

2002 Annual Report
City of New York Parks & Recreation
Natural Resources Group
Forest Restoration Team





Fall 2001 planting site at Alley Pond Park (May 2002). Pictured are: sweetgum (*Liquidamber styraciflua*), white ash (*Fraxinus americana*), red maple (*Acer rubrum*), tulip poplar (*Liriodendron tulipifera*), and red oak (*Quercus rubra*).

Dear Stakeholder,

The Natural Resources Group (NRG) Forest Restoration Team (the Team) had another exciting and productive year in 2002. It has become apparent that our work is valued and supported by the new administration, despite reorganization at nearly every level of reporting. We attained planting numbers not seen since 1995, utilizing an astounding 105 plant species, our highest ever total, a testament to our commitment to sustaining the region's biodiversity. We planted a total of 19,529 trees and shrubs this year, along with 38,954 herbaceous plants; increases of 7.1% and 15.4% respectively.

Total grant funds outstanding were \$2,403,836 at year end, including City match. Two additional grants were awarded in 2003, totaling \$213,000. The Team is working on 14 projects, inclusive of joint ventures, and is very thankful for the support of its many partners and funders.

City of New York Parks & Recreation owns and manages over 28,000 acres of land, of which over 5,000 acres (18%) are forest. The Forestry Team's primary responsibility consists of stewardship, protection, and restoration of these forested lands. While it is difficult to quantify everything the Team has accomplished this year in fulfillment of its mission, there are several areas where the Team has excelled.

Invasive Plant Control

Invasive nonnative plants are perhaps the single greatest threat to the City's forests. These exotic tree, shrub, vine, and forb species disrupt the balance of the native ecosystem, displace native vegetation, decrease biodiversity, reduce the quality and quantity of wildlife habitat, and increase nutrient and sediment loads into surrounding water bodies. Some species, such as porcelainberry (*Ampelopsis brevipedunculata*) can grow up to twenty feet a year, rapidly engulfing, and eventually killing large mature trees. Other species, like Japanese honeysuckle (*Lonicera japonica*), smother tree seedlings, preventing the forest from renewing itself. Whether it is a simple sweep of a large relatively healthy area to remove seed producing individuals of a certain species, or an intensive eradication project to completely rehabilitate a severely degraded area, protecting the City's forests from invasive plants is at the heart of most of the Forestry Team's work.

Planting

The Team planted a record number of trees and shrubs this year, due primarily to an increase in the acreage and number of sites ready for planting as well as the availability of funds for plant material. The Forestry Team planted 19,529 trees and shrubs, and 5,484 bareroot tree seedlings, a level of planting not seen since 1995, when restoration staffing and funding was twice its current level. We significantly increased our plantings of herbaceous material as well, to 38,954 plants, a 15.4% increase from last year. Altogether, we planted 105 species of plants this year, 14 more than last year, and a testament to Parks' commitment to sustaining the region's biodiversity. Monitoring has shown 5-year survival rates of 85-95% depending on site conditions and planting stock, and many of the trees planted 10 years ago have already reached 4 inches in diameter and are over 25 feet tall.

Research

The field of ecosystem restoration is young and dynamic, and presents many opportunities for research. Although research is not the Forestry Team's primary mission, studying our past work allows us to improve our techniques, and enhance our future success. The Team's research into the revegetation of fill sites is entering its fourth year, and is applicable to thousands of acres of land throughout the City. The 2001 data were published in the journal *Ecological Restoration*, and this year's data suggested additional trends which we will seek to publish in the coming year.

NRG Forestry: Year 2002 in Review

	2002	2001	% Change
Trees and Shrubs Planted (containers, B&B)	19,529	18,237	7.1
Herbaceous Planted	38,954	33,753	15.4
Erosion Control (sq. ft.)	27,220	26,570	2.4
Streambank Stabilization (linear ft.)	3,380	2,960	14.2
Plants Potted	7,922	8,575	-7.6
Acres Restored	34.4	31	14.2
Acres Maintained	41	44	-6.8
Grant Money Outstanding (\$, year end)	2,403,836	2,656,111	-9.5
Number of Projects	14	13	7.7
Number of Volunteer Events	24	20	20
Number of Volunteers	276	250	10.4
Number of Employees (year end)	11	9	22.2

Forestry, by its nature, is focused on the long term. The City's forests are under constant attack from numerous urban influences. While the work of the Forestry Team may appear, on the surface, to be simply an amalgamation of dispersed projects, it is in truth necessary rehabilitation of the structure and function of the City's forests. Mosaics are created one tile at a time. Much like the City's water tunnel #3 project, this is a long term, systematic, restoration and renewal of critical forest infrastructure, without which, in 30 years, there will be far fewer forests.

Over the last 14 years, more than 800 acres of Parks' forests have been treated or restored through the support and generosity of multiple funders. Impressive as this number is, it represents only 16% of Parks' forested lands, and about 30% of the acreage that needs restoring. Repeated droughts, disease and insect outbreaks, and severe storms have only conspired to increase the acreage requiring stewardship. It is our sincere hope that this applied effort can continue, bringing us ever closer to our vision of a healthy, diverse, self-sustaining forest.

Respectfully submitted,

Timothy J. Wenskus
Senior Forester, Natural Resources Group
April 4, 2003

1) Northern Manhattan Bond Act

The Team planted 6,310 trees and shrubs this year as well as 9,010 herbaceous groundcover plants. Foresters treated over 5 acres to remove invasive plants, and swept an additional 11 acres for satellite populations of invasive plants. We installed over 9,000 square feet of erosion control material. Construction of the capital portion is essentially complete at both the Riverside and Inwood Hill project sites. Neighborhood constituents gave the Riverside site rave reviews. This project was funded by a \$700,000 grant from the NYS Clean Water/Clean Air Bond Act.

2) Alley Pond Bond Act

The Team planted 5,267 native trees and shrubs in Alley Pond Park in Queens this year. We installed a total of 8,384 herbaceous groundcover plants to prevent sedimentation into the kettle ponds, the Parks' showcase natural feature. To further protect adjacent slopes throughout the kettle pond area, we installed 1,800 square feet of erosion fabric.

3) Riverdale Bond Act

On-the-ground work finally began on this high profile Clean Water/Clean Air Bond Act project in the Bronx. This is the first landscape scale restoration project in the park since the early 1990's. The capital portion of this \$600,000 project is on schedule for the 2003 season construction. The crews began treatment of invasive plants in almost 4 acres of the park, and in the fall planted 460 trees and shrubs, and 2,994 herbaceous plants.

4) Seton Falls Bond Act

Contractors finished work on the wetland portion of this Bronx project in the fall, completing the capital portion of this grant. The Forestry Team supplemented their work, adding almost 13,000 additional plants to the wetland and buffer areas. Team members cleared another half acre of invasive plants in upland portions of the park, and planted over 2,400 trees and shrubs. This project was funded by a \$550,000 grant from the NYS Clean Water/Clean Air Bond Act.

5) Inwood Non-Point Source

The Team began work on this \$360,000 non-point source sediment reduction project this year, funded by New York State DEC, through Section 319 of the federal Clean Water Act. Although funding was not yet available at year end, our foresters stabilized a 2,800 square foot gully on the west side of Inwood Hill Park. Several additional gullies will be targeted over the next 18 months. This grant includes a capital project for which the design has been completed, construction of which will be bid out in Spring 2003.

6) National Fish and Wildlife Foundation

This \$200,000 grant expired in the first half of the year. It supported the planting of almost 20,000 trees and shrubs, and tens of thousands of herbaceous plants to improve wildlife habitat in North Manhattan parks. Just over 28 acres of land in 3 North Manhattan parks were treated. This enabled projects in these parks to become more than the sum of their individual components.



1) Riverside Park under construction



2) Planting large trees at Alley Pond Park



3) Jute mat on hillside at Riverdale Park, prior to planting



4) Recently planted wetland at capital project site in Seton Falls



5) Partially Restored Gully in Inwood Hill Park



6) Woodchuck (*Marmota monax*) in North Manhattan

7) Seton Falls URP

This project, funded by the Urban Resources Partnership, supported the stabilization of several eroding slopes and gullies in the western half of the park. It also supported additional plantings in areas adjacent to the large wetland restoration.

8) Bronx River Bond Act

The Forestry Team began treatment of invasive trees and shrubs in sections of the floodplain forest. Staff, working with neighborhood volunteers, stabilized just over 800 square feet of eroding slopes in the surrounding uplands. NRG designers also completed the design work for the capital portion of the project.

9) West Farms NOAA

Working with contractors, the Team cleared and regraded a sandbar infested with invasive purple loosestrife (*Lythrum salicaria*). With assistance from a neighborhood partner, the Team installed 1,600 square feet of erosion control fabrics, and planted over 1,700 wetland plants.

10) Bronx River Shoelace Park

Building on the successful work of last year, the Team planted thousands of additional woody and herbaceous plants along a half mile stretch of the River. Crews also constructed a large log crib structure along the Bronx River by 228th Street. Built entirely by hand, this is the first known example of this type of structure in the City. This \$190,920 grant, funded through NOAA, expired in September.

11) Woodlawn

The MTA Metro-North Railroad, as part of a bridge reconstruction project, contributed \$40,000 in materials to restore a 2 acre parcel along the Bronx River in Woodlawn. The Team cleared over an acre of invasive plants, and planted 6,400 dormant live stakes, as well as 517 trees and shrubs. In addition, using various bioengineering materials, we stabilized another 150 linear feet of streambank this year, in addition to the 900 linear feet completed last year.

12) Four Sparrow Marsh

We are restoring the woodland buffer on the edge of this Clean Water/Clean Air Bond Act project in Brooklyn. This work represents approximately 11% of the entire project, and will continue through next year. Our foresters planted a total of 243 containerized trees and shrubs, and a similar number of bareroot trees in the spring. Additional tree and shrub planting, as well as soil stabilization and herbaceous planting, will occur in 2003.

13) Prall's Island Bond Act

The Team supplied technical assistance to NRG's Salt Marsh Restoration Team for the Prall's Island project funded by the Clean Water/Clean Air Bond Act. This habitat enhancement project off the coast of Staten Island, has both forestry and invasive species components which will be carried out as a joint effort of the two Teams over the next two years, with the Forestry Team's primary contribution being invasive plant removals.



7) Work in progress on a gully at Seton Falls Park.



8) Signage at Bronx River Bond Act site



9) Planting at the West Farms site



10) Log crib structure at 226th Street on Bronx River



11) Coirlogs and live stakes installed behind Metro-North Woodlawn station platform

14) Givans Creek Woods

The Team continued its long term research and reforestation work at Givans Creek Woods, the Bronx. A number of species and treatments are being tested for survivability and vigor on this harsh site. Planted in 1999-2000, this site will be monitored for at least five years. This work may have major implications for future tree planting in the City, as many of the City's remaining available planting sites are on a fill substrate.

15) Nursery

The Team uses thousands of trees and shrubs every year in its plantings. Often, either sufficient funding or adequate quantities of stock are not available. To partially mitigate these variations, the staff potted a total of 7,922 bareroot trees and shrubs this year, down 7% from last year due primarily to labor shortages for planting. These plants will be grown on at the Team's three field nursery sites. On-hand plant inventory at year end is down approximately 30% from last year as a result of the expiration of a large plant material grant.



14) Planted trees at start of third growing season

16) Invasive Plants

The Team treated and removed invasive nonnative plants on 15 park properties, focusing on 16 species, primarily vines and shrubs. The Team performs intense localized eradications at specific sites, as well as landscape scale sweeps of large areas. There are almost 1,000 acres of parkland infested to varying degrees with invasive plant species. As resources become available, the Team hopes to target as many of these areas as possible. Toward that end, we have applied for an invasive plant management grant for Fort Totten in Queens.

17) Apprentices

Working in partnership with the New York Environmental Justice Alliance, the Team trained two apprentice restoration technicians. Starting in July, they worked side by side with the Team, four days a week, learning all aspects of forest restoration work. We are grateful to have had the opportunity to train and work with them, and look forward to continuing the partnership in the future.



15) Trees at the Greenbelt Native Plant Center

18) Professional Outreach

Team members lectured and presented at many different venues throughout the year. Conference presentations included Manhattanville College, the Schuylkill Center, Baltimore Parks Department, New York ReLeaf, the National Association of Soil and Water Conservation Districts, and the Long Island Botanical Society. University presentations included Rutgers University and the University of Pennsylvania.

19) Publication

Last year's research work at Givans Creek Woods was showcased to a national audience with the publication of a journal article in *Ecological Restoration*, in the June 2002 (Volume 20, Number 2) issue.

20) Donation

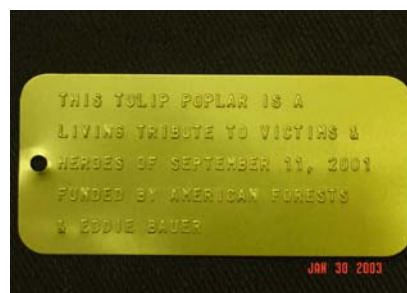
The Team received 400 large trees donated by Eddie Bauer and American Forests as a living memorial to 9/11. These trees were planted in Inwood, Alley Pond, Bronx River and Riverdale Parks. Additional trees from these donors will arrive in Spring 2003.



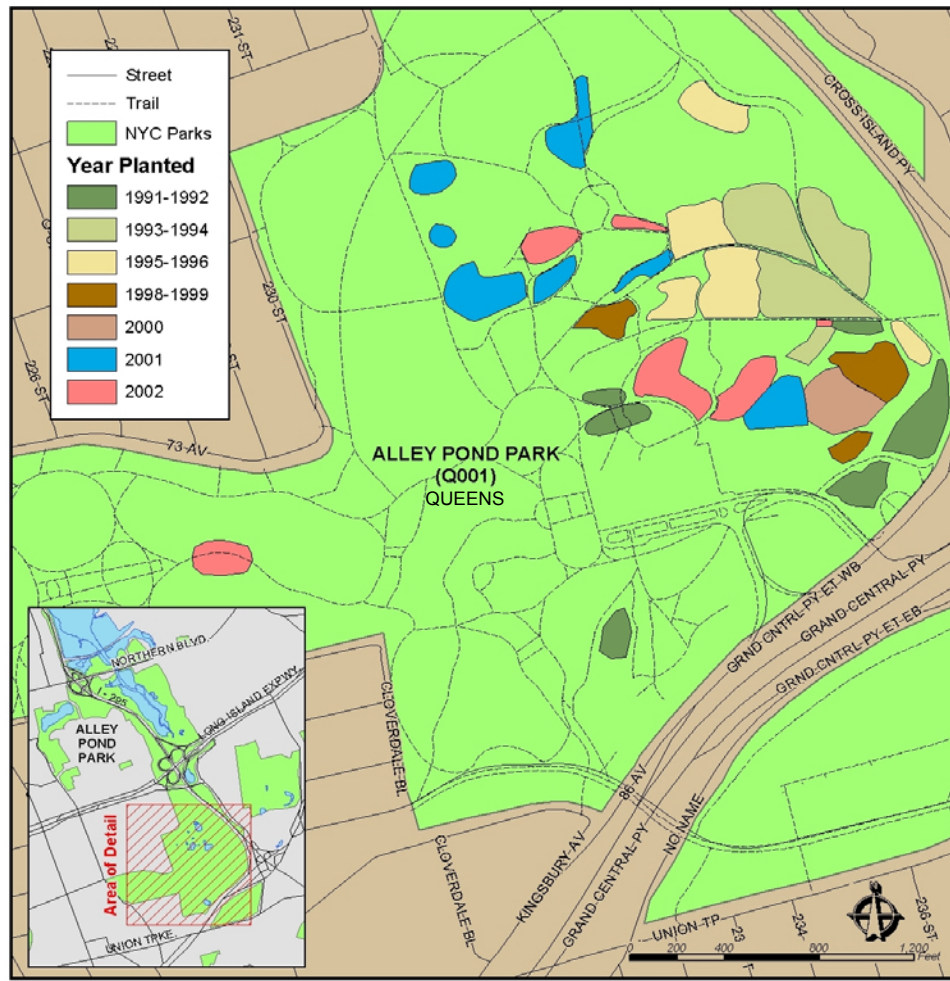
16) Invasive vines at Fort Totten



17) Apprentice restoration technicians



20) Tag from donated tree



Alley Pond Park - A 12 Year History of Systematic Science-based Forest Restoration

In 1987, a rigorous systematic inventory was conducted of the vegetation community structure, floral, faunal, and avian assemblages, soils, hydrology, and current public uses of Alley Pond Park in Queens. This was one of the first urban natural areas in the country to be inventoried in this manner. A comprehensive management plan was drafted by NRG and released in 1988.

In 1990 NRG's Central Restoration Board (CRB) began the first forest protection and restoration efforts in the park. Funded through Parks' general budget they set out to restore areas near Decadon Pond. They installed wooden stairs and cribbing on badly eroded slopes used by bikes and ATV's. The goal was to stabilize the sensitive slopes around the pond, and the project was quite successful as many of the plantings have survived to this day.

The Urban Forest and Education Program (UFEP) began work in the park in 1992. Supported with \$850K from a \$6.5 million grant from the Lila Wallace-Reader's Digest Fund, UFEP continued and extended the work of the CRB. Over five years, they restored approximately 14.5 acres. Highlights include large white pine (*Pinus strobus*) plantations, such as the one near Little Alley Pond, and several acres of new hardwood forest. UFEP concurrently began the first intensive removals of problem species in the park. Almost 3 acres per year were intensively treated and planted between 1992 and 1996. They also initiated and perfected many new restoration techniques, including automobile access control technologies, minimizing the use of herbicides, and more efficient planting techniques.

After the expiration of the UFEP grant in 1996, NRG returned to the park in 1998. The Forest Restoration Team originally focused on the maintenance of the UFEP sites, but soon expanded their role by initiating their own restoration efforts under a \$550,000 grant. They began work to restore the areas around three kettle ponds: Turtle, Lilypad and Decadon. Crews installed 21,000 square feet of erosion control fabric on slopes surrounding these ponds into which approximately 16,000 herbaceous plugs were planted. Exotic species removal continued, focusing mainly on the vast areas of multiflora rose found near the ponds. Further refining their herbicide treatment techniques, NRG has intensely treated 6.5 acres of rose dominated parkland. The Team has restored approximately 12.1 acres, and planted just over 24,300 trees and shrubs.

Overall, the last 12 years, 26.6 acres of forest have been restored, with 38,385 trees and shrubs planted. Hopefully, with persistence and additional funding, the remainder of the forest can be restored over the next 12 years.

Management Discussion of Major Projects

The NRG Forestry Team performs restoration in more than a dozen locations throughout the City. The bulk of the work, however, is funded for four main project areas, summarized below:

Queens

The 2002 season was a productive one in Alley Pond Park in Queens. The Forestry Team continued the expansion of the restoration sites begun under the \$550,000 Clean Water/Clean Air Bond Act project. The removal and control of invasive exotic species was, once again, the main focus of work in the park. The crew cut and removed large areas of multiflora rose (*Rosa multiflora*) using a dormant stem herbicide treatment. The Team continued efforts to control both seed sources and large infestations of the invasive vine oriental bittersweet (*Celastrus orbiculatus*). Our foresters began work in a new section of the park, where the invasive tree species Norway maple (*Acer platanoides*) is causing some serious erosion problems. Crews removed several canopy trees, and stabilized the soil on surrounding slopes with erosion fabric and mass plantings. In all, we intensively treated just over 2.5 acres this year, including the planting of around 5,200 native trees and shrubs, a 64% increase from 2001.

The Team treated several badly eroding slopes this year, installing more than 1,800 square feet of jute mat, with concurrent planting of native groundcover plants. This fabric, along with 70 linear feet of cribbing, will dramatically slow the movement of sediment, and deter pedestrian and bicycle traffic on these vulnerable slopes. Almost 8,500 herbaceous plants were planted, many in these erosion control sites, and the remainder for inoculating the tree/shrub planting sites. This represents a 33% increase from last year, due primarily to increased productivity.

Successful work in Alley Pond could not have been possible without the support of several volunteer and community groups. Large groups from Mineola High School and New York University helped plant hundreds of trees and shrubs during weekend volunteer events. We were also privileged to have the assistance of the Department's Parks Conservation Corps (PCC) and Ranger Conservation Corps (RCC) crews. These students, under supervision of the Urban Park Rangers, worked in the park once a week for three months, laying erosion control fabric, and cutting large areas of oriental bittersweet vines.

Bronx

The Team undertook several major projects in the Bronx this past year. Crews began work in Riverdale Park this summer. Funded by a \$600,000 Clean Water/Clean Air Bond Act grant, this project marked the first landscape scale restoration in this park since the early 1990's. Invasive species removal was the main concern this year, as several large vinelands dominated by porcelainberry (*Ampelopsis brevipedunculata*) and oriental bittersweet were cleared. We removed Amur honeysuckle (*Lonicera maackii*), multiflora rose, Japanese knotweed (*Polygonum cuspidatum*), and Sycamore maple (*Acer pseudoplatanus*) from areas of the park. The Team also installed 6,420 square feet of jute matting on a slope formerly overrun with Amur honeysuckle. With help from Wave Hill summer staff, and community volunteers on several planting days, we planted the slope with 2,944 herbaceous plugs and 460 trees and shrubs. The capital portion of this project was designed and bid out this year for Spring 2003 construction.

The highlight of 2002 at Seton Falls Park was the construction and restoration of the 1.2 acre wetland on the lower reach of Rattlesnake Creek. The Team supplemented the contractor's plantings in and around the wetland area, and added wetland plantings on edges not covered under the contract. We also extended last year's planting area by another half an acre, after removing invasive vines and shrubs such as porcelainberry, oriental bittersweet, multiflora rose, and smooth buckthorn (*Rhamnus frangula*). In all, 12,791 herbaceous plugs were added to the wetland and environs, and 2,451 trees and shrubs were planted throughout the park. A \$550,000 Clean Water/Clean Air Bond Act grant funded this restoration.

Funded with \$23,380 from the Urban Resources Partnership (URP) of the Natural Resources Conservation Service (NRCS), the Team completed the stabilization of several gullies and eroding sites in the western half of the park, installing 1,870 square feet of erosion control fabric. In addition to supporting supplemental plantings around the wetlands, this project also funded the salvage of several hundred plants from the wetland prior to construction, which were subsequently returned to the site upon completion of the grading.

Bronx River

We remained active along the Bronx River this year, covering areas from 238th Street all the way down to the West Farms neighborhood. The northernmost site was adjacent to the Woodlawn Metro-North station. Problem plant species there included common buckthorn (*Rhamnus cathartica*), porcelainberry, and oriental bittersweet. After treating these, we utilized 630 feet of coir logs, 8,700 dormant live stakes, and 160 linear feet of felt fabric to stabilize the riverbank east of the platform. This work completes the mitigation funded with \$40,000 from the railroad in conjunction with a major bridge reconstruction project.

The crew added to the NOAA project of 2001 along the Shoelace section of the River. Funded through the generosity of Congressman Jose E. Serrano, this \$190,920 project added 844 feet of coir logs, 8,600 live stakes, 1,500 herbaceous plugs, 876 containerized plants, and 10 pounds of seed, to the stream bank stabilization efforts of 2001. Crews also constructed a log-crib wall near the 227th St. playground. We built this structure with 1200 linear feet of hemlock log, and filled it by hand with 80 tons of large and medium sized stone and 20 cubic yards of soil, incorporating 603 containerized silky dogwood (*Cornus amomum*) and arrowwood viburnum (*Viburnum dentatum*) into the structure. While common in erosion control projects out west, we believe this is the only log crib structure on Parks property, and, as far as we are aware, the only one in the City.

Further south along the Bronx River, the Team conducted invasive sweeps throughout the Bronx River Forest. The site of the \$1,700,000 Clean Water/Clean Air Bond Act grant, this area contains shrub honeysuckles (*Lonicera maackii*, *Lonicera tartarica*), multiflora rose, oriental bittersweet, Amur cork tree (*Phellodendron amurense*), Japanese knotweed, and Tree of Heaven (*Ailanthus altissima*). Several volunteer plantings were coordinated through Neighborhood Initiatives Development Corporation (NIDC) in the southern section of the forest. We planted 141 trees and shrubs, 1,325 herbaceous plugs, and installed 800 square feet of jute.

West Farms was the southernmost site. In 2002, contractors cleared a quarter-acre sandbar of invasive vegetation and debris. The Team installed 866 trees and shrubs, 1,738 herbaceous plugs, and 60 coir mattresses with the help of the Drew Gardens Environmental Education Interns. Over the winter, this group will help to install dormant cottonwood poles in the same site. This project was also funded for \$114,322 through NOAA.

North Manhattan

Inwood Hill Park remained the Team's main focus in Northern Manhattan. As part of the capital portion of our Bond Act grant, a large scale hydroseeding project secured a fragile riparian slope with a variety of native grasses and wildflowers. While common in wetlands and open sites, hydroseeding is not commonly used in the woods. We hope this treatment stabilizes the steep slopes in Inwood with significantly less impact than other, more common, erosion control techniques. The crew also continued to remove invasive species from Inwood, Fort Tryon, and Fort Washington Parks, intensively treating and restoring over 4 acres of forest. These sites were all subsequently planted with appropriate native species.

Riverside Park was the location of the other capital component, funded by a \$700,000 grant from the Clean Water/Clean Air Bond Act. A large riparian slope in this park, covered with invasive Norway maples, was stabilized and restored using inventive erosion control and planting techniques. First, contractors removed forty or so large maples, whose dense canopy was inhibiting native regeneration. They then stabilized the slope with an innovative arrangement of coconut fiber erosion logs and coir fencing. Hydroseeding, live stake fascines, and a diverse planting palette were the final elements of this stabilization work.

The Team also began work on a \$360,000 non-point source sediment reduction project this year, funded by New York State DEC through Section 319 of the federal Clean Water Act. Our foresters restored 2 drainage channels in Inwood that had, over years of neglect, jumped their banks, causing deep gullies. The crew reshaped these channels, lined them with erosion fabric and covered in approximately 10 cubic yards of riprap. We then seeded and planted their banks with native plants. We expect to target several additional gullies over the next 18 months. Team members also installed 300 linear feet of 6-inch prevegetated coir logs on the steep slopes of the park. This grant also includes a capital project in Inwood for which the design has been completed. We expect construction to be bid out this Spring for Fall 2003 construction.

Volunteers from Morgan Stanley, New York Cares, and the High School for Environmental Studies participated in numerous planting events throughout the year. A significant amount of the plant material for these plantings was provided through a \$200,000 grant from the National Fish and Wildlife Foundation. Additional plants were supplied by the Greenacre Foundation, through the North Manhattan Parks Administrator's Office.

Supplemental Information

Comparison to Previous Years

2002 compared to 2001

Plant numbers were up, due primarily to the availability of plant money and pre-prepared planting sites. Grant funds outstanding at year end are down 9.5% to \$2,403,836 from \$2,656,111 in 2001, reflecting the expiration of 5 grants. The average life of the remaining grants is also down, to 1.3 years from 1.8 in 2001, as two large multi-year grants near their expiration dates.

Outlook for 2003

Plant numbers may decline in 2003 as the funding for the purchase of plant material declined by approximately 50% during 2002 due to grant expirations. A minimum of \$1,250,000 in grants will expire in 2003, with the funding weighted almost equally between Personnel Services (PS) and Capital expenditures. While Parks has managed to replace some of the PS money, the replacement PS funding is of significantly shorter duration.

Grants

2002 Grants Under Management

1996 Clean Water/Clean Air Bond Act: Alley Kettle, North Manhattan Parks, Riverdale, Seton Falls; West Farms NOAA, Inwood 319.

Other 2002 Projects, Including Grant Funded Joint Ventures

1996 Clean Water/Clean Air Bond Act : Prall's Island, Bronx River, Four Sparrow Marsh; Givans Creek.

Grants Expiring in 2002

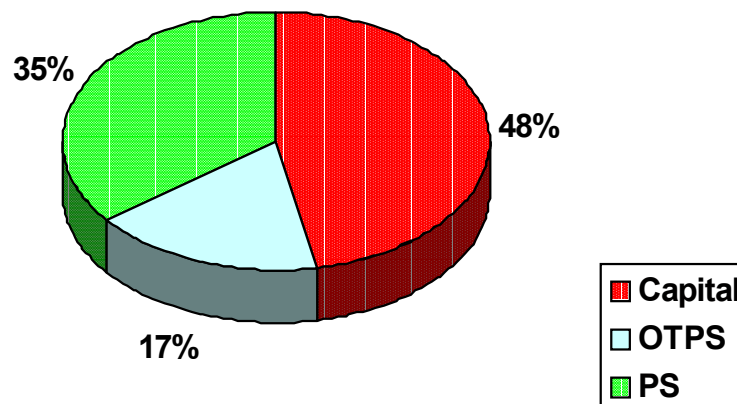
Urban Resources Partnership Seton Falls, National Fish and Wildlife Foundation Hudson River Parks, NOAA Bronx River Shoelace, Hudson River Improvement Fund Interpretive Signage, and Metro-North Railroad Woodlawn mitigation.

New Grants Awarded in 2002

Hudson River Estuary Fort Tryon/Fort Washington, and NOAA Bronx River West Farms.

Budget

At year end, the Team's outstanding grant total stood at \$2,403,836. Of this total, 35% (\$853,000) goes toward Personnel Services (PS). Forty-eight percent (\$1,130,697) is contractually obligated to be spent on capital construction work. This leaves 17% (\$420,139) for Other Than Personnel Services (OTPS). These are the funds which are available for the purchase of plants, erosion control materials, and equipment.



Notes

1. Summary of Significant Accounting Policies

Joint Ventures - Where NRG supplies all the plant material, all plants planted are credited to NRG. Where others provide some or all of the plants, NRG reports only those planted by NRG staff.

Planting - A tree is counted as "planted" only when utilized and installed in the ground at the site for which it was purchased.

Grants - In this report, grants are carried at full value until they expire. The differing City, State, and Federal fiscal years, coupled with lags in reporting from the various purchasing, vouchering, and payment systems of the City make it difficult to precisely determine the grant value at any precise moment in time. A grant is considered a Forestry Team grant if over 65% of the project (including field work, scoping, design, construction supervision, materials, salaries) is conducted by Forestry Team staff. Projects where the Forestry Team contributes less than 65% are so identified.

Area Reporting - Many areas require multiple treatments of the same square footage. The area of these retreatments is reported as a separate category in monthly reports and is not included here. Retreatments are not included in any category other than the "Initial Treatment" the first time the area is treated. The numbers for "Acres Restored", including prior years, have been restated to reflect the current definition of "restored" as reported to the Mayor's Office.

Measurement - The reported linear footage or square footage of material such as cribbing, biolags, or erosion control fabric installed may at times exceed the linear feet listed as treated. These products are often installed in multiple layers over the same area.

2. History

Prior to 1990, forest restoration was performed partly by an NRG team, and partly on a park by park basis by individual districts. A substantial private grant in 1991 created forest restoration crews in each borough, who planted 170,000 trees and treated over 600 acres for invasive plants. This funding ran out in 1996. A skeleton crew was kept on in 1997 through private grants, performing mostly research and maintenance. The current Forestry Team was created with a combination of City, State, Federal, and private funds in 1998. Current funding focuses on three boroughs, although projects have occurred in all five boroughs as resources allow. There are currently three other groups performing forest restoration work in the City, but all are limited by design to their respective park districts.

3. Joint Venture Projects

The following are projects in which the Forestry Team participated during the 2002 calendar year, but did not assume the lead role, or account for more than 65% of the project work:

Bronx River Bond Act	17% share
Four Sparrow Marsh Bond Act	11% share
Prall's Island Bond Act	25% share
Twin Fields Bond Act	5% share

For the above projects, only treatments and plantings performed by Forestry Team staff are included in this report.

4. Maintenance

Each acre planted represents a significant investment by the funder. Restoration sites need to be swept for recurrences of invasive plants, especially vines. The Team sweeps planted sites annually for the first 2 years, and at 18-month intervals until the tree canopy closes, usually 5-7 years after planting. Funders often do not provide for this crucial aftercare, but the Team will continue to take care of restored areas to the best of its ability.

5. Invasive Species Treated

Norway maple (*Acer platanoides*), sycamore maple (*Acer pseudoplatanus*), ailanthus (*Ailanthus altissima*), garlic mustard (*Alliaria petiolata*), porcelainberry (*Ampelopsis brevipedunculata*), mugwort (*Artemisia vulgaris*), oriental bittersweet (*Celastrus orbiculatus*), black swallow-wort (*Cynanchum nigrum*), Japanese honeysuckle (*Lonicera japonica*), various shrub honeysuckles (*Lonicera mackii*, *L. tatarica*), Japanese stilt grass (*Microstegium vimineum*), white mulberry (*Morus alba*), Amur cork tree (*Phellodendron amurense*), Japanese knotweed (*Polygonum cuspidatum*), European buckthorn (*Rhamnus frangula*), jetbead (*Rhodotypos scandens*), multiflora rose (*Rosa multiflora*), and wisteria (*Wisteria floribunda*).

Forest Restoration: 1997 - 2002, Summary of Operations

	2002	2001	2000	1999	1998	1997
Trees and Shrubs Planted	19,529	18,237	11,241	6,410	2,141	232
Bareroot Trees Planted	5,484	1,750	5,125	100	0	0
Herbaceous Planted	38,954	33,753	14,549	6,456	1,034	0
Number of Species Planted	105	91	59	34	26	18
Plants Potted	7,922	8,575	4,100	1,200	0	0
Acres Restored	34.4	31	26	12.8	6.5	6.1
Acres Maintained	41	44	38	22	9	11
Number of Projects	14	13	12	7	5	3
Number of Volunteer Events	24	20	18	8	5	3
Number of Employees (year end)	11	9	9	4	2	2
Grants Outstanding (\$,year end)	2,403,836	2,656,111	2,061,013	745,000	225,000	180,000
Grants Expiring (\$)	465,275	150,000	49,335	84,600	100,000	0

Examples of the different types of plant material used in 2002:



Bareroot tree seedlings



Herbaceous plugs



Dormant live stakes



Containerized tree



B&B tree



Seed

NRG Forest Restoration Team Sponsors



City of New York
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Randy A. Daniels, Secretary of State



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Natural Resources Conservation Service
Pearlie S. Reed, Chief



New York City Environmental Justice Alliance
Dave Cutler, Executive Director

Complete List of Woody and Herbaceous Species Planted During Calendar Year 2002

Tree and Shrub Species Planted

American sycamore (*Platanus occidentalis*)
Arrowwood viburnum (*Viburnum dentatum*)
Bitternut hickory (*Carya cordiformis*)
Black birch (*Betula lenta*)
Black chokeberry (*Aronia melanocarpa*)
Black gum (*Nyssa sylvatica*)
Black oak (*Quercus velutina*)
Black walnut (*Juglans nigra*)
Black willow (*Salix nigra*)
Chestnut oak (*Quercus prinus*)
Chokeberry (*Aronia arbutifolia*)
Common blackberry (*Rubus allegheniensis*)
Cottonwood (*Populus deltoides*)
Eastern hornbeam (*Carpinus caroliniana*)
Elderberry (*Sambucus canadensis*)
Flowering dogwood (*Cornus florida*)
Green ash (*Fraxinus pensylvanica*)
Gray birch (*Betula populifolia*)
Gray dogwood (*Cornus racemosa*)
Hackberry (*Celtis occidentalis*)
Hophornbeam (*Ostrya virginiana*)
Lowbush blueberry (*Vaccinium angustifolium*)
Maple-leaf viburnum (*Viburnum acerfolium*)
Northern red oak (*Quercus rubra*)
Persimmon (*Diospyros virginiana*)
Pignut hickory (*Carya glabra*)
Pin oak (*Quercus palustris*)
Pinkster azelea (*Rhododendron periclimenoides*)
Pussy willow (*Salix discolor*)
Red maple (*Acer rubrum*)
Red-osier dogwood (*Cornus sericea*)
River birch (*Betula nigra*)
Sandbar willow (*Salix exigua*)
Sassafras (*Sassafras albidum*)
Serviceberry (*Amelanchier canadensis*)
Shagbark hickory (*Carya ovata*)
Silky dogwood (*Cornus amomum*)
Silky willow (*Salix sericea*)
Silver maple (*Acer saccharinum*)
Speckled alder (*Alnus rugosa*)
Spicebush (*Lindera benzoin*)
Staghorn sumac (*Rhus typhina*)
Strawberry-bush (*Euonymus americanus*)
Sugar maple (*Acer saccharum*)
Swamp white oak (*Quercus bicolor*)
Sweetgum (*Liquidambar styraciflua*)
Sweet pepperbush (*Clethra alnifolia*)
Tulip poplar (*Liriodendron tulipifera*)
White ash (*Fraxinus americana*)
White oak (*Quercus alba*)
Winterberry (*Ilex verticillata*)

Herbaceous Species Planted

American bur-reed (*Spharganium americanum*)
Appalachian sedge (*Carex apalachica*)
Avens (*Geum virginianum*)
Black bulrush (*Scirpus atrovirens*)
Blue stemmed goldenrod (*Solidago caesia*)
Broad leaf sedge (*Carex plataphylla*)
Canada anemone (*Anemone canadensis*)
Canada rush (*Juncus canadensis*)
Cardinal flower (*Lobelia cardinalis*)
Christmas fern (*Polystichum acrostichoides*)
Common arrowhead (*Sagittaria latifolia*)
Common threesquare bulrush (*Scirpus pungens*)
Deer-tongue grass (*Panicum clandestinum*)
Dutchman's breeches (*Dicentra culneria*)
Flattened sedge (*Danthonia compressa*)
Fox sedge (*Carex vulpinoides*)
Fringed sedge (*Carex crinita*)
Great blue lobelia (*Lobelia syphilitica*)
Hay-scented fern (*Denmstaedtia punctilobula*)
Heart-leaved aster (*Aster cordifolius*)
Junegrass (*Danthonia spicata*)
Lady fern (*Athyrium felix-femina*)
Large blue flag (*Iris versicolor*)
Lizard's tail (*Saururus cernuus*)
Marginal wood fern (*Dryopteris marginalis*)
Mountain mint (*Pycnanthemum virginianum*)
Narrow-leaved cattail (*Typha angustifolia*)
New England aster (*Aster nova-angliae*)
Olney threesquare (*Scirpus americanus*)
Path rush (*Juncus tenuis*)
Pennsylvania sedge (*Carex pensylvanica*)
Pickerelweed (*Pontederia cordata*)
Riverbank wild rye (*Elymus riparius*)
Royal fern (*Osmunda regalis*)
Rue anemone (*Anemone thalictroides*)
Saltmarsh bulrush (*Scirpus robustus*)
Sensitive fern (*Onoclea sensibilis*)
Shallow sedge (*Carex lurida*)
Soft rush (*Juncus effusus*)
Soft-stem bulrush (*Scirpus validus*)
Taper-tip rush (*Juncus acuminatus*)
Thin-leaf sunflower (*Helianthus decapetalis*)
Turtlehead (*Chelone glabra*)
Tussock sedge (*Carex stricta*)
Virginia creeper (*Parthenocissus quinquefolia*)
Virginia wild rye (*Elymus virginicus*)
Water sedge (*Carex aquatilis*)
White snakeroot (*Eupatorium rugosum*)
White wood aster (*Aster divaricatus*)
Wild bergamont (*Monarda fistulosa*)
Wild columbine (*Aquilegia canadensis*)
Wild geranium (*Geranium maculatum*)
Woolgrass (*Scirpus cyprinus*)
Woodland sunflower (*Helianthus divaricatus*)

Forest Restoration Team Members

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