Todd Prager & Associates LLC

# Davis-Meeker Oak
# Treatment Plan

**Date:** November 12, 2025

**Site Address:** 7525 Old Highway 99E
Tumwater, Washington 98501

**Prepared for:** Lisa Parks, City Administrator
City of Tumwater
555 Israel Road SW
Tumwater, Washington 98501
(360) 754-4120 | lparks@ci.tumwater.wa.us

**Prepared by:** Em Roberts | Todd Prager & Associates, LLC
ISA Certified Arborist ® PN-9782A
ISA Qualified Tree Risk Assessor
(503) 893-9168 | em@toddprager.com

Christine Johnson | Todd Prager & Associates, LLC
ASCA Registered Consulting Arborist® #823
ISA Board Certified Master Arborist® PN-8730B
ISA Qualified Tree Risk Assessor
(971) 978-9381 | christine@toddprager.com

Todd Prager | Todd Prager & Associates, LLC
ASCA Register Consulting Arborist® #597
ISA Board Certified Master Arborist® WE-6723B
ISA Qualified Tree Risk Assessor
(971) 295-4835 | todd@toddprager.com

# Table of Contents


Table of Contents ..... 2
Introduction ..... 3
Recommended Treatment Schedule ..... 4
Year 1: August 2025 through July 2026 ..... 5
ROOT ZONE MANAGEMENT ..... 5
Background ..... 5
Goals and Objectives ..... 5
Treatment: Grade and Drainage Improvements ..... 5
Treatment: Vertical Mulching ..... 6
Soil amendment ..... 7
Year 2 through Year 3: August 2026 to June 2028 ..... 8
PRUNING ..... 8
Background ..... 8
Goals and Objectives ..... 8
Treatment: Pruning ..... 9
Optional Treatments ..... 9
SUPPLEMENTAL SUPPORT SYSTEM ..... 10
Background ..... 10
Goals and Objectives ..... 10
Optional Treatment: Supplemental Support System ..... 10
FENCING ..... 11
Background ..... 11
Optional Treatment: Fencing ..... 11
NATIVE PLANTING ..... 12
Background ..... 12
Optional Treatment: Native Plantings ..... 12
Continuing Risk Assessment, Monitoring, and Adaptive Management ..... 14
Additional considerations ..... 14
Attachment 1 – Graphical Soil Analysis Report ..... 16
Attachment 2 – Root Zone Management Site Plan ..... 17
Attachment 3 – Vertical Mulching Detail ..... 18
Attachment 4 – Compost Parameters for Tree and Shrub Use ..... 19
Attachment 5 – Optional Fencing Plan ..... 20



*Todd Prager & Associates, LLC*
*601 Atwater Road • Lake Oswego, OR 97034*
*Phone: 971.295.4835 • Email: todd@toddprager.com • Website: toddprager.com*

# Introduction

In August 2024 through February 2025, our firm conducted a Level 3 Advanced Tree Risk Assessment of the Davis-Meeker Oak, a historical 66-inch DSH (trunk diameter at standard height, 4.5 feet above ground level) Garry oak (*Quercus garryana*) located adjacent to Old Highway 99 in Tumwater, WA. Our risk assessment resulted in a moderate risk rating and we presented four different risk mitigation options for the City of Tumwater's consideration. This Treatment Plan expands upon treatment Option B which involves:

- Tree retention;
- Reduction pruning;
- Potential installation of supplemental support;
- Root zone management; and
- Ongoing monitoring.

The specifications provided in this treatment plan to implement Option B align with the ANSI A300 Tree Care Standards.[1] The following companion publications to the ANSI A300 Tree Care Standards by the International Society of Arboriculture (ISA) were consulted during the preparation of this report:

- Best Management Practices – Pruning, Third Edition (2019)
- Best Management Practices – Soil Management for Urban Trees, Second Edition (2021)
- Best Management Practices – Tree Support Systems, Third Edition (2014)
- Best Management Practices – Managing Trees During Construction, Third Edition (2023)

The specifications provided in the report may be implemented by the City of Tumwater based on their risk tolerance level, available budget, and other relevant factors. The ultimate decision whether to implement the specifications in this report rest with the tree owner or manager. Our firm's role is to provide professional advice to inform the tree owner or manager's decision making. Note that the tree's historical status necessitates engagement with the Washington State Department of Archaeology and Historic Preservation (DAHP) prior to any treatment. Any tree work described in this report shall be completed by a qualified ISA Certified Arborist® with coordination, oversight, and onsite documentation by our firm. Other work such as landscape planting and fence installation shall be coordinated, overseen, and documented by our firm.

[1] American National Standards Institute. (2023). *ANSI A300-2023 Tree Care Standards for trees, shrubs, palms, and other woody landscape plants*.

## Recommended Treatment Schedule

| YEAR | TREATMENT | DATE RANGE | |
|---|---|---|---|
| 1 | Root zone management: Grade and drainage improvements | 11/15/2025 | 6/30/2026 |
| | Root zone management: Vertical mulching + arborist wood chip application | 11/15/2025 | 6/30/2026 |
| 2 or 3 | Pruning treatment | 11/1/2026 | 3/1/2027 |
| | | or | |
| | | 11/1/2027 | 3/1/2028 |
| | Optional: Supplemental Support System | Year 2 or 3, assess after pruning | |
| | Optional: Fencing | Year 2 or 3, after pruning | |
| | Optional: Native Planting | Year 2 or 3, after pruning | |

# Year 1: August 2025 through July 2026

## ROOT ZONE MANAGEMENT

### Background

The root crown excavation conducted in December 2024 removed 1 to 2 feet of river rock to expose the trunk flare. With the trunk flare now visible, the planting site can be carefully graded to promote soil natural drainage and aeration. Additionally, soil analysis testing from September 2025 found low levels of nitrogen and magnesium (Attachment 1). Nitrogen is the most important macronutrient. Increasing organic matter in the root zone is the least invasive treatment to improve soil conditions.

### Goals and Objectives

The goals and objectives for the root zone treatments are:

1. Goal: Promote natural drainage.
   1.1. Objective: Promote effective drainage surrounding the tree.
   1.2. Objective: Mitigate compaction slowly over time with minimally invasive techniques.

2. Goal: Address nutrient deficiencies.
   2.1. Objective: Increase organic matter.
   2.2. Objective: Increase nitrogen.
   2.3. Objective: Improve the soil food web.

### Treatment: Grade and Drainage Improvements

| YEAR 1: GRADE AND DRAINAGE IMPROVEMENTS | |
|---|---|
| **Method** | Pneumatic excavation (e.g. Air Spade®) |
| **Time** | 1 to 2 Days |
| **Site preparation** | 1. Place request for utility locates.<br>2. Coordinate with City of Tumwater and their contract archaeologist for permitting.<br>3. Coordinate with Port of Olympia to potentially reserve and restrict parking.<br>4. Coordinate with Port of Olympia to identify soil/rock stockpile area.<br>5. Request guidance from City on limits of river rock removal adjacent to roadway. |
| **Procedure** | 1. Under supervision from the project arborist, remove the river rock at the trunk flare by hand.<br>2. River rock should be either removed from the site or at a minimum stored outside of a 100-foot radius of the tree.<br>3. Using pneumatic excavation and a rake, blend the grade from the existing grade at the stem into the surrounding grade (which is higher) without disrupting the root system unnecessarily or destroying a significant portion of fine fibrous roots.<br>4. Identify one to three routes for water to drain away from the trunk and jersey barriers to prevent standing water at the base of the trunk. Use pneumatic excavation to loosen soil when identifying routes. |

## Treatment: Vertical Mulching

| YEAR 1: VERTICAL MULCHING | |
|---|---|
| **Method** | Pneumatic excavation (e.g. Air Spade®) |
| **Time** | 1 to 3 Days |
| **Site preparation** | 1. Place request for utility locates.<br>2. Coordinate with City of Tumwater and their contract archaeologist for permitting.<br>3. Coordinate with Port of Olympia to potentially reserve and restrict parking.<br>4. Apply water through use of soaker hoses starting 48 hours before pneumatic excavation, regardless of weather predictions. Allow the soaker hose to run for 24 hours. Then turn it off for 24 hours prior to the pneumatic excavation. This will leave the soil as close to field capacity as possible in preparation for the air excavation. |
| **Procedure**<br>Attachment 2<br>Attachment 3<br>Figure 1 | 1. Excavate holes radially from the trunk with a pneumatic excavation tool. Each hole is to be excavated pneumatically to a depth of 6 inches to 12-inches, distance between holes 2 to 3 feet, and diameter of 3 inches.[2]<br>2. Inspect holes for roots. If woody roots are uncovered, adjust hole location several inches to avoid.<br>3. Excavate hole with handheld drill with 3-inch drill bit, if necessary.<br>4. Backfill hole with a soil amendment (see specification).<br>5. Install a surface application of arborist wood chips 3 to 4 inches thick within the treatment area which encompasses the tree's dripline where not precluded by obstacles such as the roadway. Gently taper arborist wood chips toward the trunk flare so they do not contact the trunk. This is an estimated 20 yards (3-inch depth) to 27 yards (4-inch depth) of arborist wood chips. |

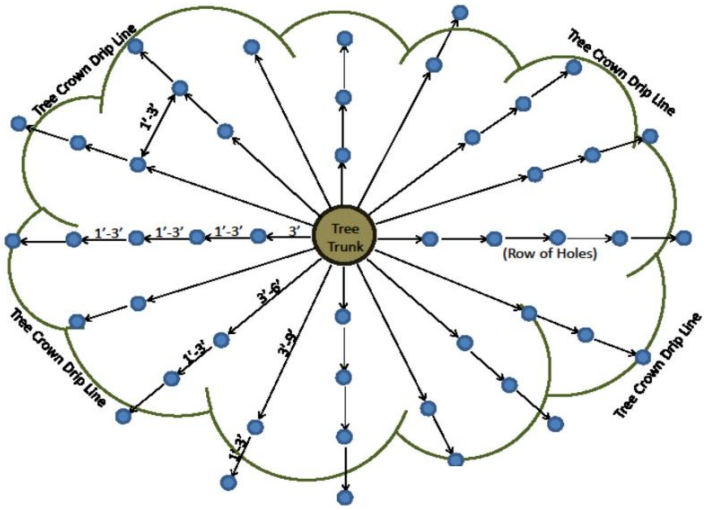



**Figure 1** The above diagram illustrates how holes should extend radially from the trunk to just beyond the dripline. Illustration adapted from Texas A&M Forest Service. See Attachment 2 for proposed root zone management area for the Davis-Meeker Oak and Attachment 3 for a vertical mulching detail.

[2] Texas A&M Forest Service. *Technical Tree Solutions: Vertical Mulching/Composting.* https://tfsweb.tamu.edu/elibrary-item/vertical-mulching-composting/

**Soil amendment**

| AMENDMENT | PERCENT | SPECIFICATIONS |
|---|---|---|
| **Compost** | 15% | Comply with US Composting Council Seal of Testing Assurance (STA) (Attachment 4). A list of Washington suppliers can be found online at https://www.compostingcouncil.org/page/participants#WA |
| **Decomposed wood chips** | 15% | Particle size 1-inch<br>Free of contaminants (rock, metal, plastic, etc.) |
| **Organic fertilizer** | 15% | Kelp Meal, 1-0.1-2<br>Feather Meal, 12-0-0<br>Worm castings |
| **Magnesium-enriched Biochar** | 5% | Woodchip biochar applied at 5% per volume to no more than 10% per volume.<br>Woodchip biochar produced at a temperature above 450°C<br>Varied particle size is desired |
| **Topsoil mix with sand or sandy loam** | 50% | The soil type is loamy fine sand. Sand should be incorporated into the amendment to ensure uniform root growth and reduce soil shrinkage or collapse in the holes. |
| **Est. Volume of soil removed** | 125 holes, 1 hole/17 SF, 84 cubic inches/hole = 10,500 cubic inches or 0.23 yards<br>150 holes, 1 hole/14 SF, 84 cubic inches/hole = 12,600 cubic inches or 0.27 yards<br>175 holes, 1 hole/12 SF, 84 cubic inches/hole = 14,700 cubic inches or 0.32 yards | |
| **Est. Volume of soil amendment** | Estimated total volume for amendment to be 0.27 yards (average) | |

# Year 2 through Year 3: August 2026 to June 2028

## PRUNING

### Background

While reduction pruning is a recommendation that could reduce the likelihood of branch failure and increase stability to the tree, the costs and benefits must be weighed with careful consideration given the age, health, and structure of this large historic tree. Pruning reduces the amount of leaves on the tree. The greater the amount of leaves on the tree, the greater the tree's capacity for photosynthesis. Photosynthesis makes "food" for the tree in the form of sugars, which sustains the tree's health, vigor, and structure while also allocating resources to many critical life processes such as compartmentalizing decay and growth among many others. The higher the rate of photosynthesis, the greater the amount of resources to sustain the tree's health, structure, and resistance to pathogens and decay.

Completing the soil mitigation work and the pruning work is not recommended within the same growing year, hence the recommendation to delay reduction pruning to Year 2 or later. Minimal canopy reduction, including end-weight reduction and reduction on specific stems and branches that have been shown to have decay columns within them, could be warranted. However, the TreeCalc[3] model did not suggest that pruning is required from a basal tree stability standpoint.

Reduction pruning is an option, but not a requirement from a tree health and structural stability perspective. However, reduction pruning is recommended if the tree owners and managers find themselves with a risk tolerance that would prefer some end-weight reduction pruning be carried out to mitigate potential branch failure. By reducing the likelihood for branch failure, serious injury to the tree may also be prevented if a branch were to fail.

### Goals and Objectives

The goals and objectives of reduction pruning are:

1. Goal: Mitigate risk of dead and large branch failure.
   - 1.1. Objective: Reduce up to 15 percent of the length of exterior branches to reduce likelihood of failure.
   - 1.2. Objective: Prune to improve branch architecture.
   - 1.3. Objective: Remove dead branches 2-inches in diameter and larger over target areas (e.g. occupied vehicles on Old Highway 99, airport hangar parking lot and drive aisle).

2. Goal: Promote and restore live crown growth.
   - 2.1. Objective: Targeted reduction of live foliage in southwest crown to increase light penetration to interior crown.

3. Goal: Reduce unnecessary weight.
   - 3.1. Objective: Remove unstable dead branches 2-inches in diameter and larger throughout crown to reduce unnecessary load on branches with defective parts. This is of particular concern when branches are wet, frozen, or covered in ice.

[3] TreeCalc is the software referenced in our February 2025 report which informed management strategies along with the sonic tomography that was completed.

## Treatment: Pruning

| YEAR 2 or 3: PRUNING | |
|---|---|
| **Method/System** | Natural pruning system |
| **Time** | 1 to 2 Days |
| **Site Preparation** | 1. Coordinate with City of Tumwater and their contract archaeologist for permitting.<br>2. Coordinate with Port of Olympia to potentially reserve and restrict parking.<br>3. Possible need for road or lane closure, coordinate with City of Tumwater if a road or lane closure is needed. |
| **Procedure**<br>Figure 2<br>Figure 3 | ***Whole Tree:***<br>1. If possible, use an aerial/boom lift parked on impervious surfaces to access the canopy. Aerial lifts with outriggers, such as a spider lift, may operate within the dripline if operating on top of a steel plate or ½-inch thick plywood.<br>2. Target the removal of dead branches 2-inches in diameter and larger.<br>3. Make proper pruning cuts outside of the branch collar. Do not leave stubs or make flush cuts.<br>**Limit total live canopy reduction to 5 to 10% or less of the tree's overall live canopy**<br>***Area 1***: Branches over Old Highway 99 - emphasize risk reduction.<br>1. Target 1-inch to 3-inch diameter cuts with a maximum cut of 4-inches in diameter.<br>2. Minimize live foliage removal to less than 15 percent in any single pruning cycle to the extent feasible.<br>3. Do not remove crossing/self-bracing branches without addressing risk of subsequent failure. Retain crossing branches as needed.<br>***Area 2:*** Central stem - emphasize load reduction on central stem.<br>1. Target 1-inch to 2-inch reduction cuts with a maximum cut size of 3-inches.<br>2. Limit live foliage removal to less than 10 percent in any single pruning cycle.<br>***Area 3:*** Southwest stem - emphasize length reduction on branches with poor attachments.<br>1. Target 1-inch to 4-inch reduction cuts.<br>2. Limit live foliage removal to less than 10 percent of any individual branch system. |

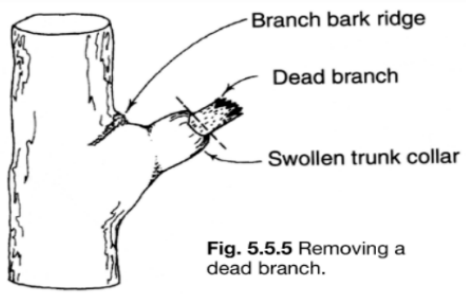



**Figure 2** Illustration of proper removal of a dead branch or stem. The final cut should be made just beyond living tissue. Source: ANSI A300 Tree Care Standards, p.15.

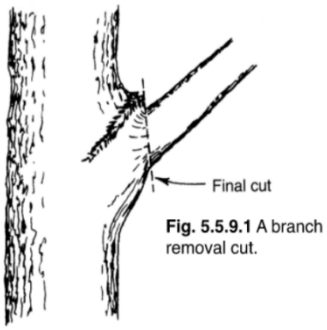



**Figure 3** Illustration of proper branch removal cut. The cut should be made without cutting into the branch bark ridge, branch collar, or leave a stub. Source: ANSI A300 Tree Care Standards, p. 16.

# Optional Treatments

## SUPPLEMENTAL SUPPORT SYSTEM

### Background

The southeast branch growing directly over Old Highway 99 may benefit from a supplemental support system. The central stem has decay and is likely not a candidate for attachment. The known type, number, and placement of a cabling system cannot be determined without first assessing each point of attachment for strength. If this treatment option is pursued, the project arborist would collaborate with the selected tree care company to determine which type of support system (dynamic or static) and which points of attachment are most appropriate to achieve short and long-term management, risk mitigation, and tree preservation goals. Hence, the specifications provided in this section are guidelines informed by the history of branch failure, crown architecture, and purpose of the support system. Note that our tree risk assessment report did not require cabling, and states that a cabling decision can be deferred until after pruning.

### Goals and Objectives

1. Goal: Mitigate the risk of the southeast branch failing and striking occupied vehicles on Old Highway 99.
   1.1. Objective: Provide structural support for the southeast branch.
   1.2. Objective: Install the supplemental support system in a manner that would redirect the failed branch away from Old Highway 99.

2. Goal: Reduce the risk of additional tree injury and reduced vigor to a historical tree.

### Optional Treatment: Supplemental Support System

| OPTIONAL TREATMENT: SUPPLEMENTAL SUPPORT SYSTEM | |
|---|---|
| **Method/System** | Single anchor point, one triangular system, two triangular system, or box system<br>Dynamic or static cables |
| **Time** | Optional, 1 Day<br>Year 2 or 3, after pruning |
| **Site preparation** | 1. Coordinate with City of Tumwater and their contract archaeologist for permitting.<br>2. Coordinate with Port of Olympia to potentially reserve and restrict parking. |
| **Procedure** | After the tree is pruned in year 2 or 3, the project arborist will reassess the tree to determine if a supplemental support system is an appropriate treatment to mitigate risk. The locations of the system would be determined by a qualified ISA Certified Arborist® with expertise in cabling following an aerial inspection in coordination with the project arborist. |

**Disclaimer:**

Cabling requires commitment to inspection and maintenance for the duration of the tree's lifetime. Few locations will offer significant structural stability improvement given the architecture of the tree and the central leader's level of internal decay.

## FENCING

### Background

Fencing could provide a physical barrier and reduced occupancy around the oak. Measurements were taken onsite to avoid existing utilities. The proposed fence location is provided in Attachment 5. The jersey barriers along Old Highway 99 are to remain in place. Since it is an archaeological site, Washington DAHP should be consulted when selecting the fence type. The US Forest Service has details available for zigzag fencing (Figure 4).[4] The zigzag fence is the preferred fence design because it can be installed without disturbing the ground to install post holes. Note that while fencing is not included as part of Option B in our tree risk assessment report, it is a prudent treatment for protecting a portion of the tree's root zone. It discourages occupancy below the tree where there is the highest potential for people to be struck by failed branches. Fencing may also improve site aesthetics.

### Optional Treatment: Fencing

| OPTIONAL TREATMENT: FENCING | |
|---|---|
| **Method/System** | Washington DAHP approved fencing, preferably a zigzag fence |
| **Time** | Optional, 1 to 2 Days<br>Year 2 or 3, after pruning |
| **Site Preparation** | 1. Coordinate with City of Tumwater and their contract archaeologist for permitting.<br>2. Coordinate with Port of Olympia to potentially reserve and restrict parking.<br>3. Coordinate with the Port of Olympia regarding preferred fence type. |
| **Procedure**<br>Figure 4<br>Attachment 5 | All work shall occur using hand labor only. Consult with a qualified fencing company for a procedure. If possible, avoid ground disturbance or restrict ground disturbance to at or beyond the dripline. If a fence type requiring ground disturbance is selected, excavation work shall carefully occur using hand tools only with the final post locations shifted to avoid contact or disturbance of roots over 0.5-inches in diameter. |

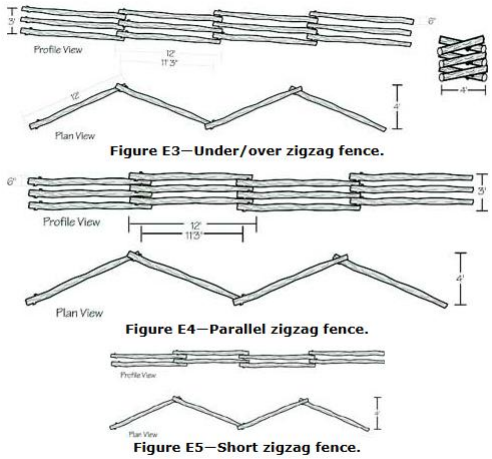



**Figure 4** Illustrations of zigzag fencing.

[4] US Forest Service, Riparian Restoration, Appendix E: Split Rail Fences and Barriers, https://www.fs.usda.gov/eng/pubs/html/04231201/page33.htm

## NATIVE PLANTING

### Background

The area beneath the oak could be planted with native grasses, wildflowers, and low growing shrubs in an effort to restore the planting site to mimic its native ecosystem and treat runoff from Old Highway 99. This option would require an initial investment of plant materials, irrigation, landscape installation services, and an additional commitment to routine maintenance. Note that native planting is an optional risk mitigation treatment within the root zone management section of our tree risk assessment report.

### Optional Treatment: Native Plantings

Below is a list of native perennial grasses, low growing shrubs, and wildflowers that would be suitable for the planting space beneath the Davis-Meeker Oak. If native planting is pursued, plant sizes should be minimized during installation, and arborist wood chips pathways should be established for ongoing maintenance. Supplemental water during the summer months using drip irrigation or other approved method would likely be required during at least the first two years after planting. Drip irrigation involves laying an irrigation line throughout the planting area and connecting it to water source. From approximately May through September, new planting should be irrigated 1 to 2 times a week, 30 to 60 minutes per session. There may be additional coordination with the Port of Olympia.

| OPTIONAL TREATMENT: NATIVE PLANTINGS | |
|---|---|
| **Method/System** | Planting of native perennial grasses, shrubs, and wildflowers using methods that have minimal disturbance. |
| **Time** | Optional, 1 Day in the planting season from November to March<br>Year 2 or 3, after pruning |
| **Site Preparation** | 1. Coordinate with City of Tumwater and their contract archaeologist for permitting.<br>2. Coordinate with Port of Olympia to potentially reserve and restrict parking.<br>3. Coordinate with Port of Olympia for ongoing irrigation needs. |
| **Procedure** | All work shall occur using hand labor only. See the native plant table below for species, size, and spacing guidelines. Planting work shall carefully occur using hand tools only with the final plant locations shifted to avoid contact or disturbance of tree roots over 0.25-inch diameter. No plants requiring ground disturbance for installation should be placed closer than 15 feet to the root crown of the tree. Based on the size and density of roots in the area surrounding the tree, the project arborist may recommend reduced plant numbers, sizes, or use of plugs or seed mixes only. |

| NATIVE PLANT LIST | |
|---|---|
| **SPECIES** | **PLANTING SIZE AND SPACING** |
| **Native perennial grasses** | |
| • Slough sedge (*Carex obnupta*)<br>• Rush (*Juncus tenuis*)<br>• Taper-tipped rush (*Juncus acuminatus*)<br>• Dagger-leaf rush (*Juncus ensifolius*)<br>• Fruited bulrush (*Scirpus, microcarpus*) | Plugs<br>1.5 to 3 inches in width and length<br>3’ O.C. |
| **Native low growing shrubs and perennials** | |
| • Kinnickinick (*Arctostaphylos uva-ursi*)<br>• Low-growing Oregon grape (*Mahonia nervosa*)<br>• Cascade Oregon grape (*Mahona repens*)<br>• Sword fern (*Polystichum munitum*)<br>• Lupine (*Lupinus*)* | 1 gallon<br>4’O.C. in groups of 1 to 3 |
| **Wildflower – sun** | |
| • Western columbine (*Aquilegia formosa*)<br>• Giant camas (*Camassia leichtlinii*)<br>• Great northern aster (*Aster modestus*) | Seed<br>< 0.01 oz per/100 SF |
| **Wildflower - shade** | |
| • Giant camas (*Camassia leichtlinii*)<br>• Fringe cup (*Tellima grandiflora*) | Seed<br>< 0.01 oz per/100 SF |

*Lupine is a nitrogen-fixing plant that will improve soil fertility.

For additional information on plant selection, see:

- Mark Griswold Wilson & Tedd Labbe. (June 2017). *Conserving Oregon White Oak in Urban and Suburban Landscapes*. Available from the Cascadia Prairie-Oak Partnership, https://cascadiaprairieoak.org/documents/conserving-oregon-white-oak-in-urban-suburban-landscapes.
- Washington Native Plant Society, https://www.wnps.org/plant-lists/county?Thurston
- Washington State Department of Ecology, Washington State University. (June 2013). *Rain Garden Handbook for Western Washington*. https://apps.ecology.wa.gov/publications/documents/1310027.pdf

# Continuing Risk Assessment, Monitoring, and Adaptive Management

Preserving large old trees require ongoing, annual, and cyclical inspections and management. Inspections and management shall be completed by an ISA Certified Arborist® that is Tree Risk Assessment Qualified.

| MANAGEMENT SCHEDULE | |
|---|---|
| **Ongoing** | • Storm response – Visually inspect the tree for broken and cracked branches after severe weather<br>• Monitor for pests and disease<br>• Leave the leaves beneath the oak<br>• Do not apply herbicide, or any other chemicals within 300 feet of the trunk |
| **Annually** | • Level II, Basic Tree Risk Assessment<br>• Drainage – Visually assess the planting site to ensure adequate drainage<br>• Ground level visual inspection of cabling system (if implemented) |
| **5-year Cycle** | • Assess tree for pruning needs<br>• Assess root zone enhancement area for arborist wood chips (maintain a minimum depth of 2-inches and a maximum depth of 4-inches)<br>• Replicate soil testing<br>• Replicate or begin foliar testing<br>• Replicate sonic tomography at same heights as October 2024 and in new areas if and when additional information is needed<br>• Aerial inspection of cabling system (or as specified by the manufacturer, if implemented) |

**Additional considerations**

*Pests and disease*

Old mature trees can be more susceptible to pests and diseases as they often have limited energy reserves to defend themselves. Professionals managing this tree should be familiar with the signs and symptoms of insects, diseases, and parasitic plants that commonly affect Oregon white oak including those that are expanding their range from central and northern Oregon. Contact the project arborist, state entomologist (WA DNR), and/or state pathologist (WA DNR) if the following changes are observed:

- Changes in canopy color, vigor, or health;
- Abnormal changes in the shape or size of the trunk or branches; or,
- Fruiting bodies are observed in the root zone, near the base of the tree, or on the stem.

The project arborist, state entomologist, and/or state pathologist will determine if diagnosis and subsequent mitigation is necessary, and if so, what treatment options are available, if any.

One invasive forest pest of note is Mediterranean Oak Borer (*Xyleborus monographus*). This invasive woodboring beetle carries a fungus that can kill oaks. It has not been detected in Washington as of October 2025 but is established just south of the OR-WA border and is expanding its range, so monitoring for this pest is important.

*Construction*

Since the Davis-Meeker Oak is situated between a major roadway and an airport, it may be impacted when infrastructure is improved or maintained. Alterations to the existing hardscape near the tree should be approached with careful consideration to root impacts. Engage a qualified ISA Certified Arborist® and consult the most current ISA Best Management Practices companion guide for Managing Trees During Site Development and Construction early in the design process to ensure sufficient tree protection measures are planned and implemented.

**Attachment 1 - Graphical Soil Analysis**



**A & L Western Laboratories, Inc.**

1311 Woodland Avenue, Modesto CA 95351 209-529-4080
10220 SW Nimbus Avenue Bldg. K-9, Portland OR 97223 503-968-9225

**REPORT NUMBER:** 137348 **CLIENT NO:** 12374 **SUBMITTED BY:** EM ROBERTS

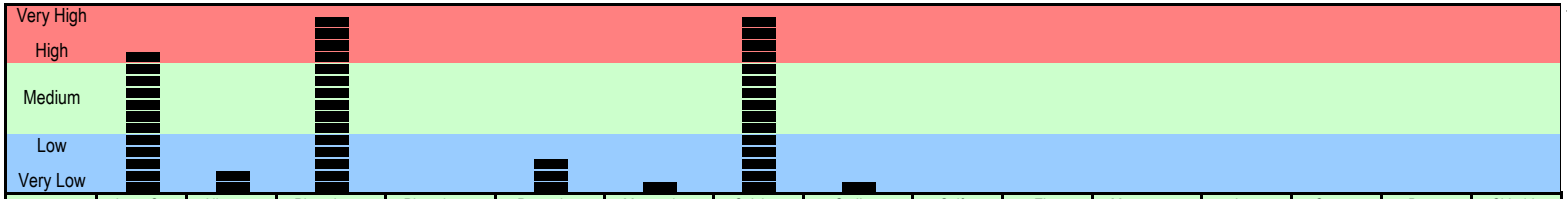
**SEND TO:** TODD PRAGER & ASSOCIATES, LLC
601 ATWATER ROAD
LAKE OSWEGO OR 97034

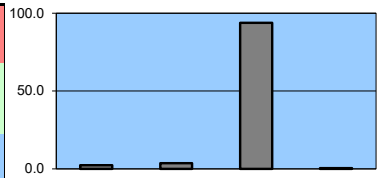
**GROWER:** 7643 OLD HWY 99 TUMWATER
**LOCATION:**

**SUBMITTED DATE:** 9/30/2025
**P.O. No:** 7643 OLDY HWY 99
**COC No:**

# Graphical Soil Analysis Report

**DATE OF REPORT:** 10/06/25 **LAB NO:** S137348-01 **SAMP NO:** DMGO **PAGE:** 1




| Analyte | Loss On Ignition OM % | Nitrogen $NO_3$-N ppm | Phosphorus Weak Bray* ppm | Phosphorus $NaHCO_3$-P ppm | Potassium K ppm | Magnesium Mg ppm | Calcium Ca ppm | Sodium Na ppm | Sulfur $SO_4$-S ppm | Zinc Zn ppm | Manganese Mn ppm | Iron Fe ppm | Copper Cu ppm | Boron B ppm | Chloride Cl ppm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Results | 6.7 | 5 | 109 | 61 | 118 | 57 | 2400 | 14 | | | | | | | |
| | | LOW | | AVERAGE | HIGH | | | | | | | | | | |

| Potassium K % | Magnesium Mg % | Calcium Ca % | Sodium Na % |
|---|---|---|---|
| 2.4 | 3.7 | 93.8 | 0.5 |
| | ACIDIC | | BASIC |

ECe dS/m — INCREASING SALINITY →

CEC meq/100g: 12.8

Lime Presence

pH: 6.1

← INCREASING NEED FOR LIME

**Buffer pH:** 6.7

## Soil Fertility Guidelines

**CROP:** OAK **RATE:**** lb/1000 sq ft **NOTES:**

| Dolomite (70 score) | Lime (70 score) | Gypsum | Elemental Sulfur | Nitrogen N | Phosphate $P_2O_5$ | Potash $K_2O$ | Magnesium Mg | Sulfur $SO_4$-S | Zinc Zn | Manganese Mn | Iron Fe | Copper Cu | Boron B | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2.9 | | 2.0 | 0.2 | | | | | | | |

**COMMENTS**

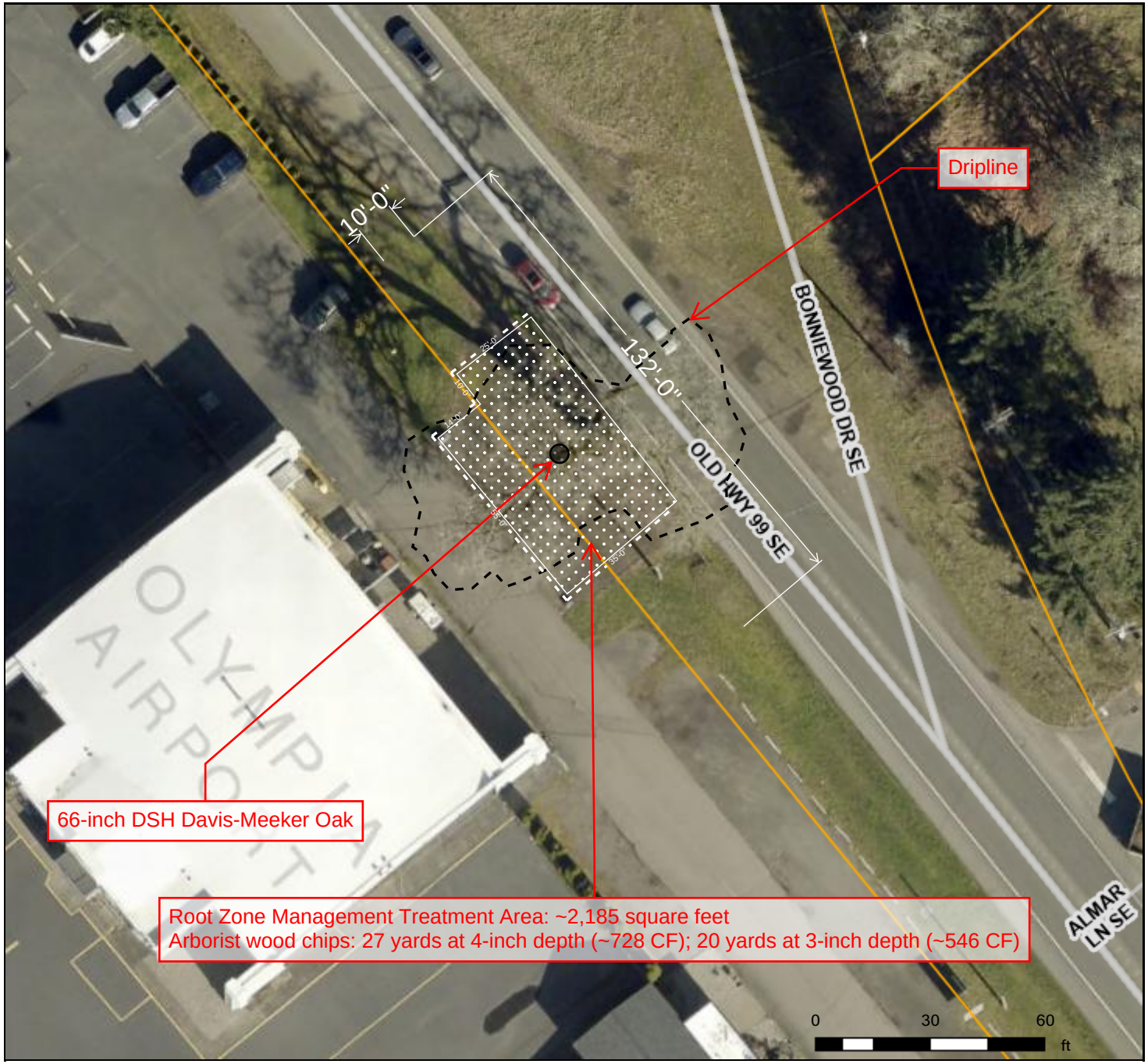
QUICK CONVERSION: Divide fertilizer grade on the bag by 10, IF applying 10 lb/1,000 sq ft. (e.g. 10 lb of a "triple 15" fertilizer would provide 1.5 lb each of nitrogen, phosphate and potash).
PRIOR TO PLANTING: Spread the above requirements per 1,000 sq ft and mix into the top 6-8 inches of soil. Initially, limit nitrogen to 1.5 lb/1,000 sq ft or 25-30 ppm NO3-N to avoid salt damage.
SPLIT extra nitrogen as necessary over the active growing season. Adjust rate according to local conditions and requirements. Allow for adequate establishment first (up to 30 days).
MAGNESIUM: If less than 50-70 ppm but pH is normal/high, consider Epsom salt, sulfate of potash magnesia, magnesium nitrate, chelates, lignosulfonates or other neutral magnesium salts.
HIGH levels of organic matter should have a beneficial effect on growth and "soil" pH may not be as critical. However, watch carefully as amendments and extra nitrogen may still be necessary.
LIME REQUIREMENT: Liming may be necessary if buffer index is less than 6.9. Guidelines are based upon common agricultural lime (70-score) per six-inch depth to raise SOIL pH to about 6.5.

Please call if you have any questions.

While these recommendations are based on agronomic research and experience, they DO NOT GUARANTEE the achievement of satisfactory performance.

# Attachment 2 - Root Zone Management Site Plan






## Davis-Meeker Oak

Legend

Parcels

Parcel Boundaries

Author:

Published: 24/10/2025

**PROCEDURE**

1.Dig holes radially from trunk with an air excavation tool. Dig holes to a depth of 6 inches to 12-inches, distance between holes 2 to 3 feet, and diameter of 3 inches.
2.Inspect holes for roots. If woody roots are uncovered, adjust hole location several inches to avoid.
3.Excavate hole with handheld drill with 3-inch drill bit if necessary.
4.Backfill hole with a soil amendment (see specification).
5.Install a layer of arborist wood chips 3 to 4 inches thick within the treatment area. Gently taper from just outside the trunk flare.

THURSTON COUNTY
WASHINGTON
SINCE 1852

Thurston County GeoData Center

The information included on this map has been compiled by Thurston County staff from a variety of sources and is subject to change without notice. Additional elements may be present in reality that are not represented on the map. Ortho-photos and other data may not align. The boundaries depicted by these datasets are approximate. This document is not intended for use as a survey product. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. Thurston County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. In no event shall Thurston County be liable for direct, indirect, incidental, consequential, special, or tort damages of any kind, including, but not limited to, lost revenues or lost profits, real or anticipated, resulting from the use, misuse or reliance of the information contained on this map. If any portion of this map or disclaimer is missing or altered, Thurston County removes itself from all responsibility from the map and the data contained within. The burden for determining fitness for use lies entirely with the user and the user is solely responsible for understanding the accuracy limitation of the information contained in this map. Authorized for 3rd Party reproduction for personal use only.

© 2025 Thurston County

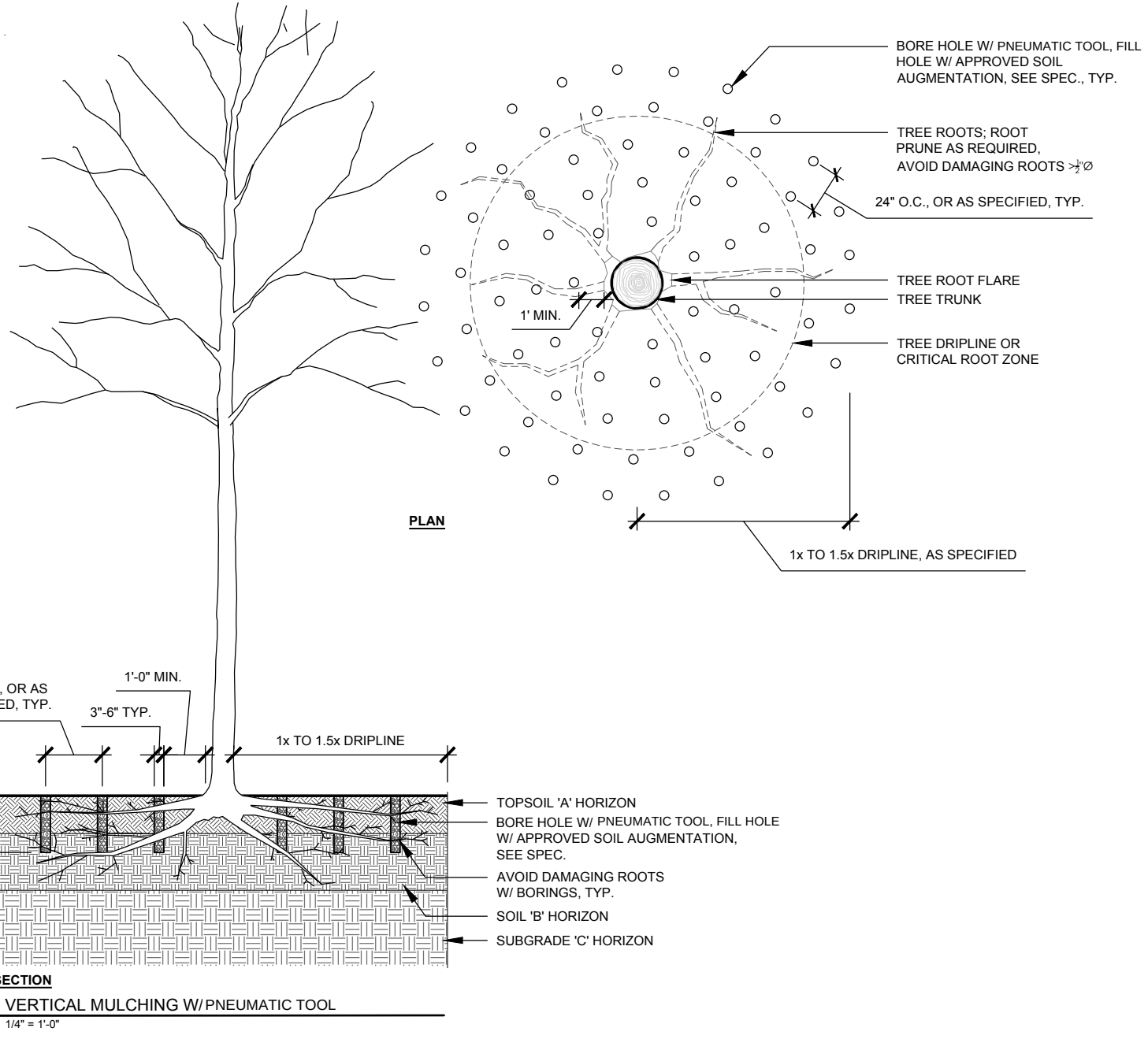
# Attachment 3 - Vertical Mulching Detail

***Modified from AirSpade®***



**NOTES:**

1. CALL 811 OR CONTACT THE APPROPRIATE LOCAL AGENCIES TO LOCATE EXISTING UTILITIES PRIOR TO ANY EXCAVATION.
2. DEPTH AND SPACING OF BORE HOLES TO BE DETERMINED BY CERTIFIED ARBORIST BASED ON INITIAL SITE INVESTIGATION. BORE HOLE DEPTH MAY RANGE FROM 6" TO 12".
3. ALL WORK TO BE DONE UNDER THE SUPERVISION OF CERTIFIED ARBORIST. ENSURE THAT TREES ARE IN GOOD HEALTH AND NOT EXPERIENCING UNUSUAL STRESS PRIOR TO COMMENCING WORK.
4. PROTECT TREE AND TREE ROOTS THROUGHOUT PNEUMATIC WORK. AIRSPADE OR HAND DIG ONLY WITHIN THE CRITICAL ROOT ZONE. DOCUMENT AND ASSESS ALL DAMAGES TO TREES AT COMMENCEMENT AND THROUGH COMPLETION OF WORK.
5. ENSURE PROPER SOIL MOISTURE LEVELS THROUGH DURATION OF WORK. SOIL MUST BE NEAR FIELD CAPACITY/. HAND WATER TREES AS NECESSARY BEFORE COMMENCEMENT OF WORK AND WITHIN 24 HOURS OF COMPLETION. COVER BARE ROOTS AND WATER AS NECESSARY DURING WORK.
6. ARBORIST TO EVALUATE THE OVERALL HEALTH OF TREES, AND TO MAKE A REPORT AND RECOMMENDATIONS FOR ADDITIONAL TREE CARE BEFORE, DURING, AND AFTER THE COMPLETION OF WORK.




4 VERTICAL MULCHING W/ PNEUMATIC TOOL
1/4" = 1'-0"

## Consumer Compost Use Program - Tree & Shrub Class

***Establishment & Maintenance***

### Description

The US Composting Council has developed the Consumer Compost Use Program to provide the consumer with an easy to use guide for compost application in the home garden and landscape. Use of this product meets the acceptable parameter range for home tree and shrub establishment. Look for the Consumer Compost Use Program icons for other applications of compost use. For more information please go to **www.compostingcouncil.org**

**Soil Analysis:** A soil analysis should be completed by a reputable laboratory to determine any nutritional requirements, pH, and organic matter adjustments that may be necessary. Once these are determined, the soil can be appropriately amended to a range suitable for the particular plants being established. A list of state agricultural cooperative extension labs can be found at: **http://www.csrees.usda.gov/Extension/index.html**

**Compost Parameters for Tree & Shrub Use**

| Parameter | Unit | Range | | Notes |
|---|---|---|---|---|
| | | **Preferred** | **Acceptable** | |
| Stability | mg $CO_2$-C per g OM per day | <2 | <4 | The lower the number, the more completely composted the product. |
| Maturity | % seed emergence & vigor | 90 -100 | 80-100 | The higher the percentage, the more versatile the product. |
| Moisture Content | % wet weight basis | 40-50% | 35-65% | Products with higher moisture contents may be used. They may simply be more difficult to apply. |
| Organic Matter Content | % dry weight basis | 35-60% | 25-65% | Creating a soil containing up to 5% - 10% organic matter is desirable in typical, well drained soils. |
| Particle Size | Screen size to pass through | 3/8” | 1/2” | Planting compost should be finely (3/8” – 1/2”) screened, whereas coarsely screened compost (1”-2” max. size) should be used in mulching. |
| pH | pH units | 6.0-7.5 | 5.5 – 8.5 | Modify soil pH with lime, etc., if necessary, based on soil testing results. |
| Soluble Salts (Electrical Conductivity) | dS/m (mmhos/cm) dry weight basis | Maximum of 5 | Maximum of 15 | Keep in mind that most soluble salts are also plant nutrients. Compost containing a higher soluble salt content should be applied at lower application rates, and ‘watered in’ well. |
| Physical Contaminants* | % dry weight basis | <0.5% | <1% | Small stones may be deemed more acceptable than man-made inerts (e.g., plastic). |

*All federal and state standards related to biological and chemical contamination must also be met.

### Applications

**Establishment:** Excavate a planting hole slightly shallower and 2 to 3 times the width of the root ball or container. Set the root ball on firm soil so that the top of the root ball sits slightly higher than the final grade. Uniformly blend compost with the excavated soil at one (1) part by volume compost to 2-3 parts by volume soil. *Compost with higher amounts of salts and nutrients should be used at lower rates (e.g. 1:3 or 1:4 parts compost to soil).* Backfill and firm the soil blend around the root ball within the planting hole. Always water thoroughly after planting. ***It should be noted that whenever possible, trees and shrubs should be planted in a mass planting bed, where multiple plants are established in a larger amended bed. This technique allows for greater planting success.***

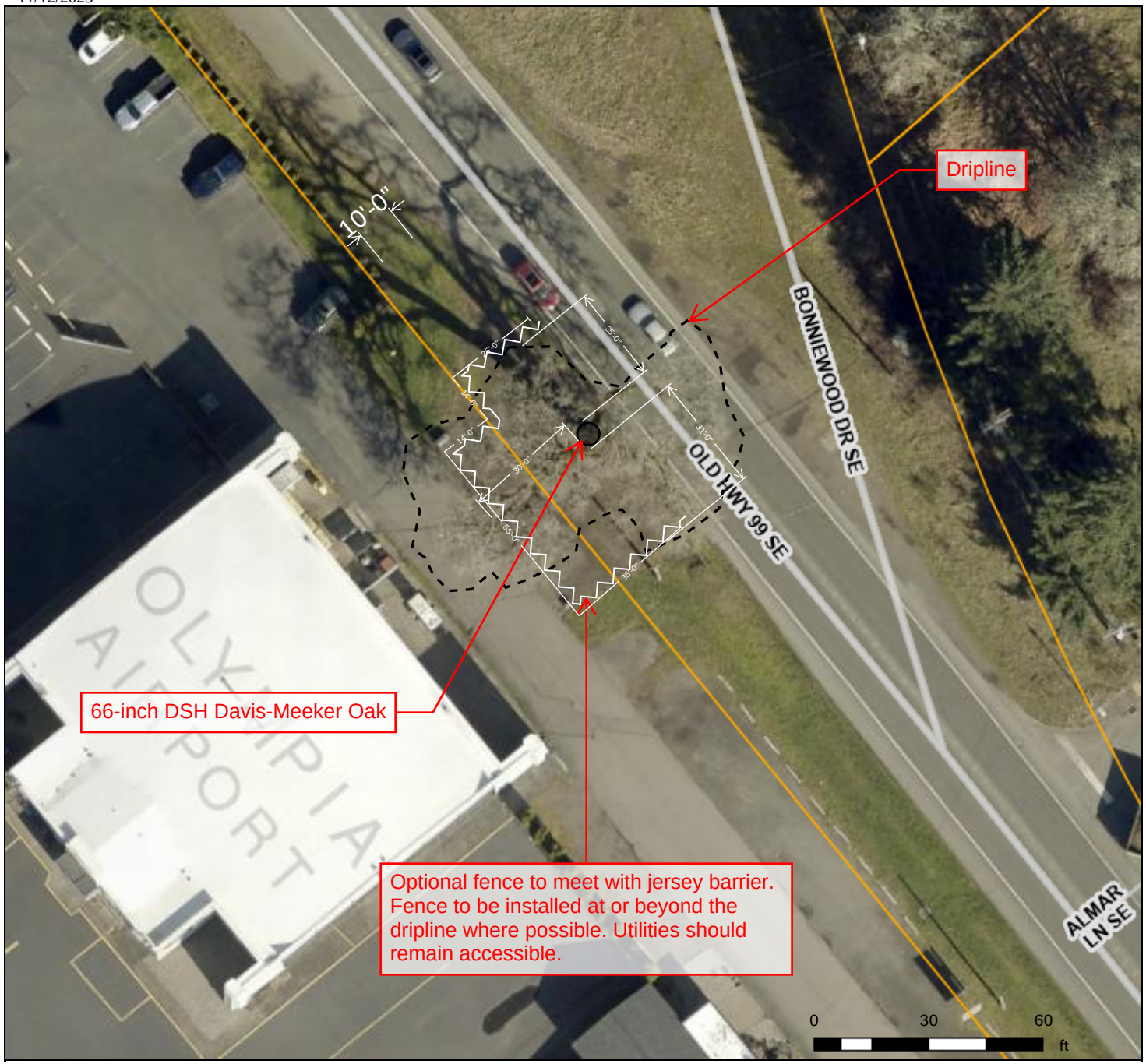
Lower compost application rates should be used for salt sensitive crops (e.g., conifers), or where composts possessing higher salt and nutrient levels are used, while higher application rates may be used for plants that require greater amounts of fertility.

**Maintenance:** Apply a coarser compost mulch (1” – 2” screened) over the garden bed to conserve moisture, for weed suppression and/or for aesthetic purposes. ***Note:*** *The nutrients contained in compost should be considered when applying fertilization. They will typically offset plant nutrient requirements, thereby potentially reducing fertilizer application rates.* **Disclaimer:** The USCC makes no warranties regarding this product or its contents, quality, or suitability for any particular use. Please refer to the individual producer’s product label for specific use instructions.

**Disclaimer:** The USCC makes no warranties regarding this product or its contents, quality, or suitability for any particular use. Please refer to the individual producer’s product label for specific use instructions.

# Attachment 5 - Optional Fencing Plan






## Davis-Meeker Oak

Legend

Parcels

Parcel Boundaries

Author:

Published: 24/10/2025

Notes

The information included on this map has been compiled by Thurston County staff from a variety of sources and is subject to change without notice. Additional elements may be present in reality that are not represented on the map. Ortho-photos and other data may not align. The boundaries depicted by these datasets are approximate. This document is not intended for use as a survey product. ALL DATA IS EXPRESSLY PROVIDED 'AS IS' AND 'WITH ALL FAULTS'. Thurston County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. In no event shall Thurston County be liable for direct, indirect, incidental, consequential, special, or tort damages of any kind, including, but not limited to, lost revenues or lost profits, real or anticipated, resulting from the use, misuse or reliance of the information contained on this map. If any portion of this map or disclaimer is missing or altered, Thurston County removes itself from all responsibility from the map and the data contained within. The burden for determining fitness for use lies entirely with the user and the user is solely responsible for understanding the accuracy limitation of the information contained in this map. Authorized for 3rd Party reproduction for personal use only.

THURSTON COUNTY
WASHINGTON
SINCE 1852

Thurston County GeoData Center

© 2025 Thurston County