Date: June 04, 2009

TO: **Board Members – Vancouver Park Board**
FROM: **General Manager – Parks and Recreation**
SUBJECT: **Stanley Park Restoration – Final Report**

RECOMMENDATION

A. ***THAT the Board approve the goals and objectives of the Stanley Park Forest Management Plan, attached as Appendix A.***

B. ***THAT the Board allocate unspent funds in the Stanley Park Restoration Reserve to projects and programs identified in the Stanley Park Forest Management Plan.***

C. ***THAT the Board thank all donors, volunteers, consultants, contractors and staff who participated in the restoration of Stanley Park.***

BACKGROUND

On December 15, 2006, the biggest windstorm in more than forty years roared through Vancouver. This was followed by two major windstorms on January 5 and January 9, 2007. The storms caused significant damage to Stanley Park. Approximately 10,000 trees fell (between 5% and 10% of all trees in the park), with severe damage to about 40 hectares (100 acres) of the forest (about 15% of the forest). The escarpment above the seawall between Prospect Point and Third Beach was weakened, causing several landslides, and there was significant damage to the seawall between Prospect Point and Third Beach.

DISCUSSION

This report chronicles the restoration of Stanley Park in the intervening two and a half year, and includes two recommendations that will assist in maintaining Stanley Park's forest as a healthy ecosystem and urban park for generations to come.

Public and government response after the storms (Dec. 2006 to early 2007)

Immediately after each windstorm, the Park Board closed most or the whole of Stanley Park for safety reasons: for four days after the first windstorm, for one day after the second windstorm and for three days after the third windstorm. After each storm, Park Board crews cleared fallen trees and removed or modified hazard trees from park roads, pathways, forest trails and public gathering places. The focus was on restoring public access and services to the park as quickly as possible.

In the days and weeks after the windstorms, individuals and corporations rallied to restore the park, donating about $3.5 million. In early 2007, all three levels of government – the City of Vancouver, the Provincial government and the Federal government – contributed $2 million each toward the restoration project.

Restoration Plan (Jan. 2007 to April 2007)

A team of Park Board staff, consultants and volunteers with a wide range of knowledge and experience prepared the Stanley Park Restoration Plan. A community consultation process was undertaken to assist with the preparation of the plan. The Restoration Plan was unanimously approved by the Park Board on April 16, 2007, with relatively little controversy.

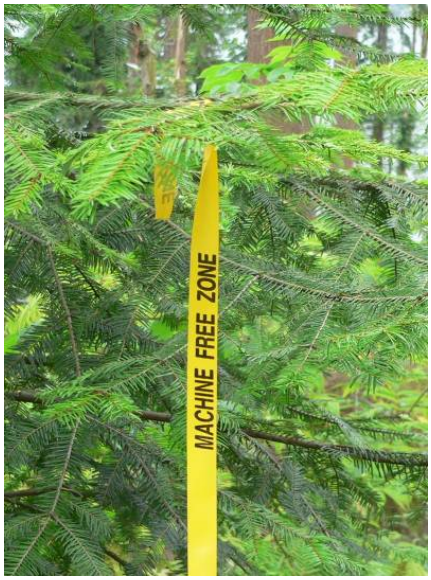
The Restoration Plan identified the following vision: "that Stanley Park's forest be a resilient coastal forest with a diversity of native tree and other species and habitats, that allows park visitors to experience nature in the city".

Three goals were established for the restoration of the park:

- Establish and maintain conditions in the blowdown areas that will foster a resilient coastal forest with a diversity of native tree and other species and habitats, using methods and equipment that protect the environment, park visitors, workers and volunteers;
- Repair the park's infrastructure so that the park activities can resume as quickly as possible; and
- Create legacies that will support the whole of Stanley Park's forest in the long term.

The Restoration Plan provided a detailed list of 28 restoration activities to be implemented during 2007 and 2008.

Forest restoration (mid 2007 to mid 2008)
A fundamental principle was to ensure that all forest restoration work be done in a manner that protected Stanley Park's natural and cultural environments. In the spring and summer of 2007, a comprehensive inventory of these various features was created by experts in forest ecology, arboriculture, biology, and archaeology.



A set of detailed work guidelines were generated and mapped out for each blowdown area, taking into consideration environmental and human features needing protection. Many of these features were also flagged in the blowdown areas. The experts subsequently monitored and assisted forest crews as they were working in the blowdown areas.

Forest crews performed a wide range of tasks, including:

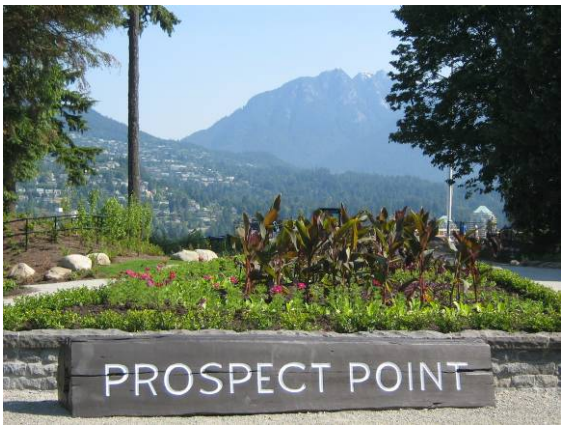
- Removing about 25% of these trees and snags that survived the windstorms because of the high risk they posed to workers and/or the public;
- Modifying more than 2,000 newly exposed trees at the edge of the blowdown areas;
- Collecting small woody debris (often the ignition source of a forest fire) found within five meters of both sides of trails and roadways and within the blowdown areas;
- Removing about 75% of fallen trees from the forest floor (about 10,000 logs); and
- Planting about 15,000 new trees and shrubs.

Slope stabilization and seawall repairs (summer-fall 2007; summer 2008)
The windstorms caused a series of small to medium scale landslides along the steep slope that runs from Prospect Point to Third Beach. The debris and the trees that tumbled down the slope blocked the seawall. In addition, the powerful waves off of English Bay during the 2006 windstorm washed out material under the seawall walkway and created voids, which weakened portions of the walking/riding surface and the strength of the stone wall itself. This section of the seawall was immediately shut down for public safety reasons.

In the summer and fall of 2007, trees, soil and rock that were considered likely to fall down over the next 10-20 years were removed from the steep slope. Plants and shrubs that grow well on steep terrain and provide good soil stability were planted. Drainage improvements were made where soils typically become overly saturated during winter months. About 40% of this 2 km segment was modified and made more stable.

After debris was removed and basic repairs were done to the asphalt surface, public access to this portion of the seawall was re-established in November 2007. In the summer of 2008, major structural repairs were performed on the seawall between Prospect Point and Third Beach. The work was carried out while keeping the seawall open to the public.

Enhancements at Prospect Point (spring 2008 to spring 2009)
Park Drive and a parking lot were built very close to the viewpoint at Prospect Point. Because a portion of the forest about 100 meters away from Prospect Point was blown down during the 2006 windstorm, an opportunity presented itself to relocate the road and parking lot away from the point, and create an enhanced viewing area at Prospect Point. The first phase of work consisted of building the new road and parking lot, while the second phase included the removal of the old road and parking lot and construction of new pathways, plazas, landscaping and viewing areas.



Legacies: interpretative signage and forest management plan (2008-2009)
In the summer of 2008, forty new historical and environmental interpretation signs were installed across the park. In the summer of 2009, a Stanley Park guide book containing historical and environmental information will be published.

In March 2009, a new forest management plan was presented to the Board. The plan includes a series of goals and objectives to guide forest-related projects and programs over the next 10-20 years. The Board is asked to approve these goals and objectives (Recommendation A), which are listed in Appendix A.

Financial summary
In January 2007, the Board and Council approved the creation of the Stanley Park Restoration Reserve.

A total of $10.6 million was received in revenues from the following sources:

• Donations from citizens and corporations:	$3.45 million
• Contribution from City of Vancouver:	$2.00 million
• Contribution from British Columbia Government:	$2.00 million
• Contribution from Government of Canada:	$2.00 million
• Revenue from sale of logs:	$0.65 million
• Interest:	$0.47 million
TOTAL REVENUE:	$10.6 million

A total of $9.9 million has been spent or committed:

• Restore public access and services after storms:	$0.75 million
• Forest restoration:	$2.64 million
• Slope stabilization and seawall repairs:	$2.23 million
• Enhancements at Prospect Point:	$2.63 million
• Legacies:	$0.29 million
• Administration and public consultation:	$1.38 million
TOTAL EXPENSES:	$9.9 million
BALANCE:	$0.7 million

It is anticipated that the balance in the reserve at the end of the restoration project will be approximately $0.7 million. The Board is being asked to allocate this amount to projects and programs identified in the Stanley Park Forest Management Plan (Recommendation B).

CONCLUSION

The restoration of Stanley Park is nearing completion. This project exemplifies the best in community interest and stewardship, partnerships with other levels of government, and the dedication of volunteers, consultants, contractors and staff.

Stanley Park's forest will recover in the fullness of time. It is hoped that the forest will not only heal after being damaged by the windstorms, but become stronger and healthier such that future disturbances do not have catastrophic effects. As it has for generations, Stanley Park's forest will continue to inspire residents of and visitors to Vancouver and allow all to richly experience nature in the city.

Prepared by:

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JL/MD

Stanley Park Forest Management Plan (2009)
Goals and Objectives

Overall Goals of Management Plan

- Maintain the conditions that foster a resilient forest with a diversity of native tree and other species and habitats within the forest.

- Reduce the risk of personal injury or property damage caused by failing trees or tree parts to a reasonable level.

- Establish guidelines and work prescriptions that strike an appropriate balance between the healthy functioning of a forest ecosystem, and people's safe enjoyment of the park.

- Establish resilient and healthy forests in the areas blown down in 2006.

- Protect the forest from large disturbances or from ecological threats.

- Manage the forest in such a way that wildlife species and their habitats are protected or enhanced.

- Maintain the forest's contribution to reduction of atmospheric greenhouse gases by managing it for maximum productive health.

- To provide a legacy of maps, data, and information that will form a baseline for ecosystem monitoring and public education.

Module 1 - Tree Inspection and Safety Management

Goals

- To reduce the risk of personal injury or property damage caused by failing trees or tree parts to a reasonable level, while sustaining a healthy forest ecosystem. The focus is to be on observable defects in trees.

Objectives

- Visually inspect all high usage areas at least once each year.
- Remain vigilant to new tree hazards as they may occur throughout the season.
- Efficiently correct known hazards on a priority basis.

Stanley Park Forest Management Plan (2009)
Goals and Objectives

Module 2 - Log and Debris Dispersal

Goals

- To provide timely cleanup of debris on a balanced priority of need basis.
- To balance efficiency with environmental, aesthetic, and community needs.

Objectives

After storm events:

- Quickly restore access throughout the park on a prioritized basis.
- With larger blowdowns, first assess the amount of coarse woody debris (> 12 cm diameter) from both before and after the event.
- Retain within the ecologically appropriate range of course woody debris.

During routine work:

- Trails and turf areas should be cleared to a level of cleanliness appropriate to the park locale.
- Felled danger trees in areas of elevated fire risk (trailsides, internal access trails, fuel type S1-S2) should have branches bucked and the logs laid to ground level.
- Felled danger trees away from areas of fire risk may be left intact, especially in wet areas.

Module 3 - Windthrow Management

Goals

- To reduce the potential of windstorms impacting park visitors or staff.
- To reduce the potential of windstorms causing damage to park infrastructure or to the forest at large, while maintaining natural forest functioning.

Objectives

- Assess the vulnerability of different parts of the forest to wind damage caused by routinely recurring windstorms.
- Identify the areas within the park where impacts of windthrow are most significant.
- Develop and implement area and stand specific strategies to help reduce the likelihood of personal injury, property damage, or substantial tree loss.

Stanley Park Forest Management Plan (2009)
Goals and Objectives

Module 4 - Fire Management

Goals

- To reduce the likelihood of uncontrolled fires burning the forest, and to minimize the extent of damage and risk to park visitors caused by escaped fires.

Objectives

- Continue to strengthen and implement the existing Stanley Park Fire Management Plan.
- Implement an ecologically sensitive fuel reduction program that is responsive to changes.

Module 5 - Invasive Species Management in Forested Ecosystems

Goal

- To promote resilient and diverse forest ecosystems in Stanley Park by managing and controlling alien invasive species in a timely, environmentally sensitive and effective manner.

Objectives

- Regularly monitor forested areas and surroundings to ensure that emergent invasive plant infestations are recognized before they have a significant impact on ecosystems.
- Prioritize management efforts to focus on invasive species according to their potential and realized threats to forest ecosystems.
- Apply the best management practices for invasive plants while taking into account legal requirements, impacts on park ecosystems, as well as the safety of park staff, volunteers and visitors.

Module 6 - Forest Health Factors

Goals

- To manage the health of the forest such that severe insect or disease infestations, or abiotic disorders, do not cause tree losses constituting catastrophic changes to the ecology of the forest.

Stanley Park Forest Management Plan (2009)
Goals and Objectives

Objectives

- Identify and understand which forest health factors represent significant threats to Stanley Park, and remain current as environmental conditions change.
- Develop and implement monitoring protocols for threatening insects and diseases.
- Implement biorational control strategies when population levels reach the point where damaging infestation is imminent.

Module 7 - Managing for Wildlife and Habitat in Forested Ecosystems

Goal

- To manage for the stewardship and enhancement of wildlife species and their habitats within Stanley Park forested areas.

Objectives

- Establish *Wildlife Emphasis Areas* within the park.
- Ensure that the Forest Management Plan conforms with all applicable Federal and Provincial legislation related to wildlife and fisheries habitats.
- Protect those species with special status (such as 'Species at Risk') and their habitats.
- Facilitate projects that protect or enhance wildlife and their habitats.

Module 8 – Establishing New Stands

Goals

- To establish after a disturbance a diversity of new native trees which will be resilient against further disturbances, while protecting ecological values. Survival and growth rate should be enhanced by using a variety of tools and methods.
- To establish new forest stands in small parcels of current forest edge which at the present time serve no recreational, aesthetic, or operational purpose. Early successional species should be used when planting new areas.

Objectives

- Plant trees that will start the area on a path toward achieving the stand objectives, as determined by the site growing conditions.
- Control the competing vegetation that would kill or slow the growth of planted trees.

Stanley Park Forest Management Plan (2009)
Goals and Objectives

- After the trees have become sufficiently large and healthy that they no longer require the brushing of competing vegetation, selectively thin their numbers to desired stocking levels. Transplanting to other locations may be considered.

Module 9 – Established Plantation Treatments

Goals

- To increase future wind resilience of established plantations by thinning the stand density to a level where trees can retain their side branches and develop strong stems.
- To enhance wildlife habitat by opening the forest floor within plantations to more sunlight.
- To hasten the development of plantations toward their stand objectives by increasing tree growth and species diversity.

Objectives

- Determine which plantations will benefit significantly by the application of thinning treatment, and determine the most effective order in which to treat the plantations.
- Bring stand density in these plantations down to a level that will achieve the stated goals.

Module 10 – Climate Change

Goal

- To maximize the forest's contribution to reduction of atmospheric greenhouse gases by managing it for maximum productive health.

Objectives

- Prepare for expected changes in weather patterns by implementing management practices that reduce the likelihood of catastrophic fire, insect/disease outbreak, or windthrow.
- Adapt tree planting and silvicultural practices, including invasive plant control, such that they are effective under today's climatic conditions, and also under those projected for the future.
- Set up twenty permanent sample plots within the forest to monitor ecological change over time, thereby guiding further adjustments to the management plan.