



# LAYTON TREE CONSULTING, LLC

## ARBORIST REPORT/TREE PLAN

7216 93<sup>rd</sup> AVE SE  
Mercer Island, WA



**Report Prepared by:**

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**October 29, 2019**

*It's all about trees.....*

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Photos, pages 9 - 13

Tree Summary Tables

Preliminary Tree Plan Map

## Assignment

Layton Tree Consulting, LLC was contacted by Barcelo Homes Inc., and was asked to compile an Arborist Report for a property on Mercer Island. The subject property is located at 7216 93<sup>rd</sup> AVE SE. My assignment is to prepare a written report on present tree conditions, and to provide appropriate recommendations for the protection of retained trees during development.

This report encompasses all of the criteria set forth under the City of Mercer Island's tree regulations, particularly Chapter 19.10 Trees, of the Unified Development Code Title 19. A 'Regulated' tree is any tree with a diameter of more than 10-inches or any tree that meets the definition of an 'Exceptional' tree.

Date of Field Examination:      October 28, 2019

## Description

43 'regulated' trees were identified and assessed on the subject property. These are comprised almost entirely of native species; primarily bigleaf maple which account for 39 of the 43 identified trees.

Seven off-site or neighboring trees were also assessed. These exist within a close proximity of property lines on the properties to the east and north. There are no neighboring tree issues on the south property line.

A numbered aluminum tag was attached to the lower trunks of all assessed trees. These tag numbers correspond with the numbers on the Tree Summary Table and attached maps. The Tree Summary Table provides detailed information for all of the subject trees.

## Methodology

Each tree in this report was visited. Tree diameters were measured by tape. The tree heights were measured using a Spiegel Relaskop. Each tree was visually examined for defects and vigor. The tree assessment procedure involves the examination of many factors:

The crown or canopy of the tree is examined for current vigor/health by examining the foliage for appropriate color and density, the vegetative buds for color and size, and the branches for structural form and annual shoot growth; and the overall presence of limb dieback and/or any disease issues.

The trunk or main stem of the tree is inspected for decay, which includes cavities, wounds, fruiting bodies of decay (conks or mushrooms), seams, insect pests, bleeding or exudation of sap, callus development, broken or dead tops, structural defects and unnatural leans. Structural defects can include but are not limited to excessive or unnatural leans, crooks, forks with V-shaped crotches, multiple attachments.

The root collar and exposed surface roots are inspected for the presence of decay, insect damage, as well as if they have been injured or wounded, undermined or exposed, or the original grade has been altered.

Based on these factors a determination of condition is made.

## Judging Condition

The three condition categories are described as follows:

Good – free of significant structural defects, no disease concerns, minor pest issues, no significant root issues, good structure/form with uniform crown or canopy, foliage of normal color and density, average or normal vigor, will be wind firm if isolated or left as part of a grouping or grove of trees, suitable for its location

Fair – minor to moderate structural defects not expected to contribute to a failure in near future, no disease concerns, moderate pest issues, no significant root issues, asymmetric or unbalanced crown or canopy, average or normal vigor, foliage of normal color, moderate foliage density, will be wind firm if left as part of a grouping or grove of trees, cannot be isolated, suitable for its location

Poor – major structural defects expected to cause fail in near future, disease or significant pest concerns, decline due to old age, significant root issues, asymmetric or unbalanced crown or canopy, sparse or abnormally small foliage, poor vigor, not suitable for its location

## Judging Retention Suitability

Not all trees necessarily warrant retention. The three retention suitability categories as described in ANSI A300 Part 5 (Standard Practices for the Management of Trees During Site Planning, Site Development and Construction) are as follows:

Good – trees are in good health condition and structural stability and have the potential for longevity at the site

Fair – trees are in fair health condition and/or have structural defects that can be mitigated with treatment. These trees may require more intense management and monitoring, and may have shorter life-spans than those in the “good” category.

Poor – trees are in poor health condition and have significant defects in structure that cannot be mitigated with treatment. These trees can be expected to decline regardless of management. The species or individual tree may possess characteristics that are incompatible or undesirable in landscape settings or be unsuited for the intended use of the site.

## Observations

43 large (regulated) trees were identified within the parcel boundaries. 39 of these are bigleaf maple which form a continuous grove over much of the property. Maple trees range from semi-mature to mature, estimated at 50 to 100 years of age. These have not developed ideal form due to past growing conditions. Trees have developed poor stem taper under heavy competition with each other for sunlight and space. Overall vigor is fair. Some are in moderate decline, evident by upper crown dieback. Three of the subject maples are in poor condition. These have developed extensive trunk decay. Another seven are rated as ‘fair to poor’ condition due to structural defects, low vigor and general decline.

There are a couple of young to semi-mature Western red cedar trees on the property. These are in fair to good condition. Only one Douglas fir on the property is greater than 10-inches in diameter. This is a young specimen, estimated at around 30 years of age. Condition is fairly good. There are several smaller Douglas fir scattered around the property. Most are in poor condition due to suppression and are over-topped by the larger maple.

The property has a major infestation of English laurel, which is found throughout. It is quite dense in places. There is also a moderate component of invasive English holly and a minor component of Himalayan blackberry. Most of the native vegetation is found in the southeast portion of the property. Here there are minor to moderate components of sword fern, Oregon grape, beaked hazelnut and oceanspray.

### Neighboring Trees

Trees #101, #102 and #103 are located on the neighboring property to the north. #101 and #102 are approximately 10-feet off of the property line and not likely to be impacted by re-development of the property. Tree #103 which is located closest to the property line is in poor condition. This is a semi-mature bigleaf maple cluster in ultimate decline. The tops have broken out in the past.

Neighboring trees #104, #105, #106 and #107 are located on the neighboring property to the north. #104 is a mature bigleaf maple. This exceptional tree has developed good form and is of good vigor. #105 is a mature European white birch. It is of fairly good vigor. Only minor top decline was observed. #106 is an exceptional Japanese maple in good condition. #107 is a cluster of English holly near the northwest property corner. It has developed typical form and is in fair condition.

### Discussion/Recommendations

The grove of trees within the southeast portion of the site will be retained. Some of these are in poor condition with a high potential for failure in the future. However, there are few targets in the area. Trees parts are likely to fall into the wooded areas. The retention of the poor condition trees is feasible at this time.

The extent of driplines (farthest reaching branches) for the subject trees can be found on the tree summary table at the back of this report. The driplines have been delineated on the attached maps for trees at the edges of the grove to be retained and for neighboring trees. The information on the attached maps and in this report shall be used by the project architect to create the final tree retention plan sheet for City submittal, once the final site design has been completed.

The recommended Limit of Disturbance (LOD) measurements can also be found on the tree summary table for trees that may be potentially impacted by proposed improvements. The LOD measurements are based on species, age, condition, drip-line, prior improvements, proposed impacts and the anticipated cumulative impacts to the entire root zone. This is the maximum allowable encroachment. Encroachment (soil excavations) beyond the LOD is likely to cause decline or compromise long-term structural stability. These measurements shall be referenced when determining tree retention feasibility.

Tree protection barriers shall be shown on the final tree plan sheet. Protection fencing shall be located beyond the driplines of retained trees where possible. In no case shall the fencing be located closer than the LOD.

In order to adequately protect neighboring Trees #105 and #106, provide a 10-foot protection zone from the property line. #106 is 'exceptional' and warrants protection. Tree #104 is not likely to be impacted because of existing steep slopes. If the slope is landscaped in the future, all work shall be done by hand within the driplines of retained on and off-site trees. Soils shall not be significantly disturbed. No grading is allowed within the LOD.

The project arborist shall be on-site to monitor any excavation within the drip-lines of retained and/or impacted trees so necessary precautions can be taken to maintain these in a viable condition. Care shall be taken when working near trees to protect soils and surface roots that likely extend beyond the drip-line. Cover areas with a protective 6 to 8-inch layer of wood chips or hog fuel to protect soils from compaction and damage to surface roots.

### Tree Protection Measures

The following guidelines are recommended to ensure that the designated space set aside for the preserved trees are protected and construction impacts are kept to a minimum. Standards have been set forth under MICC 19.10.080. Please review these standards prior to any development activity.

- Tree protection fencing shall be erected per attached tree plan prior to moving any heavy equipment on site. Doing this will set clearing limits and avoid compaction of soils within root zones of retained trees.
- Excavation limits shall be laid out in paint on the ground to avoid over excavating.
- Excavations within the drip-lines shall be monitored by a qualified tree professional so necessary precautions can be taken to decrease impacts to tree parts. A qualified tree professional shall monitor excavations when work is required and allowed within the drip-line or critical root zone.
- To establish sub grade for foundations, curbs and pavement sections near the trees, soil shall be removed parallel to the roots and not at 90-degree angles to avoid breaking and tearing roots that lead back to the trunk within the drip-line. Any roots damaged during these excavations should be exposed to sound tissue and cut cleanly with a saw. Cutting tools should be sterilized with alcohol.
- Areas excavated within the drip-line of retained trees shall be thoroughly irrigated weekly during dry periods.
- Preparations for final landscaping shall be accomplished by hand within the drip-lines of retained trees. Large equipment shall be kept outside of the tree protection zones at all times.

## Tree Retention Calculation

A minimum of 30-percent retention of large, regulated trees is required over a rolling five-year period. Of the 43 regulated trees identified on the property; 18 will be removed. 25 trees or 58% will be retained.

## Tree Replacement

Replacement trees will be required per 19.10.070 Tree Replacement. The replacement ratios per tree removed are as follows:

Trees less than 10-inches in diameter = 1:1 (8) = 8 replacement trees

Trees 10-inches to 23-inches = 2:1 (12) = 24 replacement trees

Trees 24-inches to 36-inches = 3:1 (4) = 12 replacement trees

Any 'Exceptional' tree = 6:1 (2) = 12 replacement trees

A total of 54 replacement trees are assumed to be required based on this report. There are 8 small (non-regulated) trees that will also be removed. Consult with your City planner for final tree replacement requirements. All replacement trees are to be planted on site. Replacement trees shall be at a minimum – 1 ½ inch caliper for deciduous species and 6 feet in height for coniferous species.

The most appropriate locations for tree replacement are on the undisturbed perimeters of the site and within openings in the preserved grove. These areas can be enhanced with native tree plantings of coniferous species to provide screening between residential properties and to maintain the wooded character of the area. Recommended species on the perimeters where more sunlight is available is Douglas fir and shore pine. Shade tolerant species shall be used within the preserved grove to include Western red cedar, Western hemlock and grand fir.

## Arborist Disclosure Statement

Arborists are tree specialists who use their education, knowledge, training and experience to examine and assess trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risks associated with living near trees. Clients may choose to accept or disregard the recommendations of the arborist, or to seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that grow, respond to their environment, mature, decline and sometimes fail in ways we do not fully understand. Conditions are often hidden within trees and below ground.

Arborists cannot guarantee that a tree will be healthy and/or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like any medicine, cannot be guaranteed. Treatment, pruning and removal of trees may involve considerations beyond the scope of the arborist's services such as property boundaries, property ownership, site lines, disputes between neighbors, and other issues. Arborists cannot take such considerations into account unless complete and accurate information is disclosed to the arborist. An arborist should then be expected to reasonably rely upon the completeness and accuracy of the information provided.

Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees.



Photo Documentation

North property line



Front or west side of property



Subject maple, typical of maples on property



Upper crowns



Middle portion of property, dense English laurel



Maples in southeast portion of property



Neighboring trees #101, #102 and #103



Neighboring tree #104



Neighboring trees #105 and #106



Neighboring tree #107





**Layton Tree Consulting LLC**

For: Barcelo Homes Inc.  
Site: 7216 93rd AVE SE

**Tree Summary Table**

Date: 10/24/2019

Tree/ Tag #	Species Common Name	Species Scientific Name	DBH (inches)	Height (feet)	Drip-Line / Limits of Disturbance (feet)				Condition	Exceptional Yes/No	Comments	Proposal
					N	S	E	W				
1	bigleaf maple	<i>Acer macrophyllum</i>	32	96	30	10	22	18	Fair	Yes	asymmetric crown to north, deadwood	Remove
2	bigleaf maple	<i>Acer macrophyllum</i>	26	98	12	14	10	18	Fair	No	forked top, moderate included bark	Remove
3	bigleaf maple	<i>Acer macrophyllum</i>	11	75	18	0	16	0	Fair	No	asymmetric crown to NE, suppressed	Remove
4	bigleaf maple	<i>Acer macrophyllum</i>	24	105	0	22	20	6	Fair	No	asymmetric crown to southeast	Remove
5	bigleaf maple	<i>Acer macrophyllum</i>	22	32	X	X	X	X	Poor	No	broken, 90% dead	Remove
6	bigleaf maple	<i>Acer macrophyllum</i>	37	108	24	8	8	34	Fair	Yes	trunk forks at 8 feet, codominant stems	Remove
7	bigleaf maple	<i>Acer macrophyllum</i>	18	105	8	12	5	16	Fair	No	leans west, decent vigor	Remove
8	bigleaf maple	<i>Acer macrophyllum</i>	14	98	11	6	6	9	Fair	No	poor trunk taper	Remove
9	bigleaf maple	<i>Acer macrophyllum</i>	18	102	11	6	14	5	Fair	No	poor trunk taper, forked top	Remove
10	bigleaf maple	<i>Acer macrophyllum</i>	23	116	6	28	16	12	Fair	No	natural lean south, forked top, deadwood	Remove
11	bigleaf maple	<i>Acer macrophyllum</i>	22	102	10	6	14	17	Fair	No	natural lean west	Remove
12	Western red cedar	<i>Thuja plicata</i>	26	64	14	13	13	16	Fair	No	sparse top foliage, suppressed by #11	Remove
13	bigleaf maple	<i>Acer macrophyllum</i>	19,15,9 (26)	95	9	20	18	12	Fair-poor	No	moderate trunk decay, crown dieback	Remove
14	bigleaf maple	<i>Acer macrophyllum</i>	20	86	9	12	0	28	Fair	No	natural lean west, forked top	Remove
15	bigleaf maple	<i>Acer macrophyllum</i>	18	85	8	14	16	15	Fair	No	forked top, compact crown	Remove
16	bigleaf maple	<i>Acer macrophyllum</i>	22	80	5	18	20	10	Fair-poor	No	significant crown dieback	Remove
17	bigleaf maple	<i>Acer macrophyllum</i>	14	86	6	8	14	6	Fair	No	compact crown	Remove
18	bigleaf maple	<i>Acer macrophyllum</i>	26	95	16/16	24	5	22/16	Fair	No	forked top, moderate included bark	Save
19	bigleaf maple	<i>Acer macrophyllum</i>	25	97	16	22	18	5	Fair	No	forked top, moderate included bark	Save
20	bigleaf maple	<i>Acer macrophyllum</i>	28	94	8	18	12	14	Fair	No	typical	Save
21	bigleaf maple	<i>Acer macrophyllum</i>	27	98	14	5	14	10	Fair	No	trunk seam, moderate deadwood	Save
22	bigleaf maple	<i>Acer macrophyllum</i>	25	94	18	4	0	22	Fair	No	natural lean west, asymmetric crown	Save
23	bigleaf maple	<i>Acer macrophyllum</i>	22	96	26	0	0	16	Fair	No	natural lean northwest	Save
24	bigleaf maple	<i>Acer macrophyllum</i>	24	84	35	0	0	0	Fair-poor	No	trunk decay, heavy lean north	Save
25	bigleaf maple	<i>Acer macrophyllum</i>	25	83	X	X	X	X	Poor	No	extensive trunk decay, leans north	Save
26	bigleaf maple	<i>Acer macrophyllum</i>	16,12 (20)	82	34	18	14	12	Fair	No	moderate trunk decay, moderate deadwood	Save
27	bigleaf maple	<i>Acer macrophyllum</i>	37	88	22	16	18	16	Fair-poor	*No	large trunk cavity, trunk split, decent vigor	Save
28	bigleaf maple	<i>Acer macrophyllum</i>	18	86	0	20	6	16	Fair	No	significant natural lean south	Save
29	bigleaf maple	<i>Acer macrophyllum</i>	34	94	26	8	20	10	Fair	Yes	natural lean north	Save
30	bigleaf maple	<i>Acer macrophyllum</i>	26,20 (33)	92	6	26	16	13	Fair-poor	No	significant trunk decay, natural lean south	Save
31	bigleaf maple	<i>Acer macrophyllum</i>	13	38	10	14	15	0	Fair	No	topped in past, low risk	Save
32	bigleaf maple	<i>Acer macrophyllum</i>	8,7 (11)	34	14	4	16	4	Fair	No	suppressed, natural lean north	Save
33	bigleaf maple	<i>Acer macrophyllum</i>	15	32	X	X	X	X	Poor	No	broken, extensive decay	Save
34	bigleaf maple	<i>Acer macrophyllum</i>	13	34	12	8	10	10	Fair	No	broken, failed top, decent vigor, low risk	Save
35	bigleaf maple	<i>Acer macrophyllum</i>	40,34 (52)	78	28/20	12	22	18/20	Fair-poor	*No	extensive basal rot, broken top	Save
36	bigleaf maple	<i>Acer macrophyllum</i>	14	71	18/12	0	8	6	Fair	No	natural lean north	Save



**Layton Tree Consulting LLC**

For: Barcelo Homes Inc.  
 Site: 7216 93rd AVE SE

**Tree Summary Table**

Date: 10/24/2019

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					N	S	E W					
37	bigleaf maple	<i>Acer macrophyllum</i>	8,8 (11)	58	16/10	10	16	8	Fair	No	natural lean north	Save
38	Western red cedar	<i>Thuja plicata</i>	15	49	12	12	11	12/12	Good	No	full crown, good vigor	Save
39	Douglas fir	<i>Pseudotsuga menziesii</i>	10	61	8	7	8	8/8	Fair-good	No	somewhat suppressed by maple	Save
40	bigleaf maple	<i>Acer macrophyllum</i>	11,9 (14)	47	13	13	15	6	Fair	No	fork at base, decent vigor	Remove
41	bigleaf maple	<i>Acer macrophyllum</i>	9,8,5 (13)	42	14	12	6	12/12	Fair	No	tight cluster, typical	Save
42	bigleaf maple	<i>Acer macrophyllum</i>	32	74	27/16	10	32/16	12/16	Fair	No	leans northeast, end weight prune	Save
43	plum (fruit)	<i>Prunus americana cv</i>	9,8 (12)	21	14	7	9	12/10	Fair-poor	No	topped, not maintained	Save
Neighboring Trees												
101	bigleaf maple	<i>Acer macrophyllum</i>	20	56	NA	NA	NA	6/6	Fair	No	multiple tops , approx 10 feet off pl	Protect
102	Douglas fir	<i>Pseudotsuga menziesii</i>	24	86	NA	NA	NA	5/5	Good	No	approx 10 feet off pl , old broken top	Protect
103	bigleaf maple	<i>Acer macrophyllum</i>	19,18 (26)	42	NA	NA	NA	10/5	Poor	No	approx 5 feet off pl, broken top	Protect
104	bigleaf maple	<i>Acer macrophyllum</i>	46	103	NA	20/20	NA	32/20	Good	Yes	sound, good form	Protect
105	European white birch	<i>Betula pendula</i>	18	78	NA	10/10	10	12	Fair	No	incipient top decline	Protect
106	Japanese maple	<i>Acer palmatum</i>	14,10 (17)	36	NA	16/10	17	16	Good	Yes	no concerns	Protect
107	English holly	<i>Ilex aquifolium</i>	8,7,6 (12)	20	NA	6/4	8	8/6	Fair	No	typical	Protect

\*-meets exceptional size threshold but is in poor condition



Drip-Line and Limits of Disturbance measurements from face of trunk

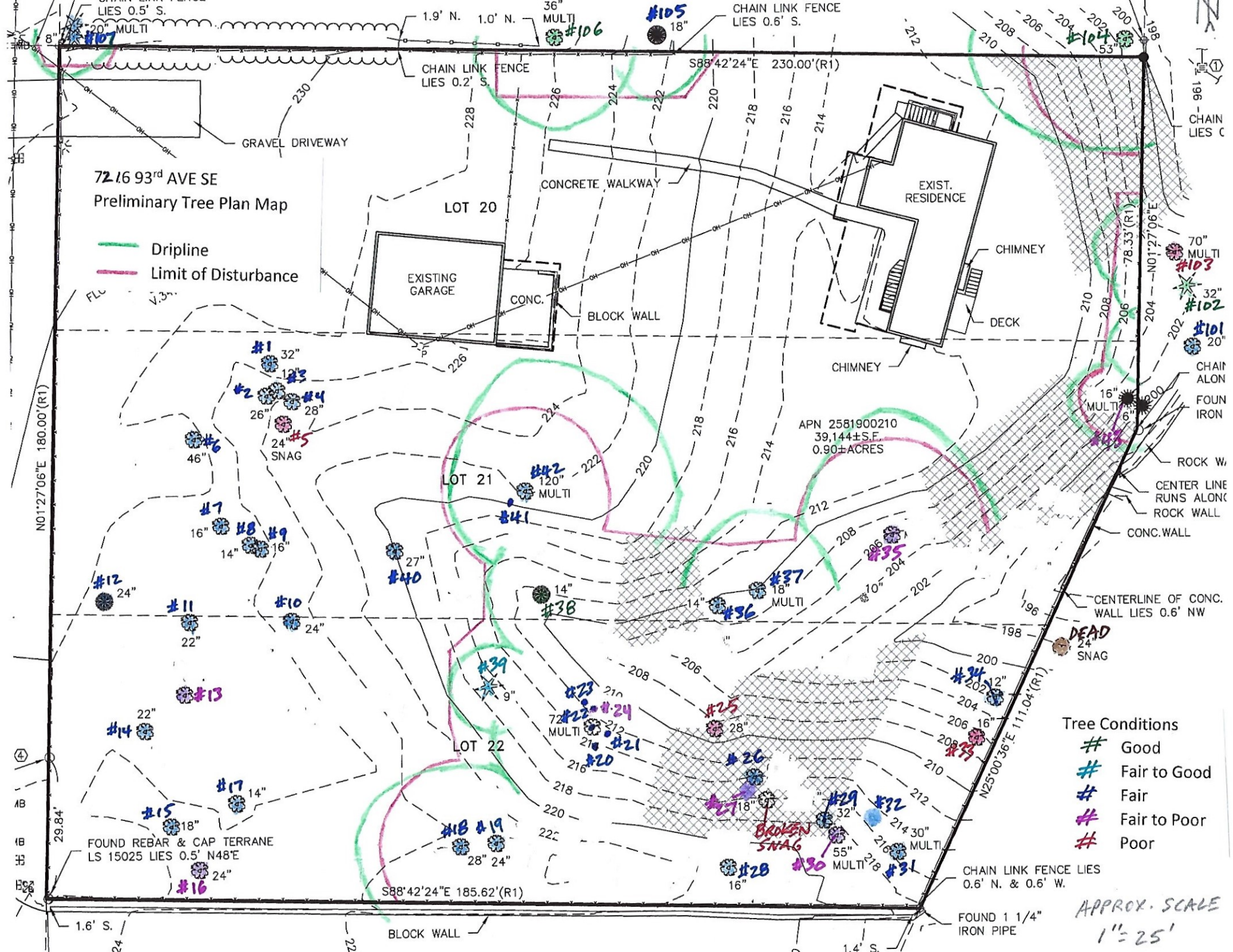
Drip-Line and Limits of Disturbance measurements for Neighboring trees from fence/property line

Calculated DBH: the DBH is parenthesis is the square root of the sum of the dbh for each individual stem squared (example with 3 stems: dbh

= square root [(stem1)2 +(stem2)2 +(stem3)2 ]).

7216 93rd AVE SE  
Preliminary Tree Plan Map

 Dripline  
 Limit of Disturbance



**Tree Conditions**

-  Good
-  Fair to Good
-  Fair
-  Fair to Poor
-  Poor

APPROX. SCALE  
1" = 25'