Appendix VIII

ENVIRONMENTAL REVIEW

SUMMARY OF ENVIRONMENTAL DATA COLLECTION

Review of Correspondence

Requests for file searches to identify any endangered, threatened or special concern species were conducted for each of the 22 Step II sites that passed the Step I review. These requests were directed to the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), and the New York State Department of Environmental Conservation (NYSDEC).

Results of the file searches indicate the occurrence of one Federally listed threatened species, the bald eagle *(Haliaeetus eucocephalus)*, reported at eight of the 22 sites, including: Henry Hudson Park, Schodack Island State Park, Stuyvesant, Four Mile Point Road, Saugerties Village Beach, Mills-Norrie State Park, Kowawese Unique Area, and Croton Point Westchester County Park. The bald eagle is also listed as endangered by the NYSDEC. In addition, the peregrine falcon *(Falco peregrinus)*, also listed as endangered by the NYSDEC, is known to occur in the vicinity of the following sites: Croton Point, Westchester County Park, Dobbs Ferry, Kingsland Point Park, and Hudson River Park. The New York State Natural Heritage Database identified one endangered species, the shortnose sturgeon; four additional threatened bird species, the upland sandpiper, king rail, least bittern and pied-billed grebe; and six threatened plant species, Davis' sedge, mock pennyroyal, heartleaf plantain, smooth bur-marigold, spongy arrowhead and Frank's sedge as also occurring within the vicinity of one or more of the potential sites (Table 1).

Birds

Bald Eagle. The bald eagle *(Haliaeetus leucocephalus)*, listed as threatened by the U.S. Fish and Wildlife Service and as endangered by the NYSDEC, is a large predatory raptor that occurs near seacoasts, rivers and large lakes (Peterson 1986). The bald eagle is found exclusively in North America. In the early 1900's, over 70 nesting pairs of bald eagles inhabited New York State. By 1960, only one active bald eagle nest remained. Hunting, loss of habitat and exposure to DDT are reasons for this decline (NYSDEC 1985).

Bald eagles nest on the ground in isolated, treeless areas, on cliffs, and in larger dominant trees of a variety of species. They tend to prefer mature old-growth timber, and an open forest structure. They are primarily shoreline nesters. Bald eagles forage near rivers, lakes, estuaries, and other large open bodies of water. Prey selection is dependent on availability and includes live fish, live sea or water birds, and carrion. Nesting densities of the bald eagle are dependent on total prey availability. In southeast New York bald

eagles were found feeding almost exclusively on dead and dying alewives (Peterson 1986).

Peregrine Falcon. The peregrine falcon *(Falco peregrinus),* listed as endangered by New York State, was reintroduced into the area after a sharp decline due to reproductive failure caused by DDT which occurred between 1940 and 1960. As a result of this reintroduction, peregrine falcons are now nesting successfully in portions of the Adirondacks and on bridges and buildings in the Hudson River Valley and New York City area (USEPA 1995).

In the NY/NJ Harbor area, peregrines nest on manmade structures such as tall buildings, high bridges spanning large rivers, and nest platforms. Due to their position in the food chain, peregrine falcons are sensitive to the effects of bioaccumulating environmental contaminants such as dioxins and polychlorinated biphenyls.

Peregrines hunt from perches offering good views of foraging areas, taking prey from over land and water. Their prey includes a variety of birds, including shorebirds, waterfowl and passerines (Terres 1980). They may travel up to 18 miles in search of prey and seek feeding opportunities in marshes and riparian areas where these prey concentrate.

Upland Sandpiper. The upland sandpiper (*Bartramia longicauda*), listed as threatened in New York State, suffered a decline in the 1870s due to overhunting for its plumes and meat. The upstate population was found mainly in the mid Hudson-Mohawk Valley region and in the agricultural areas of central and western New York. In 1919 there were up to 20 pairs in Greene County and at least 15 pairs in Cattaraugus County were documented in 1934 (Bull 1974). The upland sandpiper population is widely distributed in New York State, but is generally an uncommon breeder here. There are less than 250 known or suspected breeding sites in the state (Carter 1991).

Upland sandpipers originally nested in grass prairies. They now inhabit remaining native prairies, dry meadows, blueberry barrens, farmland, hayfields, airport runways and other pasture-like environments (Osborne and Peterson 1984). They prefer level topography and expanses of grass along with a sufficient number of fenceposts for perching.

Upland sandpipers feed almost exclusively on insects they pluck from vegetation and sometimes from the ground. Common items in their diet are grasshoppers, crickets, weevils and other small invertebrates. On occasion, they will also eat seeds from weeds, grasses, and grains such as wheat (Carter 1991).

Upland sandpipers are loosely colonial and will often nest in the same location for successive years. Although the lifespan is unknown, the longest recorded survival of a banded upland sandpiper is five years (Clapp et al. 1982).

King Rail. King rails *(Rallus elegans),* listed as Threatened in New York State, have always been a rare nesting species in New York (Andrle and Carroll 1988, Bull 1974).

They are known to breed locally in most of the eastern United States (American Ornithologists' Union 1983), although the Breeding Bird Atlas reports no confirmed breeding in the study area. Probable breeding is thought to occurr in the Finger Lakes Highlands and in the northern Hudson Valley (Andrle and Carroll 1988).

King rails are ecotone or edge species and therefore occupy a broader range of habitats, from freshwater, brackish and coastal salt marshes, to shrub swamps and upland fields near marshes (Meanley 1969, Peck and James 1983). Permanently flooded wetlands where water is at least 6 inches deep are preferred, although king rails are not averse to swimming across deep water channels (Meanley 1969).

Nests are built in areas where the water is shallow (0 to 25 cm). Water is less than 10 cm in foraging sites (Eddleman et al. 1988). King rail feed primarily on insects and aquatic invertebrates, though they are also known to consume plant matter and fish (Gough et al. 1998).

Loss and degradation of wetland habitat is a serious problem for this species that relies on wetlands (Todd 1977, Kerlinger and Sutton 1989, Kerlinger and Wiedner 1990).

Least Bittern. The least bittern *(Ixobrychus exilis)*, listed as Threatened in New York State, is an uncommon and rare breeder in New York (Smith 1988). Most populations occur in central and western portions of the state and along the Hudson River Valley. New York seems to have sizeable, relatively secure nesting populations, it is one of the ten most common nesting species in Hudson River tidal marshes (Swift 1987).

Least bitterns breed in a variety of wetlands, including cattail and sedge marshes, salt marshes and other areas with emergent vegetation (Palmer 1962). Preferred breeding areas includes dense, tall emergent vegetation, especially Typha, Carex, Scirpus or Phragmites interspersed with woody vegetation, open water and nutrient-rich environments (Weller 1961, Palmer 1962, Kushlan 1973). Along Hudson River marshes the presence of least bitterns seems to be related to the extent of tall bulrush-cattail cover and the elevation of the site (Swift 1987).

Least bitterns seem to tolerate the presence of humans fairly well. They have been found to persist in urbanized areas as long as the wetland itself remains relatively undisturbed (Palmer 1962). The greatest threat to the least bitter is the loss of wetland habitat in the Northeast.

Pied-billed Grebe. The pied-billed grebe *(Podilymbus podiceps)* is listed as threatened by the NYSDEC. A majority of New York State's population resides in protected and managed state wetlands and in national wildlife refuges, with many nests occurring in Hudson River Valley marshes.

Pied-billed grebes are found in ponds, sloughs, marsh inlets and along edges of rivers, lakes and reservoirs (Palmer 1962, Chabreck 1963, Cramp and Simmons 1977, Connor 1988).

Emergent vegetation more than 100 ft from the shore provides nesting sites which are protected from predators (Gibbs and Melvin 1992).

Wetlands inhabited by grebes may be as small as 2 ha (Connor, 1988). Palustrine emergent wetlands and brackish wetlands are among the most highly threatened in the U.S. Lake development and disturbance seems to play a role, however, since pied-billed grebes are doing well on refuges where these activities are restricted (Parker pers. comm.).

Pied-billed grebes feed on a variety of small fishes like sticklebacks and silversides; also damselfly and dragonfly nymphs, backswimmers, diving beetles and many other aquatic insects, snails, spiders, frogs, tadpoles, seeds and the soft parts of aquatic plants. Hatchlings are initially fed insects and then given small fishes as they grow (CTDEP 2001).

Pollution and loss of habitat are the principal factors in the decline of pied-billed grebes. Contamination in industrial areas may degrade the wetland system and impair the grebes' ability to reproduce. In agricultural areas, nests placed downstream of crops receive runoff carrying insecticides. These insecticides contribute to overall degradation of the nesting habitat and can significantly alter the grebes' food supply by reducing the availability of invertebrates (Gibbs and Melvin 1992).

Eaton (1910) reported a decrease in the population of pied- billed grebes due to an increase in recreational activities and human disturbance. They had been reported as breeding only sporadically in the New York City region by Griscom (1923) and Cruickshank (1942). In 1941 more than 40 pairs with young were estimated at the Jamaica Bay Wildlife Refuge (Bull 1964).

A potential problem for pied-billed grebes exists in the invasive plant, purple loosestrife *(Lythrum salicaria)*. This plant is a highly competitive wetland exotic. Its presence has altered many wetland areas because of its ability to out-compete native vegetation (Thompson et al. 1987). Although the impact of purple loosestrife on pied-billed grebes is yet to be determined, both the plants' presence and attempts made to control it have had an impact on other wetland birds.

Changing beaver populations may have an effect on grebe populations in the future. Since 1975, beaver populations have increased from 3,200 colonies to 17,000 colonies in 1990 creating approximately 176,200 wetland acres. This increase in beaver activity will most likely benefit pied-billed grebe populations.

Reptiles

Northern Fence Lizard. The northern fence lizard *(Sceloporus undulatus)*, listed as threatened by the NYSDEC, occurs in isolated colonies in southeast New York and northeast Pennsylvania. It is found in isolated small populations near Peekskill, Coldspring, Fishkill, Mt. Beacon, and on Staten Island (NYSDEC 1993).

The northern fence lizard spends the nonbreeding season (November to approximately the beginning of April) hibernating in burrows, under and between rocks or within rotten logs or stumps. Adults emerge from hibernation, in northern areas, around April (NYSDEC 1993).

Fence lizards are omnivorous and prey on a variety of items including small insects, beetles, spiders, millipedes, snails and other small invertebrates. Major predators of fence lizards include some raptorial species such as the kestrel and probably some snakes and skinks that occupy similar habitats (NYSDEC 1993).

The northern fence lizard in the northeastern part of its range is found mainly in a dry open eastern pine forest habitat. In Westchester and Putnam Counties individuals were found in open areas within oak-hickory-ash forests with blueberry, laurel, scrub oak and pine found on open rock faces or talus. The northern fence lizard may also occur on open areas around houses, log piles, fences and brush heaps near protective cover. Fence lizards occur in infrequent, small, and isolated populations. A few populations occur within New York State Park systems and may be subject to excessive disturbance from hiker (or other outdoor activities) traffic within or near fence lizard habitat (NYSDEC 1993).

Fish

Shortnose Sturgeon. The shortnose sturgeon *(Acipenser brevirostrum)* ranges from the St. John River, New Brunswick to the St. Johns River, Florida (Gruchy and Parker, 1980). Adults are large, heavy, elongated fishes with a distinctly ventral, protrusible mouth, barbels extending across most of the width of the snout, heavy bony plates (called scutes) covering the body, and an extended upper lobe of the tail fin. (Gorham and McAllister, 1974).

Shortnose sturgeon feed by rooting along the bottom and vacuuming with their protrusible mouths. Most of the diet of the shortnose sturgeon consists of mollusks, polychaete worms, and small benthic fishes (Dadswell, 1984).

The shortnose sturgeon does not migrate to sea, but stays within the confines of its natal river and estuaries, remaining primarily in deep river channels. Hudson River shortnose sturgeon spawn in the upper Hudson River, returning downstream immediately afterward. Some adults may leave the Hudson over the summer, but the majority migrate upriver in the fall and overwinter in the Kingston region (Geoghegan et al. 1992).

Plants

Davis' Sedge. Davis' sedge *(Carex davisii)* is listed as Threatened in New York State. It has been identified along the Hudson River Estuary in the counties of Albany, Dutchess, Greene, Rensselaer, Ulster and Weschester (NYSDEC 1997). Davis' sedge is a facultative species, equally likely to occur in wetland or non-wetland areas. It is a perennial native grass-like plant (USFWS 1998). Davis' sedge flowers from early April through the end of June and bears fruits in early July (NYSDEC 1997).

Mock Pennyroyal. The mock pennyroyal *(Hedeoma hispidum)* is listed as Threatened in New York State. It is found along the Hudson River Estuary in Albany, Dutchess, Rensselaer, and Ulster counties. The mock pennyroyal flowers during the month of June and bears fruits during July and the first half of August (NYSDEC 1997).

Heartleaf Plantain. The heartleaf plantain *(Plantago cordata),* is listed as Threatened in New York State and is being considered for Federal listing. Heartleaf plantain has historically been found in Alabama, Georgia, Illinois, Michigan, North Carolina, Ohio, Wisconsin and New York (Mitchell and Sheviak 1981). It is a perennial native forb and obligate wetland species, almost always occurring under natural conditions in wetlands (USFWS 1998).

In New York, the heartleaf plantain is known to occur over a 120 mile stretch of the Hudson River, and is found in the counties of Albany, Bronx, Columbia, Dutchess, Greene, New York, and Ulster. Most of the smaller populations are thought to originate from a thriving colony downriver which numbers approximately 3000 plants (Mitchell and Sheviak 1981).

Heartleaf plantain are found in gravelly and mucky river and streambank areas, usually in or on the border of shaded regions. They can tolerate fresh or brackish waters and may be submerged for part of the day. They have broad leaves with strong mid-veins with some branching lateral veins. Flowers are small, pale and numerous over the length of their slender, arching stalks (Mitchell and Sheviak 1981).

Smooth Bur-Marigold. The smooth bur-marigold *(Bidens laevis),* also called a beggar-tick, is listed as Threatened in New York State. The bur-marigold has historically been found in Delaware, Missouri, Pennsylvania, New Jersey and New York (Mitchell and Sheviak 1981).

The smooth bur-marigold has been identified along the length of the Hudson River Estuary in the counties of Dutchess, Greene, Orange, Putnam, Rensselaer, Rockland, Ulster and Westchester. It flowers from late August through late September and bears fruits in early October (NYSDEC 1997).

It is an annual native forb and an obligate wetland species, almost always occurring under natural conditions in wetlands (USFWS 1998). Bur marigolds have lance-shaped leaves that occur in pairs. They grow up to five feet and are found in wet areas. The bur marigold flowers in small heads (Newcomb 1977).

Spongy Arrowhead. The spongy arrowhead *(Sagittaria calycina),* listed as Threatened in New York State, has been found along the Hudson River Estuary in the counties of Albany, Dutchess, Greene, Orange, Putnam, Rockland, Ulster and Westchester (NYSDEC 1997). The spongy arrowhead is an obligate wetland species, almost always occurring under natural conditions in wetland areas. It is a perennial native emergent forb (USFWS 1998). From late June through early August, the plant is in a vegetative

state, when leafy growth is occurring. It flowers from late August through the end of September (NYSDEC 1997).

Frank's sedge. Frank's sedge *(Carex frankii)* is listed as Endangered in New York State. It has been identified along the Hudson River Estuary in Ulster County (NYSDEC 1997). Frank's sedge is an obligate wetland species, occurring almost always in wetland areas. It is a perennial native emergent grass (USFWS 1998). Frank's sedge bears fruits from late July through late October (NYSDEC 1997).

SIGNIFICANT HABITAT AREAS

The New York State Department of State's (NYSDOS) Division of Coastal Resources and Waterfront Revitalization in conjunction with The Nature Conservancy (TNC) have identified 39 Hudson River areas located on the tidal section of the Hudson River between the Federal Dam at Troy, and New York City as having special environmental importance. Detailed information on the 39 areas are presented in the document *Hudson River Significant Tidal Habitats: A Guide to the Functions, Values and Protection of the River's Natural Resources* (NYSDOS and TNC 1990). Included in the 39 sites are 34 sites designated as Significant Coastal Fish and Wildlife Habitats under New York State's Coastal Management Program, and five sites recognized by the New York Natural Heritage Program as containing important plant and animal communities.

The potential public swimming facilities evaluated under the Step II screening were examined as to their proximity to the designated Hudson River Significant Tidal Habitat areas. Of the 22 sites selected for evaluation under Step II, including the four existing public swimming facilities, nine are located within designated significant habitat areas and nine are located on the boundary or within a mile of a designated area. The sites evaluated and their relationship to designated Hudson River Significant Tidal Habitat areas is presented in Table 2.

A discussion of the 18 sites located in or near a Hudson River significant tidal habitat area and information on the significant habitat areas is presented below.

Potential Sites Located Within A Significant Tidal Habitat Area

Nine of the potential public swimming facility sites are located within the boundaries of designated Hudson River Significant Tidal Habitat areas. The sites are listed and discussed below:

***Schodack Island State Park*:** The potential swimming facility at Schodack Island is located on the western side of Lower Schodack Island in an area designated as Mull Plaat, near the isthmus that joins Upper and Lower Schodack Islands. The site is within the boundary of the Schodack and Houghtaling Islands and Schodack Creek Significant Coastal Fish and Wildlife Habitat area. The significant area extends along the eastern side of the river for approximately 6.5 miles and extends to the west to include Upper and Lower Schodack and Houghtaling Islands. (NOTE: the entire significant habitat area is

within the Class C water classification area, with the southern end of Houghtaling Island at River Mile 130 designating Class A waters).

The Schodack and Houghtaling Islands significant habitat area is characterized as consisting of high diversity habitat of excellent quality that has experienced limited disturbance. The primary feature of the area is Schodack Creek, which is a relic side channel that is now a backwater area between the eastern shore of the River and the western shore of the three islands. Submerged, intertidal and upland marsh areas are present along both sides of Schodack Creek and together with dredge material placed along the Hudson shore, connect the three islands. The interior of the islands is primarily scrubby upland forest and abandoned agricultural areas. Several informal trails used by hikers, bikers and recreational vehicles are located on the islands. The recommended use for the area is to develop Upper Schodack Island as a camping site or day use park, with boating facilities along the bulkheaded shoreline, either eliminate or formalize recreational vehicle use, and construct nature and hiking trails.

***Stuyvesant (River View Park)*:** The Stuyvesant site is located in the Stuyvesant Marshes Natural Heritage Program area which is a small site classified as having good quality habitat of moderate diversity that has experienced moderate disturbance and containing tidal communities of moderate significance. The site is located on the north side point of land just to the south of the Village of Stuyvesant. The point of land that the potential beach site is located on forms the northern side of a small shallow embayment that is located along the eastern-shore of the River in Greene County. A small stream enters on the eastside the embayment. Submerged, emergent and upland marshes are found in the area, with mudflats and a sandy beach south of the stream mouth and a stretch of rocky shore along the Hudson River in the vicinity of the proposed beach site. A significant area of deeper water with a sand bottom devoid of vegetation exists next to the beach areas on the north side of the peninsula. The area contains several different community types and the rare species heart leaf plantain and kidney leaf mud-plantain are reported on the site. Railroad tracks run along the eastern side of the proposed beach area, which could result in access problems to the site. The large number of aquatic and emergent community types found in this area warrants further investigation, evaluation and special site construction considerations.

***Four Mile Point Road*:** Four Mile Point is located on the western side of the Hudson River in the Town of Coxsackie, Greene County. Four Mile Point is located within the Vosburgh Swamp and Middle Ground Flats Significant Coastal Fish and Wildlife Habitat area. Several potential swimming sites are located along Four Mile Point Road from the vicinity of Barker Mountain on the north to Four Mile Point with the best potential site located on the north side of Four Mile Point and within the northern boundary of the significant habitat area. The primary habitat feature of the area is Vosburgh Swamp which is an extensive intertidal wetlands area located on the south west side of Four Mile Point. The significant habitat area is characterized as having a highly diverse habitat of excellent quality that has experienced moderate disturbance. Recommended use of the area calls for the continued protection of the extensive shallows and flats in the immediate vicinity of Four Mile Point.

***Mills-Norrie State Park*:** The Mills-Norrie State Park extends several miles along the eastern shore of the Hudson River in the Dutchess County Town of Staatsburg. The Park is located in the Vanderburgh Cove and Shallows Significant Coastal Fish and Wildlife Habitat area. The habitat area is characterized as a moderately disturbed area of moderately diverse habitat of good quality. The principle feature of the significant habitat area is Vanderburgh Cove an extensive marsh area formed at the mouths of the Landsman Kill and Fallsburg Creek. The potential beach site is located approximately 6000 ft south of the Vanderburgh Cove area at the southern end of the significant habitat area.

***Little Stony Point*:** The Highlands section of the Hudson River between mile points 44 and 56 has been designated the Hudson River Miles 44-56 Significant Coastal Fish and Wildlife Habitat area. The significant habitat area also includes the New York Natural Heritage Program's Hudson River Miles 44-56 area. Little Stony Point is located on the eastside of the Hudson River just south of Breakneck Ridge and north of the Village of Cold Spring. The proposed beach site runs along the north side of the Point. The Hudson River Miles 44-56 Significant Coastal Fish and Wildlife Habitat area is a relatively narrow 12-mile long deepwater section of the Hudson River with the habitat characterized as uniform habitat of excellent quality that has experience limited disturbance. One limiting feature of the area is the railroad tracks that run along both sides of the River.

***Riverfront Park, Rockland County Park, Bowline Point, and Croton Point/Westchester County Park*:** Three of the potential public swimming sites and the existing Croton Point/Westchester County Park, located on the north side of Croton Point, are located within the Haverstraw Bay Significant Coastal Fish and Wildlife Habitat area. The area is described as including vast shallow and deep-water areas covering a six-mile reach of River, with low diversity habitat of good quality that has experienced extensive disturbance. Extensive shallows are found in the eastern part of the bay with deeper water areas along the western shore. The Federal navigation channel, which is located along the western side of the Bay, is maintained through periodic dredging at a depth of 35-ft below mean low water (MLW). Haverstraw Bay is characterized as an extensive nursery for anadromous and estuarine migrant fish species, a nursery and feeding area for many marine species, spawning and wintering ground for the Atlantic sturgeon, and a wintering area for the Federal and state listed shortnose sturgeon. Incompatible activities within the designated significant habitat area include dredging of the shallows, construction or filling especially in the eastern part of the Bay, and clearing buffer vegetation.

Potential swimming facility development is only planned for the western part of the Bay; therefore impacts to the Bay's primary spawning and nursery area will be minimal.

Potential Sites Located In Close Proximity To A Significant Tidal Habitat Area

Nine potential or existing public swimming sites are located on the boundary or within one-mile of the boundary of a significant habitat area. The nine sites and the related significant habitat area are listed and discussed below:

***Henry Hudson Park*:** The Henry Hudson Park is a Town of Bethlehem, Albany County, park located on the western shore of the Hudson River approximately eight miles south of the City of Albany. The southern boundary of the park and the northern boundary of the Shad and Schermerhorn Islands Significant Coastal Fish and Wildlife Habitat area is the Vloman Kill. This significant habitat area is characterized as having moderately diverse habitat of good quality that has experienced limited disturbance. The recommended use of the area is as a managed game area and low-intensity recreation.

***Bristol Beach State Park*:** The Bristol Beach State Park swimming facility is located on the west side of the Hudson River just south of Eves Point in the Town of Saugerties, Ulster County. The potential beach site is directly across the River from the southern end of the Germantown-Clermont Flats Significant Coastal Fish and Wildlife Habitat area. The significant habitat area extends for approximately 4.5-mi along the eastern side of the River and includes several large expanses of shallow littoral areas and mudflats that supports one of the largest continuous areas of abundant aquatic plant growth in the Hudson River. Submerged aquatic plants in the area include water celery and eelgrass. The habitat area has experienced limited disturbance and is characterized as having good quality habitat of low diversity.

***Saugerties Village Beach*:** The Saugerties Village Beach is an existing facility located on an impoundment of the Esopus Creek. The dam, which forms the impoundment, is approximately 1.5 miles from the mouth of the Creek and is the upstream boundary of the Esopus Estuary Significant Coastal Fish and Wildlife Habitat area. The greatest percentage of the significant habitat area is located in the Hudson River around the mouth of Esopus Creek and consists of mudflats, marshes, shallow water areas, and deepwater habitat that is characterized as moderately diverse habitat of good quality that has experienced moderate disturbance.

***Ulster Landing County Park*:** The Ulster Landing County Park is located on the west side of the Hudson River approximately 1.25-mi north of the Kingston-Rhinecliff Bridge. The Flats Significant Coastal Fish and Wildlife Habitat area is a narrow (500 to 1500 ft wide) mid-River flats area that extends from approximately three miles south to one mile north of the Kingston-Rhinecliff Bridge. The Flats are characterized as uniform habitat of excellent quality that has experienced moderate disturbance. The Ulster Landing County Park, an existing swimming facility, is located just north of the northern boundary of the area.

***Kingston Point Park*:** Kingston Point Park is an existing public swimming facility located on the west side of the Hudson River on the north side of Kingston Point, which is approximately 0.5-mi north of the mouth of the Rondout Creek. The Natural Heritage Program's Roundout Creek Mouth site, an extensive marsh and wetlands area, which is formed by Kingston Point on the north and the Rondout Creek bulkhead on the south.

The Rondout Creek Significant Coastal Fish and Wildlife Habitat area is located around the mouth and extends to the south of Rondout Creek and consists of an extensive vegetated shallow water area.

***Port Ewen*;** The Port Ewen site is located on a bay on the west side of the Hudson River just south of the City of Kingston. The site is just south of the Rondout Creek Significant Coastal Fish and Wildlife Habitat area. The Rondout Creek area includes the lower section of Rondout Creek and an extensive shallow water area known as Sleightsburg Marsh located south of the Creek mouth. The area is characterized as being extensively disturbed with a moderately diverse habitat of fair quality. Reports on the Port Ewen site indicate extensive water chestnut growth.

***Kowawese Unique Area at Plum Point*:** This park located on the western shore of the Hudson River in the Town of New Windsor was recently created by the Orange County Parks Commission. The park is located just north of the Moodna Creek Significant Coastal Fish and Wildlife Habitat area, which is characterized as an area of moderate habitat diversity of good quality that has experienced moderate disturbance.

***Consolidated Edison Company of New York, Incorporated's Verplanck Property*:** The Consolidated Edison Company of New York, Incorporated (ConEd) owns property along the eastern shore of the Hudson River in the Town of Corlandt, Westchester County that was previously used as an environmental laboratory and fish hatchery. The property is located south of the Indian Point Nuclear Generating Station and just north of the extensive Haverstraw Bay Significant Coastal Fish and Wildlife Habitat area. The Haverstraw Bay area is described, as a vast shallow bay containing extensive shallows, especially along the eastern shore and a shipping channel maintained by periodic dredging to a depth of 35-ft below mean low water. The ConEd site at Verplanck is north of the significant habitat area and is currently used by boaters and area residents as a swimming site.

***Ossining-Louis H. Engel, Jr. Park*:** The Louis H. Engel, Jr. Park is located on the east side of the Hudson River in the Town of Ossining immediately north of the Ossining Correctional Facility. The potential site is approximately 0.5 mile south of the southern border of the Croton River and Bay Significant Coastal Fish and Wildlife Habitat area. The significant habitat area is a large shallow water area, with limited marsh and mudflats located in a protected cove formed on the north side by Croton Point and includes the mouth of the Croton River. The low diversity habitat is characterized as of poor quality with extensive disturbance. The area between the significant habitat area and the beach site is commercial in nature with several bulkheaded piers.

WETLANDS

Hudson River Wetlands and Aquatic Vegetation.

Along the Hudson estuary the community types are tidal marshes, intertidal mudflats, and subtidal aquatic beds, all of which can be either freshwater or brackish, depending on their location on the river (Reschke 1990). The freshwater communities are chiefly found north of Newburgh; brackish communities are found farther south, although there is no sharp demarcation of the two types.

In recent times, the aquatic vegetation in the Hudson River has undergone considerable change. The trend has been toward the reduction of native plant populations, partially because of pollution but also, and more important, through displacement by the expansion of exotics.

One of the most successful invaders of the lower Hudson River has been the exotic water chestnut (*Trappa natans*). A native of Europe and Asia, the water chestnut was introduced into the upper Hudson River drainage in 1884 (Hook 1985). It quickly spread and was considered a pest by the 1930s. An eradication program of hand-pulling and application of 2,4-D was initially successful in controlling the species; however, laws restricting the use of this herbicide resulted in the abandonment of this program in 1975. The species rapidly regained dominance in sheltered coves and shallows as far south as Constitution Island, with isolated patches as far south as Iona Island (Schmidt and Kiviat 1988). The water chestnut is particularly problematic for swimming beaches due to its hard, spiny seed pods that wash upon the beach and are painful when stepped on. Areas with heavy growths of water chestnut could cover a beach area in seed pods, rendering the beach area useless.

Another exotic that has successfully invaded the lower Hudson River is purple loosestrife. Introduced over 100 years ago, this species is now abundant in a variety of habitats. It provides no known special habitats or food for wetland biota, and it displaces the native cattails, which are excellent habitat for marsh fauna, shore birds, and migrating birds (BTIPR 1977).

Habitat alteration has also accounted for changes in aquatic vegetation. Major shoreline alterations within recorded history are attributable primarily to construction of railroad rights-of-way along the shorelines. According to Boyle (1969), bays near Tivoli and Hudson were originally open water (non-marshy). Construction of causeways partially blocked tributary inlets, thereby trapping sediment and detritus and producing new marsh areas. Similar filling is apparent in the areas of Constitution Island, Iona Island, Peekskill Bay, and Croton Point.

Croton Bay (RM 34) once supported nearly 190 acres of dense submerged aquatic vegetation (SAV), mostly native water milfoils, pondweed, and water celery. This vegetation, which undoubtedly served as an important fish nursery area, had largely disappeared by 1972 (Buckley 1992). In addition to SAV losses, more than 25 acres of cattails were lost and 40 acres of swamp rose mallow and saltmeadow cordgrass were stressed. Although there was some recovery in the late 1970s, by the early 1980s all these gains had disappeared. Vegetation losses in Croton Bay appear to have resulted from contaminated groundwater and leachate from an old landfill on Croton Point (Buckley 1992).

National Wetland Inventory Review

All sites that were recommended as a result of the Step II screening analysis were subjected to a review based on National Wetland Inventory (NWI) records. Wetlands mapped by NWI are Federally (USACE and USEPA) regulated and are identified by habitat type(s). Sites were reviewed first for wetlands occurring within ¼ mile radius, then for wetlands within 1/8 mile radius of the site (Table 3). Federally regulated wetlands have no regulated buffer or adjacent area; a distinction from NYSDEC regulated wetlands that have a 100 foot buffer zone upland from the edge of a wetland. A review of the sites in areas that have been mapped by NWI shows that no wetlands occur within 100 feet of a potential site. There were locations where wetlands are indicated within 1/8 of a mile (660 feet) of a Step II site (Table 3). Site visits to both the Stuyvesant and Four Mile point Road sites did not indicate the presence of wetlands in the immediate vicinity of the proposed beach site.

Although the NWI maps serve as a useful resource for beginning a wetlands survey, due to the age of the maps and lack of complete coverage of all sites, an on-site wetland survey is recommended for any site that is considered for development. In addition, many of the wetlands on NWI are "mapped" from aerial surveys and are not field-confirmed.

COASTAL ZONE MANAGEMENT CONSISTENCY

Coastal Zone Consistency concurrence will be required from the New York State Department of State (NYSDOS). Overall the project supports NYSDOS' general goals of creating and improving waterfront access and appreciation of the Hudson River; therefore obtaining concurrence should not be a rigorous process. Where applicable, LMS will address those proposed sites within or adjacent to NYSDOS-identified Statewide Areas of Scenic Significance and/or Significant Fish and Wildlife Habitats. The potential of combining the entire action into one comprehensive application will be evaluated at a preapplication meeting. For municipalities (such as the Town of Poughkeepsie) with a state-approved Local Waterfront Revitalization Program (LWRP), the appropriate municipal authorities will be contacted to prepare the forms and supporting materials needed for local approval. With the exception of beaches in areas covered by LWRPs, we expect that all the approvals can be handled with one application to the NYSDOS Albany office.

Nine municipalities had both a state-approved Local Waterfront Revitalization Plan (LWRP), or a well advanced LWRP process, as well as a selected Step II site. A discussion of these LWRPs, and their specific recommendations that relate to the selected sites, can be found in Appendix VII. It was found that establishing public swimming beaches at these Step II sites would be consistent with all of these Plans.

Further studies will have to be done to coordinate the second phase of this project with all communities that have a selected feasible swimming site in their jurisdiction to assure the establishment of a successful program.

IMPACT ASSESSMENT

Direct Impacts

This feasibility study can only identify general impacts that would be applicable to any of the recommended sites should they be developed. Once individual sites are selected for development, a new evaluation of impacts will be required. Impacts at each site will vary based on location, geography of the site, and extent of construction based on the size of the facility being built.

Nevertheless, there are some impacts that will occur at any site, though they will differ in degree by location. Traffic volume will increase in the vicinity of the site, with a substantial increase occurring during construction followed by a seasonal increase during the swimming season. The extent of the seasonal increase in traffic will depend on the size of the facility being built. The construction of a swimming facility will also increase the number of tourists that visit the area and use the facility, since the facilities will be in operation during the most popular vacation months.

Construction of the facility may cause a temporary increase in noise levels. After the facility is opened, swimmers may cause a localized increase in noise during the hours of operation.

Although initial research does not indicate that construction of facilities will have an impact on nearby wetland areas, an on-site wetland survey will be needed to determine the presence of wetlands on or adjacent to the site.

Construction of the facility may cause a temporary increase in noise levels during the construction period. After the facility is opened, swimmers may cause a localized increase in noise during the hours of operation.

An on-site wetland survey will be needed to determine the presence of wetlands on or adjacent to the site.

Indirect Impacts

Indirect impacts are those that arise as a result of direct impacts. As a result of increased traffic in the vicinity of the proposed facilities, there is the potential for an increase in air pollution. The extent of this increase would be related to the size of the facility, the number of hours the facility is in operation, and the number of expected visitors. To accurately determine the impact of the potential facility on air quality, each site would need to be evaluated separately.

The increase in tourists to the municipalities in the vicinity of the proposed facilities may result in an improvement in the overall economy of the area. Tourists are likely to make purchases in conjunction with their visit to the swimming facility.

Cumulative Impacts

Cumulative impacts are not expected related to the development of public swimming facilities along the Hudson River since the facilities proposed for development are widely distributed over the lower estuary's 150 mile length and the sites will be developed sequentially thus distributing the impacts over several years.

Table 1 (Page 1 of 3).
Threatened, Endangered and Rare Species, Communities and Habitats As Reported by the NYS Natural Heritage Program. Reported by Site.

Stuyvesant **Endangered Species (Year Observed)** American Waterwort (1933) Quillwort (1936) Blunt Spikerush (1936) Estuary Beggar-Ticks *Bidens hyperborea* (1937) **Threatened Species (Year Observed)** Upland Sandpiper (1983) Heartleaf Plantain (1996, 1993, 1988) Spongy Arrowhead (1992, 1985) Davis' Sedge (1978)	**Rare Species (Year Observed)** Tawny Emperor – unprotected (1994) **Communities/Habitats (Year Observed)** Freshwater Intertidal Mudflats (1988) Freshwater Tidal Marsh (1988)
Four Mile Point Road **Endangered Species (Year Observed)** American Waterwort (1965, 1935) Blunt Spikerush (no date) Muensher's Naid (1965) **Threatened Species (Year Observed)** Bald Eagle (1999) Least Bittern (1986, 1987) Golden Club (1933) Swamp Lousewort (1935) Smooth Bur Marigold (1993, 1994) Heartleaf Plantain (1988, 1993) Spongy Arrowhead (1993)	**Rare Species (Year Observed)** Estuary beggar-ticks *Bidens bidentoides* (1992, 1994) Taxiphyllum – unprotected (1989) **Communities/Habitats (Year Observed)** Freshwater Tidal Swamp (1994) Freshwater Intertidal Mudflats (1988, 1994) Freshwater Intertidal Shore (1988, 1991) Freshwater Tidal Marsh (1988, 1994) Anadromous Fish Concentration Area Waterfoul Wintering Area
Mills-Norrie State Park **Endangered Species (Year Observed)** Shortnose Sturgeon (1986) **Threatened Species (Year Observed)** Pied-billed Grebe (1980)	**Communities/Habitats (Year Observed)** Waterfowl Concentration Area – Esopus Meadows (1986) Anadromous Fish Concentration Area – Esopus Meadows (1986)

Table 1. (Page 2 of 3)
Threatened, Endangered and Rare Species, Communities and Habitats As Reported by the NYS Natural Heritage Program. Reported by Site.

Kowawese Unique Area at Plum Point **Endangered Species (Year Observed)** Estuary Beggar-Ticks *Bidens hyperborea* (1936) American Waterwort (1937) **Threatened Species (Year Observed)** Bald Eagle (1996, 2000) Least Bittern (1991) Spongy Arrowhead (1990)	**Communities/Habitats (Year Observed)** Brackish Intertidal Mudflats (1988) Brackish Tidal Marsh (1988) Waterfowl Concentration Area (1984) Raptor Concentration Area (1984) Anadromous Fish Concentration Area (1987)
Little Stony Point **Endangered Species (Year Observed)** Shortnose Sturgeon (1986) Peregrine Falcon (1999) Few-Flowered Panic Grass (1867) **Threatened Species (Year Observed)** Bald Eagle (1998) Fence Lizard (1997)	**Communities/Habitats (Year Observed)** Anadromous Fish Concentration Area (1986)
Verplanck **Threatened Species (Year Observed)** Bald Eagle (1988, 1998) Least Bittern (1980)	
Riverfront Park/Rockland County Park* **Threatened Species (Year Observed)** Bald Eagle (1992, 1996, 1998) Pied-Billed Grebe (1981) Least Bittern (1980) Troublesome Sedge (1957) Heartleaft Plantain (1936) Spongy Arrowhead (1936)	**Communities/Habitats (Year Observed)** Waterfowl Concentration Area (1986)
Kingsland Point County Park **Endangered Species (Year Observed)** Peregrine Falcon (1998) Rattlebox (1896) Virginia False Gromwell (1896) **Threatened Species (Year Observed)** Shrubby St. John's Wort (1898)	**Protected Species (Year Observed)** Kentucky Warbler (1980)

*Due to the close proximity of these sites, they were evaluated together for species presence.

Table 1. (Page 3 of 3)
Threatened, Endangered and Rare Species, Communities and Habitats As Reported by the NYS Natural Heritage Program. Reported by Site.

Saugerties Village Beach **Endangered Species (Year Observed)** Shortnose Sturgeon (1986) Muensher's Naid (1927) Estuary Beggar-ticks *Bidens hyperborea* (1937) Waterpigmy Weed (1936) Drummond's Rock Cress(1974) **Threatened Species (Year Observed)** King Rail (1987) Marsh Horsetail (1973) Heartleaf Plantain (1934, 1988) Woodland Agrimony (1916) Spongy Arrowhead (1988)	**Communities/Habitats (Year Observed)** Waterfowl Concentration Area (1993) Anadromous Fish Concentration Area (1986) Freshwater Tidal Swamp (1988) Freshwater Intertidal Mudflats (1988) Freshwater Tidal Marsh (1988)
Kingston Point **Endangered Species (Year Observed)** Shortnose Sturgeon (1986) American Waterwort (1936) Frank's Sedge (1993) Muensher's Naid (1936) **Threatened Species (Year Observed)** Pied-Billed Grebe (1980, 1984) Least Bittern (1984) Smooth-Bur Marigold (1985) Heartleaf Plantain (1985, 1988) Spongy Arrowhead (1993) Swamp Cottonwood (1993)	**Rare Species (Year Observed)** Estuary Beggar-Ticks (1993) **Communities/Habitats (Year Observed)** Rondout Creek Mouth Freshwater Tidal Community (1988) Freshwater Intertidal Shore (1988) Waterfowl Concentration Area (1987) Anadromous Fish Concentration Area (1987) Anadromous Fish Concentration Area at the Flats (1986) Freshwater Tidal Marsh (1988)
Ulster Landing County Park **Threatened Species (Year Observed)** King Rail (1987) Heartleaf Plantain (1936, 1992)	**Communities/Habitats (Year Observed)** Waterfowl Concentration Area (1986) Anadromous Fish Concentration Area (1986)
Croton Point Park **Threatened Species (Year Observed)** Bald Eagle (1998) Least Bittern (1981)	**Communities/Habitats (Year Observed)** Anadromous Fish Concentration Area (no date) Warm Water Fish Concentration Area (no date)

TABLE 2

EVALUATION OF HUDSON RIVER PUBLIC SWIMMING FACILITIES RELATED TO SIGNIFICANT TIDAL HABITAT AREAS
(NYSDOS 1990)

SITE DESIGNATION	LOCATION RELATIVE TO SIGNIFICANT HABITAT AREA		NYSDOS DESIGNATED SIGNIFICANT TIDAL HABITAT AREA	POTENTIAL FOR IMPACT
	NEAR	WITHIN		
Henry Hudson Park	X		Shad and Schermerhorn Islands	2
Schodack Island State Park		X	Schodack and Houghtaling Islands and Schodack Creek	1
Stuyvesant		X	Stuyvesant Marshes	3
Four Mile Point		X	Vosburgh Swamp and Middle Ground Flats	3
Bristol Beach State Park	X		Germantown-Clermont Flats	2
Saugerties Village Beach	X		Esopus Estuary	2
Ulster Landing County Park	X		The Flats	2
Kingston Point Park	X		Rondout Creek	2
Port Ewen	X		Rondout Creek / Kingston Deepwater	2/4
Mills-Norrie State Park		X	Vanderburg Cove and Shallows / Kingston Deepwater	3/4
Kowawese Unique Area at Plum Point	X		Moodna Creek	2
Little Stony Point		X	River Miles 44-56	3
Verplanck-Consolidated Edison Co. of NY	X		Haverstraw Bay	2
Riverfront Park		X	Haverstraw Bay	3
Rockland County Park		X	Haverstraw Bay	3
Bowline Point		X	Haverstraw Bay	3
Croton Point/Westchester County Park		X	Haverstraw Bay	3
Ossining-Louis H. Engel, Jr. Park	X		Croton River and Bay	4
Nyack Beach State Park	X		Piermont Marsh	2
Kingsland Point County Park	X		Piermont Marsh	2
Dobbs Ferry	X		Piermont Marsh	2
Hudson River Park			No significant habitat area within the vicinity of this site	4

1 Complies with intended use – significant area is located within site designation – no projected environmental impact

2 Although swimming does not comply with intended use, significant are is not located within site designation, and is not subject to direct impacts.

3 Significant area is located within site designation, there is potential for impact, further study is needed.

4 No identified intended use – significant area is not located within site designation – no project environmental impact

Table 3
National Wetlands Inventory Review for Tier II Sites

Site	Mapped Wetlands	Map Cited
Stuyvesant	SV located adjacent to proposed beach site	NYSDEC
Four Mile Point Road	SM located along the shoreline of the site	NYSDEC
Mills-Norrie State Park	(1) PFOIE located within ¼ mile radius, falling on the border of the 1/8 mile radius (1) $PUBH_x$ within ¼ mile radius, but outside the1/8 mile radius	NWI Map: Hyde Park, NY
Riverfront Park	(1) PEMIE – mapped within ¼ mile radius, but outside the 1/8 mile radius (2) PFO1E – mapped within ¼ mile radius, but outside the 1/8 mile radius	NWI Map: Haverstraw, NY
Little Stony Point	(1) $PUBH_x$ within 1/8 mile radius of the site	NWI Map: West Point, NY
Kingsland Point Park	(1) RIUBV within ¼ mile radius of the site, none within 1/8 mile of the site	NWI Map: White Plains, NY
Rockland County Park	(2) EZEMIN6 within ¼ mile radius of site, but outside the 1/8 mile radius (1) PSSIR within ¼ mile radius of site, but outside the 1/8 mile radius	NWI Map: Haverstraw, NY
Verplanck	(1) $LIUBH_x$ within ¼ mile radius, but outside the 1/8 mile radius	NWI Map: Peekskill, NY
Kowawese	(1) PEMIE, located on the ¼ mile radius (1) PFOIE located on the ¼ mile radius	NWI Map: Cornwall, NY

SM: Shoals/vegetated mud flats
SV: Submerged attached vegetation
PFOIE: Palustrine, forested, broad-leaved deciduous, seasonally flooded/saturated
$PUBH_x$: Paulstrine, unconsolidated bottom, permanently flooded, excavated
PEMIE: Palustrine, emergent, broad-leaved deciduous, seasonally flooded/saturated
RIUBV: Riverine, tidal, unconsolidated bottom, permanent tidal
EZIMIN6: estuarine intertidal, emergent, persistent, regularly flooded, oligohaline
PSSIR: Palustrine, scrub shrub, broad-leaved deciduous, seasonal tidal
$LIUBH_x$: Lacustrine, limnetic, unconsolidated bottom, permanently flooded, excavated

APPENDIX VIII
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