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Street Tree Inventory Report
Sellwood-Moreland Neighborhood

November 2011

Street Tree Inventory Report: Sellwood-Moreland Neighborhood

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Volunteers guided by Portland Parks & Recreation Urban Forestry staff collected data on all 6,502 street trees within Sellwood-Moreland neighborhood to compile the neighborhood's first complete street tree inventory. Data is being used to inform the creation of a Neighborhood Stewardship Plan to guide volunteers in caring for their community's trees.

Project Overview

This report provides results for the street tree inventory conducted in the Sellwood-Moreland neighborhood in 2011, along with Portland Parks & Recreation (PP&R) Urban Forestry staff recommendations to improve the condition of the urban forest.

Street trees were inventoried in Sellwood-Moreland in summer 2011 by trained volunteers and PP&R Urban Forestry staff. Over the course of three monthly workshops, 48 volunteers contributed 330 hours collecting data on 6,502 trees. Street trees at every tax lot in the neighborhood were inventoried; data collected included tree type (species or genus), condition, size (diameter at breast height), planting strip width, and presence of overhead high voltage lines. Data was supplemented with available planting space data collected by the Bureau of Environmental Services in 2010 and 2011. Data analysis and recommendations were completed by PP&R Urban Forestry staff.

Volunteers experienced and trained in tree identification acted as team leaders, and data was collected in pairs on paper forms. Questions regarding species or site identification were answered by certified arborists and PP&R staff during data collection. Staff conducted spot checks on data to verify accuracy. Data was later digitized and entered by staff into an ArcGIS geodatabase.

Residents of the Sellwood-Moreland neighborhood were essential to organizing workshops, recruiting volunteers, and promoting the project within the community. A special note of thanks is due to inventory organizers Tina Osterink, Anna Stulz, and Kerry Wooddell for their tireless dedication to the project.

Funding for this project was provided by PP&R Urban Forestry and an East Multnomah Soil and Water Conservation District Partners in Conservation grant.

If you would like to get involved with Sellwood-Moreland's urban forest, contact the Sellwood Moreland Improvement League by visiting http://sellwood.org/ or contacting PP&R Urban Forestry.

Data from the inventory is available to the public in spreadsheet or ArcGIS format by contacting PP&R Urban Forestry.

Neighborhood Characteristics

Sellwood-Moreland neighborhood is located in southeast Portland (Figure 1). The northern boundary is where McLoughlin Boulevard and the Willamette River meet at SE Holgate Boulevard, the southern boundary is the Clackamas County line, McLoughlin Boulevard serves as the eastern boundary, and the Willamette River serves as the western boundary.

Figure 1: Location of Sellwood-Moreland neighborhood in Portland

Neighborhood landmarks include Antiques Row along 13th Avenue, Oaks Park Amusement Park, and Share-It Square at the intersection of SE Sherrett Street and SE 9th Avenue. Key neighborhood tree assets include the Oaks Bottom Wildlife Refuge, Sellwood Park, Sellwood Riverfront Park and Westmoreland Park. The neighborhood is situated in both the Johnson Creek and Willamette River watersheds.

According to 2000 Census data (Table 1), 52% of homes in Sellwood-Moreland are owner-occupied. The median income is near $40,000/year, with 10% percent of residents living below the poverty level. Compared to city-wide averages, Sellwood-Moreland has a lower median income, a lower perentage of homeowners occupying properties, and fewer residents living below the poverly level.

Table 1: Neighborhood and citywide demographics

Demographics (2000 Census)	Sellwood-Moreland	Portland
Area	1,157 acres	89,651 acres
Population	10,475	527,750
Density	9 persons/acre	6 persons/acre
Demographics	89% white; 11 non-white	72% white; 28% non-white
% of properties occupied by homeowners	52%	56%
Median income	$40,178	$43,958
% below poverty level	10%	11%

Tree Distribution

TREE TYPE DISTRIBUTION

Sellwood-Moreland's public rights-of-way host a diverse array of tree types (trees identified to the species or genus level). The street tree population consists of 6,502 trees of 100 types. Fifteen tree types comprise 70.7% of the resource, leaving the remaining types to represent 2% or less of the resource each (Table 2). Norway maples are the most common tree type, representing 10.6% of all street trees. Pear, cherry, plum, and red maple represent 5% or more of the resource each. Maples of all types represent 30% of the resource.

Table 2: Distribution of the 15 most abundant street tree types in Sellwood-Moreland

Common Name	Species	Number of Trees	% of Total Trees	Mean DBH
maple, Norway	*Acer platanoides*	692	10.6%	18.2
pear	*Pyrus* spp.	562	8.6%	10.6
cherry	*Prunus* spp.	345	5.3%	12.0
plum	*Prunus* spp.	338	5.2%	11.4
maple, red	*Acer rubrum*	332	5.1%	9.4
linden	*Tilia* spp.	315	4.8%	14.3
maple, other	*Acer* spp.	308	4.7%	6.8
crabapple	*Malus* spp.	276	4.2%	7.3
ash	*Fraxinus* spp..	269	4.1%	8.8
dogwood	*Cornus* spp.	256	3.9%	4.6
birch	*Betula* spp.	251	3.9%	14.5
maple, Japanese	*Acer palmatum*	186	2.9%	4.5
hawthorn	*Crataegus* spp.	178	2.7%	10.4
hornbeam	*Carpinus* spp.	153	2.4%	11.1
snowbell	*Styrax* spp.	152	2.3%	2.7

Forty-two families are represented in the neighborhood, and the fifteen most abundant families comprise 93.4% of the resource. Rosaceae (rose) and Aceraceae (maple) are the most commonly found and represent 33.1% and 26.8% of trees, respectively (Table 3). Other important families include Betulaceae (birch) with 6.3%, Malvaceae (mallow) with 4.9%, Oleaceae (olive) with 4.7%, Fabaceae (legume) with 2.5%, and Styracaceae (styrax) with 2.3%

Table 3: Distribution of the 15 most abundant tree families in Sellwood-Moreland

Family Scientific Name	Family Common Name	Tree Types Included in the Family	Number of Trees	% of Total Trees
Rosaceae	rose	apple, cherry, crabapple, dogwood, hawthorn, loquat, mountain ash, peach, pear, plum, quince, serviceberry	2,153	33.1%
Aceraceae	maple	box elder, maple	1,744	26.8%
Betulaceae	birch	alder, birch, hazelnut, hornbeam	410	6.3%
Malvaceae	mallow	Chinese parasol tree, linden	316	4.9%
Oleaceae	olive	ash, Chinese fringe tree, lilac tree, olive	306	4.7%
Fabaceae	legume	amur maackia, black locust, golden chain tree, Kentucky coffeetree, honey locust, mimosa tree, pagoda tree, redbud, yellow wood	162	2.5%
Styracaceae	styrax	snowbell	152	2.3%
Altingiaceae	sweetgum	sweetgum	124	1.9%
Fagaceae	beech	beech, chestnut, oak	124	1.9%
Sapindaceae	soapberry	golden rain tree, horsechestnut	117	1.8%
Pinaceae	pine	cedar, douglas-fir, fir, hemlock, pine, spruce	111	1.7%
Ulmaceae	elm	elm, zelkova	102	1.6%
Juglandaceae	walnut	pecan, walnut	97	1.5%
Magnoliaceae	magnolia	magnolia, tulip poplar	82	1.3%

SPECIES DIVERSITY

A general rule of thumb for urban forest species diversity is the 10-20-30 rule (Santamour 1990). No species should represent more than 10% of the total, no genus should represent more than 20% of the total, and no family should represent more than 30% of the total. Sellwood-Moreland's tree distribution does not meet these guidelines. Norway maples are overrepresented at 10.8% of the resource total, and the maple genus (*Acer*) is also overrepresented at 26.8% of the resource total. The rose family (Rosaceae) is also overrepresented, accounting for 33.1% of all trees.

FUNCTIONAL TREE TYPE AND MATURE TREE SIZE DISTRIBUTION

Broadleaf deciduous trees dominate the landscape, accounting for 96.5% of all street trees (Table 4). Broadleaf evergreen trees comprise 0.6% and coniferous evergreen trees comprise 2.8% of the total. Tree size designation (small, medium, and large) is determined by the mature size of the tree. Medium-sized trees account for 49.7% of the resource and small-sized trees account for 31.4%, while large trees only account for 18.8% (Table 4).

Table 4: Distribution of trees by functional tree type and mature tree size

Functional Tree Type	Small	Medium	Large	Total
Broadleaf deciduous	30.9%	48.7%	16.8%	*96.5%*
Broadleaf evergreen	0.1%	0.5%	0%	*0.6%*
Coniferous evergreen	0.3%	0.5%	2.0%	*2.8%*
Palm evergreen	0.1%	0%	0%	*0.1%*
Total	*31.4%*	*49.7%*	*18.8%*	*100.0%*

Tree Size Distribution

TREE SIZE (RELATIVE TREE AGE)

The relative ages of trees may be approximated using size measured by diameter at breast height (DBH). Generally, trees increase in size with age, along with the value of the tree and the magnitude of the benefits that the tree provides. Trees were categorized into diameter classes to show the proportion of trees at various stages of maturity (Figure 2). Note that an uneven-aged population is desirable for managing tree maintenance costs over time. Age diversity ensures that canopy coverage and community complexity are not reduced with mortality.

Sellwood-Moreland's streets host a wide range of tree sizes from the youngest half-inch sapling to the largest, a 65" DBH giant sequoia. 36% of all street trees are less than 6" DBH, 56% are between 6" and 24" DBH, and 8% are larger than 24" DBH. Tree size distribution is slightly skewed towards smaller (younger) trees.

Tree size distributions are similar regardless of whether or not planting strips are located under high voltage power lines (Figure 3). Divided into functional size classes, Sellwood-Moreland's medium form trees dominate diameter classes between 6" and 36" DBH (Figure 4).

Figure 2: Relative tree age (tree size by diameter class)

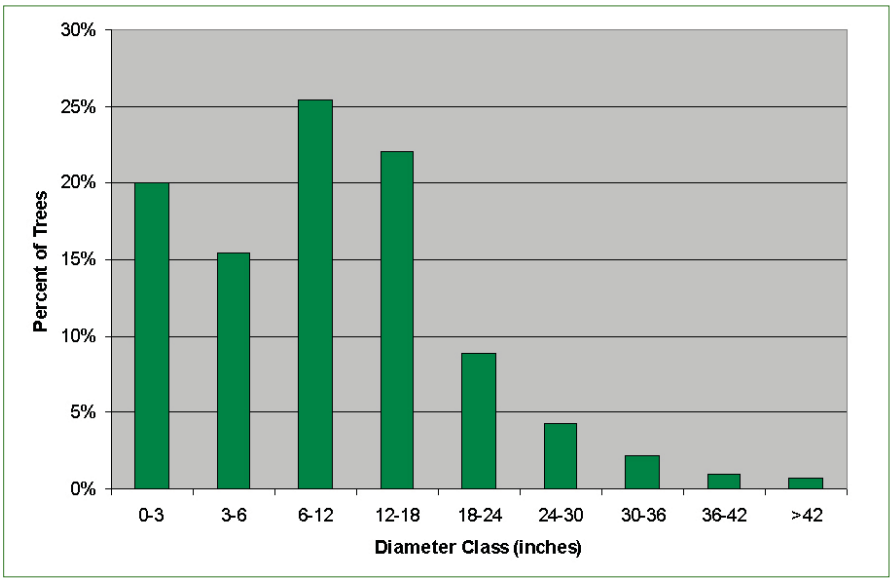


Figure 3: Relative tree age (tree size by diameter class) of trees in planting strips under high voltage wires and without high voltage wires

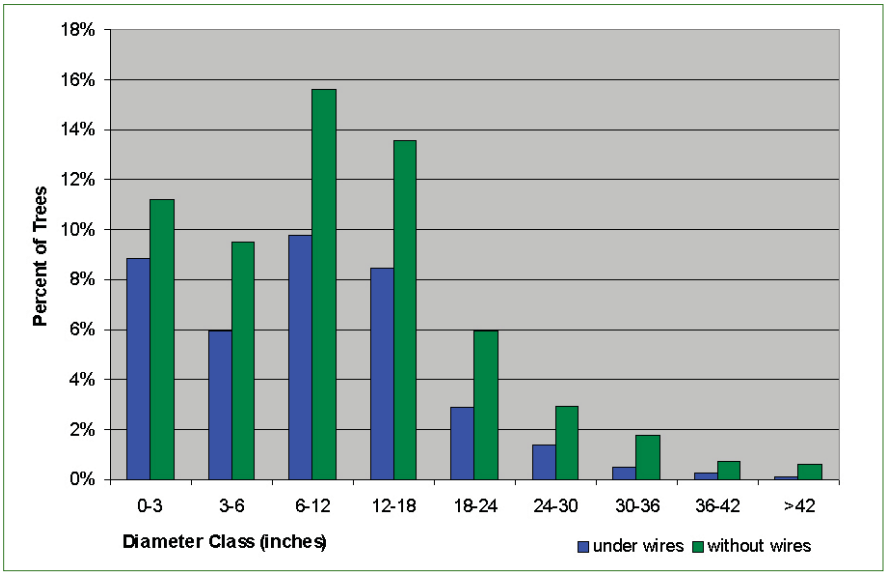
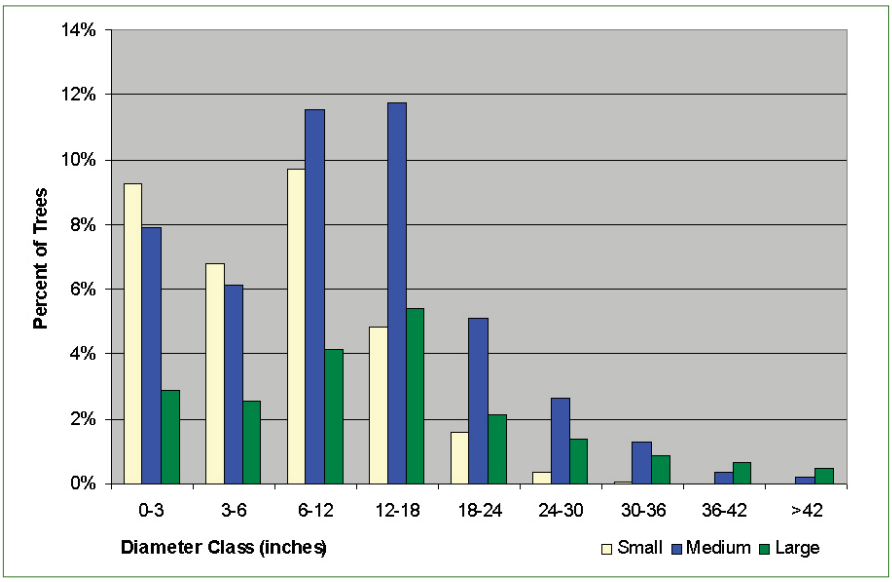


Figure 4: Relative tree age (tree size by diameter class) of trees by functional size class



Tree Condition

Tree condition was assessed by assigning trees to one of four categories: good, fair, poor, and dead. These general ratings reflect whether or not a tree is likely to continue contributing to the urban forest (good and fair trees) or whether the tree is at or near the end of its life (poor and dead trees). 56.9% of trees rated good, 31.0% rated fair, 11.4% rated poor, and 0.7% are dead (Table 5).

Table 5: Trees by condition class

Condition	% of Total Trees
Good	56.9%
Fair	31.0%
Poor	11.4%
Dead	0.7%

Of the most commonly found tree types, the healthiest trees were Japanese maple, linden, snowbell, hornbeam, and red maple. At least 96% of trees of these species rated good or fair (Table 6). In poorest condition were Norway maple, cherry, plum, dogwood, and crabapple, of which at least 16% were in poor condition.

Table 6: Condition class percentages and numbers of trees for the 15 most abundant tree types

Common Name	Species	% of Total Trees (Number of Trees) Good	Fair	Poor
maple, Norway	*Acer platanoides*	41.8% (289)	32.1% (222)	26.2% (181)
pear	*Pyrus* spp.	52.8% (297)	40.4% (227)	6.8% (38)
cherry	*Prunus* spp.	45.5% (157)	34.5% (119)	20.0% (69)
plum	*Prunus* spp.	37.6% (127)	45.0% (152)	17.5% (59)
maple, red	*Acer rubrum*	60.5% (201)	35.8% (119)	3.6% (12)
linden	*Tilia* spp.	65.1% (205)	33.0% (104)	1.9% (6)
maple, other	*Acer* spp.	66.2% (204)	25.6% (79)	8.1% (25)
crabapple	*Malus* spp.	48.6% (134)	34.8% (96)	16.7% (46)
ash	*Fraxinus* spp.	67.7% (182)	23.0% (62)	9.3% (25)
dogwood	*Cornus* spp.	50.4% (129)	32.4% (83)	17.2% (44)
birch	*Betula* spp.	53.0% (133)	36.7% (92)	10.4% (26)
maple, Japanese	*Acer palmatum*	79.0% (147)	19.4% (36)	1.6% (3)
hawthorn	*Crataegus* spp.	68.0% (121)	21.3% (38)	10.7% (19)
hornbeam	*Carpinus* spp.	80.4% (123)	16.3% (25)	3.3% (5)
snowbell	*Styrax* spp.	67.1% (102)	29.6% (45)	3.3% (5)

Stocking Level

STOCKING LEVEL

Street tree stocking level reflects the percentage of planting spaces that are currently occupied by trees. Sellwood-Moreland's stocking level for residential areas is 71% (Table 7). Stocking level data was provided by the Bureau of Environmental Services and excludes commercial, industrial, and multi-family residential sites.

Table 7: Street tree stocking level data for single-family residential lots

Planting Strip Code and Description	Available Planting Spaces	Existing Trees	Total Spaces	Stocking Level
A 2.5-3' with or without wires	399	699	1,098	64%
B 3-4' with or without wires	810	1,499	2,309	65%
C 4-6' without wires	126	301	427	70%
D 4-6' with wires	67	167	234	71%
E 6-8.5' without wires	348	1,231	1,579	78%
F >6' with wires	291	976	1,267	77%
G >8.5' without wires	152	558	710	79%
Totals	*2,193*	*5,431*	*7,624*	*71%*

Planting space availability is subject to a number of guidelines, including width of the planting strip, presence/absence of high voltage power lines, and distance from conflicts (property lines, stop signs, etc). In single-family residential lots, 2,193 empty spaces have been identified for tree planting in Sellwood-Moreland. Planting spaces are categorized into planting strip categories based upon width and overhead wire presence. Higher stocking levels are generally observed in larger planting strips. Planting strips larger than 6 feet without wires are at least 78% stocked.

RIGHT TREE IN THE RIGHT PLACE

Tree placement is vital for maximizing the benefits trees provide and minimizing avoidable costs. The right tree in the right place will experience fewer obstacles to reaching maturing and is easier to maintain.

Large planting strips without high voltage power lines provide the best opportunity for expanding canopy and maximizing benefits from trees. A small-growing tree in a large planting strip represents a missed opportunity, as it will not live as long or grow as large as a larger-growing tree. In 6-8.5' wide planting strips without wires, 45% of trees are undersized for the strip (Table 8). In planting strips 8.5' or great without wires, 50% of trees are undersized for the strip.

Table 8: Percentage and number of adequately sized trees growing in large planting strips without wires

Planting Strip Code and Description	Tree species planted are large enough for strip	Tree species planted are too small for strip
E 6-8.5' without wires	55% (704)	45% (571)
G >8.5' without wires	50% (440)	50% (439)

Replacement Values

Replacement values for street trees in Sellwood-Moreland were calculated using iTree Streets, an urban forest analysis software suite developed by the USDA Forest Service. A replacement value is an estimate of the full cost of replacing a tree in its current condition, should it be removed for some reason. Species ratings, replacement costs, and basic prices were obtained for each species from regional appraisal guides.

The replacement cost of Sellwood'-Moreland's street tree population is valued at $23,051,231. The most valuable size classes of trees are those between 12" DBH and 18" DBH (Figure 5). Replacement values are the highest for Norway maple ($4,841,293), pear ($1,619,414), and linden ($1,519,842)

Figure 5: Replacement values of trees by diameter class (inches)

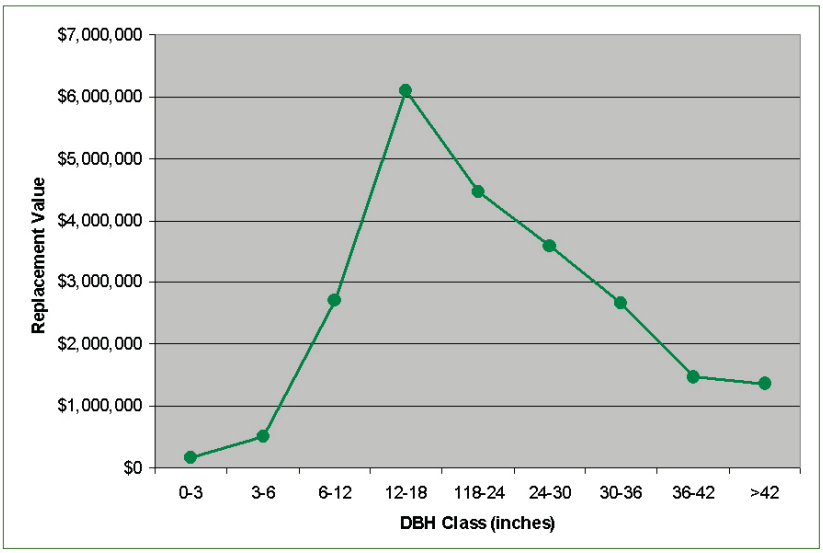


Table 9: Valuation of the environmental and aesthetic benefits provided annually by Sellwood-Moreland's trees

Benefits	Total ($)	$ / Tree
Energy savings	$32,489	$5.00
Carbon sequestration	$5,817	$0.89
Air quality improvement	$10,342	$1.59
Stormwater processing	$136,191	$20.95
Aesthetics	$437,412	$67.27
Total benefits	***$622,251***	***$95.70***

Environmental and Aesthetic Benefits

Using iTree Streets, Sellwood-Moreland's street tree population was assessed to quantify the dollar value of annual environmental services and aesthetic benefits provided by trees: energy conservation, air quality improvement, carbon dioxide reduction, stormwater control, and property value increase. The model relies on tree size and species, as well as current pricing for electricity rates, median home resale value, regional stormwater interception costs, and costs of tree maintenance.

Sellwood-Moreland's street trees provide over $622,000 annually in environmental services and aesthetic benefits, as calculated by iTree Streets (Table 9). Annual benefits are valued by category at approximately $32,000 in energy savings, $6,000 in carbon sequestration, $10,000 in air quality improvement, $136,000 in storm water management, and $437,000 in aesthetic and other benefits. Each tree provides an average of $96 worth of benefits annually.

Of the most common tree types, Norway maple, linden, red maple, and pear provide the highest annual per tree benefits, at least $100/tree average (Table 10). Japanese snowbell, dogwood, and crabapple provide the least amount of benefits at less than $40 per tree.

Table 10: Average annual environmental and aesthetic benefits provided by Sellwood-Moreland's most abundant street tree types

Tree Type	Energy	CO2	Air Quality	Storm water	Aesthetic/ Other	Total ($) per tree
ash	$3.33	$0.66	$1.26	$15.13	$72.93	*$93.32*
birch	$5.99	$0.46	$1.97	$25.67	$57.80	*$91.89*
cherry	$3.59	$1.74	$1.27	$10.23	$49.93	*$66.76*
crabapple	$1.72	$0.63	$0.58	$4.27	$26.45	*$33.65*
dogwood	$1.00	$0.36	$0.34	$2.48	$16.19	*$20.37*
hawthorn	$2.97	$1.27	$1.03	$7.92	$41.80	*$55.00*
hornbeam	$2.28	$0.22	$0.71	$9.72	$41.79	*$54.72*
Japanese snowbell	$0.40	$0.15	$0.13	$0.99	$7.39	*$9.07*
linden	$6.68	$1.23	$2.13	$25.34	$103.26	*$138.64*
maple, Japanese	$1.96	$0.35	$0.60	$7.98	$73.39	*$84.27*
maple, Norway	$10.75	$1.65	$3.72	$50.49	$101.36	*$167.97*
maple, other	$3.95	$0.45	$1.25	$13.52	$68.57	*$87.74*
maple, red	$5.67	$0.65	$1.81	$19.80	$86.69	*$114.61*
pear	$5.01	$0.63	$1.14	$19.10	$81.67	*$107.56*
plum	$3.39	$1.56	$1.19	$9.40	$47.33	*$62.86*

Recommendations

Based on street tree inventory data presented in this report, PP&R Urban Forestry staff make the following recommendations for Sellwood-Moreland neighborhood.

PLANTING

- Sellwood-Moreland's street tree stocking level is 71% and 2,193 spaces have been identified for planting trees.
- Planting opportunities should be prioritized to plant large-form trees in large planting strips (>6') without overhead wires. In these planting strips, 500 spaces have been identified for planting.
- Planting in the smallest planting strips is not a priority, as they are more difficult to manage and provide very little return on investment. However, all plantings help contribute to a neighborhood "tree ethic" and encourage others to plant.
- Plantings should continue to include a diverse array of species, genera, and families, particularly those other than maple (*Acer*) and in the rose (Rosaceae) family.
- Take advantage of existing planting programs, such as low cost trees through Friends of Trees. These plantings are currently subsidized by the City for the next few years; afterwards cost and availability may change.

YOUNG TREE ESTABLISHMENT AND MAINTENANCE

- With 36% of trees being 6" DBH or less, special attention should be paid to properly water and establish young trees. Small trees represent the future generation of street trees, and early care and training will pay off in future benefits.
- Young trees should be structurally pruned to promote proper form as street trees. This includes removing low limbs for pedestrian and traffic clearance and removing codominate leaders. This is critical in the first ten years after planting.
- Educate property owners on how to properly care for trees (pruning, watering, and root barriers) in order to reduce and delay future problems and conflicts with infrastructure.

MATURE TREE MAINTENANCE

- 56% of Sellwood-Moreland's trees are between 6" and 24". If well cared for early in their life, trees of this size are well established and will generally require minimal maintenance, such as pruning to remove dead and broken limbs.
- With 8% of trees being larger than 24" DBH, special care should be taken to maintain and care for larger trees. Trees provide the most benefits as they reach maturity, and without early maintenance, tree care is the most expensive for large trees. Increasing the level of maintenance of large, old trees will maximize the ecosystem services provided by these high value members of the urban forest.

- Seek funding or assistance for low-income property owners to care for mature trees.
- Retain existing large trees in fair and good condition. Benefits and time are lost when older trees are removed and replaced with smaller tree species.
- Promote the importance and benefits of large-form species and mature trees within the community.

REMOVALS

- Encourage removal and replacement of dead trees and trees in poor condition.
- Encourage replacement of underperforming species, including undersized trees in large rights-of-way, with higher functioning, appropriately sized trees.

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Appendices

Appendix A: Methods

Street trees were inventoried in summer 2011 by trained volunteers and PP&R Urban Forestry staff. Street trees at every tax lot in the neighborhood were inventoried, except in industrial areas, which were excluded. Street trees are located in the public right-of-way, typically between the sidewalk and curb.

Data collected included tree type (species or genus), condition, size (diameter at breast height), planting strip width, and presence of overhead high voltage lines.

Tree type: trees were identified to the genus or species. Six maple species were identified to the species level, and these are bigleaf (*Acer macrophyllum*) Japanese (*A. palmatum*), Norway (*A. platanoides*), paperbark (*A. griseum*), red (*A. rubrum*) and silver (*A. saccharinum*) maple. All other maple species were identified as "maple, other." Tree types of dead trees are listed as "unknown" as identification was difficult.

Tree condition: trees were rated as either good, fair, poor, or dead. These general ratings reflect whether or not a tree is likely to continue contributing to the urban forest (good and fair trees) or whether the tree is at or near the end of its life (poor and dead trees). The following guidelines were used.

Good: tree is healthy and vigorous with no apparent problems. Bark is undamaged, trunk is sound and solid, and crown is full.

Fair: Tree is in average condition. Tree many need some pruning and have some dead branches. Damage to bark is minimal and there is no decay on trunk. Other problems are minimal.

Poor: tree is in a general state of decline as indicated by the presence of cavities, conks, decay, and many dead branches.

Dead: Tree is dead or close to dying.

Tree size: Diameter at breast height (4.5' above ground) was measured with a diameter tape. Measurements of trees with branches, forks, or swelling at 4.5' were taken lower on the tree. Trees with multiple stems close to ground level were measured individually, and PP&R staff made final diameter calculations in the office.

Planting strip width: Planting strip width was measured from the inside of the curb to the sidewalk.

High voltage wires: Only high voltage wires were recorded.

Inventory data was supplemented with available planting space data collected by the Bureau of Environmental Services in 2010 and 2011. BES canvassing staff recorded the number of trees present and available spaces for trees by taxlot in single-family residential areas. This data was used to calculate stocking level.

Volunteer neighborhood coordinators recruited volunteers to conduct street tree inventories during three Saturday work days. Volunteers interested in being inventory "team leaders" attended a 3.5 hour training to learn to identify tree species and site conditions, and how to collect and record data.

During work days, team leaders were paired with novice volunteers to collect data in a three to four block area. Groups were given a clipboard containing a map, data entry sheets, tree type abbreviations, and a list of trees planted by Friends of Trees in the neighborhood. Volunteers wore safety vests and carried a diameter tape, tree identification book, and bags for collecting samples.

In addition to PP&R staff, one or more volunteer "arborists-on-call" was available on inventory work days to assist volunteers with questions. Accuracy was stressed as highly important, and volunteers utilized the arborist-on-call to verify species identification as questions arose. Data was collected on paper maps and forms, and later digitized in ArcGIS by PP&R staff.

Accuracy of volunteer-collected data was checked by PP&R staff and corrections made as necessary. Remaining areas not completed during inventory work days were inventoried by volunteer team leaders and PP&R staff. In Sellwood-Moreland, 53% of the inventory was collected by volunteers and 47% by PP&R staff. Spot-checks of the final data set found species identifications to be 95% accurate.

Appendix B: Street trees of Sellwood-Moreland by tree type

Common Name	Species	Number of Trees	% of Total Trees	Mean DBH
American sycamore	*Platanus occidentalis*	3	0.0%	26.9
amur maackia	*Maackia amurensis*	7	0.1%	6.2
apple	*Malus domestica*	112	1.7%	7.4
arborvitae	*Thuja arborvitae*	19	0.3%	5.2
ash	*Fraxinus* spp.	269	4.1%	8.8
beech	*Fagus* spp.	15	0.2%	5.4
birch	*Betula* spp.	251	3.9%	14.5
black locust	*Robinia pseudoacacia*	54	0.8%	17.8
boxelder	*Acer negundo*	38	0.6%	12.6
camellia	*Camellia* spp.	1	0.0%	5.6
cascara	*Rhamnus purshiana*	18	0.3%	2.5
catalpa	*Catalpa* spp.	15	0.2%	15.0
cedar	*Cedrus* spp.	13	0.2%	20.2
cherry	*Prunus* spp.	345	5.3%	12.0
chestnut	*Castanea* spp.	5	0.1%	15.2
Chinese fringe tree	*Chionanthus retusus*	7	0.1%	1.9
Chinese parasol tree	*Firmiana simplex*	1	0.0%	5.9
Chinese pistache	*Pistacia chinensis*	1	0.0%	4.9
crabapple	*Malus* spp.	276	4.2%	7.3
crape myrtle	*Lagerstroemia indica*	8	0.1%	2.4
cypress	*Chamaecyparis* spp.	30	0.5%	16.4
devil's walking stick	*Aralia* spp.	1	0.0%	17.0
dogwood	*Cornus* spp.	256	3.9%	4.6
douglas-fir	*Pseudotsuga menziesii*	19	0.3%	20.5
elm	*Ulmus* spp.	67	1.0%	26.7
empress tree	*Paulownia tomentosa*	2	0.0%	3.2
eucalyptus	*Eucalyptus* spp.	3	0.0%	4.8
fig	*Ficus* spp.	15	0.2%	3.2
fir	*Abies* spp.	8	0.1%	11.0
giant sequoia	*Sequoiadendron giganteum*	3	0.0%	23.9
ginkgo	*Ginkgo biloba*	64	1.0%	3.2
glorybower	*Clerodendron* spp.	46	0.7%	6.0
golden chain tree	*Laburnum anagyroides*	7	0.1%	4.0
golden rain tree	*Koelreuteria paniculata*	97	1.5%	12.5
hackberry	*Celtis occidentalis*	2	0.0%	1.5
hardy rubber tree	*Eucommia ulmoides*	1	0.0%	2.8
hawthorn	*Crataegus* spp.	178	2.7%	10.4
hazelnut	*Corylus* spp.	6	0.1%	5.8
hemlock	*Tsuga* spp.	4	0.1%	19.7

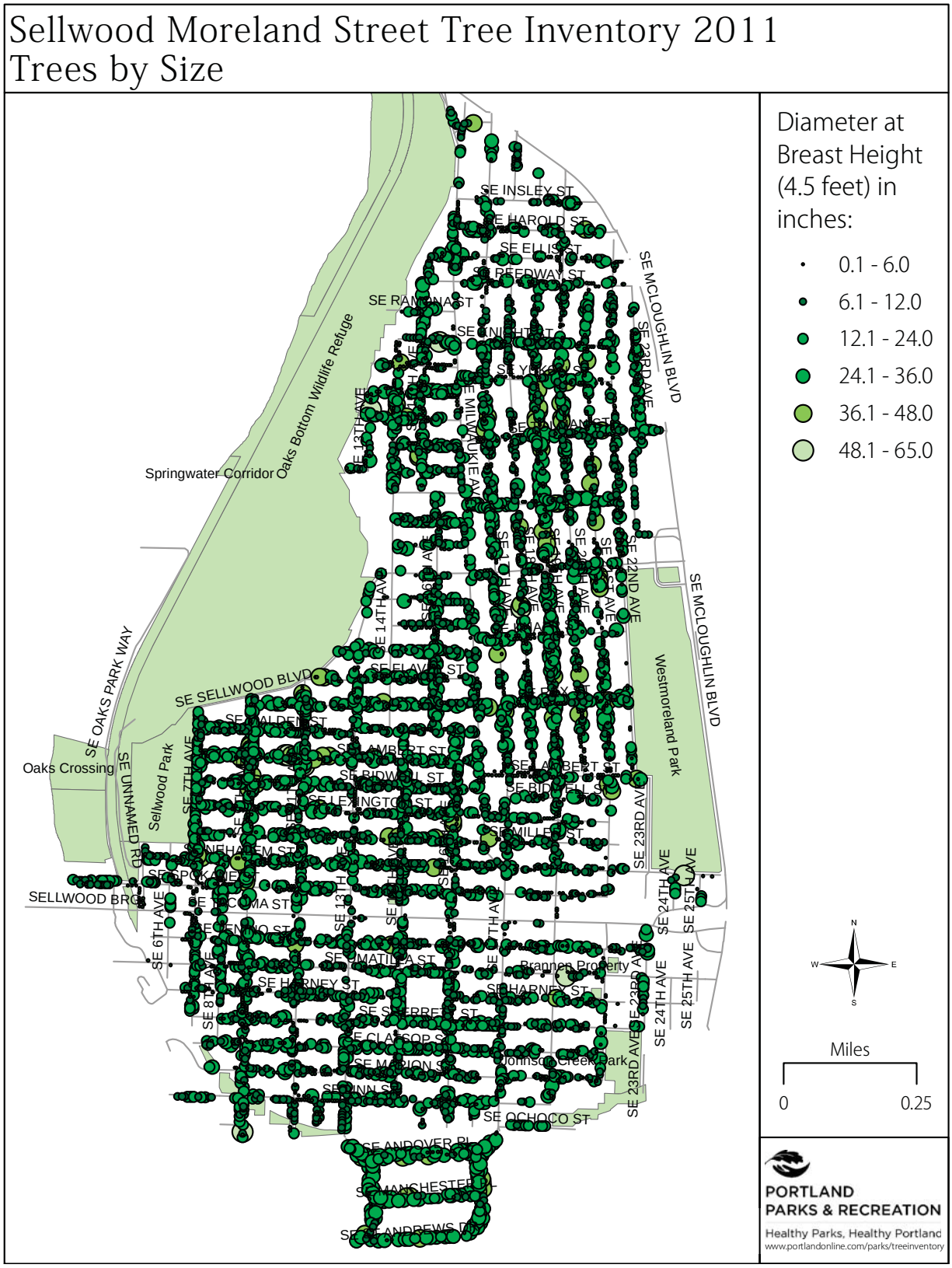
Appendix B continued

Common Name	Species	Number of Trees	% of Total Trees	Mean DBH
holly	*Ilex* spp.	4	0.1%	19.7
honey locust	*Gleditsia triacanthos*	31	0.5%	8.0
hornbeam	*Carpinus* spp.	153	2.4%	11.1
horsechestnut	*Aesculus* spp.	20	0.3%	35.2
Japanese spice bush	*Lindera obtusiloba*	1	0.0%	6.1
juniper	*Juniperus* spp.	2	0.0%	2.9
katsura	*Cercidiphyllum japonicom*	23	0.4%	3.8
Kentucky coffeetree	*Gymnocladus dioica*	3	0.0%	3.4
lilac tree	*Syringa reticulata*	26	0.4%	5.7
linden	*Tilia* spp.	315	4.8%	14.3
London plane	*Platanus acerifolia*	5	0.1%	16.8
loquat	*Eriobotrya japonica*	1	0.0%	0.0
madrone	*Arbutus menziesii*	8	0.1%	3.5
magnolia	*Magnolia* spp.	22	0.3%	6.2
magnolia, southern	*Magnolia grandiflora*	48	0.7%	7.2
maple	*Acer* spp.	308	4.7%	6.8
maple, bigleaf	*Acer macrophyllum*	11	0.2%	34.3
maple, japanese	*Acer palmatum*	186	2.9%	4.5
maple, Norway	*Acer platanoides*	692	10.6%	18.2
maple, paperbark	*Acer griseum*	128	2.0%	3.9
maple, red	*Acer rubrum*	332	5.1%	9.4
maple, silver	*Acer saccharinum*	49	0.8%	32.6
mimosa tree	*Albizia julibrissin*	10	0.2%	13.1
mountain ash	*Sorbus* spp.	24	0.4%	9.2
mulberry	*Morus* spp.	16	0.2%	13.5
oak	*Quercus* spp.	104	1.6%	10.0
olive	*Olea* spp.	4	0.1%	0.0
pagoda tree	*Sophora japonica*	2	0.0%	3.7
palm	*Trachycarpus* spp.	5	0.1%	3.2
paw paw	*Asimina triloba*	2	0.0%	0.0
peach	*Prunus persica*	7	0.1%	2.4
pear	*Pyrus* spp.	562	8.6%	10.6
pecan	*Carya* spp.	1	0.0%	34.0
Persian ironwood	*Parrotia persica*	33	0.5%	3.3
persimmon	*Diospyros* spp.	2	0.0%	1.6
pine	*Pinus* spp.	40	0.6%	11.7
plum	*Prunus* spp.	338	5.2%	11.4
quince	*Cydonia oblonga*	1	0.0%	4.3
redbud	*Cercis canadensis*	44	0.7%	4.0

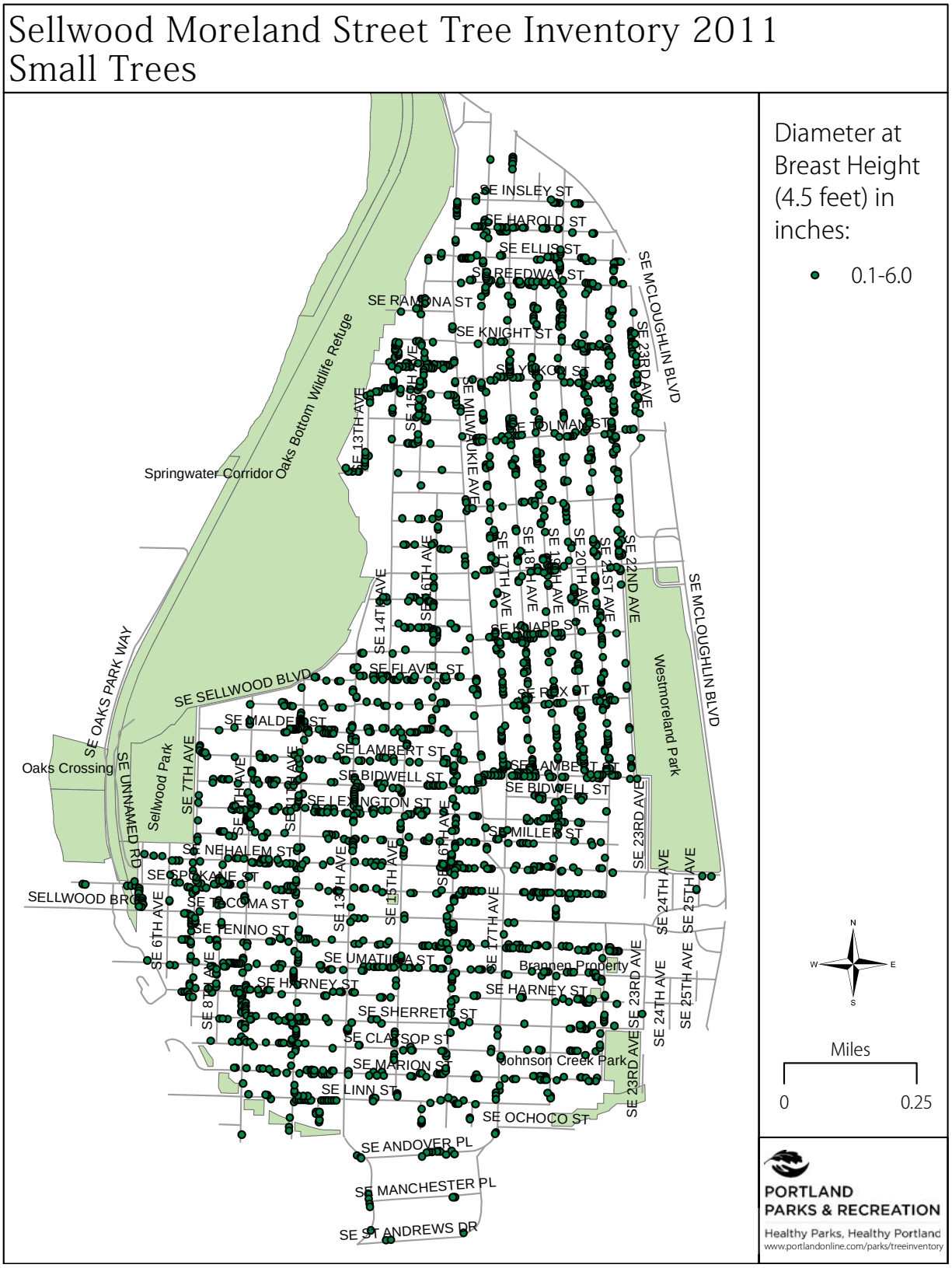
Appendix B continued

Common Name	Species	Number of Trees	% of Total Trees	Mean DBH
redwood	*Sequoia sempervirens*	3	0.0%	47.1
serviceberry	*Amelanchier* spp.	10	0.2%	2.3
seven son flower	*Heptacodium miconioides*	3	0.0%	1.1
smoketree	*Cotinus* spp.	6	0.1%	1.5
snowbell	*Styrax* spp.	152	2.3%	2.7
sourwood	*Oxydendrum arboreum*	9	0.1%	2.4
spruce	*Picea* spp.	27	0.4%	10.2
stewartia	*Stewartia pseudocamellia*	17	0.3%	1.3
sumac	*Rhus* spp.	3	0.0%	2.6
sweetgum	*Liquidambar styraciflua*	124	1.9%	15.9
tree of heaven	*Ailanthus altissima*	11	0.2%	14.0
tulip poplar	*Liriodendron tulipifera*	12	0.2%	23.9
tupelo	*Nyssa sylvatica*	17	0.3%	4.0
unknown	unknown	53	0.8%	6.7
walnut	*Juglans* spp.	96	1.5%	20.0
western redcedar	*Thuja plicata*	13	0.2%	24.7
willow	*Salix* spp.	17	0.3%	12.1
yellow wood	*Cladrastis lutea*	4	0.1%	4.0
yew	*Taxus* spp.	1	0.0%	12.0
zelkova	*Zelkova serrata*	35	0.5%	4.9
Grand Total		*6,502*	*100.0%*	*11.0*

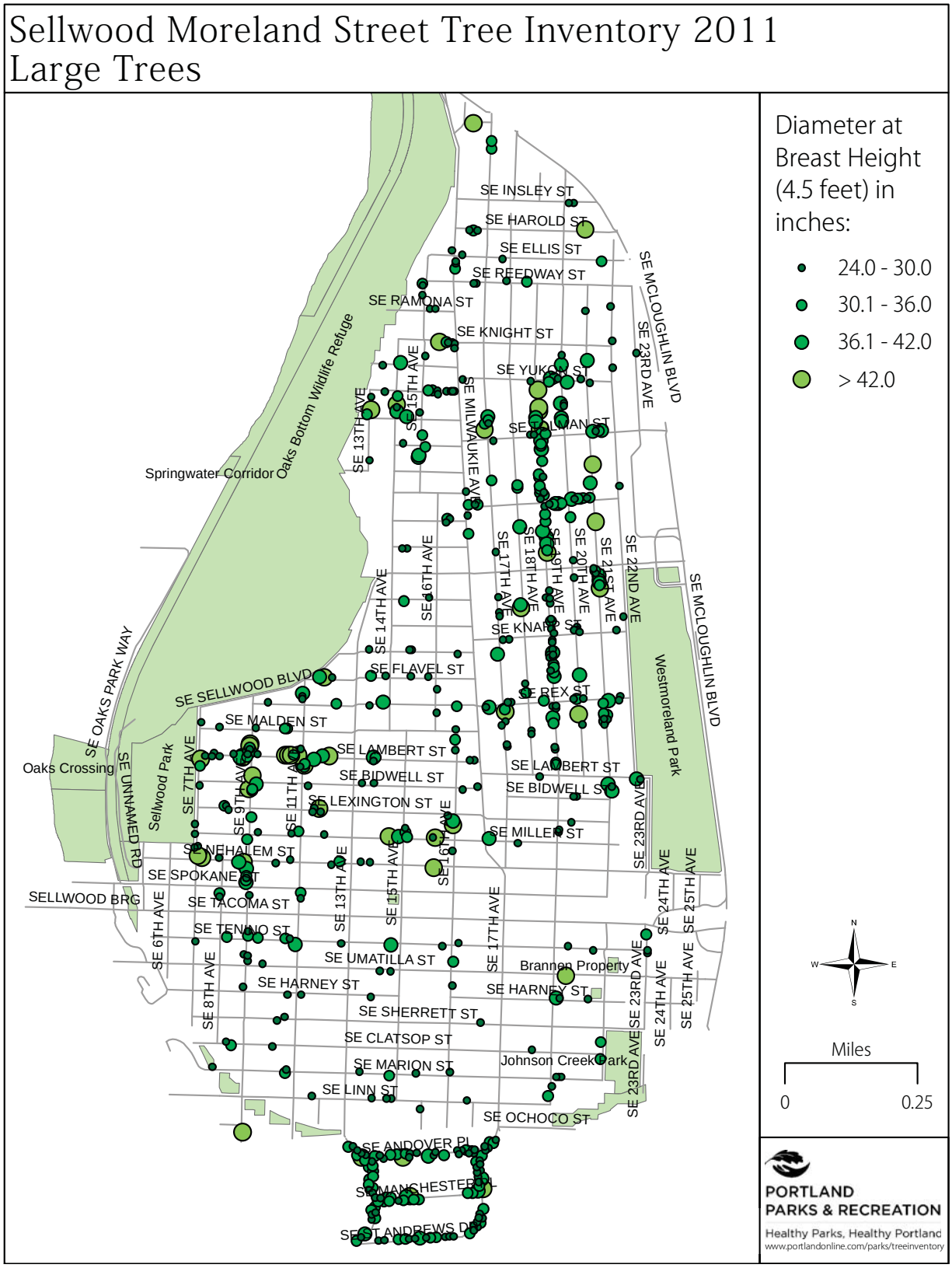
Appendix C: Street trees of Sellwood-Moreland by size



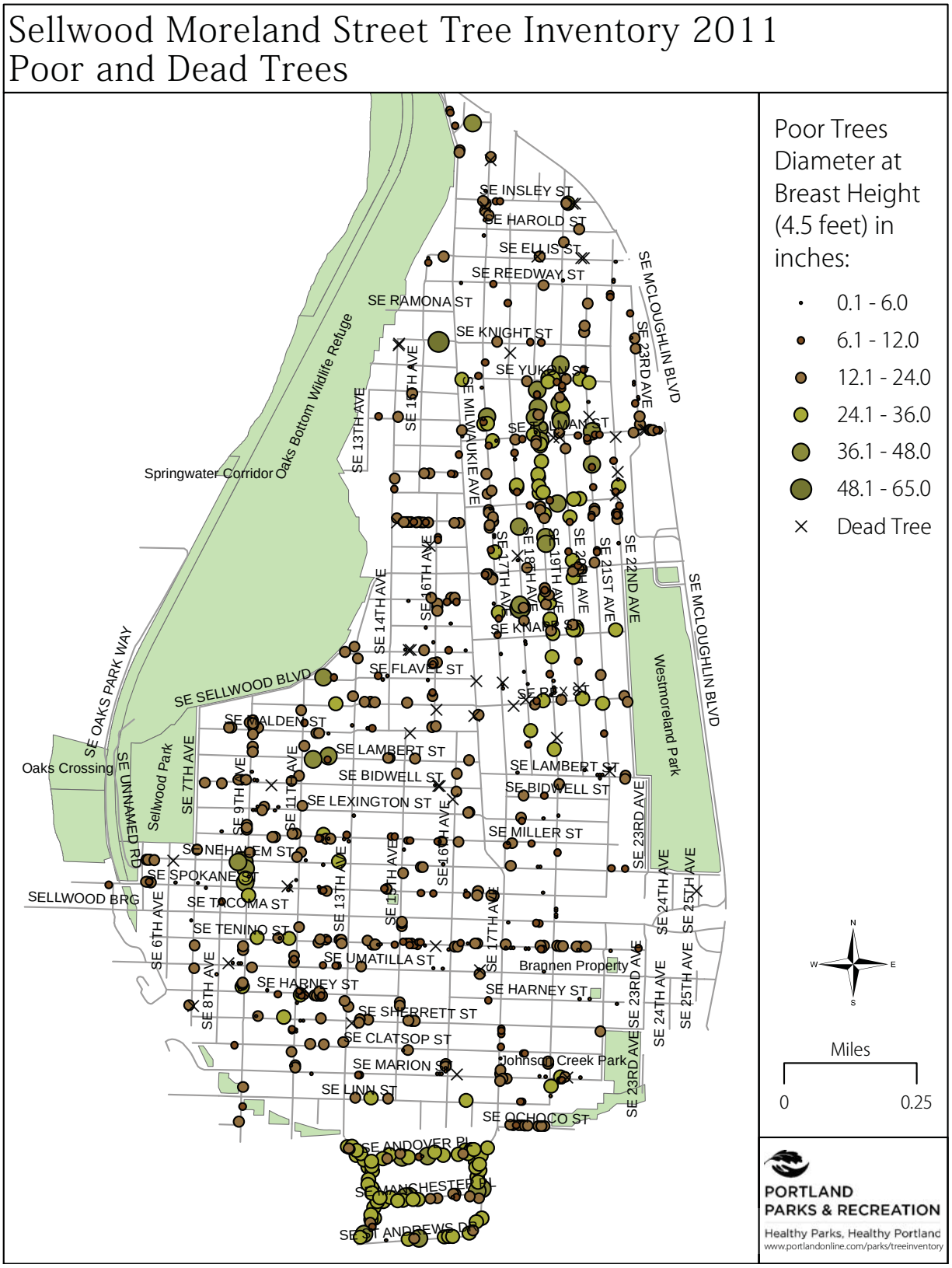
Appendix D: Small street trees (trees < 6” DBH)



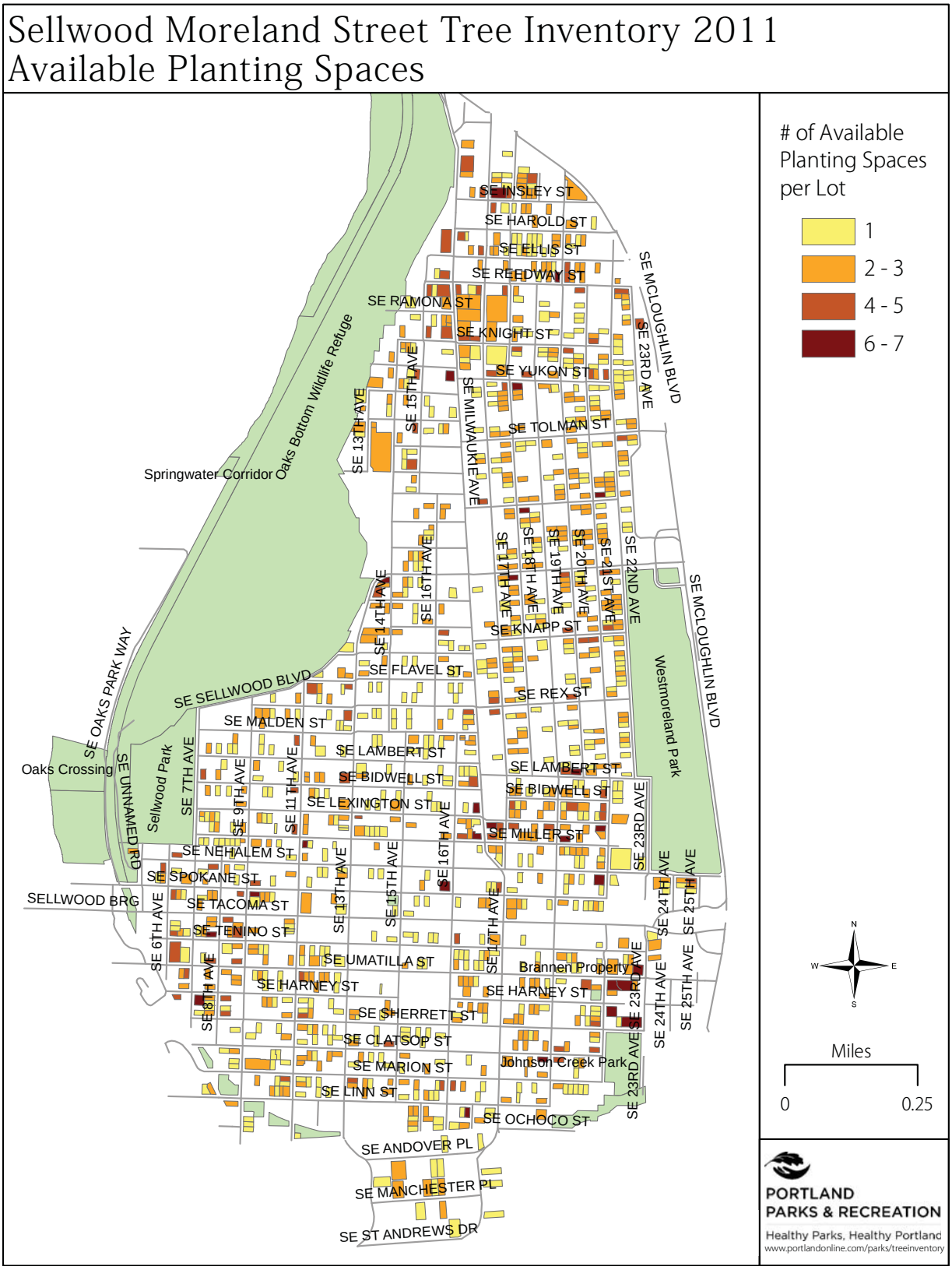
Appendix E: Large street trees (trees > 24" DBH)



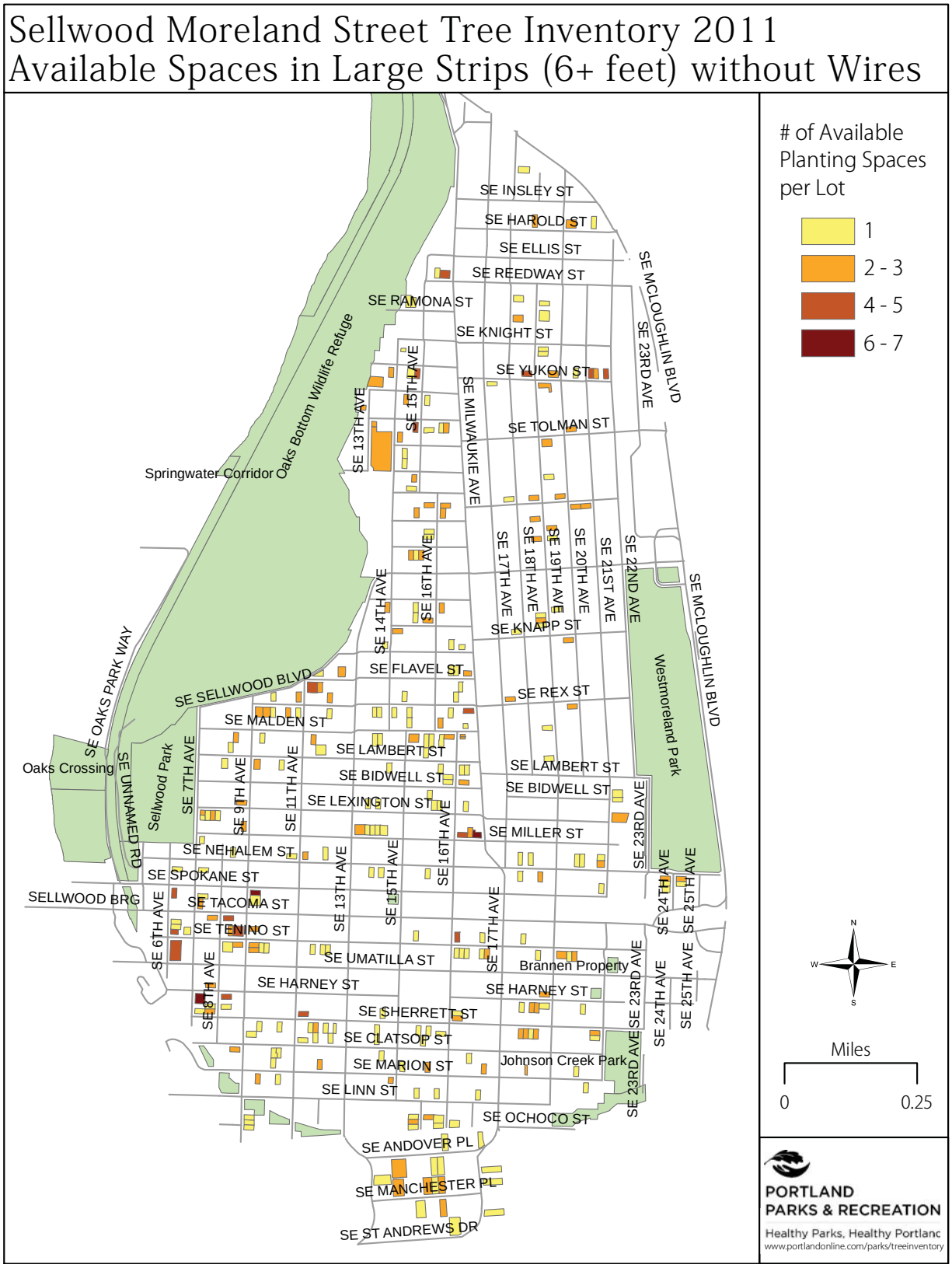
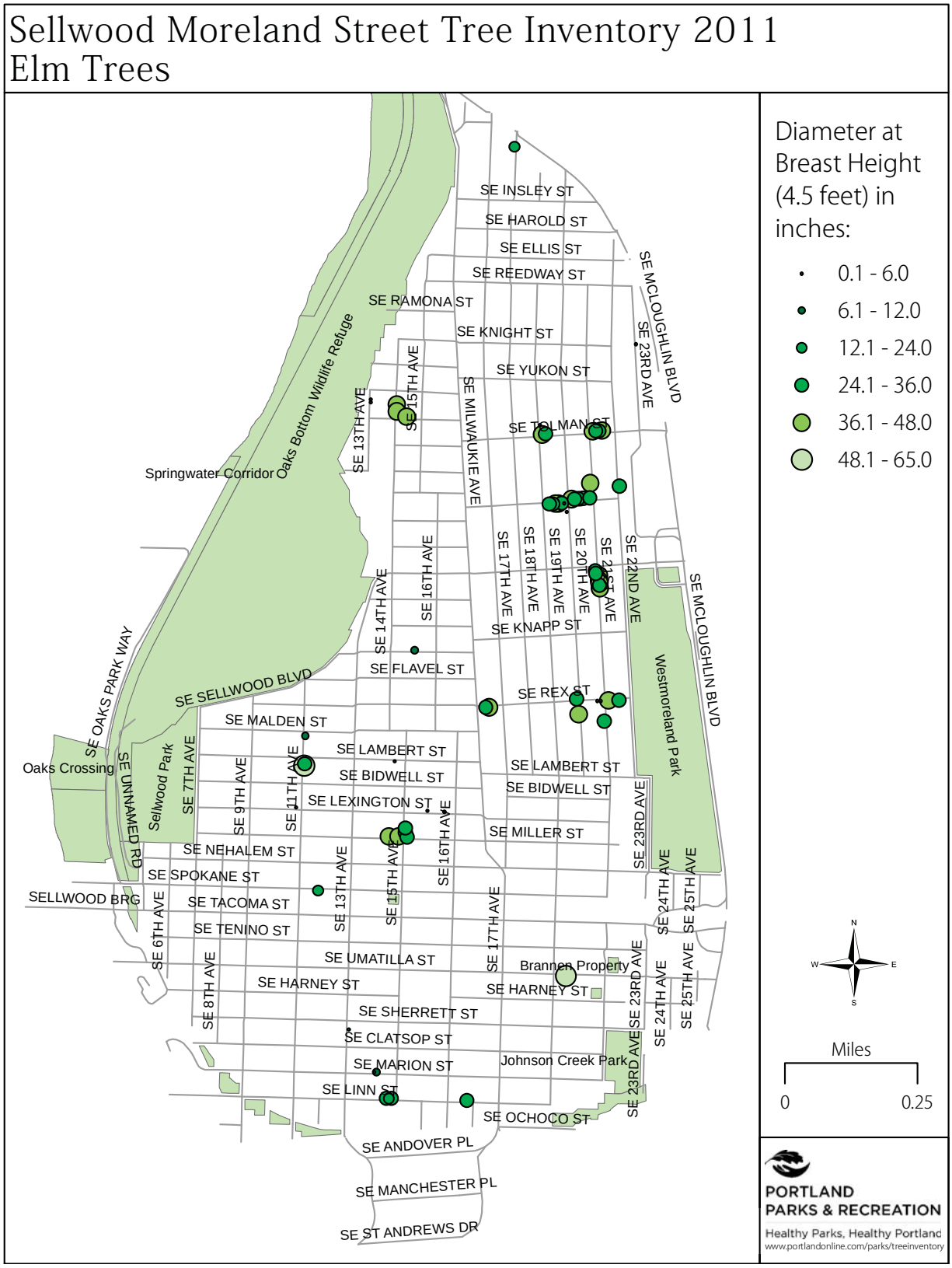
Appendix F: Poor and dead street trees



Appendix G: Available street tree planting spaces



Appendix H: Priority street tree planting spaces



Appendix I: Elm trees