Snohomish County Public Works
Surface Water Management Division

Centennial Clean Water Fund
Integrating Stormwater Water Quality Management

Macs Blue Spruce
Native Growth Protection Area (NGPA)
Management Plan

2007 to 2009

Section I	NGPA Restoration and Vegetation Management Plan
Section II	Macs Blue Spruce Homeowners Neighborhood Plan for NGPA Management

Maps, assessment, and Tree Risk documents are included in the *NGPA Restoration Macs Blue Spruce – Natural Drainage Project* binder and on the project website macsbluespruce.surfacewater.info.

Scott Moore
Native Plant Steward
425-388-6462

3000 Rockefeller Avenue
Everett, WA 98201-4046

Section I: Restoration and Vegetation Management Plan, 2009

Management Plan:

- Assess trees for hazard risk and health. Identify risk trees for treatment or monitoring
- Remove debris and garbage
- Remove smothering or potentially invasive yard waste, especially grass clippings
- Establish composting areas away from NPGA, clean green pick up
- Control interior invasive plant species
- Decommission social trails
- Control edge invasive plant species, especially Himalayan blackberry & English ivy
- Plant forest under storey with shade tolerant conifers, especially cedar and hemlock
- After successful edge control begin replanting with desirable native shrubs and small trees
- Ongoing surveillance for weed re-growth
- Ongoing vegetation monitoring
- Construct integrated stormwater bioretention swale and replant

Purpose and Need

This vegetation management plan (VMP) is being developed as a guide for Macs Blue Spruce (MBS) homeowners. The intended audience of this document includes residents of the MBS development, Snohomish County Public Works Surface Water Management (SWM), and members of the public. The purpose of this document is to provide a management tool that outlines a sequence of restoration activities to be completed in a strategic and phased manner, as well as guidelines for the continued monitoring and maintenance.

Goals of the Restoration and Vegetation Management Plan

The following eight goals are those of the NPGA preservation & restoration pilot program as well as those of the VMP. Through the implementation of this plan we will be able to meet the objectives of each of these goals over the next several years.

1. Preserve and restore integrity of the NGPA
2. Promote natural processes
3. Improve wetland functionality
4. Conserve soil and water quality
5. Insure public safety
6. Promote native character
7. Protect and enhance wildlife populations
8. Buffer land uses

Project Area

Location

- Located on Penny Creek east of Silver Lake at 111th Pl SE & 26th Ave SE in SE ¼ of Sec 20, T28N, R 5E
- MBS Open Space / NPGA occupies 6.4 acres and is adjacent to a smaller 3.3 acre NPGA wetland system north of 110th, 0.8 miles upstream of Ruggs Lake

Site Characteristics

- Type 4, ephemeral stream in this area
- Underlain by McKenna Gravelly silt loam, and Mukilteo muck

Plant Community

- There are 3 general habitat areas and plant community types within this NGPA:
  1. Edge of predominantly mature deciduous trees consists of red alder, cottonwood, big leaf maple, and pacific willow.
  2. Large patches of conifers around periphery consist of Douglas fir, western redcedar, western hemlock with understory of salal, low Oregon grape, sword fern, trailing blackberry, and false lily of the valley.
  3. Central stream, riparian corridor, and adjacent forested scrub/shrub wetland consist of alder, Sitka and Pacific willow, salmonberry, spirea, and slough sedge with small patches of reed canary grass.
- Invasive plant species include Himalayan blackberry, European ash, English holly, English Ivy, bindweed, Lamiastrum (yellow archangel), reed canary grass, and Scot's broom

Project Implementation (2008-2009):

- Removal of 1.5 tons of garbage
- Removal of invasive plant species from 51,834 sq ft (1.2 acres)
- Plant 3,425 native trees and shrubs
- Implemented with
  - 1000 man-hours Washington Conservation Corps (WCC)
  - 247 hours citizen volunteers including MBS residents, native steward volunteers, 3rd Grade class from adjacent James Monroe Elementary school

NGPA Assessment

1. Tree Stand Assessment

A forest stand inventory and assessment was conducted on all trees in the outer periphery of the MBS NPGA. The report may be found elsewhere in the overall report and on the project website: macsbluespruce.surfacewater.info. While most of the trees

were deemed healthy, a significant number showed signs of stress and declining health. Identified declining trees should be monitored regularly by adjacent property owners who should work with a certified arborist to craft a management approach for each tree. If trees are deemed unhealthy and have potential to create private property damage, the trees may be reduced in height & wind susceptibility by selective pruning and or "snagging". All tree materials must be left within the NPGA.

2. **Garbage Removal**

   Substantial time and effort was made by SWM staff, WCC Habitat Restoration Crews, local landowners/neighbors, and citizen volunteers to remove accumulations of garbage and debris scattered through the NPGA. Much of the garbage was a result of illegal dumping by adjacent property owners outside MBS, apparent transient and homeless encampments, and social/recreational users of the area. Bollards and fencing and signage may be required to discourage continuation of these behaviors. The newly cleaned up NPGA may actually discourage further dumping. Neighbors should have constant vigilance and remove even smallest accumulations before it becomes a new magnet for further dumping.

3. **Yard Debris Removal**

   Yard debris such as grass clippings, pruned shrub & tree branches, and discarded potted plants & potting soils were common within the perimeter of the NPGA where adjacent back yards. Large piles of lawn grass clippings were most common and contributed significantly to smothering of native groundcover within the NPGA. This activity should be discouraged by the common residents of the MBS green space—residents should consider contracting for clean green and yard waste pick up. At least one site in the NPGA hosts a population of yellow archangel (*Lamium galeobdolon*) which now established is beginning to swarm through the NPGA.

   The largest debris pile was found in the southeast corner of the NPGA and within an undeveloped county road right of way. Approximately 10 cubic yards of horse stall and paddock manure had been piled into the forest edge adjacent to the Penny Creek stream corridor and adjacent wetlands and stormwater treatment facility, smothering and killing two substantial (18 inch plus diameter) Douglas firs. Illegal dumping enforcement ensued.

4. Weed Control

Common invasive species occurring within the Macs Blue Spruce NPGA:

Himalayan blackberry	*Rubus armeniacus*
English ivy	*Hedera helix*
European mountain ash	*Sorbus aucuparia*
Yellow archangel	*Lamiastrum galeobdolon*
Scot's broom	*Cytisus scoparius*
English holly	*Ilex aquifolium*
English laurel	*Prunus laurocerasus*
Reed canarygrass	*Phalaris arundinacea*
Morning glory, Hedge bindweed	*Calystegia sepium*

Himalayan blackberry was the most prominent invasive plant around the periphery of the MBS NPGA. Work crews manually cut and removed canes using loppers, gas powered brush cutters and hedge trimmers reducing blackberry to 6 to 8 inch stubble. Stubble was either grubbed (dug out by shovel or pick ax) or allowed to re-leaf and subsequently sprayed with a 5-percent solution of glyphosate. Canes were chopped, piled, and covered to decompose on site. Care was taken to locate piles in areas with no understory vegetation.

English ivy is a prominent ground layer around the perimeter edges as well as a significant tree climber and strangler. Evidence shows some landowners were already taking the initiative to reduce ivy load on stressed forest trees. Where practical, ivy was pulled up from the ground and hauled offsite. Tree climbing ivy branches were severed and removed from periphery of all trees.

Other common invasive plants at MBS include Scot's broom, English holly and European mountain ash. Large specimens of both species were cut at base of trunks and moved off site. Smaller specimens were uprooted with assistance of a weed wrench. NPGA should be monitored yearly for re-sprout from stumps, or from new seedlings from the seed bank.

Another weed of great concern, yellow archangel, fortunately occurs in only one place. Left unchecked this invasive has capacity to cover much of the forest understory due to its tolerance for shade. This plant species was treated with glyphosate and is now being monitored.

5. Planting

Weed removal and treatment areas were replanted with native plants. Planting areas were delineated as three different community types: Deciduous edge, Mixed Conifer interior, and Wetland Edge. Deciduous edge accounts for approximately 25,000 sq ft.; Conifer interior totals 13,000 sq ft; and Wetland edge represents 13,000 sq ft.

Deciduous edge was the largest treatment area of the project and represents the most impacted portion of the NPGA. The abrupt edge between the developed parcels with houses and manicured lawn and the forest interior is subject to high levels of disturbance, this allows more light into the interior of the forest and encourages recruitment and growth of undesirable plant species along the edge and deeper into the forest, resulting in a steep environmental gradient. Himalayan blackberry, Scot's broom, and English ivy dominate these zones. Native plants chosen for this area included grand fir, Sitka spruce, alder, paper birch, service berry, red osier dogwood, snowberry, black twinberry, Indian plum, red flowering currant, and tall Oregon grape. All tree and shrub stock were 2 or 3 gallon container plants.

Interior conifer and deciduous forest areas were mostly planted with western redcedar, vine maple, salal, low Oregon grape, and sword fern.

Wetland edges were planted with western redcedar, western crabapple, Nootka & peafruit rose, Pacific ninebark, and slough sedge.

6. Decommission social trails

Plantings and woody debris were strategically placed to obscure social trails in sensitive areas.

In some areas, especially in the area of newly constructed drainage swale on the southeast side of the NPGA, plastic mesh construction fencing was erected and staked around the perimeter to protect plantings and prevent swale corridor from being used as a trail. Social trails often become vectors and routes for illicit garbage disposal. Shorter pocket trails penetrate the outside periphery of the NPGA and are associated with individual landowners creating yard waste dumping areas.

7. Monitoring and Maintenance

Regular visits are made to Macs Blue Spruce NPGA by County staff and its agents to assess and evaluate the health and vigor of the new plantings during the critical establishment period. Staff actively monitor plant stress, death and damage of newly established plants, and reemergence of weeds that may put plantings at risk.

Analysis of site evaluation and assessment will guide follow up maintenance and replacement priorities across the site. This includes visual inspection and utilizing Level A Monitoring (SWM Native Plant Program Vegetation Monitoring Protocol, 2004). Adjacent residents should be vigilant and prevent plantings from being engulfed by blackberry and morning glory. As often happens, once a predominant layer of weeds is removed, such as blackberry, and soil disturbed, a whole new suite of weed species may emerge.

Follow-up for areas where invasive plants were removed and revegetated with native plants requires monitoring on a regular basis for return of invasive plants, health and establishment of planted native plants, new illegal dumping of yard waste and debris into the NPGA, and continued monitoring of tree stand health and stability of senescing trees.

Additional intensive vegetation monitoring will be conducted on the site over the next ten years by County staff to evaluate effectiveness of the plantings and species selection as the canopy develops and merges with the existing natural & intact forest.

Section II: Macs Blue Spruce Homeowners Neighborhood NGPA Management Plan

The NGPA Restoration and Management Plan 2009 outlines rationale and implementation guidelines for the site. While the initial work is complete, the site will require regular vigilance to maintain it. Primary restoration elements included garbage & debris removal, removal of invasive plants, orphaning selected social trails, and revegetation with native trees and shrubs.

Best Management Practices

- Dump no yard or pet waste with in boundaries of NGPA.
- Residents should report illegal dumping to Snohomish Health District 425-339-5250.
- Discourage landowners on east side of NGPA from dumping yard waste and livestock waste within the NGPA boundaries.
- Respect boundaries of existing NGPA forest, do not damage native trees and shrubs within NGPA boundary.
- Consult with certified arborist on hazard trees assessment and risk reduction. Retain all downed trees and limbs within NGPA. Materials should not be removed for firewood.

Actions

Visit perimeter and interior of the NGPA seasonally to look for problems, especially during peak growing season June thru August, and again in fall/winter after leaves drop to allow for better visualization.

Monitor site for re-growth or return of blackberry, English ivy, Scot's broom, English holly, European mountain ash, morning glory, and yellow archangel. Refer to the NGPA Assessment Presentation for identification help. With the exception of yellow archangel, these invaders may be easily dug up or grubbed out. Larger plants may be cut off at ground level. Most of this plant debris may actually be left within the NGPA– avoid heaping piles that will suffocate existing native plants or occupy an open space that could host a native plant. There are a few exceptions, especially if the plant has **viable seed** (Scots broom or European mountain ash or is **viny** (ivy, morning glory, or yellow archangel, for instance!) and has potential to re-root. Try to control these invasives before or at flowering.

Primary invasive plant removal and planting areas at Macs Blue Spruce by plant community type

Approximately 52,000 square feet.

1. **Yellow archangel** (*Lamium galeobdolon*): is a highly invasive woody vine of shady forest floors that quickly forms dense blankets of leafy vines smothering any native ground covers. Rarely climbs. Once established it is difficult to eliminate this plant without a high amount of collateral damage to existing plants. Often starts with discarded house plant at the NGPA edge.

   There is one known infestation in the NGPA located in the northwest corner behind two adjacent homes on 26th Ave SE. It is still a relatively small patch approximately 3 x 5 ft. The patch was treated with glyphosate during visits summer of 2009.

   Treatment: behaves much like bindweed – resprouts from root fragments, roots are shallow but break easily. On small patches it may be possible to succeed with diligent digging and grubbing on a regular basis throughout the spring and summer. Small patches may respond to sheet mulching with cardboard and wood chips.

   Yellow archangel debris and plant parts should be bagged & thrown in the garbage – avoid placement in clean green or compost. Do not discard into the NGPA or adjacent forest.

2. **English Ivy (*Hedera helix*)**: Ivy is a troublesome invader of woodlands in the PNW. It is a highly invasive woody vine that swarms over shady forest floors and climbs standing vegetation especially medium to large diameter trees. The dense evergreen foliage and strangling stems smothers the tree depriving it of air circulation, water, --- and hosts unwanted pests like fungus and rodents. Untreated, ivy leads to certain death of the host tree. Ivy responds well to regular pulling and grubbing from forest floor. Tree climbing vines should severed by removing at least a 3 ft segment of vine from the tree. Ivy in upper canopy, once cut off from roots will eventually die. Create a ivy free zone from around base of trees to discourage ivy from climbing up tree.

   Primary infestations occur in the southwest corner of NGPA.

3. **Blackberry (*Rubus armeniacus*)** represents the most abundant invasive plant within the MBS NGPA both in areal coverage and sheer biomass. Restoration crews removed most of the patches by cutting plants to ground, digging up roots and runner, chopping and composting canes, spraying with glyphosate herbicide. Blackberry has not been fully eliminated from the site and is likely to return to its previous extent if not retreated on a regular basis. At minimum, landowners should cut re-emerging canes to the ground at least once a month during growing season. Hand digging or grubbing these resprouts to remove the roots and main below ground structures. Site is also at risk from emergence of new juvenile plants arising from the seed bank. Until the restoration plantings establish themselves and begin contributing significant competing biomass and cover, blackberry should be prevented from re-establishing.