefrog - <i>Hyla versicolor</i>			W	W	W	W	
Bullfrog - <i>Rana catesbeiana</i>			W	W	W	W	
Green Frog - <i>Rana clamitans melanota</i>					W		
Wood Frog - <i>Rana sylvatica</i>	W	W	W	W	W	W	
Northern Leopard Frog - <i>Rana pipiens</i>					B		
Pickerel Frog - <i>Rana palustris</i>	B	B	B	B	B-W	B	
Common Snapping Turtle - <i>Chelydra s. serpentina</i>		B	B		W		
Stinkpot - <i>Sternotherus odoratus</i>							
Spotted Turtle - <i>Clemmys guttata</i>							
Bog Turtle - <i>Clemmys muhlenbergii</i>					W	W	
Wood Turtle - <i>Clemmys insculpta</i>	B-W	B-W	B-W	B-W	B-W	B-W	
Eastern Box Turtle - <i>Terrapene c. carolina</i>		W	B-W	B-W	B-W	B-W	
Red-eared Slider - <i>Psuedemys scripta elegans</i>							
Eastern Painted Turtle - <i>Chrysemys p. picata</i>					B		
Blanding's Turtle - <i>Emydoidea blandingii</i>							
Eastern Spiny Softshell - <i>Trionyx s. spineferus</i>							
Five-lined Skink - <i>Eumeces fasciatus</i>					B-W	B-W	
Northern Water Snake - <i>Nerodia s. sipedon</i>					B-W		
Northern Brown Snake - <i>Storeria d. dekayi</i>	B-W	B-W	B-W	B-W	B-W	B-W	B-NB
Northern Redbelly Snake - <i>Storeria o. occipitamaculata</i>	B-W	B-W	B-W	B-W	B-W	B-W	
Eastern Garter Snake - <i>Thamnophis s. sirtalis</i>	B-W	B-W	B-W	B-W	B-W	B-W	B
Eastern Ribbon Snake - <i>Thamnophis s. sauritis</i>		B-W			B-W	B-W	
Eastern Hognose Snake - <i>Heterodon platyrhinos</i>		B-W	B-W	B-W			
Northern Ringneck Snake - <i>Diadophis punctatus edwardsi</i>	B-W			B-W	B-W	B-W	B
Eastern Worm Snake - <i>Carphophis a. amoenus</i>	B-W	B-W	B-W	B-W			
Northern Black Racer - <i>Coluber c. constrictor</i>		B-W	B-W	B-W	B-W	B-W	B-NB
Eastern Smooth Green Snake - <i>Opheodrys v. vernalis</i>				B-W	B-W	B-W	
Black Rat Snake - <i>Elaphe o. obsoleta</i>			B-W	B-W	B-W		B-NB
Eastern Milk Snake - <i>Lampropeltis t. triangulum</i>		B-W	B-W	B-W	B-W	B-W	B-NB
Northern Copperhead - <i>Agkistrodon contortrix mokeson</i>	B-W		B-W	B-W	B-W		
Timber Rattlesnake - <i>Crotalus horridus</i>			B-W	B-W	B-W		
Common Loon - <i>Gavia immer</i>							
Pied-billed Grebe - <i>Podilymbus podiceps</i>							
American Bittern - <i>Botaurus lentiginosus</i>							
American Bittern - <i>Ixobrychus exilis</i>							

Appendix C: Wildlife Predictive Matrix (Possible Species in Yorktown)

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Species	Eastern Hemlock	Eastern White Pine	White Pine Red Oak Red Maple	Northern Red Oak	Red Maple	Northern Hardwoods	Derilict Building Debris
Least Bittern - Ixobrychus exilis							
Great Blue Heron - Ardea herodias					B		
Green-backed Heron - Butorides striatus					B-BF		
Black-crowned Night-Heron - Nycticorax nycticorax							
Yellow-crowned Night Heron (Nycticorax violaceus)							
Glossy Ibis - Plegadis falcinellus							
Mute Swan - Cygnus olor							
Canada Goose - Branta canadensis							
Wood Duck - Aix sponsa					B-BF		
Green-winged Teal - Anas crecca							
American Black Duck - Anas rubripes					B-BF		
Mallard - Anas platyrhynchos							
Northern Pintail - Anas acuta							
Blue-winged Teal - Anas Discors							
Northern Shoveler - Anas clypeata							
Gadwall - Anas strepera							
American Widgeon - Anas americana							
Canvasback - Aythya valisineria							
Ring-necked Duck - Aythya collaris							
Common Goldeneye - Bucephala clangula		B		B	B	B	
Bufflehead - Bucephala albeola					B		
Hooded Merganser - Lophodytes cucullatus	B	B	B	B	B-BF	B	
Common Merganser - Mergus merganser	B	B	B		B	B	
Red-breasted Merganser - Mergus serrator							
Turkey Vulture - Cathartes aura		B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	W	B-BF-W-WF	
Osprey - Pandion haliaetus							
Bald Eagle - Haliaeetus leucociphalus	B	B	B	B		B	
Northern Harrier - Circus cyaneus							
Sharp-shinned Hawk - Accipiter striatus	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Cooper's Hawk - Accipiter cooperii	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Northern Goshawk -Accipiter gentilis	B-BF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Red-shouldered Hawk - Buteo lineatus		B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Broad-winged Hawk - Buteo platypterus	B-BF		B-BF	B-BF	B-BF	B-BF	
Red-tailed Hawk - Buteo jamaicensis	B-BF-W-WF	B-BF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Rough-legged Hawk - Buteo lagopus							
American Kestrel - Falco sparverius		BF-WF	BF-WF	BF-WF	BF-WF	BF-WF	
Merlin - Falco columbarius							
Peregrine Falcon - Falco peregrinus	BF	BF	BF	BF	BF	BF	
Ring-necked Pheasant - Phasianus colchicus							
Ruffed Grouse - Bonasa umbellus	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF	B-BF-W-WF	
Wild Turkey - Meleagris gallopavo	W	BF-W-WF	B-BF-W-WF	B-BF-W-WF	-W-WF	B-BF-W-WF	
Northern Bobwhite - Colinus virginianus		W-WF	B-BF-W-WF				
King Rail - Ralus elegans							
Virginia Rail - Ralus limicola							
Sora - Porzana carolina							
Common Moorhen - Gallinula chloropus							
American Coot - Fulica americana							
Killdeer - Charadrius vociferus							
Spotted Sandpiper - Actitis macularia							
Upland Sandpiper - Bartramia longicauda							
Common Snipe - Gallinago gallinago							

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Species	Eastern Hemlock	Eastern White Pine	White Pine Red Oak Red Maple	Northern Red Oak	Red Maple	Northern Hardwoods	Derilict Building Debris
American Woodcock - <i>Scolopax minor</i>		B-BF			B-BF	B-BF	
Ring-billed Gull - <i>Larus delawarensis</i>							
Herring Gull - <i>Larus argentatus</i>							
Great Black-backed Gull - <i>Larus marinus</i>							
Common Tern - <i>Sterna hirundo</i>							
Rock Dove - <i>Columba livia</i>							B-W
Mourning Dove - <i>Zenaida macroura</i>	BF-W-WF	B-BF-W-WF	B-BF-W-WF	BF-W-WF	W-WF	BF-W-WF	
Black-billed Cuckoo - <i>Coccyzus erythrophthalmus</i>		B-BF	B-BF	B-BF		B-BF	
Yellow-billed Cuckoo - <i>Coccyzus americanus</i>			B-BF	B-BF	B-BF	B-BF	
Common Barn-Owl - <i>Tyto alba</i>							B-BF-W-WF
Eastern Screech Owl - <i>Otus asio</i>	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Great Horned Owl - <i>Bubo virginianus</i>	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Snowy Owl - <i>Nyctea scandiaca</i>							
Barred Owl - <i>Strix varia</i>	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Long-eared Owl - <i>Asio otus</i>	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Short-eared Owl - <i>Asio flammeus</i>							
Northern Saw-whet Owl - <i>Aegolius acadicus</i>	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Common Nighthawk - <i>Chordeiles minor</i>	B-BF	B-BF	B-BF	B-BF	B-BF	B-BF	
Whip-poor-will - <i>Caprimulgus vociferus</i>		B-BF	B-BF	B-BF	B-BF	B-BF	
Chimney Swift - <i>Chaetura pelagica</i>							B
Ruby-throated Hummingbird - <i>Archilochus colubris</i>	B-BF	B-BF	B-BF	B-BF	B-BF	B-BF	
Belted Kingfisher - <i>Ceryle alcyon</i>							
Red-headed Woodpecker - <i>Melanerpes erythrocephalus</i>			B-BF-W-WF	B-BF-W-WF	B-BF-W-WF		
Red-bellied Woodpecker - <i>Melanerpes carolinus</i>		B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF		
Yellowed-bellied Sapsucker - <i>Sphyrapicus varius</i>	B-BF	B-BF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Downy Woodpecker - <i>Picoides pubescens</i>	W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Hairy Woodpecker - <i>Picoides villosus</i>	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Northern Flicker - <i>Colaptes auratus</i>	B-BF	B-BF-WF	B-BF-WF	B-BF	B-BF	B-BF	B
Pileated Woodpecker - <i>Dryocopus pileatus</i>	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Olive-sided Flycatcher - <i>Contopus borealis</i>	B-BRF	B-BF			B-BF		
Eastern Wood Pewee - <i>Contopus virens</i>	B-BF	B-BF	B-BF	B-BF	B-BF	B-BF	
Acadian Flycatcher - <i>Empidonax virens</i>			B-BF		B-BF		
Alder Flycatcher - <i>Empidonax alnorum</i>	B-BF	B-BF	B-BF	B-BF	B-BF	B-BF	
Willow Flycatcher - <i>Empidonax traillii</i>			B-BF	B-BF	B-BF	B-BF	
Least Flycatcher - <i>Empidonax minimus</i>			B-BF	B-BF	B-BF	B-BF	
Eastern Phoebe - <i>Sayornis phoebe</i>	B-BF	B-BF	B-BF	B-BF	B-BF	B-BF	B
Great Crested Flycatcher - <i>Myiarchus crinitus</i>	B-BF	B-BF	B-BF	B-BF	B-BF	B-BF	
Eastern Kingbird - <i>Tyrannus tyrannus</i>			B-BF	B-BF	B-BF	B-BF	
Horned Lark - <i>Eremophila alpestris</i>							
Purple Martin - <i>Progne subis</i>	BF	BF	BF	BF	BF	BF	
Tree Swallow - <i>Tachycineta bicolor</i>	BF	BF	BF	BF	B-BF	BF	
Northern Rough-winged Swallow - <i>Steigidopeteryx serripennis</i>	BF	BF	BF	BF	BF	BF	
Bank Swallow - <i>Riparia riparia</i>	BF	BF	BF	BF	BF	BF	
Cliff Swallow - <i>Hirundo pyrrhonota</i>	BF	BF	BF	BF	BF	BF	B
Barn Swallow - <i>Hirundo rustica</i>	BF	BF	BF	BF	BF	BF	B
Blue Jay - <i>Cyanocitta cristata</i>	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
American Crow - <i>Corvus brachyrhynchos</i>	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Fish Crow - <i>Corvus brachyrhynchos</i>							
Common Raven - <i>Corvus corax</i>		B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	BF-WF	B-BF-W-WF	
Black-capped Chickadee - <i>Parus artcipillus</i>	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Tufted Titmouse - <i>Parus bicolor</i>		B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	

Appendix C: Wildlife Predictive Matrix (Possible Species in Yorktown)

B=Breeding; NB= Non-Breeding; F=Foraging; W=Wintering

Species	Eastern Hemlock	Eastern White Pine	White Pine Red Oak Red Maple	Northern Red Oak	Red Maple	Northern Hardwoods	Derilict Building Debris
Water Shrew - Sorex palustris	B-BF-W-WF	B-BF-W-WF			B-BF-W-WF	B-BF-W-WF	
Smoky Shrew - Sorex fumeus	B-BF-W-WF	B-BF-W-WF			B-BF-W-WF	B-BF-W-WF	
Long-tailed Shrew - Sorex dispar	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF		B-BF-W-WF	
Pygmy Shrew - Sorex hoyi	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF			B-BF-W-WF	
Northern Short-tailed Shrew - Blarina brevicauda	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-W
Least Shrew - Cryptotis parva			B-BF-W-WF		B-BF-W-WF	B-BF-W-WF	
Hairy-tailed Mole - Parascalops breweri	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Eastern Mole - Scalopus aquaticus			B-BF-W-WF	B-BF-W-WF	B-BF-W-WF		
Star-nosed Mole - Condylura cristata					B-BF-W-WF		
Little Brown Myotis - Myotis lucifugus	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B
Northern Long-eared Bat - Myotis septentrionalis	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B
Indiana Myotis - Myotis sodalis	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	
Small-footed Myotis - Myotis leibii	B-BF-W	B-BF-W					B
Silver-haired Bat - Lasionycteris noctivagans	B-BF	B-BF	B-BF	B-BF	B-BF	B-BF	B
Tricolored Bat - Pipistrellus subflavus	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B
Big Brown Bat - Eptesicus fuscus	B-BF	B-BF	B-BF	B-BF	B-BF	B-BF	B
Red Bat - Lasiurus borealis		B-BF	B-BF	B-BF	B-BF	B-BF	
Hoary Bat - Lasiurus cinereus	B-BF	B-BF	B-BF	BF	BF	B-BF	
Eastern Cottontail - Sylvilagus floridanus	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
New England Cottontail - Sylvilagus transitionalis	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Eastern Chipmunk - Tamias striatus	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	
Woodchuck - Marmota monax	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-W
Gray Squirrel - Sciurus carolinensis		B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Red Squirrel - Tamiasciurus hudsonicus	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Southern Flying Squirrel - Glaucomys volans			B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Northern Flying Squirrel - Glaucomys sabrinus	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF		B-BF-W-WF	
Beaver - Castor canadensis			B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Deer Mouse - Peromyscus maniculatus	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF
White-footed Mouse - Peromyscus leucopus	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF
Southern Red-backed Vole - Clethrionomys gapperi	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Meadow Vole - Microtus pennsylvanicus	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Muskrat - Ondatra zibethicus							
Southern Bog Lemming - Synaptomys cooperi			B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Norway Rat - Rattus norvegicus							
House Mouse - Mus musculus							B-BF-W-WF
Meadow Jumping Mouse - Zapus hudsonius	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	
Woodland Jumping Mouse - Napaeozapus insignis	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	
Porcupine - Erethizon dorsatum	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Coyote - Canis latrans	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Red Fox - Vulpes vulpes	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Gray Fox - Urocyon cinereoargenteus			B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Black Bear - Ursus americanus	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	
Raccoon - Procyon lotor	B-BF	B-BF	B-BF-W	B-BF-W	B-BF-W-WF	B-BF-W	B-W
Marten - Martes americana	B-BF-W-WF	B-BF-W-WF				B-BF-W-WF	
Fisher - Martes pennanti	B-BF-W-WF	B-BF-W-WF	BF-WF	BF-WF	B-BF-W-WF	B-BF-W-WF	
Ermine - Mustela erminea	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Long-tailed Weasel - Mustela frenata	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
Mink - Mustela vison	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF
Striped Skunk - Mephitis mephitis	B-BF-W	B-BF-W	B-BF-W	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
River Otter - Lutra canadensis	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	
White-tailed Deer - Odocoileus virginianus	B-BF-W-WF	B-W	B-BF	B-BF-WF	B-BF-WF	B-BF-W-WF	

Appendix C: Wildlife Predictive Matrix (Possible Species in Yorktown)

B=Breeding; NB= Non-Breeding; F=Foraging; W=Wintering

Species	Structure Building	Ledge Cliff	Stable bank	Riparian	River	Stream	Lake	Pond	Bog	Shrub Swamp	Deep Marsh	Shallow Marsh
Mudpuppy - <i>Necturus m. maculosus</i>					B-NB	B-NB	B-NB	B		B	B	
Marbled Salamander - <i>Ambystoma opacum</i>										B-NB		
Jefferson Salamander - <i>Ambystoma Jeffersonianum</i>				B-NB				B-NB		B-NB	B	B
Blue-spotted Salamander - <i>Ambystoma laterale</i>				B-NB				B	NB	B-NB		
Spotted Salamander - <i>Ambystoma maculatum</i>				B		B		B		B-NB	B	B
Eastern Newt - <i>Notophthalmus v. viridescens</i>				NB		B-NB	B-NB	B-NB		B-NB	B-NB	
Northern Dusky Salamander - <i>Desmognathus f. fuscus</i>				B-NB		B-NB		B-NB				
Mountain Dusty Salamander				B		B						
Redback Salamander - <i>Plethodon cinereus</i>									NB			
Slimy Salamander - <i>Plethodon g. glutinosus</i>		B-NB		B-NB					B-NB			
Four-toed Salamander - <i>Hemidactylium scutatum</i>				B-NB		B		B	B-NB			B
Northern Spring Salamander - <i>Gyrinophilus p. porphyriticus</i>				B-NB	B	B			B-NB			
Northern Two-lined Salamander - <i>Eurycea b. bislineata</i>				B-NB	B-NB	B-NB			B-NB			
Eastern American Toad - <i>Bufo a. americanus</i>			NB	NB		B	B	B		B-NB	B	B
Fowler's Toad - <i>Bufo woodhousii fowleri</i>				NB			B	B				
Northern Spring Peeper - <i>Hyla c. crucifer</i>				NB		B	B	B		B-NB	B	B
Gray Treefrog - <i>Hyla versicolor</i>				B-NB			B	B	B-NB	B-NB	B	
Bullfrog - <i>Rana catesbeiana</i>					B-NB	NB	B-NB	B-NB			NB	NB
Green Frog - <i>Rana clamitans melanota</i>				B-NB	NB	B-NB	B-NB	B-NB		B-NB	B-NB	B-NB
Wood Frog - <i>Rana sylvatica</i>				B-NB		B		B	B-NB	B-NB	B-NB	B-NB
Northern Leopard Frog - <i>Rana pipiens</i>						B-NB	B-NB	NB	NB		B-NB	B-NB
Pickerel Frog - <i>Rana palustris</i>						NB	B-NB	B-NB	B-NB			
Common Snapping Turtle - <i>Chelydra s. serpentina</i>			B	B-NB	NB	NB	NB	NB	NB		NB	NB
Stinkpot - <i>Sternotherus odoratus</i>				B	NB	NB	NB	NB			NB	
Spotted Turtle - <i>Clemmys guttata</i>				B-NB		NB		NB	NB	B	NB	B-NB
Bog Turtle - <i>Clemmys muhlenbergii</i>				NB					B		B	B
Wood Turtle - <i>Clemmys insculpta</i>				B-NB	B-NB	B-NB	NB	NB		NB	NB	NB
Eastern Box Turtle - <i>Terrapene c. carolina</i>				B-NB		B			B-NB			
Red-eared Slider - <i>Psuedemys scripta elegans</i>				B-NB		NB	NB	NB			NB	NB
Eastern Painted Turtle - <i>Chrysemys p. picata</i>				B		NB	NB	NB			NB	
Blanding's Turtle - <i>Emydoidea blandingii</i>				B-NB			NB	NB	NB	NB	NB	
Eastern Spiny Softshell - <i>Trionyx s. spineferus</i>				B	NB		NB					
Five-lined Skink - <i>Eumeces fasciatus</i>	B-NB	NB										
Northern Water Snake - <i>Nerodia s. sipedon</i>				B-NB	B	B	B	B	B	B		
Northern Brown Snake - <i>Storeria d. dekayi</i>										NB		
Northern Redbelly Snake - <i>Storeria o. occipitamaculata</i>	B-NB								B-NB	B-NB		
Eastern Garter Snake - <i>Thamnophis s. sirtalis</i>	NB			NB		NB			NB	NB		NB
Eastern Ribbon Snake - <i>Thamnophis s. sauritis</i>				B-NB		B	B	B	B	B-NB	B	B
Eastern Hognose Snake - <i>Heterodon platyrhinos</i>	B-NB			B-NB								NB
Northern Ringneck Snake - <i>Diadophis punctatus edwardsi</i>												
Eastern Worm Snake - <i>Carphophis a. amoenus</i>				B-NB								
Northern Black Racer - <i>Coluber c. constrictor</i>	B-NB	NB		B-NB						B-NB	B	B
Eastern Smooth Green Snake - <i>Opheodrys v. vernalis</i>		NB		B						B		B
Black Rat Snake - <i>Elaphe o. obsoleta</i>	B-NB	NB										
Eastern Milk Snake - <i>Lampropeltis t. triangulum</i>	B-NB	NB			B				B			
Northern Copperhead - <i>Agkistrodon contortrix mokeson</i>		B-NB										
Timber Rattlesnake - <i>Crotalus horridus</i>		B-NB										
Common Loon - <i>Gavia immer</i>					B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF				
Pied-billed Grebe - <i>Podilymbus podiceps</i>				W-WF	W-WF	W-WF		W-WF			B-BF-W-WF	B-BF
American Bittern - <i>Botaurus lentiginosus</i>				W-WF				W-WF		W-WF	W-WF	B-BF
American Bittern - <i>Ixobrychus exilis</i>				WF	W-WF	W-WF	W-WF	W-WF	WF	W-WF	W-WF	B-BF-WF

Appendix C: Wildlife Predictive Matrix (Possible Species in Yorktown)

B=Breeding; NB= Non-Breeding; F=Foraging; W=Wintering

Species	Structure Building	Ledge Cliff	Stable bank	Riparian	River	Stream	Lake	Pond	Bog	Shrub Swamp	Deep Marsh	Shallow Marsh
Least Bittern - <i>Ixobrychus exilis</i>				WF	W-WF	W-WF	W-WF	W-WF	WF	W-WF	W-WF	B-BF-WF
Great Blue Heron - <i>Ardea herodias</i>				WF	W-WF	W-WF	W-WF	W-WF	W-WF	W-WF	W-WF	B-BF
Green-backed Heron - <i>Butorides striatus</i>				W-WF	W-WF	W-WF	W-WF	W-WF		WF	W-WF	B-BF-W-WF
Black-crowned Night-Heron - <i>Nycticorax nycticorax</i>				W-WF	W-WF	W-WF		W-WF		B-WF	W-WF	W-WF
Yellow-crowned Night Heron (<i>Nycticorax violaceus</i>)				W-WF						B-WF	W-WF	W-WF
Glossy Ibis - <i>Plegadis falcinellus</i>					W-WF	W-WF	W-WF	W-WF		B	WF	WF
Mute Swan - <i>Cygnus olor</i>				W-WF	W-WF	W-WF	W-WF	W-WF			W-WF	
Canada Goose - <i>Branta canadensis</i>				B-BF	B-BF	B-BF						B-BF
Wood Duck - <i>Aix sponsa</i>				B-BF	BF	BF	BF	B-BF		B-BF	B-BF	B-BF
Green-winged Teal - <i>Anas crecca</i>								B-BF-W-WF			B-BF-W-WF	B-BF
American Black Duck - <i>Anas rubripes</i>				B-BF-W-WF	B-BF	B-BF	B-BF-W-WF	B-BF-W-WF	B-BF	B-BF	B-BF-W-WF	B-BF-W-WF
Mallard - <i>Anas platyrhynchos</i>				B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF	B-BF	B-BF-W-WF	B-BF-W-WF
Northern Pintail - <i>Anas acuta</i>											B-BF	B-BF
Blue-winged Teal - <i>Anas Discors</i>								B-BF			B-BF	B-BF
Northern Shoveler - <i>Anas clypeata</i>								B-BF-W-WF			B-BF-W-WF	B-BF
Gadwall - <i>Anas strepera</i>				B-BF			B-BF-W-WF	B-BF		B-BF	B-BF	B-BF
American Widgeon - <i>Anas americana</i>							B-BF	B-BF-W-WF			B-BF-W-WF	B-BF-W-WF
Canvasback - <i>Aythya valisineria</i>							B-BF-W-WF				B-BF-W-WF	B-BF-W-WF
Ring-necked Duck - <i>Aythya collaris</i>				B-BF	W-WF	-W-WF	B-BF	B-BF-W-WF		B-BF	B-BF-W-WF	
Common Goldeneye - <i>Bucephala clangula</i>					B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF				
Bufflehead - <i>Bucephala albeola</i>					W-WF	W-WF	W-WF					
Hooded Merganser - <i>Lophodytes cucullatus</i>					B-BF	B-BF	B-BF-W-WF	B-BF-W-WF			W-WF	
Common Merganser - <i>Mergus merganser</i>					B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF				
Red-breasted Merganser - <i>Mergus serrator</i>				B-BF	B-BF	B-BF	B-BF	B-BF				
Turkey Vulture - <i>Cathartes aura</i>												
Osprey - <i>Pandion haliaetus</i>					B-BF	B-BF	B-BF					
Bald Eagle - <i>Haliaeetus leucociphalus</i>				B	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF					
Northern Harrier - <i>Circus cyaneus</i>									B-BF	B-BF	W-WF	B-BF-W-WF
Sharp-shinned Hawk - <i>Accipiter striatus</i>												
Cooper's Hawk - <i>Accipiter cooperii</i>												
Northern Goshawk - <i>Accipiter gentilis</i>												
Red-shouldered Hawk - <i>Buteo lineatus</i>				B-BF-W-WF							BF-WF	
Broad-winged Hawk - <i>Buteo platypterus</i>												
Red-tailed Hawk - <i>Buteo jamaicensis</i>												
Rough-legged Hawk - <i>Buteo lagopus</i>									WF	WF		WF
American Kestrel - <i>Falco sparverius</i>										WF		BF
Merlin - <i>Falco columbarius</i>									WF	WF		WF
Peregrine Falcon - <i>Falco peregrinus</i>		B										
Ring-necked Pheasant - <i>Phasianus colchicus</i>												
Ruffed Grouse - <i>Bonasa umbellus</i>												
Wild Turkey - <i>Meleagris gallopavo</i>												
Northern Bobwhite - <i>Colinus virginianus</i>												
King Rail - <i>Ralus elegans</i>											B-BF-W-WF	B-BF-W-WF
Virginia Rail - <i>Ralus limicola</i>											B-BF	B-BF-W-WF
Sora - <i>Porzana carolina</i>								B-BF		B-BF	B-BF	B-BF
Common Moorhen - <i>Gallinula chloropus</i>							B-BF	B-BF			B-BF	B-BF
American Coot - <i>Fulica americana</i>							B-BF	B-BF			B-BF	B-BF
Killdeer - <i>Charadrius vociferus</i>				B-BF								
Spotted Sandpiper - <i>Actitis macularia</i>				B-BF	B-BF	B-BF	B-BF	B-BF				
Upland Sandpiper - <i>Bartramia longicauda</i>												
Common Snipe - <i>Gallinago gallinago</i>				B-BF-W-WF					B-BF-W-WF	B-BF-W-WF		B-BF-W-WF

Appendix C: Wildlife Predictive Matrix (Possible Species in Yorktown)

B=Breeding; NB= Non-Breeding; F=Foraging; W=Wintering

Species	Structure Building	Ledge Cliff	Stable bank	Riparian	River	Stream	Lake	Pond	Bog	Shrub Swamp	Deep Marsh	Shallow Marsh
Red-breasted Nuthatch - <i>Sitta canadensis</i>									B-BF-W-WF			
White-breasted Nuthatch - <i>Sitta carolinensis</i>				B-BF-W-WF								
Brown Creeper - <i>Certhia americana</i>				B-BF-W-WF					B-BF-W-WF			
Carolina Wren - <i>Thryothorus ludovicianus</i>				B-BF								
House Wren - <i>Troglodytes aedon</i>	B			B-BF								
Winter Wren - <i>Troglodytes troglodytes</i>				W-WF						BF-WF		
Sedge Wren - <i>Cistothorus platensis</i>												
Marsh Wren - <i>Cistothorus palustris</i>											B-BF	B-BF
Golden-crowned Kinglet - <i>Regulus satrapa</i>												
Ruby-crowned Kinglet - <i>Regulus calendula</i>												
Blue-gray Gnatcatcher - <i>Poliophtila caerulea</i>										B-BF		
Eastern Bluebird - <i>Sialia sialis</i>												
Veery - <i>Catharus fuscescens</i>				B-BF								
Gray-cheeked Thrush - <i>Catharus minimus</i>												
Swainson's Thrush - <i>Catharus ustulatus</i>												
Hermit Thrush - <i>Catharus guttatus</i>									B-BF	W-WF		
Wood Thrush - <i>Hylocichla mustelina</i>				B-BF								
American Robin - <i>Turdus migratorius</i>				B-BF-W-WF					W-WF	B-BF-W-WF		
Gray Catbird - <i>Dumetella carolinensis</i>				B-BF					B-BF			
Northern Mockingbird - <i>Mimus polyglottos</i>												
Brown Thrasher - <i>Toxostoma rufum</i>				B-BF								
Cedar Waxwing - <i>Bombycilla cedrorum</i>				B-BF-W-WF						B-BF-W-WF		
Northern Shrike - <i>Lanius excubitor</i>												WF
Loggerhead Shrike - <i>Lanius ludovicianus</i>												WF
European Starling - <i>Sturnus vulgaris</i>				B-BF-W-WF								
White-eyed Vireo - <i>Vireo griseus</i>				B-BF						B-BF		
Solitary Vireo - <i>Vireo solitarius</i>												
Yellow-throated Vireo - <i>Vireo flavifrons</i>												
Warbling Vireo - <i>Vireo gilvus</i>				B-BF								
Philadelphia Vireo - <i>Vireo philadelphicus</i>												
Red-eyed Vireo - <i>Vireo olivaceus</i>				B-BF								
Blue-winged Warbler - <i>Vermivora pinus</i>										B-BF		
Golden-winged Warbler - <i>Vermivora chrysoptera</i>												
Tennessee Warbler - <i>Vermivora peregrina</i>									B-BF	B-BF		
Nashville Warbler - <i>Vermivora ruficapilla</i>									B-BF	B-BF		
Northern Parula - <i>Parula americana</i>									B-BF	B-BF		
Yellow Warbler - <i>Dendroica petechia</i>				B-BF						B-BF		
Chestnut-sided Warbler - <i>Dendroica pensylvanica</i>										B-BF		
Magnolia Warbler - <i>Dendroica magnolia</i>												
Cape May Warbler - <i>Dendroica tigrina</i>												
Black-throated Blue Warbler - <i>Dendroica caerulescens</i>												
Yellow-rumped Warbler - <i>Dendroica coronata</i>										B-BF		
Black-throated Green Warbler - <i>Dendroica virens</i>												
Blackburnian Warbler - <i>Dendroica fusca</i>												
Pine Warbler - <i>Dendroica pinus</i>												
Prairie Warbler - <i>Dendroica discolor</i>												
Palm Warbler - <i>Dendroica palmarum</i>				B-BF					B-BF	B-BF		
Bay-breasted Warbler - <i>Dendroica castanea</i>				B-BF								
Blackpoll Warbler - <i>Dendroica striata</i>												
Cerulean Warbler - <i>Dendroica cerulea</i>				B-BF								
Black-and-White Warbler - <i>Mniotilta varia</i>				B-BF					B-BF			

Appendix C: Wildlife Predictive Matrix (Possible Species in Yorktown)

B=Breeding; NB= Non-Breeding; F=Foraging; W=Wintering

Species	Structure Building	Ledge Cliff	Stable bank	Riparian	River	Stream	Lake	Pond	Bog	Shrub Swamp	Deep Marsh	Shallow Marsh
American Redstart - <i>Setophaga ruticilla</i>				B-BF								
Prothonotary Warbler - <i>Prothonotaria citrea</i>				B-BF						B-BF		
Worm-eating Warbler - <i>Helmitheros vermivorus</i>												
Ovenbird - <i>Seiurus aurocapillus</i>												
Northern Waterthrush - <i>Seiurus noveboracensis</i>				B-BF	B-BF	B-BF			B-BF	B-BF		
Louisiana Waterthrush - <i>Seiurus motacilla</i>				B-BF						B-BF		
Mourning Warbler - <i>Oporonis philadelphia</i>									B-BF	B-BF		
Common Yellowthroat - <i>Geothlypis trichas</i>				B-BF				B-BF	B-BF	B-BF	B-BF	B-BF
Hooded Warbler - <i>Wilsonia citrina</i>										B-BF		
Wilson's Warbler - <i>Wilsonia pusilla</i>				B-BF					B-BF	B-BF		
Canada Warbler - <i>Wilsonia canadensis</i>				B-BF					B-BF	B-BF		
Yellow-breasted Chat - <i>Icteria virens</i>				B-BF								
Scarlet Tanager - <i>Piranga olivacea</i>												
Northern Cardinal - <i>Cardinalis cardinalis</i>				B-BF-W-WF	W-WF	W-WF				B-BF		
Rose-breasted Grosbeak - <i>Pheucticus ludovicianus</i>				B-BF								
Indigo Bunting - <i>Passerina cyanea</i>				B-BF								
Eastern Towhee - <i>Pipilo erythrophthalmus</i>												
American Tree Sparrow - <i>Spizella arborea</i>				W-WF						W-WF		WF
Chipping Sparrow - <i>Spizella passerina</i>												
Field Sparrow - <i>Spizella pusilla</i>												
Vesper Sparrow - <i>Poocetes gramineus</i>												
Savannah Sparrow - <i>Passerculus sandwichensis</i>												B-BF
Grasshopper Sparrow - <i>Ammodramus savannarum</i>												
Song Sparrow - <i>Melospiza melodia</i>				B-BF-W-WF						B-BF-W-WF		WF
Lincoln's Sparrow - <i>Melospiza lincolni</i>									B-BF	B-BF		
Swamp Sparrow - <i>Melospiza georgiana</i>				B-BF-W-WF					B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF
White-throated Sparrow - <i>Zonotrichia albicollis</i>				W-WF								
Dark-eyed Junco - <i>Junco hyemalis</i>												
Lapland Longspur - <i>Calcarius lapponicus</i>												
Snow Bunting - <i>Plectrophenax nivalis</i>												W-WF
Bobolink - <i>Dolichonyx oryzivorus</i>												B-BF
Red-winged Blackbird - <i>Agelaius phoeniceus</i>				B-BF-W-WF				B-BF	B-BF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF
Eastern Meadowlark - <i>Sturnella magna</i>												
Rusty Blackbird - <i>Euphagus carolinus</i>				B-BF-W-WF	W-WF	W-WF		B-BF	B-BF-W-WF	B-BF-W-WF		
Common Grackle - <i>Quiscalus quiscula</i>				B-BF-W-WF			B-BF		B-BF	B-BF-W-WF	BF-WF	BF-WF
Brown-headed Cowbird - <i>Molothrus ater</i>				B-BF-W-WF							WF	WF
Orchard Oriole - <i>Icterus spurius</i>				B-BF								
Baltimore Oriole - <i>Icterus galbula</i>				B-BF								
Pine Grosbeak - <i>Pinicola enucleator</i>												
Purple Finch - <i>Carpodacus purpureus</i>												
House Finch - <i>Carpodacus mexicanus</i>												
Red Crossbill - <i>Laxia curvirostra</i>												
White-winged Crossbill - <i>Loxia leucoptera</i>												
Common Redpoll - <i>Carduelis flammea</i>												
Hoary Redpoll - <i>Carduelis hornemanni</i>												
Pine Siskin - <i>Carduelis pinus</i>				B-BF					B-BF			
American Goldfinch - <i>Carduelis tristis</i>				B-W-WF					B-BF	B-BF-W-WF		B-BF-W-WF
Evening Grosbeak - <i>Coccothraustes vespertinus</i>												
House Sparrow - <i>Passer domesticus</i>												
Virginia Opossum - <i>Didelphis virginiana</i>		W-WF	BF-W-WF	B-BF-W-WF						B-BF-W-WF	B-BF	B-BF
Masked Shrew - <i>Sorex cinereus</i>				B-BF-W-WF					B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF

Appendix C: Wildlife Predictive Matrix (Possible Species in Yorktown)

B=Breeding; NB= Non-Breeding; F=Foraging; W=Wintering

Species	Structure Building	Ledge Cliff	Stable bank	Riparian	River	Stream	Lake	Pond	Bog	Shrub Swamp	Deep Marsh	Shallow Marsh
Water Shrew - <i>Sorex palustris</i>				B-BF-W-WF	B-BF-W-WF	B-BF-W-WF						
Smoky Shrew - <i>Sorex fumeus</i>				B-BF-W-WF					B-BF-W-WF			
Long-tailed Shrew - <i>Sorex dispar</i>		B-BF-W-WF										
Pygmy Shrew - <i>Sorex hoyi</i>				B-BF-W-WF					B-BF-W-WF	B-BF-W-WF		
Northern Short-tailed Shrew - <i>Blarina brevicauda</i>				B-BF-W-WF					B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF
Least Shrew - <i>Cryptotis parva</i>												B-BF-W-WF
Hairy-tailed Mole - <i>Parascalops breweri</i>												
Eastern Mole - <i>Scalopus aquaticus</i>												
Star-nosed Mole - <i>Condylura cristata</i>				B-BF-W-WF	B-BF-W-WF	B-BF-W-WF						
Little Brown Myotis - <i>Myotis lucifugus</i>	B			BF	BF	BF						
Northern Long-eared Bat - <i>Myotis septentrionalis</i>	B	W		BF	BF	BF						
Indiana Myotis - <i>Myotis sodalis</i>				BF	BF	BF						
Small-footed Myotis - <i>Myotis leibii</i>	B			BF	BF	BF						
Silver-haired Bat - <i>Lasionycteris noctivagans</i>	B			BF	BF	BF						
Tricolored Bat - <i>Pipistrellus subflavus</i>	B	B-W		BF	BF	BF						
Big Brown Bat - <i>Eptesicus fuscus</i>	B-W	W		BF	BF	BF						
Red Bat - <i>Lasiurus borealis</i>				BF	BF	BF						
Hoary Bat - <i>Lasiurus cinereus</i>				BF	BF	BF						
Eastern Cottontail - <i>Sylvilagus floridanus</i>				B-BF						B-BF-W-WF	B-BF	B-BF
New England Cottontail - <i>Sylvilagus transitionalis</i>				B-BF-W-WF						B-BF-W-WF	B-BF	B-BF
Eastern Chipmunk - <i>Tamias striatus</i>												
Woodchuck - <i>Marmota monax</i>			B-BF-W									
Gray Squirrel - <i>Sciurus carolinensis</i>	B-W			B-BF-W-WF								
Red Squirrel - <i>Tamiasciurus hudsonicus</i>	B-W											
Southern Flying Squirrel - <i>Glaucomys volans</i>	BF-WF											
Northern Flying Squirrel - <i>Glaucomys sabrinus</i>	BF-WF											
Beaver - <i>Castor canadensis</i>				B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	BF-WF	BF-WF	BF-WF	BF-WF
Deer Mouse - <i>Peromyscus maniculatus</i>	B-BF-W-WF											
White-footed Mouse - <i>Peromyscus leucopus</i>	B-BF-W-WF			B-BF-W-WF					B-BF-W-WF	B-BF-W-WF		
Southern Red-backed Vole - <i>Clethrionomys gapperi</i>				B-BF-W-WF					B-BF-W-WF	B-BF-W-WF		
Meadow Vole - <i>Microtus pennsylvanicus</i>				B-BF-W-WF					B-BF-W-WF	B-BF-W-WF		B-BF-W-WF
Muskrat - <i>Ondatra zibethicus</i>				B-BF-W-WF	B-BF-W-WF	B-BF-W-WF						
Southern Bog Lemming - <i>Synaptomys cooperi</i>				B-BF-W-WF					B-BF-W-WF			B-BF-W-WF
Norway Rat - <i>Rattus norvegicus</i>	B-BF-W-WF											
House Mouse - <i>Mus musculus</i>	B-BF-W-WF											
Meadow Jumping Mouse - <i>Zapus hudsonius</i>				B-BF-W					B-BF	B-BF-W		B-BF
Woodland Jumping Mouse - <i>Napaeozapus insignis</i>				B-BF-W						B-BF-WF		
Porcupine - <i>Erethizon dorsatum</i>		B								WF		
Coyote - <i>Canis latrans</i>			B-W	BF-WF					BF-WF	BF-WF	BF-WF	BF-WF
Red Fox - <i>Vulpes vulpes</i>		B	B-W	BF-WF					BF-WF	BF-WF	BF-WF	BF-WF
Gray Fox - <i>Urocyon cinereoargenteus</i>		B	B-W	BF-WF						BF-WF	BF-WF	BF-WF
Black Bear - <i>Ursus americanus</i>		W	W	BF	BF	BF						
Raccoon - <i>Procyon lotor</i>		B		BF-WF					BF	BF-WF	BF	BF
Marten - <i>Martes americana</i>												
Fisher - <i>Martes pennanti</i>		B-BF-W-WF		BF-WF					BF-WF	BF-WF		
Ermine - <i>Mustela erminea</i>		BF-WF		BF-WF					BF-WF	BF-WF		
Long-tailed Weasel - <i>Mustela frenata</i>				B-BF-W-WF					BF-WF	BF-WF	BF-WF	BF-WF
Mink - <i>Mustela vison</i>				B-BF-W-WF	B-BF-W-WF	B-BF-W-WF						
Striped Skunk - <i>Mephitis mephitis</i>				BF					BF	BF	BF	BF
River Otter - <i>Lutra canadensis</i>				B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	BF-WF	BF-WF	B-BF-W-WF	BF-WF
White-tailed Deer - <i>Odocoileus virginianus</i>				BF					BF	B-BF-WF	BF	BF

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Species	Sedge Meadow	Orchard	Savanna	Pasture	Shrub Old Field	Forb	Grass	Cultivated		
Mudpuppy - <i>Necturus m. maculosus</i>										
Marbled Salamander - <i>Ambystoma opacum</i>	B-NB									
Jefferson Salamander - <i>Ambystoma Jeffersonianum</i>	B-NB									
Blue-spotted Salamander - <i>Ambystoma laterale</i>	NB									
Spotted Salamander - <i>Ambystoma maculatum</i>	B-NB									
Eastern Newt - <i>Notophthalmus v. viridescens</i>	NB									
Northern Dusky Salamander - <i>Desmognathus f. fuscus</i>	B-NB	NB								
Mountain Dusty Salamander										
Redback Salamander - <i>Plethodon cinereus</i>										
Slimy Salamander - <i>Plethodon g. glutinosus</i>										
Four-toed Salamander - <i>Hemidactylium scutatum</i>	B									
Northern Spring Salamander - <i>Gyrinophilus p. porphyriticus</i>										
Northern Two-lined Salamander - <i>Eurycea b. bislineata</i>			NB							
Eastern American Toad - <i>Bufo a. americanus</i>	NB	NB	NB	NB	NB	NB	NB	NB		
Fowler's Toad - <i>Bufo woodhousii fowleri</i>	B-NB			NB			NB	NB		
Northern Spring Peeper - <i>Hyla c. crucifer</i>	B-NB									
Gray Treefrog - <i>Hyla versicolor</i>										
Bullfrog - <i>Rana catesbeiana</i>										
Green Frog - <i>Rana clamitans melanota</i>	NB									
Wood Frog - <i>Rana sylvatica</i>	NB	NB								
Northern Leopard Frog - <i>Rana pipiens</i>	B			B						
Pickerel Frog - <i>Rana palustris</i>										
Common Snapping Turtle - <i>Chelydra s. serpentina</i>		B	B	B	B	B	B	B		
Stinkpot - <i>Sternotherus odoratus</i>		B	B	B	B	B	B			
Spotted Turtle - <i>Clemmys guttata</i>	B	B	B	B	B	B	B			
Bog Turtle - <i>Clemmys muhlenbergii</i>	B-NB	B-NB	B-NB	B-NB	B-NB	B-NB	B-NB	B-NB		
Wood Turtle - <i>Clemmys insculpta</i>	NB	B-NB	B-NB	B-NB	B-NB	B-NB	B-NB	B-NB		
Eastern Box Turtle - <i>Terrapene c. carolina</i>	B-NB	B-NB	B-NB	B-NB	B-NB	B-NB	B-NB	B-NB		
Red-eared Slider - <i>Psuedemys scripta elegans</i>				B			B			
Eastern Painted Turtle - <i>Chrysemys p. picta</i>							B			
Blanding's Turtle - <i>Emydoidea blandingii</i>		NB	NB	NB	NB	NB	NB			
Eastern Spiny Softshell - <i>Trionyx s. spineferus</i>										
Five-lined Skink - <i>Eumeces fasciatus</i>										
Northern Water Snake - <i>Nerodia s. sipedon</i>	B-NB									
Northern Brown Snake - <i>Storeria d. dekayi</i>	NB	B-NB	B-NB	B-NB	B-NB	B-NB	B-NB	B-NB		
Northern Redbelly Snake - <i>Storeria o. occipitamaculata</i>	B			B-NB						
Eastern Garter Snake - <i>Thamnophis s. sirtalis</i>	NB	B-NB	B-NB	B-NB	B-NB	B-NB	B-NB			
Eastern Ribbon Snake - <i>Thamnophis s. sauritis</i>	B-NB									
Eastern Hognose Snake - <i>Heterodon platyrhinos</i>			B-NB	B-NB	B-NB	B-NB	B-NB	B-NB		
Northern Ringneck Snake - <i>Diadophis punctatus edwardsi</i>				B-NB						
Eastern Worm Snake - <i>Carphophis a. amoenus</i>				B-NB		B-NB				
Northern Black Racer - <i>Coluber c. constrictor</i>		B-NB	B-NB	B-NB	B-NB	B-NB	B-NB	B-NB		
Eastern Smooth Green Snake - <i>Opheodrys v. vernalis</i>	NB		B-NB	B-NB	B-NB	B-NB	B-NB	B-NB		
Black Rat Snake - <i>Elaphe o. obsoleta</i>					B-NB	B-NB				
Eastern Milk Snake - <i>Lampropeltis t. triangulum</i>		B-NB		B-NB		B-NB	B-NB			
Northern Copperhead - <i>Agkistrodon contortrix mokeson</i>										
Timber Rattlesnake - <i>Crotalus horridus</i>										
Common Loon - <i>Gavia immer</i>										
Pied-billed Grebe - <i>Podilymbus podiceps</i>	W-WF									
American Bittern - <i>Botaurus lentiginosus</i>	W-WF									
American Bittern - <i>Ixobrychus exilis</i>	WF		WF	WF						

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Species	Sedge Meadow	Orchard	Savanna	Pasture	Shrub Old Field	Forb	Grass	Cultivated		
Red-breasted Nuthatch - <i>Sitta canadensis</i>		WF								
White-breasted Nuthatch - <i>Sitta carolinensis</i>		B-BF-W-WF	WF							
Brown Creeper - <i>Certhia americana</i>		WF								
Carolina Wren - <i>Thryothorus ludovicianus</i>					B-BF					
House Wren - <i>Troglodytes aedon</i>		B-BF			B-BF					
Winter Wren - <i>Troglodytes troglodytes</i>										
Sedge Wren - <i>Cistothorus platensis</i>	B-BF									
Marsh Wren - <i>Cistothorus palustris</i>										
Golden-crowned Kinglet - <i>Regulus satrapa</i>										
Ruby-crowned Kinglet - <i>Regulus calendula</i>										
Blue-gray Gnatcatcher - <i>Poliophtila caerulea</i>		B-BF	B-BF		B-BF					
Eastern Bluebird - <i>Sialia sialis</i>		B-BF-W-WF	B-BF-W-WF	BF-W-WF	BF-WF	BF-WF	BF-WF			
Veery - <i>Catharus fuscescens</i>					B-BF					
Gray-cheeked Thrush - <i>Catharus minimus</i>										
Swainson's Thrush - <i>Catharus ustulatus</i>										
Hermit Thrush - <i>Catharus guttatus</i>					B-BF					
Wood Thrush - <i>Hylocichla mustelina</i>										
American Robin - <i>Turdus migratorius</i>		B-BF-W-WF		B-BF			BF	BF		
Gray Catbird - <i>Dumetella carolinensis</i>		B-BF		B-BF	B-BF					
Northern Mockingbird - <i>Mimus polyglottos</i>				B-BF-W-WF	B-BF-W-WF					
Brown Thrasher - <i>Toxostoma rufum</i>				B-BF-W-WF	B-BF-W-WF					
Cedar Waxwing - <i>Bombycilla cedrorum</i>		B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF					
Northern Shrike - <i>Lanius excubitor</i>	WF	W-WF	W-WF	W-WF	W-WF	WF	WF			
Loggerhead Shrike - <i>Lanius ludovicianus</i>	WF	B-BF-W-WF	B-BF-W-WF	W-WF	W-WF	WF	WF			
European Starling - <i>Sturnus vulgaris</i>	BF-WF	WF	WF	WF		WF	WF	WF		
White-eyed Vireo - <i>Vireo griseus</i>				B-BF	B-BF					
Solitary Vireo - <i>Vireo solitarius</i>										
Yellow-throated Vireo - <i>Vireo flavifrons</i>		B-BF	B-BF							
Warbling Vireo - <i>Vireo gilvus</i>		B-BF	B-BF							
Philadelphia Vireo - <i>Vireo philadelphicus</i>					B-BF					
Red-eyed Vireo - <i>Vireo olivaceus</i>		B-BF								
Blue-winged Warbler - <i>Vermivora pinus</i>			B-BF	B-BF	B-BF		B-BF			
Golden-winged Warbler - <i>Vermivora chrysoptera</i>					B-BF					
Tennessee Warbler - <i>Vermivora peregrina</i>					B-BF					
Nashville Warbler - <i>Vermivora ruficapilla</i>				B-BF						
Northern Parula - <i>Parula americana</i>										
Yellow Warbler - <i>Dendroica petechia</i>		B-BF	B-BF	B-BF	B-BF					
Chestnut-sided Warbler - <i>Dendroica pensylvanica</i>				B-BF	B-BF					
Magnolia Warbler - <i>Dendroica magnolia</i>										
Cape May Warbler - <i>Dendroica tigrina</i>										
Black-throated Blue Warbler - <i>Dendroica caerulescens</i>										
Yellow-rumped Warbler - <i>Dendroica coronata</i>					B-BF					
Black-throated Green Warbler - <i>Dendroica virens</i>										
Blackburnian Warbler - <i>Dendroica fusca</i>										
Pine Warbler - <i>Dendroica pinus</i>										
Prairie Warbler - <i>Dendroica discolor</i>			B-BF	B-BF	B-BF					
Palm Warbler - <i>Dendroica palmarum</i>										
Bay-breasted Warbler - <i>Dendroica castanea</i>					B-BF					
Blackpoll Warbler - <i>Dendroica striata</i>										
Cerulean Warbler - <i>Dendroica cerulea</i>										
Black-and-White Warbler - <i>Mniotilta varia</i>		B-BF	B-BF							

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Species	Sedge Meadow	Orchard	Savanna	Pasture	Shrub Old Field	Forb	Grass	Cultivated		
Water Shrew - <i>Sorex palustris</i>	B-BF-W-WF									
Smoky Shrew - <i>Sorex fumeus</i>										
Long-tailed Shrew - <i>Sorex dispar</i>										
Pygmy Shrew - <i>Sorex hoyi</i>	B-BF-W-WF	B-BF-W-WF					B-BF-W-WF			
Northern Short-tailed Shrew - <i>Blarina brevicauda</i>	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF			
Least Shrew - <i>Cryptotis parva</i>	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF		B-BF-W-WF			
Hairy-tailed Mole - <i>Parascalops breweri</i>					B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	WF		
Eastern Mole - <i>Scalopus aquaticus</i>		B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF		
Star-nosed Mole - <i>Condylura cristata</i>	B-BF-W-WF									
Little Brown Myotis - <i>Myotis lucifugus</i>	BF	BF	BF	BF	BF	BF	BF	BF		
Northern Long-eared Bat - <i>Myotis septentrionalis</i>	BF	BF	BF	BF	BF	BF	BF	BF		
Indiana Myotis - <i>Myotis sodalis</i>	BF	BF	BF	BF	BF	BF	BF	BF		
Small-footed Myotis - <i>Myotis leibii</i>	BF				BF	BF	BF	BF		
Silver-haired Bat - <i>Lasionycteris noctivagans</i>	BF	BF	BF	BF	BF	BF	BF	BF		
Tricolored Bat - <i>Pipistrellus subflavus</i>	BF	BF	BF	BF	BF	BF	BF	BF		
Big Brown Bat - <i>Eptesicus fuscus</i>	BF	BF	BF	BF	BF	BF	BF	BF		
Red Bat - <i>Lasiurus borealis</i>	BF	BF			BF	BF	BF	BF		
Hoary Bat - <i>Lasiurus cinereus</i>	BF				BF	BF	BF	BF		
Eastern Cottontail - <i>Sylvilagus floridanus</i>	B-BF	B-BF	B-BF	B-BF-W-WF	B-BF-W-WF	B-BF	B-BF			
New England Cottontail - <i>Sylvilagus transitionalis</i>	B-BF	B-BF	B-BF	B-BF-W-WF	B-BF-W-WF	B-BF	B-BF			
Eastern Chipmunk - <i>Tamias striatus</i>					B-BF-W		B-BF-W			
Woodchuck - <i>Marmota monax</i>		B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W	B-BF-W		
Gray Squirrel - <i>Sciurus carolinensis</i>										
Red Squirrel - <i>Tamiasciurus hudsonicus</i>										
Southern Flying Squirrel - <i>Glaucomys volans</i>		B-BF-W-WF								
Northern Flying Squirrel - <i>Glaucomys sabrinus</i>										
Beaver - <i>Castor canadensis</i>										
Deer Mouse - <i>Peromyscus maniculatus</i>					B-BF-W-WF					
White-footed Mouse - <i>Peromyscus leucopus</i>	B-BF-W-WF	B-BF-W-WF		B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF			
Southern Red-backed Vole - <i>Clethrionomys gapperi</i>					B-BF-W-WF	B-BF-W-WF	B-BF-W-WF			
Meadow Vole - <i>Microtus pennsylvanicus</i>	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF		
Muskrat - <i>Ondatra zibethicus</i>	B-BF-W-WF									
Southern Bog Lemming - <i>Synaptomys cooperi</i>	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF		B-BF-W-WF	B-BF-W-WF	B-BF-W-WF			
Norway Rat - <i>Rattus norvegicus</i>		B-BF-W-WF	BF-WF	BF-WF	BF-WF	BF-WF	BF-WF	BF-WF		
House Mouse - <i>Mus musculus</i>		B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF	B-BF-W-WF		
Meadow Jumping Mouse - <i>Zapus hudsonius</i>	B-BF	B-BF	B-BF	B-BF-W	B-BF-W	B-BF-W	B-BF-W			
Woodland Jumping Mouse - <i>Napaeozapus insignis</i>					B-BF-W					
Porcupine - <i>Erethizon dorsatum</i>	BF	BF-W-WF	BF	BF	BF	BF	BF			
Coyote - <i>Canis latrans</i>	BF-WF	BF-WF	BF-WF	BF-WF	B-BF-W-WF	BF-WF	BF-WF	BF-WF		
Red Fox - <i>Vulpes vulpes</i>	BF-WF	BF-WF	BF-WF	BF-WF	B-BF-W-WF	BF-WF	BF-WF	BF-WF		
Gray Fox - <i>Urocyon cinereoargenteus</i>	BF-WF				BF-WF			BF-WF		
Black Bear - <i>Ursus americanus</i>	BF	BF		BF	BF	BF	BF	BF		
Raccoon - <i>Procyon lotor</i>	BF	BF			BF	BF	BF	BF		
Marten - <i>Martes americana</i>										
Fisher - <i>Martes pennanti</i>	BF				BF-WF					
Ermine - <i>Mustela erminea</i>					B-BF-W-WF	BF-WF	BF-WF	BF-WF		
Long-tailed Weasel - <i>Mustela frenata</i>	BF-WF	BF-WF		BF-WF	B-BF-W-WF	BF-WF	BF-WF	BF-WF		
Mink - <i>Mustela vison</i>	B-B-W-WF									
Striped Skunk - <i>Mephitis mephitis</i>	BF	B-BF	B-BF	B-BF	B-BF-W	B-BF	B-BF	BF-WF		
River Otter - <i>Lutra canadensis</i>										
White-tailed Deer - <i>Odocoileus virginianus</i>	BF	BF-WF	BF	BF	B-BF-WF	BF	BF	BF-WF		

APPENDIX D

**PLANTS AND WILDLIFE OBSERVED
OR PREVIOUSLY DOCUMENTED**



Fauna Identified in Yorktown

Legend

SC – Special Concern

T – Threatened

E – Endangered

* – As previously observed by Dr. Patrick Louis Cooney or at Teatown Lake Reservation

State Listing Status

Birds

<i>Accipiter cooperii</i> *	Cooper's Hawk	SC
<i>Accipiter gentilis</i> *	Northern Goshawk	SC
<i>Accipiter striatus</i> *	Sharp-Shinned Hawk	SC
<i>Actitis macularia</i> *	Spotted Sandpiper	
<i>Aegolius acadicus</i> *	Northern Saw-Whet Owl	
<i>Agelaius phoeniceus</i>	Red-Winged Blackbird	
<i>Aix sponsa</i>	Wood Duck	
<i>Ammodramus savannarum</i> *	Grasshopper Sparrow	SC
<i>Anas acuta</i> *	Common Pintail	
<i>Anas americana</i> *	American Widgeon	
<i>Anas clypeata</i>	Northern Shoveler	
<i>Anas crecca</i> *	Green-Winged Teal	
<i>Anas discors</i> *	Blue-Winged Teal	
<i>Anas platyrhynchos</i>	Mallard	
<i>Anas rubripes</i> *	American Black Duck	
<i>Anas strepera</i>	Gadwall	
<i>Archilochus colubris</i> *	Ruby-Throated Hummingbird	
<i>Ardea herodias</i>	Great Blue Heron	
<i>Asio otus</i> *	Long-Eared Owl	
<i>Aythya affinis</i> *	Lesser Scaup	
<i>Aythya collaris</i>	Ring-Necked Duck	
<i>Bombycilla cedrorum</i>	Cedar Waxwing	
<i>Bonasa umbellus</i> *	Ruffed Grouse	
<i>Botaurus lentiginosus</i> *	American Bittern	SC



**State
Listing Status**

<i>Branta bernicla</i> *	Brant	
<i>Branta canadensis</i>	Canada Goose	
<i>Bubo virginianus</i> *	Great Horned Owl	
<i>Bucephala albeola</i> *	Bufflehead	
<i>Buteo jamaicensis</i>	Red Tailed Hawk	
<i>Buteo lagopus</i> *	Rough-Legged Hawk	
<i>Buteo lineatus</i>	Red-Shouldered Hawk	SC
<i>Buteo platypterus</i> *	Broad-Winged Hawk	
<i>Caprimulgus vociferus</i> *	Whip-Poor-Will	SC
<i>Cardinalis cardinalis</i>	Northern Cardinal	
<i>Carduelis flammea</i> *	Common Redpoll	
<i>Carduelis pinus</i> *	Pine Siskin	
<i>Carduelis tristis</i>	American Goldfinch	
<i>Carpodacus mexicanus</i>	House Finch	
<i>Carpodacus purpureus</i> *	Purple Finch	
<i>Cathartes aura</i>	Turkey Vulture	
<i>Catharus fuscescens</i>	Veery	
<i>Catharus guttatus</i> *	Hermit Thrush	
<i>Catharus minimus</i> *	Gray Cheeked Thrush	
<i>Catharus ustulatus</i> *	Swainson's Thrush	
<i>Certhia americana</i>	Brown Creeper	
<i>Ceryle alcyon</i>	Belted Kingfisher	
<i>Chaetura pelagica</i> *	Chimmney Swift	
<i>Charadrius vociferus</i>	Killdeer	
<i>Chen caerulescens</i> *	Snow Goose	
<i>Chordeiles minor</i> *	Common Nighthawk	SC
<i>Circus cyaneus</i> *	Northern Harrier	T
<i>Cistothorus palustris</i> *	Marsh Wren	
<i>Coccythraustes vespertinus</i> *	Evening Grosbeak	
<i>Coccyzus americanus</i> *	Yellow-Billed Cuckoo	



**State
Listing Status**

<i>Coccyzus erythrophthalmus</i> *	Black-Billed Cuckoo
<i>Colaptes auratus</i> *	Northern Flicker
<i>Colinus virginianus</i> *	Northern Bobwhite
<i>Columba livia</i>	Rock Pigeon
<i>Contopus virens</i>	Eastern Wood Pewee
<i>Corvus brachyrhynchos</i>	American Crow
<i>Corvus brachyrhynchos</i> *	Fish Crow
<i>Corvus corax</i>	Common Raven
<i>Cyanocitta cristata</i>	Blue Jay
<i>Cygnus olor</i> *	Mute Swan
<i>Dendroica caerulescens</i> *	Black-Throated Blue Warbler
<i>Dendroica castanea</i> *	Bay-Breasted Warbler
<i>Dendroica coronata</i> *	Yellow-Rumped Warbler
<i>Dendroica discolor</i> *	Prairie Warbler
<i>Dendroica fusca</i> *	Blackburnian Warbler
<i>Dendroica magnolia</i> *	Magnolia Warbler
<i>Dendroica palmarum</i> *	Palm Warbler
<i>Dendroica pensylvanica</i> *	Chestnut-Sided Warbler
<i>Dendroica petechia</i> *	Yellow Warbler
<i>Dendroica pinus</i> *	Pine Warbler
<i>Dendroica striata</i> *	Blackpoll Warbler
<i>Dendroica tigrina</i> *	Cape May Warbler
<i>Dendroica virens</i> *	Black-Throated Green Warbler
<i>Dolichonyx oryzivorus</i> *	Bobolink
<i>Dryocopus pileatus</i>	Pileated Woodpecker
<i>Dumetella carolinensis</i>	Gray Catbird
<i>Empidonax alnorum</i> *	Alder Flycatcher
<i>Empidonax flaviventris</i> *	Yellow-Bellied Flycatcher
<i>Empidonax minimus</i> *	Least Flycatcher
<i>Empidonax traillii</i> *	Willow Flycatcher



		<u>State Listing Status</u>
<i>Empidonax virescens</i> *	Acadian Flycatcher	
<i>Eudocimus albus</i> *	White Ibis	
<i>Euphagus carolinus</i> *	Rusty Blackbird	
<i>Falco columbarius</i> *	Merlin	
<i>Falco peregrinus</i> *	Peregrine Falcon	E
<i>Falco sparverius</i>	American Kestrel	
<i>Fulica americana</i> *	American Coot	
<i>Gavia immer</i>	Common Loon	SC
<i>Geothlypis trichas</i>	Common Yellowthroat	
<i>Haliaeetus leucocephalus</i>	Bald Eagle	T
<i>Helmitheros vermivorus</i> *	Worm-Eating Warbler	
<i>Hirundo pyrrhonota</i> *	Cliff Swallow	
<i>Hirundo rustica</i>	Barn Swallow	
<i>Hylocichla mustelina</i> *	Wood Thrush	
<i>Icterus galbula</i>	Baltimore Oriole	
<i>Icteria virens</i> *	Yellow-Breasted Chat	SC
<i>Icterus spurius</i> *	Orchard Oriole	
<i>Junco hyemalis</i>	Dark-Eyed Junco	
<i>Larus argentatus</i> *	Herring Gull	
<i>Larus delawarensis</i>	Ring-Billed Gull	
<i>Larus marinus</i>	Great Black-Backed Gull	
<i>Lophodytes cucullatus</i>	Hooded Merganser	
<i>Melanerpes carolinus</i>	Red-Bellied Woodpecker	
<i>Meleagris gallopavo</i>	Wild Turkey	
<i>Melospiza georgiana</i> *	Swamp Sparrow	
<i>Melospiza lincolni</i> *	Lincoln's Sparrow	
<i>Melospiza melodia</i>	Song Sparrow	
<i>Mergus merganser</i>	Common Merganser	
<i>Mimus polyglottos</i> *	Northern Mockingbird	
<i>Mniotilta varia</i>	Black-and-White Warbler	



**State
Listing Status**

<i>Molothrus ater</i>	Brown-Headed Cowbird	
<i>Myiarchus crinitus</i> *	Great Crested Flycatcher	
<i>Nycticorax nycticorax</i> *	Black-Crowned Night-Heron	
<i>Oporonis philadelphia</i> *	Mourning Warbler	
<i>Oporornis formosus</i> *	Kentucky Warbler	
<i>Otus asio</i>	Eastern Screech-Owl	
<i>Oxyura jamaicensis</i> *	Ruddy Duck	
<i>Pandion haliaetus</i> *	Osprey	SC
<i>Parula americana</i> *	Northern Parula	
<i>Parus articapillus</i>	Black-Capped Chickadee	
<i>Parus bicolor</i>	Tufted Titmouse	
<i>Passer domesticus</i>	House Sparrow	
<i>Passerella iliaca</i> *	Fox Sparrow	
<i>Passerina cyanea</i> *	Indigo Bunting	
<i>Phalacrocorax auritus</i>	Double Crested Cormorant	
<i>Phalacrocorax carbo</i> *	Great Cormorant	
<i>Phasianus colchicus</i> *	Ring-Necked Pheasant	
<i>Pheucticus ludovicianus</i> *	Rose-Breasted Grosbeak	
<i>Picoides pubescens</i>	Downy Woodpecker	
<i>Picoides villosus</i>	Hairy Woodpecker	
<i>Pinicola enucleator</i> *	Pine Grosbeak	
<i>Pipilo erythrophthalmus</i>	Eastern Towhee	
<i>Piranga olivacea</i>	Scarlet Tanager	
<i>Podiceps grisegena</i>	Red-Necked Grebe	
<i>Podilymbus podiceps</i> *	Pied-Billed Grebe	T
<i>Polioptila caerulea</i> *	Blue-Gray Gnatcatcher	
<i>Pooecetes gramineus</i> *	Vesper Sparrow	SC
<i>Prothonotaria citrea</i> *	Prothonotary Warbler	
<i>Quiscalus quiscula</i>	Common Grackle	
<i>Regulus calendula</i>	Ruby-Crowned Kinglet	



**State
Listing Status**

<i>Regulus satrapa</i>	Golden-Crowned Kinglet	
<i>Sayornis phoebe</i>	Eastern Phoebe	
<i>Scolopax minor</i> *	American Woodcock	
<i>Seiurus aurocapillus</i>	Ovenbird	
<i>Seiurus motacilla</i> *	Louisiana Waterthrush	
<i>Seiurus noveboracensis</i> *	Northern Waterthrush	
<i>Setophaga ruticilla</i> *	American Redstart	
<i>Sialia sialis</i> *	Eastern Bluebird	
<i>Sitta canadensis</i> *	Red-Breasted Nuthatch	
<i>Sitta carolinensis</i>	White-Breasted Nuthatch	
<i>Sphyrapicus varius</i> *	Yellowed-Bellied Sapsucker	
<i>Spizella arborea</i> *	American Tree Sparrow	
<i>Spizella passerina</i>	Chipping Sparrow	
<i>Spizella pusilla</i> *	Field Sparrow	
<i>Steigidopeteryx serripennis</i> *	Northern Rough-Winged Swallow	
<i>Strix varia</i> *	Barred Owl	
<i>Sturnella magna</i> *	Eastern Meadowlark	
<i>Sturnus vulgaris</i>	European Starling	
<i>Tachycineta bicolor</i> *	Tree Swallow	
<i>Thryothorus ludovicianus</i>	Carolina Wren	
<i>Toxostoma rufum</i> *	Brown Thrasher	
<i>Tringa solitaria</i> *	Solitary Sandpiper	
<i>Troglodytes aedon</i> *	House Wren	
<i>Troglodytes troglodytes</i> *	Winter Wren	
<i>Turdus migratorius</i>	American Robin	
<i>Tyrannus tyrannus</i> *	Eastern Kingbird	
<i>Vermivora chrysoptera</i> *	Golden-Winged Warbler	SC
<i>Vermivora peregrina</i> *	Tennessee Warbler	
<i>Vermivora pinus</i> *	Blue-Winged Warbler	
<i>Vermivora ruficapilla</i> *	Nashville Warbler	



**State
Listing Status**

<i>Vireo flavifrons</i> *	Yellow-Throated Vireo
<i>Vireo gilvus</i> *	Warbling Vireo
<i>Vireo olivaceus</i>	Red-Eyed Vireo
<i>Vireo philadelphicus</i> *	Philadelphia Vireo
<i>Vireo solitarius</i> *	Solitary Vireo
<i>Wilsonia canadensis</i> *	Canada Warbler
<i>Wilsonia citrina</i> *	Hooded Warbler
<i>Wilsonia pusilla</i> *	Wilson's Warbler
<i>Zenaida macroura</i>	Mourning Dove
<i>Zonotrichia albicollis</i>	White-Throated Sparrow
<i>Zonotrichia leucophrys</i> *	White-Crowned Sparrow

Mammals

<i>Canis latrans</i>	Coyote
<i>Marmota monax</i>	Woodchuck
<i>Mephitis mephitis</i>	Striped Skunk
<i>Odocoileus virginianus</i>	White-Tailed Deer
<i>Ondatra zibethicus</i>	Muskrat
<i>Peromyscus leucopus</i>	White-Footed Mouse
<i>Peromyscus maniculatus</i>	Deer Mouse
<i>Scalopus aquaticus</i>	Eastern Mole
<i>Sciurus carolinensis</i>	Gray Squirrel
<i>Sylvilagus floridanus</i>	Eastern Cottontail
<i>Tamias striatus</i>	Eastern Chipmunk
<i>Tamiasciurus hudsonicus</i>	Red Squirrel
<i>Vulpes vulpes</i>	Red Fox

Amphibians

<i>Ambystoma laterale</i>	Spotted Salamander
<i>Bufo americanus</i>	American Toad
<i>Eurycea bislineata</i>	Northern Two-Lined Salamander



**State
Listing Status**

<i>Hyla versicolor</i>	Gray Tree Frog
<i>Plethodon cinereus</i>	Red-Backed Salamander
<i>Pseudoacris crucifer</i>	Spring Peeper
<i>Rana catesbeiana</i>	Bull Frog
<i>Rana clamitans</i>	Green Frog
<i>Rana palustris</i>	Pickerel Frog
<i>Rana pipiens</i>	Northern Leopard Frog
<i>Rana sylvatica</i>	Wood Frog

Reptiles

<i>Chelydra serpentina</i>	Snapping Turtle
<i>Chrysemys picta</i>	Eastern Painted Turtle
<i>Thamnophis sirtalis</i>	Garter Snake

Invertebrates

<i>Culicidae spp.</i>	Mosquito
<i>Danaus plexippus</i>	Monarch
<i>Dermacentor variabilis</i>	American Dog Tick
<i>Ixodes scapularis</i>	Deer Tick
<i>Polistes dominula</i>	Paper Wasp



Flora Identified in Yorktown

Ferns

<i>Athyrium filix-femina</i>	Lady Fern
<i>Dennstaedtia punctilobula</i>	Hayscented Fern
<i>Dryopteris marginalis</i>	Marginal Woodfern
<i>Onoclea sensibilis</i>	Sensitive Fern
<i>Osmunda cinnamomea</i>	Cinnamon Fern
<i>Osmunda claytoniana</i>	Interrupted Fern
<i>Osmunda regalis</i>	Royal Fern
<i>Polystichum acrostichoides</i>	Christmas Fern
<i>Pteridium aquilinum</i>	Bracken Fern
<i>Thelypteris noveboracensis</i>	New York Fern

Aquatic Plants

<i>Lemna minor</i>	Duckweed
<i>Nuphar lutea</i>	Bull Head Lily
<i>Nymphaea odorata</i>	White Water-Lily
<i>Pontederia cordata</i> *	Pickerel Weed
<i>Typha angustifolia</i>	Narrow Leaf Cattail
<i>Typha latifolia</i>	Broad Leaf Cattail

Grasses, Sedges, and Rushes

<i>Andropogon virginicus</i>	Broom Sedge
<i>Carex stricta</i>	Tussock Sedge
<i>Cortaderia selloana</i>	Pampas Grass
<i>Dactylis glomerata</i>	Orchard Grass
<i>Elytrigia repens</i>	Quack Grass
<i>Festuca capillata</i>	Hair Grass
<i>Juncus effusus</i>	Soft Rush
<i>Juncus tenuis</i>	Path Rush
<i>Lolium spp.</i>	Rye Grass
<i>Microstegium vimineum</i>	Japanese Stilt Grass
<i>Panicum capillare</i>	Old Witch Grass



<i>Panicum clandestinum</i>	Deer Tongue Grass
<i>Phalaris arundinacea</i>	Reed Canary Grass
<i>Phragmites australis</i>	Phragmites
<i>Poa compressa</i>	Canada Blue Grass
<i>Schizachyrium scoparium</i>	Little Blue Stem
<i>Setaria italica</i>	Foxtail Grass
<i>Sisyrinchium spp.*</i>	Blue-Eyed Grass
Herbs	
<i>Aconitum noveboracense*</i>	Monkshood
<i>Actaea racemosa*</i>	Black Cohosh
<i>Alliaria petiolata</i>	Garlic Mustard
<i>Allium schoenoprasum</i>	Chive
<i>Amaranthus retroflexus*</i>	Red Root
<i>Ambrosia artemisiifolia</i>	Common Ragweed
<i>Anemone virginiana*</i>	Thimbleweed
<i>Aralia racemosa*</i>	American Spikenard
<i>Arctium minus</i>	Common Burdock
<i>Arisaema triphyllum*</i>	Jack-in-the-Pulpit
<i>Artemisia vulgaris</i>	Mugwort
<i>Asclepias syrica</i>	Common Milkweed
<i>Asclepias tuberosa*</i>	Butterfly Weed
<i>Asplenium platyneuron</i>	Ebony Spleenwort
<i>Aster vimineus</i>	Small White Aster
<i>Bidens cernua*</i>	Bur-Marigold
<i>Bidens spp.</i>	Bidens
<i>Caltha palustris*</i>	Marsh Marigold
<i>Chimaphila maculata</i>	Spotted Wintergreen
<i>Chrysopsis mariana*</i>	Maryland Golden Aster
<i>Cichorium intybus</i>	Chicory
<i>Cirsium vulgare</i>	Bull Thistle
<i>Claytonia virginica*</i>	Spring Beauty



<i>Clintonia borealis</i> *	Blue Bead Lily
<i>Coptis trifolia</i> *	Goldthread
<i>Cornus canadensis</i> *	Bunchberry
<i>Cypripedium acaule</i>	Pink Lady's Slipper
<i>Cypripedium reginae</i>	Showy Lady's Slipper
<i>Daucus carota</i>	Queen Anne's Lace (Wild Carrot)
<i>Dicentra cucullaria</i> *	Dutchman's Breeches
<i>Dicentra eximia</i> *	Wild Bleeding Heart
<i>Diphylleia cymosa</i>	American Umbrella Leaf
<i>Dipsacus sylvestris</i>	Teasel
<i>Epigaea repens</i> *	Trailing Arbutus
<i>Erigeron annuus</i>	Daisy Fleabane
<i>Erythronium americanum</i>	Trout Lily
<i>Eupatorium maculatum</i>	Joe-Pye-Weed
<i>Eupatorium perfoliatum</i> *	Boneset
<i>Euphorbia albomarginata</i>	Rattlesnake Weed
<i>Eurybia divaricata</i> *	White Wood Aster
<i>Fallopia japonica</i>	Japanese Knotweed
<i>Galax urceolata</i> *	Galax
<i>Galium spp.</i>	Bedstraw
<i>Gentiana clausa</i> *	Closed Gentian
<i>Geranium maculatum</i>	Wild Geranium
<i>Geranium robertianum</i>	Herb-Robert
<i>Glechoma hederacea</i>	Ground Ivy
<i>Hepatica acutiloba</i> *	Sharp-Lobed Hepatica
<i>Hepatica americana</i> *	Round-Lobed Hepatica
<i>Heuchera villosa</i> *	Hairy Alum Root
<i>Hibiscus moscheutos</i> *	Swamp Rose-Mallow
<i>Houstonia caerulea</i> *	Bluets
<i>Hydrastis canadensis</i> *	Goldenseal
<i>Hypericum virginicum</i> *	Marsh St. Johnswort



<i>Impatiens capensis</i>	Jewelweed
<i>Iris cristata</i> *	Crested Iris
<i>Iris versicolor</i> *	Blue Flag
<i>Jeffersonia diphylla</i> *	Twinleaf
<i>Linnaea borealis</i> *	Twinflower
<i>Lobelia siphilitica</i> *	Blue Lobelia
<i>Lobelia cardinalis</i> *	Cardinal Flower
<i>Lotus corniculatus</i>	Bird's Foot Trefoil
<i>Ludwigia alterniflora</i> *	Seed Box
<i>Lysimachia quadrifolia</i> *	Whorled Loosestrife
<i>Lysimachia terrestris</i> *	Swamp Candles
<i>Maianthemum canadense</i>	Canada Mayflower
<i>Medeola virginiana</i> *	Indian Cucumber-Root
<i>Medicago lupulina</i>	Black Medic
<i>Mertensia virginica</i> *	Virginia Blue Bells
<i>Mimulus ringens</i> *	Monkey Flower
<i>Mitchella repens</i>	Partridgeberry
<i>Mitella caulescens</i> *	Miterwort
<i>Monarda fistulosa</i> *	Wild Bergamot
<i>Mondara didyma</i> *	Bee Balm
<i>Monotropa uniflora</i> *	Indian Pipe
<i>Oxalis acetosella</i>	Wood Sorrel
<i>Pachysandra terminalis</i>	Pachysandra
<i>Panax trifolius</i>	Dwarf Ginseng
<i>Penstemon spp.</i> *	Beardtongue
<i>Phlox stolonifera</i> *	Creeping Phlox
<i>Physostegia virginiana</i> *	False Dragonhead
<i>Plantago lanceolata</i>	English Plantain
<i>Polygala paucifolia</i> *	Fringed Polygala
<i>Polygonatum biflorum</i>	True Solomon's Seal
<i>Polygonum hydropiper</i>	Common Smartweed



<i>Polygonum persicaria</i>	Lady's Thumb Smartweed
<i>Porteranthus trifoliata</i> *	Bowman's Root
<i>Potentilla simplex</i>	Common Cinquefoil
<i>Prunella vulgaris</i>	Heal-All
<i>Ranunculus acris</i>	Tall Buttercup
<i>Ranunculus ficaria</i>	Celandine
<i>Ranunculus septentrionalis</i>	Swamp Buttercup
<i>Rudbeckia hirta</i> *	Black-Eyed Susan
<i>Rumex crispus</i>	Curly Dock
<i>Sagittaria latifolia</i> *	Broadleaf Arrowhead
<i>Sanguinaria canadensis</i> *	Blood Root
<i>Sarracenia purpurea</i> *	Purple Pitcherplant
<i>Saururus cernuus</i> *	Lizards Tail
<i>Saxifraga virginiana</i> *	Early Saxifrage
<i>Shortia galacifolia</i> *	Oconee Bells
<i>Smilacina racemosa</i>	False Solomon's Seal
<i>Solidago bicolor</i> *	Silverrod
<i>Solidago canadensis</i>	Canada Goldenrod
<i>Solidago spp.</i>	Goldenrod
<i>Sonchus oleraceus</i>	Common Sow Thistle
<i>Symplocarpus foetidus</i>	Skunk Cabbage
<i>Taraxacum officinale</i>	Dandelion
<i>Thalictrum dioicum</i> *	Early Meadow Rue
<i>Thalictrum pubescens</i>	Tall Meadow Rue
<i>Tiarella cordifolia</i> *	Heartleaved Foamflower
<i>Trifolium pratense</i>	Red Clover
<i>Trifolium repens</i>	White Clover
<i>Trillium spp.</i>	Trillium
<i>Trillium cernuum</i> *	Nodding Trillium
<i>Trillium grandiflorum</i> *	Large-Flowered Trillium
<i>Trillium sessile</i> *	Toadshade



<i>Tussilago farfara</i>	Coltsfoot
<i>Uvularia perfoliata</i> *	Perfoliate Bellwort
<i>Verbascum thapsus</i>	Giant Mullein
<i>Verbena hastata</i> *	Blue Vervain
<i>Vernonia noveboracensis</i> *	New York Ironweed
<i>Veronicastrum virginicum</i> *	Culver's Root
<i>Viola canadensis</i> *	Canada White Violet
<i>Viola septentrionalis</i>	Northern Blue Violet
<i>Viola blanda</i> *	Sweet White Violet
<i>Viola papilionacea</i> *	Common Blue Violet
<i>Viola pubescens</i> *	Downy Yellow Violet

Vines

<i>Campsis radicans</i>	Trumpet Creeper
<i>Celastrus orbiculatus</i>	Asiatic Bittersweet
<i>Lonicera japonica</i>	Japanese Honeysuckle
<i>Parthenocissus quinquefolia</i>	Virginia Creeper
<i>Polygonum arifolium</i>	Halberleaf Tearthumb
<i>Toxicodendron radicans</i>	Poison Ivy
<i>Vitis spp.</i>	Grape

Lichens and Fungi

<i>Cladonia cristatella</i>	British Soldier Lichen
<i>Trametes versicolor</i>	Turkey Tail Fungus

Shrubs

<i>Amelanchier arborea</i>	Common Serviceberry
<i>Andromeda polifolia var. glaucophylla</i>	Bog Rosemary
<i>Azalea spp.</i>	Rhododendron
<i>Berberis thunbergii</i>	Japanese Barberry
<i>Buddleia davidii</i>	Butterfly Bush
<i>Cephalanthus occidentalis</i>	Buttonbush
<i>Cercis canadensis</i>	Eastern Redbud



<i>Clethra alnifolia</i>	Sweet Pepper Bush
<i>Cornus amomum</i>	Silky Dogwood
<i>Cornus rugosa</i>	Roundleaf Dogwood
<i>Cornus sericea</i>	Red-Osier Dogwood
<i>Elaeagnus umbellata</i>	Autumn Olive
<i>Euonymus alatus*</i>	Burningbush
<i>Forsythia spp.</i>	Forsythia
<i>Ilex verticillata</i>	Common Winterberry
<i>Juniperus spp.</i>	Juniper
<i>Kalmia latifolia</i>	Mountain Laurel
<i>Ligustrum vulgare</i>	European Privet
<i>Lindera benzoin</i>	Northern Spicebush
<i>Lonicera tatarica</i>	Tartarian Honeysuckle
<i>Morus alba</i>	White Mulberry
<i>Rhamnus cathartica</i>	Common Buckthorn
<i>Rhododendron spp.</i>	Rhododendron
<i>Rhus typhina</i>	Staghorn Sumac
<i>Rosa multiflora</i>	Multiflora Rose
<i>Rubus allegheniensis</i>	Allegheny Blackberry
<i>Rubus occidentalis</i>	Black Raspberry
<i>Rubus spp.</i>	Bramble
<i>Sambucus spp.</i>	Elderberry
<i>Smilax rotundifolia</i>	Roundleaf Greenbriar
<i>Spiraea latifolia</i>	White Meadowsweet
<i>Spiraea tomentosa</i>	Steeplebush
<i>Syringa vulgaris</i>	Lilac
<i>Taxus canadensis</i>	Canada Yew
<i>Vaccinium angustifolium</i>	Lowbush Blueberry
<i>Vaccinium corymbosum</i>	Highbush Blueberry
<i>Viburnum acerifolium</i>	Maple Leaf Viburnum
<i>Viburnum trilobum</i>	Highbush Cranberry



Trees

<i>Acer negundo</i>	Box Elder
<i>Acer platanoides</i>	Norway Maple
<i>Acer rubrum</i>	Red Maple
<i>Acer saccharinum</i>	Silver Maple
<i>Acer saccharum</i>	Sugar Maple
<i>Ailanthus altissima</i>	Tree-of-Heaven
<i>Alnus rugosa</i>	Speckled Alder
<i>Alnus rubra</i>	Red Alder
<i>Betula lenta</i>	Black Birch
<i>Betula nigra</i>	River Birch
<i>Betula pendula</i>	European Birch
<i>Betula populifolia</i>	Gray Birch
<i>Carpinus caroliniana</i>	Musclewood
<i>Carya ovata</i>	Shagbark Hickory
<i>Carya tomentosa</i>	Mockernut Hickory
<i>Catalpa speciosa</i>	Northern Catalpa
<i>Cornus florida</i>	Flowering Dogwood
<i>Fagus grandifolia</i>	American Beech
<i>Fraxinus americana</i>	White Ash
<i>Fraxinus excelsior</i>	European White Ash
<i>Fraxinus pennsylvanica</i>	Green Ash
<i>Gleditsia triacanthos</i>	Honey Locust
<i>Hamamelis virginiana</i>	Witch-Hazel
<i>Juglans nigra</i>	Black Walnut
<i>Juniperus virginiana</i>	Eastern Red Cedar
<i>Liriodendron tulipifera</i>	Tuliptree
<i>Malus domestica</i>	Apple
<i>Ostrya virginiana</i>	Hop hornbeam
<i>Picea abies</i>	Norway Spruce
<i>Picea pungens</i>	Blue Spruce



<i>Pinus strobus</i>	Eastern White Pine
<i>Pinus sylvestris</i>	Scotch Pine
<i>Platanus occidentalis</i>	Eastern Sycamore
<i>Platanus acerifolia</i>	London Plane Tree
<i>Populus tremuloides</i>	Quaking Aspen
<i>Prunus avium</i>	Sweet Cherry
<i>Prunus serotina</i>	Black Cherry
<i>Quercus alba</i>	White Oak
<i>Quercus bicolor</i>	Swamp White Oak
<i>Quercus coccinea</i>	Scarlet Oak
<i>Quercus ilicifolia</i>	Scrub Oak
<i>Quercus lyrata*</i>	Overcup Oak
<i>Quercus palustris</i>	Pin Oak
<i>Quercus montana</i>	Chestnut Oak
<i>Quercus rubra</i>	Red Oak
<i>Robinia pseudoacacia</i>	Black Locust
<i>Salix discolor</i>	Pussy Willow
<i>Salix nigra</i>	Black Willow
<i>Sassafras albidum</i>	Sassafras
<i>Thuja occidentalis</i>	Northern White Cedar
<i>Tilia cordata</i>	Little Leaf Linden
<i>Tsuga canadensis</i>	Eastern Hemlock
<i>Ulmus americana</i>	American Elm

APPENDIX E
PHOTOGRAPHS

APPENDIX E

**REPRESENTATIVE SAMPLE SITE PHOTOGRAPHS
BIODIVERSITY CONSERVATION STUDY
TOWN OF YORKTOWN, NEW YORK**



Emergent wetland on Hunterbrook Road in the spring.



Emergent wetland on Hunterbrook Road in the fall.



Red maple swamp adjacent to Shrub Oak Park.



Stream meandering within Shrub Oak Park. Note the mowed riparian buffer.



Emergent and aquatic wetlands and upland buffer adjacent to Lake Yorktown.



Common Reed (*Phragmites australis*) dominated swamp adjacent to Route 118.



Photo of intermittent watercourse near the horse pastures at Acadia Farm



Looking north across the New Croton Reservoir



Vernal Pool at Hilltop Hanover Farm



Looking west towards the Hudson River atop Turkey Mountain



Non-native invasive species at the northern inlet of Mohegan Lake.



Phragmites growing on the northern banks of Mohegan Lake.



Looking west at forested wetland and watercourse near Lake Osceola.



Upland and wetland complex (including watercourse) near Field of Dreams Park.



Photo of British Soldier Lichen (*Cladonia cristatella*) taken atop of Turkey Mountain.



Photo of Asiatic bittersweet taken near the New Croton Reservoir.



Photo of mature deciduous forest taken south of the New Croton Reservoir



Photo of dry streambed taken Teatown Lake Reservation. Note the buttressed roots indicating the presence of wetland hydrology.

APPENDIX F

MODEL ORDINANCE LANGUAGE

Model Stream/Wetland Buffers Ordinance

(Prepared By State of Rhode Island- downloaded from Westchester County website)

Section I. Background.

Buffers next to stream systems and coastal areas provide numerous environmental protection and resource management benefits which can include the following:

- restoring and maintaining the chemical, physical and biological integrity of the water resources
- removing pollutants delivered in urban stormwater
- reducing erosion and controlling sedimentation
- stabilizing stream banks
- providing infiltration of stormwater runoff
- maintaining base flow of streams
- contributing the organic matter that is a source of food and energy for the aquatic ecosystem
- providing tree canopy to shade streams and promote desirable aquatic organism.
- providing riparian wildlife habitat
- furnishing scenic value and recreational opportunity

It is the desire of the _____ (Municipality) to protect and maintain the native vegetation in riparian and wetland areas by implementing specifications for the establishment, protection and maintenance of vegetated along all stream systems and/or coastal zones within our jurisdictional authority.

Section II. Intent.

The purpose of this ordinance is to establish minimal acceptable requirements for the design of buffers to protect the streams, wetlands and floodplains of (Jurisdiction); to protect the water quality of watercourses, reservoirs, lakes, and other significant water resources within _____ (Municipality); to protect _____'s (Municipality's) riparian and aquatic ecosystems; and to provide for the environmentally sound use of _____'s (Municipality's) land resources.

Section III. Definitions.

Active Channel: the area of the stream channel that is subject to frequent flows (approximately once per one and a half years), and that includes the portion of the channel below where the floodplain flattens.

Best Management conservation practices or management measures which control soil loss and

Practices (BMPs): reduce water quality degradation caused by nutrients, animal wastes,

toxics, sediment, and runoff.

Buffer: a vegetated area, including trees, shrubs and herbaceous vegetation, which exists or is established to protect a stream system, lake, reservoir or coastal estuarine area. Alteration of this natural area is strictly limited.

Development:

- 1) the improvement of property for any purpose involving building
- 1) subdivision, or the division of a tract or parcel of land in to 2 or more parcels
- 2) the combination of any two or more lots, tracts, or parcels of property for any purpose
- 3) the preparation of land for any of the above purposes

Non-Tidal Wetland: those areas not influenced by tidal fluctuations that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Nonpoint Source

Pollution: pollution which is generated by various land use activities rather than from an identifiable or discrete source, and is conveyed to waterways through natural processes, such as rainfall, storm runoff, or ground water seepage rather than direct discharge.

One Hundred Year

Floodplain: the area of land adjacent to a stream that is subject to inundation during a storm event that has a recurrence interval of one hundred (100) years.

Pollution: any contamination or alteration of the physical, chemical, or biological properties of any waters that will render the waters harmful or detrimental to:

- public health, safety or welfare
- domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses
- livestock, wild animals, or birds
- fish or other aquatic life

Stream Channel: part of a water course either naturally or artificially created which contains an intermittent or perennial base flow of groundwater origin. Base flows of groundwater origin can be distinguished by any of the following physical indicators:

Hydrophytic vegetation, hydric soil or other hydrologic indicators in the area(s) where groundwater enters the stream channel, in the vicinity of the stream headwaters, channel bed or channel banks

Flowing water not directly related to a storm event

Historical records of a local high groundwater table, such as well and stream gauge records.

- Stream Order: a classification system for streams based on stream hierarchy. The smaller the stream, the lower its numerical classification. For example, a first order stream does not have tributaries and normally originates from springs and/or seeps. At the confluence of two first order streams, a second order stream begins, and so on. (See Figure 1)
- Stream System: a stream channel together with one or both of the following:
- 100-year floodplain and/or
 - hydrologically-related non-tidal wetlands
- Streams: perennial and intermittent watercourses identified through site inspection and USGS maps. Perennial streams are those which are depicted on a USGS map with a solid blue line. Intermittent streams are those which are depicted on a USGS map with a dotted blue line.
- Water
Pollution
Hazard: a land use or activity that causes a relatively high risk of potential water pollution.

Section IV. Applications.

- 1) This ordinance shall apply to all proposed development except for that development which meets waiver or variance criteria as outlined in Section IX of this regulation.
- 2) This ordinance shall apply to all timber harvesting activities, except those timber harvesting operations which are implementing a forest management plan which has been deemed to be in compliance with the regulations of the buffer ordinance and has received approval from _____(State Forestry Agency).
- 3) This ordinance shall apply to all surface mining operations except that the design standards shall not apply to active surface mining operations which are operating in compliance with an approved _____(State or Federal Agency) surface mining permit.
- 1) The ordinance shall not apply to agricultural operations that are covered by a conservation plan approved by an appropriate agency that includes the application of best management practices.

[Note: Communities should carefully consider whether or not to exempt agricultural operations from the buffer ordinance, because buffer regulations may take land out of production and impose a financial burden on family farms. Many communities exempt agricultural operations if they have an approved conservation plan. In some regions, agricultural buffers may be funded through the USDA-Natural Resources Conservation Service's Conservation Reserve Program (CRP).]

[Note: Livestock operations near and around streams may be regulated by communities. Livestock can significantly degrade the stream system, and accelerate streambank erosion. For more information, contact the Westchester County Soil and Water Conservation District at (914)285-4422.]

- 5) Except as provided in Section IX, this ordinance shall apply to all parcels of land, structures and activities which are causing or contributing to:
 - pollution, including nonpoint source pollution, of the waters of the jurisdiction adopting this ordinance.
 - erosion or sedimentation of stream channels
 - degradation of aquatic or riparian habitat

Section V. Plan Requirements.

In accordance with Section IV of this ordinance, a plan approved by the appropriate agency is required for all development, forest harvesting operations, surface mining operations, and agricultural operations.

- 1) The plan shall set forth an informative, conceptual and schematic representation of the proposed activity by means of maps, graphs, charts, or other written or drawn documents so as to enable the agency an opportunity to make a reasonably informed decision regarding the proposed activity.
- 2) The plan shall contain the following information:
 - a location or vicinity map
 - field delineated and surveyed streams, springs, seeps, bodies of water, and wetlands (include a minimum of two hundred (200) feet into adjacent properties).
 - field delineated and surveyed forested buffers
 - limits of the one hundred (100) year floodplain
 - hydric soils mapped in accordance with the USDA-NRCS *Soil Survey of Putnam and Westchester Counties, New York*
 - steep slopes greater than fifteen (15) percent for areas adjacent to and within two hundred (200) feet of streams, wetlands, or other water bodies.
 - a narrative of the species and distribution of existing vegetation within the
- 3) The buffer plan shall be submitted in conjunction with the required grading plan for any development, and the forest buffer should be clearly delineated on the final grading plan.

buffer

Permanent boundary markers, in the form of signage approved by (Municipality), shall be installed prior to final approval of the required clearing and grading plan. Signs shall be placed at the edge of the Middle Zone (See Section VI.E).

Section VI. Design Standards for Forest Buffers.

- 1) A forest buffer for a stream system shall consist of a forested strip of land extending along both sides of a stream and its adjacent wetlands, floodplains or slopes. The forest buffer width shall be adjusted to include contiguous sensitive areas, such as steep slopes or erodible soils, where development or disturbance may adversely affect water quality, streams, wetlands, or other water bodies.
- 2) The forest buffer shall begin at the edge of the stream bank of the active channel.
- 3) The required width for all forest buffers (i.e., the base width) shall be a minimum of one hundred feet, with the requirement to expand the buffer depending on: a)stream

order; b) percent slope; c) 100-year floodplain; and d) wetlands or other critical natural resource(s).

- in third order and higher streams, add twenty five feet to the base width.
- forest buffer width shall be modified if there are steep slopes which are within close proximity to the stream and drain into the stream system. In those cases, the forest buffer width can be adjusted.

[Note: Several method may be used to adjust buffer width for steep slopes. Two examples include:]

Method A

Percent Slope	Buffer Width
15%-17%	add 10 feet
18%-20%	add 30 feet
21%-23%	add 50 feet
24%-25%	add 60 feet

Method B

Percent Slope	Type of Stream Use	
	Water Contact Recreational Use	Sensitive Stream Habitat
0 to 14%	no change	add 50 feet
15 to 25%	add 25 feet	add 75 feet
Greater than 25%	add 50 feet	add 100 feet

- forest buffers shall be extended to encompass the entire 100-year floodplain and a zone with a minimum width of 25 feet beyond the edge of the floodplain.
- when wetland or critical areas extend beyond the edge of the required buffer width, the buffer shall be adjusted so that the buffer consists of the extent of the wetland plus a 25-foot-wide zone extending beyond the wetland edge.

A) Water Pollution Hazards

The following land uses and/or activities are designated as potential water pollution hazards, and must be setback from any stream or water body by the distance indicated below:

- 1) storage of hazardous substances (150 feet)
- 2) above or below ground petroleum storage facilities (150 feet)

- 3) drain fields from on-site sewage disposal and treatment system (i.e., septic systems--100 feet)
- 4) raised septic systems (250 feet)
- 5) solid waste landfills or junkyards (300 feet)
- 6) confined animal feedlot operations (250 feet)
- 7) subsurface discharges from a wastewater treatment plant (100 feet)
- 8) land application of biosolids (100 feet)

[Note: For surface water supplies, the setbacks should be doubled.]

The forest buffer shall be composed of three distinct zones, with each zone having its own set of allowable uses and vegetative targets as specified in this ordinance. (See Figure 2).

[Note: Although a three zone buffer system is highly recommended, the widths and specific uses allowed in each zone may vary between jurisdictions.]

1) Zone 1 Streamside Zone

- 1) The function of the streamside zone is to protect the physical and ecological integrity of the stream ecosystem.
- 2) The streamside zone will begin at the edge of the stream bank of the active channel and extend a minimum of 25 feet from the top of the bank.
- 3) Allowable uses within this zone are highly restricted to:
 - flood control structures
 - utility rights of way
 - footpaths
 - road crossings, where permitted.
- 1) The vegetative target for the streamside zone is undisturbed native vegetation.

1) Zone 2 Middle Zone

- 1) The function of the middle zone is to protect key components of the stream and to provide distance between upland development and the streamside zone.
- 2) The middle zone will begin at the outer edge of the streamside zone and extend a minimum of 50 plus any additional buffer width as specified in Section VI C.
- 3) Allowable uses within the middle zone are restricted to:
 - Biking or hiking paths
 - Stormwater management facilities, with the approval of *(local agency responsible for stormwater)*.
 - Recreational uses as approved by _____ (Municipality).
 - Limited tree clearing with approval from _____ (*Forestry Agency or Planning Agency*).
- 1) The vegetative target for the middle zone is mature native vegetation adapted to the region.

1) Zone 3 Outer Zone

- 1) The function of the outer zone is to prevent encroachment into the forest buffer and to filter runoff from residential and commercial development.
- 2) The outer zone will begin at the outward edge of the middle zone and provide a minimum width of 25 feet between Zone 2 and the nearest permanent

structure.

- 3) There shall be no septic systems, permanent structures or impervious cover, with the exception of paths, within the outer zone.
- 4) The vegetative target for the outer zone may vary, although the planting of native vegetation should be encouraged to increase the total width of the buffer.

Section VII. Buffer Management and Maintenance.

- 1) The forest buffer, including wetlands and floodplains, shall be managed to enhance and maximize the unique value of these resources. Management includes specific limitations on alteration of the natural conditions of these resources. The following practices and activities are restricted within Zones 1 and 2 of the forest buffer, except with approval by _____ (Municipality):
 - 1) Clearing of existing vegetation.
 - 2) Soil disturbance by grading, stripping, or other practices.
 - 3) Filling or dumping.
 - 4) Drainage by ditching, under drains, or other systems
 - 5) Use, storage, or application of pesticides, except for the spot spraying of noxious weeds or non-native species consistent with recommendations of _____.
(*NYS DEC or County Health Department*)
 - 6) Housing, grazing, or other maintenance of livestock.
 - 7) Storage or operation of motorized vehicles, except for maintenance and emergency use approved by _____.(Municipality)
- 1) The following structures, practices, and activities are permitted in the forest buffer, with specific design or maintenance features, subject to the review of (Municipality):
 - 1) Roads, bridges, paths, and utilities:
 - an analysis needs to be conducted to ensure that no economically feasible alternative is available.
 - the right of way should be the minimum width needed to allow for maintenance access and installation.
 - the angle of the crossing shall be perpendicular to the stream or buffer in order to minimize clearing requirements

- the minimum number of road crossings should be used within each subdivision, and no more than one fairway crossing is allowed for every 1,000 feet of buffer.
- 2) Stormwater management:
- an analysis needs to be conducted to ensure that no economically feasible alternative is available, and that the project is either necessary for flood control, or significantly improves the water quality or habitat in the stream.
 - in new developments, on-site and non-structural alternatives will be preferred over larger facilities within the stream buffer.
 - when constructing stormwater management facilities (i.e., BMPs), the area cleared will be limited to the area required for construction, and adequate maintenance access.
 - material dredged or otherwise removed from a BMP shall be stored outside the buffer.
 - stream restoration projects, facilities and activities approved by are permitted within the forest buffer.
 - water quality monitoring and stream gauging are permitted within the forest buffer, as approved by _____ (local, state and/or federal agency).
 - individual trees within the forest buffer may be removed which are in danger of falling, causing damage to dwellings or other structures, or causing blockage of the stream.
 - other timber cutting techniques approved by the agency may be undertaken within the forest buffer under the advice and guidance of (*State or Federal Forestry Agency*), if necessary to preserve the forest from extensive pest infestation, disease infestation, or threat from fire.

[Note: Rather than place specific stormwater BMP design criteria in an ordinance, it is often preferable to reference a manual. Therefore, specific design information can change over time without going through the formal process needed to change ordinance language. One such manual is the NYS DEC's Reducing the Impacts of Stormwater Runoff from New Development.]

- 3) All plats prepared for recording and all right-of-way plats shall clearly:
- Show the extent of any forest buffer on the subject property by metes and bounds
 - Label the forest buffer
 - Provide a note to reference any forest buffer stating: "There shall be no clearing, grading, construction or disturbance of vegetation except as permitted by the agency".
 - Provide a note to reference any protective covenants governing all forest buffers areas stating: "Any forest buffer shown hereon is subject to protective covenants which may be found in the land records and which restrict disturbance and use of these areas.
- 1) All forest buffer areas shall be maintained through a declaration of protective covenant, which is required to be submitted for approval by

(Municipality). The covenant shall be recorded in the land records and shall run with the land and continue in perpetuity.

[Note: This protective covenant can be kept either by the local government agency responsible for management of environmental resources, or by an approved nonprofit organization.]

All lease agreements must contain a notation regarding the presence and location of protective covenants for forest buffer areas, and which shall contain information on the management and maintenance requirements of the forest buffer for the new property owner.

- 1) An offer of dedication of a forest buffer area to the agency shall not be interpreted to mean that this automatically conveys to the general public the right of access to this area.
- 2) _____ (*Responsible Individual or Group*) shall inspect the buffer annually and immediately following severe storms for evidence of sediment deposition, erosion, or concentrated flow channels and corrective actions taken to ensure the integrity and functions of the forest buffer.

[Note: A local ordinance will need to designate the individual or group responsible for buffer maintenance. Often, the responsible party will be identified in any protective covenants associated with the property.]

- 3) Forest buffer areas may be allowed to grow into their vegetative target state naturally, but methods to enhance the successional process such as active reforestation may be used when deemed necessary by (Municipality) to ensure the preservation and propagation of the buffer area. Forest buffer areas may also be enhanced through reforestation or other growth techniques as a form of mitigation for achieving buffer preservation requirements.

Section VIII. Enforcement Procedures.

- 1) _____ (*Director of Responsible Agency*) is authorized and empowered to enforce the requirements of this ordinance in accordance with the procedures of this section.
- 2) If, upon inspection or investigation, the director or his/her designee is of the opinion that any person has violated any provision of this ordinance, he/she shall with reasonable promptness issue a correction notice to the person. Each such notice shall be in writing and shall describe the nature of the violation, including a reference to the provision within this ordinance which has been violated. In addition, the notice shall set a reasonable time for the abatement and correction of the violation.
- 3) If it is determined that the violation or violations continue after the time fixed for abatement and correction has expired, the director shall issue a citation by certified mail to the person who is in violation. Each such notice shall be in writing and shall describe the nature of the violation, including a reference to the provision within this ordinance which has been violated, and what penalty,

if any, is proposed to be assessed. The person charged has thirty (30) days within which to contest the citation or proposed assessment of penalty and to file a request for a hearing with the director or his designee. At the conclusion of this hearing, the director or his designee will issue a final order, subject to appeal to the appropriate authority. If, within thirty (30) days from the receipt of the citation issued by the director, the person fails to contest the citation or proposed assessment of penalty, the citation or proposed assessment of penalty shall be deemed the final order of the director.

- 4) Any person who violates any provision of this ordinance may be liable for any cost or expenses incurred as a result thereof by the agency.
- 5) Penalties which may be assessed for those deemed to be in violation may include:
 - a civil penalty not to exceed one thousand dollars (\$1,000.00) for each violation with each days continuance considered a separate violation.
 - a criminal penalty in the form of a fine of not more than one thousand dollars (\$1,000.00) for each violation or imprisonment for not more than ninety (90) days, or both. Every day that such violations shall continue will be considered a separate offense.
 - anyone who knowingly makes any false statements in any application, record, plat, or plan required by this ordinance shall upon conviction be punished by a fine of not more than one thousand dollars (\$1,000.00) for each violation or imprisonment for not more than thirty (30) days, or both.

[Note: Specific penalties will vary between communities, and should reflect realistically enforceable penalties given the political realities of a jurisdiction.]

- 1) In addition to any other sanctions listed in this ordinance, a person who fails to comply with the provisions of this buffer ordinance shall be liable to the agency in a civil action for damages in an amount equal to twice the cost of restoring the buffer. Damages that are recovered in accordance with this action shall be used for the restoration of buffer systems or for the administration of programs for the protection and restoration of water quality, streams, wetlands, and floodplains.

Section IX. Waivers/Variances.

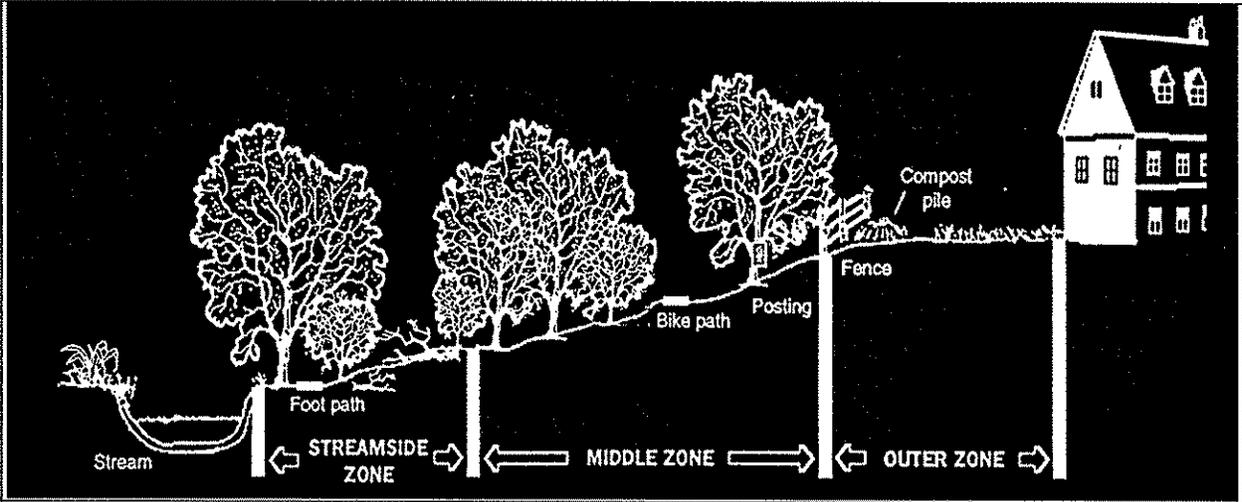
- 1) This ordinance shall apply to all proposed development except for that development which prior to the effective date of this ordinance:
 - is covered by a valid, unexpired plat in accordance with development regulations
 - is covered by a current, executed public works agreement
 - is covered by a valid, unexpired building permit
 - has been accepted to apply for a building permit
 - has been granted a waiver in accordance with current development regulations.
- 2) The director of the agency may grant a variance for the following:

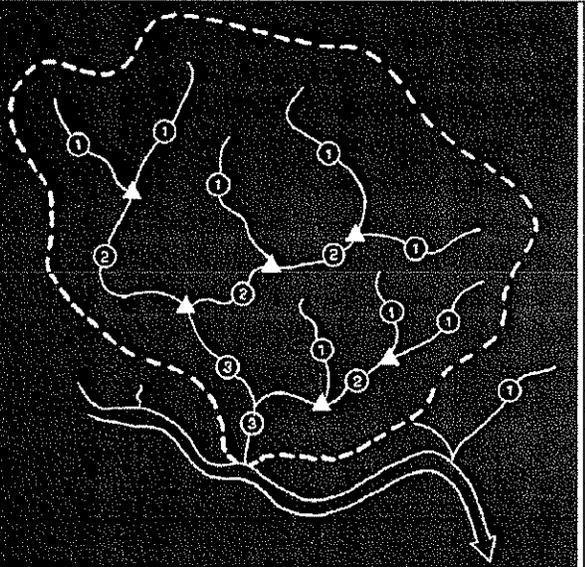
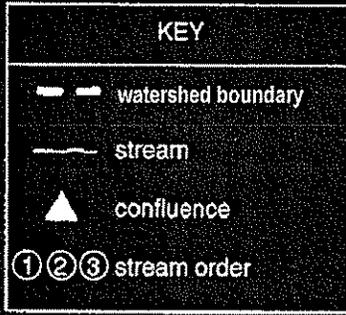
- those projects or activities where it can be demonstrated that strict compliance with the ordinance would result in practical difficulty or financial hardship
 - those projects or activities serving a public need where no feasible alternative is available.
 - the repair and maintenance of public improvements where avoidance and minimization of adverse impacts to nontidal wetlands and associated aquatic ecosystems have been addressed
 - for those developments which have had buffers applied in conformance with previously issued requirements.
- 3) Waivers for development may also be granted in two additional forms, if deemed appropriate by the director:
- the buffer width made be relaxed and the buffer permitted to become narrower at some points as long as the average width of the buffer meets the minimum requirement. This averaging of the buffer may be used to allow for the presence of an existing structure or to recover a lost lot, as long as the streamside zone (Zone I) is not disturbed by the narrowing, and no new structures are built within the one hundred (100) year floodplain.
 - _____ (*Planning Agency*) may offer credit for additional density elsewhere on the site in compensation for the loss of developable land due to the requirements of this ordinance. This compensation may increase the total number of dwelling units on the site up to the amount permitted under the base zoning.
- 4) The applicant shall submit a written request for a variance to the director of the agency. The application shall include specific reasons justifying the variance and any other information necessary to evaluate the proposed variance request. The agency may require an alternatives analysis that clearly demonstrates that no other feasible alternatives exist and that minimal impact will occur as a result of the project or development.
- 5) In granting a request for a variance, the director of the agency may require site design, landscape planting, fencing, the placement of signs, and the establishment of water quality best management practices in order to reduce adverse impacts on water quality, streams, wetlands, and floodplains.

Section X. Conflict With Other Regulations.

Where the standards and management requirements of this buffer ordinance are in conflict with other laws, regulations, and policies regarding streams, steep slopes, erodible soils, wetlands, floodplains, timber harvesting, land disturbance activities or other environmental protective measures, the more restrictive shall apply.

Figures 1 and 2





MODEL RIPARIAN AREA PROTECTION ORDINANCE

Section 1: Findings of Fact

The legislative body of(*community name*) determines that:

- Many of the riparian areas of.....(*community name*) have already been lost to drainage, channelization, levees, fills, grazing, and other activities.
- Destruction of riparian areas results in increased downstream water pollution, flooding, and erosion. Activities which damage or destroy riparian areas destroy riparian functions.
- Riparian areas function to:
 - Provide flood conveyance and storage which reduce downstream flood hazards by absorbing peak flows, slowing the velocity of flood waters, and regulating base flow;
 - Reduce the need for costly engineering solutions for flooding and erosion such as rip rap, retention basins, and dams;
 - Stabilize the banks of watercourses to reduce bank erosion and downstream transport of sediments eroded from banks;
 - Provide stormwater detention;
 - Provide living, breeding, nesting and feeding environments for many forms of wildlife by maintaining diverse and connected riparian vegetation including waterfowl, shorebirds, salamanders, frogs, and deer;
 - Treat polluted surface/subsurface waters in times of high flows through biological degradation and chemical oxidation;
 - Prevent additional nonpoint pollution of waters by providing pollution buffers;
 - Remove pollutants from urban stormwater;
 - Serve as nursery grounds and sanctuaries for fish during high flows;
 - Provide tree canopy to shade streams;
 - Provide high quality watercourse habitats with shade and food for fish and other wildlife;
 - Provide recreation areas for hiking, bird watching, biking, photography and other recreation uses;
 - Maintain potable water supplies in rivers and streams;
 - Maintain the base flows of streams;
 - Furnish scenic values and recreational opportunities; and
 - Reduce community flood, erosion, and other natural hazard losses.
- Activities in riparian areas are also often subject to flood, erosion, and subsidence hazards. Buildings, roads, and other infrastructure located in such areas are often damaged by floods and erosion, requiring emergency rescue and disaster assistance. Such structure and infrastructure also exacerbate hazards on other lands.

- Further loss of riparian buffer areas is contrary to the public health, safety, and welfare.

Section 2: Purposes

The overall goal of this ordinance is to protect and encourage the restoration of the riparian resources of(*community name*) in order to protect the public health, safety, and welfare. More specific goals include:

- Restore and maintain the chemical, physical and biological integrity of water resources;
- Achieve no net loss in the quantity, quality, and biological diversity of riparian areas and riparian area functions;
- Avoid direct or indirect impacts from activities that destroy or diminish the quantity, quality and biological diversity of riparian areas;
- Provide an ecologically sound transition between waters and upland areas;
- Replace riparian area functions and acreage where avoidance of activities is not practical and all practical measures have been taken to reduce impacts;
- Prevent increases in flood, erosion, and other natural hazard losses due to destruction of wetland and buffer flood conveyance, flood storage, and erosion control functions, acreages and values;
- Incorporate riparian area protection into the.....(*local government name*) land use, planning and development approval procedures; and

Section 3: Authority

This ordinance has been adopted pursuant to and in accordance with(*statutory cite*).

Section 4: Definitions

“Board” means the (*Select one: Riparian Area Review Board, Board of Adjustment, Planning Board*). (*Note the local government must choose the board/commission it wishes to authorize to issue permits. Permits must typically be issued by the Board of Adjustment or Planning Board if state statutes do not specifically allow the creation of a separate board with regulatory powers such as a conservation commission.*)

“Compensatory mitigation” means the replacement of riparian area acreage, function, and value to compensate for losses.

“Creation” means a human activity bringing a riparian area into existence at a site in which it did not formerly exist.

“Enhancement” means the manipulating the physical, chemical or biological characteristics of a riparian area to increase or improve specific functions or to change the growth stage or vegetation present.

“Floodplains” mean areas subject to periodic inundation when a river, stream, or other watercourse overflows its banks. They are relatively flat areas or lowlands adjoining the channel

of a river, stream or watercourse or other body of water. They include but are not limited to those mapped by the Federal Emergency Management Agency shown as flood hazard areas on the(name of municipal government) Flood Insurance Rate Map (FIRM) issued by the Federal Emergency Management Agency for the administration of the National Flood Insurance Program numbered and dated.....

“Floodways” means the channel of any rivers, stream or other watercourse and the portions of the adjoining floodplain required to carry a discharge flood without raising flood waters and velocities more than a defined amount.

“National Wetlands Inventory Maps (NWI)” are a series of maps produced by the U.S. Fish and Wildlife Service showing the general location and classification of wetlands. Some wetlands, particularly smaller wetlands, are not shown on these maps. In addition, the criteria used for mapping wetlands in the NWI does not fully coincide with the definition of wetland provided below. The definition of wetland provided below and field surveys undertaken by the Board or provided by a permit applicant and reviewed and approved by the Board shall provide the basis for more specific and accurate designation of wetlands and wetland boundaries.

“Ordinary High Water Mark” means the point of the bank or shore up to which the presence and action of surface water is so continuous as to leave a distinctive mark such as by erosion, destruction or prevention of terrestrial vegetation, predominance of aquatic vegetation, or other recognized characteristic.

“Regulated Activities” means all activities in regulated riparian areas involving filling, excavation, dredging, clear-cutting, dumping, excavation, changing of drainage, grading, placing of objects in water, excavation, or any other alteration or use of a riparian area.

“Restoration” means manipulating the physical, chemical or biological characteristics of a site to achieve a former condition with improved riparian functions, values, or acreage.

“Riparian Area” means the area adjacent to rivers, streams, creeks, washes, arroyos, and other bodies of water or channels having banks and bed through which waters flow at least periodically. These areas are subject to period flooding and are generally characterized or distinguished by a difference in plant species composition or an increase in the size and/or density of vegetation as compared to upland areas. See more detailed description of regulated riparian areas in Section 4 below.

“Watercourses” mean rivers, streams, intermittent streams, ditches, brooks, channels, lakes, ponds, manmade ponds, estuarine waters, swamps, bogs, vernal pools, playas, and all other bodies of water, natural or artificial, intermittent or permanent, public or private which has defined banks and water at least a portion of each year. These areas are typically shown on United States Geologic Survey topographic maps of the community.

“Wetlands” are areas and waters that are inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated conditions. Wetlands generally include but are not limited to lands and waters meeting this definition and otherwise often referred to as swamps, marshes, bogs swamps, wetland meadows, ephemeral and tributary

streams vernal pools, banks, reservoirs, ponds, lakes, and lands under water bodies. The primary ecological parameters for identifying wetlands include hydric soils, hydrophytic vegetation, and hydrologic conditions reflecting temporary or permanent inundation or saturation. *(Note, we are utilizing the Corps of Engineers wetland definition here. A community may wish to substitute its own definition.)*

“Riparian Area Delineation” means the establishment of riparian area boundaries.

Section 5: Riparian Review Board

(Not, this is an optional section. See commentary for Wetland Review Board in the Wetland Protection Model Ordinance above.)

The.....*(name of community)* Council shall appoint a Riparian Review Board of not more than eight but not less than four members for terms to be specified by the Council.

The Board may issue, deny, and conditionally approve riparian area permits consistent with the standards, goals, and criteria set forth in this ordinance. *(Note, the ordinance should vest permitting powers in the Board of Adjustment or Planning Commission if the Riparian Review Board is to be advisory only.)*

The Board may also advise the Council with regard to riparian area policies and activities and may help the Council undertake the following activities:

- The mapping and delineation of riparian areas, wetlands, and floodplains;
- The assessment of riparian area functions and values;
- The location of riparian area boundaries on the ground;
- The acquisition of riparian area and related wildlife or recreation areas; and
- The initiation of riparian area enforcement actions.

Section 6: Riparian Areas Regulated by This Ordinance

Riparian areas subject to the this ordinance include the following areas measured horizontally from the top of the bank of a river, stream, creek, arroyo, wash or other body of water or channel having banks and bed through which waters flow at least periodically:

- 300 feet of following rivers and streams or to the landward side of the 100 year floodplain identified on FEMA flood maps for these rivers and streams if this distance is greater: *(Note, major regulated rivers and streams should be listed here.)*
- 200 feet of the following creeks and streams or to the landward side of the 100 year floodplain identified on FEMA flood maps for these creeks and streams if this distance is greater. *(Note, mid-sized, regulated rivers and streams should be listed here.)*
- 100 feet of all other river, stream, creeks, wash, arroyo, or other body of water or channel having banks and bed through which waters flow at least periodically or to the landward side of the 100 year floodplain identified on FEMA flood maps if this distance is greater.

If there is dispute with regard to the boundaries of a riparian area, the Board shall carry out a field investigation to delineate the boundaries of the area. In this determination, the Board may take into account the available maps, the actual character of the land, distribution of soil types, degree of saturation or inundation and overall hydrology, plant species and other features.

Section 7: Coordination With Other Regulatory Agencies

(Note, this is also an optional section. It is designed to help coordinate regulatory reviews and to permit the Board to require that a project applicant obtain other required permits prior before seeking a riparian area permit pursuant to this ordinance. Alternatively, a local government may wish to allow the permit applicant to simultaneously apply for a number of permits. Some communities have developed joint permit processing procedures with other regulatory agencies.)

The Board may require that a permit applicant obtain other federal, state, or local regulatory permits needed for a proposed activity before applying for a riparian permit from the Board. The following activities may require additional state, federal, or local permits:

(Note this needs to be tailored to state laws and local laws. The additional permits required will depend upon the type of activity, the type of wetland affected, and the local government and state.)

- Construction of any dam regulated by..... (name of regulatory agency, statutory cite.)
- Construction, encroachment or placement of any obstruction within a stream channel, lake, or tidal water regulated by..... (name of regulatory agency, statutory cite.)
- Diversion of water including withdrawals in excess ofgallons per day regulated by.....(name of regulatory agency, statutory cite.)
- Discharges of fills or pollutants into the waters of the state regulated by..... (name of regulatory agency, statutory cite.)
- The undertaking of any regulated activity in a floodplain or floodway regulated by.....(name of regulatory agency, statutory cite.)
- The construction of septic tank/soil absorption fields in any wetland or buffer area requiring a permit from.....(name of regulatory agency, statutory site.)
- Any filling or grading requiring a permit from.....(name or regulatory agency, statutory site.)
- Any land use, building construction, or subdivision permit required from.....(name of the local regulatory agency, statutory site.)
- The discharge of fill or dredged material into wetlands and watercourses regulated by the U.S. Army Corps of Engineers pursuant to Section 10 of the Rivers and Harbor Act or Sections 404 and 401 of the Federal Clean Water Act, as amended.

Section 8: Activities Allowed as of Right

The following uses are allowed in riparian areas without a permit providing they do not involve hydrologic modifications or fills:

- Conservation of soil, vegetation, water, fish, and wildlife,
- Private wildlife sanctuaries, woodland preserves,

- Outdoor recreation including nature study, hiking, horseback riding, swimming, camping, trapping, hunting, fishing, shell fishing, cross-country skiing where otherwise legally permitted,
- Grazing, farming, nurseries, gardening and harvesting of crops, providing a minimum setback of 25 feet from all watercourses is maintained. This shall not be construed to include road construction, erection of buildings, or relocation of wetlands or watercourses, clear cutting of timber, or the mining of top soil, peat, sand or gravel from riparian areas without a permit,
- The control of noxious weeds if the control does not involve drainage or fill,
- Open space uses incidental to the enjoyment and maintenance of adjacent residential, commercial and industrial property such as open space for subdivisions and building setback areas,
- Maintenance and repair of existing ditches, watercourses, farm pounds, utilities, roadways providing the activity does not involve the expansion of roadways or related improvements into previously unimpacted areas , and
- The enhancement or restoration of riparian areas less than one acre and not associated with any development proposal.

Section 9: Activities Requiring a Permit

All activities in regulated riparian areas involving filling, excavation, dredging, clear-cutting, grading or excavation, construction, removal or peat, sand or gravel, alteration of the water level or water table, disturbance of surface drainage characteristics, sediment patterns, or flood retention characteristics or any other alteration or use of a riparian areas not permitted by Section 8 of this ordinance shall require a permit from the Board.

Any person proposing to carry out an activity which may disturb the natural and indigenous character of a regulated riparian area may, prior to the commencement of the operation, notify the agency on a form provided by it and provide the Board with sufficient information to enable it to determine whether the proposed activity is an activity permitted as of right or an activity requiring a permit. Such a ruling by the Board shall be made in writing within 30 days of submission and a determination by the Board that the application is complete.

Section 10: Information to be Provided by Permit Applicants

The Board shall develop and make available riparian area permit application forms. Individuals or public or private corporations seeking a permit for a regulated activity within a riparian shall fill out and submit this form to the Board. All applications shall include, at the minimum, the following information in writing or on maps or drawings in the form prescribed by the Board:

- Name, address, telephone number, and e-mail address of owner and permit applicant (if different);
- A sketch map and description of the riparian area on the project site or which may be impacted by the proposed activity;
- A description of the proposed activity including the type of proposed activity, its dimensions, distance from any road or water body;
- A description of all grading, filling, and vegetation removal proposed by the project applicant including an estimate of the dimensions of the area which will be affected;

- An explanation why this activity cannot be located at an upland location;
- A description of all measures proposed to reduce or compensate for project impacts;
- Name and location of the nearest road intersection;
- Photographs of the proposed project site showing the existing condition of the site;
- The lot size and size of any adjacent parcels owned by the project applicant;
- Any surface water bodies located on or within 100 feet of the project site;
- Zoning classification and restrictions;
- The 100 year flood elevation and floodplain and floodway boundaries at the project site if FEMA or other flood maps are available;
- A description of proposed restoration or riparian vegetation for all surfaces;
- A map of any wetlands which may be impacted by the proposed activity; and
- A description of the construction sequencing and timetable for any proposed activities including description of future phases of projects.

The Board may also require a permit applicant to submit additional information if the Board deems such information necessary to determine the compliance of a proposed activity with the standards and criteria set forth in the ordinance. Such information may include:

- Description of ecological communities and functions;
- Description how the application will change, diminish, or enhance the ecological communities and functions;
- Name, address, professional status, license number, and phone number of the person who is to prepare the riparian management or mitigation plan;
- More detailed site plans;
- Engineering reports and analyses where the proposed activity may be subject to flood or erosion hazards or increase such hazards of other types;
- Mapping or description of soil types where onsite waste disposal is proposed; and
- Analysis of chemical or physical characteristics of any fill material.

In addition, the Board may require the permit applicant to submit a riparian management and/or a compensatory mitigation plan.

Section 11: Public Hearings

Any person filing a permit application shall give written notice thereof, by certified mail (return receipt requested) or hand delivered, to all abutters at their mailing addresses shown on the most recent applicable tax list of the assessors. The notice to abutters shall include a copy of the permit application or shall state where copies may be examined and obtained by abutters.

(Note, a community could require a permit applicant to provide a notice to other agencies. See Section 7 above. For example, a permit applicant could be required to submit a copy of the permit application to the municipal engineer for compliance with floodplain regulations.)

No sooner than 30 days and not later than 60 days after receipt of a permit application and after notice the permit application has been published in one newspaper having general circulation in the area, the Board may hold a public hearing on the application unless the Board finds that the activity is so minor as not to affect riparian area functions, values, or acreage or

have impact upon public properties or the public at large. All hearings shall be open to the public.

Section 12: Standards and Criteria for Issuance of Permits

The Board shall consider all relevant facts in making its decision on any application for a permit including but not limited to the following:

- The goals and purposes of this ordinance;
- The functions and values of the riparian zone (See Section 1);
- The environmental impact of the proposed action;
- Alternatives to the proposed action;
- The relationship between short-term uses and long term productivity;
- Threats to other properties from increases in flooding, erosion, or other hazards;
- The suitability of the activity to the area for which it is proposed including threats from natural hazards; and
- Measures which would mitigate the impact of any aspect of the proposed regulated activity.

The Board shall not issue or conditionally issue a permit unless it finds that the proposed activity will not, taking into account individual and cumulative effects, threaten health or safety, result in fraud, cause nuisances, impair public rights in public waters, violate pollution control standards, or violate other regulations. In addition, the Board shall not issue a permit unless it finds that

- The permit applicant has, to the extent practical, avoided riparian areas;
- The permit applicant has, to the extent practical, reduced impacts to riparian areas;
- The proposed activity will be set back a minimum of 25 feet from the top of the bank of any river, stream, creek, wetland, or arroyo. The Board may require a larger setback based upon flooding, erosion, pollution, endangered species, riparian or wetland functions and values, or other relevant factors;
- The proposed activity will not cause a net loss of riparian area functions, values, or acreage taking in account the cumulative adverse effects of past activities on the riparian buffer area and reasonably anticipated future activities;
- The proposed activity will not increase flood, erosion, subsidence or other hazard on other lands and the proposed activity will not, in itself, be subject to flood and erosion hazards;
- The proposed activity will not result in adverse modification of habitat for or jeopardize plant, animal, or other wildlife species listed as threatened or endangered by the U.S. Fish and Wildlife Service or the state of(*specify*). Department of Fish and Wildlife or the state of Heritage program; and
- The proposed activity will not violate other applicable federal, state, and local water quality, flood loss reduction, fill and grading, stream protection, water supply protection, comprehensive zoning, sanitary code, and other statutes, regulations and ordinances.

The Board shall make written findings on any permit applicant stating the reason why the proposed permit is issued, denied, or conditionally issued or denied. The Board may consider all relevant information including but not limited to the following in making its decision on the application:

- The application and supporting documentation;
- Public comments, evidence, and testimony;
- Reports or comments from other local, state, tribal, or federal agencies and commissions; and
- Comments on the application from regional planning agencies, soil and water conservation districts, or other regional organizations.

Section 13: Conditions Which May Be Attached to Permits

The Board may conditionally approve permits. The following sorts of conditions may be attached to permit approvals:

- Design measures to further reduce project impacts;
- Relocation of the proposed activity to reduce project impacts;
- Flood and erosion loss reduction measures to prevent hazard losses to activities on other lands;
- Compensatory mitigation measures to offset losses to riparian area acreage, functions, and values;
- A requirement that structures be elevated on piles, floodproofed or otherwise protected from hazards including flood heights, velocities, and erosion potential;
- Modification of waste disposal and water supply facilities to reflect flooding, high ground water, and erosion hazards;
- Inclusion in the deed for the property a warning that the property contains a riparian area and that any activities in the riparian areas are subject to the riparian, wetland, floodplain and other regulatory requirements;
- Set backs from the river, stream, or other water body of a size appropriate for the proposed activity and the particular riparian area;
- Deed restrictions, covenants, or execution of conservation easements regarding the future use of lands including but not limited to preservation of undeveloped areas and restrictions on vegetation removal;
- Erosion control and storm water management measures;
- The clustering of structures or development;
- Erection of riparian area markers and signs including survey stakes delineating the boundary between riparian areas and adjacent lands;
- Long term monitoring and management requirements including control of exotic plant and animal species;
- Compensatory mitigation measure to offset losses to riparian acreage, functions, and values; and
- Other conditions necessary to protect riparian area functions, offset losses, and prevent increased natural hazard losses in the community.

Section 14: Riparian Management Plans

The Board may require that a permit applicant submit a riparian management plan to the Board if the Board believes such a plan is needed to meet the goals and standards of this ordinance including conditions attached to permit issuance. Such a management plan may include the procedures and timing of the proposed project, water level manipulation, removal of exotic species, replanting (if necessary) and other active management activities over time. It may also be combined with a compensatory mitigation plan as provided in Section 14 of this ordinance.

The riparian management plan shall be consistent with the following requirements:

- The plan shall describe all conservation and/or land management techniques that will be used to conserve and restore the riparian area;
- The plan shall specify any activities which will be carried out over time, who will carry out such activities, and how the activities will be carried out;
- The plan shall specify the professional and personnel resources which will be committed to monitoring and managing the riparian area;
- The plan shall specify construction methods that identify and protect riparian habitat that is to be left unaltered;
- Site development shall be fitted to the topography and soil so as to create the least potential for vegetation loss and site disturbance;
- Vegetation and soil removal shall be limited to the minimum amount necessary for the development of the site;
- Temporary vegetation, sufficient to stabilize the soil, may be required on all disturbed areas as needed to prevent soil erosion. New planting shall be given sufficient water, fertilizer and protection to insure reestablishment; and
- If proposed development including grading, dredging and filling would affect the banks of the stream or river, bank stabilization using techniques acceptable to the Board shall be required to prevent erosion.

Section 15: Compensatory Mitigation

The Board may require that the permit applicant submit a compensatory mitigation plan developed by qualified personnel to achieve no net loss of riparian area functions, values, and acreage if the Board believes such a plan is needed to meet the goals and standards of this ordinance including conditions attached to the issuance of a riparian permit. Compensatory mitigation measures may take the form of riparian area restoration creation, or enhancement. Such plans shall include design, implementation, maintenance, and monitoring elements. It shall include description of the compensation area, existing and proposed topography at one foot contour intervals, any proposed fill with the source of the fill, and any stockpiling, and planting (with source of plants).

A compensatory mitigation plan shall also include, at a minimum:

- A description of how long term replacement of riparian functions, values, and acreage will take place that recreates as nearly as possible the original riparian area in terms of type, geographic location and setting.
- Plans for any selected clearing and maintenance;

- The restoration of vegetation indigenous to the site or plant community.
- Periodic monitoring of mitigation features;
- Maintenance and replacement of damaged plants; and
- A proposal for posting a performance bond or other financial assurances.

In general, compensatory mitigation shall be onsite and in kind. However, the Board may allow use of offsite and out of kind mitigation including the use of mitigation banks if such use will have net ecological benefits, will not cause nuisances, will not violate other laws, and will not result in fragmentation of the riparian ecological system. Use of mitigation banks will be allowed to compensate for impacts only where onsite measures are in addition applied to insure that flooding, water pollution, erosion, and other problems do not occur at the original site.

Where feasible, mitigation projects shall be completed prior to activities that will disturb wetlands. In other cases, mitigation shall be completed immediately following disturbance and prior to use or occupancy of the activity.

There shall be no introduction of any plant or wildlife into a mitigation project for any wetland or wetland buffer which is not native to the area unless authorized by a state or federal permit.

In general the following ratios shall be provided for restoration, creation, and enhancement: 2:1 for restoration, 4:1 for creation, and 6:1 for enhancement. The Board may increase the ratios if uncertainties exist with regard to the success of the proposed mitigation, a significant period of time will elapse between impact and replication of riparian area functions, the mitigation will result in reduced riparian area functions, or the impact was an unauthorized impact. The Board may decrease ratios if the proposed mitigation has a high likelihood of success, the proposed mitigation will provide functions and values significantly greater than the wetland being impacted, or the proposed mitigation is conducted in advance of the impact and has been shown to be successful.

In evaluating the adequacy of proposed compensatory mitigation, the Board shall consider evaluate its effectiveness in avoiding impacts, minimizing impacts, rectifying the impacts, reducing or eliminating the impacts over time; and compensating for the impacts. It shall consider:

- The risk of failure of the proposed mitigation project based upon the difficulty with which this type of riparian area is restored, created, or enhanced, the experience and expertise of the individual or individuals proposing to carry out the mitigation, the proposed buffer and other protection measures, and the proposed management, monitoring and maintenance,
- The societal importance (value) of riparian functions provided by the mitigation plan in contrast with the societal importance of the functions of the original riparian area;
- Whether the proposed mitigation will require long term maintenance and, if so, the adequacy of any proposed maintenance;
- The need for long term monitoring and whether such monitoring will be provided; and
- Whether there will be offsite impacts of the proposed mitigation such as flooding of adjacent property and how these impacts will be addressed.

There shall be no introduction of any plant or wildlife into a mitigation project for any wetland or wetland buffer which is not native to the area unless authorized by a state or federal permit or approval.

Section 16: Variances

The Board may issue variances to the requirements of this ordinance where the regulations will otherwise deny landowners all economic use of entire properties taking into account existing uses, reasonably anticipated future uses, market values and sales for comparable properties, taxes, special assessments, and other factors. The Board may issue a variance only for the minimum deviations from permit standards, conditions, or mitigation measures, consistent with not denying landowners all economic use of their entire properties. The Board shall not authorize variances for activities which will increase flood and erosion losses on other properties, pose threats to public health and welfare such as flash flooding, pollute potable water supplies, or otherwise cause nuisances. The Board shall also not issue a variance for activities which will violate other laws.

Section 17. Prior Nonconforming Uses

Nonconforming uses including but not limited to buildings shall not be enlarged or expanded to further encroach onto the riparian area or watercourse. No nonconforming activity which has been discontinued for more than two years shall not be resumed. No nonconforming structure which has been destroyed or damaged for more than 50% of its value by flooding, wind, fire, or other natural or man-made force may be rebuilt only with issuance of a permit in conformity with the provisions of this ordinance.

Section 18: Inspections, Display of Permit, Revocations of Permits

Every permit issued pursuant to this ordinance shall allow the Board or its designated employee the right to inspect a project to determine compliance with conditions and the provisions of this ordinance. A permit applicant shall notify the Board at least five days before construction of an authorized project construction is to begin. The permit shall be prominently displayed at the project site during the undertaking of the activities authorized by the permit. All permits shall be valid for a period of one year from the date of issuance unless the Board indicates otherwise. The Board may issue a Stop Work Order if it finds that the permittee is violating provisions of the permit or of other applicable laws, ordinances, and/or regulations. The Board may, on written notice to the permittee, suspend or revoke a permit issued pursuant to this ordinance if the permittee has not complied with any term or condition of the permit or has failed to undertake the project in the manner set forth in the application.

Section 19: Bonds and Insurance

Upon approval of the application and prior to issuance of a permit, the Board may require the permit applicant to file a bond with such surety in such amount and in a form approved by the Board.

Release of the bond or surety shall be conditioned on compliance with all provisions of these regulations and the terms, conditions and limitations established in the permit.

The Board may require the applicant to certify that it has public liability insurance against liability which might result from the proposed activity covering any and all damage which might occur within *(specify)*years of completion of such operations, in an amount commensurate with the regulated activity.

Section 20: Enforcement and Penalties

Any person who commits, takes part in, or assists in any violation of any provision of this ordinance is guilty of a misdemeanor and may be fined not more than *(specify)*dollars for each offense and subject to imprisonment not exceeding *(specify)*days or both. Each violation of this ordinance shall be a separate offense, and in the case of a continuing violation, each day's continuance thereof shall be deemed to be a separate and distinct offense.

The *(community name)* shall have jurisdiction to enjoin a violation of this ordinances. All costs, fees, and expenses in connection with such action shall be assessed as damages against the violator.

In the event of a violation the *(community name)*..... shall have the power to order restoration of the riparian area. If the responsible person or agent does not complete such restoration within a reasonable time following the order, the authorized local government shall have the authority to restore the affected wetlands to the prior condition and the person or agent responsible for the violation shall be held liable to the *(community name)* for the cost of restoration.

Section 21: Appeals

Appeal on actions of the Board shall be made in accordance with provisions of the General Statutes *(specify section)*.....

Section 22: Conflict and Severance

This ordinance shall be construed as not to conflict with any provision of local, state, or federal law. However, the provisions of this ordinance shall control if more restrictive than other local, state, or federal laws.

If any portion of this ordinance is held invalid or unconstitutional by a court of competent jurisdiction, all remaining provisions of the ordinance shall continue to be of full force and effect.

Section 23: Application Fees

At the time of a permit application, the applicant shall apply a filing fee of *(specify)*if the project will involve less than 5,000 square feet of disturbance to a riparian area and a filing fee of *(specify)*if more.

The Board may also require an applicant to pay fee for reasonable costs and expenses born by the commission including but not limited to verifying wetland boundaries, analyzing resource functions and values including wildlife evaluations, and hydrogeologic and drainage analyses.

**MODEL CONSERVATION SUBDIVISION / OPEN SPACE DEVELOPMENT
ORDINANCE** (based on text from the South Carolina Department of Health and
Environmental Control)

Section 1. Purposes

- A. To provide for the preservation of greenspace as a method of enhancing biodiversity in the Town of Yorktown.
- B. To provide a residential zoning district that permits flexibility of design in order to promote environmentally sensitive and efficient uses of the land.
- C. To preserve in perpetuity unique or sensitive natural resources such as groundwater, floodplains, wetlands, streams, steep slopes, woodlands and wildlife habitat.
- D. To permit clustering of houses and structures on less environmentally sensitive soils which will reduce the amount of infrastructure, including paved surfaces and utility easements, necessary for residential development.
- E. To reduce erosion and sedimentation by minimizing land disturbance and removal of vegetation in residential development.
- F. To promote interconnected greenways and corridors throughout the community.
- G. To promote contiguous greenspace with adjacent jurisdictions.
- H. To encourage interaction in the community by clustering houses and orienting them closer to the street, providing public gathering places and encouraging use of parks and community facilities as focal points in the neighborhood.
- I. To encourage street designs that reduce traffic speeds and reliance on main arteries.
- J. To promote construction of convenient landscaped walking trails and bike paths both within the subdivision and connected to neighboring communities, businesses, and facilities to reduce reliance on automobiles.

Section 2. General Regulations

A. Applicability of Regulations. This Conservation Subdivision option is available in the following [list of applicable zoning districts and conditions] as a use by right. Applicant shall comply with all other provisions of the zoning code and all other applicable laws, except those that are incompatible with the provisions contained herein.

B. Ownership of Development Site. The tract of land to be subdivided may be held in single and separate ownership or in multiple ownership. If held in multiple ownership, however, the site shall be developed according to a single plan with common authority and common responsibility.

C. Housing Density Determination. The maximum number of lots in the Conservation Subdivision shall be determined by either of the following two methods, at the discretion of the local jurisdiction:

- (1) Calculation: The maximum number of lots is determined by dividing the area of the tract of land by the minimum lot size specified in the underlying

zoning. In making this calculation, the following shall not be included in the total area of the parcel:

- a. slopes over 25 percent of at least 5,000 square feet contiguous area;
- b. the 100-year floodplain;
- c. bodies of open water over 5,000 square feet contiguous area;
- d. wetlands that meet the definition of the Army Corps of Engineers pursuant to the Clean Water Act; or,
- e. anticipated right-of-way needs for roads and utilities.

- (2) Yield Plan: The maximum number of lots is based on a conventional subdivision design plan, prepared by the applicant, in which the tract of land is subdivided in a manner intended to yield the highest number of lots possible. The plan does not have to meet formal requirements for a site design plan, but the design must be capable of being constructed given site features and all applicable regulations.

Section 3. Application Requirements

A. Site Analysis Map Required. Concurrent with the submission of a site concept plan, Applicant shall prepare and submit a site analysis map. The purpose of the site analysis map is to ensure that the important site features have been adequately identified prior to the creation of the site design, and that the proposed Open Space will meet the requirements of this article. The preliminary site plan shall include the following features:

- (1) Property boundaries;
- (2) All streams, rivers, lakes, wetlands and other hydrologic features;
- (3) Topographic contours of no less than 10-foot intervals;
- (4) All Primary and Secondary Conservation Areas labeled by type, as described in Section 4 of this Article;
- (5) General vegetation characteristics;
- (6) General soil types;
- (7) The planned location of protected Open Space;
- (8) Existing roads and structures; and,
- (9) Potential connections with existing greenspace and trails.

B. Open Space Management Plan Required. An open space management plan, as described in Section 4, shall be prepared and submitted prior to the issuance of a land disturbance permit.

C. Instrument of Permanent Protection Required. An instrument of permanent protection, such as a conservation easement or permanent restrictive covenant and as described in Section 4, shall be placed on the Open Space concurrent with the issuance of a land disturbance permit.

D. Other Requirements. The Applicant shall adhere to all other applicable requirements of the underlying zoning and the [subdivision code].

Section 4. Open Space

A. Definition. Open Space is the portion of the conservation subdivision that has been set aside for permanent protection. Activities within the Open Space are restricted in perpetuity through the use of an approved legal instrument.

B. Standards to Determine Open Space.

- (1) The minimum restricted Open Space shall comprise at least 40% of the gross tract area.
- (2) The following are considered Primary Conservation Areas and are required to be included within the Open Space, unless the Applicant demonstrates that this provision would constitute an unusual hardship and be counter to the purposes of this article:
 - a. The regulatory 100-year floodplain;
 - b. Buffer zones of at least 75 ft width along all perennial and intermittent streams;
 - c. Slopes above 25 percent of at least 5,000 square feet contiguous area;
 - d. Wetlands that meet the definition outline in Chapter 175 of the Town of Yorktown land-use code.
 - e. Populations of endangered or threatened species, or habitat for such species; and,
 - f. Archaeological sites, cemeteries and burial grounds
- (3) The following are considered Secondary Conservation Areas and should be included within the Open Space to the maximum extent feasible.
 - a. Important historic sites;
 - b. Existing healthy, native forests of at least one acre contiguous area;
 - c. Individual existing healthy trees greater than 8 inches caliper, as measured from their outermost drip line;
 - d. Other significant natural features and scenic viewsheds such as ridge lines, peaks and rock outcroppings, particularly those that can be seen from public roads;
 - e. Prime agricultural lands of at least five acres contiguous area; and,
 - f. Existing trails that connect the tract to neighboring areas.
- (4) Above-ground utility rights-of-way and small areas of impervious surface may be included within the protected Open Space but cannot be counted towards the 40 percent minimum area requirement (exception: historic structures and existing trails may be counted). Large areas of impervious surface shall be excluded from the Open Space.
- (5) At least 75 percent of the Open Space shall be in a contiguous tract. The Open Space should adjoin any neighboring areas of Open Space, other protected areas, and non-protected natural areas that would be candidates for inclusion as part of a future area of protected Open Space.
- (6) The Open Space shall be directly accessible to the largest practicable number of lots within the subdivision. Non-adjoining lots shall be provided with safe, convenient access to the Open Space.

C. Permitted Uses of Open Space. Uses of Open Space may include the following:

- (1) Conservation of natural, archeological or historical resources;
- (2) Meadows, woodlands, wetlands, wildlife corridors, game preserves, or similar conservation-oriented areas;
- (3) Walking or bicycle trails, provided they are constructed of porous paving materials;
- (4) Passive recreation areas;
- (5) Active recreation areas, provided that they are limited to no more than 10 percent of the total Open Space and are not located within Primary Conservation Areas. Active recreation areas may include impervious surfaces. Active recreation areas in excess of this limit must be located outside of the protected Open Space;
- (6) Agriculture, horticulture, silviculture or pasture uses, provided that all applicable best management practices are used to minimize environmental impacts, and such activities are not conducted within Primary Conservation Areas;
- (7) Nonstructural stormwater management practices;
- (8) Easements for drainage, access, and underground utility lines; or
- (9) Other conservation-oriented uses compatible with the purposes of this ordinance.

D. Prohibited uses of Open Space

- (1) Golf courses;
- (2) Roads, parking lots and impervious surfaces, except as specifically authorized in the previous sections;
- (3) Agricultural and forestry activities not conducted according to accepted Best Management Practices; and,
- (4) Other activities as determined by the Applicant and recorded on the legal instrument providing for permanent protection.

E. Ownership and Management of Open Space.

- (1) Ownership of Open Space. The applicant must identify the owner of the Open Space who is responsible for maintaining the Open Space and facilities located thereon. If a Homeowners Association is the owner, membership in the association shall be mandatory and automatic for all homeowners of the subdivision and their successors. If a Homeowners Association is the owner, the Homeowners' Association shall have lien authority to ensure the collection of dues from all members. The responsibility for maintaining the Open Space and any facilities located thereon shall be borne by the owner.

(2) Management Plan. Applicant shall submit a Plan for Management of Open Space and Common Facilities ("Plan") that:

- a. allocates responsibility and guidelines for the maintenance and operation of the Open Space and any facilities located thereon, including provisions for ongoing maintenance and for long-term capital improvements;
- b. estimates the costs and staffing requirements needed for maintenance and operation of, and insurance for, the Open Space and outlines the means by which such funding will be obtained or provided;
- c. provides that any changes to the Plan be approved by the Board of Commissioners; and,
- d. provides for enforcement of the Plan.

(3) In the event the party responsible for maintenance of the Open Space fails to maintain all or any portion in reasonable order and condition, [the jurisdiction] may assume responsibility for its maintenance and may enter the premises and take corrective action, including the provision of extended maintenance. The costs of such maintenance may be charged to the owner, Homeowner's Association, or to the individual property owners that make up the Homeowner's Association, and may include administrative costs and penalties. Such costs shall become a lien on all subdivision properties.

F. Legal Instrument for Permanent Protection.

(1) The Open Space shall be protected in perpetuity by a binding legal instrument that is recorded with the deed. The instrument shall be one of the following:

- a. A permanent conservation easement in favor of either:
 - (i) a land trust or similar conservation-oriented non-profit organization with legal authority to accept such easements. The organization shall be bona fide and in perpetual existence and the conveyance instruments shall contain an appropriate provision for retransfer in the event the organization becomes unable to carry out its functions; or
 - (ii) a governmental entity with an interest in pursuing goals compatible with the purposes of this ordinance.
If the entity accepting the easement is not [the jurisdiction], then a third right of enforcement favoring [the jurisdiction] shall be included in the easement;
- b. A permanent restrictive covenant for conservation purposes in favor of a governmental entity; or,
- c. An equivalent legal tool that provides permanent protection, if approved by [the jurisdiction].

(2) The instrument for permanent protection shall include clear restrictions on the use of the Open Space. These restrictions shall include all restrictions contained in this article, as well as any further restrictions the Applicant chooses to place on the use of the Open Space.

APPENDIX G

NATIVE AND NON-NATIVE PLANT LISTS

APPENDIX G

LIST OF COMMON NON-NATIVE INVASIVE PLANT SPECIES BIODIVERSITY CONSERVATION STUDY TOWN OF YORKTOWN, NEW YORK

The following plant species should be avoided in future development projects. In addition to plant material, common erosion control seed mixes contain invasive herbaceous plant species which should be avoided. Note: Non-native invasive plant list is based on data from Westchester County Department of Planning and the Invasive Plant Council of New York State.

SCIENTIFIC NAME	COMMON NAME
TREES	
<i>Acer platanoides</i>	Norway Maple
<i>Ailanthus altissima</i>	Tree of Heaven
<i>Robinia pseudoacacia</i>	Black Locust
SHRUBS	
<i>Berberis thunbergii</i>	Japanese Barberry
<i>Elaeagnus umbellata</i>	Autumn Olive
<i>Euonymus alatus</i>	Burning Bush
<i>Lonicera tatarica</i>	Tartarian Honeysuckle
<i>Rhamnus cathartica</i>	Common Buckthorn
<i>Rhamnus frangula</i>	Glossy Buckthorn
<i>Rosa multiflora</i>	Multiflora Rose
<i>Rubus phoenicolasius</i>	Japanese Wineberry
<i>Viburnum japonicum</i>	Japanese Viburnum
HERBACEOUS	
<i>Alliaria petiolata</i>	Garlic Mustard
<i>Ampelopsis brevipedunculata</i>	Porcelain-Berry
<i>Artemisia vulgaris</i>	Mugwort
<i>Celastrus orbiculatus</i>	Oriental Bittersweet
<i>Centaurea maculosa</i>	Spotted or Bush Knapweed
<i>Cynanchum louiseae</i>	Black Swallow-wart
<i>Cynanchum rossicum</i>	Pale Swallow-wart
<i>Heracleum mantegazzianum</i>	Giant Hogweed
<i>Fallopia japonica</i>	Japanese Knotweed
<i>Lonicera japonica</i>	Japanese Honeysuckle
<i>Lythrum salicaria</i>	Purple Loosestrife
<i>Microstegium vimineum</i>	Japanese Stilt Grass
<i>Myriophyllum spicatum</i>	Eurasian Milfoil
<i>Persicaria perfoliata</i>	Mile-a-Minute
<i>Phragmites sp.</i>	Common Reed
<i>Trapa natans</i>	Water Chestnut
SUBMERGED AQUATICS	
<i>Potamogeton crispus</i>	Curly-leaved Pondweed

APPENDIX G

SUGGESTED PLANT LIST FOR WETLAND MITIGATION/RESTORATION PROJECTS BIODIVERSITY CONSERVATION STUDY TOWN OF YORKTOWN, NEW YORK

Successful wetland mitigation and restoration projects typically included the installation of native plants well suited for specific wetland areas. The following list contains a mixture of suggested wetland plant species which are often well-suited for use in mitigation plantings. Note: when applicable, plant materials should be from a wetland nursery.

SCIENTIFIC NAME	COMMON NAME
TREES	
<i>Acer rubrum</i>	Red Maple
<i>Acer saccharinum</i>	Silver Maple
<i>Fraxinus pennsylvanica</i>	Green Ash
<i>Betula nigra</i>	River Birch
<i>Betula populifolia</i>	Gray Birch
<i>Carpinus caroliniana</i>	American Hornbeam
<i>Platanus occidentalis</i>	American Sycamore
<i>Quercus bicolor</i>	Swamp White Oak
<i>Quercus palustris</i>	Pin Oak
<i>Salix nigra</i>	Black Willow
SHRUBS	
<i>Alnus incana</i>	Speckled Alder
<i>Amelanchier canadensis</i>	Shadblow
<i>Aronia arbutifolia/prunifolia</i>	Red Chokeberry
<i>Cephalanthus occidentalis</i>	Buttonbush
<i>Clethra alnifolia</i>	Sweet Pepperbush
<i>Cornus amomum</i>	Silky Dogwood
<i>Cornus sericea</i>	Red-osier Dogwood
<i>Ilex verticillata</i>	Winterberry Holly
<i>Lindera benzoin</i>	Common Spicebush
<i>Rhododendron viscosum</i>	Swamp Azalea
<i>Salix discolor</i>	Pussy Willow
<i>Sambucus canadensis</i>	Common Elderberry
<i>Vaccinium corymbosum</i>	Highbush Blueberry
<i>Viburnum cassinoides</i>	Wild Raisin
<i>Viburnum lentago</i>	Nannyberry
<i>Viburnum trilobum</i>	American Cranberrybush
EMERGENT HERBACEOUS	
<i>Acorus americanus</i>	Sweetflag
<i>Asclepias incarnate</i>	Swamp Milkweed
<i>Aster cordifolius</i>	Blue Wood Aster

APPENDIX G (continued)

SCIENTIFIC NAME	COMMON NAME
<i>Aster divaricatus</i>	White Wood Aster
<i>Aster novae-angliae</i>	New England Aster
<i>Aster puniceus</i>	Swamp Aster
<i>Caltha palustris</i>	Marsh Marigold
<i>Carex comosa</i>	Bearded Sedge
<i>Carex stricta</i>	Tussock Sedge
<i>Iris versicolor</i>	Blue Flag Iris
<i>Juncus effusus</i>	Soft Rush
<i>Lobelia cardinalis</i>	Cardinal Flower
<i>Mimulus ringens</i>	Monkey Flower
<i>Pontederia cordata</i>	Pickrelweed
<i>Schoenoplectus acutus</i>	Hard-stem Bulrush
<i>Schoenoplectus tabernaemontani</i>	Soft-stem Bulrush
<i>Scirpus atrovirens</i>	Green Bulrush
<i>Symplocarpus foetidus</i>	Skunk Cabbage
SUBMERGED AQUATICS	
<i>Alisma plantago-aquatica</i>	Water Plantain
<i>Nymphae odorata</i>	White Water Lily
<i>Peltandra virginica</i>	Arrow Arum
<i>Potamogeton nodosus</i>	Long-leaf Pondweed
<i>Potamogeton pectinatus</i>	Sago Pondweed
<i>Sagittaria latifolia</i>	Duck Potato
<i>Sarracenia purpurea</i>	Pitcher Plant
SEED MIXES	
New England Wet Mix	New England Wetland Plants, Amherst, MA
New England Moist Seed Mix	New England Wetland Plants, Amherst, MA
New England Conservation Mix	New England Wetland Plants, Amherst, MA
New England Erosion Control/Restoration Mix	New England Wetland Plants, Amherst, MA
FACW Wetland Meadow Mix	Ernst Conservation Seed, Meadville, PA
Seasonally Flooded Area Annual & Perennial Wildlife Mix	Ernst Conservation Seed, Meadville, PA
Wildlife Food and Shelter Mix	Ernst Conservation Seed, Meadville, PA
Riparian Buffer Mix	Ernst Conservation Seed, Meadville, PA

APPENDIX H

BEST MANAGEMENT PRACTICES DETAILS

APPENDIX H

SAMPLE DETAILS AND DIAGRAMS FOR CONSERVATION BIODIVERSITY ENHANCEMENT BIODIVERSITY AND CONSERVATION STUDY TOWN OF YORKTOWN, NEW YORK

The following details outline various design elements that can be utilized to enhance biodiversity and provide suitable wildlife habitat. These include:

Ecotone and Woodland Buffer – The ecotone detail illustrates the interface zone between open and forest areas. This area is typically a substantial rich and diverse habitat and should be protected and restored when possible. This detail provides a background and guidance for establishing effective ecotones.

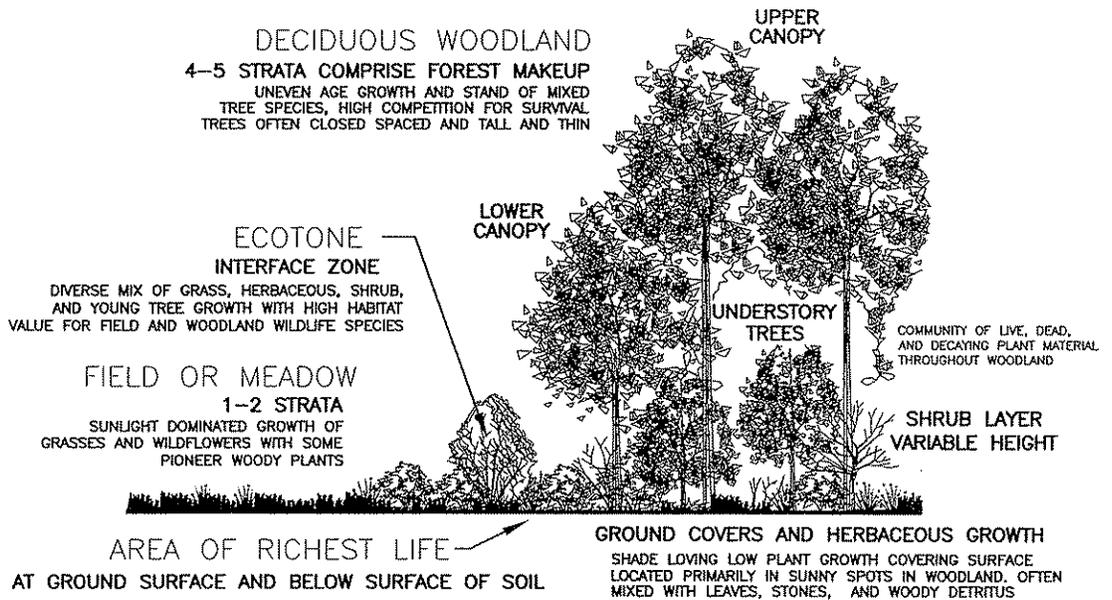
Typical Constructed Wetland – Some land development situations require unavoidable impacts to wetland resources. Wetland mitigation via constructed wetlands can be a proposed option to offset impacts. However, these projects often fail due to poor design or execution of the mitigation plan. The attached cross section provides a sample for how established an effective wetland mitigation cross section.

Log Habitat – In certain wetland or natural area restoration projects, providing stand alone wildlife habitat enhancements can prove to be beneficial. The attached log habitat detail illustrates how logs and stones can be used to create a habitat area fairly quickly.

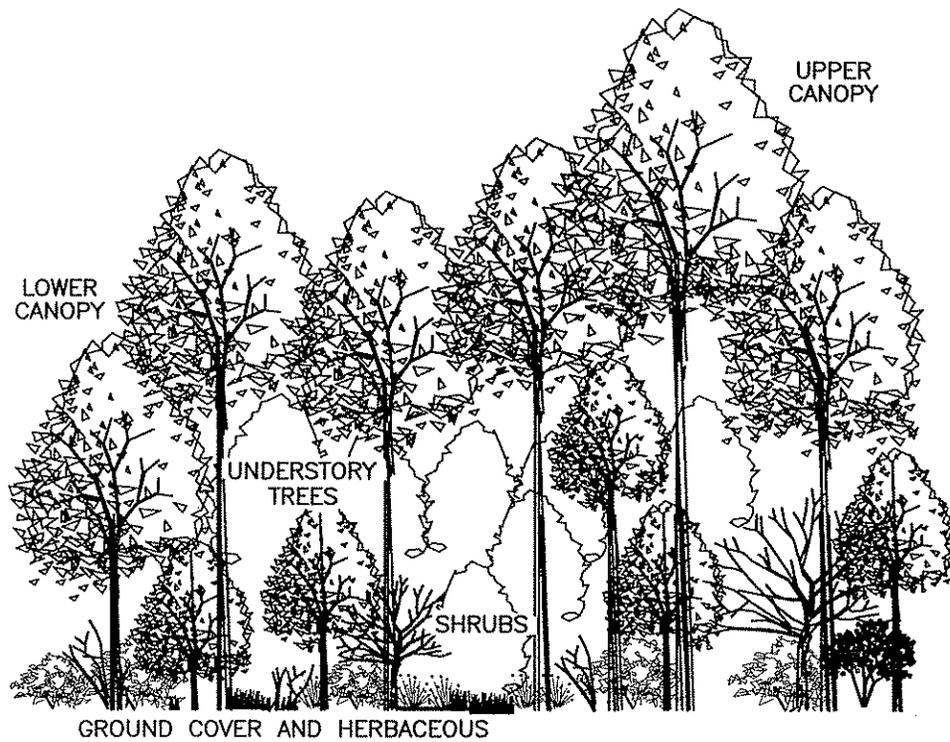
Stream Edge Restoration – Increased water quality can lead to an increase in overall biodiversity. One way of increasing water quality is to restore and stabilization eroding or degrading stream banks. This detail illustrates one method for protecting and revegetating and eroded stream edge.

Tree Protection Detail – Tree protection should be carried out as part of any erosion and sediment control or pollution prevention plan.

Disclaimer: The details and diagrams contained in this appendix are the property of Stearns & Wheeler, LLC and are not intended for public use or reproduction without approval.



ECOTONE – EDGE HABITAT



DECIDUOUS FOREST – 5 STRATA
UNEVEN AGE GROWTH

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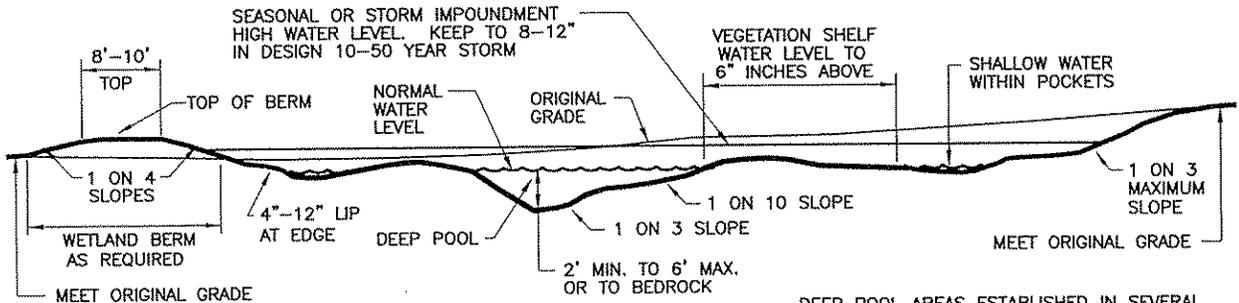
DATE:6/2009 JOB No.:81100

BIODIVERSITY AND CONSERVATION STUDY
PROPOSED BMP DETAILS
TOWN OF YORKTOWN, NEW YORK

**ECOTONE AND WOODLAND
BUFER ZONE DIAGRAM**

ALL WETLANDS REQUIRE AN OUTLET STRUCTURE TO ALLOW RELEASE OF STORMWATER AND HIGH GROUNDWATER. THE OUTLET MAY BE A STONE SPILLWAY, WEIR THROUGH A BERM, OR MORE FORMAL STONE WALLED STRUCTURE WITH PIPES

WETLAND EDGES, EXPOSED SOIL SHELF, AND SHALLOW WATER AREAS ARE PLANTED OR ARE ALLOWED TO GROW TO A DIVERSE MIX OF WETLAND ORIENTED PLANT SPECIES



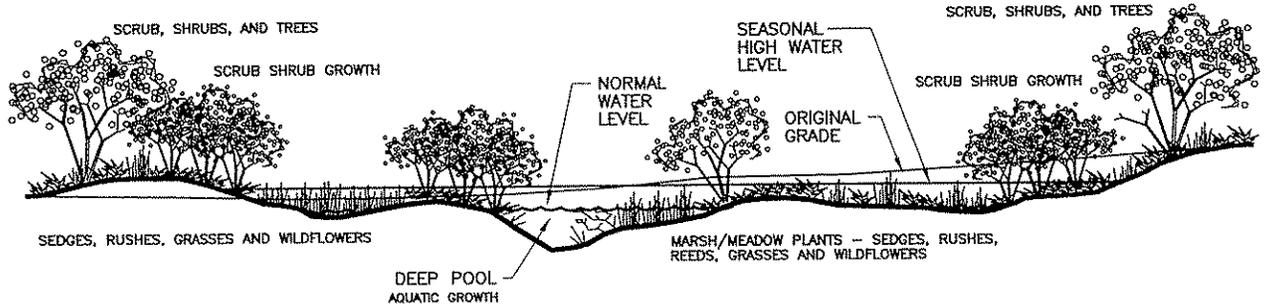
A WETLAND IS EXCAVATED INTO SEASONAL GROUND WATER TABLE OR IS BERMED TO CATCH RUNOFF WATER. ABOVE GROUNDWATER A WETLAND BOTTOM MUST BE LINED WITH DENSE CLAY OR SILT SOILS OR HAVE A MAN-MADE LINER SYSTEM

DEEP POOL AREAS ESTABLISHED IN SEVERAL LOCATIONS IN THE WETLAND WILL SUPPORT AQUATIC LIFE DURING DRYER SEASONS. A STORMWATER WETLAND SHOULD HAVE 20-40% OF ITS SURFACE AREA IN DEEP WATER POOLS.

FLOW PATH ACROSS THE BASE OF A STORMWATER WETLAND SHOULD BE AT A RATIO OF 2:1 OR GREATER. THE LENGTH TO WIDTH RATIO OF THE WETLAND SHOULD ALSO BE 2:1 OR GREATER.

TYPICAL CONSTRUCTED WETLAND SECTION

SHOWING SURFACE FEATURES, WATER LEVELS, AND SLOPES
DETAIL NOT TO SCALE



TYPICAL CONSTRUCTED WETLAND SECTION

SHOWING VEGETATION ASSOCIATIONS AND GROWTH PATTERNS
DETAIL NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION PURPOSES.

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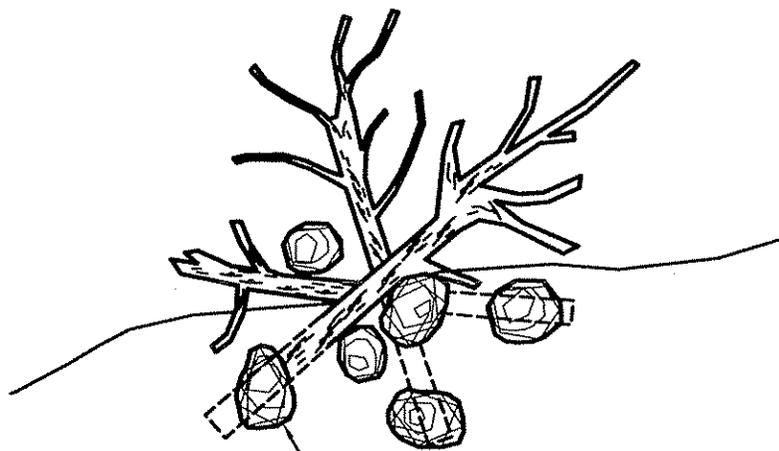
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PROPOSED BMP DETAILS
TOWN OF YORKTOWN, NEW YORK

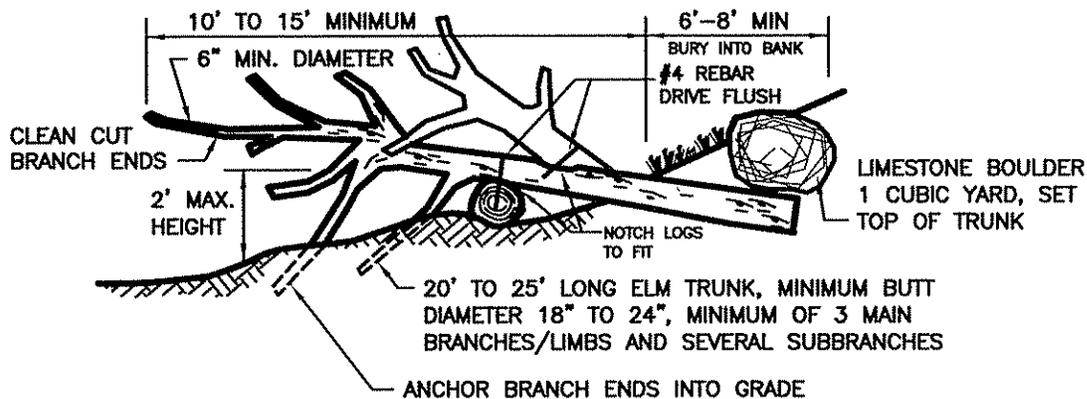
**CONSTRUCTED WETLAND
CROSS SECTIONS AND DETAILS**



LIMESTONE BOULDERS,
4 MINIMUM PER TREE

PLAN VIEW

NOT TO SCALE



LOG HABITAT

NOT TO SCALE

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NOT INTENDED FOR CONSTRUCTION PURPOSES.



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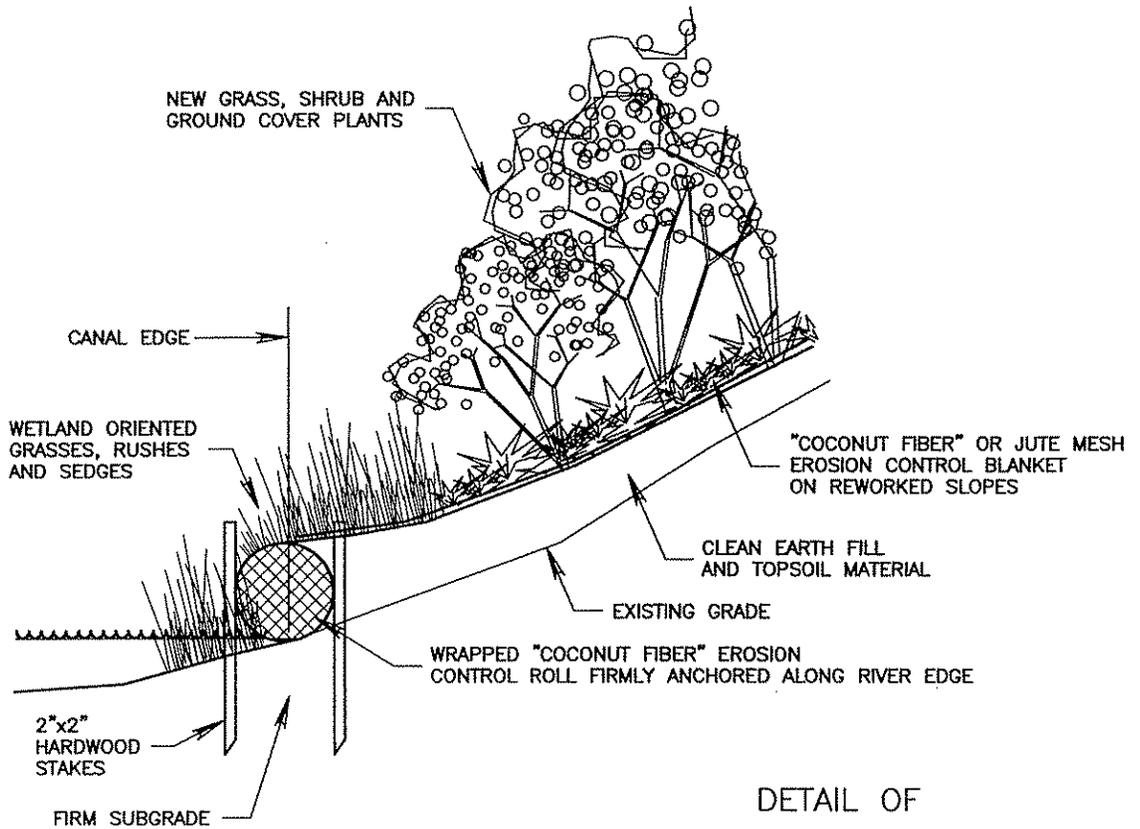
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BIODIVERSITY AND CONSERVATION STUDY
PROPOSED BMP DETAILS
TOWN OF YORKTOWN, NEW YORK

**LOG HABITAT STRUCTURE
DIAGRAM**

NOTES

1. SHRUB AND GROUND COVER PLANTS SHALL BE NATIVE SPECIES ie; ARROWWOOD VIBURNUM, WINTERBERRY, GREY STEM DOGWOOD, RED STEM DOGWOOD AND MYRTLE. SHRUBS SHALL BE 18"-24"-30" HEIGHT AT TIME OF PLANTING. EITHER CONTAINERIZED STOCK OR BARE ROOT PLANTS MAY BE INSTALLED DEPENDENT UPON THE PLANTING SEASON.
2. WETLAND ORIENTED PLANT MATERIAL AREAS SHALL BE SEEDED OR PLANTED (2 1/4" POTS) TO SPECIES SUCH AS SWITCH GRASS, SOFT RUSH, GREEN BULRUSH, BLUE FLAG IRIS, REDTOP, PURPLE LOVE GRASS AND CATTAILS.



DETAIL OF
STREAM EDGE RESTORATION
 NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION PURPOSES.

08.06.2009 GREG LIBERMAN J:\80000\81100\10\BMP DETAILS\STREAM REST.DWG



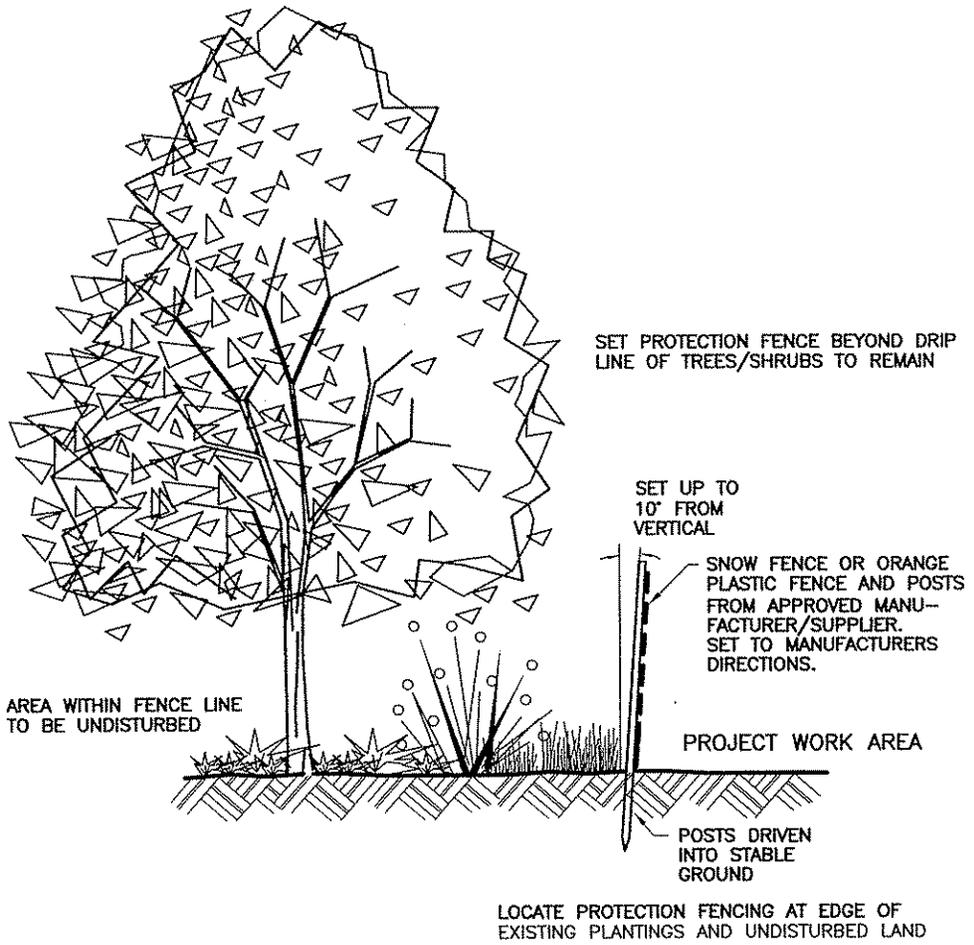
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DATE:6/2009 JOB No.:81100

BIODIVERSITY AND CONSERVATION STUDY
 PROPOSED BMP DETAILS
 TOWN OF YORKTOWN, NEW YORK

**STREAM BANK RESTORATION
 DIAGRAM**



TREE PROTECTION DETAIL
NOT TO SCALE

NOT INTENDED FOR CONSTRUCTION PURPOSES.

08.06.2009 GREG LIBERMAN J:\80000\81100\10\BMP DETAILS\TREE PROTECTION.DWG

 <p>STEARNS & WHEELER[™] Environmental Engineers & Scientists CAZENOVIA & SUFFERN, NY</p> <p>DATE:6/2009 JOB No.:81100</p>	<p>BIODIVERSITY AND CONSERVATION STUDY PROPOSED BMP DETAILS TOWN OF YORKTOWN, NEW YORK</p>
	<p align="center">TREE PROTECTION DETAIL</p>