

# Graniteville Wetland Habitat

## Wetland Functions and/or Values

The property that is identified as the Graniteville Wetland is located on Block 1707, Lots 1 and 5 located along Forest Avenue and South Avenue in Graniteville, Staten Island, New York. The subject site is approximately 28 acres in size. The site consists of an undeveloped, forested property that contains forested and emergent wetland habitats (both freshwater and tidal), forested uplands and freshwater and tidal tributaries. The trees that are growing on the property consist of older growth trees combined with secondary growth tree saplings. Overall, the forested habitat is healthy ecosystem situated in an urban environment. It is important to point out that the habitat is unique in nature because it provides tidal and freshwater habitats

As per Article 24 of the Environmental Conservation Law, section 24-0105 (statement of findings) the Graniteville Wetland has the listed benefits that the Department is mandated to protect. Any impact to the wetlands and the property would greatly reduce the value that the wetlands provide and would be a violation of Article 24, section 24-0105. The following information describes the ten (10) valuable properties that the Graniteville Wetlands consist of.

This document was prepared by, Coalition for Wetlands and Forests and Professional Wetland Scientist Ericka Naklicki. The purpose of the information is to call for the preservation of the Graniteville forested wetland and raise awareness about its proposed destruction and how its loss would be detrimental to residents' safety, health, and quality of life.

### **1. Flood and storm control by the hydrologic absorption and storage capacity**

The 28 acre parcel is surrounded by impervious surface that mainly discharges toward the forested wetland and upland habitat which is an undeveloped property. As such, the habitat is serving as a stormwater storage area in which the surface water from the adjacent impervious surface sheet flows to the habitat acting as a natural stormwater storage basin. During heavy rainstorms the habitat remains flooded for extending periods of time eventually discharging to the stream (Old Place Creek) onsite or recharging back into the groundwater.

Based on the Effective FEMA Flood Maps, dated 9/5/2007, the southern portion of the site is within FEMA Flood Zone X, which is also known as the 0.2% Annual Flood Hazard Area. This means that 1% annual chance flood with average depth of flood less than 1 foot or drainage areas less than 1 square mile. Based on the Preliminary FEMA Map (not yet approved), dated December 5, 2013, the southern portion of the site is located in Zone AE with Base Flood Elevation 10'. As such, the property is prone to flooding during storm events.

The wetlands provide the following flood mitigation benefits:

- A one-acre wetland can typically store about three-acre feet of water, or **one million gallons**.
- One large tree can lift up to 100 gallons of water out off the ground and discharge it into the air in a day. (NC State)

- Trees and other wetland vegetation help slow the speed of flood waters. This action lowers flood heights and reduce the water’s destructive potential. (EPA)
- Thousands of mature trees absorb the water from storm flooding and help block the winds. This forested wetland protected thousands of homes and small businesses nearby, especially during hurricane Sandy and during other major storm events.
- Trees absorb the atmospheric pollutant CO2. Their root systems sequester carbon, thus lessening the CO2 in the atmosphere and reducing our impact on the climate.

Based on NYSDEC Sea Level Rise Mapping, the entire area will be impacted by extreme high tides and Sea Level Rise in the near future. Preserving the wetland and forest onsite will help protect the area from sea level rise, storm surges, and minimize the costs of climate change and the risks including:

- For every \$1 spent on mitigation, there is a \$4 return of avoided losses in the future. (FEMA).
- Managed retreat must also be part of this plan to protect the community from rising sea levels. Every \$1 Invested in disaster mitigation saves \$6 in spending to reduce risk, while saving lives and property.

**Soil:**

According to USDA Soil Data, the southern portion of the site is underlain by Hydrologic Soil Series consisting of poorly drained soils that accumulate a lot of surface water. Specifically, the soils are as follows:

- **PkA—Preakness mucky silt loam, 0 to 3 percent slopes**

The parent material consists of coarse-loamy outwash over gravelly outwash and/or sandy outwash. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 0 inches during January, February, March, April, May, November, December. Organic matter content in the surface horizon is about 77 percent. Below this thin organic horizon the organic matter content is about 14 percent. Nonirrigated land capability classification is 4w. This soil meets hydric criteria. The hydrologic soil group is A/D.

- **WbA—Westbrook mucky peat, sandy substratum, 0 to 1 percent slopes, very frequently flooded**

The Westbrook, sandy substratum, very frequently flooded component makes up 85 percent of the map unit. Slopes are 0 to 1 percent. This component is on tidal marshes on lowlands. The parent material consists of herbaceous organic material over loamy fluviomarine deposits over sandy fluviomarine deposits. Depth to a root restrictive layer, sulfuric, 0 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink- swell potential is low. This soil is very frequently flooded. It is frequently ponded. A seasonal zone of water saturation is at 6 inches during January, February, March, April, May, June, July, August, September, October, November, December. Organic matter content in the surface horizon is about 55 percent. Nonirrigated land capability classification is 8w. This soil meets hydric criteria. The soil has a strongly saline horizon within 30 inches of the soil surface. The hydrologic soil group

is A/D. To summarize, there are only two listed soil series onsite that are identified on the Hydric Soil List- Preakness and West Brook. Both of these soil series are located on the southern portion of the property.

## **2. Wildlife habitat (breeding, nesting and feeding grounds and cover for wildlife, waterfowl, and shore birds including migratory waterfowl and rare species such as the bald eagle and osprey)**

The 28 acre Graniteville Wetland and Forest is unique in that it has a freshwater wetland and a tidal wetland side-by-side. This creates a wide variety of environments that support animal and plant life. It acts as nesting ground for birds as well as small animals such as turtles and frogs, and larger animals such as possums and deer.

A request was submitted to the New York Natural Heritage Program (NHP) to obtain a list of rare, threatened or endangered species that inhabit the site. According to the NYNHP, the following species habitat may be on the property - Atlantic Coast Leopard Frog which is listed as a state imperiled species (rare species); and the Eastern Mud Turtle, which is listed as State Endangered.

The USFWS provides an IPaC Review of Federal Species on a property. Certain birds are protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures. The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location.

According to the website (<https://ecos.fws.gov/ipac>) the property may have the following species and/or their onsite:

Bald Eagle, Blue winged warbler, Cerulean warbler, Eastern warbler, Golden eagle, Kentucky warbler, Prairie warbler, Prothonotary warbler, Red-headed woodpecker, Rusty blackbird, Wood thrush, Piping plover (Threatened) and Roseate Tern (Endangered). It is important to note that more in-depth survey would be required by a qualified wildlife biologist to determine if these species or their habitats are onsite.

In addition, White tailed deer (*Odocoileus virginianus*) and signs of deer have been observed on the property. Although deer are not a protected species, it is rare to see deer in an urban environment. Other animals observed onsite include, opossum, skunk, chipmunks, squirrels, dragon flies, and other animals and insects typically found in woodlands along the east coast.

As described recently, the site is identified as containing Eastern Mud Turtle (State Endangered). Eastern mud turtles live in freshwater or brackish wetlands and the undeveloped sandy vegetated uplands that surround them. They prefer wetlands that are shallow and quiet, with a soft bottom and emergent vegetation. These wetlands include marshes, small ponds, water-filled ditches, creeks, and swamps. On Long Island and adjacent islands, the turtles usually occupy brackish marshes and ponds dominated by giant reed grass (*Phragmites australis*). The surrounding undeveloped sandy uplands are a critical component of suitable habitat, since they provide areas that are critical for nesting and overwintering (Soule and Lindberg 2008). A survey is proposed by a biologist hired by the property owner in the early spring to determine if the turtle exists on the

property. The Survey for the species is anticipated to begin in May and June to determine if the mud turtle is inhabiting the site, or if the habitat exists.

As such, the Graniteville wetland provides habitat to a very diverse list of animal and bird species. To impact this habitat would result in a significant loss of biodiversity to both animal and plant species.

### **3. Protection of subsurface water resources and ground water recharge**

As described in the Section 1, the wooded habitat is presently acting as a natural basin which collects the Stormwater flow from the surrounding impervious surfaces. The surface water sheet flows to the site and slowly recharges back into the groundwater. The subsurface water would be greatly impacted if the habitat onsite were to be converted to impervious surface. It is assumed that any new development on the property would redirect stormwater to a manmade basin which would direct the water to Old Place Creek. Eventually flowing offsite and not allowing the stormwater to recharge back into the ground. If the man made basin overflows, and the water does not permeate into the ground, it will flow back into the community.

### **4. Recreation**

- hunting
- fishing
- boating
- hiking
- bird watching
- photography
- camping and other uses

Since the property is private property and there is very limited public access, the site currently does not provide many recreational opportunities such as the activities listed above. However, it would be in the best interest for the State of New York DEC to offer this site as a wonderful destination for residents, visitors, and classrooms to use for recreation activities. The habitat could be used to teach students of all ages about the importance of the last remaining natural resources in the area. It would be great to create a public access walkway and/or boardwalk for passive recreation activities. This would introduce a new attraction to the community and offer an endless resource for teaching. We have a vision to protect the habitat to create a healthier and safer community. This would include New York State or the City of New York acquiring the wetland and preserving it in perpetuity. It can become a public park under either State or City jurisdiction.

5. **Pollution treatment by serving as biological and chemical oxidation basins to help in a combination of physical, chemical, and biological processes.** When wetlands are drained, their environmental benefits such as filtering water are lost as well. Wetlands act as natural filters, removing sediment and toxins from the water. As described from the Wetland Initiative, <http://www.wetlands-initiative.org/nutrient-removal> "Wetlands are able to remove nitrogen and phosphorus through a combination of physical, chemical, and biological processes. These naturally occurring processes adsorb/absorb, transform, sequester, and remove the nutrients and other chemicals as water slowly flows through the wetland. The main physical processes of nutrient removal are particle settling (sedimentation), volatilization (releasing as a gas into the atmosphere), and sorption. Sorption includes a nutrient adhering to a solid (adsorption) or diffusing into another liquid or solid (absorption). Chemical processes include transformations of nutrient forms and chemical

precipitation, in which a solid compound is formed out of a liquid through a chemical reaction. The main biological processes are uptake (or assimilation) by plants, algae, and bacteria and transformation processes conducted by microbes. All of these processes occur throughout the different wetland compartments, which include water; biota (plants, algae, and bacteria); litter; and soil.”

Storm water runoff from urban areas can contain significant concentrations of harmful pollutants that can contribute to adverse water quality impacts in receiving streams. Effects can include such things as beach closures, shellfish bed closures, limits on fishing and limits on recreational contact in waters that receive storm water discharges. Contaminants enter storm water from a variety of sources in the urban landscape. Since the Graniteville wetlands receive stormwater flow from the surrounding impervious surfaces, there could potentially be pollutants found in the stormwater as described in the Terrene Institute’s *Fundamentals of Urban Runoff Management* (Horner et al, 1994), pollutants associated with urban runoff potentially harmful to receiving waters fall into the categories listed below:

- Solids
- Oxygen-demanding substances
- Nitrogen and phosphorus
- Pathogens
- Petroleum hydrocarbons
- Metals
- Synthetic organics.

It is also important to point out that there could be potential gas releases from the gas station and spills from the cars in the parking lots that will runoff into the creek and Arthur Kill. These pollutants degrade water quality in receiving waters near urban areas, and often contribute to the impairment of use and exceedances of criteria included in State water quality standards. The quantity of these pollutants per unit area delivered to receiving waters tends to increase with the degree of development in urban areas.

The wetlands onsite aid in filtering the pollutants as they recharge to the groundwater. The wetlands onsite provide an important resource to the neighboring residences such as:

- Wetlands provide an array of ecosystem services: filter water from runoff, rain, and flooding.
- The sponge like earth holds back pollutants that would otherwise enter the bodies of water nearby.
- Since the Staten Island Expressway, Newark Airport and the chemical treatments plants in Elizabeth NJ, just across the bridge are close, the forest benefits the community by sequestering air pollutants. Graniteville has one of the highest rates of cancer and asthma on the Island.
- The North Shore of Staten Island is an environmental justice community. Our communities are majority black and brown and suffer from “multiple, disproportionate environmental health burdens” and “limits to effective participation in decisions” about environmental issues. (EPA)

## **6. Erosion control by serving as sedimentation areas, filtering basins**

Wetlands are filters for water coming off the land, reducing sediment and chemicals in runoff before it gets into open water. Vegetated wetlands adjacent to rivers can protect against erosion caused by

waves and flooding along the shorelines during floods and storms. Wetland plants are important because they can absorb much of the energy of the surface waters and bind soil and deposited sediments in their dense root systems. The Graniteville Wetlands and upland forest play a very important role in protecting the habitat from soil erosion and reducing sediment from entering our waterways.

**7. Protection of channels and harbors by absorbing silt and organic matter**

Similar to the response in number 6 above, the wetlands onsite serve as a basin to protect the downstream Arthur Kill and other channels by absorbing silt and organic material. If the freshwater wetland and forest are destroyed, the tidal wetland will be significantly affected, and the Arthur Kill will ultimately be polluted. The trees are acting as a barrier and protecting the habitat. If the wetland is replaced by commercial development, 1,800 mature trees will be removed, and it will take decades for the 2,200 newly planted trees to fully mature. Young trees will not be able to mitigate flooding and air pollution.

**8. Education and scientific research by providing readily accessible outdoor bio-physical laboratories, living classrooms and vast training and education resources**

There is a long list of education and scientific research opportunities that would be provided at the site. It would be extremely beneficial to the community if the New York State Department of Parks and Recreation or the City Department of Parks and Recreation purchased the property, as a capital project that is funded by the city council. Or the state government or city government could purchase the property and donate it to the parks agencies. The site could be used to educate the public about the value of wetland habitats. A public access trail and/or boardwalk could be constructed to allow safe access to the site. The public could identify the trees onsite, people could occupy the site for birdwatching and other passive recreation activities, and the schools could use the site for outdoor classrooms and education resources. This is one of the last remaining green spaces in the area which could provide the surrounding community with a variety of opportunities to get out and enjoy the benefits of nature in an urban environment. It could bring a community together, help combat obesity by providing a natural area to go for walks and could get people outside to enjoy a nice walk in the woods.

**9. Open space and aesthetic appreciation derived from the fact that they are often the only remaining open areas along crowded river fronts and coastal Great Lakes regions.** This wetland is the only open green space in Graniteville other than a school playground for young children.

The Graniteville Wetland which is 28+ acres in size is one of the last remaining open space forested habitats in the community. Keeping the site as public open space would increase the value of the property and provide the public a green space to use to escape from the urban environment.

According to Census data, four of Staten Island's five poorest zip codes are on the North Shore. The Garden State's petrochemical alley is located across from Arthur Kill, which has produced odd smells and pollutants for decades. The North Shore is as one of 10 charter members in the Environmental Justice Showcase Communities program. The program targets communities with "multiple, disproportionate environmental health burdens" and "limits to effective participation in decisions" about environmental issues, according to the EPA's web site. According to EPA, Graniteville is an Environmental Justice community and there are 21 toxic sites on the North Shore.

**10. Sources of nutrients in freshwater food cycles and nursery grounds and sanctuaries for freshwater fish**

Graniteville Wetlands and Old Place Creek provide a variety of nutrients for the freshwater food cycles for freshwater and tidal (brackish) fish and other aquatic species. The appearance, character and function of wetlands vary depending on the depth of the water, length of flooding and characteristics of the surrounding land. The different types of wetlands provide a unique array of habitats for many species of wildlife (Table 2).

Wetlands which do not contain standing water all year still provide valuable wildlife habitat. The vegetation growing around the wetland edge serves as food and cover for many wildlife species, particularly during migration.

As an example, many small aquatic invertebrates are produced during the wet spring period. They survive the dry months by going into a dormant stage. These invertebrates hatch the following spring when the wetland contains water. The hatching usually coincides with migratory waterfowl's northward journey.

Shallow water wetlands, which hold water throughout the year, contain emergent, submerged and floating vegetation throughout most of the marsh. The vegetation supports a variety of wildlife species (Table 2).

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**Table 2. Benefits To Some Common Wildlife Species Provided By Wetland Vegetation**

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Type	Plants around wetland edges	Emergent, submerged and floating vegetation in shallow water areas
Requirement:	Food and Cover	Food and Cover
	rabbits	waterfowl & broods
	quail	muskrats mink otters fish insects
	pheasants song birds	song birds: red-winged blackbird,

Hydrilla

common yellow throat, marsh wren

Submerged and emergent plants around the edges and shallow areas of deep water wetlands, provide food and cover for wildlife. In addition, the deep water area (Old Place Creek) may furnish a suitable habitat for fish and often offers a source of recreation such as fishing, canoeing and swimming.

## Conclusion

Together we feel that preserving the Graniteville Wetlands and forest would be in the best interest of the community as a whole and the City and State. The forested freshwater and tidal wetlands and uplands onsite provide a wealth of values for the community, animals, plants, air, and flood protection. Destroying the wetland will be an enormous problem for the community when catastrophic storms occur in the not too distant future. Without the wetland to absorb the water, twice daily high tides could flood into the surrounding neighborhoods, worsening with the coming decades. This is projected as a risk in the year 2020 by NY City Planning, Flood risk Mapper.

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