CITY OF DUPONT

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March 25, 2022

Sent via email only to:

Ben Eldridge
Barghausen Consulting Engineers
18215 72nd Avenue South
Kent, WA 98032

Subject: Founder's Ridge - Applications for PLNG2021- 018 (Site Plan Review and Design Review), -019 (Tree Modification), -021 (SEPA) and -027 Preliminary Plat
City Comments

Dear Mr. Eldridge:

In response to our comments in the Notice of Complete letter dated January 18, 2022, you submitted the following additional information on February 7, 2022:

- Preliminary Plat Drawings, 6 sheets, prepared by Barghausen Consulting Engineers
- Response to Comments Letter prepared by Barghausen Consulting Engineers dated February 3, 2022

On March 4, 2022, the City received the following additional information:

- Economic Impacts Assessment prepared by Troyer Strategic Advisors dated April 13, 2021
- Draft Phase 2 Archaeological Survey prepared by Historical Research Associates, Inc. dated February 17, 2022.

The city has reviewed all the submitted materials and has the following comments on the land use and zoning-related aspects of the proposal. **Items in bold require a response and/or additional information.** Comments will be provided separately related to the SEPA environmental review, peer review of the critical areas report, and engineering/public works comments.

A. General Comments

1. The preliminary plat plans, civil plans, landscape plans and architectural site plan use different nomenclature for lot numbers, building numbers and road numbers. **Prior to resubmittal check that all plans are consistent.**

2. All revisions shall be shown in clouds.

B. Consistency with DMC 25.41 Mixed Use Village

1. DMC 25.41.010(5) provides that the MUV-5 subdistrict is intended to be a primary employment area that allows office, light manufacturing, and research and development. DMC 25.41.015 Definitions provide a definition for light manufacturing as follows:

   > *"Light manufacturing" means an indoor facility used for the assembly, fabrication, and conversion of semi-processed material into finished products, where the intensity, scale, and characteristics of the operation are unlikely to negatively impact surrounding land uses. Light manufacturing also includes intermediate services such as machining, welding, grinding, and machine/industrial repair. Examples of light manufacturing uses include, but are not limited to, clothing and fabric manufacturing; food and beverage products, including ice production; electronic, optical, and instrumentation assembly; jewelry production; and manufacturing musical instruments. Outdoor storage or processing of equipment or materials is prohibited.*

   The application materials propose all light manufacturing-type uses for the proposal; therefore, the comments in this letter are based on a light manufacturing use. It is our understanding that a tenant has not yet been identified for the proposal. There are other uses listed in DMC 25.41.020(a) that could be viable uses within the buildings, including office, service business and research and development**.** In separate correspondence you have indicated that you intend for the buildings to be permitted for all uses that are allowed in the zoning district. This may affect the traffic study and trip generation as well as other environmental effects of the proposal that will be addressed in the environmental review comments/environmental impact statement. Please take careful consideration of your intention for uses within the buildings as the addition of uses outside of light manufacturing will not be allowed when applications for tenant improvement permits for uses other than light manufacturing are requested. A mix of uses within the building will require compliance with the Commercial and Mixed Use Design Standards in DMC Chapter 25.70. Any future changes to the buildings and/or site plan to comply with DMC 25.70 that are made following issuance of a final decision on the project will require a site plan amendment per DMC 25.150.050.

2. DMC 25.41.040(1) Maximum nonresidential floor area ratio (FAR) provides that nonresidential uses shall have a maximum 0.30 FAR. Subsection (2) provides that the area used for calculating the allowable FAR shall be based on the lot/parcel used for the nonresidential development. The Architectural Site Plan dated July 7, 2021, provides the floor area ratio broken out per proposed lot, however the lot sizes do not match the new preliminary plat drawings. Table 1 below provides the FAR using the lot sizes in on the preliminary plat drawings:

Table 1 – Floor Area Ratio*				
	Lot 2	**Lot 3**	**Lot 4**	**Lot 5**
Lot Area	1,056,491 SF / 24.25 acres	646,535 SF / 14.84 acres	1,061,594 SF / 24.37 acres	1,406,032 SF / 32.27 acres
Building Area	200,000 SF	200,000 SF	200,000 SF	200,000 SF
FAR	.19	.309	.19	.14

*Ratio calculated based on the Preliminary Plat drawings.

Lots 1 and 7 do not propose buildings at this time and there is no Lot 6. The FAR for Lot 3 is slightly over the allowed maximum of .30 FAR. **Revise the building or the lot size to provide no more than .30 FAR on all lots.**

3. The Table in DMC 25.41.050(a), provides the following nonresidential setbacks:

   Front: 25 feet
   Side: 25 feet
   Rear: 25 feet
   Abutting a golf course: 30 feet
   Additional: In addition, any building wall over 40 feet high shall be set back at least an additional one foot for each foot in height over 40 feet.

   The architectural site plan indicates that buildings are 50 feet in height requiring an extra setback of 10 feet. Setbacks are labeled on the civil site plans. In all cases the setbacks appear to be exceeding the code minimums. It appears as though a 50-foot setback is provided from the golf course and Old Fort Lake, exceeding the code minimums of 40 feet and 35 feet, respectively. Sheet C4, C7, C9 labels the setback from the new road as 50 feet, but that does not appear accurate. Sheet C12, C13 and C15 labels the building setback as 28 feet from the new road. **Confirm the setback measurements on the civil plans. Add the code requirement for setbacks and provide measured setbacks to the buildings to the preliminary plat drawings (see also Consistency with Title 24-Subdivisions, below).**

4. The proposal provides that building height will be 50 feet, which is less than the 65-foot maximum required per DMC 25.41.050(1).

5. DMC 25.41.050(a), footnote (1) provides that for a light manufacturing use the design standards in DMC 25.41.060(3) shall apply in addition to the dimensional standards. DMC 25.41.050(5) provides that the parking and loading areas shall be provided as required by Chapter 25.95 DMC and (6) requires compliance with the landscaping standards in DMC 25.90. See below for comments regarding compliance with the design standards in DMC 25.41.060(3), Chapter 25.95 Parking and Chapter 25.90 Landscaping. Note that DMC 25.41.050 (2) requires that a mixed use building comply with DMC Chapter 25.70, Commercial and Mixed Use Design Regulations and Guidelines. Our comments are based on the assumption that the buildings will be 100% light manufacturing uses.

6. DMC 25.41.050(6) provides that landscaping shall be provided as required by Chapter 25.90 DMC; see Consistency with DMC 25.90, Landscaping, below. Buffer requirements shall be applied pursuant to the standards listed in the Chapter 25.10 DMC "buffer" definition. DMC 25.41.050(6)(b) provides the following applicable buffer requirements for light manufacturing sites and similar uses:

   i. Sites abutting a golf course or open space district shall be screened by a full landscape buffer.

   ii. Sites abutting a residential district shall be screened by a full landscape buffer.

   iii. Sites abutting an arterial or collector roadway shall be screened by a moderate landscape buffer.

   The applicant proposes light manufacturing type uses, therefore the buffer requirements of DMC 25.41.050(6)(b) listed above shall apply. There are no property boundaries abutting a residential district. The property abuts both a golf course and open space district on the north, west and southwest boundaries, therefore a full landscape buffer shall be provided in these areas. Due to future volumes anticipated in the Old Fort Lake Subarea, all new public roads in the OFLSA are anticipated to be collectors or arterials. Where parcels abut an arterial or collector roadway a moderate landscape buffer shall be provided. Moderate and full landscape buffers are defined in DMC 25.10.020.060 as follows:

""Buffer – landscape" means a strip of trees, shrubs, and ground cover of sufficient height, width, and density to screen, within three years of planting, an unsightly or nuisance-generating land use from a more sensitive land use, even in the winter months. The minimum visual screening is 100 percent for full buffers, 50 percent for moderate buffers, and 25 percent for light buffers. Berms, grade separations, walls, and fences may be incorporated to achieve up to 50 percent of the minimum screening. For critical areas, see DMC 25.105.030*."*

We reviewed the buffers provided on the landscape plans and have the following comments. Note that lot, building, and road numbers described below are in accordance with the details provided on the landscape plans.

a. Full buffer Planting Plans –The landscape plans indicate that every 100 feet the full buffer Type A will have 3 evergreen trees, 2 deciduous trees, 2 ornamental trees and 13 shrubs. Full buffer Type B is similar and proposes 4 evergreen trees, 1 deciduous tree, 4 ornamental trees and 20 shrubs. The trees are to be 2-inch caliper or 6 feet tall at time of planting and the shrubs are 1-gallon plants. No groundcover is provided. The spacing appears to suggest an approximate spacing of the trees of 20 feet on-center ("OC"). For the shrubs, they are about 7.5 feet OC. This density of planting will not provide 100 percent screening within three years. **Revise the planting plan to provide all evergreen trees and increase the tree density to provide a tree spacing of no more than 15 feet OC. The tree height at planting shall be 7 to 8 feet minimum. Revise the shrub quantities to provide between 3 to 5 feet OC. Also, add groundcover as required by code for a full buffer. All sheets of the landscape plan shall provide the abutting property designations for either Golf Course, Open Space or MUV-7.**

b. Moderate buffer Planting Plans - The landscape plans indicate that every 100 feet the moderate buffer Type A will provide one deciduous tree, 2 ornamental trees and 27 shrubs. Moderate buffer Type B proposes 1 evergreen tree, 6 ornamental trees and 27 shrubs. Type C provides 2 deciduous trees, 2 ornamental trees and 24 shrubs and Type D provides 1 deciduous tree, 4 ornamental trees and 26 shrubs. The trees are to be 2-inch caliper or 6 feet tall at time of planting and the shrubs are 1-gallon plants. No groundcover is provided. The spacing appears to suggest an approximate spacing of the trees of 20 feet OC. This density of planting will not provide a 50 percent screening within three years. The city is in support of a mix of evergreen, deciduous and ornamental tree types in the moderate buffer and the planting sizes proposed but requires a reduced tree spacing of 15 feet to meet the moderate buffer requirements. **Revise the planting plan to increase the density of trees and add groundcover as required for a moderate buffer.**

c. Other landscape buffer comments are:

    i. The north boundary of Lot 1 is adjacent to golf course and MUV-7-designated property. The landscape plans depict tree retention plus full buffer type A and B in areas. It is unclear the extents of the full buffer. For example, the far northwest corner does not provide a full buffer, it depicts a total of four ornamental trees located north of Pond 2 in an area adjacent to golf course-designated property. **A full buffer is needed along the entire boundary shared with the golf course; additional notations and plantings shall make that clear.**

ii. The buffers adjacent to proposed Roads 1, 2 and 3 are required by code to be at a minimum a moderate buffer. (See below for the requirements for full buffer where required to screen loading docks per DMC 25.41.050(3)(d)). There are segments of the frontages that do not have callouts indicating the proposed buffer type. For example, there is no notation of buffer type for the landscaping between Pond 2 on Lot 1 and Proposed Road #3 and there is no notation along proposed Road #1 adjacent to the southeast corner of the building. Portions of the lot abutting New Road #3 on Lot 4 do not indicate a moderate buffer will be provided. **Increase the notations provided on the landscape plan for all lots indicating the proposed buffer types.**

iii. There is not enough detail provided to assess how the buffers meet the definition of a full buffer. **Revise landscape plan to provide planting details, including the number, size, and species of plants within the buffers.**

7. Per DMC 25.41.050(8) Outdoor storage, if located between a building and street or side of the building and visible from a street at other than a driveway entrance, shall be screened by a six-foot-high solid fence or wall. No outdoor storage areas are depicted on the plans.

8. Per DMC 25.41.050 (14), outdoor lighting shall be designed to minimize light throw beyond the site. Outdoor light poles shall not exceed 30 feet. We have reviewed the submitted Site Lighting Plans, Photometric Analysis and specification of lighting fixtures provided. Lighting fixtures are full cut-off type and some are also shielded. Light pole heights are provided at the maximum allowed of 30 feet. The site photometrics are acceptable at the property line. With the exception of lighting required for roadways, all other lighting is below 1.0 footcandles at the property line, which is within acceptable standards. Pedestrian scale lighting is not provided at the multi-use trail. **Revise the lighting plans to provide for pedestrian scale lighting on the multi-use trail.**

9. Per DMC 25.41.060(3) Light manufacturing, research, and development, and like buildings shall be subject to the following design guidelines:

   a. Blank walls greater than 50 feet in length along the front and side of a building shall be softened either by planting large, 12-foot minimum trees adjacent to the building, by wood trellises on the building, or by similar means. The building elevations demonstrate various treatments including façade modulation, metal panels, windows and paint color variations that serve to break up blank walls below the maximum of 50 feet in most places. For the purposes of the blank wall evaluation, the Table 2 below provides the applicable front and sides of the buildings referenced on the Architectural Site Plan. See also the enclosure labeled Property Line Assignments. Property line assignments are guided by the following definition of property line provided in DMC 25.10.160.110:

      "Property line" means those lines enclosing a lot and those lines defining a recorded vehicular access easement. The following are categories of property lines:
      (1) "Front property line" is any property line that is adjacent to a street or vehicular access easement or tract more than 21 feet in width, except when said vehicular access easement or tract:
      (A) Is located entirely on an adjacent lot or lots and does not serve the subject property; or
      (B) Encompasses a hammerhead turnaround required by the fire department, whether or not it is located on or serves the subject property.

(2) "Rear property line" is any property line that is farther from and essentially parallel to a front property line except on a lot which contains two or more front property lines; or any property line that is adjacent to a street, alley or vehicular access easement or tract 21 feet or less in width, except when said vehicular access easement or tract serves only one lot, or is located entirely on an adjacent lot or lots and does not serve the subject property; or any property line that is adjacent to a vehicular access easement or tract which encompasses a hammerhead turnaround required by the fire department.
(3) "Side property line" is any property line other than a front property line or a rear property line.

Table 2 - Founder's Ridge Lot Line Assignments*			
	Front Lot Line/ Facade	**Side Lot Line/ Facade**	**Rear Lot Line/Facade**
Lot 1/Bldg. 1	Abutting Road 1, 2 and 3	North line	n/a
Lot 2/Bldg. 2	Abutting Road 1 and 3	Northwest and southeast lot lines	n/a
Lot 3/Bldg. 3	Abutting Road 3	Northwest and southeast lot lines	Line opposite/parallel to Road 3
Lot 4/Bldg. 4	Abutting Road 3	Northwest and southeast lot lines	Line opposite/parallel to Road 3

*Lots and building numbers are based on the architectural site plan

According to the lot line assignments, all facades of Buildings 1 and 2 are required to meet the blank wall requirements, and all except the line opposite Road 3 shall meet the blank wall requirements for Buildings 3 and 4. Review of the submitted building elevations shows the following blank wall locations:

b. Buildings 1 and 2 – The partial north elevation (views 2 and 3) depict larger than 50-foot wide wall spans above the dock doors. **Provide treatments to the north elevation to address the blank walls. It is assumed that the treatments will need to be in the form of a change in materials, addition of windows, or other such treatment as landscaping will not be possible in this area.** Also, the elevation shows a concrete screen wall that is a blank wall greater than 50 feet. Trees are depicted for screening the wall on the landscape plans, but tree heights are noted to be 6 feet. **Revise the landscape plans to increase the height of the trees planted at the concrete screen wall for all lots to be a minimum of 12 feet at the time of planting.**

10. Per DMC 25.41.050(3) (b) Entrances shall be emphasized with architecturally distinctive elements such as a covered walk, gabled roof, landscaping, or similar means. Earth-berming at the base of the facade is encouraged for large-scale structures. Building designs for multi-phase campuses are encouraged to be of similar character. The building elevations and renderings depict that the entrances have a metal canopy (covered walk) and landscaping. The landscaping depicted on the Typical Foundation Planting Plans indicate a variety of shrubs of different types and heights to be provided around the entrances. The landscape plans provide a "typical foundation planting plan"; therefore, each will be of similar character. According to the grading plans, earth-berming at the base of the façade is not provided. **The sizes of the buildings are considered large in scale; therefore, provide a berm around the base of the façade of each building.**

11. Per DMC 25.41.050(3)(c), parking areas shall be located at the rear of buildings or separated from public rights-of-way by a moderate buffer (see Chapter 25.90 DMC). Parking lots are located at fronts, sides and/or the rear of the buildings; therefore, they shall be screened by a minimum of a moderate buffer. This code requirement is duplicative with DMC 25.41.050(a). See comment #6, above, for comments regarding the buffers provided.

12. Per DMC 25.41.050(3) (d) Loading docks, service areas, and semi-truck parking areas shall be located at the rear of buildings or separated from public rights-of-way by a full buffer (see Chapter 25.90 DMC). According to the lot line assignments in Table 2, loading dock locations are provided as follows:

    a. Building 1 docks are not located in the rear, however they are separated from the right of way and a full buffer is provided along segments of Road 2. A landscaped screening wall screens the dock doors from Road 2. The landscape buffer screening from Road #2 and the docks is depicted on the plans as a moderate buffer. **Modify the landscape plans to provide a full buffer between Building 1 dock doors and the Road 2 right of way.**

    b. Building 2 dock doors are not located in the rear, however they are separated from the right of way with a full buffer along Road 3 and a screening wall.

    c. Building 3 dock doors are not located in the rear and are separated from the right of way with a moderate buffer along Road 3 and a screening wall. **Modify the landscape plans to provide a full buffer between Building 3 dock doors and the Road 3 right of way.**

    d. Building 4 provides dock doors to the rear and sides of the building and the landscape plans depict a moderate buffer along proposed Road 3 and a full buffer to screen the dock doors from the golf course on the rear and side of the lot. This screening is appropriate.

13. Per DMC 25.41.060(4)(a) All roadways shall include sidewalks and/or a multi-use trail to facilitate pedestrian circulation. Roadway sections are provided on Sheet C56 of the civil plans and depict five different types labeled A through E. All but Type E depict a 5-foot sidewalk on one side and a 12-foot paved trail on the other side of each street section. Type E does not provide either a sidewalk or trail. This type is depicted as new Road #3 on Sheet C14, which is intended to be a Major Collector, but is not an area intended for a future multiuse trail on the OFL SAP. **Provide sidewalks on Road #3/Type E as required per the Major Collector section and the OFL SAP.**

14. Per DMC 25.41.060(4) (b) all buildings shall have a direct, paved pedestrian connection from the front entrance to the nearest street sidewalk. The plan sets do not depict a direct paved pedestrian connection from each building's front entrance to the nearest street sidewalk; nor do they depict each building's entry location. **Revise the plans to provide the pedestrian connection to the street from the building access.**

15. DMC 25.41.060(4) (c) Surface parking lots shall be designed with a designated pedestrian pathway that connects to a prominent building access door. The plan sets do not depict a designated pedestrian pathway that connects the parking lot to a prominent building access door, nor do they depict the entry location. **Revise the plans to provide the designated pedestrian pathway to the building access.**

16. Per DMC 25.41.070 Design Review. Design review is required for all multifamily, nonresidential, and mixed use projects as set forth in DMC 25.175.010. Design review may be processed concurrently with the site plan approval process. You have submitted an application for Design Review to be processed concurrent with the application and have included the required submittal requirements. Comments on design review are included herein.

17. Per DMC 25.41.080, site plan approval is required for all multifamily, nonresidential, and mixed use projects as set forth in Chapter 25.150 DMC. The applicant has submitted for site plan approval. This staff report provides comments on the required consistency analysis provided in DMC 25.150.

18. Per DMC 25.41.090, any proposed site plan, plat and/or binding site plan shall accommodate roadways, trails, and other rights-of-way as depicted in the Old Fort Lake subarea plan (OFLSAP). The community development director may allow roadway alignments to be adjusted to respond to documented cultural resources and/or critical areas subject. According to the OFLSAP, and submitted Cultural Resources Assessment, the site has been assessed for documented cultural resources areas within the proposed roadway alignments or trail areas and the report recommends that archaeological monitoring occur in conjunction with site excavation activities. With the monitoring, the proposed road alignments are acceptable. There are also no known onsite critical areas, however the site is located adjacent to Old Fort Lake and its regulated 100-foot buffer. The OFLSAP Figure 15 Future Transportation Plan Map depicts the future road alignments and classifications. The site plan depicts the roadways in compliance with the general roadway alignments depicted in the OFLSAP. According to Figure 15 all roadways within the Founder's Ridge proposal are to be minor arterials, with the exception of new Road #3, which is a Major Collector. The roadway classifications are not provided on the plans or in the Traffic Study. **Provide the road classifications on the civil plans**.

    The OFLSAP future trail alignments are also shown on Figure 12 in the OFLSAP. The alignment generally follows the roadway alignments provided and appears to be in compliance. One exception is a segment of trail that is missing from new Road 2 to the future Old Fort Lake Trailhead. The landscape plans depict this area as future bat habitat area. **Add this trail connection to the plans and add the trailhead to the plans. Adjust the bat habitat plan to allow for trail and trailhead improvements.**

    Road #2 ends inside future Lot 5 in a cul-de-sac (per the preliminary plat drawings) that concludes short of the property boundaries. **The Road #2 cul-de-sac shall be extended to the end of Lot #5 to allow for future extension of the road by others.**

    Provide an exhibit which depicts the turning radius for fire trucks and semitrucks accessing the site.

C. Consistency with DMC Chapter 25.80 Cultural, Historical and Archaeological Resources

1. DMC 25.80.020 provides four designated cultural resource sites within the city:

    a. 1833 site of Fort Nisqually

    b. 1843 site of Fort Nisqually

    c. Site of Methodist/Episcopal Mission; and

    d. Wilkes Observatory site.

Figure 12 in the Old Fort Lake Subarea Plan depicts the general location of designated cultural resource sites. The 1833 site of Fort Nisqually is located near the center of the adjacent Home Course Golf Course property. The 1843 site of Fort Nisqually is located offsite to the east of the Subarea and the Methodist/Episcopal Mission is located offsite to the north of the Subarea. The Wilkes Observatory Site is located on the adjacent City-owned property designated as Open Space. Another site is depicted on Figure 12 that is not listed as a designated cultural resource site in DMC. 25.80.020, the "Crystallizer site" which appears to be located at the far north portion of Lot 5. The Subarea Plan describes the Crystallizer site as follows:

- **Crystallizer Site:** The crystallizer site is reminiscent of the key location of the previous manufacturing use on the Old Fort Lake property. The crystallizer site has a relic with left behind building foundation and part of the wall structure.

In the absence of regulations protecting the Crystallizer Site, per DMC 25.175.040(b) staff relies upon the goals and policies of the Comprehensive Plan. The OFL Subarea Plan, an element of the City Comprehensive Plan provides Cultural Resources Goals and Policies to guide future development and decision-making. There are no specific policies related to the Crystallizer site. Other related policies include:

CR 1.3, "Develop an active preservation program that emphasizes community outreach and involvement including other local governments and agencies."

CR1.4, "Seek ways to capitalize on DuPont's unique cultural and historic resources to enhance tourism and local education opportunities."

CR1.5, "Partner with the Nisqually Tribe to identify cultural sites that have tribal heritage and possess native artifacts."

CR 1.6, "Apply the city's cultural resources policies and regulations to all future development within the subarea."

The relics described in the OFL SAP are not depicted on the survey or preliminary plat drawings. **Provide the location and details of the Crystallizer Site relics on the survey and preliminary plat drawings.** The Crystallizer Site is not located in the area of impact that was evaluated in the cultural resources studies you provided. **Provide documentation on the historical significance of the crystallizer site.**

D. Consistency with DMC Chapter 25.90 Landscaping

1. DMC 25.90.020(2) requires the minimum portion of the site which must be a landscape area. The portion is dependent on the type or use of the property. For manufacturing/research type use the minimum is 20 percent. Staff interprets this requirement as needing to be met for each proposed lot. Sensitive areas, sensitive area buffers, parks and land designated as open space do not count toward this requirement. The minimum landscape area calculation is provided on the Architectural Site Plan as shown in Table 3.

Table 3 - Landscape Area Provided Per Lot

Lot Number	Landscape Area (Acres)	Lot Size (acres)	Percent of Landscape Area
Lot 1	13.57	24.22	56%
Lot 2	5.66	15.06	37.5%
Lot 3	13.62	24.07	56.5%
Lot 4	17.51	27.7	63%

The landscaped area provided per lot exceeds the minimum of 20 percent and is compliant. The lot areas provided on the architectural site plan, however, do not match the preliminary plat lot areas. **Revise the architectural site plan to be consistent with the lot numbers and area calculations provided on the preliminary plat maps.**

2. DMC 25.90.030 requires street trees be provided within with right-of-way in accordance with the city's public works standards. They shall be provided at least one per 40 to 50 feet of frontage, depending on the species and other circumstances; located within the right of way; of the same species as other street trees in the same streetscape; spaced to accommodate sight distance requirements for driveways and intersections; and be at least two inches in caliper and minimum branch height of six feet. The landscape plans depict street trees of varying species to be provided at 1 per 50 feet of frontage. Heights are provided for the trees; however, it is not clear that the heights provided are at the time of planting or at maturity. **Revise the landscape plans to provide tree height at the time of planting. Revise the proposed tree types to be consistent with the City's recommended street trees (see enclosed Tree Care Manual).**

3. DMC 25.90.030 (2) requires the interior of surface parking lots with 10 or more stalls shall be landscaped with at least one tree per six stalls. The landscape plans provide a quantity of trees demonstrating that at least one tree per six stalls will be provided, however the quantity of trailer parking spaces was not included in the calculation and no landscape islands are depicted in the trailer parking areas. **Revise the landscape plans to include the required landscape islands and tree quantities inclusive of the trailer parking areas.**

4. DMC 25.90.030 (3) requires buffers to mitigate incompatible uses or screen uses as follows:

    a. A moderate buffer shall be provided between parking lots and any adjacent public right-of-way.

    b. In the process of reviewing development proposals, the city will require full, moderate, or light buffers as necessary to mitigate incompatibility, for example between residential and nonresidential development, or between an outdoor storage or trash receptacle area and surrounding high-use areas.

    These standards are duplicative to the standards required in DMC 25.41.050(6)(b). See the comments provides in Section B, above.

5. DMC 25.90.040 requires landscape design with minimal irrigation. All landscape plans shall include a water conservation element, including a statement of techniques proposed to conserve water; and a projection of the amount of irrigation required. No landscape plan is to be approved if the irrigation projection exceeds 11.6 inches of water per year, 7.2 gallons per square foot, or 313,632 gallons per acre. The landscape plans provide a typical irrigation & water conservation plan. It depicts areas to receive drip and popup irrigation and include water conservation notes. The notes state that irrigated areas shall receive no more than 11.6 inches of water per year from the irrigation system. The irrigation plans will be reviewed by the City Engineer and comments provided under separate cover.

E. Consistency with DMC Chapter 25.95 Off-Street Parking

1. DMC 25.90.030 provides the minimum and maximum number of parking spaces for certain uses. Light manufacturing use, as proposed for the Founder's Ridge project, is not listed in the code's parking table. The closest type of use listed is "Industries, research facilities, print shops, bakeries, wholesales, and warehouses," which requires a minimum of 0.3 and a maximum of 1 parking spaces per worker at maximum shift. Table 4 below provides the proposed number of spaces per 200,000 SF building and lot:

Table 4 – Founder's Ridge Proposed Parking*		
Lot Number	**Vehicle Parking Provided**	**Min and Max Number of Workers at maximum shift**
Lot 1	284	284 - 945
Lot 2	209	209 - 698
Lot 3	288	288 - 959
Lot 4	220	220 - 734
Total	1,001	1,001 – 3,336

*Lots numbers and parking quantities as depicted on the Architectural Site Plan

The off-street parking quantities provided in Table 4 are presumed for passenger vehicles only, however the parking quantities provided do not add up to the total provided. The site plan provides additional trailer spaces; however, the city does not regulate the amount of trailer parking. According to the information provided in the SEPA checklist, which is based on the Troyer Economic Impact Analyses, approximately 474 jobs would be created. This number of employees would require a maximum number of parking spaces of 474; therefore, the parking quantity exceeds the code maximums. **Clarify on the architectural site plan the number of parking spaces for passenger vehicles and the total quantity of all types of parking. Either revise/reassess the anticipated number of workers at maximum shift or revise the site plan to provide no more than the maximum number of spaces allowed per worker at maximum shift.**

2. DMC 25.95.050 requires that parking spaces be located within 500 feet walking distance from an entrance to the building served. The City requires that the minimum quantity of parking spaces meet the walking distance requirements. Each lot provides the minimum number of parking spaces within 500 feet of a building entrance.

3. DMC 25.95.050 requires that parking not be located within any required vision clearance triangle. All parking is setback from driveway entrances and is not located in the vicinity of a vision clearance triangle.

4. DMC 25.95.050(4) requires a setback from property lines for parking dependent upon the type of use. In commercial areas, parking spaces shall not be located in required front yards or in required side yards abutting residential areas.

   (5) In manufacturing/research park areas, parking shall not be located in required front yards or within five feet of any property line.

   (6) In industrial areas, parking spaces shall not be located within 20 feet of the front property line.

   The City interprets (5) as being most similar to the proposal. Parking areas on each lot exceed all of the above setback requirements.

5. DMC 25.95.050 provides the dimensional requirements of parking spaces, drive aisles and other design requirements. The parking spaces are 9' x 18' in dimension, which meets the requirements for a 90-degree, two-way drive aisle. The required aisle width is 26 feet, 27-foot width is provided in passenger vehicle areas and up to 70 feet in width is provided in truck maneuvering areas. The other design requirements will be reviewed in depth at the time of site development permit.

6. DMC 25.95.060 requires disabled parking be provided in accordance with state law and at least one of every 20 employee parking spaces reserved for high-occupancy vehicles. These preferential spaces and bicycles are to be given locational priority in parking space layout. No high occupancy spaces are provided on the architectural site plan or the civil plans. Accessible parking is depicted as being provided and will be reviewed for full compliance at the time of site development permit. **Provide the required number of high occupancy spaces on the architectural site plan and civil plans**.

7. DMC 25.95.070 requires adequate off-street loading facilities and maneuvering spaces. The locations and design of the loading facilities are regulated. The loading berths, or docks, that are at 90-degree angles are required to have a minimum length of 55 feet, width of 12 feet, and have an apron of 75 feet. Review of the architectural site plan depicts a length of 60 feet, width of 13 feet and an apron of 130 feet. The loading dock design is in compliance.

8. DMC 25.100 regulates the design and location of refuse and recycling receptacles. The enclosures cannot be located in required yards or buffers and shall comply with the screening requirements of DMC 25.70. Per DM 25.100.050, the enclosure shall be designed and finished to match the primary building in terms of design and materials; shall be sized for both general refuse and recycling bins and located on a flat and level area of a minimum of 100 square feet, surfaced with concrete with an opening of 10 feet in width. The enclosures shall not be visible from public streets, on-site access routes or parking areas; otherwise, the enclosure shall be fully gated with a three-foot wide pedestrian opening (unless automated closing assembly). Dumpster locations are depicted on the site plans as being located in the dock loading areas. The architectural site plan states that final locations are subject to tenant requirements and determined at the time of tenant finish. Refuse container locations and maneuverability has been reviewed and approved by the service provider, Waste Connections. It shall be noted that all of the requirements of DMC 25.100 and 25.70.070(1) apply, which may include landscape screening of the service areas depending on location. **Revise the plans to comply with the dumpster location and design requirements.**

9. DMC 25.115 requires Transportation Concurrency Review. Per DMC 25.115.020, the proposal is subject to a concurrency test and a land use application will not be approved until a certificate of concurrency has been issued. **Provide a letter requesting concurrency evaluation for the proposal and a fee of $350.**

F. Consistency with DMC 25.105, Critical Areas

1. We have reviewed the Wetland and Fish and Wildlife Habitat Assessment Report and Voluntary Bat Habitat Restoration Plan prepared by Soundview Consultants dated November 2021 and understand the findings describe that Old Fort Lake is offsite, a Category III wetland with a 75-foot buffer for which no impacts are planned/proposed. The report also provides that there is no evidence of bat habitat (Priority species) onsite or Priority Oregon white oak woodlands. The report describes a bat habitat restoration plan that will be peer-reviewed by others. Comments on the peer review will be forwarded when available.

G. Consistency with DMC 25.120 Tree Retention

We have reviewed the Tree Modification Request dated Sept. 22, 2021, the Arborist Report dated Nov. 3, 2021, and the Tree Preservation Plan dated Sept. 14, 2021, to assess the tree retention and tree modification request for compliance with DMC Chapter 25.120.

1. DMC 25.120.030(2) requires that all landmark Oregon white oak trees shall be retained, along with any native understory within a protection zone one and one-half times the radius of the oak's canopy, unless the landmark oaks are within a proposed street right-of-way which is integral to the neighborhood and cannot reasonably be moved, or unless overall neighborhood densities cannot be met. In such cases, up to 30 percent of the landmark oak trees may be removed, when consistent with the standards in the table of DMC 25.120.040(1). At least half of all other (non-oak) landmark trees shall be retained.

   The arborist report provides that there are a total of 139 landmark trees, all of which are Douglas fir. Based on this count, a total of 70 trees are required to be retained. Staff interprets the provisions about tree retention in the roadway to apply to Oregon white oaks, of which you state there are none. Your proposal is to retain seven (7) of the landmark trees. You have requested a Tree Modification to allow for a reduction in the tree retention requirements. Note that the arborist report will be peer-reviewed by the City's on-call certified arborist. Due to the extent of our comments, we will wait for the peer review to occur following resubmittal and response to the comments.

2. DMC 25.10.120.005 Table 1 provides that the measurement of multi-stemmed or multi-trunked trees is the sum of the diameters. Table 1 in the arborist report provides a different measurement for landmark trees. **Revise the arborist report methodology, and amend the tree statistics as needed, in calculating the diameters of all multi-stem/multi-trunk trees to comply with DMC 25.10.120.005 Table 1.**

3. DMC 25.120.030(2) provides that the tree protection radius shall be one and one-half times the radius of the Oregon white oak's canopy. DMC 25.120.030(5) provides that the tree protection zone for non-oak landmark trees is the drip line of any tree to be retained. The arborist report provides a different method of measuring the protection radius that is not code compliant. **Revise the arborists report to demonstrate compliance with city code with the correct tree protection radius for all Oregon white oaks and all non-oak landmark trees to be retained. Per DMC 25.120.030(5), provide the tree protection radius on the landscape and grading plans.**

4. Page 5 of the arborists report states that the Old Fort Lake Subarea Plan (OFLSAP) did not intend for tree retention in the areas not designated open space. We are not aware of this. It is staff interpretation that Council intended each development application to meet the City's tree retention requirements. **If you have documentation of Council's intent to the contrary, please provide it.**

5. DMC 25.120.030(4) requires that when the application before the city contains oak management mapping units, trees retained therein shall count toward meeting the tree retention requirements and code provides specific measures for each oak management mapping unit. The arborist report is silent on the presence of oak management mapping units (OMMUs) and the tree modification narrative describes that the tree removal is either adjacent to or abutting OMMUs**. Provide an exhibit that overlays the oak management mapping units on the subject property so that we can verify their location with the proposed tree removal.** A copy of the map of the oak management mapping units is attached.

6. DMC 25.120.050 provides a Tree Modification may be requested based on special circumstances pertaining to the land or the trees on it. You provided that there were three special circumstances that justify removal of all but 7 of the landmark trees:

    a. Special circumstance number one states that the OFL Subarea is equivalent to a neighborhood plan and tree retention should be reviewed on an overall basis over the 600-acre subarea. The proposal is for a 101-acre portion of the subarea, however, and each subsequent development application will need to be viewed for its own consistency with the tree retention requirements. Additionally, the proposal does not include a request for a Master Plan of the entire subarea. Also, unless you can provide additional documentation, there is no basis to assume that Council intended for the open space areas to be the only tree retention areas. The provisions of the DMC to allow for 30% removal of landmark trees within the road rights of way is specific to Oregon white oak landmark trees, which the arborists report has concluded that the property does not have. The argument that the applicant should get credit for having to remove landmark tree within the right of way, therefore is not applicable. Staff cannot support special circumstance number one as justification for the tree removal.

    b. Special circumstance number two states that the irregular shape of the property is caused by adjacent property boundaries and proposed road rights of way as depicted in the subarea plan and not by the applicant and that the shape prohibits a market viable project. Staff notes that the overall development area is 101 acres, for which a substantial amount is available for development. A reduction in size of the building on Lot 1 (as depicted on the Tree Preservation Plan), which is the location of the bulk of the landmark trees, could meet the tree retention requirements. Applicant has indicated that the buildings will likely house multiple tenants, so a smaller building would likely have fewer tenants. Staff cannot support special circumstance number two as justification for the tree removal.

    c. Special circumstance number 3 is related to the permitting history of the property. Your request states that the prior expired project (First Park) was approved to remove 12 of the 76 landmark trees within proposed rights of way, and that additional landmark trees have established since that project was assessed. Your narrative states that the First Park proposal requested to retain at least 50 percent of all non-oak landmark trees. Our review of the SEPA Determination and Preliminary Plat Decision finds that the First Plat proposal retained all Oregon white oak landmark trees and 83 percent of the Douglas fir landmark trees, all of which was consistent with code requirements. All landmark Douglas fir within road rights of way were approved for removal. Staff cannot support special circumstance number three as justification for the tree removal because that application met the code requirements.

    Either withdraw the Tree Modification request and demonstrate compliance with the City's tree retention requirements or propose an alternative with justification that staff can support.

H. Consistency with Title 24 – Subdivision Regulations

1. You submitted an application for a 7-lot preliminary plat on Dec. 23, 2021. On February 7, 2022, you submitted a complete set of preliminary plat drawings (plot dated January 27, 2022). Upon review of the preliminary plat drawings, the proposal is to subdivide the 260.74 acres property into the lots described in Table 5.

Table 5 – Preliminary Plat Proposal*			
Lot Number	**Size in SF**	**Size in Acres**	**Proposed Improvements**
Lot 1	1,909,451 SF	43.83 acres	No improvements
Lot 2	1,056,491 SF	24.25 acres	200,000 SF building with parking, circulation, and landscaping.
Lot 3	646,535 SF	14.84 acres	200,000 SF building with parking, circulation, and landscaping.
Lot 4	1,061,594 SF	24.37 acres	200,000 SF building with parking, circulation, and landscaping.
Lot 5	1,406,032 SF	32.27 acres	200,000 SF building with parking, circulation, and landscaping.
Lot 6	n/a – there is no Lot 6		
Lot 7	4,814,454 SF	110.52 acres	No improvements

*Lot numbers and sizes as reflected on the Preliminary Plat drawings submitted Feb. 7, 2022.

DMC 24.01.020 provides the definitions for various subdivisions. The proposal is a subdivision that meets the definition of a "large lot division" because all lots are over five acres in size. **If it is your intent to process a large lot division rather than a preliminary plat, provide the city with your intent to withdraw the preliminary plat application and replace it with a large lot subdivision application that complies with DMC Chapter 24.06.**

2. The following comments are based upon review of the proposal for compliance with DMC 24.06, Short Subdivision – Large Lot Subdivision. Per DMC 24.06.110, Large Lot Subdivisions are to follow the same review criteria and drafting standards as for short plats. The review criteria for short plats are provided in DMC 24.06.070. The City Engineer will provide comments under separate cover. All lots have ingress and egress. Lot 5 depicts New Road 2 ending in a cul-de-sac prior to reaching the full end of the lot. **The plans shall be revised to extend the roadway to the end of the lot so that future extension of the roadway can be completed by others and in a manner that complies with the alignment depicted in the Old Fort Lake Subarea plan.**

If you have any questions, please call me at 253-912-5393, or email me at bkincaid@dupontwa.gov.

Sincerely,

Barbara Kincaid

Barb Kincaid, AICP
Director of Community Development

Encl: DuPont Map of Oak Management Mapping Units
Property Line Assignments Exhibit
DuPont Street Tree Care Manual

c: PLNG2021-018, -019, -021, -027
Jeffrey Nelson, NorthPoint Development
Sherri Ingles, Building Department
Mike Turner, City of DuPont Fire Marshal
Fred Foreman, City of DuPont Public Works
Scott Hein, City of DuPont Public Works
Dominic Miller, Gray & Osborne, Inc. (representing the City of DuPont)
Lisa Klein, AHBL, Inc. (representing the City of DuPont)
David Sherrard, Leon Environmental, LLC

Type of Oak Woodland	Mapping Unit Number	Condition Class	Size (Acres)
Mixed	MO-1a	Low	8.9
Mixed	MO-1b	Moderate	6.7
Mixed	MO-2	Moderate	4.1
Mixed	MO-3	Moderate	1.4
Mixed	MO-4	Low	1.6
Mixed	MO-5	Low	2.5
Mixed	MO-6	Moderate	1.4
Mixed	MO-7	Low	1.3
Mixed	MO-8	Moderate	0.9
Mixed	MO-9	Moderate	2.2
Mixed	MO-10	Moderate	1.1
Mixed	MO-11	Low	3.5
Mixed	MO-12	Low	0.9
Mixed	MO-13	High	10.8
Mixed	MO-14	Moderate	1.3
Mixed	MO-15	Moderate	1.0
Mixed	MO-16	Low	0.9
Mixed	MO-17a	Moderate	8.0
Mixed	MO-17b	Moderate	8.1
Mixed	MO-18	Moderate	3.1
Dominant	O-1	High	28.5
Dominant	O-2	Low	1.4
Dominant	O-3	Moderate	0.4
Dominant	O-4	Moderate	0.6
Dominant	O-5a	High	4.1
Dominant	O-5b	Moderate	5.8
Dominant	O-6	Low	0.9
Total			111.4

Note: Oak Woodland boundaries are approximate and not surveyed.

750' 0 750' 1500'
SCALE: 1"=750'

N

Sequalitchew Creek
City Boundary (approximate)
PUGET SOUND
OLD FORT LAKE
Management Zone 1 Oak Savannah
Management Zone 2 West Edmond Marsh
Management Zone 3 Sequalitchew Creek
Management Zone 4 North Edmond Marsh
Center Drive
Palisades Blvd
Northwest Divisions
EDMOND MARSH
BELL MARSH
VILLAGE OF DUPONT
POND LAKE
STRICKLAND LAKE
GRANT LAKE
DuPont Steilacoom Road

MO-1a MO-1b MO-2 MO-3 MO-4 MO-5 MO-6 MO-7 MO-8 MO-9 MO-10 MO-11 MO-12 MO-13 MO-14 MO-15 MO-16 MO-17a MO-17b MO-18
O-1 O-2 O-3 O-4 O-5a O-5b O-6

LEGEND:

- Mixed Oak Woodland
- Oak Woodland
- (7) Wetland
- Core Area to be Preserved (See Oak Management Recommendations)

Exhibit A: Location of Oak Woodlands and Management Zones and the Biological Condition Class of Oak Woodlands in the DuPont Study Area

Prepared by: Jones & Stokes Associates, Inc. 7-22-96

FILE COPY
NOT FOR
LOANING OUT

FOUNDER'S RIDGE (DUPONT, WA)

SITE PLAN - OVERALL

2021.07.07
SCALE 1:200

N

SITE DEVELOPMENT DATA TABLE		
SITE AREA:	102.36 Ac.	
TOTAL BUILDING AREA:	800,000 S.F.	
TOTAL BUILDING COVERAGE:	0.20	
RIGHT-OF-WAY DEDICATION:	11.3 Ac.	
NET SITE AREA:	91.06 Ac.	
PAVED AREA:	22.05 Ac	24.21%
GREEN SPACE:	50.64 Ac	55.61%
DOCK DOORS:	111	
DRIVE IN DOORS (14' x 16'):	8	
TRAILER PARKING:	266	
AT BUIDING	111	
AT STALL:	155	
***CITY OF DUPONT, WA* REQUIREMENTS**		
CURRENT ZONING: MUV-5		
PROPOSED ZONING: MUV-5		
PROPOSED USES: LIGHT MANUFACTURING UP TO 200,000 SF		

SITE DATA:	REQUIRED	LOT 1 PROVIDED	LOT 2 PROVIDED	LOT 3 PROVIDED	LOT 4 PROVIDED
BUILDING SQUARE FOOTAGE (SF):	200,000 max.	200000	200000	200000	200000
LOT AREA (MIN.):	NONE	24.22 Ac.	15.06 Ac.	24.07 Ac	27.7 Ac.
LOT COVERAGE (PAVED AREA):	NONE	6.06 Ac.	4.53 Ac.	5.86 Ac.	5.60 Ac.
GREEN SPACE:	NONE	13.57 Ac	5.66 Ac	13.62 Ac	17.51 Ac
BUILDING HEIGHT (1):	65'	50'	50'	50'	50'
FAR:	0.30	0.19	0.30	0.19	0.17
BUILDING SETBACKS:					
FRONT(2):	25' (3) 35'	71'	42'	59'	146'
SIDE(2):	25' (3) 35'	211'	60'	135'	201'
REAR(2):	25' (3) 35'				
ABUTTING A GOLF COURSE(2):	30' (3) 40'	228'	60'	159'	200'
PARKING SETBACKS(4):	5'	32'	32'	67'	63'
PARKING DATA:	**TOTAL**				
INDUSTRIES, WAREHOUSE REQUIRED (5):		86-295	63-209	86-288	66-220
PROVIDED (INCLUDES ACCESSIBLE STALLS):	1001	284	209	288	220
DOCK DOORS:	111	30	24	27	30
DRIVE-IN DOORS:	8	2	2	2	2
TRAILER STALLS:	266	60	58	60	88
AT BUILDING:	111	30	24	27	30
AT STALL:	155	30	34	33	58
PARKING DIMENSIONS:	9'x18'	9'x18'	9'x18'	9'x18'	9'x18'
DRIVE AISLE WIDTH:	26' (TWO-WAY)	27' (TWO-WAY)	27' (TWO-WAY)	27' (TWO-WAY)	27' (TWO-WAY)

(1) ANY PORTION OF A BUILDING LOCATED WITHIN 150' OF A RESIDENTIAL DISTRICT SHALL BE LIMITED TO 35' IN HEIGHT. ANY PORTION OF A BUILDING LOCATED WITHIN 50 FEET OF A GOLF COURSE SHALL BE LIMITED TO 35' IN HEIGHT
(2) ANY BUILDING WALL OVER 40' TALL SHALL BE SETBACK AT LEAST AN ADDITIONAL ONE FOOT FOR EACH FOOT IN HEIGHT OVER 40'
(3) BUILDINGS ARE 50' TALL AND REQUIRE AN EXTRA 10' SETBACK
(4) PARKING SHALL NOT BE LOCATED IN REQUIRED FRONT YARDS
(5) INDUSTRIES, WAREHOUSE: 0.3 TO 1 STALL PER EMPLOYEE WORKING AT MAXIMUM SHIFT

LEGEND
1. THE HOME COURSE
2. FUTURE COMMERCIAL DEVELOPMENT
3. MXD ZONING
4. MUV-4 ZONING
5. MUV-6 ZONING
6. MUV-7 ZONING
7. MUV-9 ZONING
8. OPEN SPACE ZONING
9. R-5 ZONING
10. R-12 ZONING
11. OLD FORT LAKE
12. MUV-6 ZONING
13. TEMPORARY CUL-DE-SAC

PL – PROPERTY LINE
L – LOT LINE
R/W – RIGHT-OF-WAY LINE

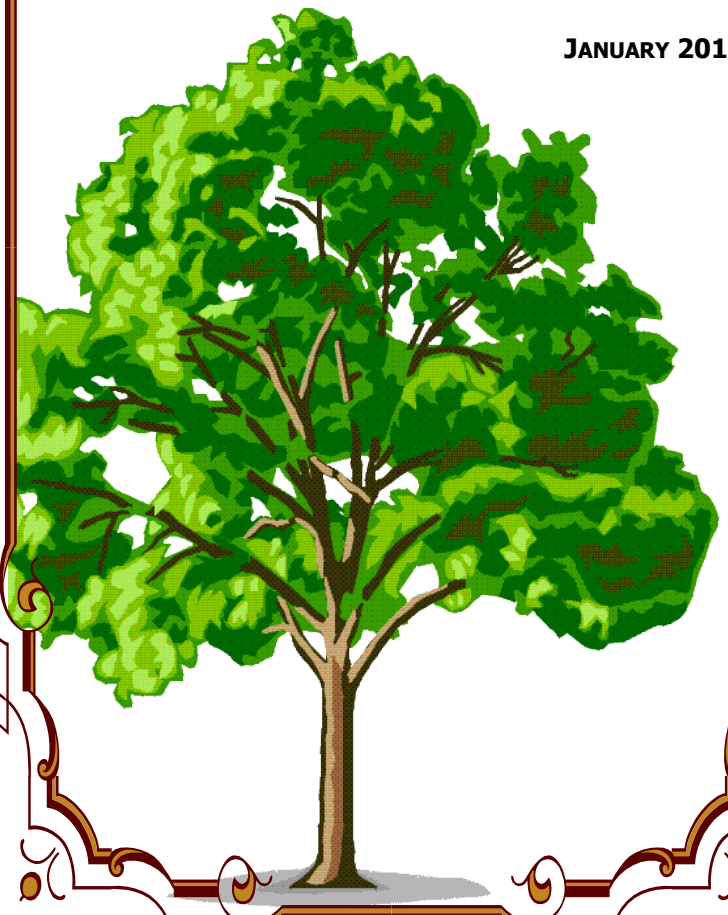
D:\SITEPOINT DROPBOX\01 PROJECTS_INDUSTRIAL\0728 FOUNDER'S RIDGE (DUPONT, WA)\05 MASTER PLANS\PLANS\SITE PLAN\SITE PLAN OVERALL.DWG

NorthPoint DEVELOPMENT

CITY OF DUPONT

CITIZEN'S TREE CARE MANUAL

JANUARY 2012



ACKNOWLEDGEMENTS

We gratefully acknowledge the generosity of Lisa Burban and Jill Johnson for permission to adapt the *Tree Owner's Manual for the Northeastern and Midwestern United States,* USDA Forest Service, for this manual.

Illustrations by Jennifer Salveson, unless otherwise noted.

Text developed by Micki McNaughton, Arborea, LLC.

Funds for this project were provided by the Urban and Community Forestry Program administered through the State of Washington Department of Natural Resources and the USDA Forest Service.

NOTES

From the cherry blossoms lining the lane near Iafrati Park to the wooded corridor of Sequalitchew Creek, the City of DuPont is defined by its trees. They lend its streets grace and dignity, providing a sense of place and community. DuPont's trees are an important symbolic link with the City's history and its future. Our trees are a valuable City asset that supports the economic, environmental and social vitality of our community.

To make the most of this versatile resource, we need to ensure that our trees are healthy and structurally sound. As with our homes—even our own health—proper care will help ensure that our 'green citizens' remain strong, safe community members. Come along with us as we learn how to take care of our trees, so that they take care of us!

City of DuPont Tree Board
John Ehrenreich
Kerri McConnell
Bill McDonald
Micki McNaughton
Dawn Masko, City Administrator

Peter Zahn, Public Works Director

TREE BOARD MISSION:

"To encourage quality tree care and management in the City of DuPont to help achieve the benefits and values of a healthy urban forest."

BENEFITS OF TREES

- √ **Trees absorb CO_2.** One acre of mature trees absorbs the amount of CO_2 produced in one year by a car driven 26,000 miles.
- √ **Trees clean the air.** Trees absorb pollutant gases and filter particulates out of the air.
- √ **Trees provide oxygen.** One acre of mature trees provides oxygen for 18 people for one year.
- √ **Trees reduce the urban "heat island" effect.** Trees cool urbanized areas by up to 10°F through shade and the release of water vapor into the air.
- √ **Trees conserve energy.** Strategically planted trees may reduce summer air conditioning costs by up to 50 percent.
- √ **Trees conserve water.** Shade from trees slows evaporation from the soil; moisture is captured in leaves, branches and trunks.
- √ **Trees improve water quality** Trees reduce runoff by slowing rainfall impact through canopy capture. Tree roots aid infiltration of water into the soil to reduce surface flow.
- √ **Trees help prevent soil erosion.** Tree roots slow runoff, aid water infiltration into soil and hold soil in place.
- √ **Trees shield people from ultra-violet light.** Large tree canopies reduce UV-B exposure by up to 50 percent; UV-B is a contributor to the most common form of cancer, skin cancer.
- √ **Trees contribute to health.** Patients who can see trees and nature typically heal faster with fewer complications. Children diagnosed with ADHD show fewer symptoms when they have access to trees and nature. Access to trees and nature reduces mental fatigue. People are typically more active in communities with greater tree canopy coverage.
- √ **Trees support economic vitality.** Business districts planted attractively with trees attract more customers and increase the amount of time customers spend in a shopping district.
- √ **Trees slow traffic.** Trees provide natural traffic control when planted along streets.
- √ **Trees increase property values.** Beautiful trees in a well-planted, well-maintained property can raise property values by as much as 15 percent.
- √ **Trees contribute to a sense of community.** Trees link us to the past, help us reach into the future, bring us together with our neighbors through community events, and provide a sense of place.

RESTRICTED STREET TREES FOR DUPONT

Some trees are not appropriate for planting as street trees: some have aggressive roots that are infamous for breaking sidewalks, some have roots that pioneer into water and sewer pipes and some have brittle wood or poor branching structure that doesn't hold up well during our occasional storms. The use of the following trees for street trees in DuPont is restricted, per DuPont Public Works Standards Chapter 5.7 *Street Trees and Landscaping*:

Section 5.7.4

- Poplar and cottonwood (*Populus* species; invasive roots in water and sewer systems, weak brittle wood)
- Soft maples (selected *Acer* species; aggressive root systems, weak brittle wood)
- Sweet gum (*Liquidambar styraciflua* and its cultivars; aggressive root systems, weak brittle wood)
- Orchard-type trees that bear large edible fruit (fruit may pose a pedestrian hazard on sidewalks)

Other trees that are not recommended for use as street trees in DuPont are

- Other members of the Poplar family, such as aspen and white poplar (*Populus* species; invasive roots in water and sewer systems, weak brittle wood)
- Willows (*Salix* species; invasive roots in water and sewer systems, weak brittle wood)
- European Mountain Ash (*Sorbus acuparia*; weak brittle wood, fruit may pose a hazard on sidewalks)
- Nut-bearing orchard-type trees (nuts may pose a pedestrian hazard on sidewalks)

In addition, many of our beautiful native trees just get too big for the space we have available in right-of-way parking strips, thus are not suitable for use as street trees.

RECOMMENDED STREET TREES, CONTINUED

H = Expected Mature Height
W = Expected Mature Canopy Width
F = Flowering
FC = Fall Color

Appropriate for 8-foot minimum planting space		H	W	F	FC
Common Name	**Botanic Name**				
Ash, Autumn Applause	Fraxinus americana 'Autumn Applause'	40	25	N	Y
Ash, Prairie Spire	Fraxinus pennsylvanica 'Rugby'	45	20	N	N
Ash, Urbanite	Fraxinus pennsylvanica 'Urbanite'	50	40	N	N
Ash, Windy City	Fraxinus americana 'Tures'	45	35	N	Y
Coffeetree, Espresso	Gymnocladus dioicus 'Espresso' (seedless)	60	40	N	N
Elm, Allee	Ulmus parvifolia 'Emer II'	50	35	N	Y
Hazel, Turkish	Corylus colurna	45	30	N	N
Honeylocust, Skyline	Gleditisia triacanthos 'Skycole'	45	35	N	Y
Hophornbeam	Ostrya virginiana	40	25	N	N
Linden, Sterling	Tilia tomentosa 'Sterling'	45	35	N	Y
Maple, Autumn Blaze	Acer x freemanii 'Jeffersred'	50	40	N	Y
Oak Bur	Quercus macrocarpa	55	45	N	N
Oak, Red	Quercus rubra	50	45	N	Y
Oak, Scarlet	Quercus coccinea	50	40	N	Y
Oak, Shumard	Quercus shumardii	50	40	N	Y
Oak, Swamp White	Quercus bicolor	45	45	N	Y
Oak, White	Quercus alba	50	45	N	Y
Pagodatree, Regent	Sophora japonica 'Regent'	50	45	Y	Y
Pear, Aristocrat	Pyrus calleryana 'Aristocrat'	40	28	Y	Y
Silverbell, Mountain	Halesia monticola	40	35	Y	N
Tuliptree	Liriondendron tulipifera	60	40	Y	Y
Yellowwood	Cladrastis kentukea	30	40	Y	Y
Zelkova, Green Vase	Zelkova serrata 'Green Vase'	50	40	N	Y

Note that the specifically recommended tree species and cultivars are important; for example, Sterling Linden (*Tilia tomentosum* 'Sterling') does not exhibit the sooty mildew and aphid problems that occur in the more commonly planted lindens (Basswood [*Tilia americana*]; Littleleaf Linden [*T. cordata*]).

TABLE OF CONTENTS

RECOMMENDED STREET TREES, CONTINUED

H = Expected Mature Height
W = Expected Mature Canopy Width
F = Flowering
FC = Fall Color

Appropriate for 7-foot minimum planting space					
Common Name	Botanic Name	H	W	F	FC
Birch, Himalayan	Betula jacquemontii	40	30	N	Y
Crabapple, Tschonoskii	Malus tschonoskii	35	20	Y	Y
Dogwood, Starlight	Cornus kousa x nutalli 'KN 43'	30	20	Y	Y
Elm, Frontier	Ulmus carpinifolia x parvifolia 'Frontier'	40	30	N	Y
Honeylocust, Shademaster	Gleditsia triacanthose 'Shademaster'	45	35	N	Y
Ironwood, Persian	Parrotia persica	30	20	N	Y
Maple, Hedge	Acer campestre	30	30	N	N
Maple, Pacific Sunset	Acer truncatum x platanoides 'Warrenred'	30	25	N	Y
Tupelo	Nyssa sylvatica	35	25	N	Y

Note that the specifically recommended tree species and cultivars are important; for example, Himalayan Birch (*Betula jacquemontii*) is resistant to bronze birch borer and has stronger wood than European White Birch (*Betula pendula*).

RECOMMENDED STREET TREES, CONTINUED

H = Expected Mature Height
W = Expected Mature Canopy Width
F = Flowering
FC = Fall Color

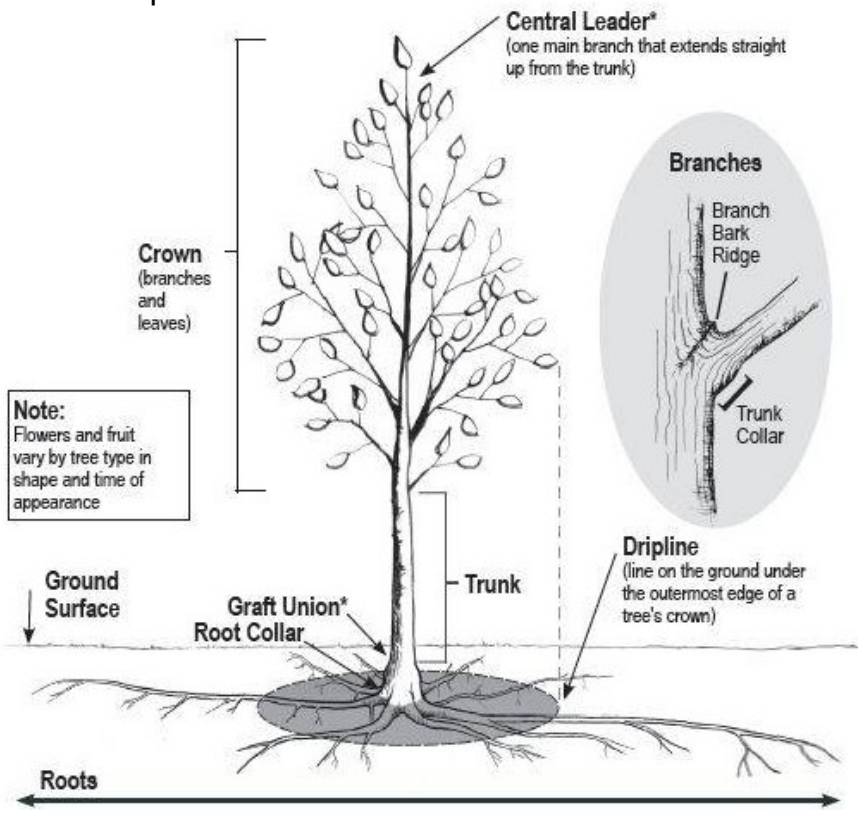
Appropriate for 6-foot minimum planting space Common Name	Botanic Name	H	W	F	FC
Dogwood, June Snow	Cornus controversa 'June Snow'	30	40	Y	Y
Hawthorn, Toba	Crataegus x mordenensis 'Toba'	20	20	Y	N
Hawthorn, Washington	Crataegus phaenopyrum	25	20	Y	Y
Magnolia, Galaxy	Magnolia liliflora x sprengeri 'Galaxy'	30	15	Y	N
Magnolia, Oyama	Magnolia sieboldii	20	15	Y	N
Magnolia, Rustica Rubra	Magnolia x soulangiana 'Rustica Rubra'	20	20	Y	N
Magnolia, Wada's Memory	Magnolia x kewensis 'Wada's Memory'	30	20	Y	N
Maple, Henry	Acer henryi	25	25	N	Y
Maple, Rocky Mountain Glow	Acer grandidentatum 'Schmidt'	25	15	N	Y
Oak, Crimson Spire	Quercus alba x robur 'Crimschmidt'	45	15	N	Y
Pear, Edgewood	Pyrus calleryana x betulaefolia 'Edgewood'	30	25	Y	Y
Pear, Prairie Gem	Pyrus ussuriensis 'MorDak'	25	25	Y	Y
Plum, Thundercloud	Prunus cerasifera 'Thundercloud'	20	20	Y	N
Smoketree, American	Cotinus obovatus	25	20	Y	Y
Sourwood	Oxydendron arboreum	25	18	Y	Y

Note that the specifically recommended tree species and cultivars are important; for example, Thundercloud Flowering Plum (*Prunus cerasifera* 'Thundercloud') is cleaner and more disease-resistant than Blireiana Flowering Plum (*Prunus x blireiana*).

BASIC TREE BIOLOGY

It's important to know the parts of a tree, and how those parts work, so you understand how to plant and care for trees to keep them healthy and strong.

Basic tree parts:



- Roots gather nutrients and water for the tree and provide a stable foundation for its structure.
- Root collar, sometimes called the root flare, is the portion of the trunk just above the ground; a tree does a great deal of its gas exchange ("breathing") here.
- Graft union is the point where a bud or scion from a desirable cultivar was grafted onto more vigorous rootstock.

- The trunk supports the crown and is a critical support structure for the tree.
- Central leader is the strong, straight continuation of the trunk through the canopy, particularly important to maintain in young trees so they grow structurally sound, and are easy to limb up for clearance.
- Bark protects the trunk, branches and twigs, and contains the xylem and phloem on its inner surface. Xylem and phloem conduct water and nutrients between the roots and the leaves, in similar fashion to our blood vessels.
- Limbs, branches and twigs form the crown structure and are an important part of a tree's structure.
- Branch collars, sometimes called trunk collars, form where branches grow out of the trunk. Branch collars contain special cells that help trees contain disease and rot from damage further out on the limb. It's important not to injure the collar when pruning so the wound will callus over properly and protect the interior of the tree from pests and disease.
- Leaves are a tree's food factory; through a complex chemical process, chlorophyll in leaves produces the sugars and nutrients that trees need to grow and thrive. It's important, therefore, to leave as many leaves on a tree as possible.
- Crown consists of the branches, twigs and leaves supported by the trunk.
- Dripline is an imaginary line on the ground following the edge of the crown, often used to establish a Critical Root Zone (CRZ) to protect a tree's roots, during construction activities for example. A more accurate rule-of-thumb to estimate the extent of a tree's roots is to calculate *one foot radius* from the base of the trunk for each *inch* of trunk diameter.

RECOMMENDED STREET TREES FOR DUPONT

H = Expected Mature Height
W = Expected Mature Canopy Width
F = Flowering
FC = Fall Color

Appropriate for 5-foot minimum planting space Common Name	Botanic Name	H	W	F	FC
Amur Maackia	Maackia amurensis	25	20	Y	N
Chokecherry, Canada Red	Prunus virginiana 'Canada Red'	25	20	Y	Y
Crabapple, Adirondack	Malus 'Adirondack'	18	10	Y	N
Crabapple, Golden Raindrops	Malus 'Schmidtcutleaf'	20	15	Y	Y
Crabapple, Royal Raindrops	Malus 'Royal Raindrops'	20	15	Y	Y
Crabapple, Sugartyme	Malus 'Sutyzam'	18	15	Y	N
Crabapple, Thunderchild	Malus 'Thunderchild'	20	20	Y	Y
Dogwood, Celestial	Cornus 'Rutdan'	20	20	Y	Y
Dogwood, Chinese	Cornus kousa	20	20	Y	Y
Hawthorn, Lavalle	Crataegus x lavallei	28	20	Y	N
Hawthorn, Thornless Cockspur	Crataegus crus-galli 'Inermis'	25	25	Y	Y
Hornbeam, American	Carpinus caroliniana	25	20	N	Y
Lilac, Japanese Ivory Silk	Syringa reticulata 'Ivory Silk'	20	15	Y	N
Maple, Tartarian	Acer tartaricum	25	20	N	Y
Maple, Trident	Acer buergeranum	20	20	N	Y
Mountain Ash, Red Cascade	Sorbus americana 'Dwarfcrown'	18	8	Y	Y
Redbud, Oklahoma	Cercis reniformis 'Oklahoma'	25	30	Y	N
Serviceberry, Cumulus	Amelanchier x hybrida	25	15	Y	Y
Serviceberry, Lustre	Amelanchier cv. 'Rogers'	25	18	Y	Y
Serviceberry, Robin Hill	Amelanchier x grandiflora 'Robin Hill'	20	15	Y	Y

Note that the specifically recommended tree species and cultivars are important; for example, Red Cascade Mountain Ash (*Sorbus americana* 'Dwarfcrown') is a much more desirable street tree than European Mountain Ash (*Sorbus aucuparia*).

RESOURCES

The Alliance for Community Trees
www.actrees.org

The American Grove
www.americangrove.org

The Arbor Day Foundation
www.arborday.org

City of DuPont official website
www.ci.dupont.wa.us

Human Dimensions of Urban Forestry and Urban Greening
www.naturewithin.info

Landscape and Human Health Laboratory
lhhl.illinois.edu

National Tree Benefits Calculator
www.treebenefits.com

Tree Care Industry Association
www.tcia.org

Trees Are Good! (ISA public outreach website)
www.treesaregood.org

USDA Forest Service Pacific Southwest Research Center
www.fa.fed.us/psw/programs/uesd/uep/research

USDA Forest Service Urban and Community Forestry
www.fs.fed.us/ucf

Washington Grove
www.americangrove.org/wa

Washington State Department of Natural Resources
Forestry, Forest Health & Forest Ecology
www.dnr.wa.gov/ResearchScience/ForestryForestEcology

Washington State Department of Natural Resources
Urban and Community Forestry Program
www.dnr.wa.gov/urbanforestry

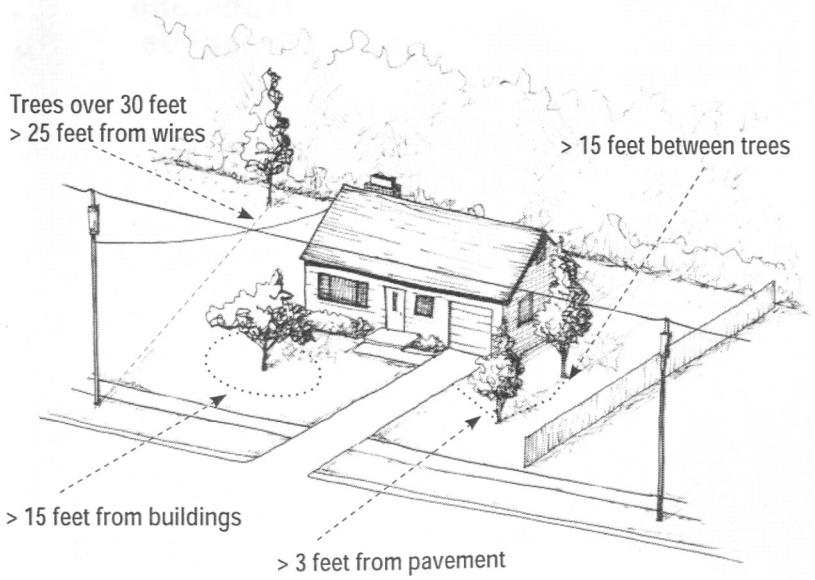
NEW TREES

THE RIGHT PLACE

"The best time to plant a tree was twenty years ago; the next best time is NOW!' — old proverb

There's nothing more exciting than planting new trees! To ensure a long, healthy, beautiful life, begin by finding the Right Place for your tree:

- Look up: are there utility lines overhead of the planting site?
- Look around: wherever possible, stay at least
  - 3 feet from pavement or fencing in *any* direction
  - 15 feet from buildings
  - 10 feet from driveways
  - 10 feet from safety or traffic signage
  - 10 feet from fireplugs
  - 35 feet from street corners (visibility)



- Look down (underground): **always call the free utility marking service at 811**. Washington State law requires that anyone preparing *any* excavation to know what is underground before beginning to dig. Better to wait a few days for the utility locate service rather than disrupt vital utilities to your community—or worse yet, injure yourself.

> ***Caution!***
> Remember that trees grow! That cute little tyke in the pot has the potential to become VERY BIG, so make sure there is space for the tree to grow: adequate space for the canopy to develop to its full potential and adequate space for the roots so the tree remains stable and healthy.

- Sun and wind protection: What direction are the prevailing winter winds? How high is the summer sun? If reducing energy costs is one reason you're planting a tree, be sure to think about where to plant it to get the best effect.
- Soils: are the soils where you propose to plant the tree heavily compacted due to construction or road-building activities? These soils are very difficult for young trees' roots to grow into.
- Septic system: if your home has a septic system, please do not plant a tree over the tank or leach field; the tree's roots will reduce the functionality of the system and may cause it to fail.
- View: Remember the mature size of your tree when planning its location; do not plant a large tree where it will impact a view that you or your neighbors love. That will lead to topping or other bad pruning practices—and higher pruning expenses—as the tree grows.

SIDEWALKS AND TREES

Streets and sidewalks are for everyone's use. In DuPont, property owners are responsible for maintaining the sidewalk and planting strip, or roadway shoulder if no sidewalk is present, that adjoins their property.

DuPont Municipal Code Chapter 14.02 requires that sidewalks be maintained in good repair, fit and safe for the public to use. A notice will be issued to the adjacent property owner if the City determines that a sidewalk is in need of repair. The City may direct property owners to repair problematic sidewalks; however, the City prefers to work cooperatively with property owners to address such issues.

A sidewalk is considered to be in need of repair when

- There are cracks greater than 1/2-inch wide
- There are multiple cracks or spalls over 50% or more of a single sidewalk panel
- There is a fault or other surface irregularity greater than 1/2-inch in depth
- A piece of the sidewalk can be moved with ordinary foot pressure

The City may provide concrete-grinding or asphalt shims as a temporary safety measure for cracks or faults less than 1/2-inch, as funds allow.

Repair of damaged sidewalks requires a permit, available through City Hall. The permit ensures that the repaired sidewalk will meet the City's current sidewalk standards.

If trees are causing the sidewalk damage, property owners should consult with a certified arborist (ISA or TCIA) to discuss possible options for controlling future damage. Such options may include root pruning by a professional, root barriers or in extreme cases, removal of the tree.

TREE REMOVALS

Trees, like people, have a lifespan; sometimes it's time to let our green friends go. Alternatively, a tree may be deemed a nuisance or hazard, and require removal to reduce exposure to risk and liability.

Whatever the reason for removal, please hire a professional for this work, to ensure the safety of you and your family, your neighbors and your property. A tree falling on your home or your neighbor's car can wipe out any savings that might have been made by doing the removal yourself.

Many of the same tips for choosing an arborist are important when choosing someone to take a tree down:

- Ask for local references and check those references.
- Ask for the arborist's experience and record of safety in felling. In particular, find out if he/she has experience in felling trees in an urban setting—much different than logging trees in the forest!
- Get more than one bid or estimate; do not automatically accept the lowest bid. Never pay in advance.
- Hire an arborist who is bonded, licensed and insured. Ask for proof.
- Ask if they will remove the waste wood, or cut it to length for you if you prefer. Ask if they will grind the stump for you, and fill the grinding hole with soil.
- Get the work details and estimate in writing.
- Check with the Public Works Dept. at (253) 912-5381 to see whether a Right-of-Way Permit is needed if the arborist needs to use the right-of-way as workspace to do the job safely.

If you wish to remove a street tree, please call City of DuPont Public Works Department at (253) 912-5381.

THE RIGHT TREE

Now that you have chosen the perfect spot for your tree, let's look at how to choose the right tree for that location.

- Soils: are your soils gravelly? Sandy? Wet and boggy? There's a tree appropriate to nearly any soil condition; be sure to choose a tree that enjoys, or at least tolerates, the conditions at the planting site.
- Exposure: is the location sunny or shady? Windy or protected? Again, you and your tree will be happier if the tree's preferences match the site better.
- Space: much less pruning will be required if your new tree fits the space available. Be sure there's enough space for roots, too.

Caution!

Remember that trees grow! This is particularly important to remember if planting under or near utility lines. Trees planted under utility lines should reach a mature height of 25 feet or less to remain outside the Safety Zone, approximately 10 feet in all directions from the lowest wire (neutral). Planting smaller trees under utility lines

- reduces fire hazards;
- limits the need for frequent (and expensive) pruning; and
- maintains the shapeliness and beauty of trees because they do not need to be pruned for clearance.

- Function: are you planting for shade? Wind protection? Screening from a busy street? To frame your home or a view?
- Seasonal interest: would you like flowers? Fruit? Fall foliage color? Interesting bark?
- Are you planting a street tree? If so, please check the *Recommended Street Tree List* at the back of this Manual.

CHOOSING A GOOD-QUALITY TREE

Trees of poor quality may be cheaper, but will cost more in the long run as you struggle to keep them healthy and beautiful. Factors to consider in choosing a high-quality tree include

- Roots: the root system should be loose enough that you can 'massage' it easily. Root-bound trees rarely establish well because their roots never stretch out into the surrounding soil; they may even roll out of the ground under the weight of the canopy as the tree grows. Avoid circling roots as well, as they may 'girdle' the trunk, creating a weak area at the base of the trunk with high potential for tree failure. You should be able to find a root at least as large as your thumb in the upper two inches of soil in the nursery pot or dirt ball.
- Trunks: look for straight trunks with good branch development and evidence of root flare (root collar) development. The bark should be uninjured, and there should be no sign of disease or pests.
- Canopy: the canopy should be even-sized and well-balanced, even in a small young tree. There should be a strong central leader visible (this is typically not found on trees that mature to a small size, such as flowering plums or dogwoods).
- Branches: branches should be well-attached to the trunk with a well-defined branch (or trunk) collar and spaced regularly around the trunk; not broken, diseased or damaged. Branch angles should be close to 90°, unless the species or cultivar is narrow and upright.
- Leaves: leaves should be well-hydrated, with a healthy color typical for the species or cultivar; not torn or diseased.

TREE DOCTOR: PESTS AND DISEASES

The best way to keep your trees insect- and disease-free is to make sure that they are the Right Tree in the Right Place; the next best way is to keep them healthy.

Occasionally, however, even the healthiest trees will develop problems due to an introduced pest or disease to which they have no immunity. Examples of these are:

- Cherry tortrix beetle
- Asian long-horned beetle
- Gypsy moth
- Emerald ash borer
- Dutch elm disease
- Sudden oak death
- Thousand canker disease

There's a lot of information about these and other pests and diseases online; a quick Internet search will provide a plethora of information. Be sure that the website you consult offers accurate and timely information; the best are sponsored by the USDA Forest Service Research Centers and the Washington State University Extension Service. Links for these are on the Resource page toward the end of this Manual.

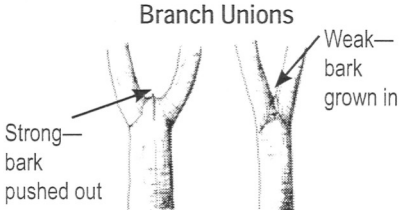
But what about common seasonal aggravations like aphids and sooty mildew? Again, the best defenses are the Right Tree in the Right Place in good health; neither condition is around long, a few weeks usually. There is little that can be done about sooty mildew; however, some options for addressing aphids include

- Washing aphids off leaves with a strong stream of water from a hose
- Systemic insecticides (although these may be expensive and can be hard on beneficial insects)
- Avoiding honeydew drippings on cars by parking elsewhere for the duration

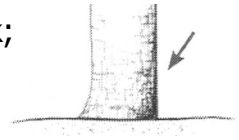
WHEN GOOD TREES GO BAD

A tree may be green and lush, but still have structural defects or internal rot that may cause it to be unsafe. Inspect your trees regularly, especially after storms, and keep your eyes open for these common risks:

- Included bark in a branch attachment or double trunk
- Weak trunk or branch attachments



- Broken, dead or hanging branches
- Large cracks in the trunk or larger branches
- Internal decay as evidenced by shelf fungi, gummy exudates or sunken spots
- A lean of approximately 45° or more is considered risky if the tree is not well-rooted
- Recent change in degree of lean, particularly if the soil or grass is lifted on the opposite side of the tree
- Girdling roots that compress the trunk; a flat-sided trunk without a root flare at ground level is a good indicator



- Buckling in the trunk of a weak-wooded tree, such as aspen or alder
- Sapsucker damage often *looks* awful, but may not affect the tree's health or soundness at all

If you have any questions regarding the soundness or safety of your trees, call an expert. Experienced arborists can put your mind at ease, identifying and remediating a problem or offering possible solutions. Some homeowner's insurance policies will reimburse for regular tree inspections, similar to preventive care paid by a health insurance policy.

Trees are sold in one of three ways:

- Balled-and-burlapped (B & B): trees should be freshly dug; the root system with its soil is wrapped in burlap. Sometimes there is also a wire cage to help in moving the tree.
- Containerized: there are a wide variety of container types available, all the way from typical nursery pots to bags of various materials that are designed to help a tree grow healthy root systems in a confined space.
- Bare-root: all dirt has been washed from the roots, making the tree very easy to handle. It is imperative that the roots be kept moist and never allowed to dry out. Fruit trees are the most commonly-found bare-root trees, but occasionally ornamental trees may also be found bare-root.

Remember to keep your tree watered if you can't plant it immediately; never let the roots or root ball dry out.

Before you leave the nursery or garden center, it's a good idea to write down

- Type of tree—species, variety, etc.
- Mature height and canopy width
- Where the tree was purchased
- Date of purchase
- Warranty period and particulars

Moving your tree is usually easier if the branches are tied with twine or some other soft material.

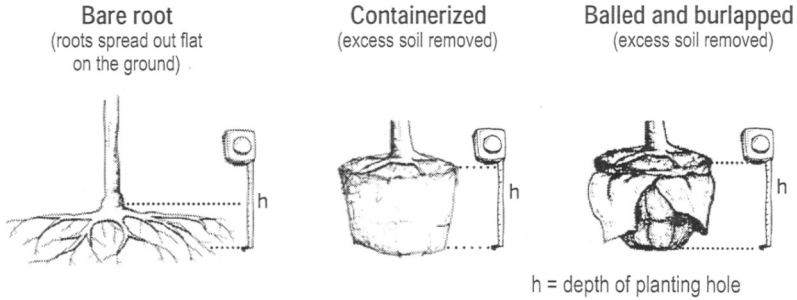
If your tree has leaves or needles, wrap it with a tarp or other protection while transporting to reduce wind damage and desiccation.

Do NOT lift your tree by the trunk! Lift the tree by the rootball, cage or container. For larger trees, use a hand-truck, or tip to one side and roll. Steady by holding near the base of the trunk.

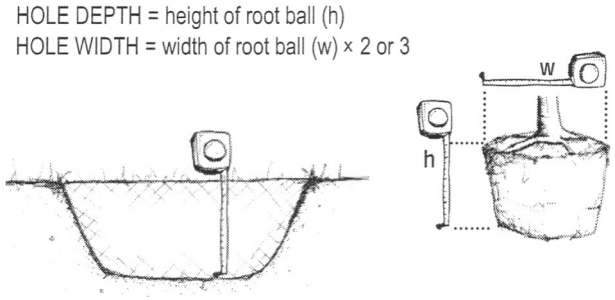
PLANTING YOUR NEW TREE

Now for the fun part! Here's a good way to give your new tree a *great* start in life:

- Remove all wrappings and tags from trunk and branches.
- Prune away dead, diseased, broken or rubbing branches.
- Poke around in the top of the dirt ball to locate the top structural root; it should be about the size of your thumb. Clear away all dirt in the container or rootball above that root.



- Dig a good hole: the old saying is to dig a $5000 hole for a $50 tree, and that's a good start! The hole should be wide enough to accommodate the roots when they're spread out, usually two to three times the width of the rootball in the container or B & B. Make the hole only as deep as the roots up to the root flare; avoid a deep cylindrical 'plug' hole; roots have difficulty growing beyond such a planting hole.



HIRING AN ARBORIST

Consider hiring an arborist if the pruning job is too big for you to tackle safely on your own. If a branch removal calls for a ladder and chainsaw, it may be time to consider a professional for the job—*your* safety is paramount!

Tips for selecting an arborist:

- Ask for local references and check those references.
- Get more than one bid or estimate; do not automatically accept the lowest bid. Never pay in advance.
- Hire an arborist who is bonded, licensed and insured. Ask for proof.
- Look for current certification by the International Society of Arboriculture (ISA) or Tree Care Industry Association (TCIA). Arborists certified by either organization have been rigorously tested to ensure high standards of skill and knowledge.

Credit: ISA

Credit: TCIA

- Beware of doorknockers or cold-calls; would you hire a doctor from a flyer on your car windshield? A dentist who called you to solicit your business? Respect your trees, and yourself, enough to hire the best.
- A good arborist rarely recommends topping, and should offer other options if topping is requested. AVOID TREE TOPPING at all costs (*your* costs!).
- A good arborist should not use climbing spurs to work in your tree; do not allow this practice as it opens wounds in the tree trunk that allow disease and insects into the heart of the tree.

TOPPING

In a word, ***DON'T!*** Topping is one of the worst things you can do to a tree; it is extremely harmful to trees for a variety of reasons:

- Topping opens the 'heart' of the tree to rot, which may make the tree unsound and unsafe.
- Topping may actually make a tree hazardous, by creating openings for disease, pests and decay.
- Topping cuts usually produce sprouts that are weakly attached to the trunk and thus more likely to break off in a storm.
- Topping starves a tree through canopy loss.
- Topping may shorten the lifespan of a tree through malnutrition and stress.
- Topping removes the protection of branches and leaves, leaving the canopy interior exposed to sunlight and heat which may burn tissues beneath the bark.

Topping may also be called rounding over, hatracking, heading, tipping, height reduction or stubbing.

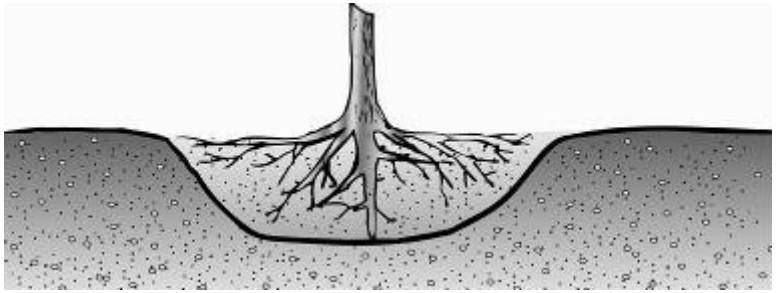
Topping is expensive, both initially and into the future. Trees will typically try to replace lost leaves by throwing a multitude of shoots, which then have to be removed, an endless cycle. Topping often leads to expensive removal of a tree that has become a liability.

As if that weren't enough, topping is *ugly!* The tree no longer has its natural form and grace.

As you can see, topping is not only an insult to your tree, it's an insult to your pocketbook. It is clearly not in the best interests of you, or your tree. Contrast that to the powerful positive effects of proper pruning that make your tree healthier, more beautiful, safer and extends its useful life.

- Put the tree in the hole. If containerized, remove the container and 'massage' roots to loosen. Spread roots out in the shallow bowl, clipping any problem roots such as those that circle or kink. If balled-and-burlapped, make sure the hole is the proper depth—from bottom of root ball to root collar and no deeper—before removing all wrappings.

→ <u>Remove all materials: twine, burlap, wire cage, etc.</u> Remember the root collar from Page 1? Don't bury it; that's where the tree 'breathes.'



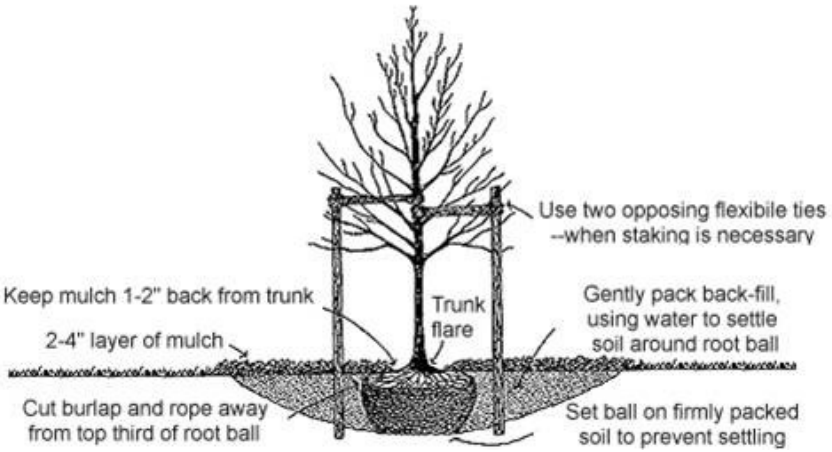
Credit: International Society of Arboriculture

- Make sure the trunk is straight and backfill the hole with native soil, breaking up clumps if necessary. This is a 'tough love' situation; don't pamper your young tree with goodies in its planting hole—it won't send its roots out to become strongly established. Be sure that the root collar is free of soil.
- Water the entire planting hole thoroughly.
- Apply mulch two to four inches deep over the entire planting hole. Spread mulch so that is looks like a donut, not a volcano! Less than two inches of mulch doesn't effectively reduce the loss of soil moisture or discourage weeds; more than four inches prevents oxygen from reaching the tree's roots. Mulch should not touch the trunk or cover the root collar. For best long-term results, mulch should be a biodegradable material: shredded wood chips, rough compost, etc. Do not use sawdust or grass clippings.

Credit: International Society of Arboriculture

- Stake only if necessary; sometimes staking is a good idea more to protect the tree than to support it. Use sturdy stakes solidly installed, one on either side of the planting hole, no closer than 2 feet to the tree. Use a soft, stretchy material to fasten the tree to the stakes at right angles: wide nylon straps, rubber locklink, old t-shirts ripped into strips, even old nylon stockings! Never use wire or twine, even inside hose, as it cuts into tender young wood and may cut off the flow of water and nutrients to part of the tree.

→ <u>Leave stakes no longer than one or two years.</u>



Credit: City of Olympia

Voila! Your new baby tree is home!

A few guidelines to help you prune your older trees well:

- Use the proper tools; chainsaws may be too large to make a good cut for the branches you're removing.
- Use clean, sharp tools. Dirty dull tools are more difficult to use, and may spread disease.

Credit: City of Tacoma

- Don't remove more than 50 percent of live canopy; remember that the tree needs leaves to feed itself.
- Prune carefully; remember that bad pruning cuts won't grow back and can cause long-term damage.
- Use correct pruning technique. For large branches, you may need to use a three-part cut:

Credit: City of Tacoma

Cut A: make a short cut on the under-side of the branch to prevent bark tears if you lose control of the branch.
Cut B: remove the heavy end of the branch; may require multiple cuts.
Cut C: make the final cut cleanly just outside the branch collar.

- Never make flush cuts; the branch collar contains special cells that help close the wound and protect the tree from disease, pests and rot.
- Do not leave stubs, which may promote internal rot.
- Stay on top of pruning tasks in order to keep branch removals as small as possible: smaller wounds cre-ates less stress to the tree and close faster than large pruning wounds.
- Don't clean branches leaving a tuft of leaves at the end; this "lion's tailing" creates weak branches and may cause branch failure.
- Wound dressings are not necessary, and in fact, may foster disease, insects and rot.

PRUNING YOUR MATURING TREE

As a tree matures, pruning becomes more important

- for safety (traffic clearance, sign clearance, etc.)
- for shape (lightly thinning heavy branch ends)
- for structural training, to maintain a strong leader
- for aesthetics

Pruning should always have a purpose, and should always be done thoughtfully—you can't glue branches back on once you've cut them off!

The best time to prune is when you have enough time to take your time and do it properly. Here are a few suggestions for scheduling pruning tasks:

- Structural pruning is best done during the winter when the structure of deciduous trees is apparent due to lack of leaves.
- Dead, diseased or broken limbs may be removed at any time.
- Deciduous trees should NOT be pruned during leaf expansion; the wound will weep sap copiously and may attract insects and disease pathogens. Be careful to prune flowering trees AFTER they bloom; if you prune in late winter or spring, you will most likely remove the flower buds! Light pruning may be done in summer to reduce weight at branch ends.
- Coniferous trees may be pruned anytime, except early summer during the flush of new growth.

Caution!

Never work near powerlines!

Overhead wires that carry electricity are very dangerous; for your own safety and that of others, call your local power provider for assistance if you have a tree near powerlines that needs trimming or pruning.

CARING FOR YOUR NEW TREE

The two most important things you can provide for your new tree are water and protection against 'mower blight.'

Newly-planted trees need a minimum of 5 gallons of water per week during the growing season when they're in leaf, roughly May through September. Lack of water will stress a young tree, sometimes to the point of death. Providing ample water while the tree is young will help ensure a healthy, sound, disease- and pest-free tree for years. Once the tree is well-established, usually about 3 years here in the Pacific Northwest, the roots will be able to find water and nutrients on their own.

A young tree's roots are not yet able to make efficient use of fertilizers. If you *must* fertilize, please use an organic fertilizer and a light hand. Spread fertilizers sparingly at the drip line of the tree where the tiny feeder roots can take up those nutrients.

Anything that causes damage to the thin bark of a young tree is stressful, and that certainly includes wounds from string trimmers, weed whackers or lawn mowers. If the wound encircles the whole trunk, the tree may even die. The vessels which transport water and nutrients throughout the tree, the xylem and phloem, lie immediately beneath the bark and are easily cut or damaged in a young tree.

A large mulch circle will help prevent such damage, as well as reduce evaporation of important soil moisture. A mulch circle also helps reduce stressful competition for water and nutrients from grass and weeds.

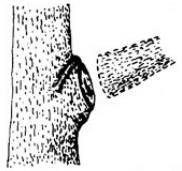
Credit: City of Tacoma

PRUNING YOUR NEW TREE

A young tree needs as much of its 'food factory,' its leaves, left intact as possible; therefore, a young tree doesn't require much pruning. Removing *dead, diseased, or damaged* branches—the three Ds—helps to reduce stress and keep the tree healthy.

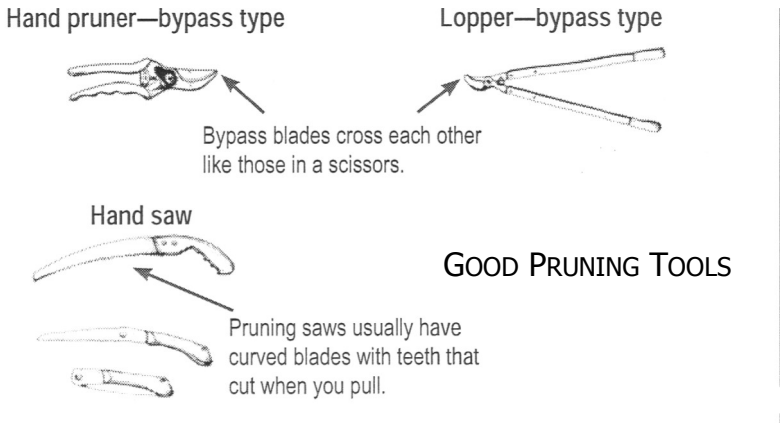
Guidelines to keep in mind when pruning young trees:

- Prune with a purpose: remove only the three Ds (see above) to provide clearance or improve structure.
- Prune properly: bad pruning cuts can cause long-term damage.
- Make cuts as small as possible: smaller wounds creates less stress to the tree than large pruning wounds.
- Prune off branches just outside the branch collar: this allows for faster wound closure and less exposure to disease pathogens and pests.
- Do not leave stubs, which may invite disease pathogens or pests.
- Never remove more than approximately 20 percent of a young tree's live canopy.



Pruning cuts should be made just outside the branch collar.

Credit: City of Tacoma



GOOD PRUNING TOOLS

EXISTING TREES

What about trees that are already in place? Now we'll learn how to care for them, too, so that they are safe, sturdy members of our community.

- Water is just as important to a maturing tree as to a young tree, although most well-established trees are able to find enough on their own. During hot, dry summers, though, your older trees will also appreciate a long soak at the drip line every couple of weeks, which will help to reduce stress and keep the tree healthier.
- Fertilizer may be helpful to your tree if it is undergoing stress due to drought, damage to roots or other parts of the tree, or severe pruning. Fertilizer does not feed a tree, it just makes nutrients more available; trees feed themselves through the complex process of photosynthesis.
- Mulch performs the same functions for maturing trees as for young trees: it keeps soil temperatures even, reduces the loss of soil moisture, and reduces competition for water and nutrients from grass and weeds. A large mulch circle also protects the lower trunk from wounding by string trimmers, weed whackers and lawn mowers, one of the most common injuries found on urban trees.
- Protection from injury due to construction or traffic is important to maintain the health and soundness of your tree. Open wounds invite disease and pests, which may lead to internal rot that compromises the structural stability and safety of a tree.
- Protect the root zone; roots not only provide the water and nutrients that a tree needs to grow and thrive, they also anchor the tree. Reducing root mass or compromising root strength through tearing or crushing may cause the tree to die or fall over.