

NEW YORK CITY'S HIGH PERFORMANCE PARKS AND LANDSCAPE RENEWAL

Commissioner Adrian Benepe presents plans by the NYC Department of Parks and Recreation for the future of New York City's public open spaces, featuring the new *High Performance Landscape Guidelines*.

Climate change, air and water quality, the urban heat island effect, and public health loom as major challenges facing cities of the 21st century. Urban parks are well positioned to address and help solve these challenges. Within New York City, 14 percent of the land is owned and managed by the NYC Department of Parks and Recreation, providing the agency with a unique opportunity to transform the City.

High Performance Landscape Guidelines: 21st Century Parks for NYC – a comprehensive, design-focused manual for sustainable design, construction, maintenance, and operations of parks and open spaces – proposes radical changes for how this 14 percent of New York City is designed and managed. It is the first document of its kind in the nation. The ideas housed in these Guidelines will foster a new generation of urban green infrastructure that supports a larger movement within New York to improve environmental quality simultaneously with quality of life.

There is committed political and community support for using progressive design principles to solve these problems. Mayor Bloomberg has championed these efforts through his office's PlaNYC, a 25-year vision addressing the challenges of a growing city while improving urban experience. This doc-

ument began as a master plan for the City, but authors quickly acknowledged that no successful plan could be created without addressing larger issues of climate change and environmental functionality. The plan, released in 2007, included initiatives for increasing open space access for all New Yorkers, improving water quality, and planting one million new trees. Many focused documents and guides arose in the wake of PlaNYC, including the Parks Department's own Guidelines.

The High Performance Landscape Guidelines are actually the third in a series of guidelines created by a partnership between the City of New York and the New York-based non-profit Design Trust for Public Space. The pairing of City agencies with a non-profit allowed for the project to blossom. The City had a distinct need for a visionary document that captured the innovations and institutional knowledge housed within the agency, but lacked the structure and funding to take on the project alone. The Design Trust for Public Space offered a proven model of employing experts to guide and author the document, as well as the fundraising capabilities to support them. In addition, the Design Trust had the past experiences of shepherding two other guidelines to fruition: the *High Performance Building Guide-*

lines and the *High Performance Infrastructure Guidelines*, released in 1999 and 2005, respectively. These documents impacted both City policy and the built environment.

However, it was the unique structure and potential of the Parks Department that made the creation of the third in the series so crucial and relevant. The Parks Department is the sole City agency that acts as landowner, designer, and steward. This allows the agency to make decisions about how landscapes are built and maintained, and then follow through with the execution of construction and maintenance goals. Combined with the scale of its landholdings, it allows the Department to substantially impact the city as a whole.

The Guidelines' innovative design, construction, and maintenance strategies will clean water and air, increase biodiversity, lessen the burden on combined sewer systems, reduce the urban heat island effect, improve public health, and reduce energy usage. These new park designs will do all that while increasing amenities New Yorkers rightfully demand from their public spaces – points for gathering, pedestrian and bicycle paths, recreation areas, and verdant settings. These parks should not be thought of as simply "natural" landscapes, because typically every element of



Freshkills, designed by Field Operations, will be a new jewel in the crown of New York's open spaces. Transforming a landfill on the water into a public open space will create a high-performance 21st century park that is three times the size of Central Park.



The projects in the Bronx River Watershed bring systems-based thinking to the management of New York's public open spaces, and renew the life of the Bronx River.

high performance landscapes – the soils, the plants, the water levels, the installations – are as precisely engineered as a new bridge or road. High performance landscapes must be meticulously planned and seasonally orchestrated to get the most out of a limited parcel of land. They also require thoughtful, skilled, and ongoing evaluation and maintenance.

Systems thinking about green infrastructure: the Bronx River watershed. The Guidelines consider all parks to be an integrated system, or network, of spaces that function in partnership to enhance citywide environmental quality. Considering these factors at the landscape scale rather than as individual parks maximizes the opportunities for positive impact and citywide success.

The Bronx River watershed, including 1,500 acres of New York City parkland, is an example of how a systems-based approach can change the landscape. Through the work of the Bronx River Alliance and a consortium of over 100 partners within New York City and communities upstream, the Bronx River corridor is being transformed from a polluted and neglected waterway into a thriving and healthy chain of natural areas and recreational sites. In doing so, the river has also become accessible to a community rediscovering its existence, fighting for its renewal, and now using it for recreation and education.

This work ranges from habitat management to engineered green infrastructure. A fish passage is being installed over a historic dam along the Bronx River. This fish ladder will create physical conditions allowing alewife, a herring that spawns in freshwater but has been in decline for decades, to migrate upstream. By helping to create access to upstream habitat, the City is contributing to regional efforts to protect and conserve these amazing fish. Shoe-lace Park, which runs adjacent to the Bronx River, was designed for more urban green in-

frastructure. Designed by Parks Department staff with Matthews Nielsen Landscape Architects, the park now captures stormwater from the street along a swale following an old asphalt road within the park. The 440-foot long and 8-foot wide swale was designed with a high pore-volume gravel storage layer on the bottom and soil filter and growth medium on the top.

But beyond such current efforts in environmental restoration and remediation, there are additional green infrastructure opportunities throughout the watershed that are vital to the long-term health of the river. Green infrastructure could continue to transform the Bronx River watershed and surrounding neighborhoods. This includes water and soil quality improvements, street tree plantings, green roofs, park bio-retention systems, waterway daylighting, roadways converted from pavement into green spaces filled with shade and flowering trees, shrubs, and ground cover. Green infrastructure planning, conducted by the Parks & Recreation staff, could increase connections between disparate efforts by emphasizing landscape and habitat connectivity. In 2011 Parks & Recreation, the Bronx River Alliance, and Westchester County published the Bronx River Intermunicipal Plan to lay out a new vision for coordination and cooperation throughout the entire Bronx River watershed. This planning effort consulted with the Department of Environmental Protection (DEP) to incorporate elements of the Green Infrastructure Plan, and now the Bronx River watershed will serve as a model for DEP-funded green infrastructure projects. In addition, the City's *Vision 2020* plan brought a new emphasis to green infrastructure and other elements necessary to water quality, influencing – as well as influenced by – the Intermunicipal Plan and similar initiatives across the City.

These opportunities are especially welcome in the Bronx, which has one of the highest asthma

ma rates in the United States. Through a systems approach to green infrastructure, it is estimated that 9.4 percent of stormwater runoff from impervious surfaces within the watershed could be captured. This would come close to reaching the DEP's long-term Green Infrastructure goal of managing runoff throughout New York City from 10 percent of impervious surfaces through detention and infiltration.

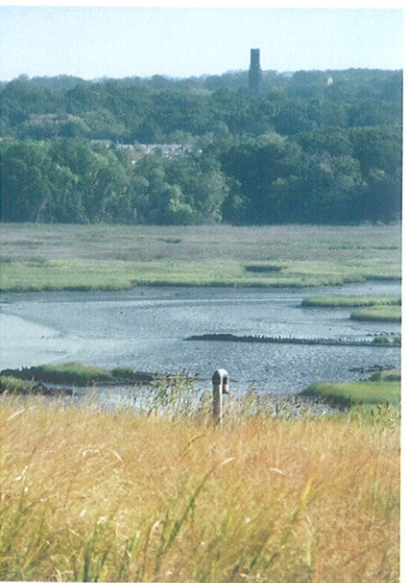
Throughout the Bronx River watershed, these interventions could retain over 260 million gallons of stormwater per year, with over 375 Olympic-sized swimming pools worth of water diverted from the sewer system. This helps to reduce sewer overflows during rainstorms, the primary contaminant for the river, improving water quality. However, green infrastructure does more than capture stormwater. Cumulative benefits to the neighborhood would include the transformation of almost 70 acres from pavement to pervious surfaces and planted areas, an area the size of 13 blocks in Manhattan.

Building the new 21st century parks: Freshkills Park. When considering potential 21st century parks, previously overlooked or neglected sites, including roadway medians and rooftops, abandoned railway tracks, and former industrial areas must be included. These areas offer some of the more exciting opportunities to become new parks because they are some of the last remaining undeveloped spaces. Taking advantage of them enhances quality of life at the same time as it removes undesirable land uses. Achieving this on a large scale creates a transformative neighborhood benefit.

Freshkills Park is a stunning example of the need to address these issues as well as the advantage of these types of sites. A former landfill site of 2,200 acres, Freshkills will be almost three times the size of Central Park, and the largest park to be developed in New York City in more



Bronx Concrete Park Plant, designed by James Mituxus, Barretto Park, designed by Ricardo Hinkle, are key projects in the Bronx River Watershed to create high-performance public spaces out of areas that were previously underutilized.



of Freshkills enables the creation of a new open
New York, with the transformation of a literal junk-
a vital space for recreation and remediation.

than 100 years. The park exemplifies the values and aspirations of contemporary New Yorkers, not just by providing a diversity of recreational opportunities uncommon in the City – mountain biking, trail running, kayaking, horseback riding – but also by emphasizing environmental restoration, sustainability, and a renewed public concern for our impact on the earth. The transformation of what was the City's biggest landfill – a reminder of wastefulness, excess, and environmental neglect – into a productive, vital, beautiful, public cultural destination is a powerful and hopeful symbol of renewal and an expression of how society can help restore the proper functioning of the landscape. The department of sanitation is already harvesting methane from the landfill's decomposing garbage – enough to heat some 22,000 homes – and, by selling it back to the grid, generating approximately USD\$12 million in annual revenue for the city.

Freshkills Park will be the ambassador of a new era of park design and operations in New York City. Based on a masterplan and initial projects designed by the landscape architecture firm Field Operations, the park will implement technologies and land management practices aimed at reducing waste, minimizing gross energy expenditure, and nourishing the health and well being of local ecosystems. This will include reliance on renewable energy sources (photovoltaic cells and wind turbines, for instance), stormwater management, water conservation and reuse, solid waste reduction, and cultivation of native plants and bulk seed for use on site. Rain gardens are designed to capture rainwater for irrigation while infiltration trenches and pervious pavements will minimize stormwater runoff. Water will also be conserved through waterless urinals, composting toilets, low-flow fixtures, grey water recycling in larger buildings, and rainwater harvesting on building roofs. These initiatives will reduce onsite water

demand by about 40 percent. To the greatest extent possible, plant materials in landscaping and construction will be grown on site at Park's Greenbelt Native Plant Center. This effort to harvest local, native seed and to grow trees for site-wide planting will both reduce the need for long-distance trucking and also increase sustainability. All of these design elements exemplify the spirit of the Guidelines, providing park amenities that serve the diverse population of New Yorkers while simultaneously enhancing the environmental quality of the City.

Citywide impacts: Pearly Gates Playground.

The New York City Department of Parks & Recreation plans to implement the *High Performance Landscape Guidelines* throughout all of its parks, not only the large-scale and new sites that typically garner so much attention. It is the systematic application of the Guidelines' principles to the designs of over 200 Parks Department projects per year that will have the biggest impact on the City.

Pearly Gates Playground serves as an example of a prototypical playground. Designed by Parks Department Landscape Architect Stephen Koren, RLA, it was opened in 2010, showcasing many of the goals and techniques found in the Guidelines. Once an expanse of pavement and outdated play equipment, the playground was transformed into a delightful, sustainable feature of the neighborhood. Each year, 950,000 gallons of stormwater are kept on site by directing it to planting beds and other pervious surfaces rather than directing the runoff into storm drains. Existing trees within the park were not only protected, their growing area was expanded and soil amended, insuring that they will provide shade and habitat for many years to come. Many local materials were used, supporting local businesses and minimizing transportation impacts. Recycled materials used on site totaled over 400 cubic yards, including recycled

Going beyond New York City. With the publication of High Performance Landscape Guidelines: 21st Century Parks for NYC, the New York City Department of Parks & Recreation embraces the challenges offered in PlaNYC, and signals a paradigm shift in the way the City designs, builds, maintains, and even thinks about parks. These changes need not be con-

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