

**First Monitoring Report
for the North Portland Road
Restoration and Mitigation Site
in Portland, Oregon**

LU 03-100430 EN EF

**Prepared for
Metro
Regional Environmental Management
Portland, Oregon**

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1.0 INTRODUCTION

This report documents the first of three annual monitoring periods for a Land Use Review for the excavation of a mitigation site to compensate for fill in the Columbia Slough floodplain in Portland, Oregon (Figure 1). All Figures are in Appendix A. The project area is located off North Portland Road, east of the Columbia Slough and south of Smith Lake. The site was excavated and planted as off-site mitigation for fill within the base flood area at the St. Johns landfill.

The Bureau of Development Services for the City of Portland has issued permit LU 03-100430 EN EF for the site excavation and restoration. The city requires site monitoring for a minimum of three years during the late summer.

2.0 PLANTINGS

2.1 Plant Survival

Native trees and shrubs were planted in early winter 2003. Figure 2 depicts general planting areas and provides a list of species planted. Plantings were labeled with identification tags that include the common name of each species. Plantings were counted on September 9, 2004. Table 1 shows the original numbers specified, along with the first year sampling count for each species and the estimated percent survival rates.

Table 1. Trees installed with percent (%) survival rates on North Portland Road

Scientific Name	Common Name	Originally Installed	Counted 2004	% survival
<i>Acer macrophyllum</i>	bigleaf maple	18	8	44%
<i>Alnus rubra</i>	red alder	92	0	0%
<i>Crataegus douglasii</i>	black hawthorn	98	98	100%
<i>Fraxinus latifolia</i>	Oregon ash	169	110	65%
<i>Populus trichocarpa</i>	black cottonwood	100	120*	120%
<i>Pseudotsuga menziesii</i>	Douglas-fir	38	2	5%
<i>Pyrus diversiloba</i>	western crabapple	36	36	100%
<i>Rhamnus purshiana</i>	cascara buckthorn	103	58	56%
<i>Salix spp.</i>	willow	162	200**	123%
Total tree plantings		816	632	77%

*Also >1000 volunteer seedlings, ~12" tall in lower portion of pond. **Also hundreds of volunteer seedlings, ~12" tall

Table 2. Shrubs installed on North Portland Road

Scientific Name	Common Name	Originally Installed
<i>Berberis (Mahonia) aquifolium</i>	tall Oregon-grape	69
<i>Holodiscus discolor</i>	ocean-spray	20
<i>Oemleria cerasiformis</i>	Indian-plum	25
<i>Ribes sanguineum</i>	red-flowering currant	39
<i>Rubus parviflorus</i>	thimbleberry	33
<i>Rosa pisocarpa</i>	swamp rose	34
<i>Sambucus racemosa</i>	red elderberry	87
<i>Spiraea douglasii</i>	Douglas' spirea	17
<i>Symphoricarpos albus</i>	snowberry	26
Total shrub plantings		350

Table 3. Emergent species installed in lower excavated areas

Species	Common Name	Quantity (plugs)
<i>Carex aperta</i>	Columbia sedge	800
<i>Juncus tenuis</i>	slender rush	800
<i>Scirpus microcarpus</i>	small-fruited bulrush	600

Table 4. Grass seed mix installed in the North Portland Road mitigation site

Species	Common name	Amount/area
<i>Beckmannia syzigachne</i>	sloughgrass	0.1 lb./1000 ft ²
<i>Bromus carinatus</i>	California brome	1 lb./1000 ft ²
<i>Deschampsia cespitosa</i>	tufted hairgrass	0.2 lb./1000 ft ²
<i>Elymus glaucus</i>	blue wildrye	1 lb./1000 ft ²
<i>Festuca occidentalis</i>	western fescue	1 lb./1000 ft ²
<i>Glyceria elata</i>	tall mannagrass	0.1 lb./1000 ft ²
<i>Hordeum brachyantherum</i>	meadow barley	0.1 lb./1000 ft ²

At this time, tree survival (77%) is below the threshold (100%) required by the City due to mortality. Grasses seeded throughout the site and emergents installed in the lower portions of the excavated areas appear to be becoming established. The woody plantings appear to be suffering some initial drought stress with severe mortality in several species (e.g. red alder, oceanspray, Indian-plum, red elderberry and thimbleberry). Some recruitment of native species from the adjacent forested area was noted (e.g. redosier dogwood) and adjacent mature stands of black cottonwood and willow are providing an ample seed source that is resulting in the colonization of the lower portions of the site with numerous seedlings.

The site appears to be meeting the City's requirement of $\geq 80\%$ aerial cover of native species in the plantings areas, based on visual estimation. Many of the herbaceous plants on-site, such as large-leaved lupine (*Lupinus polyphyllus*), Spanish clover (*Lotus purshiana*) and bedstraw (*Galium aparine*) had already gone to seed at the time of monitoring; however, in the still-wet lower portions of the excavated area, emergents and grasses were exhibiting vigor and will likely contribute to the site's structural and species diversity over time.

The site appears to be relatively weed-free; however, along the northern slopes of the excavated area, vetch (*Vicia sp.*) is becoming established. Vetch is not listed as a nuisance plant on the Portland Plant List and it is not considered a noxious weed. Nevertheless, it should be removed to prevent competition with desirable plants. At roughly 10% aerial cover, Himalayan blackberry is not yet posing a problem within the site

2.2 Tree Replacement

At the time the woody plants were installed, twenty (20) 2-inch-caliper black cottonwood stakes were also installed in the southwest portion of the mitigation to compensate for tree removal that took place during the excavation activities. These large cuttings, some of which are over 6 feet tall, are faring relatively well in spite of droughty conditions and fluctuating soil moisture levels. Twenty additional stakes of the same size will be installed in the winter of 2005 to further increase structural diversity of plantings on the site.

2.3 Remedial Planting

To compensate for losses due to droughty conditions during the growing season, remedial plantings are recommended for installation in the winter of 2005, as shown in Table 5.

Table 5. Suggested remedial plantings for the North Portland Road Mitigation Site

Species	Common Name	Quantity
<i>Amelanchier alnifolia</i> *	Pacific serviceberry	50
<i>Berberis (Mahonia) aquifolium</i>	tall Oregon-grape	250
<i>Ceanothus velutinus</i> *	snowbrush	20
<i>Fraxinus latifolia</i>	Oregon ash	150
<i>Holodiscus discolor</i>	oceanspray	190
<i>Physocarpus capitatus</i> *	Pacific ninebark	150
<i>Pinus ponderosa</i> *	ponderosa pine	100
<i>Populus trichocarpa</i>	black cottonwood	100
<i>Pseudotsuga menziesii</i>	Douglas-fir	100
<i>Pyrus diversiloba</i>	western crabapple	50
<i>Rhamnus purshiana</i>	cascara	100
<i>Rubus parviflorus</i>	thimbleberry	20
<i>Sambucus cerulea</i> *	blue elderberry	20
<i>Symphoricarpos albus</i>	snowberry	100
Total remedial plantings		1400

*Species not in the original planting plan

The suggested number of remedial plantings will bring the total survival to well over 100% (151%), which will likely buffer the plantings against future mortality. The addition of five new species to the site is recommended, as the droughty conditions on-site will likely continue to pose a great challenge to survival for many of the originally-specified plants. The five new suggested species exhibit moderate-to-high drought tolerance and offer flexibility in an environment with changing growing conditions.

3.0 PHOTODOCUMENTATION

Photodocumentation of site conditions is intended to provide a visual record of vegetation changes over time. The photos that accompany this report (Figures 3 through 5) show site conditions one week before the monitoring visit. Photos in subsequent years will continue to show plant community development.

4.0 DISCUSSION AND CONCLUSIONS

This report documents the progress of the Smith Lake mitigation area on North Portland Road in Portland, Oregon after the first of three monitoring seasons. The report addresses terms and conditions of City permit LU 03-100430 EN EF. This information, along with photodocumentation of the site, will establish a basis for assessing progress over the three-year monitoring period.

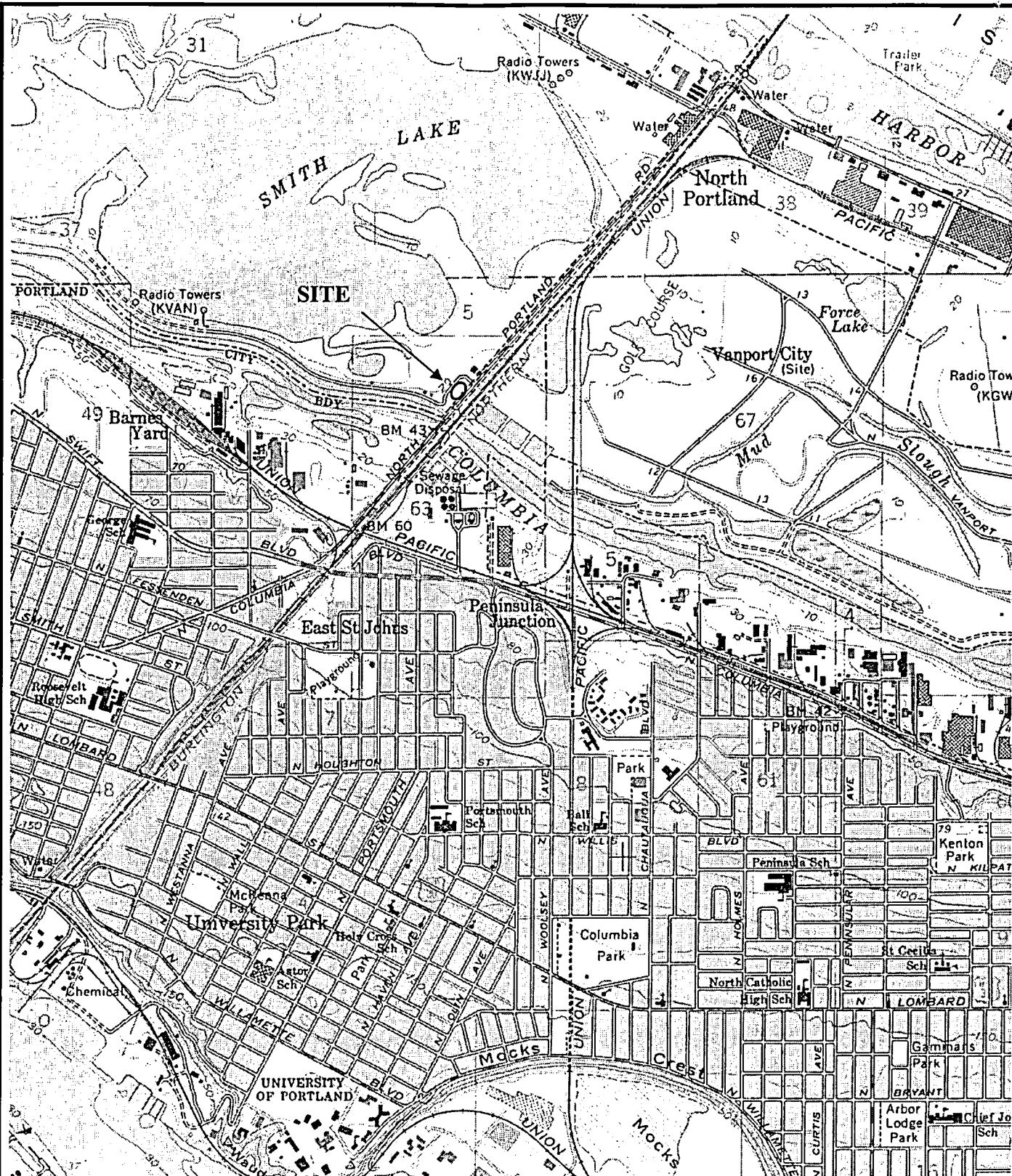
Replanting in the dormant season, winter 2005, should bring the plant numbers up to exceed the City's permit requirements. Because the site tends to be droughty during the summer and contains sandy soils, additional watering will be necessary to allow the plantings to become established. The watering for the coming growing season is scheduled to occur every two weeks (e.g., the 1st and 15th of the month) from June to September 2005. Weed control is scheduled to take place in April and October 2005.

While noxious weeds have not become established on the site at this time, some areas of the site, particularly the northern areas, are beginning to be dominated by vetch (*Vicia sp.*). This weedy vine should be removed during the growing season to prevent competition with desirable plants.

Appendix A

Figures





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Location and general topography for the Smith Lake restoration and mitigation area on N. Portland Rd. in Portland, Oregon (USGS, Portland, Oreg. – Wash. quadrangle, 1961, photorevised 1970 and 1977).

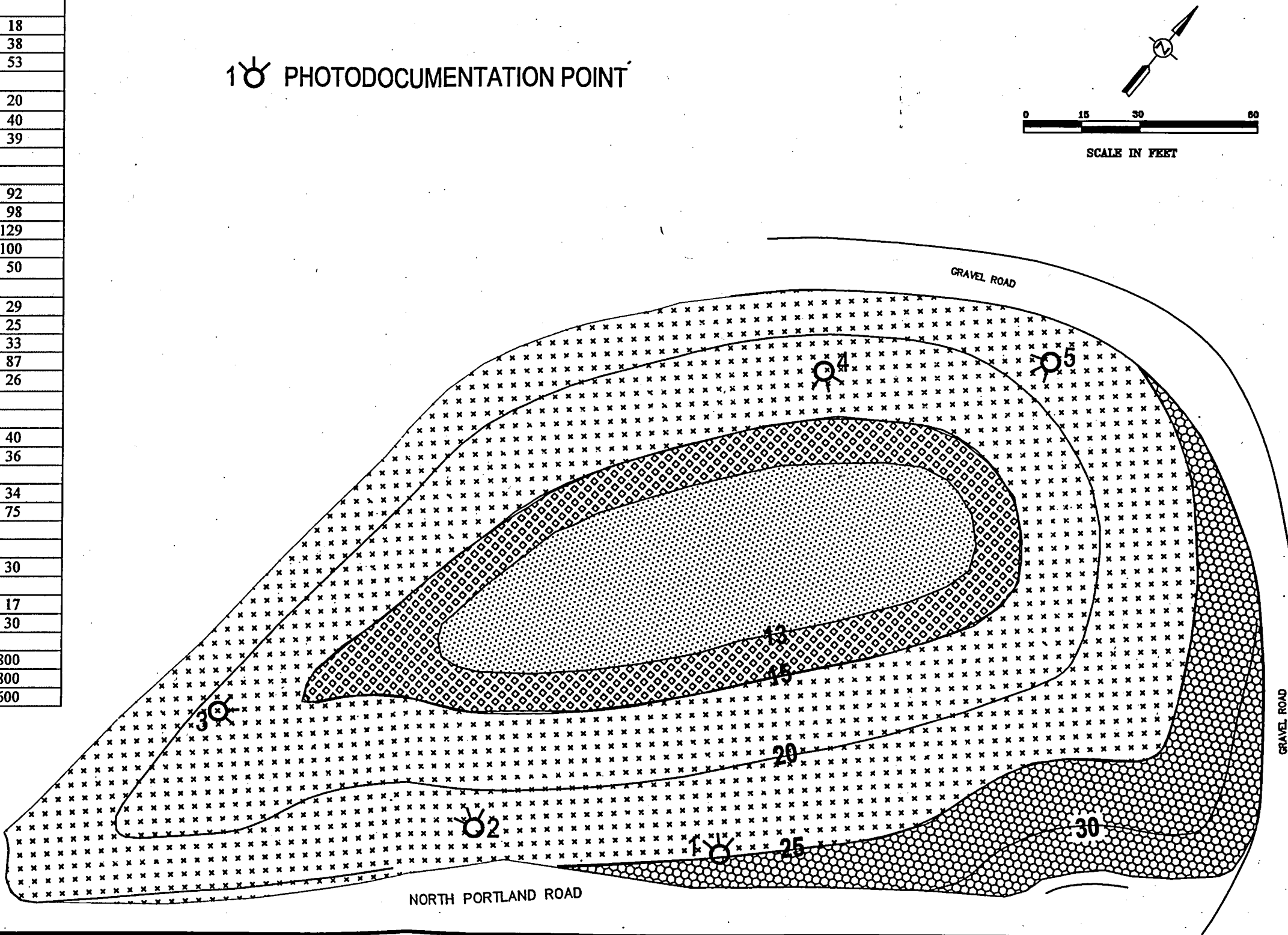
FIGURE
1



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Proposed Plants Above 25' Elevation (zone 1)		
Scientific Name	Common Name	Quantity
WOODY PLANTS		
<i>Acer macrophyllum</i>	bigleaf maple	18
<i>Pseudotsuga menziesii</i>	Douglas fir	38
<i>Rhamnus purshiana</i>	cascara	53
SHRUBS		
<i>Holodiscus discolor</i>	oceanspray	20
<i>Mahonia aquifolium</i>	tall Oregon grape	40
<i>Ribes sanguineum</i>	flowering red currant	39
Proposed Plants Between 15-25' Elevations (zone 2)		
TREES		
<i>Alnus rubra</i>	red alder	92
<i>Crataegus douglasii</i>	black hawthorn	98
<i>Fraxinus latifolia</i>	Oregon ash	129
<i>Populus balsamifera trichocarpa</i>	black cottonwood*	100
<i>Rhamnus purshiana</i>	cascara	50
SHRUBS		
<i>Mahonia aquifolium</i>	tall Oregon grape	29
<i>Oemleria cerasiformis</i>	Indian plum	25
<i>Rubus parviflorus</i>	thimbleberry	33
<i>Sambucus racemosa</i>	red elderberry	87
<i>Symphoricarpos albus</i>	snowberry	26
Proposed Plants Between 13-15' Elevations (zone 3)		
TREES		
<i>Fraxinus latifolia</i>	Oregon ash	40
<i>Pyrus diversiloba</i>	western crabapple	36
SHRUBS		
<i>Rosa pisocarpa</i>	swamp rose	34
<i>Salix sitchensis</i>	Sitka willow	75
Proposed Plants Below 13' Elevation (zone 4)		
TREES		
<i>Salix lasiandra</i>	Pacific willow	30
SHRUBS		
<i>Spiraea douglasii</i>	Douglas spirea	17
<i>Salix fluviatilis</i>	Columbia River willow	30
WETLAND EMERGENTS		
<i>Carex aperta</i>	Columbia sedge	800
<i>Juncus ensifolius</i>	dagger-leaf rush	800
<i>Scirpus microcarpus</i>	small-fruit bulrush	600

*30 cottonwoods are 8-ft. min/1" caliper





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Photodocumentation of the Smith Lake restoration and mitigation site on N. Portland Rd. in Portland, Oregon. Top photo looks north from Photodocumentation Point 1. Bottom photo looks northwest from Photodocumentation Point 2. Both photos taken on 8/30/04.



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FIGURE
3



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Photodocumentation of the Smith Lake restoration and mitigation site on N. Portland Rd. in Portland, Oregon. Top photo looks east from Photodocumentation Point 3. Bottom photo looks southeast from Photodocumentation Point 4. Both photos taken on 8/30/04.

FIGURE
4



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Photodocumentation of the Smith Lake restoration and mitigation site on N. Portland Rd. in Portland, Oregon. Photo looks south from Photodocumentation Point 5. Photo taken on 8/30/04.



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FIGURE
5