Frink Park Site #2
Landscape Rehabilitation Plan
Autumn 2001

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EHUF 480: Selection and Management of Landscape Plants
Center for Urban Horticulture

I. Introduction and Goals

The goal of this project is to follow the Frink Park Forest Plan guidelines to create an inviting entryway into Frink Park. Frink Park site 2 borders S. King Street to the south and the meadow area to the west. A gravel path traverses the northwest edge of the site, ending at King St and 32nd. Neighbors frequently enter the park through this area and are very interested in seeing improvements in the park.

The area now known as Frink Park was logged during a period of rapid development early in the 1900's. Prior to logging, the forest was predominantly made up of *Thuja plicata* (western red cedar), *Tsuga heterophylla* (western hemlock), *Pseudotsuga menzesii* (Douglas fir), and *Abies grandis* (grand fir) (Forest Plan, p. 4-1). The remnant trees—sycamores along King Street, an elm and a red maple—are present today (Forest Plan, p. 4-11). Throughout the park, the over story is now predominantly *Acer macrophyllum* (bigleaf maple).

The Frink Park Forest Plan specifies six goals for restoring Frink Park (p. 4-12). Briefly, they are: assist natural processes, promote native character, conserve soil and water quality, protect and enhance wildlife habitat, buffer land uses, and ensure public safety. In designing the plan for Site 2, we looked to these goals direct us.

II. Site Analysis

a. Current site conditions

Soil

When preparing a site for restoration, one of the main components to analyze is the condition and health of the soil. Once soil characteristics such as texture and nutrient content are known, landscape planners can select the best plants to use given the site conditions.

Soil Profiles

Two 16-inch holes were dug to analyze the soil properties. One hole was dug on the bare ground hillside and another in the forest area. The main difference between the two locations was that the hole dug under the ivy in the forested area had a dark color to its top two inches showing high organic matter content, whereas the bare hillside had no signs of organic matter besides light deciduous leaf cover.

Field analysis for the texture and pH of the different soil horizons is listed in Table A.

Table A: Soil Analysis Results

Site Location	*Depth*	*Horizon*	*Texture*	*Soil pH*
Bare Ground			sandy clay	
Hillside	0"-2"	A	loam	5.54
	2"-8"	A	silty clay loam	4.66
			sandy clay	
	8"-16"	A	loam	5.38
Ivy	0"-3"	O	sandy loam	6.2
	3"-8"	A	sandy loam	4.64
	8"-16"	A	silty clay	5.1

Bulk Density

Bulk density is a measure of the compaction of a soil: weight of oven-dried soil/volume of soil. Plants can root freely with bulk densities of 1.0–1.4 g/cm^3.

Interestingly, the top of the bare hillside had the highest bulk density (Table B). The relatively high bulk densities in this area will have to be considered when preparing the site for plant installation.

Table B: Soil Bulk Density Results

Bulk Density	*Location*
1.60g/cm3	Top of Bare Hillside
1.47g/cm3	Middle of Bare Hillside
1.49g/cm3	Bottom of Bare Hillside
1.58g/cm3	Gravel Path
1.52g/cm3	Forested Area

Nutrient analysis

The nutrient content of a soil can be used to determine part of the overall health of that soil. In the case of site 2, the soil analysis shows that there are obvious differences in the carbon and nitrogen abundances between horizons (Table C). The levels of the other essential nutrients for plant growth, as shown in Tables C, D, and E, are similar

throughout the landscape. These nutrients will not be of concern for plant health and commercial fertilizers will not have to be applied.

Table C: Soil Nutrient Analysis Results

	Depth	Carbon	Nitrogen	Boron	Calcium	Copper
		%	%	µg/g	µg/g	µg/g
Forested Area	0"-3"	3.129	0.199	31.13608	3873.576	22.82595
Forested Area	3"-8"	0.829	0.068	42.76245	3440.427	23.75
Forested Area	8"-16"	0.589	0.055	37.04697	2701.286	16.34342
Bare Hillside	0"-2"	2.442	0.16	36.52843	3376.222	24.70196
Bare Hillside	2"-8"	1.236	0.084	35.3905	2986.891	17.85562
Bare Hillside	8"-16"	0.72	0.042	29.06144	2933.083	10.18998

Table D: Soil Nutrient Analysis Results

	Depth	Iron	Potassium	Magnesium	Manganese	Molybdenum
		µg/g	µg/g	µg/g	µg/g	µg/g
Forested Area	0"-3"	14758.65	868.673	3967.511	334.5591	17.53376
Forested Area	3"-8"	21306.27	712.5353	5569.101	388.2967	24.93154
Forested Area	8"-16"	18413.24	508.7307	4337.228	331.8152	21.11587
Bare Hillside	0"-2"	17808.81	954.65	4761.224	406.0549	21.2098
Bare Hillside	2"-8"	17440.77	677.6192	4221.255	481.4816	21.07849
Bare Hillside	8"-16"	14277.84	499.6503	3500.308	368.2694	18.1087

Table E: Soil Nutrient Analysis Results

	Depth	Nickel	Phosphorus	Lead	Sulfur	Zinc
		µg/g	µg/g	µg/g	µg/g	µg/g
Forested Area	0"-3"	49.45148	872.0781	61.1308	285.615	61.15928
Forested Area	3"-8"	69.72614	682.668	53.03631	186.8237	56.8195
Forested Area	8"-16"	57.60125	568.1618	58.29019	138.3518	42.46973
Bare Hillside	0"-2"	58.5549	782.5971	69.78529	291.6618	68.90588
Bare Hillside	2"-8"	57.37694	852.2112	50.63275	211.9002	55.12694
Bare Hillside	8"-16"	51.22779	759.9083	31.16635	108.9263	48.84688

Light/seasonal analysis

The majority of the site's canopy is deciduous, allowing moderate light infiltration of the site. The southern edge of site 2, along King Street, is the most densely vegetated area and receives southern exposure to sunlight. After clearing invasive species and other undesired vegetation from this area, more sunlight will be allowed to penetrate the interior space.

b. Existing Plant Material

The plants that currently exist at the site can be divided into three areas: trees that make up the canopy of the site, the under story trees and shrubs, and ground covers.

It is recommended that the sugar maples, sycamore trees, and the beech be left on the site. Although they are not native plants, they are non-invasive species, provide shade to the site, and have historical merit. It is recommended that the few black cherry trees, *Prunus serotina*, located on the site be removed as they provide no benefits to the site. The Lombardy poplars, *Populus nigra*, growing along King Street should also be removed and the stumps frilled, as this species is invasive.

English ivy has choked off the growth of under story plants in most areas of the site. The area along King Street is a tangled mass of many weedy and invasive shrubs including *Ilex aquifolium, Pyracantha coccinea, Prunus laurocerasus, Forsythia spp,* and *Viburnum opulus*. Scattered around the site are several single seed hawthorns, *Crataegus monogyna*, that should be removed as they are invasive.

There are a few under story plants existing at the site that should remain, including oceanspray (*Holodiscus discolor*), snowberry (*Symphoricarpos albus*), Pacific dogwood (*Cornus nuttallii)*, Indian plum, (*Oemleria cerasiformis*), Oregon grape (*Berberis nervosa*), and Solomon's Seal. Care will need to be taken when working around these plants in order to ensure their survival.

III. Site Plan and Design

a. Design Considerations

Frink Park Forest Plan Goals

To assist the natural process of succession, our plan calls for the planting of western red cedar and western hemlock seedlings. Promotion of native character will entail control of the non-native invasives present on the site, and the planting of native species that would typically be found in a Puget Sound forest. Soil and water quality will be conserved and enhanced by the stabilization of an impacted slope and revegetation with native plants. The transition from forest/park to residential will be buffered by plantings which help to screen King St from view. Public safety will be increased by the removal of a hazard tree.

Wildlife Considerations

Increasing the diversity of plant species will also increase the variety and numbers of native animal populations that Frink Park can support. To maximize native animal habitat, our plan calls for increasing the vegetation layers.

Other Considerations

In designing the plan for this site, we also took into consideration the desires and needs of the users. Friends of Frink Park was an invaluable source of information.

Friends of Frink Park would like site 2 to serve as an entryway into the park. In order to draw attention to the main entrance, an arbor structure will be placed at the entrance. This will provide opportunity to place trail maps and other educational material and also call attention to the park. Also, the park's southern border along King Street will be opened up to allow pedestrians to see into park.

A major problem area in the site is a disturbed and compacted area of the slope, which extends from the edge of the grassy area west to the main gravel path. The slope will be stabilized and planted with native shrubs and ground covers.

b. Proposed landscape renovation

i. Design narrative

This plan is meant to invite the public into Frink Park and create a woodland feel within the urban setting. Plants have been located and massed to direct views and create "windows" into the space between the London plane trees on King Street.

Plants should be installed in natural arrangements. Avoid straight rows or formal patterns. Small groups of same species should be the prevailing pattern.

ii. *Invasive Weed Control*

An invasive plant species is one that can spread rapidly by seed, rhizomes, or stolons. These plants tend to form monocultures that displace native plant species. Invasive plants can seriously threaten the native character of large and small areas alike.

Site Preparation/Landscape Installation

Site preparation will require removal of invasive species, downing a big leaf maple located on the bare slope, and placing 10 to 12 inches of wood chip mulch on the bare slope and within the forest. Additionally, multiple areas adjacent to King St. need to be stabilized with coir netting and areas of bare slope need to be stabilized with logs. This aspect of the project will be the most costly and time consuming. Considerable care will need to be used when removing invasive species around species to be kept. Erosion control is a top priority due to the exposure of soil when invasive species are removed.

iii. Plant selection

Plants were selected based on several criteria. Since the Frink Park Forest Plan requires that native character be enhanced and maintained, we chose only plants native to the Pacific Northwest. From the extensive palette of PNW natives, we chose plants that are adapted to woodland habitats. Since a mature over story is present at the site, the plan mostly calls for shrubs and groundcovers. These plants were carefully chosen to provide shelter and food for wildlife while creating an inviting feel to the park.

iv. Plant Maintenance and Aftercare

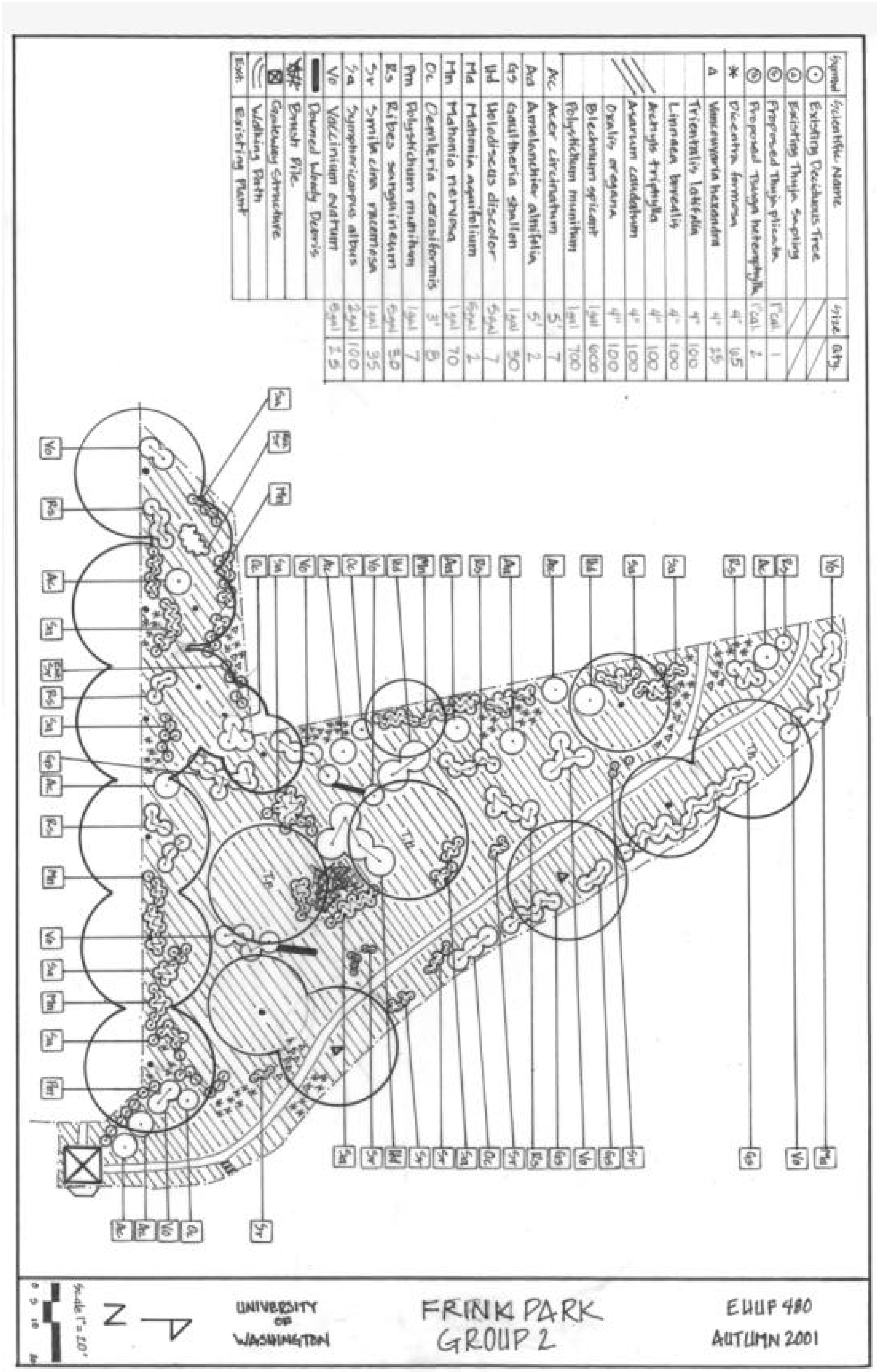
Plants should be installed in the fall in order to capitalize on autumn and winter rains that will aid in plant establishment. All plants should be watered regularly during the first growing season. Extra attention should be paid to plants during the second growing season, and water-stressed plants should be watered. Since the plants called for in the design are adapted to site soil conditions, fertilizer will generally not be required. Although pruning is not required for any of the plants called for in the design, park managers may decide to prune certain plants in order to keep paths and views clear.

v. Budget

The Friends of Frink Park suggested $5,000 as an operable budget. It is recommended that the proposal be considered in three phases of implementation; site preparation, installation, and aftercare. The students of EHUF 480 have already contributed the site analysis, soil testing, and design proposal. Volunteers can remove invasive species, and the parks department has volunteered to haul debris from the site. The woodchip topdressing will be provided at no cost by the Parks Department. Tools and wheelbarrows are available through the Adopt-a-Park Program for work parties. Volunteers will install the plant material, and free or discounted plants may be available.

Aftercare

Volunteers will provide the necessary watering, pruning, and topdressing of the site. The materials needed to maintain the layer of top dressing and future control of invasive plants are the major predicted costs of aftercare and maintenance.


Symbol | Scientific Name | Size | Qty.
Existing Deciduous Tree
Existing Thuja Sapling
Proposed Thuja plicata | 1" cal. | 1
Proposed Tsuga heterophylla | 1" cal. | 2
Dicentra formosa | 4" | 65
Vancouveria hexandra | 4" | 25
Trientalis latifolia | 4" | 100
Linnaea borealis | 4" | 100
Achlys triphylla | 4" | 100
Asarum caudatum | 4" | 100
Oxalis oregana | 4" | 100
Blechnum spicant | 1 gal | 600
Polystichum munitum | 1 gal | 700
Ac | Acer circinatum | 5' | 7
Aa | Amelanchier alnifolia | 5' | 2
Gs | Gaultheria shallon | 1 gal | 30
Hd | Holodiscus discolor | 5 gal | 7
Ma | Mahonia aquifolium | 5 gal | 2
Mn | Mahonia nervosa | 1 gal | 70
Oc | Oemleria cerasiformis | 3' | 8
Pm | Polystichum munitum | 1 gal | 7
Rs | Ribes sanguineum | 5 gal | 30
Sr | Smilacina racemosa | 1 gal | 35
Sa | Symphoricarpus albus | 2 gal | 100
Vo | Vaccinium ovatum | 5 gal | 25
Downed Woody Debris
Brush Pile
Gateway Structure
Walking Path
Ext. | Existing Plant
Scale 1" = 20'
0 5 10 20
N
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FRINK PARK
GROUP 2
EHUF 480
AUTUMN 2001

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