

**FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE
CROTON WATER TREATMENT PLANT
AT THE MOSHOLU SITE**

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6.14. NATURAL RESOURCES

6.14.1. Introduction

Natural resource parameters such as upland vegetation; wetlands, waterways, and floodplains; fish and benthic invertebrates; essential fish habitat (EFH); birds; herpetiles; mammals; and endangered, threatened, or rare plant and animal species were assessed at the water treatment plant site and appropriate study area to assess the potential effects resulting from the construction and operation of the proposed Croton Water Treatment Plant (WTP) project at the Mosholu Golf Course in Van Cortlandt Park (a.k.a. the Mosholu Site), with the surrounding areas during construction and operation.

For the purpose of this analysis, a study area extending 400 feet beyond the water treatment plant site has been established. For the methodology of this analysis, refer to the Section 4.14, Data Collection and Impact Methodologies, Natural Resources.

6.14.2. Baseline Conditions

As described in Section 7.2, Land Use, Zoning and Public Policy, the location of the proposed Croton WTP at the Mosholu Site is within the 78-acre Mosholu Golf Course and Driving Range property within the Borough of the Bronx, New York City (City). The golf course is bounded by the Mosholu Parkway to the west, West Gun Hill Road to the south, Jerome Avenue and the IRT No.4 elevated subway to the east, and Shandler Recreation Area to the north (Figure 6.14-1). Across Jerome Avenue to the northeast of the water treatment plant site is Woodlawn Cemetery.

6.14.2.1. Existing Conditions

6.14.2.1.1. Vegetation

The majority of the Mosholu Site consists of the maintained grass areas of the golf course and driving range (Figure 6.14-1). The habitat value of these areas for wildlife is low due to the absence of cover and scarcity of food sources. Cultural trees form boundaries along the driving range, adjacent fairways, and south of the driveway entrance. The most common tree species present on and near the driving range and south of the golf course entrance include sweetgum (*Liquidambar styraciflua*), black cherry (*Prunus serotina*), Japanese black pine (*Pinus thunbergiana*), white oak (*Quercus alba*), pin oak (*Quercus palustris*), and sassafras (*Sassafras albidum*). The presence of nine-shagbark hickories (*Carya ovata*) is of particular note because this species is not common in the area. The diameter at breast height (dbh) of the trees sampled on and near the potential impact area were measured to be between 6 and 48 inches. The under story throughout the woodlot areas on the water treatment plant site is variable. The value of those areas that lack under story for wildlife is greatly reduced as compared to the more diverse oak-tulip tree forest community present at the adjacent Shandler Recreation Area. However, the fruits of the tree species present provide a food source for birds and small mammals (see below) and seed source for new tree growth. The cultural trees present within the water treatment plant site boundaries occupy approximately 2.9 acres.

A small area of oak-tulip tree forest (approximately 0.7 acres) exists within the area of potential construction impact along portions of the water treatment plant site boundaries. The forested area is contiguous with the larger tract of oak-tulip tree forest located in the adjacent Shandler Recreation Area. This small area of forest is located west of the existing parking lot (Figure 6.14-1) and represents approximately one-percent of the larger forest of Shandler Recreation Area. Tree species present within the forest area on the water treatment plant site include white oak (*Quercus alba*), tulip tree (*Liriodendron tulipifera*) smooth sumac (*Rhus glabra*), sycamore (*Platanus x hybrida*), red maple (*Acer rubrum*), shagbark hickory (*Carya ovata*), black locust, and black cherry. The dbhs of the trees sampled in this area ranges between 5 and 38 inches. These forested areas that are contiguous with the Shandler Recreation Area have a much more complex vegetative structure than the more isolated cultural trees that exist along the fairways on the site, since it includes herbaceous, shrub, sapling and tree vegetative strata composed of a variety of upland plant species. Consequently, the oak-tulip tree forest provides a greater diversity of natural resource functions than the isolated woodlots present at the water treatment plant site. The presence of shrubs and saplings in the under story of the oak-tulip tree forest is an important habitat characteristic that is valuable for many wildlife species because it is a source of food and cover (see below). The greater vegetation density of the forest area serves to retain and filter stormwater, and it serves as a buffer for the wildlife community inhabiting the forested upland and wetland areas of the adjacent Shandler Recreation Area.

6.14.2.1.2. Wetlands, Waterways, and Floodplains

Five wetland areas, one drainage swale, one drainage ditch, and two stormwater overflow ditches are located within the study area of the proposed water treatment plant site. Table 6.14-1 lists the resources in the study area and their dimensions. As indicated below, two of the wetlands (WL-A and WL-D) outside the area affected during construction are both identified on the U.S. Fish & Wildlife Service (USFWS) National Wetland Inventory (NWI) map for the Yonkers quadrangle, while the remainder of the wetlands are not indicated on the NWI. None of the wetlands, swales, or ditches described below is illustrated on the New York State Department of Environmental Conservation (NYSDEC) Freshwater Wetlands Map for the Bronx.

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Natural Resources Existing Conditions Mosholu Site

Croton Water Treatment Plant

Figure 6.14-1

TABLE 6.14-1. WETLANDS, DRAINAGE DITCH, DRAINAGE SWALE, AND STORMWATER OVERFLOW DITCH

Identification	Area (acres)
Wetlands	
WL-A	1.60
WL-B	0.02
WL-C	0.10
WL-D	5.00
WL-E	0.30
Drainage Swale	
DS-A	0.03
Drainage Ditch	
DD-A	0.02
Stormwater Overflow Ditch	
SO-A	0.05
SO-B	0.00

A red maple hardwood swamp within the study area, outside of the approximate area affected during construction, totals approximately 1.60 acres. This area is located in the northern half of the study area, and is depicted on Figure 6.14-1 as WL-A (see Section 4.14, Data Collection and Impact Methodology, Natural Resources for information on identifying wetlands). This wetland is illustrated on the USFWS NWI map as a semi permanently flooded, palustrine wetland with an unconsolidated bottom. Dominant wetland plants in this area include red maple (*Acer rubrum*), pin oak (*Quercus palustris*), green ash (*Fraxinus pennsylvanica*), northern arrowwood (*Viburnum recognitum*), skunk cabbage (*Symplocarpus foetidus*), and trout lily (*Erythronium americanum*). The soils in this area exhibited low chroma matrices, high organic content, and redoximorphic features. These characteristics are indicative of hydric soils and wetland hydrology. Seasonal water level variations occur in the wetland that range from inundation to dryness at the surface. One function served by this wetland area is likely groundwater recharge, since this is an isolated, topographic depression that may serve to infiltrate surface water runoff into the soil. Other functions served by this wetland area include wildlife habitat, stormwater retention, sedimentation of silt from stormwater runoff, nutrient removal, and retention of any potential pollutants existing in stormwater runoff from upslope areas. This wetland is regulated by the U.S. Army Corps of Engineers (ACOE), but is not regulated as a State jurisdictional wetland because it is smaller than 12.4 acres and is not mapped as a State jurisdictional wetland on NYSDEC wetland maps.

The second wetland area is an impounded marsh with an adjacent drainage swale in the study area, outside of the approximate area affected during construction. They are indicated on Figure 6.14-1 as WL-B and DS-A, respectively. The impounded marsh identified as WL-B on the Figure 6.14-1 is located upslope of the drainage swale DS-A, and both are located west of the existing parking area (Figure 6.14-1). These areas are not illustrated on the USFWS NWI map. The wetland is approximately 0.02 acres in size and the drainage swale is approximately 0.03 acres in size. The

area designated WL-B is very sparsely vegetated with wetland plant species, including poison ivy and mild water pepper (*Polygonum hydropiperoides*). Soils examined within the WL-B wetland exhibited low chroma matrices and redoximorphic features, which are both indicative of a hydric soil. Portions of the WL-B wetland were observed to be not vegetated in March 1998, and these areas were observed to be inundated and have no vegetation in July and August 1998. Only the portions of the area labeled as WL-B wetland that are vegetated are regulated by the ACOE as a wetland; however, all of the WL-B wetland would likely be regulated by the ACOE as Waters of the U.S. due to the presence of a channel with a distinct down slope gradient and observation of flowing water.

Down slope of the WL-B wetland, the channel disappears and water appears to flow underground prior to reaching the drainage swale depicted at DS-A. DS-A consists of a grassy channel with a distinct downslope gradient dominated by upland and wetland species, including fowl meadow grass (*Poa palustris*) and red fescue (*Festuca rubra*). Soils examined in the drainage swale exhibited low chroma matrices and some redoximorphic features, and flowing water was observed in the swale on July 10, 1998. The down slope portion of DS-A ends diffusely, in an upland grassy area. Dominance of hydrophytic vegetation is lacking in DS-A. Consequently, DS-A does not meet one of the three parameters (hydrophytic vegetation) required for classification as a federal wetland. However, due to the presence of a distinct channel with a downslope gradient and observation of flowing water, this swale would likely be regulated as Waters of the U.S. by the ACOE. Functions served by WL-B and DS-A includes stormwater retention, nutrient removal, and detention of existing pollutants in stormwater runoff from the adjacent, existing parking area. In addition, these areas also likely serve to infiltrate runoff into the soil, thus aiding in groundwater recharge.

The third wetland area is a palustrine-forested wetland in the northern half of the study area that is approximately 0.1 acres, and outside of the approximate area affected during construction (Figure 6.14-1). This wetland is depicted on the figure as WL-C. This red maple hardwood swamp is not illustrated in the USFWS NWI. Dominant wetland vegetation in this area includes red maple (*Acer rubrum*), American elm (*Ulmus americana*), and poison ivy (*Toxicodendron radicans*). Throughout most of the wetland area, the under story is relatively sparse, with a canopy cover of approximately 60 percent. Soils in the wetland exhibited low chroma matrices and redoximorphic features. These characteristics are indicative of hydric soils and wetland hydrology. Seasonal water level variations occur in the wetland that range from inundation to dryness at the surface. The WL-C wetland is hydrologically connected to the artificial ditch traversing east to west near the northern border of the ball field (Figure 6.14-1). The ditch is labeled as DD-A and is approximately 0.02 acres in size. This area is not illustrated on the USFWS NWI map. This ditch appears to have been constructed in an attempt to collect sheet runoff from upslope areas and divert it around the northern baseball field. However, a substantial amount of runoff was observed collecting downslope of the ditch and on the baseball field during the on-site investigations. One function served by both the wetland area and the nearby drainage ditch is stormwater retention and water quality improvement, since these areas serve to retain stormwater and remove existing pollutants and nutrients that may be present in stormwater runoff. The area indicated as WL-C provides wildlife habitat; the habitat value of the DD-A drainage ditch is limited by the lack of vegetation and stagnant nature of its water. The wetland and ditch are regulated by the ACOE as wetland and Waters of the U.S., respectively. These areas are not regulated as State jurisdictional wetlands because they are smaller than 12.4

acres in size and are not mapped as State jurisdictional wetlands on the NYSDEC wetland map for the Bronx.

The stormwater overflow ditch originates at a maintenance access way located adjacent to Jerome Avenue and is approximately 300 feet in length, outside of the area affected during construction (Figure 6.14-1). The stormwater overflow ditch is depicted on Figure 6.14-1 as SO-A. The ditch ends diffusely, upslope of the proposed project area. It appears that flow through the ditch continues as overland sheet flow downslope of the ditch terminus. The ditch is not vegetated and averages approximately five feet in width. The total acreage of the ditch is approximately 0.05 acres. Stormwater control and retention of sediments and existing pollutants in stormwater flows are functions provided by this ditch. This ditch is not illustrated on the USFWS NWI map.

The forested wetland depicted as WL-D occupies approximately five acres and is located to the north of the access road to the water treatment plant site, outside of the area affected during construction (Figure 6.14-1). This floodplain forest wetland is illustrated as two distinct palustrine forested wetland areas on the USFWS NWI map, which are classified as broad-leaved deciduous, seasonally flooded/saturated wetlands. The wetland is dominated by red maple (*Acer rubrum*), sweet gum (*Liquidambar styraciflua*), green ash (*Fraxinus pennsylvanica*), poison ivy (*Toxicodendron radicans*), northern arrowwood (*Viburnum recognitum*), jewelweed (*Impatiens capensis*) and skunk cabbage (*Viburnum recognitum*). Seasonal water level variations occur in the wetland that range from inundation to dryness at the surface. Soils in this area exhibit low chroma matrices and redoximorphic features, which are both indicative of a hydric soil. There is no under story in the open-water area in which seasonally high water inundates the soils. This wetland area provides valuable wildlife habitat, due to the habitat diversity present and its proximity to upland forest. This wetland also provides a variety of other valuable functions, including stormwater retention, nutrient removal, retention of existing pollutants in stormwater runoff, and improvement of downslope water quality. This area may also serve as an area of groundwater recharge, since it is an isolated wetland that likely provides an area for surface water runoff to infiltrate into the soil. This wetland receives drainage from a catch basin in the golf course parking lot via a pipe labeled SO-B in Figure 6.14-1

Based on the data from 101 borings, the groundwater elevation is coincident with the surface water elevation of this wetland. (164.5 ft. MSL). The rock topography provides additional evidence that the hydrology of this wetland is controlled by groundwater. The maximum height of water in the wetland is limited by an existing drain that drains the water to the combined sewer system on Jerome Avenue. The forest under story is highly diverse. There are a few depressions in which skunk cabbage dominates the herbaceous layer. There is an area of poorly drained soils that extends uphill to the west-northwest. This wetland area is contiguous with the inundated area to the east. The entire wetland contains a complex network of drainage ditches, lined with cut stones. These ditches are about one foot wide and eight inches deep. This wetland is regulated by the ACOE, but is not regulated as a State jurisdictional wetland because it is less than 12.4 acres in size and is not illustrated on the NYSDEC Freshwater Wetlands map.

One isolated wetland approximately 0.30 acres in size is located adjacent to the area of potential construction impact (Figure 6.14-1). This vernal pool wetland is identified on the figure as WL-E.

The wetland occupies a topographical depression and is sparsely vegetated with emergent wetland species, including the sedge, *Carex vulpinoidea*, and mild water pepper (*Polygonum hydropiperoides*). Pin oak trees (*Quercus palustris*) are present along the border of the wetland. The soil examined within the wetland exhibited a low chroma matrix and redoximorphic features, which are indicative of a hydric soil. Seasonal water level variations occur in the wetland that range from inundation to dryness at the surface.

The small wetland present adjacent to the potential area of construction impact provides little wildlife value due to the sparseness of the herbaceous vegetation cover, lack of sapling or shrub cover, lack of connection to permanent open water, small size, and isolated location among the golf course fairways. Functions likely served by this isolated wetland are groundwater recharge/discharge and aiding in the attenuation and filtering of stormwater flows, since this wetland occupies an isolated depression that may serve to infiltrate surface runoff into the soil. In addition, the seasonal hydrology for the wetland is likely provided by high groundwater table discharging to the ground surface, since the wetland is not connected to a surface water source. An analysis of local runoff and groundwater conditions indicates that the hydrology of this wetland is perched above the water table and is primarily controlled by surface runoff and infiltration from the surrounding soils (see Section 6.15, Water Resources). This wetland is regulated by the ACOE under the Clean Water Act, but is not regulated by New York State because it is less than 12.4 acres in size and is not depicted on the NYSDEC Freshwater Wetlands map for the Bronx.

The Flood Insurance Rate Map for the City published by the Federal Emergency Management Agency indicates that the water treatment plant site includes no floodplain areas.

6.14.2.1.3. Fish and Benthic Macroinvertebrates

There were no aquatic inventories conducted on this water treatment plant site, as no permanent surface waters are present within the study area.

6.14.2.1.4. Reptiles and Amphibians

No spring amphibian or reptile surveys were conducted specifically for reptiles and amphibians at the water treatment plant site. The close proximity to the Shandler Recreation Area suggests that some of the same herpetile species present at the Shandler Recreation Area may also be present at the Mosholu Golf Course. However, the habitat present at the water treatment plant site is much less diverse than that present at Shandler Recreation Area. In the woodlot areas of the water treatment plant site, the lack of under story cover, limited ground cover, and the lack of permanent open water are characteristics that substantially reduce the habitat value for many wildlife species. The mowed grass areas of the driving range and fairways similarly offer little habitat for herpetiles, due to the lack of cover. The small area of forest west of the existing golf course parking lot is the most valuable portion of the water treatment plant site for herpetile species because of the presence of leaf litter and ground cover, as well as proximity to forested wetland.

The water treatment plant site as a whole provides poor habitat for most herpetile species. Reptiles and amphibians that require water for only a short time period in the spring may utilize the isolated

wetland at the water treatment plant site, although the distance between the isolated wetland and nearby forest communities diminishes the likelihood that the wetland supports large herpetile populations. Herpetiles that would likely inhabit the water treatment plant site based on habitat characteristics are listed in Table 6.14-2. No herpetiles or signs of herpetiles were observed during the on-site ecological surveys.

6.14.2.1.5. Birds

Birds were researched and surveyed to identify the species likely to occur on the water treatment plant site and/or the species using the water treatment plant site for winter, breeding, and migratory habitat. Birds anticipated at the water treatment plant site were presumed to be similar to bird communities anticipated at the Shandler Recreation Area because of the overlap of the two areas. Therefore, Table 6.14-3, prepared for the Shandler Recreation Area and presented in the 1999 Croton Water Treatment Plant Final EIS, is also anticipated to represent bird species that may be present at the water treatment plant site. However, some of the species anticipated and/or observed at Shandler Recreation Area would be less likely to occur at the golf course because a more mature forest community is present at Shandler Recreation Area. Compared to the forest present at Shandler Recreation Area, the woodlots at the golf course include a smaller percent of canopy cover and a substantially reduced under story. The water treatment plant site also lacks permanent open water and forested wetland habitat. Furthermore, the tree canopy present throughout most of the water treatment plant site occurs in distinct, isolated patches rather than as a continuous forest community. The frequent human presence on the driving range, fairways, and the lack of buffer between human activities and the woodlots, serves to further diminish the value of the woodlots for some bird species. The small area of forest immediately west of the parking lot provides the most valuable bird habitat on the water treatment plant site, due to its continuity with the larger forested area of Shandler Recreation Area and its higher vegetation density and diversity.

Overall, the habitat diversity at the water treatment plant site is substantially less than at Shandler Recreation Area. Therefore, although many of the species observed at Shandler Recreation Area are anticipated to occasionally occur at the water treatment plant site, the bird community is likely a subset of that present at the Shandler Recreation Area, and likely includes a smaller number of individuals and less diverse species composition than that present at the Shandler Recreation Area.

TABLE 6.14-2. HERPETILE SPECIES POTENTIALLY OCCURRING IN THE VICINITY OF THE MOSHOLU SITE

COMMON NAME	SCIENTIFIC NAME
Salamanders/Newts Spotted Salamander Marbled Salamander Red-backed Salamander	<i>Ambystoma maculatum</i> <i>Ambystoma opacum</i> <i>Plethodon cinereus</i>
Frogs/Toads American Toad Chorus Frog Eastern Spadefoot Woodhouse's Toad	<i>Bufo americanus</i> <i>Pseudacris triseriata</i> <i>Scaphiopus holbrooki</i> <i>Bufo woodhousei</i>
Turtles Eastern Box Turtle	<i>Terrapene carolina</i>
Five-lined Skink	<i>Eumeces fasciatus</i>
Snakes Brown Snake Common Garter Snake Eastern Hognose Snake Milk Snake Racer Rat Snake Red-bellied Snake Ringneck Snake Worm Snake	<i>Storeria dekayi</i> <i>Thamnophis sirtalis</i> <i>Heterodon platyrhinos</i> <i>Lampropeltis triangulum</i> <i>Coluber constrictor</i> <i>Elaphe obsoleta</i> <i>Storeria occipitomaculata</i> <i>Diadophis punctatus</i> <i>Carphophis amoenus</i>

Source: Based on the ecological surveys conducted on July 7, 1998 and July 22, 1998 at Mosholu Golf Course, and April 13, 1998 at Shandler Recreation Area.

Behler, J and F. King. 1997. National Audubon Society Field Guide to North American Reptiles and Amphibians. New York, NY.

**TABLE 6.14-3. AVIAN SPECIES POTENTIALLY OCCURRING IN THE VICINITY
OF THE MOSHOLU SITE**

COMMON NAME	SCIENTIFIC NAME	SITE SPECIFIC STATUS (1)	OCCUR- RENCE (2)	HERITAGE RANKING (3)	EXPECTED MAY	OBSERVED AT SHANDLER (MAY 1998)	EXPECTED JUNE	OBSERVED AT SHANDLER (JUNE 1998)
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	C	B	S3		X		
Green Heron	<i>Butorides virescens (striatus)</i>	C	B	S5	X		X	
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	C	B	S3	X		X	
Glossy Ibis	<i>Plegadis falcinellus</i>	U	B	S2	X		X	
Canada Goose	<i>Branta canadensis</i>	C	B	S5	X	X	X	
Mute Swan	<i>Cygnus olor</i>	C	B	SE			X	
Wood Duck	<i>Aix sponsa</i>	C	B	S5	X		X	
Gadwall	<i>Anas strepera</i>	C	B	S3	X		X	
American Black Duck	<i>Anas rubripes</i>	C	B	S4	X		X	
Mallard	<i>Anas platyrhynchos</i>	C	B	S5	X	X	X	X
Broad-winged Hawk	<i>Buteo platypterus</i>	U	B	S5	X		X	
Red-tailed Hawk	<i>Buteo jamaicensis</i>	C	B	S5	X	X		
American Kestrel	<i>Falco sparverius</i>	C	B	S5	X		X	

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COMMON NAME	SCIENTIFIC NAME	SITE SPECIFIC STATUS (1)	OCCUR- RENCE (2)	HERITAGE RANKING (3)	EXPECTED MAY	OBSERVED AT SHANDLER (MAY 1998)	EXPECTED JUNE	OBSERVED AT SHANDLER (JUNE 1998)
Ring-necked Pheasant	<i>Phasianus colchicus</i>	C	B	SE	X	X	X	X
Wild Turkey	<i>Meleagris gallopavo</i>	C	B	S5		X		
Killdeer	<i>Charadrius vociferus</i>	C	B	S5		X		
Spotted Sandpiper	<i>Actitis macularia</i>	C	B	S5			X	
Ring-billed Gull	<i>Larus delawarensis</i>	C	NBR	S4		X		
Great Black- backed Gull	<i>Larus marinus</i>	C	B	S3				X
Rock Dove	<i>Columba livia</i>	C	B	SE	X	X	X	X
Mourning Dove	<i>Zenaida macroura</i>	C	B	S5	X	X	X	X
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	U	B	S5	X		X	
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	U	B	S5	X		X	
Eastern Screech-Owl	<i>Otus asio</i>	C	B	S5	X			
Great Horned Owl	<i>Bubo virginianus</i>	C	B	S5	X		X	

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OF THE MOSHOLU SITE**

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Common Nighthawk	<i>Chordeiles minor</i>	C	B	S4	X		X	
Chimney Swift	<i>Chaetura pelagica</i>	C	B	S5	X		X	
Belted Kingfisher	<i>Ceryle alcyon</i>	C	B	S5	X		X	
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>	C	B	S5	X	X	X	X
Downy Woodpecker	<i>Picoides pubescens</i>	C	B	S5	X	X	X	X
Hairy Woodpecker	<i>Picoides villosus</i>	C	B	S5	X	X	X	
Northern Flicker	<i>Colaptes auratus</i>	C	B	S5	X	X	X	X
Eastern Wood-Pewee	<i>Contopus virens</i>	C	B	S5	X		X	X
Willow Flycatcher	<i>Empidonax traillii</i>	U	B	S5	X		X	
Eastern Phoebe	<i>Sayornis phoebe</i>	C	B	S5	X		X	
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	C	B	S5	X		X	
Eastern Kingbird	<i>Tyrannus tyrannus</i>	C	B	S5	X	X	X	X

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OF THE MOSHOLU SITE**

COMMON NAME	SCIENTIFIC NAME	SITE SPECIFIC STATUS (1)	OCCUR- RENCE (2)	HERITAGE RANKING (3)	EXPECTED MAY	OBSERVED AT SHANDLER (MAY 1998)	EXPECTED JUNE	OBSERVED AT SHANDLER (JUNE 1998)
White-eyed Vireo	<i>Vireo griseus</i>	U	B	S4	X			
Blue-headed (Solitary) Vireo	<i>Vireo solitarius</i>	U	B	S5	X			
Warbling Vireo	<i>Vireo gilvus</i>	R	B	S5	X		X	
Red-eyed Vireo	<i>Vireo olivaceus</i>	C	B	S5	X		X	X
Blue Jay	<i>Cyanocitta cristata</i>	C	B	S5	X	X	X	X
American Crow	<i>Corvus brachyrhynchos</i>	C	B	S5	X	X	X	X
Tree Swallow	<i>Tachycineta bicolor</i>	C	B	S5	X		X	
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	U	B	S5	X		X	
Bank Swallow	<i>Riparia riparia</i>	U	B	S5	X		X	
Barn Swallow	<i>Hirundo rustica</i>	C	B	S5	X	X	X	
Black-capped Chickadee	<i>Poecile (Parus) atricapillus</i>	C	B	S5	X	X	X	X
Tufted Titmouse	<i>Baeolophus (Parus) bicolor</i>	C	B	S5	X	X	X	X
White-breasted Nuthatch	<i>Sitta carolinensis</i>	C	B	S5	X	X	X	X
Brown Creeper	<i>Certhia Americana</i>	C	B	S5	X			

**TABLE 6.14-3. AVIAN SPECIES POTENTIALLY OCCURRING IN THE VICINITY
OF THE MOSHOLU SITE**

COMMON NAME	SCIENTIFIC NAME	SITE SPECIFIC STATUS (1)	OCCURRENCE (2)	HERITAGE RANKING (3)	EXPECTED MAY	OBSERVED AT SHANDLER (MAY 1998)	EXPECTED JUNE	OBSERVED AT SHANDLER (JUNE 1998)
Carolina Wren	<i>Thryothorus ludovicianus</i>	C	B	S5	X			
House Wren	<i>Troglodytes aedon</i>	C	B	S5	X		X	X
Ruby-crowned Kinglet	<i>Regulus calendula</i>	C	M	S3	X	X		
Veery	<i>Catharus fuscescens</i>	C	B	S5	X		X	
Hermit Thrush	<i>Catharus guttatus</i>	C	B	S5	X			
Wood Thrush	<i>Catharus mustelinus</i>	C	B	S5	X	X	X	X
American Robin	<i>Turdus migratorius</i>	C	B	S5	X	X	X	X
Gray Catbird	<i>Dumetella carolinensis</i>	C	B	S5	X	X	X	X
Northern Mockingbird	<i>Mimus polyglottos</i>	C	B	S5	X	X	X	
Brown Thrasher	<i>Toxostoma rufum</i>	C	B	S5	X		X	
European Starling	<i>Sturnus vulgaris</i>	C	B	SE	X	X	X	X
Cedar Waxwing	<i>Bombycilla cedrorum</i>	C	B	S5	X	X	X	
Blue-winged Warbler	<i>Vermivora pinus</i>	C	B	S5	X			

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Golden-winged Warbler	<i>Vermivora chrysoptera</i>	C	B	S4	X			
Tennessee Warbler	<i>Vermivora peregrina</i>	U	M	S2	X			
Nashville Warbler	<i>Vermivora ruficapilla</i>	U	B	S5	X			
Northern Parula	<i>Parula Americana</i>	C	M	S3S4	X	X		
Yellow Warbler	<i>Dendroica petechia</i>	C	B	S5	X	X	X	X
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	C	B	S5	X			
Magnolia Warbler	<i>Dendroica magnolia</i>	C	M	S5	X			
Cape May Warbler	<i>Dendroica tigrina</i>	U	M	S2	X			
Black-throated Blue Warbler	<i>Dendroica caerulescens</i>	U	M	S5	X			
Yellow-rumped (Myrtle) Warbler	<i>Dendroica coronata</i>	C	M	S5	X	X		
Black-throated Green Warbler	<i>Dendroica virens</i>	C	B	S5	X			
Blackburnian Warbler	<i>Dendroica fusca</i>	U	B	S5	X			X

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OF THE MOSHOLU SITE**

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Pine Warbler	<i>Dendroica pinus</i>	U	B	S5	X			
Prairie Warbler	<i>Dendroica discolor</i>	U	B	S5	X			
Palm Warbler	<i>Dendroica palmarum</i>	U	M	S1	X			
Bay-breasted Warbler	<i>Dendroica castanea</i>	U	M	S2	X			
Blackpoll Warbler	<i>Dendroica striata</i>	C	M	S3	X			X
Cerulean Warbler	<i>Dendroica cerulea</i>	U	B	S4B	X			X
Black-and- white Warbler	<i>Mniotilta varia</i>	C	B	S5	X	X		
American Redstart	<i>Setophaga ruticilla</i>	C	B	S5	X		X	
Prothonotary Warbler	<i>Protonotaria citrea</i>	R	M	S2	X			
Worm-eating Warbler	<i>Helminthos vermivorus</i>	C	B	S4	X			
Ovenbird	<i>Seiurus aurocapillus</i>	C	B	S5	X		X	
Northern Waterthrush	<i>Seiurus noveboracensis</i>	U	B	S5	X			

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OF THE MOSHOLU SITE**

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Louisiana Waterthrush	<i>Seiurus motacilla</i>	U	B	S5	X			
Kentucky Warbler	<i>Oporornis formosus</i>	R	M	S2	X			
Common Yellowthroat	<i>Geothlypis trichas</i>	C	B	S5	X		X	X
Hooded Warbler	<i>Wilsonia citrina</i>	C	B	S5	X			
Canada Warbler	<i>Wilsonia canadensis</i>	U	B	S5	X			
Yellow- breasted Chat	<i>Icteria virens</i>	U	B	S3	X			
Scarlet Tanager	<i>Piranga olivacea</i>	U	B	S5			X	
Eastern (Rufous-sided) Towhee	<i>Pipilo erythrophthalmus</i>	C	B	S5	X	X	X	X
Chipping Sparrow	<i>Spizella passerina</i>	C	B	S5	X	X	X	
Field Sparrow	<i>Spizella pusilla</i>	C	B	S5				X
Song Sparrow	<i>Melospiza melodia</i>	C	B	S5	X	X	X	X
White-throated Sparrow	<i>Zonotrichia albicollis</i>	C	B	S5	X	X		
Northern Cardinal	<i>Cardinalis cardinalis</i>	C	B	S5	X	X	X	X

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OF THE MOSHOLU SITE**

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Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	C	B	S5	X	X	X	
Blue Grosbeak	<i>Guiraca caerulea</i>	U	B	S1				X
Indigo Bunting	<i>Passerina cyanea</i>	U	B	S5	X	X	X	
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	C	B	S5	X	X	X	X
Common Grackle	<i>Quiscalus quiscula</i>	C	B	S5	X		X	
Brown-headed Cowbird	<i>Molothrus ater</i>	C	B	S5	X	X	X	
Orchard Oriole	<i>Icterus spurius</i>	U	B	S5	X		X	
Baltimore Oriole	<i>Icterus galbula</i>	C	B	S5	X	X	X	X
House Finch	<i>Carpodacus mexicanus</i>	C	B	SE	X		X	
American Goldfinch	<i>Carduelis tristis</i>	C	B	S5	X	X	X	
House Sparrow	<i>Passer domesticus</i>	C	B	SE	X	X	X	X

**TABLE 6.14-3. AVIAN SPECIES POTENTIALLY OCCURRING IN THE VICINITY
OF THE MOSHOLU SITE**

COMMON NAME	SCIENTIFIC NAME	SITE SPECIFIC STATUS (1)	OCCUR- RENCE (2)	HERITAGE RANKING (3)	EXPECTED MAY	OBSERVED AT SHANDLER (MAY 1998)	EXPECTED JUNE	OBSERVED AT SHANDLER (JUNE 1998)
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(1) R = Rare; U = Uncommon; C = Common

(2) B = Breeding; M = Migratory; NBR = Non-breeding Resident

(3) The ranking codes from the Natural Heritage Program follow:

STATE RANK:

S1 Extremely rare; typically 5 or fewer occurrences, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York.

S2 Very rare; typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York.

S3 Rare to uncommon; typically 21 to 100 occurrences, limited acreage, or miles of stream in New York. May have fewer occurrences, but with a large number of individuals in some populations.

S4 Common, apparently secure in New York State; typically 100 or more estimated occurrences. May be fewer occurrences with many large populations.

S5 Very common, demonstrably secure in New York.

B/N Qualifier Species which are long distance migrants would normally receive two ranks, one for the breeding season (B) and one for the non-breeding season (N). Example: S2B, SZN

Note: This list was compiled from a combination of field work and those species which would be anticipated given the habitat at and around the site. Breeding status was based on observation and knowledge of each species local breeding distribution. Not all species on this list would be found at this site and some species not on this list may be found at this site. Additional species that New York City Parks and Recreation Department personnel believe may potentially occur at the Shandler Recreation Area, and therefore may potentially occur at the Mosholu Site, are provided in Appendix F4 (Kunstler, 1996).

SA Accidental or casual in New York.

SE Exotic, not native to New York.

SN see SZ.

SR Reported in New York but without persuasive documentation.

SZ (formerly SN) This rank applies to long-distance migratory animal species which occur in an irregular, dispersed or transitory manner; not of conservation concern in New York for a reason other than being exotic or accidental.

The habitat value of the water treatment plant site for birds is considered moderate. Table 6.14-3 contains status ratings, classifications, and Natural Heritage Program rankings for all species of birds potentially occurring at the water treatment plant site and indicates which of these species were seen during the on-site survey at Shandler Recreation Area. The May 1998 survey at the Shandler Recreation Area was conducted to evaluate the species of migratory birds utilizing the area. The June 1998 survey at the Shandler Recreation Area was conducted to identify the breeding birds.

As described in Section 4.14, Data Collection and Impact Methodologies, Natural Resources, these lists contain potential bird populations existing on the water treatment plant site based on local distribution patterns from the literature. For instance, breeding status is based on a particular species' local breeding distribution from the literature and does not imply that all bird species with an occurrence of "B" are actually breeding at the water treatment plant site.

Eighty-two of the species anticipated to occur at the water treatment plant site are classified as common, 27 are classified as uncommon, and three are classified as rare (Table 6.14-3). Indigo Bunting (*Passerina cyanea*) is an uncommon species that was observed at the Shandler Recreation Area during the May survey. Blackburnian Warbler (*Dendroica fusca*), Cerulean Warbler (*Dendroica cerulean*), and Blue Grosbeak (*Guiraca caerulea*) are uncommon species that were sighted at the Shandler Recreation Area during the June 1998 survey. Several common unanticipated species were sighted at the Shandler Recreation Area in both May 1998 and June 1998.

The results of the bird surveys at Shandler Recreation Area are summarized in Table 6.14-4. One hundred and two species were potentially able to occur at the Shandler Recreation Area in May, and 44 were actually observed on the day of the survey. Sixty-nine species were potentially able to occur at the Shandler Recreation Area in June 1998, and 34 were actually observed at the Shandler Recreation Area. As indicated above, many of the species observed at Shandler are presumed to have the potential of occurring at the water treatment plant site as well.

TABLE 6.14-4. SUMMARY OF BIRD SURVEY RESULTS AT THE MOSHOLU SITE

NUMBER OF SPECIES			
MAY 1998		JUNE 1998	
Anticipated from Historical Data	Observed at Shandler Recreation Area	Anticipated from Historical Data	Observed at Shandler Recreation Area
102	44	69	34

6.14.2.1.6. Mammals

No surveys were specifically conducted for mammals at the water treatment plant site. Due to the close proximity of the water treatment plant site to the Shandler Recreation Area and the widespread occurrence of many urban mammal species, many of the mammal species anticipated to

occur at the Shandler Recreation Area are also anticipated to occur at the water treatment plant site. This is a conservative assumption because the mammal habitat available at the water treatment plant site is less abundant and diverse than that at the Shandler Recreation Area. The majority of the tree cover at the water treatment plant site consists of isolated patches of trees with little or no under story. On and near the fairways and south of the golf course entrance, the under story of the tree canopy is maintained by mowing, which diminishes the value of the area for many mammal species by reducing cover and food sources. In addition, the isolated nature of the separate woodlots is a negative habitat characteristic for mammal species requiring continuous, uninterrupted tree canopy and under story. The frequent human presence on the golf course and driving range and lack of buffer between human activities and the woodlots, serve to further diminish the value of the woodlots for many mammal species.

The forest immediately west of the existing parking lot provides the best mammal habitat on the water treatment plant site, primarily because the under story of this area is not mowed and the area is contiguous with the larger forested areas of the Shandler Recreation Area. This forest area on the water treatment plant site is also connected to the large forested wetland present in the Shandler Recreation Area by a continuous forest canopy (see Figure 6.14-1). The value of the forest parcel on the water treatment plant site as a habitat for mammals is enhanced due to its connection to forested upland and wetland areas. The remainder of the wooded areas on the water treatment plant site is less valuable for most mammal species, due to the lack of habitat diversity.

Based on qualitative observations of the habitat present on the water treatment plant site, mammal species that are anticipated to occur are listed in Table 6.14-5. One woodchuck was observed directly during the on-site ecological surveys at water treatment plant site. One coyote was directly observed and signs of woodchuck and raccoon were observed at the nearby Shandler Recreation Area, and these species are likely to occasionally occur at the water treatment plant site as well.

Mammal population sizes and community diversity are anticipated to be much lower at the water treatment plant site as compared to the Shandler Recreation Area due to the habitat limitations described above. Based on visual observations, the water treatment plant site is considered to provide moderate mammal habitat.

6.14.2.1.7. Rare, Threatened, and Endangered Species

Consultation with the U.S. Fish and Wildlife Service (USFWS) indicated that no federally-protected plant or animal species are known to occur at the water treatment plant site, with the exception of occasional, transient individuals. No federally-protected plant or animal species were observed at the water treatment plant site.

The NYSDEC Natural Heritage Program records indicate that twelve state-listed plants of varying rarity have been historically observed in the vicinity of Van Cortlandt Park and Mosholu Golf Course (Appendix F). For ten of these 12 species, the most recent sighting of the plant occurred between 1890 and 1901. The other two plant species were last observed in 1915 and 1938, respectively. Because of the long time period since these species were last seen in the vicinity of the

water treatment plant site, these 12 plant species are not considered part of the existing conditions. Consultation with the New York City Department of Parks and Recreation (NYCDPR) indicated that the NYCDPR is not aware of any state-listed rare plants at the water treatment plant site, although a rare sedge may be present within the large forested wetland area (WL-D) north of the water treatment plant site, within the Shandler Recreation Area. The State-listed rarity, wild bleeding heart *Dicentra eximia* [*Bicuculla eximia* et. Britt. Brown] was observed adjacent to the forested wetland site in April, 1999.

Neither the NYSDEC nor the NYCDPR reported any known occurrences of state-listed animal species at the Shandler Recreation Area. No state-protected animal species were observed at the water treatment plant site during the field surveys.

TABLE 6.14-5. MAMMALS POTENTIALLY OCCURRING IN THE VICINITY OF THE MOSHOLU SITE

COMMON NAME	SCIENTIFIC NAME
Coyote	<i>Canis latrans</i>
Virginia Opossum	<i>Didelphis virginiana</i>
Shrews/Moles Masked Shrew Smoky Shrew Northern Short-tailed Shrew Hairy-tailed Mole Eastern Mole	<i>Sorex cinereus</i> <i>Sorex fumeus</i> <i>Blarina brevicauda</i> <i>Parascalops breweri</i> <i>Scalopus aquaticus</i>
Bats	Family <i>Vespertilionidae</i> (Evening Bats)
Eastern Cottontail	<i>Sylvilagus floridanus</i>
Rodents Eastern Chipmunk Woodchuck Gray Squirrel White-Footed Mouse Deer Mouse Woodland Vole Meadow Vole House Mouse Norway Rat	<i>Tamias striatus</i> <i>Marmota monax</i> <i>Sciurus carolinensis</i> <i>Peromyscus leucopus</i> <i>Peromyscus maniculatus</i> <i>Microtus pinetorum</i> <i>Microtus pennsylvanicus</i> <i>Mus musculus</i> <i>Rattus norvegicus</i>
Raccoon	<i>Procyon lotor</i>
Mustelids Long-tailed Weasel Striped Skunk	<i>Mustela frenata</i> <i>Mephitis mephitis</i>

**TABLE 6.14-5. MAMMALS POTENTIALLY OCCURRING IN THE VICINITY OF
THE MOSHOLU SITE**

COMMON NAME	SCIENTIFIC NAME
White-tailed Deer	<i>Odocoileus virginianus</i>

Source: Based on the on-site ecological surveys conducted on July 10 and 22, 1998 at the Water treatment plant site and on April 27, May 16, 1995 and April 13, 1998 at Shandler Recreation Area. The following sources were also consulted:

- Illinois State Museum. 1998. FAUNMAP - An Electronic Database Documenting the Late Quaternary Distribution of Mammal Species in the United States. <http://www.museum.state.il.us/research/faunmap/aboutfaunmap.html>
- Jones, J.K., Jr. and E.C. Birney. 1988. Handbook of Mammals of the North-Central States. University of Minnesota Press. Minneapolis, MO.
- Martin, A.C., H.S. Zim, and A.L. Nelson. 1951. American Wildlife and Plants, A Guide to Wildlife Food Habits. Dover Publications, Inc. NY.
- Murie, O.J. 1974. A Field Guide to Animal Tracks, The Peterson Field Series. Houghton Mifflin Company. Boston, Mass.
- Whitaker, J.O. 1980. The Audubon Society Field Guide to North American Mammals. Alfred A. Knopf. White Plains, NY.
- Wilson, D.E., and D.M. Reeder (eds). 1993. Mammal Species of the World. Smithsonian Institution Press. Washington, D.C.

6.14.2.2. Future Without the Project

The Future Without the Project considerations include the anticipated year of peak construction (2010) and the anticipated year of operation (2011) for the proposed project. The anticipated peak year of construction is based on the peak number of workers because such inputs to the community would likely cause the most noticeable land use changes.

It is anticipated that the Mosholu Golf Course and Driving Range and the Allen Shandler Recreation Area would continue to operate as recreational facilities within Van Cortlandt Park. The Lew Rudin Youth Golf Center is still evolving and there would be continued need for improvements and space allocated on the golf course for these new golfers to learn and play. As for future developments, there is a future plan to construct a new structure that would offer golf instructional programs year round. With these future development changes to the ecological conditions at the water treatment plant site may change.

6.14.3. Project Impacts

6.14.3.1. Potential Project Impacts

The proposed Croton WTP at the Mosholu Site would occupy approximately 9 acres. The finished project with the new clubhouse, driving range, parking, and access roads would cover approximately 24 acres. Since construction related impacts are also related to potential permanent site impacts, they are discussed below under each impact category.

6.14.3.1.1. Trees and Vegetation.

Approximately 2.9 acres of trees would be cleared to facilitate the installation of the proposed water treatment plant, tunnel access, temporary replacement parking area, and a permanent replacement clubhouse (Table 6.14-6). The treed areas that would be cleared currently consist of cultural trees with little or no under story. Due to the lack of habitat diversity and continuity of canopy cover, the areas that would be cleared have minimal habitat value for most wildlife species (see Existing Conditions above).

A small area (approximately 0.70 acres) of oak-tulip tree forest along the northern edge of the potential impact area that is contiguous with a larger forest tract in the Shandler Recreation Area would also be cleared (in accordance with the plan developed by NYCDPR and the Mosholu Golf Course concessionaire) in order to facilitate construction of a new golf course maintenance facility. This area of forest provides more important natural resource functions than the cultural tree area on the driving range. These functions include stormwater retention, wildlife habitat, and a buffer for larger upland and wetland habitat areas. Some of these individual trees are mature specimens. Mature forested areas are rare in the City. One hundred sixty six trees outside of the construction area would be potentially threatened by the construction of the water treatment plant (see Section 6.21, Mitigation). Trees adjacent to the construction impact area, although not proposed for removal, may be adversely affected and their survival is uncertain. For example, construction activity could injure trunks or canopies, compaction of soils could affect root growth; and over-saturation of the soils surrounding 38 trees in the vicinity of an infiltration trench, proposed as part of a mitigation technique described in the mitigation section of this Draft SEIS, could affect those trees that can not adapt to those conditions.

The area that would be cleared is a small fraction, approximately one percent, of the contiguous forest present at the Shandler Recreation Area. The dbh of the trees that would be lost from the forest and driving range varies between 5 and 40 inches. The remaining 99 percent of existing forest would remain undisturbed. However, the necessary clearing and grading for the proposed facilities would result in the direct loss of 278 trees.

In addition, the proposal to widen the 233rd Street exit ramp from the Major Deegan Expressway, a traffic network improvement measure proposed as part of the project, would cut 16 white pines. In order to maintain the Mosholu Golf Course operations during construction of the proposed project, the NYCDPR is permitting the golf course concessionaire to construct a temporary golf club house

in the Shandler Recreation Area immediately north of the existing golf course fence. A small parking area would be cleared along an existing footpath along the northeast boundary of the golf course. A maintenance facility would replace the existing maintenance facility and would be situated along the forest edge south of the new parking area (see Figure 6.14-1). These golf course facilities would require the cutting of 56 trees. Access to this temporary golf clubhouse and parking area would be from the Shandler Recreation Area parking lot along an existing paved path; the use of which would not require cutting of trees. Eighty two trees adjacent to these boundaries and whose driplines are within 20 feet of the boundaries would be threatened. See Table 6.14-6 for a summary of the trees that would be threatened or cut as a result of the temporary golf course work.

Since the loss of mature trees in parkland as a result of the construction to build the proposed plant would result in the loss of an important public resource and since old trees cannot readily be replaced, this loss is considered a significant adverse impact. A mitigation program has been developed to address this impact, in conjunction with the NYCDPR. It is described in the Mitigation section of this Draft SEIS (Section 9.2). The additional trees to be removed to facilitate the temporary golf course are not considered a significant impact; these additional trees are being removed as part of the NYCDPR plan to construct the temporary golf course.

The NYC Department of Parks and Recreation (NYCDPR) has developed plans to maintain the golf course and driving range during the proposed construction of the water treatment plant at the Mosholu Site. These plans include a temporary golf course clubhouse and parking area, as well as the reconfiguration of several golf course holes so that nine holes can be maintained in the area that currently includes holes 1 and 8 of the existing Mosholu Golf Course. In addition, the existing maintenance sheds, which would be demolished during construction, would be relocated north of their present position in a new building.

The temporary golf club house would consist of three mobile homes arranged in an open “C” shape, with a deck between the buildings. These would be architecturally finished in keeping with a golf course façade. This facility would be located immediately north of the existing northern boundary of the golf course in an open space that is currently part of one of the picnic areas in the Shandler Recreation Area. This facility would include a rental shop, restrooms, locker rooms, and a snack shop. The existing comfort station within the Shandler Recreation Area would be rehabilitated to support the existing picnic uses in the area.

Additional parking would be provided southeast of the temporary clubhouse, along the fence between the Mosholu Golf Course and the Shandler Recreation Area. Space would be provided for 35 cars. This would supplement the existing parking at the Shandler Recreation Area, which would increase in capacity when the existing lease with the Montefiore Hospital for their employee parking expires in 2004. This parking area would be covered with porous paving blocks that allow grass to grow around the paving blocks.

The golf club house would be replaced with a permanent facility adjacent to the water treatment plant after construction, and the parking area would be restored to forest. The original Golf Course fenceline would be restored.

These actions are a consequence of the proposed water treatment plant construction, but their specific locations have been selected by NYCDPR. The tree losses associated with this work are summarized in Table 6.14-6.

TABLE 6.14-6. SUMMARY OF TREES CUT AND THREATENED AT THE MOSHOLU SITE

	Threatened	Cut
Water Treatment Plant	166	278
Traffic Improvements	---	16
Temporary Golf Course Improvements	79	76
Totals	245	370

6.14.3.1.2. Wetlands, Waterways, and Floodplains.

No significant adverse impacts to the 0.3-acre vernal pool area north of the driving range are anticipated as a result of the project (Figure 6.14-1), either during construction or operation of the proposed water treatment plant. Although this wetland is located near the potential area of construction impact, the wetland is located outside of the proposed facility footprint and would not be altered. Access to the wetland area would be prohibited during construction. In addition, sediment and erosion controls would be installed around the perimeter of the wetland to protect it from the potential for secondary impacts. Since the wetland is primarily controlled by surface runoff and infiltration from the surrounding soils, no significant adverse impacts are anticipated during operation of the water treatment plant due to the slight change in the groundwater hydrologic regime in this area.

The approximately five acre floodplain forest wetland north of the proposed project site is an important natural resource within the Park. There would be no direct impacts to this resource from the proposed project, but deep excavation within 300 feet of the wetland could potentially affect the hydrology of the wetland by changing the surface and groundwater flow in the area. A detailed groundwater and stormwater model of the area influenced by the proposed excavation and subsequent operation of the water treatment plant was developed. The analysis shows that there could be potential significant adverse impacts to this resource. Results of this model were used to develop a Stormwater / Groundwater Management Plan for the Mosholu Site to mitigate this potential impact. An infiltration trench and gallery have been designed to prevent changes in groundwater from having an effect on the natural resources in the Mosholu Site and study area. A discussion is located in Section 6.15, Water Resources.

6.14.3.1.3. Fish and Benthic Macroinvertebrates.

Because there are no surface waters present within the project zone, no fish or benthic macroinvertebrates utilize the site, and no significant adverse impacts are anticipated.

6.14.3.1.4. Reptiles and Amphibians.

As indicated above in Existing Conditions, the vast majority of the site provides poor habitat for herpetile species due to the lack of permanent standing water and limited leaf litter and canopy cover. The 0.70 acres of oak-tulip forest present on the site, to the west of the existing parking area, may provide habitat for some herpetile species, due to its habitat complexity, continuity with the larger forest of Shandler Recreation Area and position near the forested wetland area of Shandler Recreation Area. This 0.70 acre parcel of forest would be cleared to facilitate the proposed water treatment plant construction. A portion of this area would be used for the permanent golf course maintenance facility. This would result in the loss of some herpetile habitat. However, an approximately 5.0 acre floodplain forest wetland is located adjacent to the area to be cleared which would provide additional habitat for herpetiles. In addition, the forest parcel that would be cleared is small and represents only approximately 1 percent of the larger forest area; its potential loss would result in a less than significant impact to herpetiles.

6.14.3.1.5. Birds.

As discussed above in Existing Conditions, the site contains moderate bird habitat. The cultural trees on the site lack vegetative diversity, permanent standing water, and under story; they are fragmented and isolated. Therefore, they do not provide valuable habitat for birds. The small parcel of oak-tulip forest west of the existing parking lot provides the most valuable bird habitat on the site. If the proposed project were constructed at the Mosholu Site, approximately 2.90 acres of cultural trees and 0.70 acres of oak-tulip forest on the site would be cleared. Although loss of these cover types would remove some bird habitat, no significant adverse impacts to birds would be anticipated to result since the cultural trees provide only marginal bird habitat and the forest that would be lost represents only one percent of the larger forest present at Shandler Recreation Area. The cultural trees on the site are not unique. Although forest is generally uncommon in the Bronx, the forest area that would be cleared is small and is not anticipated to affect the size or diversity of the bird community in the area. As stated below, the noise generated from the proposed construction activity may disturb wildlife several hundred feet beyond the project boundary. This may discourage the birds from visiting the area during the construction period. However, they may find shelter in areas of the golf course that are not subject to potential construction impacts. Overall, no significant adverse impacts are anticipated.

6.14.3.1.6. Mammals.

The field reconnaissance supplemented with the Shandler Recreation Area mammal survey determined that the habitat within the Mosholu Site project boundary is of moderate value for most mammal species. The 0.70 acres of oak-tulip forest present on the site, to the west of the existing parking area, provides the most valuable mammal habitat, due to its habitat complexity and continuity with the larger forest of Shandler Recreation Area. Clearing of this 0.70 acre parcel of forest for the proposed water treatment plant construction would result in the loss of some mammal habitat. However, because the forest parcel that would be lost is small and represents only approximately one percent of the larger forest area, its potential loss would result in a less than a significant adverse impact to mammals.

Lighting around the access roads may also affect some nocturnal animals. However, it is likely that the mammals frequenting the surroundings of the site would rapidly habituate to low-level lighting that may penetrate the natural areas around the facility or utilize other areas of the Park.

6.14.3.1.7. Rare, Threatened, and Endangered Species.

As indicated above in Existing Conditions, no rare, threatened, or endangered species are known to exist at or use the Mosholu Site. The State-listed rare plants in the Shandler Recreation Area would not be impacted by the proposed project. Therefore, no significant impacts to protected resources would occur.

6.14.3.2. Potential Construction Impacts

The anticipated year of peak construction for the proposed plant is 2010. Therefore, potential construction impacts have been assessed by comparing the Future With the Project conditions against the Future Without the Project conditions for the year 2010.

The potential construction impact area would be approximately 28.5 acres. During the construction at the Mosholu Golf Course, areas as required within the potential area of construction would be cleared to accommodate the storage and daily activities of construction vehicles and equipment. Therefore, wildlife use of almost all natural and landscaped areas within the construction site boundaries would be eliminated for the entirety of the construction period. The proposed facilities would be installed below-grade and the surface of the proposed water treatment plant facility would be restored to existing grade to create a public driving range, new club house, and a restored parking lot. To minimize potential construction period impacts, best management practices (BMP's) would be used to minimize noise, sedimentation, and erosion. Construction equipment and vehicles would be equipped with mufflers to minimize noise. These construction-related effects are considered temporary and therefore not significant to natural resources.

The construction area is an open driving range containing isolated rows of trees. This area does not constitute good bird habitat. The interior forest areas of Van Cortlandt Park that would be

frequented by migratory birds would not be impacted by the project. Work would cease in the vicinity of any nest/roost found until a NYCDEP Wildlife Biologist is notified and assesses the situation.

The construction impacts at this site are related to changes in tree cover and hydrology that are long term and potentially permanent. These impacts were discussed in the preceding section under Project Impacts. Impacts specific to construction include the possibility of disturbing wildlife in the forested area of Shandler Recreation Area. People already habituate the wildlife in this forest to urban noise and frequent intrusions. The noise analysis indicates that there would be no significant increase of noise outside the construction area after the proposed noise mitigation is implemented; therefore, no significant construction related impacts would occur to wildlife.

Based on the analyses presented above, the proposed Croton project at the Mosholu Site would have significant adverse impacts on natural resources that would be mitigated. For comparison purposes, this is true of the Eastview and Harlem River sites as well.