View looking north along the multi-use greenway path from the 211th Street entry area

Program and Recreational Resources

Visitors are drawn to the park for a variety of active and passive outdoor recreational activities. While some park users come from the greater region, such as those wishing to use the remote control racecar track at Fort Knox Park or to paddle the river, the park primarily functions as a neighborhood park. Throughout the participatory design process, residents from the densely-populated neighborhood just east of the park voiced that they have come to regard this natural place as their community park. Many residents of the single and multi-family units directly facing the park have formed an even more intense connection to the park and have come to think of the open space as their own front yard. Neighborhood ties to these parks are easily understood when considering that, collectively, Shoelace Park and Fort Knox Park make up almost half of the open space within the defined Community District (excluding Woodlawn Cemetery.)

Large expanses of sloped lawns are commonly used for informal gatherings, “pick-up” field games, and sledding during the winter months. Visitors also utilize flat areas of lawn for picnics and grilling with the use of portable BBQs. Both the linear configuration of the park and the reuse of the original parkway road-bed have resulted in the development of an extensive path system that runs the full length of the park through various terraced areas. These paved paths — including a rare one-and-a-half mile length of path uninterrupted by street crossings — are routinely used by cyclists, joggers, dog-walkers, and nearby residents for strolling.

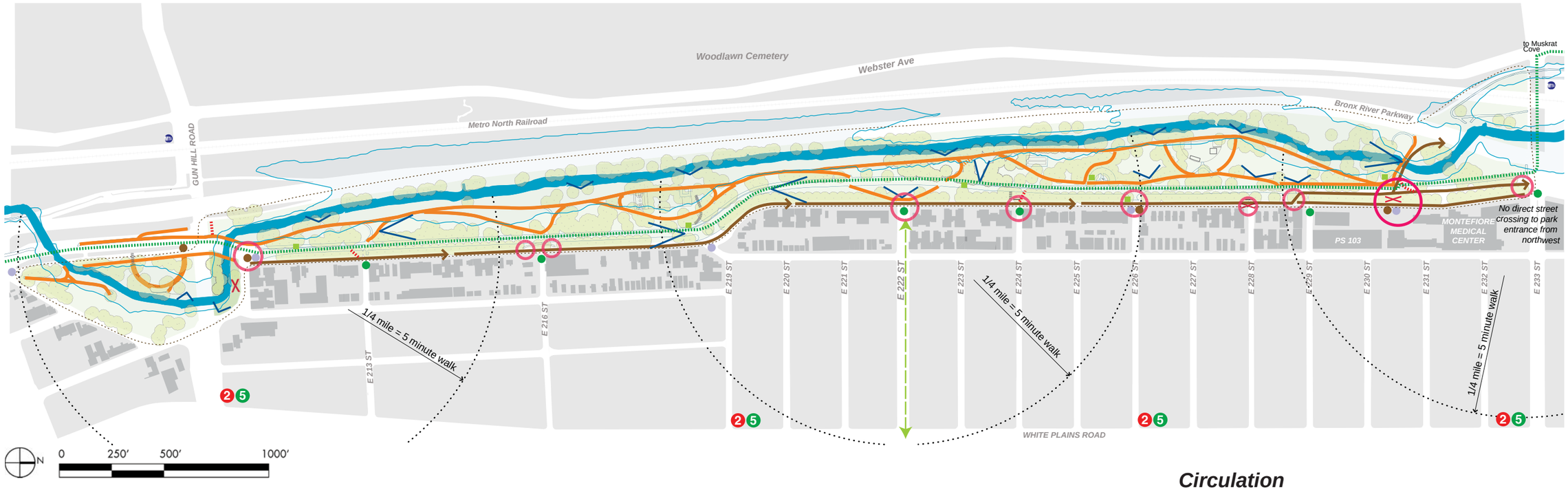
The multiuse path has also been used by many organizations for various athletics and training in a car-free zone. Bike New York offers Learn-to-Ride clinics in the park and many other organized bicycle rides traverse the park including the New York City Century Ride, Tour de Bronx, and Pedal and Paddle Day. Athletes from nearby schools have also been known to train in the park, including a cycle club at Bronx Lab School and runners from Fordham University.

Over the years, fitness stations have been located throughout the park. Many stations have recently been removed due to degradation related to flooding and normal wear and tear. The stations were previously used in concert with the path system to create a circuit of outdoor fitness and athletic training. Seating is provided adjacent to pathways throughout the park and in grouped arrangements within the multiple plazas located within the park.

Two large playgrounds and a basketball court are well used by school children during the weekdays and neighborhood families during afternoons, evenings and on weekends. Each of the playgrounds has a comfort station with restroom facilities and a small maintenance office. A bocce court constructed in the 1960s has since gone largely unused, as community demographics have changed.

A popular activity with young adults and their families is found in Fort Knox Park between the river and Bronx Boulevard. Scale-sized replica cars are raced at an informal track and the remote-control racecar enthusiasts have activated this somewhat isolated section of parkland.

Frequent group boat outings organized by the Bronx River Alliance are launched at the 219th Street boat launch. Mosholu Preservation Corporation also regularly uses the boat launch at Fort Knox West.



Circulation

The existing circulation within Shoelace Park consists of several types of paths and some vehicular circulation routes for Park Department maintenance vehicles. There are also points of connection with the Bronx River Parkway and city streets.

Pedestrian Circulation

The historic road-bed of the Bronx River Parkway is used as a multi-use path through the park. The approximately forty-foot-wide path is occasionally subdivided by raised curbs that act as small medians. As an abandoned road-bed, the asphalt pavement gives few visual cues that is a pedestrian path and is in poor condition. A series of seven foot-wide asphalt paths run through the park. These are also in a state of disrepair with damage caused by extensive stormwater runoff. Additionally there is a seven foot-wide wide asphalt path that is adjacent to the river's edge.

Additionally the connections to the Bronx River Greenway at the southern and northern borders of the park are not clear. There is also not a clear pedestrian connection between Fort Knox Park and Shoelace Park, or between Fort Knox East and Fort Knox West although capital projects in development aim to formalize these connections.

Vehicular Circulation

The New York City Parks Department and emergency vehicles occasionally use the multi-use path and the continuous water's edge path for maintenance purposes and access to the boat launch at 219th Street. There is emergency vehicle access at 211th Street, 226th Street, 230th Street, and the path near the northwest corner of Fort Knox West. There is no clear signage on any of the paths to demarcate pedestrian and vehicular uses.

Circulation

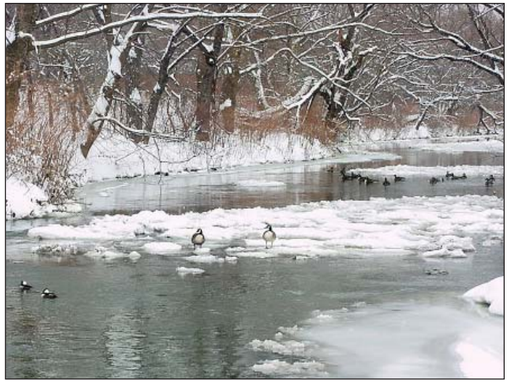
Legend

- Project Boundary
- Bronx River
- 100 Yr. Floodline
- Park Entrance
- ADA Access
- Vehicular Access
- No Direct Park Access
- Viewshed
- Vehicular Road
- Proposed Bronx River Greenway
- Pedestrian Path
- Desire Path
- Stairs
- Pedestrian/Vehicular Conflict Areas
- Proposed Bikeway Connection
- 2 MTA Subway/Train Services

An invasive species, Japanese knotweed, dominates large areas of shoreline and limits open views of the water

Fencing at native restoration planting areas is instrumental in the success of plant development but requires routine maintenance

Mature trees located within the park help signal the edge of the parkland and counteract poorly defined park entrances as seen from uphill



Views of open water during the winter months remain a defining element of the park

Visual Qualities

During the public outreach process, many community elders shared their stories of the parkway relocation from its historic alignment to its current location west of the river; through this reconstruction the gentle meander of the river was straightened. Despite this change, the common theme for every person, be they young or old, was the beauty of the flowing river and the exceptional perspective that it offers to park visitors. A view from the parkway bridge near 229th Street provides an example of that perspective.

Today, there are a number of issues related to barriers to visual access to the river and visual qualities within the park:

- Significant colonies of invasive species contribute to the creation of a vegetative wall that closes off views to the water from much of the eastern bank during spring, summer and fall months.

- Previously completed native restoration planting areas at the river banks are off-limits to foot traffic and have been enclosed by a variety of restraints, including wood picket snow fence, wire mesh fence, and hedge rails constructed with wooden posts with plastic chains. While restricted access has been instrumental to the success of new restoration plantings, the visual inconsistency of fencing types, combined with the need for ongoing maintenance, has resulted in an edge condition that often looks unkept.

- 'Cobra head' pole lighting is located along the western side of the mulit-use greenway path. Replacing the existing lights with lower pedestrian-scale lighting can add visual consistency to this promenade and enhance safety.

- At existing riverbank overlook areas, portions of the eastern bank and the adjacent riparian zone do not have understory vegetation. This allows the river to be seen and physical access to the water's edge is possible. However, with the exclusion of the two boat launch areas, none of the existing openings are maintained for overlook purposes. Additional informal overlook areas have been established by park users who have created desire lines down to the water's edge in multiple locations.

- As one approaches the park from the uphill neighborhoods north of Gun Hill Road, the long western view across Bronx Boulevard toward the park is dominated by concrete barrier walls placed by the NYC Department of Transportation (NYCDOT) for safety purposes. Currently there are six such entrances. When one stands at the barriers and faces west toward the Bronx River, the high elevation along Bronx Boulevard affords open views across the pastoral landscape to the woodland edge nearest the river. However, the river can only be seen in winter months from this vantage point and in a few areas where the vegetation is not dense in summer.

A stand of mature white pines help divide areas of open lawn near the south end of the park and create visual interest

Large areas of lawn create open views across the parkland and promote the visual connection between higher and lower areas of the park

Long views down the multi-use greenway path are a defining visual element of the park

The historic bridge at Gun Hill Road

There are a number of very appealing built and natural features located throughout the park that help define the sense of place and are to be retained:

- The river remains the dominant natural feature of the park and people naturally gravitate towards it. Views of the water from bridges and open streamside views, especially during the winter months, allow people to see and experience the river.

- Significant stands of mature specimen trees frame the edges of the park, define smaller spaces within the overall open space and act as objects of visual interest unto themselves.

- Gently undulating areas of open lawn provide expansive open views of the park itself and allow more direct sunlight than densely wooded areas. Located adjacent to more densely planted naturalized areas, they serve as a visual cue, inviting park visitors to occupy the space by promoting a sense of safety.

- The continuous multi-use greenway path located along the high ground within the park provides a unique uninterrupted vantage of a promenade that is the primary domain of pedestrians, cyclists and skaters.

- Three historic bridges crossing the Bronx River adjacent to the park are architecturally distinct. They include the bridges at Gun Hill Road, 211th Street, and the Bronx Parkway North onramp. These structures provide visual interest when seen from below and offer unique vantages of the water from above.

Slope Percentages within Parkland

Slope Categories	*Percent of Park*
Shallow *(0-5%)*	*24%*
Moderate *(5-10%)*	*20%*
Steep *(10%-32%)*	*44%*
Very Steep *(33% and greater)*	*12%*

Paths over 5% need handrails to be ADA compliant
Ramps that comply with American with Disabilities Act standards can not exceed 8.33% & require landings every 30'

Stormwater Runoff and Erosion

Several factors contribute to severe erosion within the park: the severity of slopes, the low elevation of the park relative to the contributing watershed, and the ultra-urban conditions of the watershed with its high percentage of impermeable surfaces. Almost all of the stormwater runoff, excluding what falls within the parks, enters the park from the upland residential neighborhoods to the east, along Bronx Boulevard and Duncomb Avenue. At multiple locations, the areas of raised concrete curb that define the park boundary along the western side of Bronx Boulevard have been damaged or 'blown-out', creating pinch points where unmanaged concentrated runoff enters the park. Once within the park, runoff flows down slopes and over paved surfaces before continuing along the edge of paved paths that cut across slopes, degrading pavements, depositing sediment, and scouring non-paved areas. Flooding and ponding on paved surfaces also occurs in areas where pavements are damaged or not sufficiently sloped to shed runoff. Unmanaged runoff is not only detrimental to the health of the river but is responsible for the creation of hazardous conditions at park paths that require routine maintenance to uphold the New York City Department of Parks & Recreation (NYCDPR) Parks Inspection Program standards. Damage from runoff is often most severe at the convergence of downhill park paths and riverside park paths in the lower elevations of the park. In steep non-paved areas, especially where the shade from mature trees has suppressed understory vegetation, concentrated surface runoff has created severely eroded channels on the slopes. The sediment carried by surface runoff is routinely deposited on paved lower park paths and carried into the river.

River Channel Restoration

The channel conditions for the portion of the Bronx River that runs through the park is typical of a highly altered river in an ultra-urbanized watershed. The channel has been straightened from its once meandering course and is confined by the parkway on the west and by the programmed park on the other side. There is relatively little in-stream cover and low in-stream habitat diversity. The channel bed is homogenous, consisting of predominantly sand, with two riffles located at the upstream and downstream ends of the park at approximately 229th Street and 213th Street. The overall longitudinal profile of the channel in the park is very low and the side slopes of the channel are relatively steep. The steepness of the bank slopes is exacerbated by the dominance of invasive Japanese knotweed, which grows along the tops of the banks and has limited the establishment of native woody riparian species that would grow lower to the water line and create a more thoroughly vegetated bank. All of these geomorphologic conditions further complicate efforts to improve channel habitat and native vegetation populations within the floodplain.

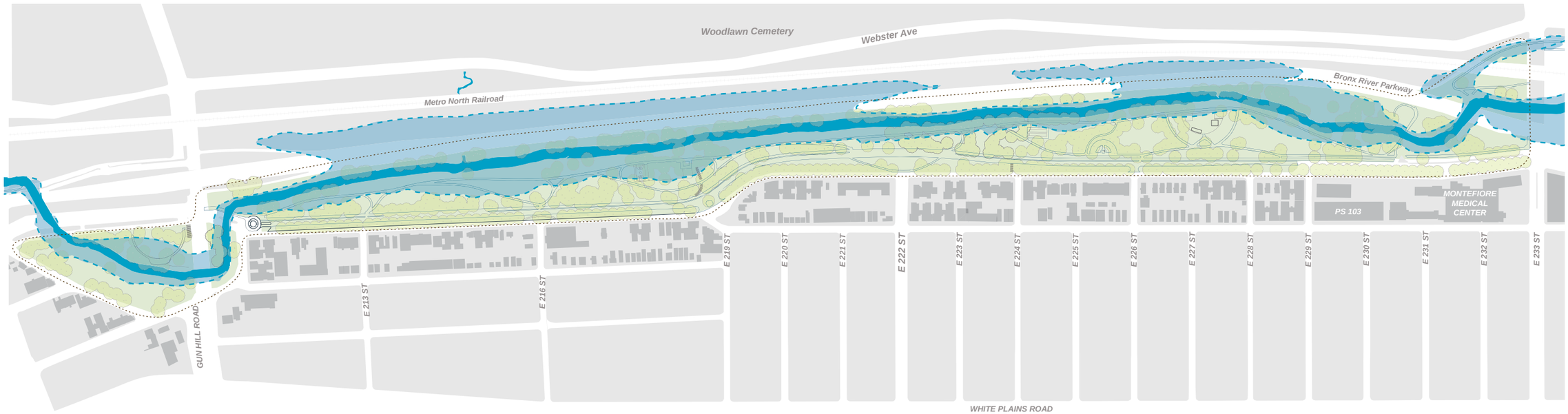
Built structures such as bridge abutments constrict the channel and have altered hydraulics and indirectly contributed to adverse upstream and downstream conditions, including scouring and high sediment deposition. To prevent scour, the channel sides have been armored with large rocks adjacent to the bridges and roads constructed over half a century ago. In 2001, four boulder veins were installed in the eastern side of the channel within Shoelace Park to increase the hydraulic variation in the channel and attempt to force a scour pool and deflect flow towards the center of the channel. These structures were found to have only a local impact on the channel bed topography, and through the added boulder obstructions created cover where there was none, and a way to get closer to the water, they did not scour large pools in the channel bed.

Previous efforts to restore native riparian vegetation along the banks by the Bronx River Conservation Crew and the NYCDPR Natural Resources Group included staking coir logs at the toe of the bank to try to narrow the low flow channel by installing a sediment trapping structure that could be vegetated, and terracing the banks to facilitate planting. Log cribbing has also been used in two locations to stabilize channel slopes and prevent erosion associated with overland runoff. The channel bank restoration efforts in particular have shown mixed results, potentially because many of the planted areas have reverted to dominance by Japanese knotweed or Japanese hops. Areas on the west bank where the channel side slopes are particularly steep and difficult to access are especially difficult to plant and maintain, and are frequently colonized by invasive species. Flood-related deposition of sediment carrying exotic seeds and propagules (i.e., Japanese knotweed can take root from pieces of rhizomes or stems) has further led to a disturbance regime favoring the spread of invasive species.

Deterioation of raised curb and slope erosion at Bronx Blvd.

Erosion of asphalt paths at low point in lower terrace area

Channel bank restoration with dominant invasive species



100-year Flooplain

Legend

- Project Boundary
- Bronx River
- 100 Yr. Floodline

40% of the park landscape is within the 100-year floodplain. Built structures such as playgrounds and comfort stations are regularly inundated.

Fort Knox West in flood, Spring 2007

Lower Shoelace Park during Spring 2007 flood

Floodplain Resource Management

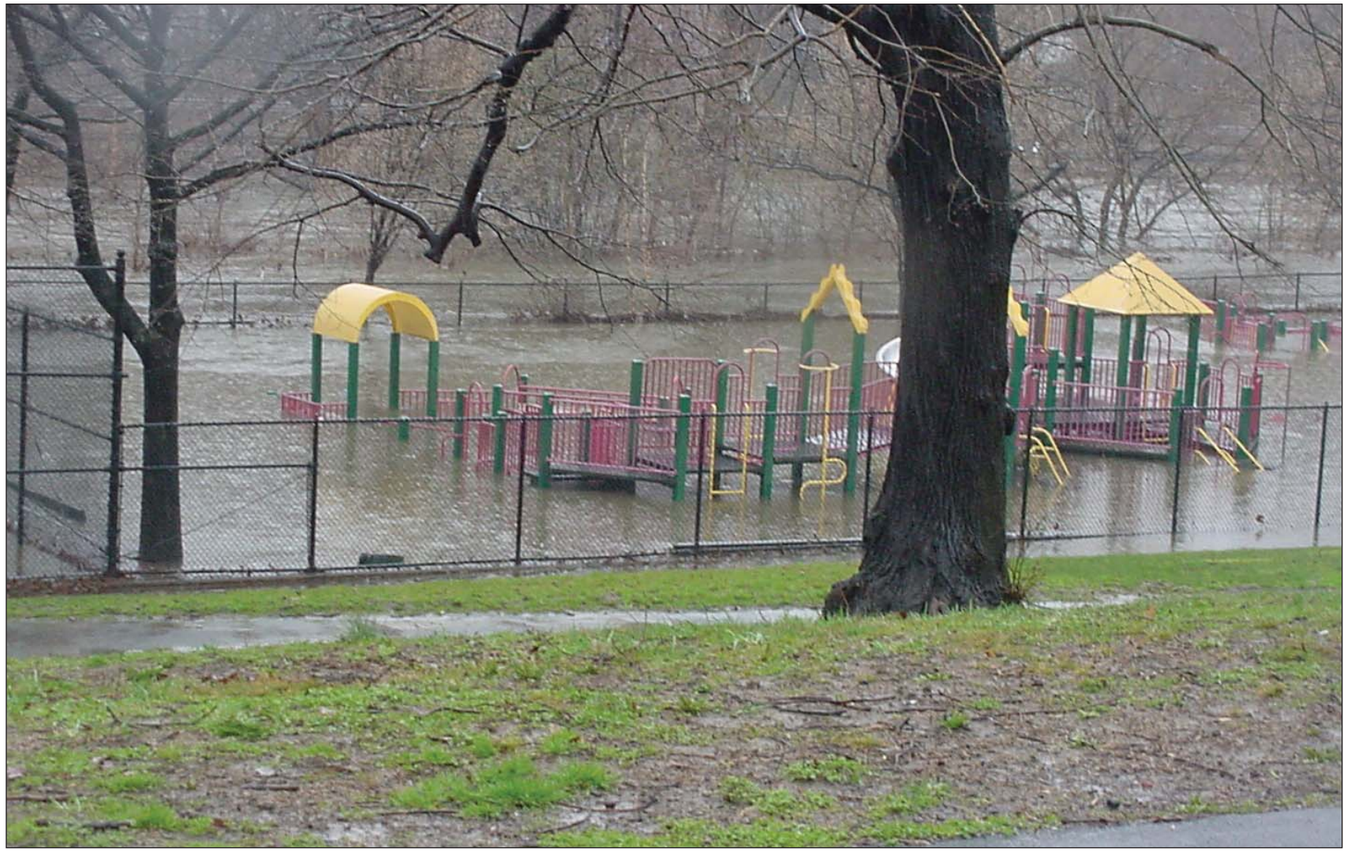
The widest, lowest floodplain along the Shoelace Park reach is limited to an area of the river at approximately 216th Street. Elsewhere, the channel valley and floodplain are narrow. Due to these narrow conditions, the flashy flow regime, and the rapid transition to upland, a majority of plants located within the 100-year floodplain are facultative upland species rather than wetland species. There are no officially mapped wetlands within the park.

Decades of watershed development and other anthropogenic disturbances have led to the proliferation of invasive plant species along the banks of the Bronx River, including Japanese knotweed (*Fallopia japonica*), Japanese hops (*Humulus japonicas*), Lesser celandine (*Ranunculus ficaria*), and Purple loosestrife (*Lythrum salicaria*). Japanese knotweed is the most prevalent invasive species found within the park. Spreading by rhizomes, this invasive herbaceous plant thrives in direct sunlight and has colonized much of the floodplain. These invasive species displace native riparian plant communities, thereby impacting riparian habitat through reduction in recruitment of native riparian species. Additionally, increases in invasive species result in changes in the organic material entering the channel and the delivery of large woody debris in the channel, both of which can change the habitat value and structural configuration of the channel bank over time.

A detailed and coordinated *Riparian Invasive Plant Management Plan*, currently being developed by New York City Department of Parks & Recreation Natural Resources Group (NYCDPR NRG), the Bronx River Alliance, with assistance by the New York Botanical Garden will allow more effective use of limited resources. This plan will build on the recommendations of the Shoelace Park Master Plan.

Vegetation restoration efforts to date have increased the native forested wetland species population, but constant pressure from invasive species continues to be a serious problem and threatens restoration projects along the river for the following reasons:

1. Ongoing stressors, such as hydrologic disturbance, erosion and sedimentation favor exotic invasive species
2. Organizations that manage the land along the river – NYCDPR NRG, the Bronx River Alliance, the New York Botanical Garden, and the Bronx Zoo Wildlife Conservation Society (WCS) – currently lack the resources to implement a sustained, intensive level of invasive plant removal along the entire riparian corridor
3. Invasive species seed source is virtually impossible to eliminate



Olinville Playground in Flood, Spring 2007

Woody vegetation growth rate analysis was conducted to determine the approximate size of species that are believed to be alive in the park today as represented in the last completed survey (NYCDPR, 1990)

Canopy Vegetation

Legend

SPECIES	CALIPER (DIAMETER AT BREAST HEIGHT) <6"	6"≤DBH<18"	18"≤ DBH
ASH			
BEECH			
BERRY			
DOGWOOD			
ELM			
FIR			
LOCUST			
LONDON PLANE			

	<6"	6"≤DBH<18"	18"≤ DBH
MAPLE			
OAK			
PINE			
SWEET GUM			
SYCAMORE			
WILLOW			
BASSWOOD			
UNIDENTIFIED			

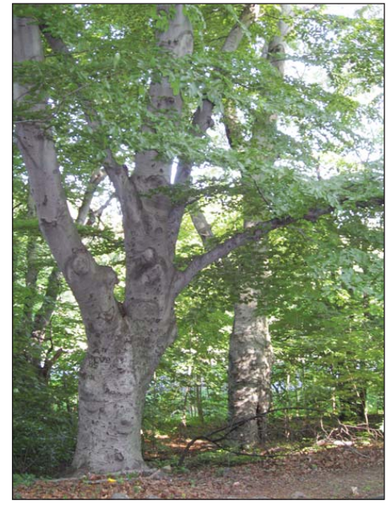
Vegetation

There are currently two dominant landscape typologies within the park, each with their own visual qualities and maintenance regimes. The first landscape type is Pastoral, established during the creation of the historic Bronx River Parkway from 1907 to 1925. The pastoral landscape type became prevalent as parkways were built throughout America, and over time has become ingrained as a distinguished twentieth-century vernacular landscape. The line of majestic Oak trees along the historic parkway road-bed stands as a reminder of the parkway project and its distinctive historic landscape. Mature trees, many with calipers up to 48" diameter at breast height (dbh), are located in a less formal arrangement within generous lawn panels. Fewer large trees are found closer to the river's edge. This pastoral landscape typology dominates the park at higher elevations.

The second landscape typology is the Upland Forest. It is located within the riparian corridor and much of it is within the 100-year floodplain. Over the last decade, this zone has received a high level of management, primarily from the Bronx River Conservation Crew, through the planting of native species including both canopy trees and understory plantings. However, these same areas have been plagued by constant pressure from invasive plant species. Japanese knotweed (*Fallopia japonica*) and Japanese hops (*Humulus japonicus*) have colonized vast regions within this area. Other common invasive species, such as Garlic mustard (*Alliaria petiolata*) are present, though in lower quantities.

Row of historic Oaks in southern section of Shoelace Park

Pastoral lawn area



Stand of mature Beech trees near 233rd Street

Many trees planted during the original parkway development have matured and can still be seen in the park today. Species include Ash, Beech, Linden, Maple, Oak, Sycamore, and Willow. A historic parkway survey from 1934 shows the row of Oak trees lining the original parkway road were 4-6" caliper trees. A survey from1995 shows these majestic markers had grown to 36-42" average caliper. Many of these same trees exist along the historic parkway alignment today, seventy-five years later.

Additional Resources:

Bronx River Greenway Plan, Bronx River Alliance, www.bronxriver.org/plans

Bronx River Design Guidelines are included in the Bronx River Greenway Plan and are available on the same webpage: www.bronxriver.org/plans

Bronx River Ecological Restoration and Management Plan, Bronx River Alliance, http://www.bronxriver.org/puma/images/usersubmitted/greenway_plan/

Bronx River Greenway Signage Master Plan, available upon request - see contact information below

Urban Riparian Wetland Restoration Evaluation: A Case Study for the Bronx River, Natural Resources Group, City of New York, Department of Parks & Recreation

Native Species Planting Guide for New York City and Vicinity, Natural Resources Group, City of New York, Department of Parks & Recreation

For more information, please contact the Bronx River Alliance
at 718.430.4665 or via email: bronxriver.info@parks.nyc.gov

For more about the Bronx River Alliance, see www.bronxriver.org