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Main Street Subdivision – Sherwood, Oregon
Tree and Woodland Inventory and Report
June 29, 2014

MHA1445

Purpose

This Tree and Woodland Inventory and Report for the Main Street Subdivision project in Sherwood, Oregon, is provided pursuant to City of Sherwood Municipal Code Chapter 16.142. This report describes the existing trees located on the project site, provides recommendations for tree removal, retention, and protection during construction, and explains how the required tree canopy cover requirements will be satisfied. This report is based on observations made by International Society of Arboriculture (ISA) Certified Arborist and Qualified Tree Risk Assessor Morgan Holen (PN-6145A) during a site visit conducted on June 26, 2014. A complete description of individual trees is provided in the enclosed tree data. No woodlands, as defined in Sherwood Municipal Code Section 16.142.070.C.3.b, are located on or adjacent to the project site.

Scope of Work and Limitations

Morgan Holen & Associates, LLC, was contracted by J. T. Smith Companies to collect tree inventory data for individual trees measuring six inches and larger in diameter and to develop an arborist report and tree plan for the project. The site is planned for residential development. A site plan was provided by CESNW, Inc. illustrating the location of existing trees and proposed construction impacts.

Visual Tree Assessment (VTA) was performed on individual trees measuring at least six inches in diameter located across the site and on neighboring properties located directly adjacent to the project site. VTA is the standard process whereby the inspector visually assesses the tree from a distance and up close, looking for defect symptoms and evaluating overall condition and vitality of individual trees. Trees were evaluated in terms of general condition and potential construction impacts. Following the tree inventory fieldwork, we coordinated with CESNW and J. T. Smith Companies to discuss potential construction impacts to existing trees, finalize treatment recommendations, and discuss recommendations for new trees proposed for planting.

The client may choose to accept or disregard the recommendations contained herein, or seek additional advice. Neither this author nor Morgan Holen & Associates, LLC, have assumed any responsibility for liability associated with the trees on or adjacent to this site.

General Description

Three existing residences are planned for demolition for development of an eight lot subdivision with an open space tract on the north end of the project site. The existing trees are scattered across the site, primarily around the existing homes, along the eastern property boundary, fronting the street, and on the neighboring property to the south.

In all, 36 trees measuring at least six inches in diameter were inventoried, including 15 different tree species and four (11%) trees located off-site on the adjacent property to the south, nine (25%) street trees along SW Main Street, and 23 (64%) trees located within the boundaries of the project site. A complete description of individual trees is provided in the enclosed tree data. Table 1 provides a summary of the number of trees by species and location.

Table 1. Number of Trees by Species and Location– Main Street Subdivision, Sherwood.

Common Name	Species Name	Off-Site	Street	On-Site	Total	%
apple	*Malus* spp.			1	1	2.8
blue spruce	*Picea pungens*			2	2	5.5
cherry	*Prunus* spp.			1	1	2.8
Douglas-fir	*Pseudotsuga menziesii*			2	2	5.5
English holly	*Ilex aquifolium*			1	1	2.8
European white birch	*Betula pendula*			3	3	8.3
fig	*Ficus* spp.			4	4	11.1
horse-chestnut	*Aesculus hippocastanum*			1	1	2.8
juniper	*Juniperus* spp.			1	1	2.8
maple	*Acer* spp.		9		9	25
mimosa	*Albizia julibrissin*			1	1	2.8
ponderosa pine	*Pinus ponderosa var. willamettensis*	4			4	11.1
princess tree	*Paulownia tomentosa*			1	1	2.8
spruce	*Picea* spp.			4	4	11.1
weeping mulberry	*Morus alba*			1	1	2.8
Total		**4**	**9**	**23**	**36**	**100%**
Percent of Total		**11%**	**25%**	**64%**		

The trees appeared in variable condition and, as described in the enclosed tree data, individual trees were assigned a general condition rating defined as follows:

D: Dead – completely lifeless

P: Poor Condition – not sustainable

F: Fair Condition – sustainable, but with notable defects such as branch dieback, fair or poor structure, codominant stems with included bark, insect infestation, etc.

G: Good Condition – no major defects

E: Excellent Condition – specimen quality

Note that none of the inventoried trees were classified as dead. One of the four neighboring ponderosa pines (*Pinus ponderosa*) was classified in excellent condition, while the other three were classified in good condition with minor defects including forked leaders and some western gall rust, a disease caused by the fungus *Peridermium harknessii*.

The nine street trees are maples (*Acer* spp.) that were not identified to species or variety. These trees appeared in good and fair condition. Some exhibited sunscald, multiple attachments with some included bark, surface and girdling roots, and crown asymmetry due to adjacent tree competition.

The on-site trees are primarily classified in fair condition, although two European white birches (*Betula pendula*) appear without major defects and in excellent condition for the species. In addition, one ornamental cherry (*Prunus* spp.), a well-maintained mimosa (*Albizia julibrissin*), and two small blue spruces (*Picea pungens*) were classified in good condition with no major defects. The remaining trees classified in fair condition are described individually in the enclosed tree data. Note that four large spruce (*Picea* spp.) trees have all been topped in the past and now have new tops with multiple large diameter leaders and poor crown structure. These spruces also appear to be infested with Cooley spruce gall adelgid (*Adelges cooleyi*), which affects aesthetics more than sustainability.

Tree Plan Recommendations

Prior to preparation of this report we coordinated with CESNW and J. T. Smith Companies in regard to the relatively best existing tree features and potential construction impacts, and reviewed and considered the approval criteria identified in Sherwood Municipal Code Section 16.142.070. Of the 36 inventoried trees, 28 (78%) are recommended for removal for the purposes of development, including buildings, driveways, underground utilities, and site grading, and eight (22%) trees are planned for preservation. Table 2 provides a summary of the number of trees by general condition rating and treatment recommendation.

Table 2. Inventoried Trees by Condition Rating and Treatment Recommendation.

Treatment Recommendation	Condition Rating				Total
	Poor	Fair	Good	Excellent	
Remove	1	17	9	1	**28** (11%)
Retain		2	1	1	**4** (11%)
Protect Adjacent Tree			3	1	**4** (11%)
Total	**1** (3%)	**19** (53%)	**13** (36%)	**3** (8%)	**36** (100%)

The only tree recommended for removal that is not within the limits of disturbance is tree number 3567, a horse-chestnut (*Aesculus hippocastanum*) which is classified in fair condition with good vigor but poor structure, codominant stems at approximately six feet, and a history of branch failure. Removal of this tree will provide suitable growing space for replanting with more desirable species that are likely to provide long-term amenities to the site. Adequate protection is not feasible for the other 27 trees recommended for removal, including seven street trees measuring between six and 10 inches in diameter. The location of trees relative to planned development is illustrated on site plan drawings.

Four of the eight trees to be protected during construction are the ponderosa pines located on the neighboring property to the south. The four on-site trees recommended for retention include two street trees that will not be impacted by site development, one European white birch in the rear of proposed lot 8, and a 47-inch diameter spruce located in the front of proposed lot 1 in the northwest corner of the project site. Pruning is recommended at the spruce tree to remove dead and infested branches and to improve the overall structure and crown aesthetics as feasible. Pruning should be limited to the minimum amount needed and performed by a Qualified Tree Service. Tree protection fencing shall be installed at the limits of disturbance and any construction that is necessary beneath the dripline of protected trees shall be performed under the guidance of a Qualified Arborist.

Required Tree Canopy

Sherwood Municipal Code Section 16.142.070.D requires that residential development sites achieve a minimum total tree canopy of 40 percent based on the expected mature canopy of existing retained trees and planted new trees. The total area of the net development site is 42,429 square feet. To meet the 40 percent total tree canopy requirement, the required tree canopy cover needed is 16,972 square feet.

The four off-site trees inventoried on adjacent property do not count towards the canopy requirement. The four on-site trees planned for retention during development provide 5,459 square feet of expected mature canopy cover (note that the canopy credit for preserving existing trees is doubled). In addition, five new street trees and 12 new landscape trees are proposed, which will provide an additional 11,722 square feet of expected mature canopy. The total expected mature canopy is 17,181 square feet, or 40.5% of the total net development site, satisfying the City's canopy cover requirement.

The enclosed canopy credit summary provides a complete description of the trees to be retained and planted to satisfy the canopy cover requirement. The location of trees proposed for plating is illustrated on the tree plan drawing and trees proposed for planting are numbered to correspond with tree numbers provided in the canopy credit summary table.

Tree Protection Standards

The trees recommended for preservation will need special consideration to assure their protection during construction. We recommend a preconstruction meeting with the owner, contractors, and project arborist to review tree protection measures and address questions or concerns on site. Tree protection measures include:

- **Pruning.** Trees to be preserved may require minor pruning for overhead clearance to avoid crown damage during construction and to remove dead and defective branches for safety. The project arborist shall help identify whether pruning is necessary once trees recommended for removal have been removed and the site is staked and prepared for construction. Tree removal and pruning shall be performed by a Qualified Tree Service.
- **Protection Fencing.** Trees to be preserved shall be protected by installation of tree protection fencing to prevent injury to tree trunks or roots, or soil compaction within the root protection area, which generally coincides with tree driplines. Fences shall be 6-foot high steel on concrete blocks or orange plastic construction fencing on metal stakes. The project arborist shall determine the exact location and type of tree protection fencing. Trees located more than 30-feet from construction activity shall not require fencing.
- **Tree Protection Zone.** Without authorization from the project arborist, none of the following shall occur beneath the dripline of any protected tree:
    1. Grade change or cut and fill;
    2. New impervious surfaces;
    3. Utility or drainage field placement;
    4. Staging or storage of materials and equipment; or
    5. Vehicle maneuvering.

  Root protection zones may be entered for tasks like surveying, measuring, and, sampling. Fences must be closed upon completion of these tasks. Construction that is necessary beneath protected tree driplines shall be performed under the on-site supervision of the project arborist.
- **Surfacing.** Where the driveway is proposed beneath the dripline of tree number 3597 (the 47 inch diameter spruce), avoid excavation and use a modified profile to build up from existing grade (Figure 1). The profile includes a layer of permeable geotextile fabric on the ground surface and clean crushed rock to raise the grade as needed. Surfacing may include asphalt, concrete, or other materials. If excavation is necessary, work shall be performed under arborist supervision.

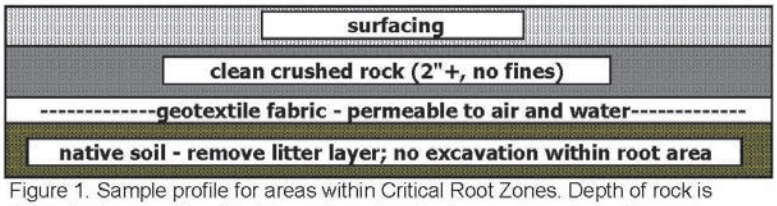
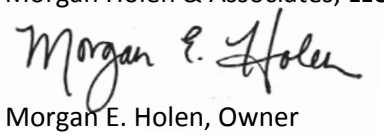


Figure 1. Sample profile for areas within Critical Root Zones. Depth of rock is dependent on grading. Technique based on best management practices.

- **Excavation beneath Protected Tree Driplines.** Excavation beneath tree driplines shall be avoided if alternatives are available. If excavation is unavoidable, the developer shall coordinate with the project arborist to evaluate the proposed excavation to determine methods to minimize impacts to trees. This can include tunneling, hand digging, or other approaches.
- **Landscaping.** Following construction and where landscaping is desired, apply approximately 3-inches of mulch beneath the dripline of protected trees, but not directly against tree trunks. Shrubs and ground covers may be planted within tree protection areas. If irrigation is used, use drip irrigation only beneath the driplines of protected trees.
- **Quality Assurance.** The project arborist shall supervise proper execution of this plan during construction and will be available on-call. It is the developer's responsibility to coordinate with the project arborist as needed.
- **Final Report.** After the project has been completed, the project arborist shall provide a final report that describes the measures needed to maintain and protect the remaining trees.

Please contact us if you have questions or need any additional information. Thank you for choosing Morgan Holen & Associates, LLC, to provide consulting arborist services for the Main Street Subdivision project in Sherwood.

Thank you,
Morgan Holen & Associates, LLC



Morgan E. Holen, Owner
ISA Certified Arborist, PN-6145A
ISA Tree Risk Assessment Qualified
Forest Biologist

Enclosures: MHA1445 Main Street Sherwood – Tree Data 6-26-14
MHA1445 Main Street Sherwood – Canopy Credit Summary

No.	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Treatment
1026	apple	*Malus* spp.	12	12	F	some branch decay, fairly well maintained fruit tree	remove
1683	European white birch	*Betula pendula*	20	20	E	no major defects	remove
1684	European white birch	*Betula pendula*	18	16	F	top dieback, few dead branches, suspect bronze birch borer infestation	remove
1685	Douglas-fir	*Pseudotsuga menziesii*	12	15	F	broken top, no terminal leader, dead branches	remove
1686	Douglas-fir	*Pseudotsuga menziesii*	14	14	F	topped at ~15', multiple new leaders, good vigor	remove
1702	juniper	*Juniperus* spp.	6	6	P	broken top, thin foliage, poor branch distribution	remove
1775	ponderosa pine	*Pinus ponderosa var. willamettensis*	26	22	E	off-site, no major defects	protect adjacent tree
1867	spruce	*Picea* spp.	29	22	F	topped in the past, poor crown structure, epicormic sprouts, dead branches, suspect Cooley spruce gall adelgid infestation	remove
1882	mimosa	*Albizia julibrissin*	18	25	G	few dead branches, no major defects, variable spread: N30'/E18'/S26'/W24'	remove
1883	cherry	*Prunus* spp.	13	15	G	fairly well maintained fruit tree	remove
1890	maple	*Acer* spp.	10	15	G	street tree, some crown asymmetry due to adjacent tree competition	remove street tree
1891	maple	*Acer* spp.	8	10	G	street tree, no major defects	remove street tree
1892	maple	*Acer* spp.	8	12	G	street tree, no major defects	remove street tree
1893	ponderosa pine	*Pinus ponderosa var. willamettensis*	22	22	G	off-site, some western gall rust	protect adjacent tree

No.	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Treatment
1894	ponderosa pine	*Pinus ponderosa var. willamettensis*	24	22	G	off-site, forked tops, some western gall rust	protect adjacent tree
1895	ponderosa pine	*Pinus ponderosa var. willamettensis*	26	22	G	off-site, forked tops, some western gall rust	protect adjacent tree
1945	European white birch	*Betula pendula*	10	13	E	no major defects	retain
2036	maple	*Acer* spp.	8	12	G	street tree, some sunscald, no major defects	remove street tree
2037	maple	*Acer* spp.	9	12	G	street tree, some sunscald, multiple attachments, some included bark	retain street tree
2448	maple	*Acer* spp.	8	12	G	street tree, sunscald, surface and girdling roots, some included bark, south side pruned for sign clearance	remove street tree
2449	maple	*Acer* spp.	11	12	F	street tree, multiple attachments, some included bark, sunscald, girdling roots, surface root damage	retain street tree
2451	maple	*Acer* spp.	9	8	F	street tree, codom stems at ~6', some included bark, would on SE lateral branch	remove street tree
2452	maple	*Acer* spp.	6	8	F	street tree, poor past pruning, major crown asymmetry to street due to adjacent tree competition	remove street tree
2637	princess tree	*Paulownia tomentosa*	14	18	F	dead branches, moderate structure, large surface roots	remove
3567	horse-chestnut	*Aesculus hippocastanum*	22	12	F	good vigor but poor structure, codom stems at ~6', history of branch failure	remove
3596	spruce	*Picea* spp.	37	22	F	topped in the past, poor crown structure, crown asymmetry, dead branches, branch dieback, suspect Cooley spruce gall adelgid	remove

No.	Common Name	Species Name	DBH[1]	C-Rad[2]	Cond[3]	Comments	Treatment
3597	spruce	*Picea* spp.	47	28	F	topped in the past, poor crown structure, dead branches, branch dieback, suspect Cooley spruce gall adelgid infestation	retain; prune to remove dead and infested branches
3726	English holly	*Ilex aquifolium*	12	10	F	poor crown structure	remove
3850	spruce	*Picea* spp.	34	20	F	topped in the past, poor crown structure, dead branches, branch dieback, suspect Cooley spruce gall adelgid infestation	remove
3851	blue spruce	*Picea pungens*	10	10	G	long live crown, dead twigs, no major defects	remove
3852	blue spruce	*Picea pungens*	8	10	G	long live crown, dead twigs, no major defects	remove
3853	fig	*Ficus* spp.	6	10	F	good vigor, some branch and stem decay, fairly well maintained fruit tree	remove
3854	fig	*Ficus* spp.	8	10	F	good vigor, some branch and stem decay, fairly well maintained fruit tree	remove
3855	fig	*Ficus* spp.	6	10	F	good vigor, some branch and stem decay, fairly well maintained fruit tree	remove
3586	fig	*Ficus* spp.	8	10	F	good vigor, some branch and stem decay, fairly well maintained fruit tree	remove
3857	weeping mulberry	*Morus alba*	10	6	F	good vigor, stem decay with hollows	remove

[1]**DBH** is tree diameter measured at 4.5-feet above the ground level in inches; trees with multiple trunks splitting below DBH were measured at the narrowest point beneath the split. [2]**C-Rad** is the average crown radius measured in feet. [3]**Cond** is an arborist assigned rating to generally describe the condition of individual trees as follows- **D**ead; **P**oor Condition; **F**air Condition; **G**ood Condition; and **E**xcellent Condition.

MHA1445 Main Street Sherwood - Canopy Credit Summary

No.	Common Name	Species Name	Mature Canopy Spread	Mature Canopy (sqft)	Existing Tree Multiplier	Canopy Credit (sqft)
1945	European white birch	*Betula pendula*	25	491	2	982
3597	spruce	*Picea spp.*	40	1,257	2	2,513
2449	maple	*Acer spp.*	25	491	2	982
2037	maple	*Acer spp.*	25	491	2	982
S1	Metro Gold Hedge Maple	*Acer campestre 'Panacek'*	25	491	1	491
S2	Metro Gold Hedge Maple	*Acer campestre 'Panacek'*	25	491	1	491
S3	Metro Gold Hedge Maple	*Acer campestre 'Panacek'*	25	491	1	491
S4	Metro Gold Hedge Maple	*Acer campestre 'Panacek'*	25	491	1	491
S5	Metro Gold Hedge Maple	*Acer campestre 'Panacek'*	25	491	1	491
L1	Oregon white oak	*Quercus garryana*	50	1,963	1	1,963
L2	Oregon white oak	*Quercus garryana*	50	1,963	1	1,963
L3	ponderosa pine	*Pinus ponderosa var. willamettensis*	30	707	1	707
L4	ponderosa pine	*Pinus ponderosa var. willamettensis*	30	707	1	707
L5	Merrill magnolia	*Magnolia* x *loebneri* 'Merrill'	25	491	1	491
L6	Merrill magnolia	*Magnolia* x *loebneri* 'Merrill'	25	491	1	491
L7	Merrill magnolia	*Magnolia* x *loebneri* 'Merrill'	25	491	1	491
L8	Merrill magnolia	*Magnolia* x *loebneri* 'Merrill'	25	491	1	491
L9	Kousa dogwood	*Cornus kousa*	25	491	1	491
L10	Kousa dogwood	*Cornus kousa*	25	491	1	491
L11	Kousa dogwood	*Cornus kousa*	25	491	1	491
L12	Kousa dogwood	*Cornus kousa*	25	491	1	491
Total Canopy Cover Credit (sqft):						**17,181**
Total Area of Net Development Site (sqft):						42,429
Required Tree Canopy (%):						40%
Required Tree Canopy (sqft):						16,972
Difference (sqft):						209
Canopy Cover Requirement Satisfied?						Yes

S = Newly Planted Street Tree; **L** = Newly Planted Lot Tree (not indicative of lot number to be planted on).

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