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WFCI1
18 pages

- Tree Protection Plan-

WATTS PRD

19313, 19321, 19379 Viking Avenue NW
19521 Laurene Lane NW
Poulsbo, Washington

Prepared for: Entitle Fund Two, LLC

Prepared by: Washington Forestry Consultants, Inc.

Date of Report: September 8, 2022

Introduction

The project proponent is planning to construct a new 60-lot single-family home plat on 26.1 acres on Viking Avenue NW in Poulsbo, WA. The proponent has retained WFCI to:

- Evaluate all significant (>10 in. diameter) trees on the site pursuant to the requirements of Chapter 18.180 of Poulsbo Municipal Code.
- Make recommendations for tree removal and retention.
- Complete the required minimum stocking and tree replacement calculations.

Methodology

The significant (10 inches DBH and larger) trees within the interior of the buildable area were inventoried using standard forestry sampling methodology. Eighteen variable area plots were installed on a systematic grid across the forested portion of the site. The plot locations are marked in the field with orange flagging. Data from the counts of significant trees were entered into SuperAce®, a forest inventory software program that projected the total number of significant trees in the interior, buildable area of the project. This plot data will be used to determine the 25% interior tree retention requirement. Sampling was designed to, and achieved a 95% confidence level for the projection of the population of

significant trees. The evaluation used methodology developed by the International Society of Arboriculture and Matheny and Clark (1998)[1].

Observations

Site Description

The site is made up of 5 parcels, legally described as parcel #'s: 152601-3-025-2003, 152601-3-023-2005, 152601-3-033-2003, 152601-3-040-2004, 152601-3-090-2102. The main area of the site slopes gently to the east. There is a steep slope along the western edge of the site that runs down to a fish bearing stream. There are four wetland areas identified on the site plan. The parcel is bordered by single family homes to the north and east, and undeveloped forested lots to the south and west. Four homes and a number of old outbuildings are located on the site.

Soils

There are five soil types in the project area, three slope variants of the Alderwood gravelly sandy loam, Kapowsin gravelly ashy loam, and the Poulsbo gravelly sandy loam.

The first three soil types are the Alderwood gravelly sandy loam, a moderately deep, moderately well drained soil found on glacial till plains. It is formed in ablation till overlying basal till. A weakly cemented hardpan is at a depth of 20 to 40 inches. Permeability is moderately rapid above the hardpan and very slow in the pan. Available water capacity is low. Effective rooting depth is 20-40 inches. A perched seasonal high-water table is at a depth of 18-36 inches from November to March. The potential for windthrow of trees is moderate under normal conditions. New trees require irrigation for establishment.

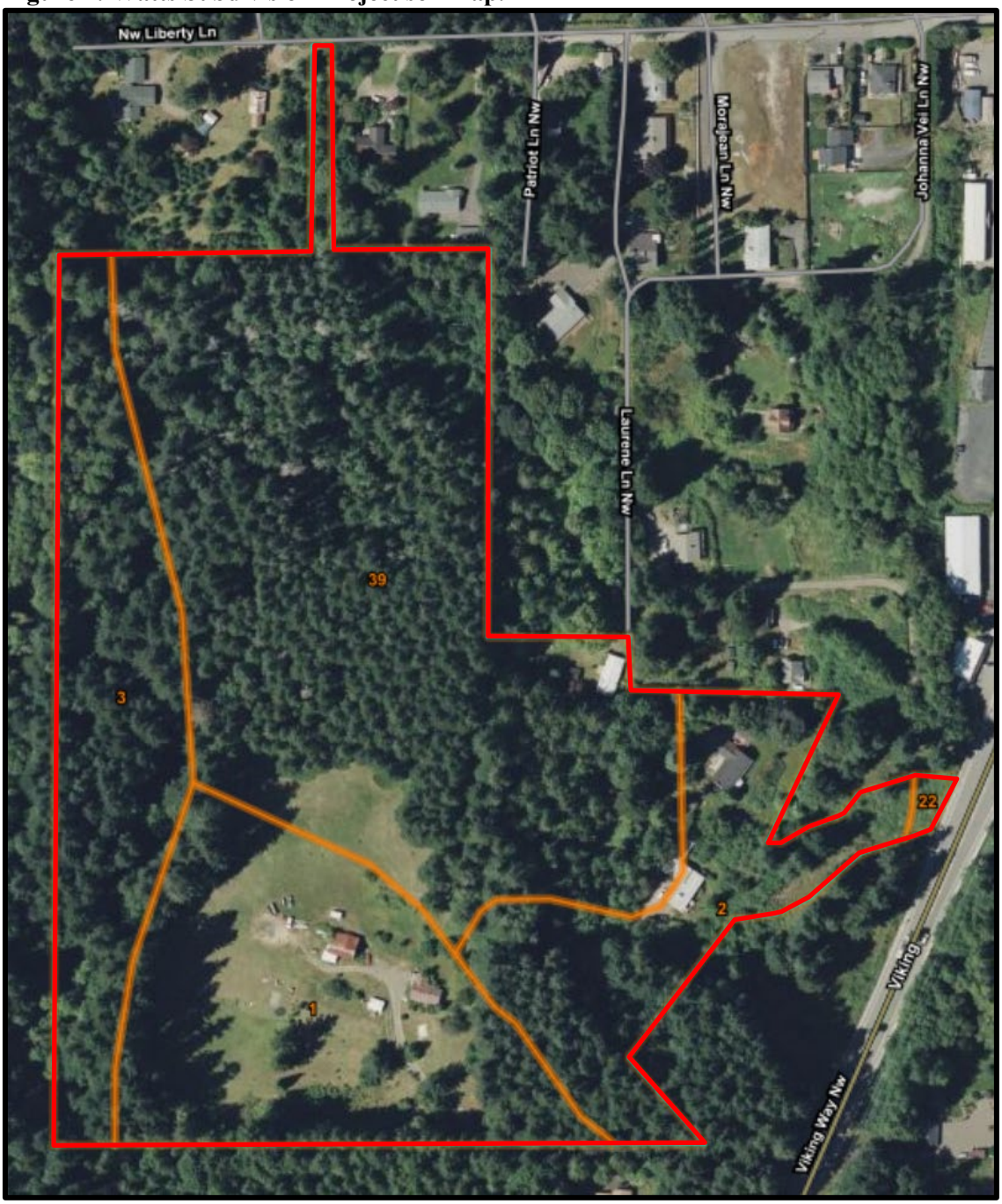
The fourth type is the Poulsbo gravelly sandy loam, a moderately deep, moderately well drained soil found on glacial terraces. A weakly cemented hardpan is at a depth of 20 to 40 inches. Permeability is moderately rapid above the hardpan and very slow in the pan. Available water capacity is very low. Effective rooting depth is 20-40 inches. A perched seasonal high-water table is at a depth of 12-30 inches from November to March. The potential for windthrow of trees is moderate under normal conditions. New trees require irrigation for establishment.

The fifth soil type is the Kapowsin gravelly ashy loam, a very deep, moderately well drained soil. It is formed in glacial till under conifers. A water table is perched above the very slowly permeable, weakly cemented and compact substratum during the rainy season. The available water capacity for plants is low to moderate. The effective rooting depth for trees is 40 inches. Some windthrow trees can be expected during the winter months when the soil is saturated.

[1] Nelda Metheny and James R. Clark. (1994). A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas (2nd Edition). International Society of Arboriculture, Champaign, IL.

In areas where grading brings the hardpan nearer to the surface, the hardpan must be fractured under new trees to provide soil volume for root development and to improve drainage around the tree.

Figure 1: Watts Subdivision Project soil map.



1 – Alderwood gravelly sandy loam 0 – 8%
2 – Alderwood gravelly sandy loam 8 – 15%
3 – Alderwood gravelly sandy loam 15 – 30%
22 – Kapowsin gravelly ashy loam
39 – Poulsbo gravelly sandy loam

Existing Tree Conditions

There are four forest cover types for the purposes of description (see Attachment #1).

Type I. -- Cover Type I is located in the northern portion of the site. Tree species include Douglas-fir (*Pseudotsuga menziesii*), western redcedar (*Thuja plicata*), and western hemlock (*Tsuga heterophylla*). There are 809 trees in this type, ranging in size from 8 to 38 inches DBH. Tree conditions ranges from 'Dead' to 'Good' with most trees described as being in 'Fair' condition or better. Six hundred and sixty-two (662) of the 809 trees are healthy significant trees (>10" DBH).

Photo 1. View of typical trees in Type I.

Table 1. Summary of Trees in Cover Type I.

Species	DBH Range (in.)	Total # of Trees*	# of Unhealthy Trees	# of Healthy, Significant (>10" DBH) Trees
Douglas-fir	8 – 38	509	34	388
Western Red Cedar	10 – 28	265	26	239
Western Hemlock	15 – 26	35	0	35
Summary	**8 – 38**	**809**	**60**	**662**

**Includes non-significant trees*

The understory vegetation consists of dense shrubs including salal (*Gaultheria shallon*), sword fern (*Polystichum munitum*), Oregon grape (*Mahonia nervosa*), evergreen huckleberry (*Vaccinium ovatum*), Himalayan blackberry (*Rubus* armeniacus), grasses and broadleaved weeds.

Type II. -- Cover Type II is located on the western side of the site, on the slope above the stream. Tree species include Douglas-fir, western redcedar, western hemlock, and bigleaf maple (*Acer macrophyllum*). The trees in this type are old, large second-growth. There are 545 trees in this type, ranging in size from 12 to 44 inches DBH. Tree conditions ranges from 'Very Poor' to 'Good' with most trees described as being in 'Fair' condition or better. Red ring rot (*Porodaedalea pini*) was observed in multiple Douglas-firs. Five hundred and twenty-two (522) of the 545 trees are healthy significant trees (>10" DBH).

Photo 2. View of typical trees in Type II.

Table 2. Summary of Trees in Cover Type II.

Species	DBH Range (in.)	Total # of Trees	# of Unhealthy Trees	# of Healthy, Significant (>10" DBH) Trees
Bigleaf Maple	20 – 26	28	0	28
Douglas-fir	13 – 44	371	23	348
Western Red Cedar	28 – 30	17	0	17

Species	DBH Range (in.)	Total # of Trees	# of Unhealthy Trees	# of Healthy, Significant (>10" DBH) Trees
Western Hemlock	12 – 42	129	0	129
Summary	**12 – 44**	**545**	**23**	**522**

The understory vegetation consists of lightly stocked shrubs including sword fern, Oregon grape, evergreen huckleberry, red huckleberry (*Vaccinium parvifolium*), and broadleaved weeds.

Type III. -- Cover Type III is the largest type on the project and is located in the central area of the site. Tree species include Douglas-fir, western redcedar, red alder (*Alnus rubra*), and bigleaf maple. There are 1,988 trees in this type, ranging in size from 9 to 42 inches DBH. Tree conditions ranges from 'Dead' to 'Good' with most trees described as being in 'Fair' or better condition. Red ring rot was also observed on Douglas-firs in this type. One thousand seven hundred and six (1,706) of the 1,988 trees are healthy significant trees (>10" DBH).

Photo 3. View of typical trees in Type III.

Table 3. Summary of Trees in Cover Type III.

Species	DBH Range (in.)	Total # of Trees*	# of Unhealthy Trees	# of Healthy, Significant (>10" DBH) Trees
Bigleaf Maple	10 – 18	175	0	175
Douglas-fir	9 – 42	1,491	177	1,209
Red Alder	11 – 20	79	0	79
Western Red Cedar	10 – 36	243	0	243
Summary	**9 – 42**	**1,988**	**177**	**1,706**

**Includes non-significant trees*

The understory vegetation consists of densely stocked shrubs including salal, sword fern, Oregon grape, evergreen huckleberry, red huckleberry, and broadleaved weeds.

Type IV. -- Cover Type IV is the developed and cleared areas of the project site around the existing homes. The trees in the type are mix of native and introduced species. Native trees include Douglas-fir, western redcedar, bigleaf maple, Scouler's willow (*Salix scouleriana*), Pacific madrone (*Arbutus menziesii*), and western white pine (*Pinus monticola*). Introduced species include fruiting cherries (*Prunus spp.*), pear (*Pyrus spp.*), apple (*Malus spp.*), bird cherry (*Prunus avium*), and giant sequoia (*Sequoiadendron giganteum*). There are 36 trees in this type, ranging in size from 6 to 70 inches DBH. Tree conditions ranges from 'Fair' to 'Good' with most trees described as being in 'Fair' or better condition. Twenty-nine (29) of the 36 trees are healthy significant trees (>10" DBH).

Photo 4. View of typical trees in Type IV.

Table 4. Summary of Trees in Cover Type IV.

Species	DBH Range (in.)	Total # of Trees*	# of Unhealthy Trees	# of Healthy, Significant (>10" DBH) Trees
Apple	20	1	0	1
Bird Cherry	6 – 18	4	0	2
Bigleaf Maple	8	1	0	0
Douglas-fir	6 – 30	8	0	7
Fruiting Cherry	10 – 18	6	0	6
Giant Sequoia	13 – 70	2	0	2
Pacific Madrone	8 – 13	3	0	2
Pear	10 – 14	3	0	3
Scouler's Willow	6 – 9	2	0	0
Western Red Cedar	22 – 36	5	0	5
Western White Pine	20	1	0	1
Summary	**6 – 70**	**36**	**0**	**29**

**Includes non-significant trees*

The understory vegetation consists of densely stocked shrubs in landscaped areas including salal, evergreen huckleberry, western hazelnut (*Corylus cornuta*), and broadleaved weeds. Other areas are open grass fields with Himalayan blackberry and scotch broom (*Cytisus scoparius*).

Potential Tree Retention

The site plan shows 14.36 acres of Open Space, Critical Areas, and associated buffers that will be areas of potential tree retention. All of these areas are forested with quality long-term trees. Tracts I & J are planned to be cleared for park space.

Offsite Tree Removal

Offsite trees in proposed rights-of-ways for the project entrance and EVA access will also be removed as part of the project. A total of 60 trees in these areas will be removed.

Impacts to Off-Site Trees

Residential properties to the east of the project area contains trees near the property line that may be affected by site clearing and development. Property lines need staking to properly inventory the edge trees.

Discussion

There are 2,919 healthy significant-sized trees currently growing in the project area. The City of Poulsbo requires 25% significant trees to be retained.

The following is a summary of the proposed tree retention:

Total Significant Trees on Site:	2,919 Trees
Tree Removal on Main Site Area:	919 Trees
Tree Removal on EVA & Entrance ROWs:	60 Trees
Required Tree Retention (25%):	730 Significant Trees
Planned Tree Retention:	1,940 Significant Trees
Excess of Tree Retention Requirement:	1,210 Significant Trees
Required Replacement Trees:	**0 Trees**

Tree Replacement Plan

No tree replacement is required since the planned tree retention is 1,210 trees over the 25% retention requirement.

Tree Protection Measures

Trees to be saved should be protected during site grading and construction with high visibility NGPA fencing on driven posts (see Attachment #3) located at the edge of the critical root

zone. This zone is described as a distance of 5 feet outside of the dripline of the save tree unless otherwise specified by WFCI. The fences should be installed after logging and pruning, but prior to the start of land clearing.

There should be no root disturbing activity within the critical root zone of save trees. This includes irrigation line installation, rototilling, equipment operation, trenching, cuts or fills. If roots are encountered outside of the established root protection zone, they should be cut cleanly with a saw and covered immediately with moist soil. If grading or fill soils must impact tree, then the tree should be re-evaluated by WFCI to determine if the tree can be saved. Mitigation to save the tree can then be prescribed, or tree removal may be necessary.

Pruning

Tree pruning may be required where trails, sidewalks, access roads, or other improvements occur near saved trees. Crown raising should be done to a height of 8' over sidewalks, and 15' over driveways or streets to allow vehicles to pass without damaging branches. All new buildings should have at least 10 feet of clearance to tree branches. Pruning should be completed prior to construction to avoid tree damage by construction contractors cutting or breaking branches for clearance.

All pruning on save trees should be completed according to the ANSI A300 (2001) standards for proper pruning, and be completed by, or supervised by an International Society of Arboriculture Certified Arborist®.

Conclusions

Timeline for Activity

1. The approved tree protection plan map should be included in the construction drawings for bid and construction of the project.
2. Contact WFCI to attend pre-job conference and discuss tree protection issues with logging and clearing contractor. WFCI can verify all trees to be saved and/or removed are adequately marked for retention.
3. Complete logging and removal of any hazard trees within reach of homes or other targets within the project and outside of the project area.
4. Complete all necessary pruning to provide at least 8' of ground clearance near sidewalks and trails, and 15' above all driveways or access roads.
5. Complete land clearing. Do not excavate stumps within 10' of trees to be saved. These should be individually evaluated by WFCI to determine method of removal.
6. Remove any invasive species with in tree protection areas. No equipment should enter the tree protection areas.
7. Install tree protection fences along the perimeter landscape and around all interior trees to be saved. The fences should be located at the edge of grading. Maintain fences throughout construction.
8. Complete grading and construction of the project.

Summary

There are 2,919 healthy significant trees within the buildable area of the project. One thousand nine hundred and forty healthy significant trees are planned to be retained in the designated Open Spaces and Critical Areas. These trees exceed the required 730 trees by 1,210 trees. No replacement trees are required.

Please give us a call if you have any questions.

Respectfully submitted,

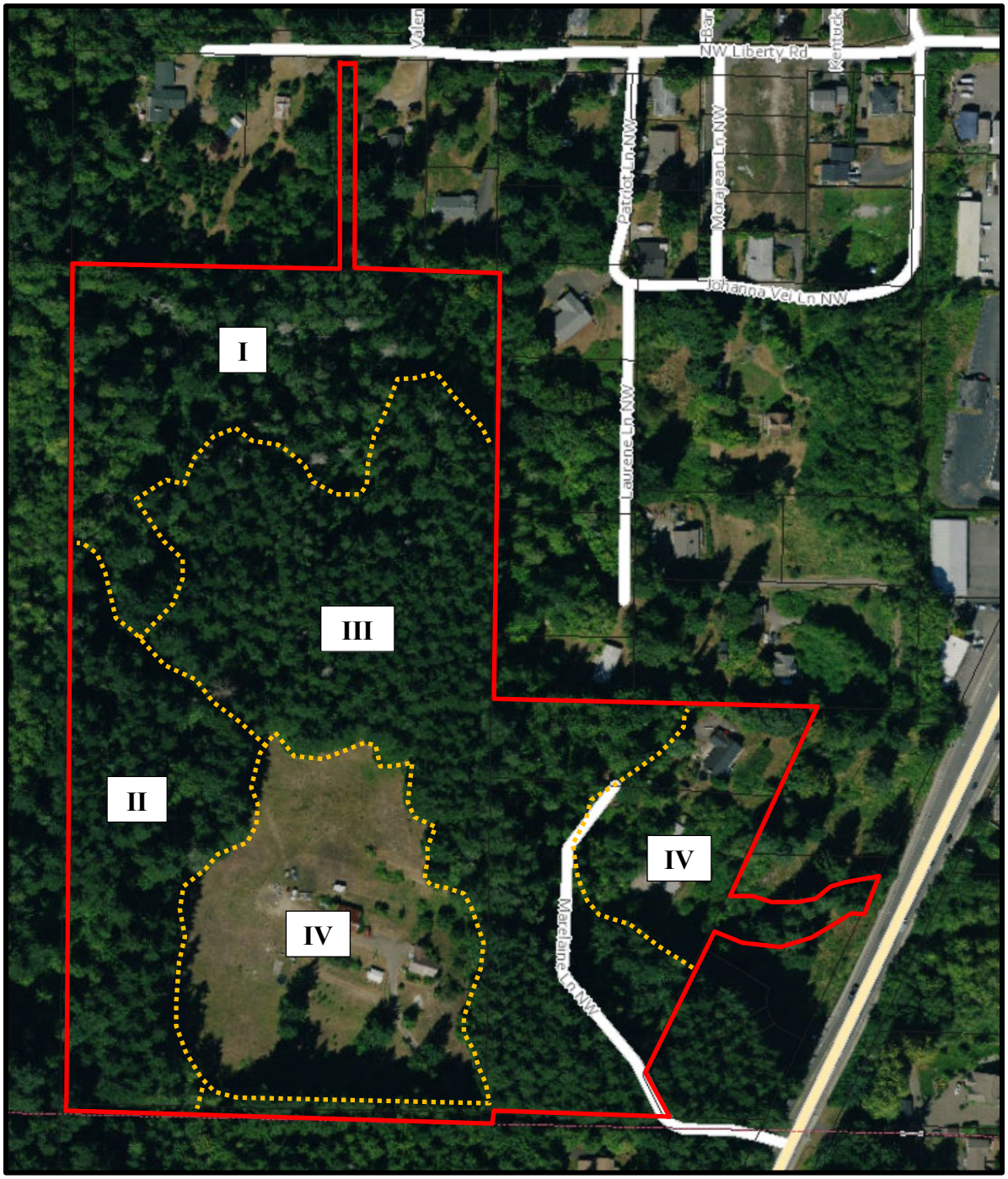
Washington Forestry Consultants

Galen M. Wright, ACF, ASCA
ISA Bd. Certified Master Arborist PN-129BU
Certified Forester No. 44
ISA Tree Risk Assessor Qualified
ASCA Tree and Plant Appraisal Qualified

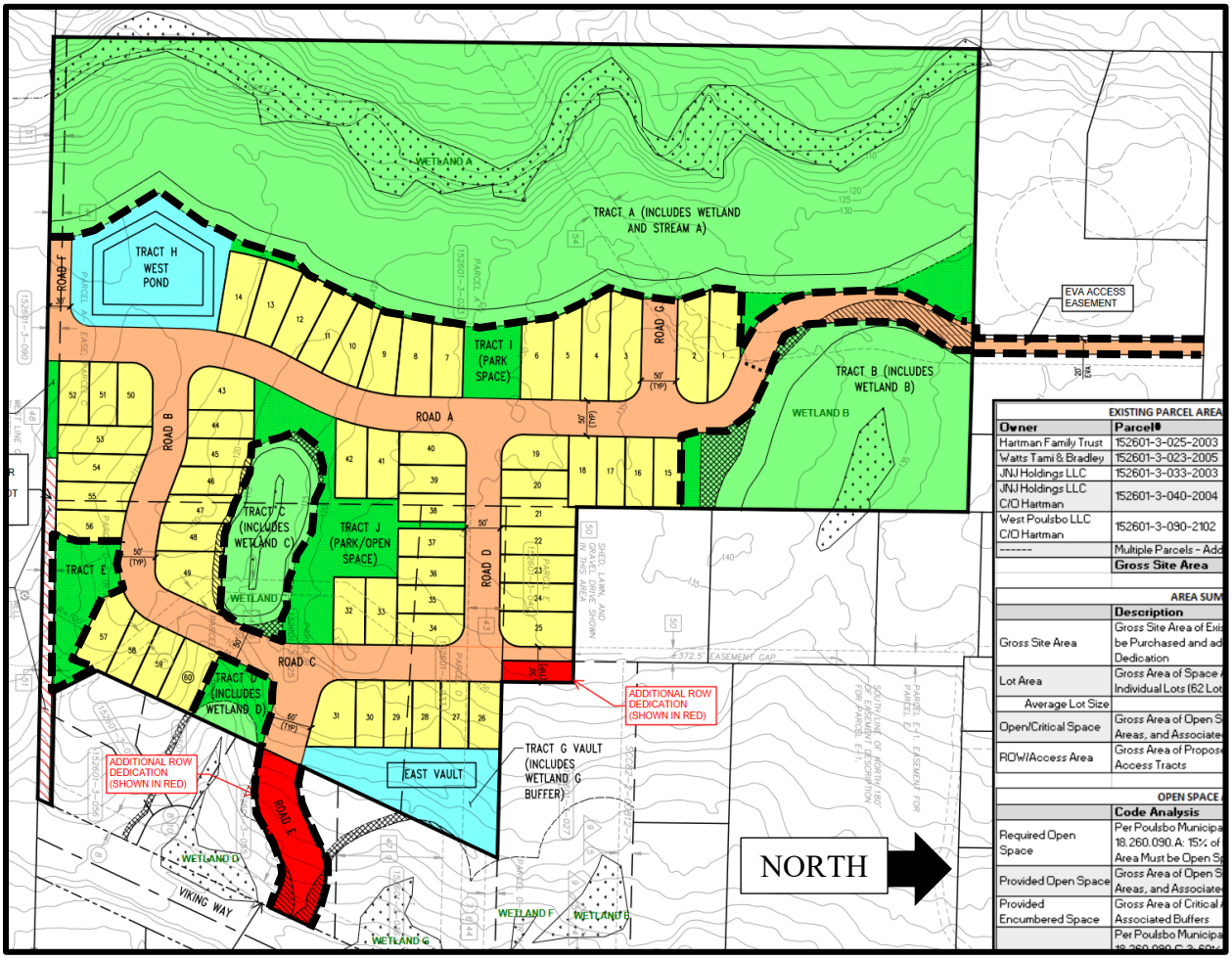
Joshua Sharpes
Professional Forester
ISA Certified Arborist
Municipal Specialist, PN-5939AM
ISA Tree Risk Assessor Qualified

Attachment 1. Aerial Photo of Project Area

(Kitsap County Parcel Viewer 2020)

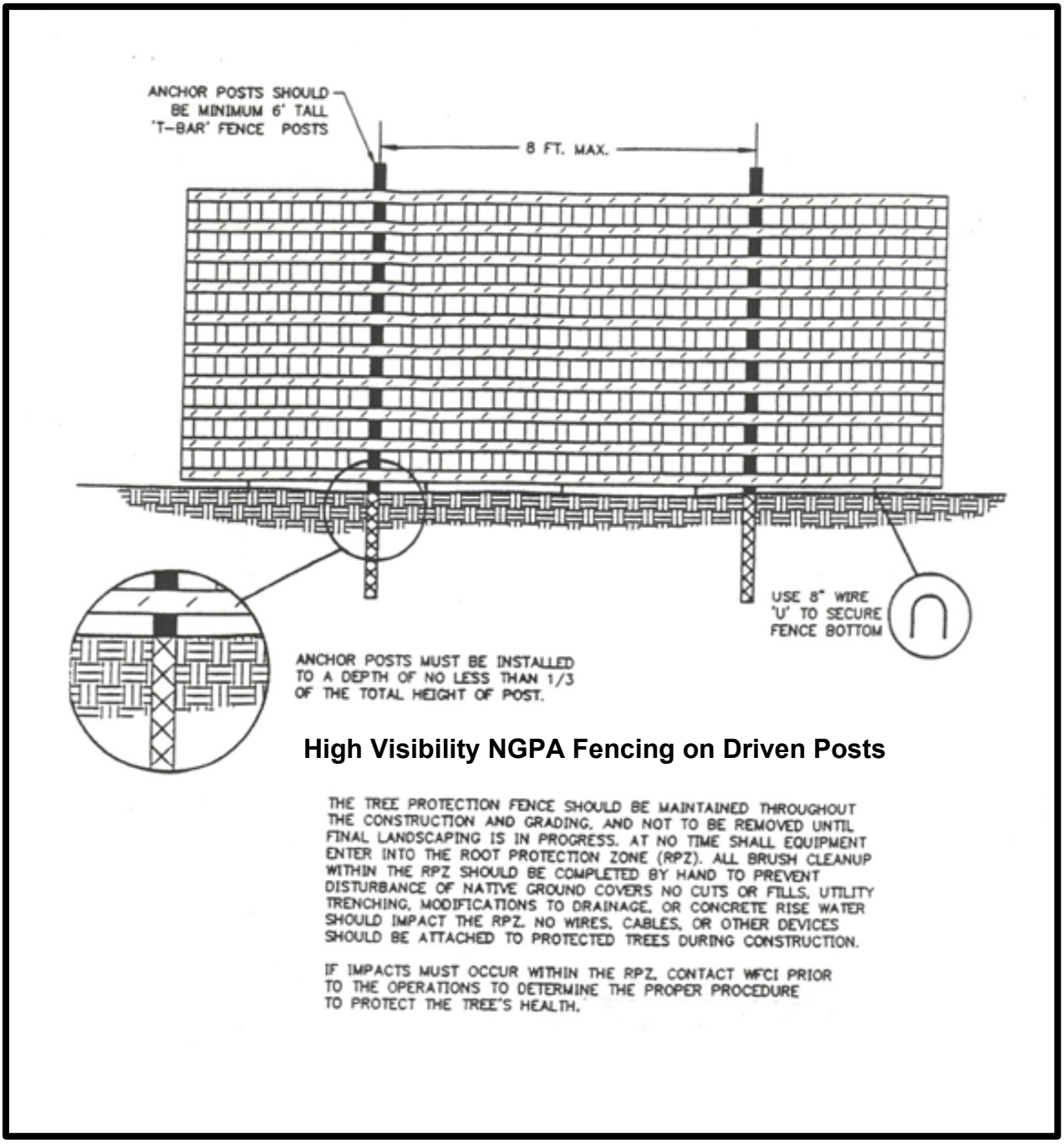


Attachment 2. Watts Subdivision Site Plan



▬ ▬ ▬ Tree Protection Fence Location

Attachment 3. Tree Protection Fence Detail



High Visibility NGPA Fencing on Driven Posts

THE TREE PROTECTION FENCE SHOULD BE MAINTAINED THROUGHOUT THE CONSTRUCTION AND GRADING, AND NOT TO BE REMOVED UNTIL FINAL LANDSCAPING IS IN PROGRESS. AT NO TIME SHALL EQUIPMENT ENTER INTO THE ROOT PROTECTION ZONE (RPZ). ALL BRUSH CLEANUP WITHIN THE RPZ SHOULD BE COMPLETED BY HAND TO PREVENT DISTURBANCE OF NATIVE GROUND COVERS NO CUTS OR FILLS, UTILITY TRENCHING, MODIFICATIONS TO DRAINAGE, OR CONCRETE RISE WATER SHOULD IMPACT THE RPZ. NO WIRES, CABLES, OR OTHER DEVICES SHOULD BE ATTACHED TO PROTECTED TREES DURING CONSTRUCTION.

IF IMPACTS MUST OCCUR WITHIN THE RPZ, CONTACT WFCI PRIOR TO THE OPERATIONS TO DETERMINE THE PROPER PROCEDURE TO PROTECT THE TREE'S HEALTH.

Attachment #4. Assumptions and Limiting Conditions

1) Any legal description provided to the Washington Forestry Consultants, Inc. is assumed to be correct. Any titles and ownership's to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management.

2) It is assumed that any property is not in violation of any applicable codes, ordinances, statutes, or other governmental regulations, unless otherwise stated.

3) Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, Washington Forestry Consultants, Inc. can neither guarantee nor be responsible for the accuracy of information.

4) Washington Forestry Consultants, Inc. shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.

5) Loss or alteration of any part of this report invalidated the entire report.

6) Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of Washington Forestry Consultants, Inc.

7) Neither all or any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without the prior expressed written or verbal consent of Washington Forestry Consultants, Inc. -- particularly as to value conclusions, identity of Washington Forestry Consultants, Inc., or any reference to any professional society or to any initialed designation conferred upon Washington Forestry Consultants, Inc. as stated in its qualifications.

8) This report and any values expressed herein represent the opinion of Washington Forestry Consultants, Inc., and the fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence neither of a subsequent event, nor upon any finding in to reported.

9) Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.

10) Unless expressed otherwise: 1) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and 2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the tree or other plant or property in question may not arise in the future.

Note: Even healthy trees can fail under normal or storm conditions. The only way to eliminate all risk is to remove all trees within reach of all targets. Annual monitoring by an ISA Certified Arborist or Certified Forester will reduce the potential of tree failures. It is impossible to predict with certainty that a tree will stand or fail, or the timing of the failure. It is considered an 'Act of God' when a tree fails, unless it is directly felled or pushed over by man's actions.

SUF1 - Tree Retention Reiew

Memo

To: Edie Berghoff, City of Poulsbo Associate Planner

From: Kevin M. McFarland, City of Poulsbo Contracted Arborist

Date: 2/28/23

Re: The Plateau at Liberty Bay Proposed Tree Retention Review

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Upon the request of the City of Poulsbo, I have reviewed the provided materials (WFCI tree protection plan dated 9/8/22 and KPFF site plans dated 2/1/23) and conducted a site visit at the proposed Plateau at Liberty Bay PRD. I visited the site on February 16, 2023. The following presents my findings and comments.

Tree Retention Plan

Overall, the report presents solid material and the methodology is concise and accurate. The description of the forest cover types and conditions of the existing trees are consistent with what I found at the site.

The report states that there may be edge trees along the east side of the project area that will need to be reassessed. I agree that the property lines need to be staked so that a thorough assessment and inventory of these trees can be conducted. Once the clearing limits for the 1st phase and any additional phases are marked, the arborist will need to assess the trees along those limits to determine appropriate protection measures and the need for any pruning or removals.

The tree protection measures and timeline for activity as presented on pages 9 & 10 of the report should be included in the notes on the TESC and landscape plans All tree protection fencing locations and the fencing diagram should be included as well.

I concur with the report that the project meets the City's minimum 25% significant tree retention. I would like to review the updated plans as requested above once they are submitted to the City.

If you should have questions, please feel free to contact me at 360-870-2511 or suf1234@comcast.net

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FORESTRY AND VEGETATION MANAGEMENT SPECIALISTS

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WFCI2 - Critical Area Review

MEMO TO: Geoffrey Sherwin
Entitle Fund Two, LLC
P.O. Box 188
Puyallup, WA 98371

FROM: Washington Forestry Consultants, Inc.

DATE: September 17, 2023

RE: The Plateau at Liberty Bay Critical Area Review

Mr. Sherwin:

We have reviewed the City of Poulsbo's comments regarding conditions for approval on The Plateau at Liberty Bay project. The comments are as follows:

1. *Tree Information*

   Staff Comment:

   Revision of stormwater design includes on lot roof drain infiltration to stream and wetland buffer critical areas. Tree retention is also located in critical area buffers. Species identified on site have various tolerance of wet soils which can reduce long term survivability.

   - *Please provide arborist review of critical area buffer (retention) trees sensitivity to and survivability of additional water provided during wet season.*
     - *Will review of tree health be needed on a yearly or periodic basis?*
   - *Tree health review, removal, and replanting requirement will be the responsibility of developer and future Homeowners Association. Please provide information in project CCRs.*

Findings

All trees lose water during normal metabolic processes, even in winter. During the growing season when trees are in full foliage, large amounts of water are lost through their leaves. During winter months, photosynthetic processes are slowed, but evergreens continue to lose water at a higher rate than deciduous trees, through their needles and to a lesser extent from exposed bark, twigs and buds. The soils on the site are the Alderwood gravelly sandy loam and

the Poulsbo gravelly sandy loam. Both soil types have a seasonally high-water table between November and March because of a compacted hardpan in the soil horizons at depths of 20 to 40 inches below the surface. The slope of the topography around the critical areas range between 8 – 30%. The drainage class for the soils is 'Moderately well drained'. The available water supply is 'Very Low'.

Tree species being retained in the critical area buffers include Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), western redcedar (*Thuja plicata*), bigleaf maple (*Acer macrophyllum*), and red alder (*Alnus rubra*). The bigleaf maple and red alder will be in a dormant state during the winter months and are expected to have little to no impact from the additional water runoff. The Douglas-fir, western hemlock, and western redcedar have moderate sensitivity to wet soils if the water is not standing for long periods of time. Standing water is not expected in the critical areas because of the slope within the buffers.

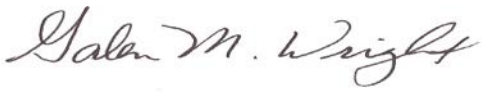
Based on the slope, drainage class, and available water of the soils the additional runoff from the roof drains will not significantly impact the health or survivability of the trees within the critical area buffer.

It is recommended the trees in the buffer areas should be assessed for health and risk potential every 3 – 5 years. The responsibility of the assessments will be outlined in the project CCRs.

Please give us a call if you have any questions.

Respectfully submitted,

Washington Forestry Consultants, Inc.



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