

SHOFFNER CONSULTING

21529 4TH AVE W. #C31 BOTHELL, WA 98021 MOBILE:(206)755-2871

February 11, 2014

Quadrant Homes
c/o Core Design, Inc.
14711 NE 29th Pl., Suite 101
Bellevue, WA
98007

RE: Tree Inventory Evaluation and Retention Report – Beuca Property.

Lafe:

This report and the accompanying data forms have been prepared to address the City of Redmond's requirements for tree preservation and tree protection on developing lots as specified in chapters 21.72.060 and 070 of the Redmond Zoning Code (Title 21). I visited the site recently using a site plan of existing conditions prepared by Core Design, Inc. The numbers referred to in the data form and in this report are those assigned to the trees during the survey with numbered tags in the field and on the Tree Retention Plan.

1.0 Summary of This Report

There are 163 trees with diameters of 6" dbh or greater which classifies them as significant, 19 of which are larger than 30" dbh, classifying them as landmark. In total, I found 11 of the total (5 landmark and 6 significant) to be in poor condition and/or health and/or possessing significant defects. These trees are either dead, in an advanced state of decline with no hope for recovery in the next few years or otherwise posing a considerable hazard for the new development in the event that they are retained. Of the remaining 152 trees, 60 (60 significant and 0 landmark) are proposed to be retained for a total of 39% of the total of healthy, significant trees on the project site. As the Tree Retention Plan shows, all of the retained trees are provided the required 5 foot protection zone setback from the edge of their driplines.

2. Site Conditions

The conditions of the site are important to consider as they relate to the conditions of the trees. This project site is in a rural setting bordered by properties developed with single family residences to the west and east and by undeveloped land to the north. The project site varies from sparsely treed in the southern 2/3 where pasture dominates to moderately trees in the northern 1/3. The majority of trees on the southern portion lie along the western boundary with a few scattered throughout the pasture area. In general, the trees are in great condition and health, aside from the small number that are in poor condition and health.

3.0 Methods of Evaluation

Each tree was visually evaluated up close to assess conditions of the crown, trunk, surface roots and surrounding landscape conditions. For the larger trees, inspections were also conducted from afar to gather more information about the crown. Visual conditions and symptoms of internal defects were noted to determine the retention potential for each tree. No invasive measures were utilized, however, trees with external symptoms and exposed decay were investigated externally for the extent of decay.

3.1 Tree Evaluations

In total, I evaluated 163 trees which range in dbh (diameter at 4.5') from 6" to 56". The species include big-leaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), silver birch (*Betula pendula*), ponderosa pine (*Pinus ponderosa*), purple leaf plum (*Prunus cerasifera*), bittercherry (*Prunus emarginata*), Douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*) and western hemlock (*Tsuga heterophylla*). I identified 11 trees that are exempt from the total number and replacement because of their condition. Following are descriptions of these trees:

- Tree #8450 – A 16" Douglas fir that has suffered failure of the main leader (leader failure of Douglas firs is often associated with root defects), crown dieback and decline and major asymmetrical form.
- Tree #8461 – A 36" big-leaf maple showing symptoms of decline in dieback of the upper part of the crown. There's extensive decay of several of the limbs as well as of the trunk that appears to spread down into the root crown.
- 8458 – A 24" western hemlock is suffering from terminal dieback and there are significant decay cavities at the base of the trunk that likely extend down into the root flare.
- 8821 – A 38" Douglas fir that has suffered failure of the main leader and has developed codominant leaders in the upper portion of the trunk with tight connections that are prone to the development of included bark, decay and to failure.
- 8826 – A Douglas fir measuring 18" dbh with extensive scarring of the trunk leaving large wounds and developing decay.
- 8827 – A 10" silver birch that is showing symptoms of advanced dieback and decline in the form of a very sparse upper crown/dieback from the terminal.
- 8750 – A 41" big-leaf maple that has developed a major decay cavity at the base that appears to extend down into the root crown.
- 8736 – A 12" dbh big-leaf maple that is dead.
- 8793 – A 42" dbh Douglas fir that is declining as evidenced by the very sparse crown. At this size, this tree is considered over-mature.
- 8646 – This 14" Douglas fir is dead.
- 8108 – This 18" western hemlock is also dead.

4.0 Removals

To develop the site as proposed, a total of 92 trees, 15 landmark and 7 significant, are proposed to be removed. Replacement will be provided for at the required ratio in the tree replacement plan.

5.0 Summary of Tree Retention

The following Summary of Tree Retention Table is required by the City of Redmond as part of the Tree Preservation Plan. It illustrates the total number of trees on the site and which are proposed to be retained and removed and how the proposed development plan meets the minimum retention of 35% of the significant trees on the project site. The 11 trees that are excluded from the total due to condition have been eliminated from this count.

Summary of Tree Retention

Tree Type	Removal**	Retention	Total
Landmark	15 (10%)	0 (0%)	15 (10%)
Significant *	77 (51%)	60 (39%)	137 (90%)
Totals	92 (61%)	16 (39%)	152 (100%)

As demonstrated by the summary table, the proposed development plan exceeds the required 35% retention number with a total of 39% of retained significant trees.

6.0 Tree Protection Measures

The following tree protection measures are specified for the retained trees. The protection fencing signage text has been revised to include my name and phone number as the project consulting arborist to contact for concerns regarding encroachment into the protection zones.

- (1) All trees identified for retention shall be identified on project site plans, and shall include a summary of the project specific tree protection measures.
- (2) Trees identified for retention shall be identified on the project site by use of one or more of the following methods:
 - (a) Tree protection barriers shall be installed along the outer edge and completely encompass the setbacks from the dripline of trees identified for retention. Protection barriers shall consist of fencing at least four feet high, constructed of chain link or polyethylene laminar safety fencing or similar material; or
 - (b) Tree protection flagging shall be installed along the outer edge and completely encompass the dripline of trees identified for retention. Flagging should include signs reading "Tree Save Area."
- (3) All construction activities shall be located outside of the dripline of trees identified for retention.
- (4) Site plans shall be designed to provide long-term protection of trees identified for retention. Site design shall incorporate one of the following to provide protection of retained trees:
 - (a) Curbing or other physical barrier in areas used by vehicular traffic;
 - (b) Fencing around areas adjacent to areas not used by vehicular traffic; or
 - (c) Other protection means subject to approval by the director.

(5) All trees identified for retention may be pruned and otherwise maintained at the property owner's discretion; provided, that topping of retained trees and removal of more than 25 percent of existing limbs shall only be permitted under the direction of a certified arborist.

Additional Protection Concerns and Recommendations

The main concerns with regards to tree retention regard protection of the roots and trees along a new edge. Where will be new edges along the edges of retention tracts, trees along these edges and just inside the edges will most likely experience elevated stress levels following clearing so it's important to lessen the degree of impacts to them during clearing and grading as the stress levels they experience during and just following clearing and grading will contribute to their success or failure in the future.

One measure of lessening the degree of impacts and stress levels is by establishing as wide of a protection zone as possible. At a minimum, the protection fencing needs to be set at the edges of the driplines, and if possible an additional three to five feet, especially where excavation is to occur. If this additional setback can't be provided, then the minimum protection at the dripline is acceptable.

An additional measure that is highly recommended, if possible, is to provide irrigation of the soil beneath the trees along the edge is recommended for the first two growing seasons (may through September) following clearing. This can be done with broadcast sprinklers.

Any work conducted within the protection setback of any tree is to be monitored and supervised by the project consulting arborist.

Any roots within the protection setback zone that are severed or otherwise damaged are to be handcut by the project consulting arborist just prior to backfilling over the cut root.

All snags are to be reduced in height so as to not impact the nearest target in the event of failure.

All retained trees are to be monitored to identify any developing risks. For the first five years following clearing, monitoring is to be done on a yearly basis in the fall and thereafter every two years.

All protection measures are to be maintained and remain in place throughout development and construction;

Any proposed encroachment into the driplines or dripline setbacks of retained trees will be reviewed on a case by case basis by the project consulting arborist:

Any development actions taking place within the driplines or dripline setbacks of retained trees are to be monitored by the project consulting arborist.

Where tree protection areas are remote from areas of land disturbance, and where approved by the Administrator, alternative forms of tree protection may be used in lieu of tree protection barriers, provided that protected trees are completely surrounded with continuous rope or flagging and are accompanied by signs reading:

**Tree Save Area – Keep Out.
For Questions Call
Project Consulting Arborist Shoffner Consulting
(206)755-2871**

6.0 Use of This Report and Disclaimers

This report is provided to Quadrant Homes for the purpose of reporting on the conditions of the trees on the site of Beuca property and to present the numbers of those proposed to be removed and retained as required by the City of Redmond. This information is the property of Quadrant Homes, but cannot be amended by anyone other than Shoffner Consulting and Tony Shoffner.

This report doesn't guarantee against damage caused by the failure of any tree, nor does it guarantee that trees not recommended for removal will live long into the future. Trees are dynamic and can change in health or hazard quickly, therefore this report only warrants the conditions of these trees on the day of my evaluation in October of 2012. To follow the dynamic progress of the retained tree, it is important that regular monitoring be conducted either yearly or at the very least every two years.

If you have any questions regarding this report, please feel free to call me directly.

Cordially,

A handwritten signature in black ink, appearing to read "Tony Shoffner". The signature is fluid and cursive, with the first name "Tony" and last name "Shoffner" clearly distinguishable.

Tony Shoffner
ISA Certified Arborist #PN-0909A
CTRA #1759

Quadrant Homes				Tree Evaluation Data - Beuca Property			February 11, 2014	
Tree#	Species	Dbh	Spread	Cond	Condition Notes	Size Status	Proposed Fate	
8108	TSHE	18	30	4	Dead snag	Significant	UNHEALTHY	
8364	PSME	32	30	2	Generally good condition, large and mature	Landmark	REMOVE	
8365	PRCE	12	30	1	Good condition and health	Significant	REMOVE	
8450	PSME	16	20	4	Leader failure and adadvanced crown dieback	Significant	UNHEALTHY	
8451	PSME	26	30	1	Good condition and health	Significant	REMOVE	
8458	TSHE	24	20	4	Terminal dieback and decay cavities at base	Significant	UNHEALTHY	
8459	PSME	20	30	3	Codominant leaders at the base	Significant	REMOVE	
8460	PSME	56	40	2	Generally good condition, large and mature	Landmark	REMOVE	
8461	ACMA	36	50	4	Crown dieback, trunk and limb decay	Landmark	UNHEALTHY	
8607	PSME	24	30	2	Generally good condition, large and mature	Significant	REMOVE	
8608	PSME	24	30	2	Generally good condition, large and mature	Significant	REMOVE	
8609	PSME	18	20	1	Very good condition and health	Significant	REMOVE	
8610	PSME	10	10	1	Very good condition and health	Significant	REMOVE	
8611	THPL	22	20	1	Very good condition and health	Significant	REMOVE	
8621	PSME	22	30	1	Very good condition and health	Significant	REMOVE	
8622	PSME	26	30	1	Very good condition and health	Significant	REMOVE	
8623	PSME	22	30	1	Very good condition and health	Significant	REMOVE	
8624	ACMA	6	24	1	Very good condition and health	Significant	REMOVE	
8625	PSME	8	12	1	Very good condition and health	Significant	REMOVE	
8626	ALRU	6	16	1	Very good condition and health	Significant	REMOVE	
8628	ACMA	10	16	1	Very good condition and health	Significant	RETAIN	
8629	PSME	22	20	1	Very good condition and health	Significant	RETAIN	
8630	ACMA	8	24	1	Very good condition and health	Significant	RETAIN	
8631	PSME	16	20	1	Very good condition and health	Significant	RETAIN	
8632	PSME	12	16	1	Very good condition and health	Significant	RETAIN	
8633	PSME	24	20	2	Generally good condition, large and mature	Significant	RETAIN	
8634	PSME	6	8	1	Very good condition and health	Significant	RETAIN	
8635	PSME	18	20	1	Very good condition and health	Significant	RETAIN	
8636	PSME	12	10	1	Very good condition and health	Significant	RETAIN	
8637	PSME	12	10	1	Very good condition and health	Significant	RETAIN	
8638	PSME	14	16	1	Very good condition and health	Significant	RETAIN	
8639	PSME	6	10	1	Very good condition and health	Significant	RETAIN	
8640	PSME	12	16	1	Very good condition and health	Significant	RETAIN	
8641	ACMA	6	30	1	Very good condition and health	Significant	RETAIN	
8642	PSME	10	12	1	Very good condition and health	Significant	RETAIN	
8643	PSME	18	16	1	Very good condition and health	Significant	RETAIN	
8644	PSME	22	20	1	Very good condition and health	Significant	RETAIN	
8645	PSME	8	8	1	Very good condition and health	Significant	RETAIN	
8646	PSME	14	36	4	Dead	Significant	UNHEALTHY	
8647	PSME	10	20	1	Very good condition and health	Significant	RETAIN	
8648	PSME	24	24	2	Generally good condition, large and mature	Significant	RETAIN	
8662	ALRU	12	20	3	Moderate branch dieback	Significant	REMOVE	
8700	ACMA	25	16	1	Very good condition and health	Significant	RETAIN	

8701	PSME	6	16	1	Very good condition and health	Significant	RETAIN
Tree#	Species	Dbh	Spread	Cond	Condition Notes	Size Status	Proposed Fate
8702	PSME	10	16	1	Very good condition and health	Significant	RETAIN
8703	PSME	14	16	1	Very good condition and health	Significant	RETAIN
8704	PSME	14	16	1	Very good condition and health	Significant	RETAIN
8705	PSME	14	12	1	Very good condition and health	Significant	RETAIN
8706	PSME	14	16	1	Very good condition and health	Significant	RETAIN
8707	PSME	14	16	1	Very good condition and health	Significant	RETAIN
8709	PSME	7	16	1	Very good condition and health	Significant	RETAIN
8709	PSME	7	16	1	Very good condition and health	Significant	RETAIN
8710	ALRU	9	30	1	Very good condition and health	Significant	REMOVE
8711	PSME	27	36	2	Generally good condition, large and mature	Significant	REMOVE
8712	PSME	27	36	2	Generally good condition, large and mature	Significant	REMOVE
8713	THPL	11	20	1	Very good condition and health	Significant	REMOVE
8714	THPL	10	20	1	Very good condition and health	Significant	REMOVE
8715	PSME	28	30	2	Generally good condition, large and mature	Significant	REMOVE
8716	PSME	20	30	1	Very good condition and health	Significant	REMOVE
8720	ACMA	14	36	1	Very good condition and health	Significant	REMOVE
8723	PREM	16	20	1	Very good condition and health	Significant	REMOVE
8724	PREM	8	20	1	Very good condition and health	Significant	REMOVE
8725	PREM	10	16	1	Very good condition and health	Significant	REMOVE
8726	PSME	12	20	1	Very good condition and health	Significant	REMOVE
8727	ALRU	24	35	2	Generally good condition, large and mature	Significant	REMOVE
8729	PSME	41	36	2	Generally good condition, large and mature	Landmark	REMOVE
8731	PSME	38	40	2	Generally good condition, large and mature	Landmark	REMOVE
8732	PSME	38	40	2	Generally good condition, large and mature	Landmark	REMOVE
8733	ACMA	12	30	1	Very good condition and health	Significant	REMOVE
8734	THPL	30	30	1	Very good condition and health	Significant	REMOVE
8735	ACMA	25	50	1	Very good condition and health	Significant	REMOVE
8736	ACMA	12	20	4	Trunk failure, dead	Significant	UNHEALTHY
8737	ACMA	22	30	1	Very good condition and health	Significant	REMOVE
8738	ACMA	14	20	1	Very good condition and health	Significant	REMOVE
8739	ACMA	18	40	1	Very good condition and health	Significant	REMOVE
8740	THPL	20	24	1	Very good condition and health	Significant	REMOVE
8741	ACMA	16	36	1	Very good condition and health	Significant	REMOVE
8745	THPL	24	20	1	Very good condition and health	Significant	REMOVE
8746	PSME	24	16	1	Very good condition and health	Significant	REMOVE
8747	PSME	20	16	1	Very good condition and health	Significant	REMOVE
8748	THPL	36	20	1	Very good condition and health	Landmark	REMOVE
8749	THPL	39	40	2	Generally good condition, large and mature	Landmark	REMOVE
8750	ACMA	41	50	4	Major decay cavity from base into roots	Landmark	UNHEALTHY
8751	PSME	40	30	2	Generally good condition, minor branch d.b.	Landmark	REMOVE
8752	PSME	26	20	2	Generally good condition, large and mature	Significant	REMOVE
8753	ACMA	30	50	2	Generally good condition, large and mature	Significant	REMOVE
8754	PSME	16	12	1	Very good condition and health	Significant	REMOVE

8755	PSME	8	12	1	Very good condition and health	Significant	REMOVE
8756	PSME	24	20	2	Generally good condition, large and mature	Significant	REMOVE
Tree#	Species	Dbh	Spread	Cond	Condition Notes	Size Status	Proposed Fate
8757	PSME	18	16	1	Very good condition and health	Significant	REMOVE
8758	PSME	8	16	1	Very good condition and health	Significant	REMOVE
8759	PSME	24	24	1	Very good condition and health	Significant	REMOVE
8760	ACMA	15	40	1	Very good condition and health	Significant	REMOVE
8761	ACMA	12	16	1	Very good condition and health	Significant	REMOVE
8762	THPL	32	24	2	Generally good condition, large and mature	Landmark	REMOVE
8773	PREM	6	12	2	Good condition and health	Significant	REMOVE
8774	PREM	10	16	3	Good condition and health	Significant	REMOVE
8782	ACMA	51	50	3	Moderate branch dieback	Landmark	REMOVE
8790	THPL	40	36	2	Generally good condition, large and mature	Landmark	REMOVE
8791	PSME	41	36	2	Generally good condition, large and mature	Landmark	REMOVE
8793	PSME	42	30	4	Very sparse crown, advanced decline	Landmark	UNHEALTHY
8818	PSME	20	30	1	Very good condition and health	Significant	REMOVE
8819	PSME	18	40	1	Very good condition and health	Significant	REMOVE
8820	PREM	8	16	1	Very good condition and health	Significant	REMOVE
8821	PSME	38	40	4	Trunk failure, codominants in upper crown	Landmark	UNHEALTHY
8824	PIPO	18	36	1	Very good condition and health	Significant	REMOVE
8826	PSME	18	16	4	Massive trunk scars and decay	Significant	UNHEALTHY
8827	BEPE	10	20	4	Crown dieback	Significant	UNHEALTHY
8828	PIPO	10	16	1	Very good condition and health	Significant	REMOVE
8829	PSME	24	36	1	Very good condition and health	Significant	REMOVE
8830	PIPO	6	12	1	Very good condition and health	Significant	REMOVE
8831	PIPO	10	30	1	Very good condition and health	Significant	REMOVE
8833	THPL	48	30	2	Generally good condition, large and mature	Landmark	REMOVE
8859	PSME	10	12	1	Very good condition and health	Significant	RETAIN
8860	PSME	14	12	1	Very good condition and health	Significant	RETAIN
8861	PSME	16	16	1	Very good condition and health	Significant	RETAIN
8862	PSME	16	20	1	Very good condition and health	Significant	RETAIN
8863	PSME	16	16	1	Very good condition and health	Significant	RETAIN
8864	PSME	12	16	1	Very good condition and health	Significant	RETAIN
8865	PSME	8	16	1	Very good condition and health	Significant	RETAIN
8866	PSME	26	30	2	Generally good condition, large and mature	Significant	RETAIN
8867	PSME	10	16	1	Very good condition and health	Significant	RETAIN
8868	PSME	18	20	1	Very good condition and health	Significant	RETAIN
8869	PSME	14	20	1	Very good condition and health	Significant	RETAIN
8870	PSME	22	30	1	Very good condition and health	Significant	RETAIN
8871	PSME	16	30	1	Very good condition and health	Significant	REMOVE
8872	PSME	19	24	1	Very good condition and health	Significant	REMOVE
8873	PSME	28	40	2	Generally good condition, large and mature	Significant	REMOVE
8874	PSME	32	50	2	Generally good condition, large and mature	Landmark	REMOVE
8875	PSME	28	50	2	Generally good condition, large and mature	Significant	REMOVE
8876	PSME	15	40	1	Very good condition and health	Significant	REMOVE

8877	ALRU	8	40	1	Very good condition and health	Significant	REMOVE
8878	PSME	25	36	1	Very good condition and health	Significant	REMOVE
8879	ALRU	12	16	1	Very good condition and health	Significant	REMOVE
Tree#	Species	Dbh	Spread	Cond	Condition Notes	Size Status	Proposed Fate
8881	PSME	22	20	1	Very good condition and health	Significant	REMOVE
8883	PSME	14	20	1	Very good condition and health	Significant	REMOVE
8884	PSME	26	36	2	Generally good condition, large and mature	Significant	REMOVE
8885	PSME	15	16	1	Very good condition and health	Significant	REMOVE
8886	PSME	15	16	1	Very good condition and health	Significant	REMOVE
8887	PSME	16	16	1	Very good condition and health	Significant	REMOVE
8888	PSME	12	16	1	Very good condition and health	Significant	RETAIN
8889	PSME	10	16	1	Very good condition and health	Significant	RETAIN
8890	PSME	18	20	1	Very good condition and health	Significant	RETAIN
8891	PSME	15	24	1	Very good condition and health	Significant	RETAIN
8892	PSME	8	12	1	Very good condition and health	Significant	RETAIN
8893	PSME	15	24	1	Very good condition and health	Significant	RETAIN
8894	PSME	8	10	1	Very good condition and health	Significant	RETAIN
8895	PSME	17	26	1	Very good condition and health	Significant	RETAIN
8896	PSME	6	12	1	Very good condition and health	Significant	RETAIN
8897	PSME	18	12	1	Very good condition and health	Significant	RETAIN
8898	PSME	12	16	1	Very good condition and health	Significant	RETAIN
8899	PSME	24	30	2	Generally good condition, large and mature	Significant	RETAIN
8900	PSME	30	30	2	Generally good condition, large and mature	Significant	RETAIN
8901	PSME	8	10	1	Very good condition and health	Significant	RETAIN
8902	PSME	14	20	1	Very good condition and health	Significant	RETAIN
8903	PSME	12	20	1	Very good condition and health	Significant	RETAIN
8904	PSME	24	24	2	Generally good condition, large and mature	Significant	RETAIN
8905	PSME	6	10	1	Very good condition and health	Significant	RETAIN
8906	PSME	8	12	1	Very good condition and health	Significant	RETAIN
8910	THPL	46	30	1	Very good condition and health	Landmark	REMOVE
8911	THPL	12	20	1	Very good condition and health	Significant	REMOVE
8912	THPL	12	36	1	Very good condition and health	Significant	REMOVE
8913	ALRU	8	16	1	Very good condition and health	Significant	REMOVE

Tree # - Number of tree assigned by surveyors

Species - Tricode acronym (first two letters of genus and species)

ACMA = Acer macrophyllum (big-leaf maple)

ALRU = Alnus rubra (red alder)

BEPE = Betula pendula (silver birch)

PIPO = Pinus ponderosa (ponderosa pine)

PRCE = Prunus cerasifera (purple leaf plum)

PREM = Prunus emarginata (bittercherry)

PSME = Pseudotsuga menziesii (Douglas fir)

THPL = Thuja plicata (western red cedar)

TSHE = <i>Tsuga heterophylla</i> (western hemlock)
Dbh - Diameter in inches at 4.5' above grade
Spread - Diameter crown spread provided on survey
Cond (Condition Code) - Number system pertaining to condition of tree.
1 = Excellent condition and health, no defects noted.
2 = Good condition and health, minor defects or conditions of tree, but not of great concern.
3 = Fair condition and/or health, defects or symptoms of declining health present but not significant enough to pose a significant risk.
4 = Poor condition and/or health, significant defects, significantly declining, dying (or dead) tree, if retained could pose significant risk in the presence of a high value target.
Condition Notes - Notes of tree condition of any outstanding features or defects that may affect retention.
Size Status - Size status as determined by City of Redmond as either significant (6" - 30" dbh) or landmark (>30" dbh)
Proposed Fate - Removal or retention of the tree.
Remove C = Remove due to poor condition Remove I = Remove due to impacts.