



# TERAGAN & ASSOCIATES, INC. ARBORICULTURAL CONSULTANTS

## MEMORANDUM

**DATE:** January 10, 2018  
**TO:** Levi Levasa (Stafford Land Company)  
**FROM:** Todd Prager, RCA #597, ISA Board Certified Master Arborist  
**RE:** Tree Plan for Marshall Ridge Subdivision

---

### Summary

This report includes tree removal, protection, and mitigation recommendations for the Marshall Ridge Subdivision.

### Background

Stafford Land Company is proposing to subdivide the subject property at 19535 SE Bornstedt Road in Sandy and develop 39 new lots with single family homes. Existing trees are present on the property in the area of the proposed development. The proposed site plan with tree locations is provided in Attachment 1 and the proposed mitigation tree planting plan is provided in Attachment 2.

The assignment requested of our firm for this project was to:

- Assess the existing trees at the project site;
- Identify the trees to be removed and retained based on construction impacts;
- Provide tree protection recommendations for the trees to be retained; and
- Review and provide recommendations for the tree mitigation planting plan.

### Tree Assessment

On April 19, 2017 I completed the inventory of existing trees at the project site.

The complete inventory data for each tree is provided in Attachment 3 and includes the tree number, common name, scientific name, trunk diameter (DBH), health condition, structural condition, and pertinent comments.

The tree numbers in the inventory in Attachment 3 correspond to the tree numbers on the proposed site plan in Attachment 1.

## Tree Removal and Retention

The standard tree protection requirements in the City of Sandy Code range from at least 10 feet from the trunks of retained trees (SDC 17.102.50.B.1) to five feet beyond the driplines (SDC 17.92.10.D) unless otherwise approved by the Planning Director.

A typical alternative minimum recommended root protection zone encompasses a radius around a tree to be retained of .5 feet per inch of DBH. For example, a tree with a 24-inch DBH would have a minimum root protection zone radius of 12 feet. This standard may need to be adjusted on a case by case basis due to tree health, species, root distribution, whether the tree will be impacted on multiple sides, and other factors.

Using the criteria described above and the locations of the trees relative to grading, paving, construction, and other site improvements, 150 of the 191 trees at the site are proposed for removal.

The remaining 41 trees at the site will be retained and protected. Tree protection recommendations for the trees to be retained are provided in the next section of this report.

## Tree Protection Recommendations

The critical root zone radii of .5 feet per inch of DBH are shown on the site plan in Attachment 1 for the trees to be retained. The trees to be retained can be adequately protected by placing tree protection fencing at or beyond their critical root zones wherever possible as shown in Attachment 1. No grading, stockpiling, storage, disposal, or any other construction related activity shall occur in the tree protection zones unless specifically reviewed and approved by the project arborist.

Note that some trees to be retained may have some encroachment within their critical root zones for construction. The following protection measures shall apply:

- *Tree Protection Fencing*: Establish tree protection fencing in the locations shown in Attachment 1. Required fencing shall be a minimum of six feet tall supported with metal posts placed no farther than ten feet apart installed flush with the initial undisturbed grade.
- *Directional Felling*: Fell the trees to be removed away from the trees to be retained so they do not contact or otherwise damage the trunks or branches of the trees to be retained. No vehicles or heavy equipment shall be permitted within the tree protection zones during tree removal operations.
- *Stump Removal*: The stumps of trees to be removed from within the tree protection zones shall either be retained in place or stump ground to protect the root systems of the trees to be retained. Do not pull stumps with an excavator within the tree protection zones.
- *Construction Modifications*: Modify the grading so it is outside the tree protection zones of trees 2615 and 2618.

- *Excavation Adjacent to Tree 2647*: Excavation is proposed for a driveway within the critical root zone of tree 2647. The project arborist should be consulted if roots greater than 2-inches in diameter are encountered during excavation.
- *Fill Adjacent to Tree 2663*: A fill slope will encroach within the critical root zone of tree 2663. Based on the large size and good condition of the tree, the project team will attempt to retain it. The fill shall be held back from the tree as far as possible and not closer than 12.5 feet from the trunk as shown in Attachment 1. No vehicles or heavy equipment shall be permitted within the tree protection zone during the placement of fill materials. If a retaining wall is required to hold back the fill, the project arborist should be consulted if roots greater than 2-inches in diameter are encountered during construction of the wall.
- *Protect Tree Crowns*: Care will need to be taken to not contact or otherwise damage the crowns of the trees that may extend into the construction area.

Additional tree protection recommendations for the trees to be retained are provided in Attachment 4.

### **Tree Mitigation Planting Recommendations**

The proposed tree mitigation planting plan is provided in Attachment 2. Based on my recommendations, bigleaf maples (*Acer macrophyllum*) and western red cedars (*Thuja plicata*) are spaced a minimum of 15 feet on center. Vine maples (*Acer circinatum*), which are shade tolerant understory trees, may be spaced as close as six feet on center from existing and proposed trees. This species mix and planting arrangement is sustainable and will allow for the long term growth of the proposed mitigation trees.

## Conclusion

Based on the impacts from construction, 150 of the 191 trees at the site are proposed for removal. The 41 trees to be retained will be adequately protected by adhering to the recommendations in this report. The mitigation tree species mix and planting arrangement is sustainable and will allow for the long term growth of the proposed mitigation trees.

Please contact me if you have questions, concerns, or need any additional information.

Sincerely,

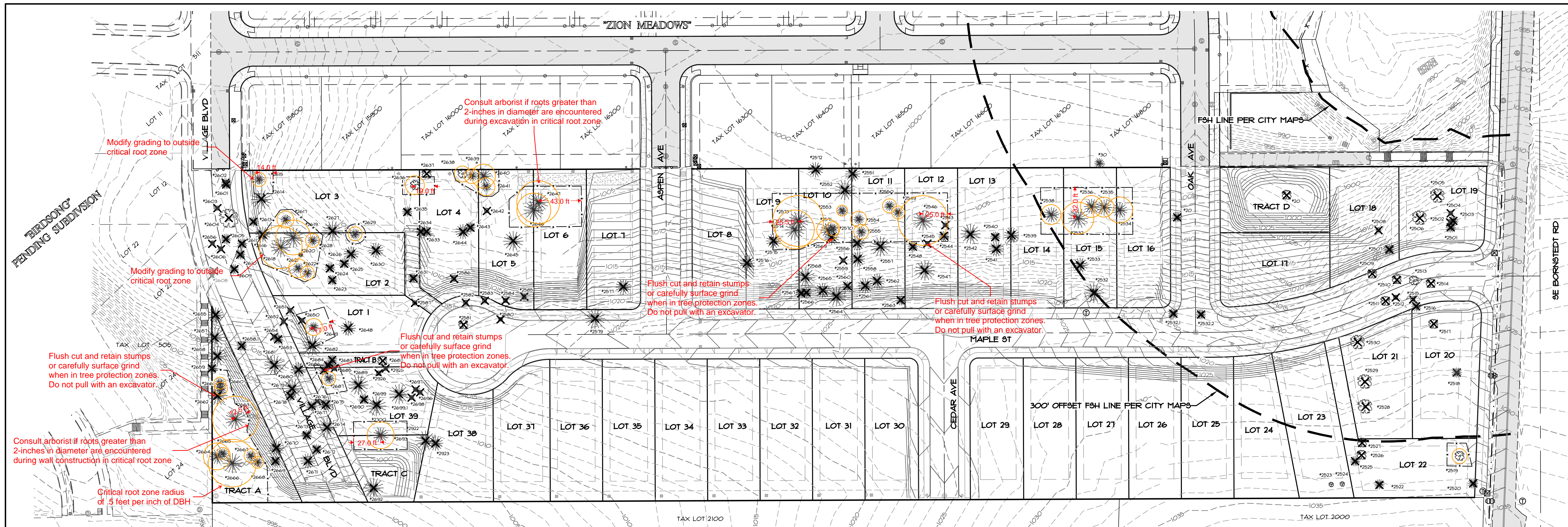


Todd Prager

*ASCA Registered Consulting Arborist #597  
ISA Board Certified Master Arborist, WE-6723B  
ISA Qualified Tree Risk Assessor  
AICP, American Planning Association*

Attachments: Attachment 1 - Site Plan with Trees and Tree Protection  
Attachment 2 - Mitigation Tree Planting Plan  
Attachment 3 - Tree Inventory  
Attachment 4 - Tree Protection Recommendations  
Attachment 5 - Assumptions and Limiting Conditions





PROFESSIONAL SEAL: **STAFFORD LAND COMPANY**  
 DESIGNER: [Signature]  
 DRAWN: [Signature]  
 CHECKED: [Signature]  
 APPROVED: [Signature]

RENEWAL DATE: 12/31/2018

DATE: 11-13-17  
 SCALE: HORIZ: 1" = 60'  
 VERT: N/A

FILE: IT-02B-Planning.dwg  
 LEGAL SECTION: 29  
 RANGE: 25  
 SHEET: 4 OF 10

PROJECT: MARSHALL RIDGE TREE INVENTORY, RETENTION, AND PROTECTION PLAN  
 LOCATION: 19525 SE BORNSTEDT RD, SANDY, OR

SURVEY NO.	COMMON NAME	SCIENTIFIC NAME	DBH	CONDITION	TO BE PRESERVED & COUNTED?
20	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	good	NO
20	English walnut	<i>Juglans regia</i>	30	fair	NO
30	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	good	NO
2501	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	good	NO
2502	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	good	NO
2503	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	good	NO
2504	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	good	NO
2505	orchard apple	<i>Malus domestica</i>	23	fair	NO
2506	orchard apple	<i>Malus domestica</i>	23	fair	NO
2507	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	good	NO
2508	orchard apple	<i>Malus domestica</i>	10	fair	NO
2509	orchard apple	<i>Malus domestica</i>	16	poor	NO
2510	orchard apple	<i>Malus domestica</i>	12	fair	NO
2511	orchard apple	<i>Malus domestica</i>	17	fair	NO
2512	orchard apple	<i>Malus domestica</i>	8	fair	NO
2513	orchard apple	<i>Malus domestica</i>	11	fair	NO
2514	orchard apple	<i>Malus domestica</i>	11	fair	NO
2515	orchard apple	<i>Malus domestica</i>	9	fair	NO
2516	arbutus	<i>Thuja occidentalis</i>	16.12	fair	NO
2517	orchard apple	<i>Malus domestica</i>	18	fair	NO
2518	Hinko cypress	<i>Chamaecyparis obtusa</i>	15	poor	NO
2519	flowering dogwood	<i>Cornus florida</i>	15	fair	YES
2520	Chinese fir	<i>Cunninghamia lanceolata</i>	13,12,11,10,10.5	good	NO
2521	Chinese elm	<i>Ulmus parvifolia</i>	18	poor	NO
2522	Chinese fir	<i>Cunninghamia lanceolata</i>	17,17,17,16,11.5	good	NO
2523	arbutus	<i>Thuja sp.</i>	8	fair	NO
2524	saucer magnolia	<i>Magnolia x soulangeana</i>	9.8,5.5,3	good	NO
2525	Colorado blue spruce	<i>Picea pungens</i>	19	good	NO
2526	flowering cherry	<i>Prunus serrulata</i>	14	fair	NO
2527	purpleleaf plum	<i>Prunus cerasifera</i>	12	fair	NO
2528	Crimson King maple	<i>Acer platanoides 'Crimson King'</i>	18	good	NO
2529	flowering cherry	<i>Prunus serrulata</i>	23	poor	NO
2530	English holly	<i>Ilex aquifolium</i>	23	good	NO
2532	Douglas-fir	<i>Pseudotsuga menziesii</i>	45	good	NO
2532.1	Monkey puzzle	<i>Araucaria araucana</i>	18	good	NO
2532.2	Monkey puzzle	<i>Araucaria araucana</i>	18	good	NO
2533	Douglas-fir	<i>Pseudotsuga menziesii</i>	29	good	NO
2534	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	good	YES
2535	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	YES
2536	Douglas-fir	<i>Pseudotsuga menziesii</i>	22	good	YES
2537	Douglas-fir	<i>Pseudotsuga menziesii</i>	32	good	YES
2538	Noble fir	<i>Abies procera</i>	20	good	YES
2539	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	good	NO
2540	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	good	NO
2541	western red cedar	<i>Tsuga heterophylla</i>	27	good	NO
2542	Douglas-fir	<i>Pseudotsuga menziesii</i>	52	good	NO
2543	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	good	NO
2544	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	good	NO
2545	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	good	NO
2546	Douglas-fir	<i>Pseudotsuga menziesii</i>	50	good	YES
2547	Douglas-fir	<i>Pseudotsuga menziesii</i>	57	good	NO
2548	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	good	NO
2549	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	good	YES
2550	western hemlock	<i>Tsuga heterophylla</i>	14	good	YES
2551	Douglas-fir	<i>Pseudotsuga menziesii</i>	33	good	NO
2552	Douglas-fir	<i>Pseudotsuga menziesii</i>	42	good	NO
2553	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	fair	YES
2554	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	fair	YES
2555	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	fair	YES
2556	Douglas-fir	<i>Pseudotsuga menziesii</i>	21	good	NO
2557	western hemlock	<i>Tsuga heterophylla</i>	39	good	NO
2558	Douglas-fir	<i>Pseudotsuga menziesii</i>	22	good	NO
2559	grand fir	<i>Abies grandis</i>	9	good	NO
2560	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	good	NO
2561	Douglas-fir	<i>Pseudotsuga menziesii</i>	27	good	NO

SURVEY NO.	COMMON NAME	SCIENTIFIC NAME	DBH	CONDITION	TO BE PRESERVED & COUNTED?
2562	Douglas-fir	<i>Pseudotsuga menziesii</i>	21	good	NO
2563	western hemlock	<i>Tsuga heterophylla</i>	19	good	NO
2564	western red cedar	<i>Tsuga heterophylla</i>	44	good	NO
2565	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	NO
2566	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	fair	NO
2567	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	good	NO
2568	western red cedar	<i>Tsuga heterophylla</i>	35	good	NO
2569	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	NO
2570	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	fair	YES
2571	western red cedar	<i>Tsuga heterophylla</i>	22	good	YES
2572	Douglas-fir	<i>Pseudotsuga menziesii</i>	21	good	NO
2573	Douglas-fir	<i>Pseudotsuga menziesii</i>	51	good	YES
2574	Douglas-fir	<i>Pseudotsuga menziesii</i>	39	good	YES
2575	Douglas-fir	<i>Pseudotsuga menziesii</i>	28	good	NO
2576	Douglas-fir	<i>Pseudotsuga menziesii</i>	25	good	NO
2577	Noble fir	<i>Abies procera</i>	22	good	NO
2578	Douglas-fir	<i>Pseudotsuga menziesii</i>	49	good	NO
2580	western hemlock	<i>Tsuga heterophylla</i>	9	good	NO
2581	orchard apple	<i>Malus domestica</i>	12	fair	NO
2582	edible plum	<i>Prunus sp.</i>	8	fair	NO
2583	orchard apple	<i>Malus domestica</i>	7	fair	NO
2584	orchard apple	<i>Malus domestica</i>	9	fair	NO
2585	orchard apple	<i>Malus domestica</i>	7	fair	NO
2586	orchard apple	<i>Malus domestica</i>	8	fair	NO
2587	English walnut	<i>Juglans regia</i>	10	fair	NO
2601	western hemlock	<i>Tsuga heterophylla</i>	26	good	NO
2602	Douglas-fir	<i>Pseudotsuga menziesii</i>	7	good	NO
2603	western hemlock	<i>Tsuga heterophylla</i>	7	good	NO
2604	bigleaf maple	<i>Acer macrophyllum</i>	36	good	NO
2605	western hemlock	<i>Tsuga heterophylla</i>	14	good	NO
2606	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	fair	NO
2607	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	good	NO
2608	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	good	NO
2609	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	good	NO
2610	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	fair	NO
2611	Noble fir	<i>Abies procera</i>	11	fair	NO
2613	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	fair	NO
2614	western hemlock	<i>Tsuga heterophylla</i>	40	poor	NO
2615	western hemlock	<i>Tsuga heterophylla</i>	14	good	YES
2616	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	fair	NO
2617	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	good	YES
2618	Douglas-fir	<i>Pseudotsuga menziesii</i>	43	good	YES
2619	Douglas-fir	<i>Pseudotsuga menziesii</i>	35	good	YES
2620	western red cedar	<i>Tsuga heterophylla</i>	10	good	NO
2621	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	fair	NO
2622	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	fair	YES
2623	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	fair	NO
2624	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	fair	NO
2625	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	fair	NO
2626	Douglas-fir	<i>Pseudotsuga menziesii</i>	23	good	NO
2627	Douglas-fir	<i>Pseudotsuga menziesii</i>	46	good	NO
2628	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	fair	YES
2629	western hemlock	<i>Tsuga heterophylla</i>	12	good	YES
2630	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	NO
2631	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	good	NO
2633	Noble fir	<i>Abies procera</i>	11	good	NO
2634	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	good	NO
2635	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	good	NO
2636	bigleaf maple	<i>Acer macrophyllum</i>	19	good	YES
2637	red alder	<i>Alnus rubra</i>	14	poor	NO
2638	red alder	<i>Alnus rubra</i>	16	fair	YES
2639	Nut fir	<i>Abies procera</i>	15	very poor	YES
2640	grand fir	<i>Abies grandis</i>	24	fair	YES
2641	Noble fir	<i>Abies procera</i>	18	fair	YES
2642	Crimson King maple	<i>Acer platanoides 'Crimson King'</i>	8	fair	NO

SURVEY NO.	COMMON NAME	SCIENTIFIC NAME	DBH	CONDITION	TO BE PRESERVED & COUNTED?
2643	Noble fir	<i>Abies procera</i>	17	good	NO
2644	grand fir	<i>Abies grandis</i>	22	good	NO
2645	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	good	NO
2646	Douglas-fir	<i>Pseudotsuga menziesii</i>	34	good	YES
2647	Douglas-fir	<i>Pseudotsuga menziesii</i>	43	good	YES
2648	western red cedar	<i>Tsuga heterophylla</i>	26	good	NO
2649	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	fair	YES
2650	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	poor	NO
2651	western red cedar	<i>Tsuga heterophylla</i>	9	good	NO
2652	western red cedar	<i>Tsuga heterophylla</i>	7	fair	NO
2653	western red cedar	<i>Tsuga heterophylla</i>	13	good	NO
2654	western red cedar	<i>Tsuga heterophylla</i>	10	good	NO
2655	Douglas-fir	<i>Pseudotsuga menziesii</i>	25	good	NO
2656	Douglas-fir	<i>Pseudotsuga menziesii</i>	6	good	NO
2657	Douglas-fir	<i>Pseudotsuga menziesii</i>	48	good	NO
2658	western hemlock	<i>Tsuga heterophylla</i>	31	fair	NO
2658.1	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	poor	NO
2659	western red cedar	<i>Tsuga heterophylla</i>	12	good	NO
2660	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	good	YES
2661	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	good	YES
2662	Douglas-fir	<i>Pseudotsuga menziesii</i>	44	good	NO
2663	Douglas-fir	<i>Pseudotsuga menziesii</i>	46	good	YES
2664	Douglas-fir	<i>Pseudotsuga menziesii</i>	27	good	YES
2665	western hemlock	<i>Tsuga heterophylla</i>	12	poor	NO
2666	Douglas-fir	<i>Pseudotsuga menziesii</i>	48	good	YES
2667	western red cedar	<i>Tsuga heterophylla</i>	14	good	YES
2668	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	good	YES
2669	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	good	NO
2670	Douglas-fir	<i>Pseudotsuga menziesii</i>	23	good	NO
2671	western hemlock	<i>Tsuga heterophylla</i>	27	good	NO
2672	western red cedar	<i>Tsuga heterophylla</i>	13	good	NO
2673	western red cedar	<i>Tsuga heterophylla</i>	11	good	NO
2674	Douglas-fir	<i>Pseudotsuga menziesii</i>	48	good	NO
2675	western red cedar	<i>Tsuga heterophylla</i>	29	good	NO
2676	western red cedar	<i>Tsuga heterophylla</i>	7	good	NO
2677	western red cedar	<i>Tsuga heterophylla</i>	14	good	NO
2678	western red cedar	<i>Tsuga heterophylla</i>	13	fair	NO
2679	western red cedar	<i>Tsuga heterophylla</i>	46	good	NO
2680	western hemlock	<i>Tsuga heterophylla</i>	23	fair	NO
2681	Douglas-fir	<i>Pseudotsuga menziesii</i>	35	good	NO
2682	Douglas-fir	<i>Pseudotsuga menziesii</i>	37	good	NO
2683	western red cedar	<i>Tsuga heterophylla</i>	14	good	NO
2684	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	good	NO
2685	western red cedar	<i>Tsuga heterophylla</i>	6	fair	NO
2686	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	fair	NO
2687	western red cedar	<i>Tsuga heterophylla</i>	14	good	YES
2688	red oak	<i>Quercus rubra</i>	15	fair	NO
2689	Douglas-fir	<i>Pseudotsuga menziesii</i>	39	good	NO
2690	western red cedar	<i>Tsuga heterophylla</i>	14	good	NO
2692	Douglas-fir	<i>Pseudotsuga menziesii</i>	38	good	NO
2693	Douglas-fir	<i>Pseudotsuga menziesii</i>	27	good	YES
2696	Colorado blue spruce	<i>Picea pungens</i>	7	good	NO
2697	Port-Orford-cedar	<i>Chamaecyparis lawsoniana</i>	8	good	NO
2698	Port-Orford-cedar	<i>Chamaecyparis lawsoniana</i>	9	good	NO
2699	western hemlock	<i>Tsuga heterophylla</i>	8	fair	NO
2699.1	western red cedar	<i>Tsuga heterophylla</i>	48	good	NO
2700	Douglas-fir	<i>Pseudotsuga menziesii</i>	35	good	NO
2922	western red cedar	<i>Tsuga heterophylla</i>	42	good	NO
2923	western red cedar	<i>Tsuga heterophylla</i>	22	good	NO
2925	Port-Orford-cedar	<i>Chamaecyparis lawsoniana</i>	6	good	NO
2926	red oak	<i>Quercus rubra</i>	6	good	NO

**TREE RETENTION CALCULATIONS**

**AREA "F3H"**  
 (STUDY AREA WITHIN 300' OF F3H AREA AS SHOWN ON CITY OF SANDY ZONING MAP)

AREA = 105,285 SF (2.41 AC.)  
 RETENTION REQUIREMENT PER IT54.140.3.A.1.  
 80% + 9 TREES / ACRE  
 241 x 9 = 2169

**AREA "BVO"**  
 (STUDY AREA WITHIN THE BORNSTEDT VILLAGE OVERLAY, OUTSIDE THE 300' OFFSET OF THE F3H LINE)

AREA = 329,420 SF (7.56 AC.)  
 RETENTION REQUIREMENT PER IT54.140.3.A.1.  
 80% + 6 TREES / ACRE  
 156 x 6 = 936

**TOTAL NUMBER OF TREES REQUIRED TO BE RETAINED:**  
 45 + 22 = 67

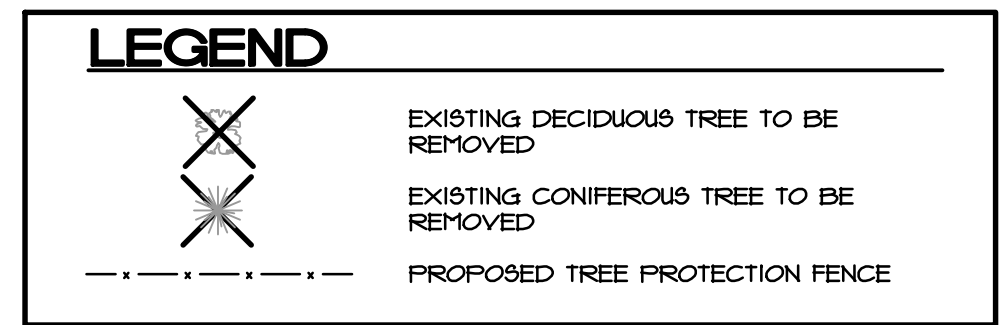
**TOTAL NUMBER OF TREES TO BE RETAINED:**  
 41

**MITIGATION REQUIREMENT:**  
 67 - 41 = 26 x 2 = 52

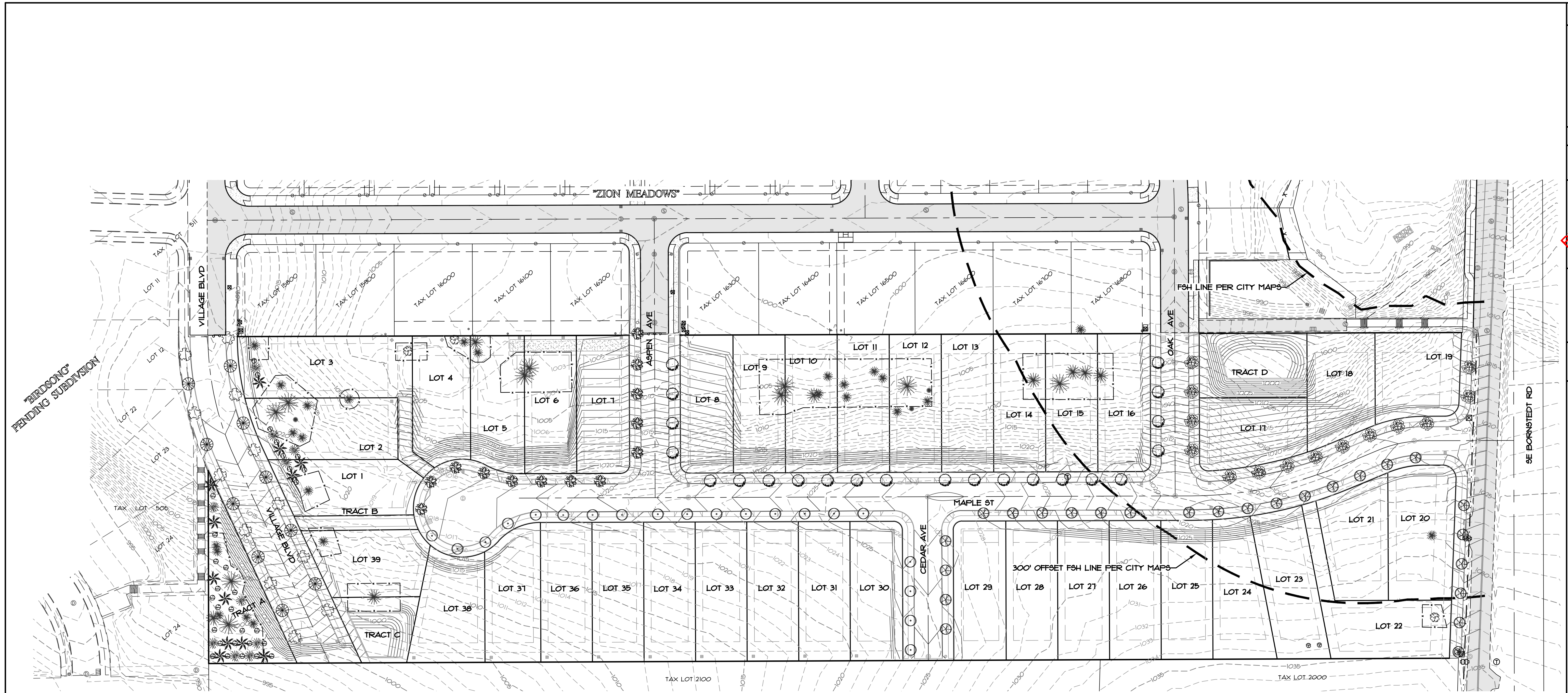
**TOTAL NUMBER OF PROPOSED MITIGATION TREES:**  
 52

**NOTES:**

- "F3H" INDICATES AN AREA WITHIN 300 FEET OF
- "BVO" INDICATES AN AREA WITHIN THE BORNSTEDT VILLAGE OVERLAY & NOT WITHIN THE "F3H" AREA
- SEE ATTACHED ARBORIST INVENTORY BY TERAGAN & ASSOCIATES, INC.

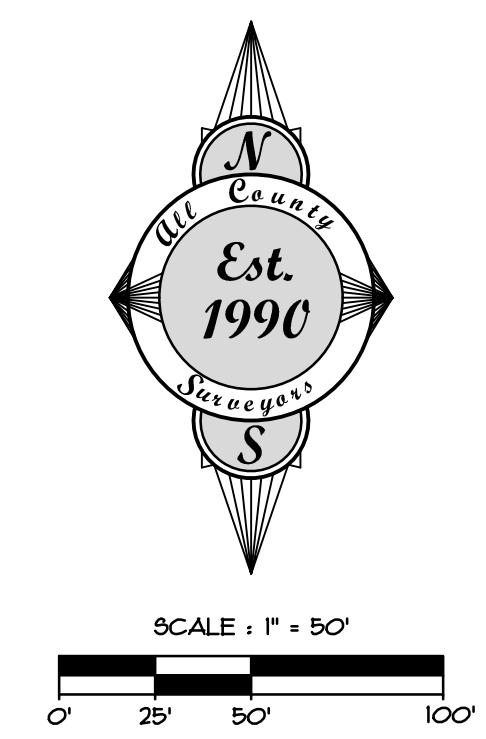






**PROPOSED STREET TREES**

SYMBOL	COMMON NAME	SPACING
	PACIFIC SUNSET MAPLE	30' O.C. MIN.
	QUEEN ELIZABETH MAPLE	30' O.C. MIN.
	FLOWERING ASH	30' O.C. MIN.
	BLACK TUPELO	30' O.C. MIN.
	KATSURA TREE	30' O.C. MIN.
	YELLOWWOOD	30' O.C. MIN.
	GREEN VASE ZELVOKA	30' O.C. MIN.



**LEGEND**

- EXISTING DECIDUOUS TREE
- EXISTING CONIFEROUS TREE
- PROPOSED TREE PROTECTION FENCE
- PROPOSED TREE : CEDAR, 15' SPACING
- PROPOSED MITIGATION TREE : BIG LEAF MAPLE, 15' SPACING
- PROPOSED MITIGATION TREE : VINE MAPLE, 6' SPACING

BY: _____	REVISION: _____	SHEET: <b>10</b>
DATE: _____	NO. _____	OF <b>10</b>
DESIGNED: _____	DRAWN: _____	CHECKED: _____
APPROVED: _____	DATE: _____	RENEWAL DATE: _____

SCALE: _____	VERT: _____	N/A
HORIZ: 1" = 50'	DATE: 11-13-17	FILE: 17-025-Planning.dwg
SECTION: 23	RANGE: 29	4E
TWP: _____	LEGAL: _____	_____

**MARSHALL RIDGE**  
 TREE MITIGATION PLAN AND  
 STREET TREE PLAN  
 19525 SE BORNSTEDT RD, SANDY, OR

**Stafford County**  
**Surveyors & Planners, Inc.**  
 Surveying, Planning and  
 Civil Engineering  
 P.O. Box 955, Sandy, OR 97055  
 Phone: (503) 668-4730  
 Fax: (503) 668-4730  
 DATE OF PLOT: 01-09-18

**STAFFORD**  
 DEVELOPMENT COMPANY  
 15111 206th Ave SE  
 LAKE OSWEGO, OR 97034  
 LEVI@STAFFORDLANDCOMPANY.COM

Attachment 2



Attachment 3

Survey No	Common Name	Scientific Name	DBH <sup>1</sup>	Condition <sup>2</sup>	Structure <sup>2</sup>	Comments
20	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	good	good	size estimated because in locked cow pen
20	English walnut	<i>Juglans regia</i>	20	fair	fair	multiple leaders, size estimated because in locked cow pen
30	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	good	good	size estimated because offsite
2501	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	good	fair	moderately one sided
2502	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	good	fair	one sided
2503	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	good	fair	one sided
2504	Douglas-fir	<i>Pseudotsuga menziesii</i>	8	good	fair	moderately one sided
2505	orchard apple	<i>Malus domestica</i>	21	fair	fair	pruned for fruit production
2506	orchard apple	<i>Malus domestica</i>	23	fair	fair	pruned for fruit production
2507	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	good	good	
2508	orchard apple	<i>Malus domestica</i>	10	fair	fair	pruned for fruit production
2509	orchard apple	<i>Malus domestica</i>	16	poor	poor	pruned for fruit production, significant dieback
2510	orchard apple	<i>Malus domestica</i>	12	fair	fair	pruned for fruit production
2511	orchard apple	<i>Malus domestica</i>	17	fair	fair	pruned for fruit production
2512	orchard apple	<i>Malus domestica</i>	8	fair	fair	pruned for fruit production

Attachment 3

Survey No	Common Name	Scientific Name	DBH <sup>1</sup>	Condition <sup>2</sup>	Structure <sup>2</sup>	Comments
2513	orchard apple	<i>Malus domestica</i>	11	fair	fair	pruned for fruit production
2514	orchard apple	<i>Malus domestica</i>	11	fair	fair	pruned for fruit production
2515	orchard apple	<i>Malus domestica</i>	9	fair	fair	pruned for fruit production
2516	arborvitae	<i>Thuja occidentalis</i>	16,12	fair	fair	not typically considered a tree
2517	orchard apple	<i>Malus domestica</i>	18	fair	fair	pruned for fruit production
2518	Hinoki cypress	<i>Chamaecyparis obtusa</i>	15	poor	fair	thin crown, added to site map in approximate location by arborist
2519	flowering dogwood	<i>Cornus florida</i>	15	fair	fair	multiple leaders, suspect dogwood anthracnose
2520	Chinese fir	<i>Cunninghamia lanceolata</i>	13,12, 11,10, 10,5	good	fair	multiple leaders at ground level
2521	Chinese elm	<i>Ulmus parvifolia</i>	18	poor	poor	large leader failure, history of branch failure, size estimated because offsite
2522	Chinese fir	<i>Cunninghamia lanceolata</i>	17,17, 17,16, 11,5	good	fair	multiple leaders at ground level
2523	crabapple	<i>Malus sp.</i>	8	fair	poor	overtopped by adjacent trees
2524	saucer magnolia	<i>Magnolia x soulangeana</i>	9,8,5,5, ,3	good	fair	multiple leaders at ground level
2525	Colorado blue spruce	<i>Picea pungens</i>	19	good	good	
2526	flowering cherry	<i>Prunus serrulata</i>	14	fair	fair	wound and decay in lower trunk, significant lean
2527	purpleleaf plum	<i>Prunus cerasifera</i>	12	fair	poor	previously topped



Attachment 3

Survey No	Common Name	Scientific Name	DBH <sup>1</sup>	Condition <sup>2</sup>	Structure <sup>2</sup>	Comments
2528	Crimson King maple	<i>Acer platanoides</i> 'Crimson King'	18	good	fair	codominant at 8'
2529	flowering cherry	<i>Prunus serrulata</i>	23	poor	poor	significant decay in lower trunk, previously topped
2530	English holly	<i>Ilex aquifolium</i>	23	good	fair	nuisance species, multiple leaders
2532	Douglas-fir	<i>Pseudotsuga menziesii</i>	45	good	good	
2532.1	Monkey puzzle	<i>Araucaria araucana</i>	18	good	good	added to site map in approximate location by arborist, size estimated because in locked cow pen
2532.2	Monkey puzzle	<i>Araucaria araucana</i>	18	good	good	added to site map in approximate location by arborist, size estimated because in locked cow pen
2533	Douglas-fir	<i>Pseudotsuga menziesii</i>	29	good	good	
2534	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	good	good	
2535	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	good	
2536	Douglas-fir	<i>Pseudotsuga menziesii</i>	22	good	good	
2537	Douglas-fir	<i>Pseudotsuga menziesii</i>	32	good	good	
2538	Noble fir	<i>Abies procera</i>	20	good	good	
2539	Douglas-fir	<i>Pseudotsuga menziesii</i>	26	good	good	
2540	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	good	good	
2541	western red cedar	<i>Thuja plicata</i>	27	good	good	
2542	Douglas-fir	<i>Pseudotsuga menziesii</i>	52	good	good	large scar on lower trunk

Attachment 3

Survey No	Common Name	Scientific Name	DBH <sup>1</sup>	Condition <sup>2</sup>	Structure <sup>2</sup>	Comments
2543	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	good	good	
2544	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	good	fair	one sided
2545	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	good	fair	codominant at 10'
2546	Douglas-fir	<i>Pseudotsuga menziesii</i>	50	good	good	
2547	Douglas-fir	<i>Pseudotsuga menziesii</i>	57	good	good	
2548	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	good	good	
2549	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	good	good	
2550	western hemlock	<i>Tsuga heterophylla</i>	14	good	good	
2551	Douglas-fir	<i>Pseudotsuga menziesii</i>	33	good	fair	one sided
2552	Douglas-fir	<i>Pseudotsuga menziesii</i>	42	good	fair	moderately one sided
2553	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	fair	fair	moderately one sided
2554	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	fair	fair	one sided
2555	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	fair	fair	marginal trunk taper
2556	Douglas-fir	<i>Pseudotsuga menziesii</i>	21	good	fair	moderately one sided
2557	western hemlock	<i>Tsuga heterophylla</i>	39	good	good	growing on nurse stump
2558	Douglas-fir	<i>Pseudotsuga menziesii</i>	22	good	fair	moderately one sided
2559	grand fir	<i>Abies grandis</i>	9	good	good	
2560	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	good	good	



Attachment 3

Survey No	Common Name	Scientific Name	DBH <sup>1</sup>	Condition <sup>2</sup>	Structure <sup>2</sup>	Comments
2561	Douglas-fir	<i>Pseudotsuga menziesii</i>	27	good	good	
2562	Douglas-fir	<i>Pseudotsuga menziesii</i>	21	good	good	
2563	western hemlock	<i>Tsuga heterophylla</i>	19	good	good	growing on nurse stump
2564	western red cedar	<i>Thuja plicata</i>	44	good	fair	multiple leaders at 2'
2565	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	good	
2566	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	fair	poor	lost top at 30'
2567	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	good	fair	moderately one sided
2568	western red cedar	<i>Thuja plicata</i>	35	good	fair	codominant at 3'
2569	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	fair	one sided
2570	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	fair	fair	35 percent live crown ratio, one sided
2571	western red cedar	<i>Thuja plicata</i>	22	good	fair	codominant at 3' with included bark
2572	Douglas-fir	<i>Pseudotsuga menziesii</i>	21	good	fair	moderately one sided
2573	Douglas-fir	<i>Pseudotsuga menziesii</i>	51	good	fair	moderately one sided
2574	Douglas-fir	<i>Pseudotsuga menziesii</i>	39	good	fair	moderately one sided
2575	Douglas-fir	<i>Pseudotsuga menziesii</i>	28	good	good	

Attachment 3

Survey No	Common Name	Scientific Name	DBH <sup>1</sup>	Condition <sup>2</sup>	Structure <sup>2</sup>	Comments
2576	Douglas-fir	<i>Pseudotsuga menziesii</i>	25	good	good	
2577	Noble fir	<i>Abies procera</i>	22	good	good	
2579	Douglas-fir	<i>Pseudotsuga menziesii</i>	49	good	good	
2580	western hemlock	<i>Tsuga heterophylla</i>	9	good	fair	50 percent live crown ratio
2581	orchard apple	<i>Malus domestica</i>	12	fair	fair	pruned for fruit production
2582	edible plum	<i>Prunus sp.</i>	8	fair	fair	pruned for fruit production
2583	orchard apple	<i>Malus domestica</i>	7	fair	fair	pruned for fruit production
2584	orchard apple	<i>Malus domestica</i>	9	fair	poor	fallen over, pruned for fruit production
2585	orchard apple	<i>Malus domestica</i>	7	fair	fair	pruned for fruit production
2586	orchard apple	<i>Malus domestica</i>	8	fair	fair	pruned for fruit production
2587	English walnut	<i>Juglans regia</i>	10	fair	fair	pruned for fruit production
2601	western hemlock	<i>Tsuga heterophylla</i>	11	good	fair	one sided, growing on nurse stump
2602	Douglas-fir	<i>Pseudotsuga menziesii</i>	7	good	fair	one sided, growing on nurse stump
2603	western hemlock	<i>Tsuga heterophylla</i>	8	good	good	
2604	bigleaf maple	<i>Acer macrophyllum</i>	36	good	fair	multiple leaders, codominant at 10' with included bark
2605	western hemlock	<i>Tsuga heterophylla</i>	14	good	good	
2606	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	fair	fair	large scar on lower trunk, overtopped by adjacent trees
2607	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	good	fair	moderately one sided



Attachment 3

Survey No	Common Name	Scientific Name	DBH <sup>1</sup>	Condition <sup>2</sup>	Structure <sup>2</sup>	Comments
2608	Douglas-fir	<i>Pseudotsuga menziesii</i>	9	good	fair	moderately one sided
2609	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	good	good	
2610	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	fair	poor	one sided, poor trunk taper
2611	Noble fir	<i>Abies procera</i>	11	fair	poor	25 percent live crown ratio, poor trunk taper
2613	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	fair	poor	poor trunk taper
2614	western hemlock	<i>Tsuga heterophylla</i>	40	poor	poor	significant dieback, visible heartrot in trunk
2615	western hemlock	<i>Tsuga heterophylla</i>	14	good	good	
2616	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	fair	fair	marginal trunk taper, moderately one sided
2617	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	good	good	
2618	Douglas-fir	<i>Pseudotsuga menziesii</i>	43	good	good	
2619	Douglas-fir	<i>Pseudotsuga menziesii</i>	35	good	fair	moderately one sided
2620	western red cedar	<i>Thuja plicata</i>	10	good	good	
2621	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	fair	fair	moderately one sided, marginal trunk taper
2622	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	fair	fair	one sided, marginal trunk taper
2623	Douglas-fir	<i>Pseudotsuga menziesii</i>	19	fair	fair	one sided, marginal trunk taper
2624	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	fair	fair	one sided, marginal trunk taper
2625	Douglas-fir	<i>Pseudotsuga menziesii</i>	16	fair	fair	one sided, marginal trunk taper

Attachment 3

Survey No	Common Name	Scientific Name	DBH <sup>1</sup>	Condition <sup>2</sup>	Structure <sup>2</sup>	Comments
2626	Douglas-fir	<i>Pseudotsuga menziesii</i>	23	good	fair	moderately one sided
2627	Douglas-fir	<i>Pseudotsuga menziesii</i>	46	good	good	
2628	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	fair	fair	moderately one sided
2629	western hemlock	<i>Tsuga heterophylla</i>	12	good	fair	one sided, large scar on lower trunk
2630	Douglas-fir	<i>Pseudotsuga menziesii</i>	20	good	good	
2631	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	good	good	
2633	Noble fir	<i>Abies procera</i>	11	good	fair	moderately one sided
2634	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	good	fair	moderately one sided
2635	Douglas-fir	<i>Pseudotsuga menziesii</i>	14	good	good	
2636	bigleaf maple	<i>Acer macrophyllum</i>	19	good	fair	codominant at 5' with included bark
2637	red alder	<i>Alnus rubra</i>	14	poor	poor	significant decay in lower trunk, top dieback
2638	red alder	<i>Alnus rubra</i>	16	fair	fair	codominant
2639	Noble fir	<i>Abies procera</i>	15	very poor	very poor	95 percent dead
2640	grand fir	<i>Abies grandis</i>	24	fair	fair	moderately one sided
2641	Noble fir	<i>Abies procera</i>	18	fair	fair	moderately one sided
2642	Crimson King maple	<i>Acer platanoides</i> 'Crimson King'	8	fair	fair	codominant
2643	Noble fir	<i>Abies procera</i>	17	good	fair	moderately one sided



Attachment 3

Survey No	Common Name	Scientific Name	DBH <sup>1</sup>	Condition <sup>2</sup>	Structure <sup>2</sup>	Comments
2644	grand fir	<i>Abies grandis</i>	22	good	fair	moderately one sided
2645	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	good	good	
2646	Douglas-fir	<i>Pseudotsuga menziesii</i>	34	good	fair	one sided
2647	Douglas-fir	<i>Pseudotsuga menziesii</i>	43	good	fair	one sided
2648	western red cedar	<i>Thuja plicata</i>	26	good	good	
2649	Douglas-fir	<i>Pseudotsuga menziesii</i>	17	fair	fair	one sided, large scar on lower trunk
2650	Douglas-fir	<i>Pseudotsuga menziesii</i>	10	poor	poor	thin crown, added to site map in approximate location by arborist
2651	western red cedar	<i>Thuja plicata</i>	9	good	good	
2652	western red cedar	<i>Thuja plicata</i>	7	fair	fair	large scar on lower trunk
2653	western red cedar	<i>Thuja plicata</i>	13	good	good	
2654	western red cedar	<i>Thuja plicata</i>	10	good	good	
2655	Douglas-fir	<i>Pseudotsuga menziesii</i>	25	good	fair	moderately one sided
2656	Douglas-fir	<i>Pseudotsuga menziesii</i>	6	good	good	
2657	Douglas-fir	<i>Pseudotsuga menziesii</i>	48	good	good	
2658	western hemlock	<i>Tsuga heterophylla</i>	31	fair	fair	moderately one sided
2658.1	Douglas-fir	<i>Pseudotsuga menziesii</i>	18	good	fair	moderately one sided, added to site map in approximate location by arborist
2659	western red cedar	<i>Thuja plicata</i>	12	good	good	
2660	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	good	good	
2661	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	good	good	
2662	Douglas-fir	<i>Pseudotsuga menziesii</i>	44	good	good	

Teragan Associates, Inc.  
 3145 Westview Circle • Lake Oswego, OR 97034  
 Phone: 971.295.4835 • Fax: 503.697.1976  
 Email: todd@teragan.com • Website: teragan.com

Attachment 3

Survey No	Common Name	Scientific Name	DBH <sup>1</sup>	Condition <sup>2</sup>	Structure <sup>2</sup>	Comments
2663	Douglas-fir	<i>Pseudotsuga menziesii</i>	46	good	good	
2664	Douglas-fir	<i>Pseudotsuga menziesii</i>	27	good	fair	moderately one sided
2665	western hemlock	<i>Tsuga heterophylla</i>	12	poor	poor	extensive heartrot in lower trunk
2666	Douglas-fir	<i>Pseudotsuga menziesii</i>	48	good	fair	codominant at 6'
2667	western red cedar	<i>Thuja plicata</i>	14	good	good	
2668	Douglas-fir	<i>Pseudotsuga menziesii</i>	12	good	fair	moderately one sided
2669	Douglas-fir	<i>Pseudotsuga menziesii</i>	13	good	fair	moderately one sided
2670	Douglas-fir	<i>Pseudotsuga menziesii</i>	23	good	good	
2671	western hemlock	<i>Tsuga heterophylla</i>	27	good	good	
2672	western red cedar	<i>Thuja plicata</i>	13	good	good	
2673	western red cedar	<i>Thuja plicata</i>	11	good	good	
2674	Douglas-fir	<i>Pseudotsuga menziesii</i>	48	good	good	
2675	western red cedar	<i>Thuja plicata</i>	29	good	fair	codominant at 4' with included bark
2676	western red cedar	<i>Thuja plicata</i>	7	good	fair	moderately one sided
2677	western red cedar	<i>Thuja plicata</i>	14	good	good	codominant at 10', overtopped by adjacent trees

Attachment 3

Survey No	Common Name	Scientific Name	DBH <sup>1</sup>	Condition <sup>2</sup>	Structure <sup>2</sup>	Comments
2678	western red cedar	<i>Thuja plicata</i>	13	fair	fair	codominant at 10', overtopped by adjacent trees
2679	western red cedar	<i>Thuja plicata</i>	46	good	good	
2680	western hemlock	<i>Tsuga heterophylla</i>	23	fair	fair	one sided, moderate branch dieback
2681	Douglas-fir	<i>Pseudotsuga menziesii</i>	35	good	good	
2682	Douglas-fir	<i>Pseudotsuga menziesii</i>	37	good	good	
2683	western red cedar	<i>Thuja plicata</i>	14	good	good	
2684	Douglas-fir	<i>Pseudotsuga menziesii</i>	15	good	fair	crown moderately suppressed by adjacent trees
2685	western red cedar	<i>Thuja plicata</i>	6	fair	fair	suppressed
2686	Douglas-fir	<i>Pseudotsuga menziesii</i>	11	fair	fair	one sided, marginal trunk taper
2687	western red cedar	<i>Thuja plicata</i>	14	good	good	
2688	red oak	<i>Quercus rubra</i>	15	fair	fair	multiple leaders
2689	Douglas-fir	<i>Pseudotsuga menziesii</i>	39	good	good	
2690	western red cedar	<i>Thuja plicata</i>	14	good	good	
2692	Douglas-fir	<i>Pseudotsuga menziesii</i>	38	good	good	
2693	Douglas-fir	<i>Pseudotsuga menziesii</i>	27	good	good	
2696	Colorado blue spruce	<i>Picea pungens</i>	7	good	good	
2697	Port-Orford-cedar	<i>Chamaecyparis lawsoniana</i>	8	good	good	
2698	Port-Orford-cedar	<i>Chamaecyparis lawsoniana</i>	9	good	good	
2699	western hemlock	<i>Tsuga heterophylla</i>	8	fair	fair	overtopped by adjacent trees, suppressed



Attachment 3

Survey No	Common Name	Scientific Name	DBH <sup>1</sup>	Condition <sup>2</sup>	Structure <sup>2</sup>	Comments
2699.1	western red cedar	<i>Thuja plicata</i>	48	good	fair	multiple leaders at 30', added to site map in approximate location by arborist
2700	Douglas-fir	<i>Pseudotsuga menziesii</i>	35	good	fair	moderately one sided
2922	western red cedar	<i>Thuja plicata</i>	42	good	fair	multiple leaders at 5'
2923	western red cedar	<i>Thuja plicata</i>	22	good	fair	moderately one sided
2925	Port-Orford-cedar	<i>Chamaecyparis lawsoniana</i>	6	good	good	
2926	red oak	<i>Quercus rubra</i>	6	good	fair	40 percent live crown ratio with lean

<sup>1</sup>**DBH** is the trunk diameter in inches. DBH was estimated for trees that were offsite on private property.

<sup>2</sup>**Condition** and **Structure** ratings range from very poor, poor, fair, to good. Condition and Structure were estimated for trees that were offsite on private property.

## Attachment 4 Additional Tree Protection Recommendations

The following recommendations meet City of Sherwood Code requirements:

### Before Construction Begins

1. Notify all contractors of tree protection procedures. For successful tree protection on a construction site, all contractors must know and understand the goals of tree protection.
  - a. Hold a tree protection meeting with all contractors to explain the goals of tree protection.
  - c. Have all contractors sign memoranda of understanding regarding the goals of tree protection. The memoranda should include a penalty for violating the tree protection plan. The penalty should equal the resulting fines issued by the local jurisdiction plus the appraised value of the tree(s) within the violated tree protection zone per the current Trunk Formula Method as outline in the current edition of the *Guide for Plant Appraisal* by the Council of Tree & Landscape Appraisers. The penalty should be paid to the owner of the property.
2. Fencing
  - a. Trees to remain on site should be protected by installation of tree protection fencing as shown in Attachment 1.
  - b. The fencing should be put in place before the ground is cleared in order to protect the trees and the soil around the trees from disturbances.
  - c. Fencing should be established by the project arborist based on the needs of the trees to be protected and to facilitate construction.
  - d. Fencing should consist of 6-foot high steel fencing on concrete blocks or 6-foot metal fencing secured to the ground with 8-foot metal posts placed no farther than ten feet apart to prevent it from being moved by contractors, sagging, or falling down.
  - e. Fencing should remain in the position that is established by the project arborist and not be moved without approval from the project arborist until final project approval.
3. Signage
  - a. All tree protection fencing should have signage as follows so that all contractors understand the purpose of the fencing:

**TREE PROTECTION ZONE**

**DO NOT REMOVE OR ADJUST THE APPROVED  
LOCATION OF THIS TREE PROTECTION FENCING.**

Please contact the project arborist if alterations to the approved location of the tree protection fencing are necessary.

Todd Prager, Project Arborist - 971-295-4835

- b. Signage should be placed every 75-feet or less.

### During Construction

1. Protection Guidelines Within the Tree Protection Zones:
  - a. No new buildings; grade change or cut and fill, during or after construction; new impervious surfaces; or utility or drainage field placement should be allowed within the tree protection zones.
  - b. No traffic should be allowed within the tree protection zones. This includes but is not limited to vehicle, heavy equipment, or even repeated foot traffic.
  - c. No storage of materials including but not limiting to soil, construction material, or waste from the site should be permitted within the tree protection zones. Waste includes but is not limited to concrete wash out, gasoline, diesel, paint, cleaner, thinners, etc.
  - d. Construction trailers should not to be parked/placed within the tree protection zones.
  - e. No vehicles should be allowed to park within the tree protection zones.
  - f. No other activities should be allowed that will cause soil compaction within the tree protection zones.
2. The trees should be protected from any cutting, skinning or breaking of branches, trunks or woody roots.
3. The project arborist should be notified prior to the cutting of woody roots from trees that are to be retained to evaluate and oversee the proper cutting of roots with sharp cutting tools. Cut roots should be immediately covered with soil or mulch to prevent them from drying out.
4. Trees that have roots cut should be provided supplemental water during the summer months.
5. Any necessary passage of utilities through the tree protection zones should be by means of tunneling under woody roots by hand digging or boring with oversight by the project arborist.
6. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

### After Construction

1. Carefully landscape the areas within the tree protection zones. Do not allow trenching for irrigation or other utilities within the tree protection zones.
2. Carefully plant new plants within the tree protection zones. Avoid cutting the woody roots of trees that are retained.
3. Do not install permanent irrigation within the tree protection zones unless it is drip irrigation to support a specific planting or the irrigation is approved by the project arborist.
4. Provide adequate drainage within the tree protection zones and do not alter soil hydrology significantly from existing conditions for the trees to be retained.
5. Pruning of retained trees should be one of the last steps of the landscaping process before the final placement of trees, shrubs, ground covers, mulch, or turf.
6. Provide for the ongoing inspection and treatment of insect and disease populations that are capable of damaging the retained trees and plants.
7. The retained trees may need to be fertilized if recommended by the project arborist.
8. Any deviation from the recommendations in this section should receive prior approval from the project arborist.



## **Attachment 5**

### **Assumptions and Limiting Conditions**

1. Any legal description provided to the consultant is assumed to be correct. The site plans and other information provided by Stafford Land Company and their consultants was the basis of the information provided in this report.
2. It is assumed that this property is not in violation of any codes, statutes, ordinances, or other governmental regulations.
3. The consultant is not responsible for information gathered from others involved in various activities pertaining to this project. Care has been taken to obtain information from reliable sources.
4. Loss or alteration of any part of this delivered report invalidates the entire report.
5. Drawings and information contained in this report may not be to scale and are intended to be used as display points of reference only.
6. The consultant's role is only to make recommendations. Inaction on the part of those receiving the report is not the responsibility of the consultant.
7. The purpose of this report is to:
  - Assess the existing trees at the project site;
  - Identify the trees to be removed and retained based on construction impacts;
  - Provide tree protection recommendations for the trees to be retained; and
  - Review and provide recommendations for the tree mitigation planting plan.