OPERATING AGREEMENT
For
THE DELRIDGE WETLAND AND STEWARDSHIP PROJECT PROPERTY
BETWEEN
THE CITY OF SEATTLE, DEPARTMENT OF PARKS AND RECREATION
And
DELRIDGE NEIGHBORHOOD DEVELOPMENT AUTHORITY

This Operating Agreement ("Agreement") is made this ___ day of _____, 2017 ("Effective Date"), by and between the City of Seattle, a Washington municipal corporation ("City"), and Delridge Neighborhood Development Association a [a 501C3 Washington non-profit corporation] ("DNDA"), (sometimes referred to individually as a "Party" and collectively "the Parties").

RECITALS

A. The City, through its Department of Parks and Recreation ("SPR") owns in fee the real property located at 5601 23rd Avenue SW, Seattle, Washington, described more fully herein.

B. The City, with the help of funds secured by DNDA, acquired the Property for open space, park, and recreation purposes.

C. DNDA is a 501C3 Washington non-profit corporation formed in 1996 for the purpose of providing affordable housing, green space, healthy food, education, arts and culture in the Delridge community within West Seattle. Other projects that DNDA has been involved in include the Longfellow Creek Legacy Trail, the development and preservation of affordable housing, bringing a new library to the community, and assisting dozens of groups with their community projects. This Agreement to manage the Property for the benefit of the community is consistent with DNDA's mission to activate growth in the Delridge corridor by providing vital resources for all our neighbors.

D. The Delridge community is committed to protecting and restoring the degraded wetland on the Property to enhance water quality in nearby Longfellow Creek and to provide an outdoor laboratory for community learning of their environment.

E. The Parties desire to establish and provide a vibrant public space that meets community outdoor recreation needs, and to efficiently operate and manage the Property. To that end, the Parties desire to set forth the terms and conditions of their relationship in this Agreement.

F. The Parties commit themselves to work together in the spirit of partnership for the success of the Property, subject to the terms and conditions of this Agreement, and to deal with each other with fairness, respect, cooperation, and good faith.

NOW THEREFORE, the Parties agree as follows:

AGREEMENT

1. PROPERTY. The City owns the former Seattle City Light substation property (aka Delridge Wetland and Stewardship Project) located at 5601 23rd Avenue SW, Seattle, Washington, described in Exhibit A (the "Property").

2. PERMITTED USES; IMPROVEMENTS AND ALTERATIONS. The Parties intend for the Property to be developed, operated, and maintained for purposes of open space, park and recreation uses (with a focus on environmental education) community supported agriculture, and for no other purposes. The City hereby authorizes DNDA to use, maintain, operate, and develop, the Property for the specific purposes above, subject to the terms and conditions set forth in this Agreement. The City acquired the Property using King County Conservation Futures Funding, in part, which restricts future uses of the Property to habitat restoration and low impact, passive-use outdoor recreation. A maximum of 15% of the total surface area of the Property may be developed or maintained with non-vegetative impervious surfaces. Any improvements or alterations to the Property must be reviewed and approved in writing, in advance, by SPR. For any proposed improvements to the Property, DNDA shall provide Parks at least 30 days in advance of DNDA's proposed construction start date with a development plan and schedule. Parks shall review all plans within 20 days of receipt from DNDA to ensure that in SPR's sole discretion, the work is consistent with this Agreement and can be completed consistent with the development schedule. DNDA shall submit a development plan to SPR at least once every year during the term of this Agreement, and once approved by SPR, any changes to the approved plan will require SPR review and approval.

3. GOVERNING LAWS, REGULATIONS AND POLICIES. All use of the Property shall be subject to and comply with City of Seattle Municipal Code, including but not limited to the Park Code, all applicable SPR regulations and policies, and all other applicable local, state and federal laws.

4. FEE; EXCHANGE OF BENEFITS. SPR will not require DNDA to provide monetary compensation to SPR for the use of the Property pursuant to this Agreement. SPR acknowledges and agrees that DNDA's use of the Property under this Agreement provides valuable services by operating, managing, and maintaining the Property for the benefit of the City, its residents, and the community. In addition, such public benefit will be confirmed as part of SPR's review process relating to individual improvements and alterations in accordance with Section 2

5. TERM. The term of this Agreement shall commence on the Effective Date, and shall terminate 10 years thereafter ("Initial Term"). Thereafter, this Agreement may be extended by mutual written agreement of the Parties for additional five-year periods.

6. TERMINATION; REVOCATION. This Agreement may be terminated by SPR at any time for any reason, including but not limited to DNDA failing to properly use, manage, or maintain the Property, or in the event this Agreement is no longer in the public interest or that of SPR, in the sole discretion of SPR. In addition, this Agreement may be terminated by mutual agreement of the Parties with 30 days' written notice. Within 30 days of the date of termination, DNDA shall remove all equipment, tools, and other personal property. Should DNDA fail to remove personal property with 30 days of termination, the City may remove such personal property at DNDA's cost.

7. MANAGEMENT AND STAFFING. DNDA agrees to use, manage, maintain, operate, and develop the Property for the benefit of the public, at DNDA's expense. DNDA's executive director, or designee will be responsible for all operations on the Property. The executive director shall have operational authority over all management and operation of the Property including routine maintenance, events, partnerships, and any improvements to the site.

8. GROUNDS AND FACILITIES. The City shall retain title to the real property, including grounds, buildings, structures and all other improvements on or within the Property. DNDA shall determine, consistent with Section 2 of this Agreement, and subject to the advance written approval of the SPR, the most effective and appropriate use of the Property for the benefit of the Delridge community.

9. BUDGET AND FUNDING. The Parties agree that it is the intent of this Agreement that DNDA is responsible for all operating and management expenses (including, but not limited to, routine maintenance and any capital improvement projects on the property). Except as to grants, which DNDA may apply for from time to time, DNDA understands and agrees that it will not receive reimbursement, compensation or other financial assistance from the City for using, operating, managing, maintaining, improving or altering the Property or providing other services as contemplated in this Agreement.

10. MAINTENANCE AND OPERATIONS. DNDA agrees to maintain the property, at DNDA's sole expense, to Seattle Park Standards as referenced in Attachment B (Forest Steward Field Guide). DNDA shall submit an operating plan to SPR at the beginning of every year, although both parties recognize that operations may change over the year in order to meet community or financial objectives. Parks shall review the plan within 20 days of receipt from DNDA to ensure that in SPR's sole discretion, the operation of the property is consistent with this Agreement

11. REVENUES.

11.1. The Parties agree that the residents of the Delridge community along with the general public are intended to be the primary beneficiaries of DNDA's use of the Property. DNDA shall submit a revenue plan to SPR at the beginning of every year that will accomplish that goal and provide adequate revenue to cover annual operating and development expenditures. DNDA also intends to seek grants or other sources of

funding. As stated in this Agreement, all uses of the Property shall comply with City of Seattle codes, regulations and policies, including those limiting use of public Parks land for commercial activities or purposes.

11.2. DNDA shall not discriminate based upon race, color, creed, religion, gender, marital status, age, disability, national origin, sexual orientation, or ancestry, in any activity, program, or use of the Property pursuant to this Agreement.

12. AUDITS, RECORD RETENTION AND INSPECTION. The Parties understand and agree that the City is a public entity and as such must comply with and is subject to various laws including, but not limited to, Washington public records disclosure laws, and that members of the public as well as representatives of governmental agencies have access to and the right to examine, audit, excerpt, copy or transcribe any pertinent transaction, activity, or other records of each Party relating to this Agreement. DNDA shall retain for a period of not less than seven (7) years after their creation date, all cost, accounting, financial, and other records related to this Agreement. DNDA hereby grants the City the right to conduct at any reasonable time an audit and re-audit of the books, records and business conducted related to this Agreement and observe the operation of the related business so that the accuracy of the above records and any of the invoices for services provided can be confirmed.

13. DISPUTE RESOLUTION. Should disputes arise between the Parties for which a dispute resolution mechanism or remedy is not otherwise specifically set forth in this Agreement and 1) the Parties are unable to resolve such matters between themselves by negotiation after the complaining party has provided the other party written notice of the complaint and 2) after reasonable opportunity to cure the problem has been given by the complaining Party, either Party may file an action in King County Superior Court. Such dispute shall be adjudicated under the laws of the State of Washington.

14. INDEMNIFICATION. DNDA agrees to indemnify, defend and hold harmless City, its agents, officer and employees, from and against any and all liability, expense, nature whatsoever, including, but not limited to, bodily injury, death, personal injury, or property damage arising from or connected with DNDA's operations or its services under this Agreement, or its use of the Property, including any Worker's Compensation suits, liability or expense, arising from or connected with services performed by or on behalf of the DNDA by any person pursuant to this Agreement. DNDA's duty to indemnify City shall survive the expiration or other termination of this Agreement.

15. INSURANCE.

15.1. General Requirements. DNDA shall provide and maintain at its own expense throughout the term of this Agreement insurance covering its operations hereunder. Such insurance shall be provided by insurers satisfactory to City's Risk Manager, and shall name the City as an additional insured.

15.2. DNDA agrees and will ensure that all DNDA staff are trained in all safety-related matters as required by law or appropriate for the use of the Property and for services provided at the Property.

16. NOTICES. Any notice, consent, authorization or other communication given to a Party shall be in writing and deemed duly given and received when (a) delivered personally, (b) transmitted by facsimile, (c) one business day after being deposited for next-day delivery with a nationally recognized overnight delivery service, or (d) three business days after being mailed by first class mail, charges and postage prepaid, and in all cases properly addressed to the Party to receive such notice at the last address furnished for such purpose by the Party to whom notice is directed. In the case of notices to be given to the City, notice shall be addressed as follows:

Seattle Parks and Recreation
800 Maynard Avenue South
Seattle, WA 98134
Attn: Manager, Property and Acquisition Services

In the case of notices to be given to DNDA shall be addressed as follows:

Delridge Neighborhood Development Authority
4408 Delridge Way SW
Seattle, WA 98106
Attn: Executive Director

17. AMENDMENTS. This Agreement may be amended only by mutual written Agreement of the Parties.

18. MISCELLANEOUS PROVISIONS.

18.1 Good Faith and Cooperation. The City and DNDA agree that it is in their mutual best interest and in the best interest of the public that the Property be maintained, operated and managed as herein agreed and, to that end, the Parties shall in all instances cooperate and act in good faith in compliance with all of the terms, covenants, and conditions of this Agreement.

18.2 Severability. If any provision of this Agreement, or the application of such provision to any Party or circumstance, shall be held by a court of competent jurisdiction to be invalid or unenforceable, the remainder of this Agreement, or the application of such provision to such Party or circumstance other than those to which it is held to be invalid or unenforceable, shall not be affected thereby.

18.3 Governing Law; Venue**.** This Agreement shall be governed by, construed, and interpreted in accordance with the laws of the State of Washington. Venue for any action shall in relation this Agreement shall be in King County Superior Court, Seattle, Washington.

18.4 Entire Agreement. This Agreement represents the entire agreement of the parties and supersedes all prior to contemporaneous written or oral negotiations, correspondence, understandings and agreements between the parties regarding the subject matter hereof.

18.5 Parties in Interest. Nothing in this Agreement shall confer any rights or remedies under or by reason of this Agreement on any Party other than the DNDA and the City nor shall anything in this Agreement relieve or discharge the obligation or liability of any third party to any Party to this Agreement nor shall any provision give any third party any right of subrogation or action over or against any Party to this Agreement.

18.6 Waiver. Failure of either Party to complain of any action, non-action or default of the other Party shall not constitute a waiver of such Party's rights hereunder with respect to such action, non-action or default. Waiver by the DNDA or City of any right or any default hereunder shall not constitute a waiver of any subsequent default of the same obligation or for any other default, past, present or future.

18.7 Construction. This Agreement has been negotiated by the Parties and their respective legal counsel and will be fairly interpreted in accordance with its terms and without strict construction in favor of or against any Party.

18.8 No Assignment. This Agreement, nor any part of it nor any right or obligation arising from it shall be assigned without the express written consent of the Parties.

18.9 Independent Contractor Status. DNDA shall at all times be acting as an independent contractor. This Agreement is not intended, and shall not be construed to create the relationship of agent, servant, employee, partner, joint venture or association as between the Parties. The Parties understand and agree that any of their personnel furnishing services to the Property under this Agreement are employees solely of the Party which hired such personnel for purposes of workers' compensation liability and for purposes of receiving all other types of employee benefits. The Parties shall bear the sole responsibility and liability for furnishing workers 'compensation benefits to any personnel hired by them for injuries arising from or connected with services performed under this Agreement, and shall bear the sole responsibility and liability for furnishing all other employee benefits to any personnel hired by them.

IN WITNESS WHEREOF, the DNDA and the City have executed this Agreement as of the day and year first above written.

DNDA

By _____
Printed Name: _____
Title: _____

CITY OF SEATTLE

By _____
Jesús Aguirre
Superintendent, SPR and Recreation Department

Approved as to Form:

By: _____
Assistant City Attorney

Exhibit A

PROPERTY DESCRIPTION

Real property in the County of King, State of Washington, described as follows:

LOT 1, BLOCK 12, HOMECROFT ADDITION TO THE CITY OF SEATTLE, ACCORDING TO THE PLAT THEREOF RECORDED IN VOLUME 24 OF PLATS, PAGE 42, IN KING COUNTY, WASHINGTON.

Tax Parcel Number: 343850036009

Situs Address: 5601 23rd Avenue SW, Seattle, WA 98106

Exhibit B

GREEN SEATTLE PARTNERSHIP
FOREST STEWARD FIELD GUIDE

Forest Steward Field Guide

GREEN SEATTLE PARTNERSHIP

FORT&RRA

Green Seattle Partnership Contact Information
Forterra
901 Fifth Ave, Suite 2200 Seattle, WA 98164
tel 206-905-6920

greenseattle.org
Seattle Parks and Recreation
1600 S. Dakota Street
Seattle, WA 98104

Dear Forest Steward:

We welcome you to the Green Seattle Partnership (GSP)! The GSP Forest Stewards Program is an opportunity to join one of the largest, most unique community-based urban forest restoration efforts in the country. Work is already underway with a citywide goal of restoring 2,500 acres of forested parkland by 2025. The program has been working towards this goal for 10 years. To date we have over 1,200 acres enrolled in restoration. Getting to the remaining acres of forests while maintaining our work will take a tremendous effort.

This endeavor results in extraordinary benefits to the community as well as to the environment. Forest Stewards and community volunteers like you play an integral role in the success of this effort. Without volunteers our goal would be unachievable. To date, the work of many dedicated volunteers has been substantial, and we hope that through this program, we can assist you in making your incredible efforts even more successful.

While the thought of tackling the invasive plants in your park may seem daunting at times, remember that you have support from Seattle Parks and GSP staff. With more than 150 Forest Stewards and participating organizations, you will quickly realize you are not alone. This Forest Steward Field Guide contains the basic yet essential information you will need to start and implement site restoration plans and a system for tracking progress. As a Forest Steward, you will have opportunities to expand your forest restoration knowledge and skills by attending specialized training sessions. In addition, Forest Stewards at each park are eligible to receive tools, materials, plants, and crew assistance for your restoration projects through the Green Seattle Partnership.

Thank you for taking the lead to restore, maintain, and steward our urban forest. Your commitment makes our amazing city an even better place to live. We look forward to many great years of cooperation and success!

Sincerely,

The Green Seattle Partnership

Why the Green Seattle Partnership?

Our Vision: A Healthy, Livable City with Sustainable Urban Forest

The Green Seattle Partnership (GSP) is a public-private venture between the City of Seattle, its residents, Forterra, and a host of community organizations. Our vision is a city with diverse, invasive-free, sustainable forested parklands. Seattle's urban forest will be supported by an aware and engaged community in which individuals, neighborhoods, nonprofits, businesses, and government agencies work together to protect and maintain this resource.

Seattle's landscape has a history of logging and urbanization that has left our natural areas in less than ideal conditions. Many of these areas have a canopy comprised of short-lived deciduous trees, like red alder and bigleaf maple, and an understory that is often battling aggressive invasive plants. These conditions do not support the regeneration of a diverse native forest. Without intervention we are at risk of losing the quality forests our city needs. The Green Seattle Partnership is committed to creating healthy forested parklands, supported by long-term community stewardship and the establishment of resources within the City.

Our Goals

Restore 2,500 acres of Seattle's forested parklands by 2025 to a healthy, diverse, native state that is essentially free of invasive plants, thereby enhancing social, ecological, and ecosystem service values

- Increase community and volunteer stewardship of Seattle's urban forests.
- Provide opportunities for new forest conservation stewards through youth engagement and vocational training and leadership development.
- Develop a strategy to prioritize, fund, and restore additional forested City-owned land not currently included in the GSP plan.

In order for the Green Seattle Partnership to achieve these goals, we utilize volunteers, paid crews, and staff to advance our progress in restoring Seattle's forested parklands.

GREEN SEATTLE PARTNERSHIP

Forest Stewards Program

The most important element for success is a concerned and committed community. The Green Seattle Partnership is a result of community demand to provide resources and support to restore the City's forested parklands. Forest Stewards serve as the backbone of GSP by building a community of stewardship around these public forested parks to safeguard their future.

Benefits of GSP Support (as resources allow)

- Specialized training opportunities for continuing education, environmental science, project leadership, and more
- Access to plants, tools, and materials
- Multi-faceted volunteer recruitment
- Paid crews when available, and where and when needed
- Volunteer networking among groups working with GSP
- Direct communication with the City and access to technical resources and expertise to help meet site-specific needs
- Staff dedicated to helping Forest Stewards accomplish their site goals
- Assistance and training to monitor each project's progress to ensure proper maintenance

Forest Steward Duties

As a GSP Forest Steward, it is your responsibility to carry out the following duties and/or delegate them within your group:

- Attend initial Forest Steward orientation and additional required trainings.
- Serve as key contact person for GSP.
- Coordinate with GSP staff to develop site restoration plans and annual goals.
- Coordinate volunteer forest restoration events and activities in your forested parkland (minimum of four annually).
- Communicate! Complete and submit GSP event notifications, resource requests, work logs, and sign-in sheets via CEDAR to document restoration activities and the progress you've made.

THE FOUR-PHASE APPROACH

At GSP we recommend a four-phase restoration approach to forest stewardship:

Phase 1 focuses on removing invasive plants for the first time. In areas with high levels of invasive coverage, it may take more than one year to complete initial invasive removal.

Phase 2 requires follow-up invasive plant removal (weeding), as well as planting of native trees, shrubs, and groundcovers.

Phase 3 repeats invasive plant removal (weeding), if needed, and focuses on plant establishment. Sites are weeded, mulched, and watered as needed. Some sites may stay in Phase 3 for several years.

Phase 4 Phase 4 is the final phase, long-term stewardship and maintenance. Volunteers and professional crews will sweep restored areas on a 3 – 5 year cycle, looking for new populations of invasive plants, social use impacts, and other ecosystem health indicators. GSP zones only move into Phase 4 after a verification process by GSP staff that ensures the full zone is on a trajectory towards target ecosystem goals .

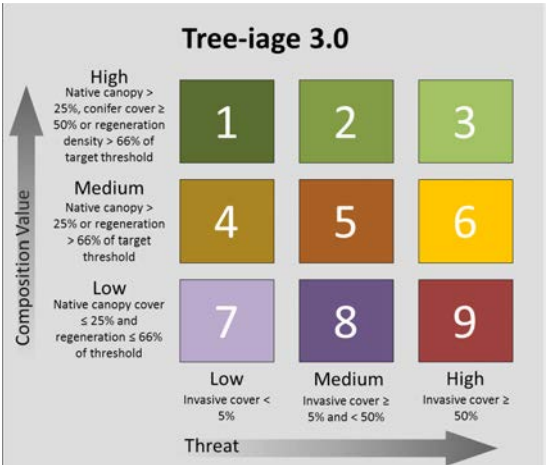
While most forest areas will need all four phases of restoration, some areas with low levels of invasive plants may only need a quick initial Phase 1 sweep to prepare the site for the next phase. If a healthy native plant community already exists, the site may graduate to Phase 3 or 4, depending on the conditions. Characterizing restoration sites in each of the four phases aids in the monitoring and development of site-specific management strategies.

Getting to Phase 4

In order to effectively your plan restoration activities, you need to have a clear goal for what you want your site to look like over time. There are several tools that help GSP staff and Forest Stewards plan restoration.

Tree-iage

The tree-iage model helps to understand key forest conditions and categorizes each zone for easy analysis. The axis on the left shows current tree composition values and the axis on the bottom shows the current invasive species threat. The categories can help with prioritizing restoration (e.g. high-value forests with little invasive cover should be restored before invasive issues get worse) and to help understand the restoration strategy and required resources.



Reference Ecosystems

An important principle of restoration is the identification of a reference ecological community to serve as a guide for planning projects and a benchmark for evaluating success. For each of the restoration zones, two levels have been identified to reference. Target Ecosystems and Target Forest Types (TFT) correspond to NatureServe Ecological Systems and Washington State Natural Heritage Ecological Systems. These are approaches to classification from statewide and international systems that characterize native plant communities.

7 target systems have been identified for the forested parkland in Seattle. Nested within the Target Ecosystem are numerous TFTs, native plant associations that provide a more specific planting palate to guide restoration. These associations are named by dominant and diagnostic plant species. For example, PSME-TSHE/GASH-MANE Douglas-fir- western hemlock / salal- dwarf Oregon grape. (The dashes in the names separate species in the same canopy layer; slashes separate species in different canopy layers).

A zone's TFT helps to select specific species that may be included in the planting palate. Project managers and Forest Stewards should feel free to experiment with species. It is not uncommon for a range of different plant associations to occur within a zone—and that is a good thing!

Web resources can be found on the Green Seattle Partnership website for identifying and understanding all the Target Ecosystems and Target Forest Types that occur in the forested parklands. Visit greenseattle.org *search:* reference ecosystem to find the Target Ecosystem and Target Forest Type for you park.

GSP Inventory

Each year, GSP prioritizes about 350 acres to be inventoried using the GSP Inventory Protocols in order to capture current condition information. The rapid assessment includes information on plant composition, as well as regenerating trees and overstory trees. This data is used for annual work planning as well as the Phase 4 verification by GSP staff. For more information, visit greenseattle.org *search*: inventory

Phase Mapping

In order to represent restoration progress and plan future work, areas that have seen restoration activities in the previous year are mapped. This work often happens concurrently with inventory data collection. The restoration phase information is then updated annually on the online GSP Reference Map. Watch your site change colors!

Forest Monitoring Teams

While the Inventory provides a rapid assessment of current conditions, the Monitoring program provides important details on how restoration areas are changing over time. Monitoring plots are 1/10-acre in size and are distributed across GSP sites. They are visited before and after initial restoration and on a five-year cycle thereafter. The Forest Monitoring Team program and data collection protocol was developed in 2010 by several partners and is currently coordinated by EarthCorps. Visit greenseattle.org *search*: monitoring

Work Logs (CEDAR)

Part of how work is planned and prioritized is capturing what has happened so far using the online work log and event portal called CEDAR. Having information on what work has been done where tells what follow up is needed, and can help to understand how much volunteer and crew time has been used in a given area. This makes it possible to refine techniques and resource commitments over the course of the program. Keeping up with work logs is a key component of getting sites to phase 4!

Other factors also influence planning and prioritization, including but not limited to: equity and social justice considerations, proximity to fish bearing streams, public visibility, and community interest.

Getting Started: Planning for the Site

1. Schedule a site visit with GSP staff. Staff will help groups establish a site plan to guide work that identifies specific goals for each project year. Some parks already have a Vegetation Management Plan (VMP) established, in which case staff will help interpret that plan. Staff will clarify what work can be done by volunteers, and identify that must be left for professional crews such as slopes and herbicide work.
Site visits will cover the following topics:

- the history of any prior forest restoration work at your site.
- information about how to set a timeline for volunteer work parties.
- an estimate of an appropriately sized area to begin restoration project.
- a review of site maps in order to evaluate the best area of focus for volunteer work.
- information about how to set site goals and choose a restoration strategy using the Seattle Parks-approved Best Management Practices (BMPs) that apply to the site.

2. Visit the GSP Reference Map online to see the initial tree-iage value, delineated wetlands, slope conditions, and target ecosystem expectations for the zone you will be working in. Visit greenseattle.org *search*: reference map

3. Explore your site to understand the ecological conditions. Consider the plant species that are present, soil type (appx A), sun exposure, water features or wet conditions, signs of wildlife.

4. Host work parties as you begin to implement the site plan. Request work party dates by creating an event on CEDAR at least four weeks in advance if you need any additional tools or materials for your event. This will ensure that you can get your event posted on the GSP calendar and have your tools and materials ready for the work party.
(cedar.greencitypartnerships.org)

5. For each event you host, be sure to **submit a work log and volunteer sign-in sheet** as soon as possible. If you are working independently, please record and submit hours regularly. Timely submission of work logs and volunteer sign-in sheets is important to tracking and reporting our monthly progress, and demonstrating this progress is key to attracting the financial, political, and volunteer support necessary to keep the program sustainable in the future.

6. Celebrate your group's accomplishments!

7. Continue this process annually.

Best Management Practices (BMPs)

The BMPs described in the 4-phase approach are a compilation of practices collected by both volunteers and restoration professional with a wide range of experience in forest restoration. These methods align with Seattle Parks and Recreation's commitment to using sound environmental practices for managing park landscapes, including natural areas. BMPs are updated as new methods are tested and deemed successful. Your feedback on these methods is essential! Please don't hesitate to share your experience with us.

Integrated Pest Management (IPM)

The IPM decision making process is used to help develop strategies for reducing invasive plants. A full range of management options are considered based on weed biology, site conditions, as well as anticipated labor availability. This translates to Forest Stewards in the form of recommendations by GSP staff as well as requirements in the BMPs. In some cases removing invasive plants using volunteers will work great, while other populations or species may require herbicide treatment by a professional crew. Often multiple methods over several years will be used. Using the IPM framework, Seattle Parks and Recreation focuses on non-herbicide strategies whenever possible and strictly uses the Citywide Pesticide Use Reduction Strategy and Policy. Visit seattle.gov *search:* pesticide reduction

Forest Stewards and volunteers are not allowed to do any herbicide application. All professional crew work is coordinated by Seattle Parks and Recreation.

Volunteers have the best intentions to improve the health of natural areas in Seattle, but sometimes restoration activities can be disruptive. Many of the habitats where GSP works, including wetlands, are ecologically important and sensitive, and as such Seattle Parks and Recreation has a responsibility to comply with regulations.

State Environmental Policy Act (SEPA)

GSP's work is regulated by the SEPA process, which is used to assess potential environmental impacts of restoration work and to issue project requirements that are embodied in the Forest Steward Field Guide. The City of Seattle has determined that as long as City staff, their contractors, and GSP volunteers comply with the BMPs, then GSP is in compliance with the restrictions set forth in the City's Critical Areas Ordinances (CAO), and therefore in compliance with State and Federal regulations.

Look for this symbol on the left throughout the Field Guide where special considerations exist for wetlands or wet areas. A comprehensive document of wetland-specific BMPs can be found online, visit greenseattle.org *search*: wetlands

Stewardship Trails

Stewardship trails concentrate impact from foot traffic, and create access to restoration sites. Stewardship trails need to be carefully planned and laid out, taking into account the disturbances that access will have on those maintained habitat patches. For example, access paths should travel though the center of restoration areas not adjacent to them. These paths are in public spaces, and are often inviting for other parks users. If you want to discourage people from accessing restoration sites, keep paths discrete and even naturalized. Stewardship trails are temporary access ways, and once restoration is in Phase 3, establishment, they often can be replanted and naturalized.

If a Stewardship trail skirts or passes through a wet area, planks or duck boards should be used to minimize impacts to soil. Volunteers should communicate with GSP staff if help is needed to acquire these materials.

Phase 1: Invasive Control

Erosion Control

It's important for restoration sites and the larger watershed to keep soil in place. The following should be considered before moving forward with invasive plant removal:

- Volunteers are restricted from working on slopes greater than 40%. Slope work will be coordinated by GSP staff and accomplished by professional crews.
- Wet slopes with seeps or perched wetlands present specific challenges, including an increased likelihood of soil erosion and the possibility of more deep-seated stability problems. GSP staff will help determine if wet slopes under 40% will need professional crew attention.
- Bare soils susceptible to erosion must be covered within 5 days. This is an important requirement of our GSP programmatic SEPA. Leaves, downed wood or twigs, blackberry canes (cut to 2 ft. length), and forest duff, burlap, and wood chip mulch can all be used to cover soils.
- If sites are close to a lake, stream, or wetland (or even a drain structure), erosion barriers may be needed during invasive plant removal efforts. GSP staff can provide recommendations, materials (such as coir logs or erosion blankets), and crew support if needed.

- On-site wood debris can be used, lay/stake it perpendicular the slope to provide some additional stability.
- Flag clearing limits to avoid impacting sensitive areas, especially during larger volunteer events.

Manual and Mechanical Methods

Manual removal techniques can be very effective and may be applied to invasive shrubs, vines, and herb layer weeds. The ongoing control of invasive vines, such as English ivy and clematis, is important to any forest restoration site. Creating "life-saver" rings on trees infested with ivy and clematis is a great way to get started. It is also a rewarding experience for volunteers and may help to build momentum on your project as you get it underway. Seattle Parks must be notified before you begin working in any park.

Volunteers are restricted from using power tools on City of Seattle properties, including all City parks. Mowing, chainsaw work, and brush-cutting must be performed by Seattle Parks staff or paid crews. Additionally, weedy trees often require treatment with herbicide or power tools, which must be done by paid crews.

GSP does not restrict clearing to any formal square footage limit, but your work should take into account the habitat considerations. In some cases, it will make sense to phase in sections, leaving a portion of the invasive plants in place until the new native plants are established.

Weed Pulling and Cutting with Hand Tools

- Hand pulling is most appropriate for small herbaceous plants and some vines, while hand tools can help with shrub and vine removal.
- Be sure to maintain a safe distance of at least ten feet between volunteers using tools.
- Removal often causes soil disturbance, discuss erosion control options with GSP staff.
- Avoid pulling non-target plants.
- Use tools of an appropriate size for the job to avoid stress on both hands and tools. Stem-cutting tools include hand pruners for stems of less than one inch, loppers for stems of one to two inches, and handsaws for stems of more than one inch. Root-removal tools include handtillers for herbaceous plants and large picks, shovels, and Pullerbear™(formerly called Weed Wrenches) for shrub or tree roots and rhizomes.
- Mark clearing limits when working with volunteers.

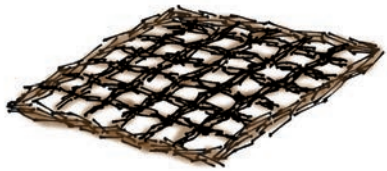
Weed Waste Disposal and Composting On-site

It is important to have a plan for the disposal of weed waste before you begin to remove plants. Composting on-site is cost effective, helps to leave organic material and nutrients on site, and provides excellent habitat for wildlife. Create compost piles out of sight from walking trails as much as possible. Work with GSP staff if composting on-site is absolutely not an option at your location.

When clearing an area for planting, you may find it easier first to remove dead branches and small logs from the ground. Be sure to set these aside separate from the invasive plant material being removed. The woody debris should then be replaced, either after all the clearing and mulching is complete, or after the site has been planted. It may also be used for building a compost pile. Logs and other coarse woody debris are important components of healthy Pacific Northwest ecosystems. Additional logs and branches can be introduced if areas undergoing restoration have little or no naturally occurring coarse, woody debris available. Make sure that only invasive plant material goes into your compost pile, so that leaves and sticks can decompose and contribute to healthy soils, and resist the urge to "rake the forest floor clean." This will also save you from having to make more compost piles than you really need.

Building an On-site Composting Pile

Step 1: Find an area free of native plants and remove all invasive plants and roots. It is very important that the area is thoroughly cleared before you build your compost piles. If there is no good space, you can start by clearing a small patch of invasive plants to make room for the compost pile.



Step 2: Lay out a frame of branches that will define your compost area. If you are using burlap, lay the burlap own first, then put the frame of branches on top of the burlap edges. The area of the pile should **not be more than 40 square feet.** The sides of the frame should not be much longer than you are tall. When possible create windrow compost piles; long, short compost piles that are 3ft wide and 2ft high running parallel to the contours of the slope. Windrow compost piles can be as long as necessary.

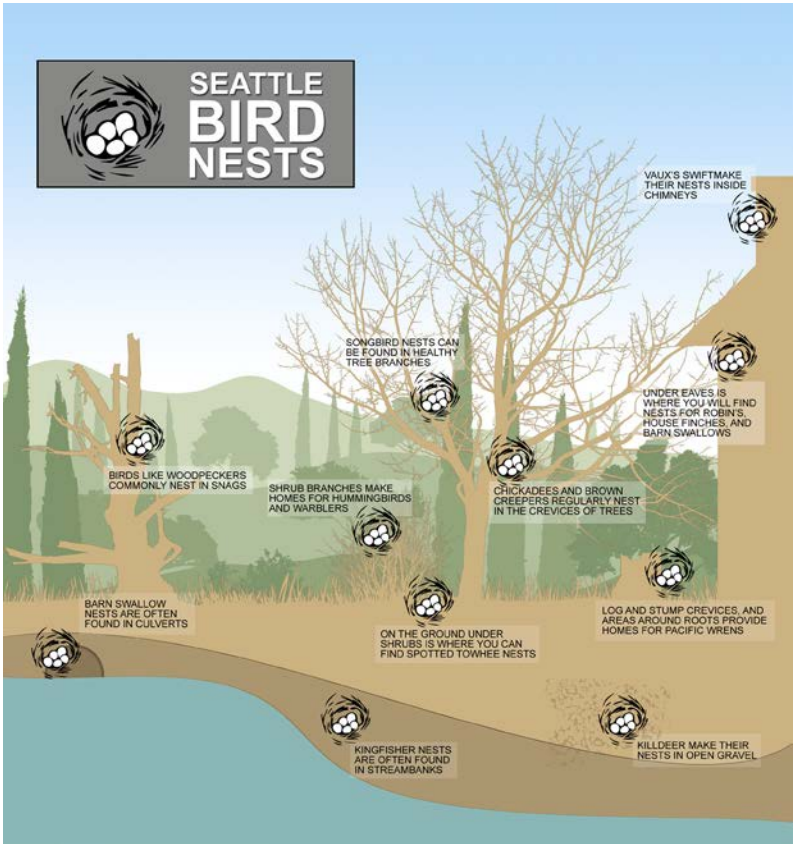
If you are in working in a wet area, or on soils that you expect will become saturated later in the season (see the Site Assessment Decision Tree, Appendix E) locate compost piles where soils can freely drain all year. This will help minimize the likelihood that plant fragments will re-root from the compost pile.

Step 3: Fill in your frame with dead branches and sticks found on site. Place them in both directions to form a grid. This helps prevent the composting weeds from having direct contact with the soil.

Step 4: Put pulled weeds on top of the pile. Stack ivy in smaller bundles and contain all debris inside the frame. **Do not make the pile higher than three feet tall,** and do not let the pile spill over beyond your frame. Seperate woody material from herbaceous weeds when creating piles. The herbaceous material breaks down faster and can be redistributed sooner.

Step 5: Check piles throughout the year and turn or maintain them as needed to ensure that the ivy or blackberry do not re-sprout.

- Reproductive parts, such as seed heads and roots, should be collected separately and placed on top of composting piles so they do not sprout or root in the soil.
- Knotweed and certain other noxious weeds are capable of re-sprouting from plant fragments. Knotweed should not be touched or disturbed by volunteers. Please leave it for paid crews and notify the GSP staff if you find it on your site. All plant parts of purple loosestrife, garlic mustard, yellow archangel, and giant hogweed should be removed from the site in garbage bags and disposed of in a landfill. If you have large amounts of organic material that needs to be disposed of in a landfill, discuss with GSP staff to arrange for a pick up.



Habitat Considerations

Once the forests are restored, whey will provide superior habitat to invaded ecosystems. While sites are in the process of restoration it is important to plan activities with the needs of birds and wildlife in mind. Here are some suggestions for improving bird habitat:

- Avoid clearing work, or large work parties in high value nesting areas from April 15-July 31.
- Consider the capacity available to completely clear areas, replant, and maintain sites in order to avoid leaving them barren for extended periods.
- Minimize long periods of disruption to natural riparian and slopes as much as possible, as these areas are widely used by wildlife.
- Leave snags and other habitat structures on site; do not cut down invasive trees.
- Promote vegetative growth between restoration projects to allow for safe travel between populations.
- Become familiar with the birds that are nesting in your restoration ares. Use the nesting diagram for ideas of where to look for nesting activity at your park.

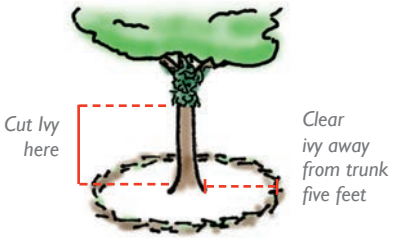
Weed-Specific Methods

For additional help with identification of invasive plants, as well as additional resources about removal and disposal methods, see the King County Noxious Weed website: kingcounty.gov *search:* noxious weeds

For the purpose of the weed-specific methods a "small" infestation is an area from which you can effectively and reasonably remove all necessary plant material (usually all above and below ground parts) given your available time, ability, and resources. This size will vary from person to person, by species, stand density, and by site conditions. When deciding if an infestation can reasonably be removed manually, it is important to weigh the full impacts of manual removal against other methods. Soil disturbance, the potential to scatter plant fragments that could then re-sprout, the risk that composted materials could re-sprout in new locations, the impact of dragging and hauling vegetative material across a site, the potential to increase sediments in nearby water, and the impact to wildlife caused by one's presence at a site for long periods of time, are all real disturbances. Manual removal can be effective in smaller infestations, but should not be used when other methods produce fewer negative impacts, in areas of standing water, or on steep slopes.

English Ivy and Clematis
kingcounty.gov *search:* english ivy, clematis

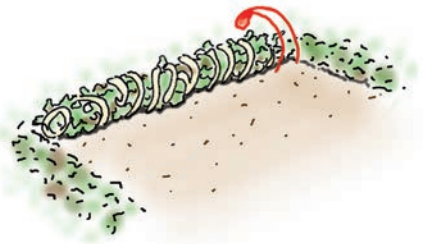
- Creating "life-saver" or "survival rings" should be top priority to save existing trees and reduce the ivy seed source. Start by cutting vines at shoulder height, then again at the base of the tree. Remove all ivy from where you cut at shoulder height down. Grub out the roots in a radius that is at least five feet away from the tree. **Do not attempt to pull vines above out of the tree**; they will die and decompose on their own, and pulling them down from high branches can be dangerous and possibly damage the tree.
- Remove dense ground patches of ivy by clipping edges of swaths, then continue clipping, digging, and rolling the tangled mat up into a an ivy log.
- Take care to cut around or gently lift ivy mats over existing native plants.
- Clear ivy at least ten feet beyond the proposed planting area to create an ivy-free buffer.



"Lifesaver" Tree Ring – Cut ivy at shoulder height and again at base of tree. Do not attempt to pull vines out of tree. Roll ivy back away from tree in logs like those illustrated. Clear at least five feet back from each tree trunk.

Ivy Bundle – For small clumps of ivy, pull all vines out, wrap into a tight bundle, and dispose on compost pile or hang on a branch where it will not come into contact with the ground.

Ivy Log – For large contiguous swaths of ivy, clip edges of five- to ten-foot-wide sections, roll into a log, clip root connections at end of roll, and roll on top of compost pile to decompose. Ivy logs fit nicely on windrow compost piles.



Himalayan and Evergreen Blackberry
kingcounty.gov *search:* blackberry

- Cut and grub root balls. (It may be necessary to repeat for two to three growing seasons before planting.)
- For sites that provide important bird habitat, it is recommended to only remove one-fourth of the blackberry infestation each year, especially if there is little alternative habitat nearby.
- You may also want to consider refraining from large blackberry removal projects during nesting season (mid-April to the end of July). The nesting timeline may change year-to-year. Observe nesting at your site to best determine nesting periods.
- Phase removal over time if possible to minimize eliminating all habitat. Consult GSP staff if this approach is not a viable option.

Blackberry Canes, *left above* – Cut or bend canes to 1-3 ft, and use caution when cutting and carrying these stiff, prickly canes. Long sleeves and leather gloves are a necessity. Locate a clearing beyond trail-view corridors and stack the canes to compost over time. It is helpful to leave about a foot of cane sticking out of the ground to remind you where to come back and dig out the root.

Blackberry Root Balls, *right above* – Blackberries have large clumps of root balls in the first 6-18 inches of soil. Below the balls the roots can grow up to three-feet deep. Roots should be dug out entirely and placed on top of a stack of canes.

Field Bindweed (Morning Glory)
kingcounty.gov *search:* morning glory

- Hand pull at least three times per year (early growing season, mid-summer, and late summer) for at least three growing seasons.
- Flag site and monitor.
- Shade is the best way to eradicate bindweed; therefore, plant conifers and other native shade plants for long-term success.
- If keeping up with all the bindweed takes more time than you have available, you may need to prioritize clearing all the bindweed from the native plants first, or at minimum, clipping all the bindweed away from the base of the plants that are trying to establish.

- For larger or more established infestations where manual removal is impractical, consult with GSP staff for options. In most cases, controlling this species will require multiple methods over several years, potentially herbicide by professional crews.

Knotweed

kingcounty.gov *search:* knotweed

- Foliar herbicide application is the most effective way to eradicate knotweed. It must be performed by GSP staff or paid crews during dry periods from July to September. With growing demand for knotweed treatment, please be patient as crews are directed to your site.
- Hand removal of knotweed is impractical and could actually exacerbate the problem.
- Volunteers are highly discouraged from removing or tampering with knotweed patches as disturbance promotes growth and dispersal.
- If knotweed is present at your site complete the treatment request form on the Green Seattle website. The form will request park name, the GSP site name, estimated square footage of the knotweed patch and the estimated number of stems. greenseattle.org *search:* knotweed treatment form

Cherry or English Laurel, English Holly and English Hawthorn

kingcounty.gov *search:* English laurel or English holly

- Do not simply cut down an invasive tree **without removing its roots.** This will cause it to send up suckers that will grow into many more trees, greatly multiplying the problem. Any tree that cannot be completely removed should be left for a paid crew.
- Limb up trees – removing the lower branches to get safe access to the ground surrounding the trees. Dispose of limbs appropriately. This will make it easy for crews to come through for cut stump treatment.
- Small, young plants may be hand pulled or taken out with a Pullerbear.™
- Do not leave freshly cut or pulled holly stems or branches in direct contact with the soil, as the cuttings can easily re-root. Make sure they are left to dry out on top of a compost pile. Herbicide application is seasonally and weather sensitive. With a growing demand for removal, please be patient.

- Large plants require herbicide (only to be performed by Seattle Parks staff or paid crews). Crews may not be able to be sent right away, so please do not cut down the invasive trees prior to treatment by crews. This makes it more difficult for us to find and effectively treat the invasive trees.
- To have invasive trees treated with herbicide fill out the form on the GSP website. To be efficient the trees will be treated when the entire GSP site has been enrolled into restoration. greenseattle.org *search:* herbicide request

Scotch Broom

kingcounty.gov *search:* scotch broom

- Hand-pull small plants and use Pullerbear™ to extract larger plants when soil is moist in spring. Another option is to cut plants in early summer, just as flowering begins; then cut again at least once in late summer. For large stands, sheet mulching and diligent monitoring may be necessary.

Yellow Archangel

kingcounty.gov *search:* yellow archangel

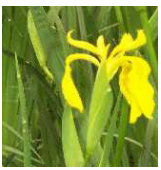
- Manual removal is generally not effective. Plants grow densely, sprout from root or stem fragments, grow easily among desirable vegetation, and are labor intensive to hand pull.
- For very small populations (less than 10 sq. ft.), try continuous hand-pulling. Be careful to remove all root and stem fragments by sifting through the soil. This is easiest to do fall through early spring.
- Dense infestations can be controlled by sheet mulching. It is crucial to control any escaping plants and to regularly check for holes in the covering material.
- Stem fragments and roots can re-sprout if left in contact with wet ground. Plant material may be composted on site if thoroughly dried out. Do not let plant fragments get into waterways.

Reed Canarygrass

kingcounty.gov *search:* reed canarygrass

- Manual removal is not practical for any but the smallest patches (1-4 sq. ft.). Hand dig when the ground is soft. Be sure to remove all roots and rhizomes (below ground stems) because any left in the soil will resprout. Monitor the site for regrowth.

- Reed canarygrass roots and rhizomes can be composted on site away from wet areas so long as root and rhizomes are not in contact with the soil.
- For areas where reed canarygrass is dominant, a long-term control strategy may be to shade it out. Shade production won't eradicate the species, but it will control it and allow for a more structurally and genetically diverse site. The initial task is to use sheet mulch with several layers of cardboard or burlap and 6 inches of wood chip mulch. Do not sheet mulch in areas where standing water will achieve a depth of more than 6 inches. Leave in place for at least one growing season. Monitor the edges for shoots coming up from lateral growth of rhizomes. Efficacy can be increased by removing above ground plant material at or just after flowering with hand tools prior to laying down sheet mulch. Any above ground material removed prior to sheet mulching that hasn't gone to seed, can be left on site where it falls.
- After at least one growing season, the area should be planted with native species. Plant layout should be dense (see the plant spacing table on page 29 for examples of "dense") over the entire site or in a clump-gap or row pattern. The latter two patterns would allow City staff or contractors to mow the areas (the gaps or areas between rows) between native plants for 1 to 2 seasons. Fast growing species adapted to wet areas such as black cottonwood, red alder, and several willow species should be installed initially. Once they become established, a second planting of shade tolerant species such as Western redcedar, thicket-forming species like red-osier dogwood, snowberry, and Nootka rose; and fast growing conifers like Douglas and grand fir (placed along southerly and westerly edges) should be planted.
- For any infestation greater than 4 sq. ft., consult with GSP staff for options. In most cases, controlling this species will require multiple methods over several years, potentially including cutting and herbicide by professional crews.



Yellow Flag Iris

kingcounty.gov *search:* yellow flag iris

- Manual removal can be effective for small infestations, especially for very young plants not yet established. Manual removal of larger plants requires special attention to remove the rhizome. The rhizome is tough and may require heavier tools or saws. If you do not get the rhizome, more plants will be produced. Monitor the location after you have removed the plants - new leaves will show you where you missed any sections of rhizome.
- When removing manually, precautions should be taken to protect the skin, as resins in the leaves and rhizomes can cause irritation.

- When removing vegetation near streams and wetlands use barriers to prevent sediment and vegetative debris from entering the water system.
- If composting rhizome segments, be sure to compost away from wet sites. If this is unfeasible, then securely bag and arrange for it to be disposed of in the trash.
- For larger or more established infestations where manual removal is impractical, consult with GSP staff for options. In most cases, controlling this species will require multiple methods over several years, potentially including cutting and herbicide by professional crews.

Purple Loosetrife and Garden Loosetrife
kingcounty.gov *search:* purple loosetrife

- Hand pulling is recommended for young plants or older plants in sandy, mucky, moist, or loose soil. This may be impractical to impossible when trying to remove hardy, woody roots in compacted soils.
- If the plants are in flower or in seed, cut off and securely bag all flower heads. Pulling plants in seed will disperse the small, lightweight seeds. Cut plants may continue to produce flowers later in the season, so these sites will have to be consistently and regularly monitored until frost to cut and remove any subsequent flowers. Cutting will not control purple loosestrife but it can serve in the interim until more effective control measures can be accomplished.
- Care should be taken to minimize erosion when digging in saturated soils on shorelines. When removing vegetation on shorelines (by lakes, streams and wetlands) use barriers to prevent sediment and vegetative debris from entering the water system.
- Brush off boots, clothing and tools prior to leaving the infested area. All parts of the purple loosestrife plant, including flowers, seed heads, stems, leaves and roots must be securely bagged, and discarded in the trash or taken to a transfer station. Do not compost or place in yard waste. Plants may regenerate in compost.
- Under the Washington State Lythrum quarantine (WAC 16.752), it is illegal to transport, buy, sell, offer to sell, or to distribute plants, plant parts or seeds of purple loosestrife into or within the state of Washington
- For larger or more established infestations where manual removal is impractical, consult with GSP staff for options. In most cases, controlling this species will require multiple methods over several years, potentially including cutting and herbicide by professional crews.

Bittersweet Nightshade

kingcounty.gov *search:* nightshade

- Hand pull the stem close to the ground and pull or dig up the roots, taking care not to break the slender roots. This method is most effective with young plants and small infestations. Manual control works best after rain or in loose soils. Tools that work include shovels, spades, and handtillers to loosen soil.
- When substantial manual removal is used in wet areas, take care to prevent soil erosion. See Erosion Control section on page 10 for more information.
- Wear gloves when handling bittersweet nightshade as it is toxic to people, pets, and livestock.
- Fruiting plants and root balls should be collected and discarded with the trash or taken to a transfer station for disposal. Composting root balls is not recommended. Stems can be left on site to dry out and decompose if they are in a dry area where they will not move into waterways or onto moist soil.

Policeman's Helmet and Jewelweed

kingcounty.gov *search:* impatiens

- Manual removal is effective for small infestations. Pull or dig up plants in the spring or early summer when the soil is still moist and before the plant develops seed capsules.
- Cut and bag all flower and seed heads using sturdy plastic bags. Dispose as garbage; do not put in yard waste or compost bins. Stems can be left on site to be composted but only if they are first crushed and dried out thoroughly. Do not let plant fragments get into waterways.

Mulch

Mulch is a general term to describe a ground-covering material placed around a plant. Mulches serve to retain soil moisture and block growth of weeds around desirable plants. They also prevent soil erosion and can be used to moderate soil temperature. Organic mulch is available from Seattle Parks and Recreation, including wood-chip mulch, compost, and burlap.

Wood Chips

Wood-chip mulch is particularly useful in establishing restoration plantings that will receive no supplemental water and do not have long-term maintenance funds. Wood-chip mulch improves soil bioactivity which promotes healthy plant growth. Apply a four-inch layer of wood-chip mulch around all new plantings. Do not use bark mulch, as this material contains a higher wax content than wood-chip mulch and may lead to the formation of hydrophobic soils. To minimize the spread of undesirable species or possible contamination by chemicals in the wood used do not obtain woodchips outside of Seattle Parks and Recreation.

Sheet Mulch

Sheet mulching is the preferred mulch method in planting areas that have previously been severely infested with invasive plants, especially blackberry, and are in full sun. Sheet mulching combines the use of burlap and wood chips. Place one or two layers of burlap on the ground between all plants. Make sure burlap bags overlap so that there are no openings for weeds to grow through. Follow up by applying six to eight inches of wood-chip mulch across the site. This method helps suppress weed re-growth, but follow up weed maintenance will most likely be required.

Mulching in Wetlands

Mulch should only be used in wetlands that dry out during summer and early fall months or where invasive regrowth pressure is high

When applying mulch near a stream bank, do not apply mulch below the ordinary high water mark (OHWM). This is the elevation to which stream flows regularly rise. It can be estimated by locating exposed woody roots along the stream bank where soils have been scoured away or by identifying where herbaceous plants do not grow. Mulch placed below the OHWM has a high chance of washing away during a rain event.

Compost

Compost is organic mulch that has a finer texture and is more nutrient rich than wood-chip mulch. Compost should only be used as a top dressing to sites that have extremely nutrient-poor soil due to topsoil removal or landslide. Apply one to two inches of compost across the site before planting. Follow up after planting by applying six to eight inches of wood chip mulch to suppress weeds. Compost is not generally used on Green Seattle Partnership restoration sites due to cost, and is reserved for severely nutrient-poor soils.

Planting Calendar

Planting Calendar by Stock Type

Stock Type	Planting Season
Container	October 15 – March 1
Bareroot and Plugs	October 15 – March 1 (check availability)
Live Stakes	November 1 – February 1
Wetland Plants	All year long with adequate soil moisture

The following section was provided by Sound Native Plants.

Plants installed in the fall usually outperform those installed in the late winter or spring. Planting projects should be scheduled for early October to mid-December for best results.

More Root Growth Before the Growing Season

It can take several months for roots to sufficiently grow beyond the planting hole to start absorbing moisture and nutrients from the native soil. Fall soil is warm and aerated and many plants actively grow roots during this time. Some species will continue root growth through our mild winters, and most begin their most vigorous root-growth period in the late winter or early spring. Only fall transplants have this critical time for root extension before spring top growth takes off. Plants installed in the spring may barely recover from transplant shock before the heavy demands of growth and summer drought are upon them.

Ideal Planting Weather

The cool, cloudy days and frequent precipitation of fall and winter provide ideal transplanting conditions. Until sufficient roots develop, newly installed plants will undergo transplant stress that can be exacerbated by warm, sunny days. Fall and winter weather allows for reduced transpiration and provides ample moisture for the roots while the plants recover from transplant shock. However, plants should not be installed when the soil or container is frozen since frozen ground will keep plants from thawing out.

Lower Maintenance and Irrigation Requirements

Fall plantings enjoy advantages that are especially important for projects that will receive minimal maintenance and irrigation. The earlier plants go into the ground in the fall, the more time they have to recover from transplant shock, adapt to the site, and expand their root systems before the growing season. They will require less water and grow more vigorously than if they are planted in the spring. In climates where the ground is frequently frozen several inches deep, it may make sense to delay planting until spring, but in western Washington we usually have perfect winters for plant establishment.

Planting in Wetlands

The exception to the fall planting rule is with certain wet areas. There is no simple answer as to when to plant in a wet areas or wetlands, but by answering the following questions you should be able to get to the best answer for your wet area.

1. If your wet areas dry out during parts of the year, you will want to plant on either side of the wet season to avoid soil impacts (early fall/winter and late spring). Avoid planting when wet areas are inundated with water.

2. If soil is saturated all year, prime planting time is usually between late spring and early fall, when the soil is only saturated. To ensure plant establishment, do not plant within the 2 months prior to site flooding as plants can float out of their holes. Avoid planting a site if it is under water, as plant material may not stay secured into suitable growing material.

3. If your site has standing open water at a depth of at least 10 cm between Dec 1 and June 1, then avoid work during this period as it may impact breeding and developing amphibian species. Some native amphibian species will continue to breed into mid-summer (i.e. Pacific chorus frog).

Plant Selection and Installation

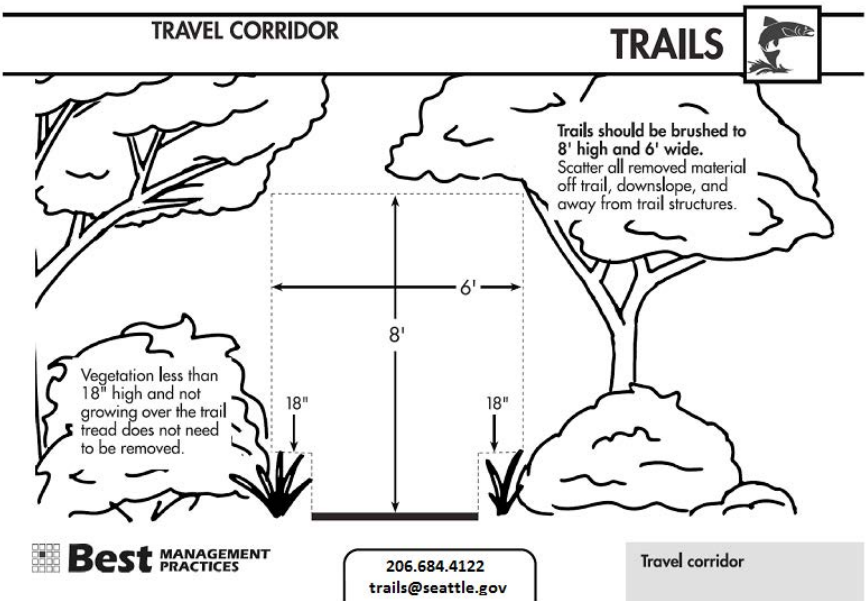
Many Seattle Parks properties have Vegetation Management Plans (VMPs) or other documents that outline plant palettes to meet various site-management objectives. These documents are based on extensive inventory of different sites and were developed with community involvement and agency environmental review. Adhere to plant palettes and project scheduling as outlined in park-specific documents. Check to see if your park has a VMP at: cityofseattle.net/parks/Horticulture/vmp.htm.

There are many factors to consider when choosing a plant palette: aspect, slope position, soil moisture, soil texture, sunlight, existing vegetation, access to water, and human impact. It is a great experience to walk your site and analyze its characteristics. Consult the Target Forest Types and Target Ecosystem to see prescribed plant communities for your restoration site. There is information about analyzing soil quality in Appendix A and the native plant list in Appendix C that will help you identify plants that will work with your site's soil, meet different ecosystem needs, and fill specific niches.

Trail Corridor Considerations

The trail corridor includes the trail's tread and the areas to the sides and above the tread. Seattle Parks and Recreation natural areas trails standard is 3-4ft wide and a brushing width of 6 feet wide. Trail maintenance volunteers follow the standards to reestablish the trail and maintain the trail corridor; which includes pruning and brushing vegetation, and could include removal of plants that are planted too close to the trail. These corridor standards are important to keep in mind when installing new plants.

Don't plant material that will grow significantly over 18 inches within 2 feet of the Trail Corridor. Plant trees at least 10 feet away from the trail to avoid future removal or aggressive pruning. Take time to explain these criteria to volunteers, and walk trails after events to check for plants that are too close. It is easier on the plants to relocate them before they get established. If you have questions about the Seattle Parks and Recreation trail standards or the Trails program you can email trails@seattle.gov

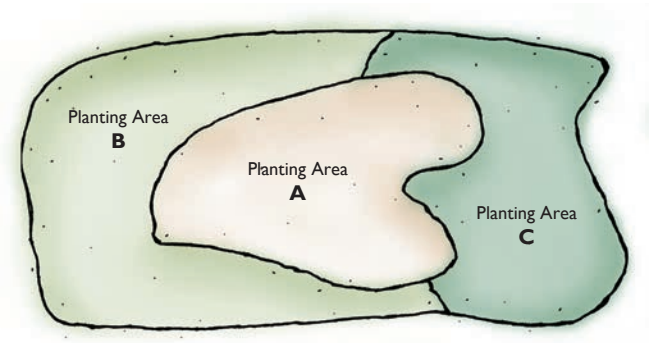


The best strategy for stabilizing a soils with plants is to establish vegetation at multiple levels – plant a mixture of trees, shrubs, and ground covers. A multi-level canopy will do the best job of intercepting and slowing precipitation before it hits the ground, thus reducing surface erosion. Multiple vegetation types also provide both deep and spreading roots, which stabilize the entire soil profile.

Plant trees at the edges of the designated viewpoints, space them widely, or prune selectively, but don't leave them out—you can't beat a mature tree for its root system.

See a complete list of recommended plants in Appendix C. The native plants recommended for slopes are marked with an icon (▲) and are rapid growers that stabilize soil quickly.

Selecting Planting Areas



Planting areas are discrete sites that require different restoration approaches. Sites overwhelmed by invasive plants will require more intensive planting and maintenance than those that already have some native canopy cover and a healthy shrub and groundcover layer. Divide your project site into the following three types of planting areas and sketch these areas onto the planting plan form provided in the last pages of this field guide.

Type A: Establish Plant Community – These are areas of completely bare ground, likely due to the clearing of an invasive plant community.

Type B: Enhance Plant Community – Areas where there are some native plants, but additional density and/or species diversity is required to meet target thresholds.

Type C: No Planting – Areas that are fully occupied by a diversity of native species that provide multiple layers of canopy cover or otherwise currently meet management objectives.

Posting the Planting Area

Delineating the above planting areas is a helpful first step before you begin to take measurements and identify where to distribute plants. Visual clues in the forest will help you determine boundaries or "edges" between planting areas. Type A areas are the easiest to mark with clear boundaries between bare or chip-mulched soil and the start of other plant communities – posting edges is not necessary in these areas. Where boundaries are less clear, define planting area boundaries by flagging edges at head height.

Flagging is strictly for purposes of site measurement and designating areas for planting day. It is especially helpful when you have volunteers helping with planting. All flagging or stakes used for such purposes should be removed immediately after plants are installed. Posting pin flags or loosely tying flagging tape on a lateral branch of a plant will make it easier to find for weeding, watering, and monitoring survivorship.

Measuring Planting Areas

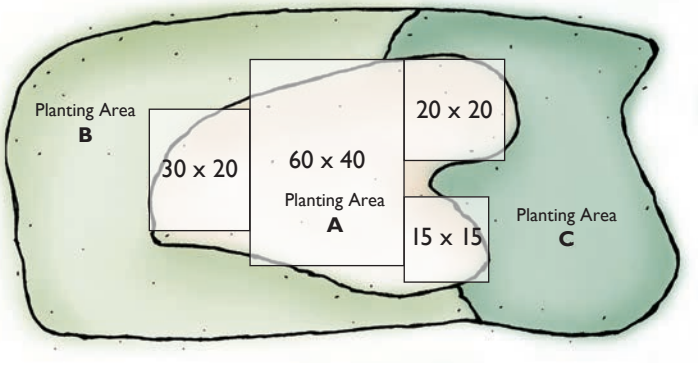
Planting-area estimates are required in order to determine plant quantities for orders. Plants do not grow in perfect geometric patterns, so planting area shapes are often irregular. Depending on the shape of the area, divide it into a series of squares or circles, calculate the area of each shape in square feet, and add the totals together to get an estimate of the entire area. If the entire area approximates a regular shape – i.e., roughly circular or rectangular – estimate the area of just the one large shape.

Formulas for Calculating Area

Use these formulas to calculate the area of squares, rectangles and circles.

square or rectangle: length × width
Example: Planting Area A (above): (30 × 20) + (60 × 40) + (20 × 20) + (15 × 15) = 3,625 sq. ft.

circle: 3.14 × radius^2
Example: A circle with a radius of 12 feet: 3.14 × (12 × 12) = 452 sq. ft.



Spacing

Spacing refers to the amount of distance between installed plants. Spacing objectives are determined by management goals related to canopy cover and plant competition. Planting natives densely will utilize site resources, including water, nutrients, and light, and limit opportunities for invasive species. Spacing will ultimately determine how many plants you need to order.

Type A and Type B planting areas (shown on page 31) have different spacing protocols. The general idea for both types of sites is for new plants to occupy as much of the site as possible without creating excessive competition with native plants. Type A sites are fairly straightforward because you are working with a blank slate. Type B sites require evaluating the current plant density and approximating the number of additional plants you would need to fully occupy the site.

The spacing table on page 30 was created by Sound Native Plants. Organized into plant type and desired plant density, the table indicates the spacing – how far apart each plant should be from another – and the square footage that each plant will occupy based on that spacing. For most GSP sites a "dense" plant density is recommended. Site conditions and other considerations should be taken into account when ordering plants. Areas with sandy soils or without water access should be planted at higher density, given expected plant mortality.

Formula for Calculating Plants Needed

Planting Area ÷ Square Footage per Plant = Number of Plants Needed

Example: 3625 sq. ft. ÷ 324 sq. ft. per tree = 11 trees (sparsely spaced trees, 18 feet on center)

Plant and Stock Type	Desired Plant Density	Spacing	Divide Square Footage by
Trees	Dense	10 feet o.c.*	100 square feet
	Average	12-15 feet o.c.	144-225 square ft.
	Sparse	18 feet o.c.	324 square feet
Shrubs	Dense	4 feet o.c.	16 square feet
	Average	6 feet o.c.	36 square feet
	Sparse	8 feet o.c.	64 square feet
Live Stakes	Dense	1 foot o.c.	1 square foot
	Average	2 feet o.c.	4 square feet
	Sparse	3 feet o.c.	9 square feet
Emergents *plant in clumps of 4, multiply the final number x 4*	Dense	clumps 1 foot o.c.	1 square feet
	Average	clumps 2 feet o.c.	4 square feet
	Sparse	clumps 3 feet o.c.	9 square feet
Herbaceous/Ground Cover *4-inch pots in groups of 3*	Dense	1 foot o.c.	1 square foot
	Average	1.5 feet o.c.	2.25 square feet
	Sparse	2 feet o.c.	4 square feet
Herbaceous/ Ground Cover *1-gallon pot*	Dense	2 feet o.c.	4 square feet
	Average	3 feet o.c.	9 square feet
	Sparse	4 feet o.c.	16 square feet

* o.c. = on center

Note: Herbaceous layer figures have been adjusted down from Sound Native Plants' suggestions to account for the presence of trees and shrubs. For four-inch pots, multiply the final plant number by three as each group of three plants should receive four square feet of space. (Sound Native Plants (2004), soundnativeplants.com)

Sample Spacing Plan for Planting Area A Sites (All New Plantings)

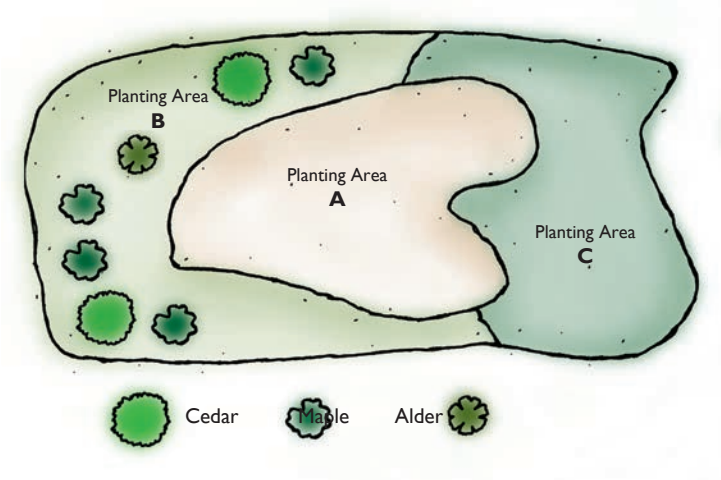
Let's suppose you want to create a sparsely mixed conifer/deciduous canopy on a Type A site. First, you would need to calculate the total number of trees needed. Second, you would need to figure out what percentage of your total square footage (3,625 sq. ft.) you would like each species to occupy. Let's assume we want 30% cedar, 50% maple, and 20% alder.

Number of trees needed: 3,625 sq. ft. ÷ 324 sq. ft. per tree = 11 trees
Cedars needed = 11 × 0.3 (30%) = 3
Maples needed = 11 × 0.5 (50%) = 6
Alders needed = 11 × 0.2 (20%) = 2

Follow the same steps for each canopy layer to occupy the site fully. Do not be terribly concerned about overloading each canopy layer. Density protects the integrity of a project on two levels: 1) the site is fully occupied by natives, which exclude opportunities for invasive plants to take over, and 2) it is a form of insurance for poor plant survival. In restoration, plants are cheap relative to the costs of invasive species removal. It takes substantially less effort to thin a few excess native trees or shrubs than it does to clear ivy or blackberry from the same area. Finally, it is also extremely unlikely that you will have 100% survival, so overplanting is better than underplanting.

Adjustments for Planting Area B Sites (Moderate Number of New Plantings Needed)

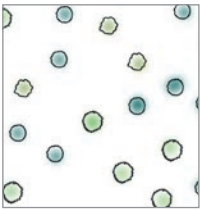
If you are working on a Type B site, enhancing plant community, you will need to estimate the current site occupancy and then adjust the quantity of new plants needed accordingly. The simplest way to do this is to count stems and divide by the site's square footage. Don't worry about getting a perfect count. As an example, see the following diagram. Let's assume Planting Area B is also 3,625 square feet.



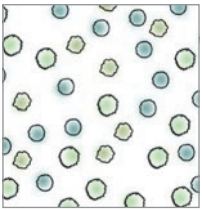
The site is currently occupied by two cedars, four maples, and one alder. Assuming we have the same density goal as our Type A site, we can follow the same steps as above, then simply subtract the number of plants already occupying the site from the total amount of plants needed to determine how many new plants you need to install.

Cedars Needed = 3 – 2 = 1
Maples Needed = 6 – 4 = 2
Alders Needed = 2 – 1 = 1

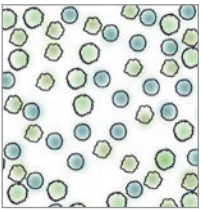
Tree stem counts are simple, shrub counts are a little more complicated, and ground cover counts are challenging. If you already have dense ground cover, or plants are in clumps too close to identify individuals, estimate a percent cover, then work your way back to occupancy. The following diagrams illustrate five levels of cover. Use these illustrations to help you estimate; again, this is somewhat subjective, so don't worry about making it perfect. If you have 70% native ground cover and your goal is 100%, you need to occupy 30% of your site with additional ground cover.



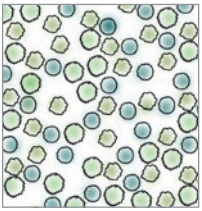
5% Cover



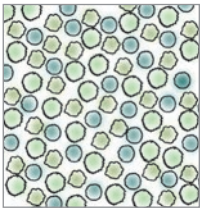
25% Cover



50% Cover



75% Cover



95% Cover

Ground Cover Plants Needed: 3,625 sq. ft. ÷ 4 sq. ft. per plant = 906 plants

In order to account for current occupancy, multiply the number needed for full occupancy by the percent of bare ground on your site.
Bare Ground Percent (100%) – Current Percent Cover (70%) = 30%
Ground Cover Plants Needed: 906 plants × 0.3 (30%) = 270 plants

This may seem like a lot of work, but as you gain experience it gets much, much easier. An experienced reforestation specialist can walk to a site, estimate area and percent cover, and calculate plants needed in less than an hour. While you work your sites, practice the following technique:

Think of objects whose approximate area you already know. For example, a car is approximately 50 square feet, an average bedroom is 130 square feet, and a story of an average house is about 1,000 square feet.

Estimate stem density and eyeball percent cover in comparison to those known areas.

After you practice a bit, run through the above steps and see how close your educated guess came to your measured results.

Over time, your skills will improve dramatically and you will need significantly less time to develop planting plans. Remember, restoration is an art and a science; there are no perfect answers!

Plant Order Form

With the plant palette, stock types, and spacing settled, as well as planting areas delineated and measured, you are ready to combine these elements and put together a plant order. There are many ways to acquire plants for your restoration site.

- Green Seattle Partnership staff will send out a plant request form to all active Forest Stewards/Forest Steward Teams to receive plants in the spring.
- Use plant salvages. kingcounty.gov *search:* plant salvage
- Use live stakes. greenseattle.org *search:* live stakes
- Write grants or have a fund raiser.
- Contact nurseries for donations.

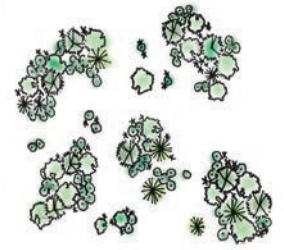
Plant Inspection

Upon delivery, count and examine the health of all varieties of plants received. Pull some plants from containers to examine the root ball. If you notice extremely root bound or unhealthy plants please make a note of the species and communicate this to GSP staff.

Staging

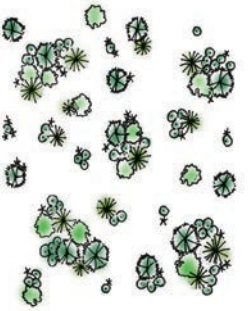
Allow adequate time in your work plans for plant staging. Staging is the distribution of plants across a site in preparation for planting. One-time volunteers and new crew members may not be familiar with each plant species or its ecological niche, so it is very important to have plants placed where they will be planted prior to the planting event. Small patch plantings of 50-100 plants may be placed by an individual within an hour. Larger, more elaborate plantings can take several hours and will require the help of a crew to stage. Forested parkland plantings are staged to meet restoration goals. Specifically, plants are selected and placed to meet interconnected needs of wildlife, aesthetics, soil stability, and recreation. The general forested parkland aesthetic is naturalistic, defined by a randomly placed assemblage of multiple canopy layers. Species are selected to suit site-specific soils, aspect, and desired Target Forest Types. Some VMPs may call out specific planting styles based on a desired aesthetic which requires specific staging methods. This is unusual. Unless otherwise noted, the following three plant staging techniques are acceptable and are most frequently used: clump-gap mosaic, forest thicket, and row irrigation.

Clump-Gap Mosaic



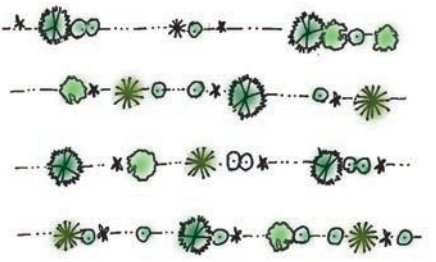
The microsite is the specific location within a site that a plant will be placed. Plant palettes are selected to meet general site conditions; however, within each site there is variability in soils, sunlight, and moisture availability. The clump-gap mosaic planting pattern was developed in order to address these microsite issues. The basic pattern is that three to five plants of each species are "clumped" with several other groups of three to five plants of other species. Between these clumps are gaps where individuals of the different species are randomly placed with wider spacing. This layout ensures that each species will be distributed across the site and in association with several different suites of species as well as alone. It provides several unique niche opportunities for each species and lends a random and naturalistic aesthetic to the planting. Site attributes, like woody debris, can help provide structure to planting clusters for shade-tolerate conifers and decay loving plants like western hemlock and red huckleberry.

Forest Thicket



This style is a high-density version of clump-gap as at right, without the gaps. Stage ground covers and shrubs at dense spacing in groups of three to five, with individual tree species placed in between, also at dense spacing. Visually there will be less bare ground than the clump-gap style. This style of planting is particularly useful to address areas heavily infested by invasive weeds, as it maximizes site occupancy by native plants.

Row Planting



Plants are placed in irregular intervals along irrigation lines or to facilitate mowing on a regular basis. Orient rows along contours of the slope to avoid unnatural looking lines when possible. Plants are in clumps of three to five, by species. Over time, competition and mortality will lend a natural aesthetic to this planting.

Exposed, dry sites may require irrigation. Where drip irrigation is installed, plants need to be placed in rows because the drip emitters are placed at regular intervals and need to be directly adjacent to the plants. The initial aesthetic of these plantings may appear formal, but with careful staging, the plants will grow into a more natural aesthetic.

Freestyle Planting Plans

If you feel confident in your work group or in your own skills, a freestyle planting plan may be an option. Have volunteers plant "at random," keeping trees about ten feet apart (two shovel lengths), and shrubs and ground cover three to five feet apart (one shovel length) from each other.

Please plan ahead if you need GSP staff to assist with plant selection or installation plans.

Installation

Now that you have spent lots of time planning for your site, removing the invasive species, and preparing for planting, it is important to know how to plant the trees, shrubs, and groundcovers that will one day grow to make up a healthy urban forest. *Adapted from Washington State University Cooperative Extension Bulletin MISC0337, Plant it Right: Restoration Planting Techniques.*

1. Preparing the Hole

- Clear away all loose materials, such as leaves, rocks, and branches from the area where you will plant.
- Dig the hole wide enough to completely spread out the plant roots, without crowding or bending them. If you are planting a container plant, dig a hole that is twice the width of the container.
- Dig deep enough so the plant, when set in the hole, will have the top of the root crown flush with the soil surface. Use a shovel as a level. Use the level of soil around the base of a container plant as a guide for how to plant in the ground. Avoid digging deeper than necessary to avoid soil settling.
- Dig a cylindrical hole and thoroughly clear existing roots from the hole.
- Pile soil in a cleared area next to the hole. Take plant roots and grass clumps out of the soil that will be used to backfill the hole.
- Roughen the sides of the hole if they appear slick or claylike, as it will help the new roots to penetrate the surrounding ground.

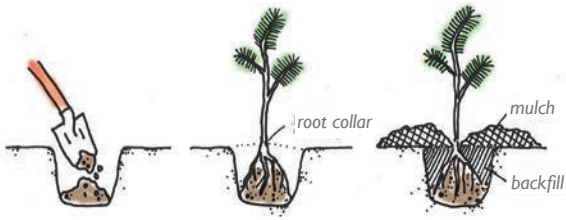
2. Preparing the Plant

There are slightly different methods to planting, depending on the stock type.

For Potted Plants

- Tip the pot on its side and gently press on the pot to loosen the plant.
- It is important to loosen up the roots with your hands or a tool such as a hand tiller. Pull loose roots outward and cut or straighten any that are encircling the root ball, or "J" roots that are growing upwards. These roots may continue to grow around the plant or upwards and affect the health of the plant.
- Place the plant so that the root collar is level with the ground. When you fill the hole in later, the soil should be at the same level as it was in the pot.
- Place the plant in the hole and arrange the roots so they point outward.
- Make sure the plant is placed at its original depth. Do not plant too deeply or too shallowly.

For Bareroot Plants and Plugs



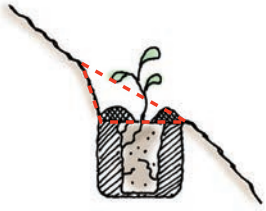
- Keep the roots moist until planting by storing them in moist sawdust or soil. In addition, you may soak them for one to two hours (although never longer than six hours) before planting.
- Prune back any badly bruised, broken, kinked, or jagged roots to sound wood.
- Make a small cone of soil in the bottom of the hole.
- Arrange the roots around the cone so they all point outward from the plant.
- Make sure hole is deep enough for roots to extend downward without curving back up (known as "J" rooting).

For Ball and Burlap Plants

- Keep the ball and burlap plants moist until planting time.
- Place ball and burlap root ball in the hole, and adjust the height of the tree to have the root collar in line with the ground.
- Clip away burlap, twine or packaging as much as possible, leaving roots as undisturbed as possible.

For Planting on Slopes

- Dig plant hole deep enough so that the root collar will be level with the lower edge of the slope. Place the plant so it grows straight up, not perpendicular with slope.



3. Replacing the Soil

- Backfill using the native soil that was dug out of the hole (or a hole nearby if more soil is needed).
- Ensure that only soil goes back into the hole – no large rocks, sticks, clumps of grass, leaves, or mulch.
- Push soil around the roots in the hole minimizing disturbance to the root arrangement. Cover the roots, but leave the entire stem exposed above soil. Planting too deep can cause the stem to rot and kill the plant, and planting too shallow can dry out the roots.
- Push soil down firmly to remove any air pockets.
- Form the surface soil into a small basin around the periphery of the planting hole to hold water, and adjust the soil so that water drains away from the immediate trunk area. Gently pull the plant by holding on to the base of its stem to make sure that it's firmly planted.

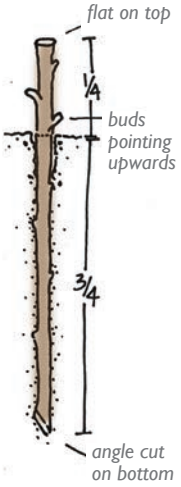
4. Finishing Up

- If possible, water the plant immediately to settle the soil and eliminate air pockets. Add more soil if needed.
- Apply wood-chip mulch to the top of the soil in a circle at least as wide as the roots, but not touching the stem. This mulch "donut" will help to retain water around the plant, suppress weeds, and provide nutrients as the mulch breaks down. Two five-gallon buckets of mulch in a four-inch-deep donut around each container plant is appropriate.

For Live Stakes (Cuttings)

A *planting bar* tool is often used to punch a hole for the cutting. In soft soil, cuttings can sometimes be directly pushed or hammered in.

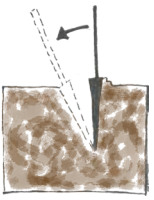
Place the cutting in the hole right side up. Cuttings are typically cut on an angle on the bottom and flat on the top. When held right-way up, the buds will point upward.



- A general rule is to plant cuttings 18 inches deep, or at least half the length of short cuttings. Deeper is fine, as long as a few buds are exposed at the top.
- Tamp in around the cutting to ensure there are no air pockets along the stem.

For Wetland Plants

- When planting emergent bare-root plugs the most common method is to use a dibble tool to open up a hole in soft saturated soil. Keep the plugs in their packaging until just before planting. Use the tool to open a planting hole. If you don't have a dibble, use a narrow-bladed shovel or trowel. Make a slit in the soil, levering back and forth so that the plug will fit into the slit.



- Carefully install the plug, and then compact the surrounding soil to remove large air pockets, but do not over compact.
- With many species, the vegetation is deciduous and will not be present during the dormant season. Like other stock types, install the bare-root plug so that the soil surface of the plug matches the surrounding soil surface.
- Plugs can 'float' out of their hole if water levels rise before the roots can establish themselves and act to anchor the plant down, so plant at least 2 months before the date you anticipate the area will become submerged.
- Mulch is rarely used when planting emergent plugs because the soils are typically moist enough year round to support these species.

Phase 3: Plant Establishment

Most plants require at least three years of establishment care to ensure plant survival. Although native plants have adapted to our summer-dry climate, installed container and transplanted plants both experience transplant shock that affects root and shoot health. In general, sites are weeded in the early growing season, watered in summer, and mulched any time of year.

Volunteers can do a lot to ensure plantings survive during Phase 3: creating mulch donuts, watering, removing invasive plants, and doing more planting or plant replacement, if needed.

Optimal watering during dry months, most often June through September, would be two gallons per plant per week. If water is not directly accessible from your site, volunteers can transport water from the nearest source with buckets or watering cans. Installing mulch donuts/rings (ten gallons, four inches thick) is crucial when access to water is limited or inaccessible. Coordinate with GSP staff before planting to discuss irrigation plans.

Phase 4: Long-term Stewardship and Maintenance

After a restoration site has gone through invasive removal and planting, and the trees, shrubs, and groundcover are established, the work still isn't done! Forested parklands are never completely restored because continued monitoring and maintenance is needed to make sure that invasive plants are in check and the ecosystems continue on a healthy trajectory.

Phase 4 sites are determined by GSP staff through a verification process that uses data from the Inventory and work logs, as well as thresholds from the Target Ecosystem assigned to each zone. Prospective zones are visited by GSP staff who verify if a zone is meeting its restoration targets, including specified levels of native tree regeneration, shrub and groundcover density, species diversity, invasive cover, and woody invasive regeneration.

Once your site is in phase 4, your volunteer tasks may include sweeps for new or returning invasive plants, as well as monitoring for social use impacts that need to be addressed through restoration, forest health issues (like root rot pockets or storm damage), and other impacts from adjacent properties. This type of stewardship and maintenance may occur just once a year and as little as once every 5 years, depending on your site conditions.

Dealing with Dogs Off Leash

While it is not your duty as a Forest Steward to regulate off-leash dog use in parks, you may consider some of these techniques to protect the restoration area.

- Use signs or fencing when able to educate and designate areas where dogs should not go.
- Lay branches or rocks to designate protected areas and to deter people and animals from areas where dogs are not permitted.
- Avoid removing all plants from an area at once, establish new plantings behind a temporary buffer of weeds.
- If the problem persists, or you don't feel comfortable confronting the dog owner, you can contact Animal Control at 206-386-7387 or file a complaint online at: seattle.gov/animalshelter/ServiceRequest/ServiceRequest.asp. Animal Control will ask for a description of the dog, the owner, and a license plate number (if available).

It is important to know exactly how much wonderful work you are all accomplishing. This information helps to recognize great achievements, monitor success, and track progress on your site and across the City. Reporting City-wide forest restoration achievements is **absolutely crucial** for gaining the necessary political and financial support for a successful program.

Reporting Forms

The Green Seattle Partnership collectively hosts over 1000 volunteer events a year. To simplify and streamline the documentation process, volunteers can use CEDAR (CEntralized DAta Repository), an online request and reporting website. greencitypartnerships.org

Before each work event:

- Create a NEW EVENT. Submit four to six weeks in advance.

After each work event:

- Sign-in Sheet: Add non-registered volunteers and finalize sign-in sheets.
- Event Work Log: Submit after each event.

Any paper sign-in sheets should be sent to the GSP staff:
Green Seattle Project Manager - Forterra
900 Fifth Ave, Suite 2200, Seattle, WA 98164
Cell: (616) 745-7027 Office: (206) 905-6920
Email: amojzak@forterra.org Website: greenseattle.org

Volunteer Events

Each group receiving Green Seattle Partnership support must commit to holding at least four work parties per year. GSP staff can help each group recruit enough volunteers to meet this goal. Volunteers can help with all four phases of restoration – from initial invasive removal to watering and maintaining plants. As mentioned, the Forest Steward for each group needs to submit an event on CEDAR at least four weeks in advance of the work party. This is to ensure that there are no other conflicting events in the park and allows the GSP staff to better direct interested volunteers to your work party. An event calendar with all GSP work parties is posted the GSP website (greenseattle.org), so fill out the "posting" section if you have specific information you would like to have posted online for your event.

In addition to posting volunteer events on CEDAR, Forest Stewards are encouraged to do additional outreach to recruit enough volunteers for a successful work party. GSP has created outreach materials that are available to Forest Stewards such as door hangers, kiosk posters, business cards, and GSP brochures. Check them out: greenseattle.org *search:* printed outreach material

Volunteer events are great way to get work done in the forest, but it also serves an important opportunity to get people outside and connected to Seattle's parks. Forest Stewards can provide a fun and rewarding experience for resident's by being well organized, friendly, prepared, and appreciative.

GSP staff and paid crews are available to help lead larger events, as long as you provide us with enough advance notice. Please contact GSP staff to request volunteer-event support. If you cannot accommodate an interested volunteer group, please ask for assistance or direct them to an alternative GSP event listed on the website.

Volunteer Event: Ten Essentials

With all volunteer events, ten essential items help create a successful event.

1. First-aid kit, cell phone, and info about nearest hospital
2. Tools
3. Materials (plants, cardboard, mulch, etc.)
4. Signage – at sign-in table or park entrance
5. Volunteer sign-in sheet and extra youth waiver forms, clipboard, and pens for signing
6. Water and food (coffee, tea, snacks, etc.)
7. Garbage bags, for trash and as-needed rain ponchos
8. Clear goal of restoration work for the day
9. General information about your group, your site plan, GSP brochures, the next work party dates, etc.
10. Volunteers!

Volunteer Event Welcome / Introduction

1. Welcome and thank volunteers for coming. Make sure everyone has signed in and let them know where the bathrooms and other facilities are located. For small groups, have people introduce themselves to each other.

2. Give a brief description of the history of the park, the project, your group, and other involved partners or agencies.

3. Introduce Green Seattle Partnership and describe our mission. Key points to cover include:

- Current forest conditions: Seattle's current forests are dominated by relatively short lived trees such as red alder and bigleaf maple. The forest floor is being overtaken by invasive trees and shrubs. These conditions are preventing the native forest from regenerating—a forest that is sustainable and long lived. The City of Seattle and its residents are stepping in to remove invasive plants and replant with native trees in shrubs in parks all across Seattle in order to restore its forests.
- Healthy urban natural areas and forest restoration provide many benefits to residents: they improve air and water quality, reduce stormwater runoff and erosion, buffer noise, reduce global warming, increase property value, provide wildlife habitat, promote active lifestyles and make communities more attractive.
- The Green Seattle Partnership, made up of Forterra, the City of Seattle, and its residents, are working together to restore 2,500 acres of Seattle's forested parklands.
- The Green Seattle Partnership is a collaborative effort with more than 15,000 individual volunteers, as well as many organizations, businesses, and community groups.
- Thank your volunteers for being a part of this City-wide effort!

4. If there is a large number of volunteers, we advise you to break out into working groups for safety talks and instructions. Suggested work group sizes: 10-15 for adults and 5-7 for youth groups.

If there is a year-round wet area in the restoration site, limit volunteer involvement to small work parties, 10 or less people. If possible, try to work at the driest time of year. If the wet area is seasonal, regular to large work parties are permitted when the site is dry.

5. Give a brief safety talk that discusses these issues.

- Where is the first-aid kit and cell phone?
- Who has first aid training?
- Make volunteers aware of possible site hazards. Glass, needles, or other unsafe materials shall only be handled by a lead volunteer with proper gloves for safety disposal. Contact GSP staff to arrange a drop off or pick up of "sharps" containers.
- Steep slopes are an additional site hazard. If they are present, warn volunteers about the steep slopes and limit access to those who are capable of negotiating them with care. Remember, volunteers are not allowed on steep slopes (greater than 40%) or where safety is a concern.
- Make sure volunteers stay safe and healthy during extreme temperature events, such as drinking water and taking breaks during warm weather.
- Ask if anyone is allergic to bee or wasp stings. Point out that there are often nests in natural areas during the summer and let volunteers know to move quickly away from any nests or swarms.
- Discuss how to carry, store and use each tool. Each tool has a set of rules that go with it. (Check out: americantrails.org *search:* tools for information on all types of restoration tools.) Some basic rules that apply for all tools are 1) always wear gloves, 2) make sure you have enough room to use your tool, and 3) use the right tool for the right job.

6. Demonstrate proper work techniques and BMPs. Be sure to set a realistic goal for what can be accomplished that day. Physically mark work boundaries with flagging if appropriate.

7. Get volunteers to start working first. Walk around, talk to, and check on them before you start to work yourself. As a volunteer-event leader, your main job is quality control and to ensure that your volunteers are working safely and enjoying their time.

8. At the end of the day, wrap things up and thank volunteers for coming. Ask them for feedback on what went well and how to improve any areas where there were problems. Maintain volunteer email list to let volunteers know about upcoming events at your site, or steer them to greenseattle.org for other restoration events around the City.

Creating a Tool List for Your Event

Forest Stewards can borrow tools for a volunteer event from Seattle Parks by using CEDAR to request tools. When planning for your event, estimate about one to one-and-one-half hand tools per expected volunteer (not including buckets, wheelbarrows, tarps, etc). Volunteers can share or trade tools as needed, so you do not need all of the different tools per volunteer. Requested tools will be available for pick up by Forest Stewards (or a member of your group) at a Seattle Parks facility, or a delivery by Seattle Parks/GSP staff can be arranged.

Forest Stewards who demonstrate a long-term commitment to a site and need tools on a regular basis may qualify for an on-site tool box and tools. Contact GSP staff for more information.

Please note that the preferred tool for a job varies among volunteers. The following suggestions are based on what tools are most readily available.

All Restoration Activities

- Gloves! Make sure you have enough for each volunteer.
- Garbage bags

Invasive Plant Removal

- Hand tillers and/or mini-mattocks (digging out small roots)
- Loppers (all-purpose cutting)
- Hand pruners (cutting smaller invasive plants)
- Folding hand saw (cutting ivy vines from trees)
- Digging shovels (digging out blackberry roots)
- Tarps (carrying piles of invasive plants)
- Hard rake (moving piles of invasive plants)
- Pullerbear™ (removing Scotch Broom and small invasive trees)

Mulching and Sheet Mulching

- Buckets (moving mulch or gravel)
- Pitchfork
- Wheelbarrow
- Hard rake (spreading mulch)

Planting

- Digging shovels
- Hand trowels (for smaller four-inch plants)
- Rock bar or pick-mattocks (rocky or difficult digging)
- Utility knife (cutting cardboard or fabric)

Other Available Tools

- Push broom (cleaning up paved surfaces)
- Fan rake
- Litter picker-uppers

Example

20 volunteers for English ivy removal as well as some blackberries will need:

8 loppers
8 hand tillers
5 hand pruners
2 folding hand saws
3 shovels
2 tarps
20 sets of gloves
3 buckets (for carrying tools)

Tools and materials can be requested on CEDAR
greencitypartnerships.org

Tips for keeping track of your tools

- Count your tools before you start working!
- Keep tools in a central location at the work site when they are not in use.
- Collect and count tools when breaking for snacks or lunch.
- Assign one of your volunteers to sort and count tools at the end of the day before volunteers leave. If there are tools missing, have everyone go back and look together.
- Tie brightly colored flagging tape to small tools such as hand pruners and folding saws.
- Sweep through the site as people are working to look for abandoned tools.
- Make sure people don't forget to return their gloves neatly rolled together.

Working with Students

Students are enthusiastic volunteers and they can help you get some great work done. A ratio of 1:5 to 1:7 supervisors to youth is recommended. When you work with students it is important to go over tool safety, explain why we need to restore our forests, and then have fun!

Students can help to remove invasive plants and mulch, but they need to have permission, most likely granted to the school by their parents. You still need to have a sign-in sheet for the event. You can have adults and/or teachers sign in on the sign-in sheets and have the teacher bring a class list to staple to it.

Hints for planting: Have students work in teams of two for planting. Have them identify their plant species with ID cards if available, name their plants, and make a mulch donut.

Hints for invasive removal: Have students compete to remove the largest blackberry root ball, create the largest compost pile, or pull the longest strand of ivy. Middle-school and high-school students can also help measure the area cleared to help with the work log.

If you need special tools for younger children, or have requests for extra hands for a youth event, please notify the GSP staff four weeks in advance.

Resources for student activities and educational lessons can be found at the Starflower Foundation (wnps.org/education/resources/index.html).

If a school group is interested in the GSP Urban Forest Curriculum, there is a three-week set of in-class lessons that teachers can use. Check out: greenseattle.org *search:* educator resources.

Appendix A: Soil Quality

Soil quality is an important consideration in restoration plantings, especially in urban habitats where there can be significant disturbance. As part of preparing your planting plan, spend some time digging in and getting familiar with what is going on below the ground's surface.

Soil texture is key to our understanding of the capacity of a soil to hold and supply water and nutrients to a plant. Texture refers to the distribution of different sized soil particles.

- Sand particles are the largest and make for well-aerated and well-drained soil that consequently has poor water and nutrient holding capacities.
- Clay particles are the smallest and have slow drainage and poor aeration, but high water and nutrient capacities.
- Silt particles fall between sand and clay in size, nutrients, and moisture conditions.
- Loam refers to a soil that has half as much clay as sand or silt, making for a well-structured soil with ideal pore space and surface area to hold water and nutrients.

Field Analysis

	Forms a weak ribbon of less than 1 inch	Forms a ribbon 1 - 2 inches before breaking	Forms a ribbon 2 inches or longer before breaking
Feels Gritty?	Sandy Loam	Sandy Clay Loam	Sandy Clay
Feels equally gritty and smooth?	Loam	Clay Loam	Clay
Feels very smooth?	Silt Loam	Silky Clay Loam	Silky Clay

Select a soil sample from the rooting zone (between four and eight inches deep). Place in the palm of your hand, add water, and knead until the soil is like moist putty. When you squeeze it, see if the soil remains in a ball; if not,

add more water or soil to get the correct consistency. If your soil still will not remain in a ball it is **Sand**.

Next, if your soil is not sand, place your ball of soil between thumb and forefinger. Push soil upwards into a ribbon shape with uniform depth of about 1/8". Let it break under its own weight.

Does the soil form a ribbon?

Yes: Use the chart on the next page to ID your soil.

No: Your soil is **Loamy Sand.**

Adapted from: Thien, S. J. 1979. "A Flow Diagram for Teaching Texture by Feel Analysis." *Journal of Agronomic Education*. 8: 54-55.)

The results of your soil-texture ribbon test will help determine your best options for plant installation and management practices. Consider the following:

- Knowing your soil texture will change your approach to moisture management during droughty summer months. Because sandy soils drain quickly, any supplemental irrigation should be applied more frequently at decreased amounts. Clay or clay loam soils may make irrigation unnecessary.
- Organic amendments such as mulch rings can improve the water-holding capacity of sandy soils by decreasing evaporation and improving soil structure as the mulch decomposes.
- Because soil amendments can be expensive and logistically impossible for many sites, often your best option is to plant the right species for the existing conditions. For sandy soils with no natural seeps, include plants that establish roots quickly and can tolerate drought. Slow-draining soils heavy in clay should be planted with species that can tolerate anaerobic conditions common in saturated soils.
- Clay soil can have adequate organic content, providing for a combination of good moisture-holding capacity and a structure that allows for drainage and aeration.
- At sites where plant establishment has proven to be difficult, you may consider sending a soil sample to a testing lab such as the Washington State University Extension.

(Adapted from: Harris, W. H., J.R. Clark, N.P Matheny. *2004 Arboriculture: Integrated Management of Landscape Trees, Shrubs, and Vines*. New Jersey: Prentice Hall. Thien, S.J. 1979. "A Flow Diagram for Teaching Texture by Feel Analysis." *Journal of Agronomic Education*. 8: 54-55.)

Appendix B: Mulch Calculation

Calculating Cubic Yards

1 cubic yard = 27 cubic feet. To convert cubic feet to cubic yards:
number of cubic feet ÷ 27 cubic feet = number of cubic yards

Example: You have an area of 1,000 square feet and you want to cover it with four inches (0.33 feet) of mulch.

1,000 square feet × 0.33 feet (depth of the mulch) = 330 cubic feet
330 cubic feet ÷ 27 cubic feet = 12.2 cubic yards

Cubic Yards Calculator

If you don't want to go through all the calculations above.

Square Feet	Depth 3 inches	Depth 4 inches	Depth 5 inches	Depth 6 inches	Depth 7 inches	Depth 8 inches
100	1	1-1/4	1-1/2	2	2-1/4	2-1/2
150	1-1/2	2	2-1/2	2-3/4	3-1/4	3-3/4
200	2	2-1/2	3	3-3/4	4-1/2	5
250	2-1/2	3	4	4-3/4	5-1/2	6-1/4
300	2-3/4	3-3/4	4-3/4	5-1/2	6-1/2	7-1/2
350	3-1/4	4-1/2	5-1/2	6-1/2	7-3/4	8-3/4
400	3-3/4	5	6-1/4	7-1/2	8-3/4	10
450	4-1/4	5-3/4	7	8-1/2	9-3/4	11-1/4
500	4-3/4	6-1/4	7-3/4	9-1/4	10-3/4	12-1/2
600	5-3/4	7-1/2	9-1/4	11-3/4	13	15
700	6-1/2	8-3/4	11	13	15-1/4	17-1/4
800	7-1/2	10	12-1/2	15	17-1/2	20
900	8-1/2	11-1/4	14	16-3/4	19-1/2	22-1/4
1,000	9-1/2	12-1/2	15-1/2	18-1/2	21-3/4	24-3/4
2,000	18-1/2	24-3/4	31	37	43-1/4	49-1/2
3,000	28	37	46-1/2	55-3/4	65	74
5,000	46-1/2	61-3/4	77-1/4	92-3/4	108	123-1/2

Converting Square Feet into Acres

1 acre = 43,560 square feet (1 acre measures 208.71 ft. × 208.71 ft.)

Example: You have a restoration area that is 7,850 square feet.
7,850 square feet ÷ 43,560 square feet = 0.18 acres

Appendix C: Native Plant Chart

NRCS Code	Species	Botanical Name	Soil Texture	Soil Moisture	Light/Slope
TREES					
CHNO	Alaska yellow ceder	Chamaecyparis nootkatensis	mineral/organic	wet-moist	● ◑ ▲
ACMA	Bigleaf maple	Acer macrophyllum	mineral	moist-dry	● ◑ ● ▲
PREM	Bitter cherry	Prunus emarginata	mineral	moist	●
POBA	Black cottonwood	Populus balsamifera	mineral	wet-moist	● ◑
CRDO	Black hawthorn	Crataegus douglasii	organic	moist	●
RHPU	Cascara	Rhamnus purshiana	mineral	wet-dry	● ◑ ● ▲
PSME	Douglas fir	Pseudotsuga menziesii	mineral	moist-dry	● ◑ ▲
QUGA	Garry oak	Quercus garryana	mineral	dry	●
ABGR	Grand fir	Abies grandis	moist-dry		◑ ▲
SAHO	Hooker's willow	Salix hookeriana		wet-moist	● ◑ ▲
FRLA	Oregon ash	Fraxinus latifolia	organic	wet-moist	●
ARME	Pacific madrone	Arbutus menziesii	mineral	dry	●
SALU	Pacific willow	Salix lucida		wet-moist	● ◑ ▲
TABR	Pacific yew	Taxus brevifolia	mineral	moist	● ◑ ● ▲
BEPA	Paper birch	Betula papyrifera		moist	●
ALRU	Red alder	Alnus rubra	mineral	moist	●
SASC	Scouler's willow	Salix scouleriana		moist-dry	● ◑ ▲
PICO	Shore pine	Pinus contorta		moist-dry	● ▲
PISI	Sitka spruce	Picea sitchensis	organic	moist	● ◑
SASI	Sitka willow	Salix sitchensis		wet-moist	● ◑ ▲
CONU	Wstrn. flowering dogwood	Cornus nuttallii	organic	moist	● ◑
TSHE	Western hemlock	Tsuga heterophylla	mineral	moist-dry	● ◑ ●
THPL	Western red cedar	Thuja plicata	mineral/organic	wet-moist	◑ ●

KEY Environmental Preferences

Soil

Organic: Plant prefers organic rich soil in humus and generally moist.

Mineral: Plant prefers sandy soil, generally well drained and drier.

Blank: No preference, or unknown

Soil Moisture

Soil preferred: Wet, Moist or Dry

Light/Slope

● Full Sun - Mostly Sun

◑ Partial Sun

● Mostly Shade - Full Shade

▲ Suitable for steep slopes

NRCS Code	Species	Botanical Name	Soil Texture	Soil Moisture	Light/Slope
SHRUBS					
ROGY	Baldhip rose	Rosa gymnocarpa		moist-dry	
COCO	Beaked hazelnut	Corylus cornuta	mineral	moist	
OPHO	Devil's club	Oplopanax horridus	mineral	moist	
MANE	Dull Oregon grape	Mahonia nervosa		moist-dry	
VAOV	Evergreen huckleberry	Vaccinium ovatum	mineral	moist-dry	
ARDI	Goat's beard	Aruncus dioicus		moist	
SPDO	Hardhack	Spiraea douglasii		moist-wet	
VIED	Highbush cranberry	Viburnum edule	mineral/organic	moist	
OECE	Indian plum	Oemlaria cerasiformis	organic	moist-dry	
PHLE	Mock-orange	Philadelphus lewisii		moist-dry	
RONU	Nootka rose	Rosa nutkana	mineral	moist-dry	
HODI	Oceanspray	Holodiscus discolor	mineral	moist-dry	
LOCI	Orange honeysuckle	Lonicera ciliosa		moist	
PHCA	Pacific ninebark	Physocarpus capitatus	mineral	wet-moist	
TODI	Pacific poison-oak	Toxicodendron diversilobum	mineral	moist	
RHMA	Pacific rhododendron	Rhododendron macrophyllum		moist-dry	
ROPI	Pea-fruited rose	Rosa pisocarpa	mineral/organic	wet-moist	
SARA	Red elderberry	Sambucus racemosa	mineral	moist	
VAPA	Red huckleberry	Vaccinium parvifolium	organic	moist	
COSE	Red osier dogwood	Cornus sericea	organic	wet-moist	
RISA	Red-flowering currant	Ribes sanguineum	mineral	dry	
RUSP	Salmonberry	Rubus spectabilis	mineral	wet-moist	
AMAL	Serviceberry	Amelanchier alnifolia	mineral	moist-dry	
SOSI	Sitka mountain ash	Sorbus sitchensis	mineral	moist-dry	
SYAL	Snowberry	Symphoricarpos albus	mineral	moist-dry	
RIBR	Stink currant	Ribes bracteosum	organic	wet	
RILA	Swamp gooseberry	Ribes lacustre	organic	moist-dry	
MAAQ	Tall Oregon grape	Mahonia aquifolium		moist-dry	
RUPA	Thimbleberry	Rubus parviflorus	mineral	dry	
RUUR	Trailing blackberry	Rubus ursinus		moist-dry	
LOIN	Twinberry	Lonicera involucrata	mineral	wet-moist	
ACCI	Vine maple	Acer circinatum	mineral	wet-moist	
MAFU	Western crabapple	Malus fusca	mineral/organic	wet-moist	
GROUNDCOVER/HERB					
ERSP	Aspen fleabane	Erigeron speciosus	mineral/organic	moist	
DECE	Beringian hairgrass	Deschampsia cespitosa	mineral	moist	
PTAQ	Bracken fern	Pteridium aquilinum	mineral	wet-moist	
PESE	Coast penstemon	Penstemon serrulatus	mineral	moist	

CAQU	Common camas	Camassia quamash	mineral/organic	moist	
ACMI	Common yarrow	Achillea millefolium	mineral	dry	
BLSP	Deer fern	Blechnum spicant	mineral	moist	
TITR	Foamflower	Tiarella trifoliata	organic	moist	
TEGR	Fringecup	Tellima grandiflora		moist	
ARUV	Kinnikinnick	Arctostaphylos uva-ursi	mineral	dry	
ATFI	Lady fern	Athyrium filix-femina	organic	wet-moist	
GEMA	Large-leaved avens	Geum macrophyllum	organic	wet-moist	
POGL	Licorice fern	Polypodium glycyrrhiza	organic	moist	
ADPE	Maidenhair fern	Adiantum pedatum	organic	moist	
OXOR	Oregon wood-sorrel	Oxalis oregana	organic	moist	
DIFO	Pacific bleeding heart	Dicentra formosa		moist	
HYTE	Pacific waterleaf	Hydrophyllum tenuipes	organic	wet-moist	
TOME	Piggy-back plant	Tolmiea menziesii		moist	
GASH	Salal	Gaultheria shallon	mineral	dry-moist	
MAST	Star Solomon's-seal	Maianthemum stellatum	mineral/organic	moist	
URDI	Stinging nettle	Urtica dioica	organic	moist	
PEFR	Sweet coltsfoot	Petasites frigidus var. palmatus	mineral/organic	wet-moist	
POMU	Sword fern	Polystichum munitum	mineral	dry-moist	
ANMA	Western pearly everlasting	Anaphalis margaritacea	mineral	dry	
TROV	Western trillium	Trillium ovatum	organic	wet-moist	
ASCA	Wild ginger	Asarum caudatum	mineral/organic	moist	
MADI	Wild lily-of-the-valley	Maianthemum dilatatum	organic	wet-moist	
FRVE	Woodland strawberry	Fragaria vesca		moist	

EMERGENTS

JUEF	Common rush	Juncus effusus	organic	wet
CADE	Dewey sedge	Carex deweyana	mineral/organic	wet-moist
SCAC	Hardstem bullrush	Scirpus acutus	mineral/organic	wet
ALPR	Meadow foxtail	Alopecurus pratensis	mineral/organic	wet-moist
CAOB	Slough sedge	Carex obnupta	mineral	wet
SCMI	Small-fruited bullrush	Scirpus microcarpus	mineral	wet
LYAM	Skunk cabbage	Lysichiton americanum	organic	wet
GLEL	Tall mannagrass	Glyceria elata	mineral/organic	wet
JUAC	Tapertip rush	Juncus acuminatus	mineral/organic	wet

WOODY INVASIVE PLANTS

ROPS	Black locust	Robinia pseudoacacia L.
BUDA	Butterfly bush	Buddleia davidii
COSP	Cotoneaster	Cotoneaster spp.
PRDO	Domestic cherry	Prunus domestica
CRMO	English hawthorne	Crataegus monogyna
ILAQ	English holly	Ilex aquifolium
PRLA	English laurel	Prunus laurocerasus
PYSP	Firethorn	Pyracantha spp.
LAAN	Golden chain tree	Labernum anagyroides
ACCA	Hedge maple	Acer campestre
AEHI	Horse chestnut	Aesculus hippocastanum
PONI	Lombardy poplar	Populus nigra
SOAU	Mountain ash	Sorbus aucuparia
ACPL	Norway maple	Acer platanoides
PRLU	Portuguese laurel	Prunus lusitanica
TARA	Saltcedar	Tamarix ramosissima
CYSC	Scotch broom	Cytisus scoparius
POAL	Silver poplar	Populus alba
PRSP	Sloe	Prunus spinosa
ACPS	Sycamore maple	Acer pseudoplatanus
PRCE	Thundercloud plum	Prunus cerasifera
CLVI	Traveler's joy	Clematis vitalba
PRAV	Wild cherry	Prunus avium

KEY Environmental Preferences

Soil

Organic: Plant prefers organic rich soil in humus and generally moist.

Mineral: Plant prefers sandy soil, generally well drained and drier.

Blank: No preference, or unknown

Soil Moisture

Soil preferred: Wet, Moist or Dry

Light/Slope

- Full Sun - Mostly Sun
- Partial Sun
- Mostly Shade - Full Shade
- Suitable for steep slopes

The species listed above,Woody Invasive Plants, outlines the species that will be treated when Forest Stewards request herbicide treatment through the request form. A full list of target weeds for Seattle Parks natural areas can be found at: kingcounty.gov/environment/animalsAndPlants/noxious-weeds/laws/list.aspx

Appendix D: Additional Field References and Tools

Pacing

My pace = _____ ft.
10 ft. = _____ paces
50 ft. = _____ paces
100 ft. = _____ paces

Estimating square footage

Average parking space: 150 – 200 sq. ft.
Olympic-sized swimming pool: 13,448 sq. ft. (82' x 164')
One acre: 43,560 sq. ft.
Football field: 57,600 sq. ft. (160' x 360')
One hectare (10,000 sq. m.): 107,639 sq. ft.

Appendix E: Wet Area Decision Tree

It's important to be able to answer the question: *Does my site have a wetland or wet area?* Answer the questions below, starting with 1. If you get to a green box, move to the next question. If you land on a blue box with the wetland symbol, you have a wetland! An orange box indicates that you have upland site.

KEY:

you have a wetland area!

you have an upland site!

1 What season is it?

- **DRY** *mid-June to mid-November*
- **WET** *Mid-November to mid-June*

2 Is the soil surface glistening or is there standing water?

- **No** → **3 What plants are present at your site?**
- **Yes** → **wetland**

3 What plants are present at your site?

- **Group 1**: skunk cabbage, sedge species, reed canary grass, yellow flag iris, purple loosestrife → **wetland**
- **Group 2 ***: black cottonwood, red alder, western red cedar, salmonberry, willow species, red twig dogwood, black twinberry, hardhack
- **Neither** → **upland**

* If you have plants at your site that are in Group 2, but the decision tree does not identify your site as a wetland, we recommend re-testing during the wet months to verify that the site is not a wetland.

4 Dig down12 inches. Is the soil glistening or is there water?

- **Yes** → **wetland**
- **No** → **upland**

Invasive Plants

Record invasive plants present in your restoration site and any notes on quantity or percent cover:
Example: *English ivy- 5% ground cover and growing up a few trees.*

Native Plants

Record native plants present in your restoration site. Add the new species as you plant your restoration site.

Trees

Shrubs

Groundcover/Herbaceous

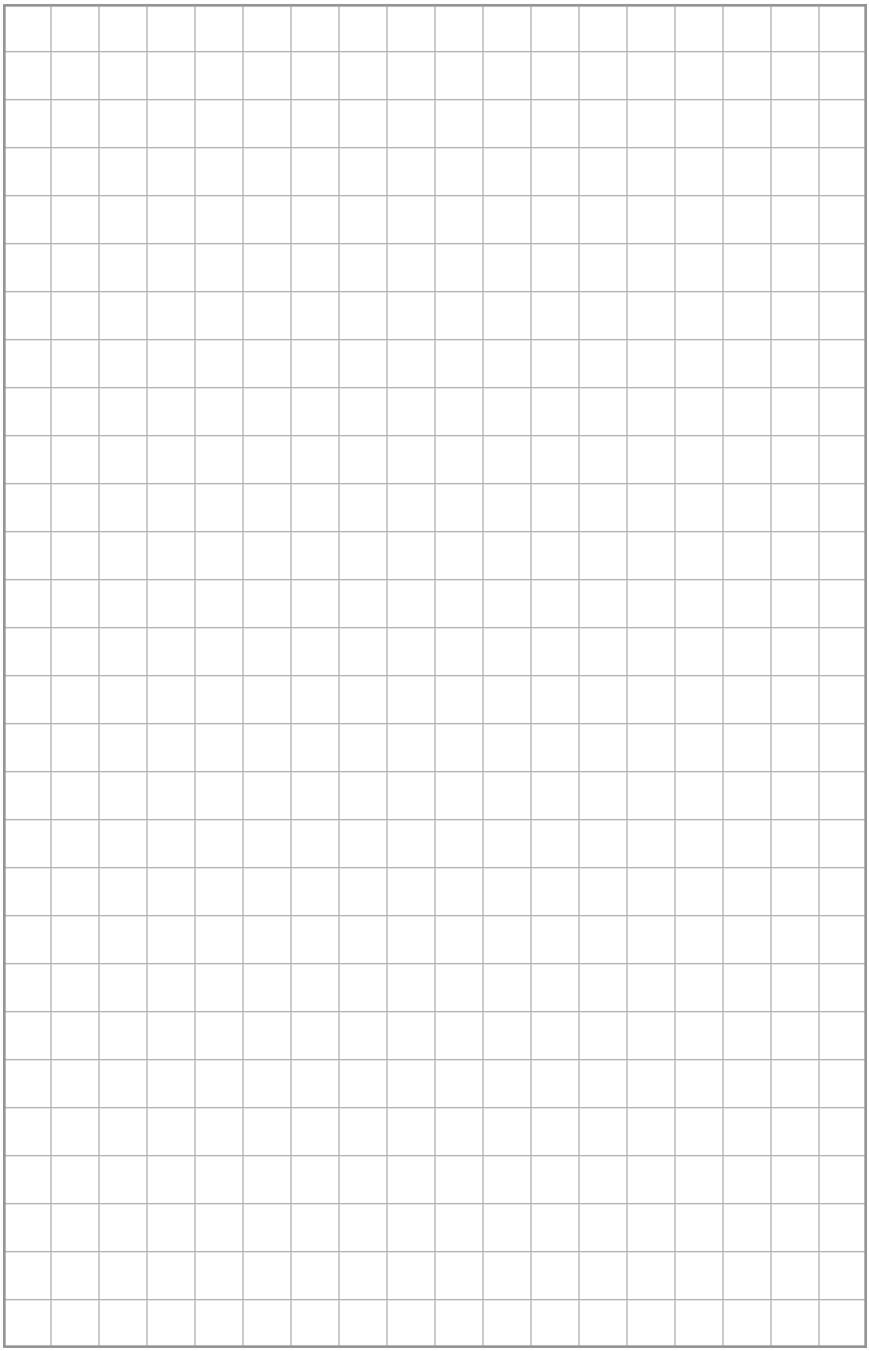
VOLUNTEERS

Use this space to collect the names and contact information of volunteers or community members you meet who might want to come back and volunteer at your site again. It is great to follow up with volunteers, thank them and invite them back.

Name Email/Phone

NOTES

Sketch a map of your restoration site.




KEEP GOING...
AND THANKS!