



## ARBORIST REPORT and TREE RISK ASSESSMENT

For: Save the Davis-Meeker Gary Oak

7637 Old Highway 99, Tumwater, WA. 98501

The following arborist report outlines one tree, a large Gary Oak (*Quercus garryana*) white oak tree. This evaluation meets the conditions of a basic limited level 2 tree risk assessment. It will discuss the current condition and recommend future dispositions or treatments for the tree.



This pro-bono effort is a volunteer opinion by ISA Certified Arborist Paul A. Dubois VI of Keyport Arboriculture Consulting, who is not affiliated with any group, city, contractor, or employer.

The Davis Meeker Gary Oak tree is estimated to be 400 years old. It is a historically significant tree because it is a feature of what once was part of the Oregon Trail—today, living in a growing space next to Old Highway 99 in Tumwater, WA.

*Davis Meeker Oak Tree*

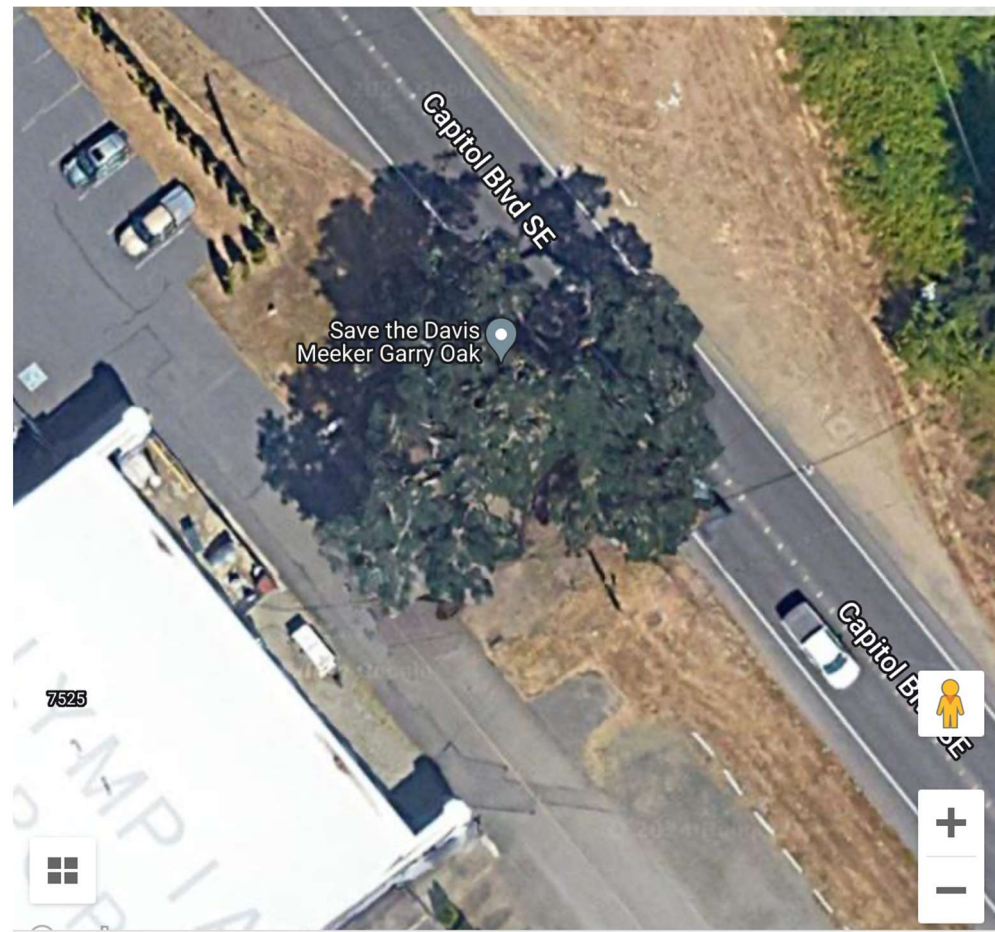
### Disclosure

Arborists cannot detect every condition that could lead to the structural failure of the tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below the ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances or for a specified period. Arborists are specialists who use their training, education, knowledge, and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living or working near trees. Tree owners/managers may accept or disregard the arborist's recommendations or seek additional advice and information. The tree's owner/manager makes any decisions regarding treatment or work on the tree. And it is the owner who is responsible for the outcome and consequences. Trees can be managed; they cannot be controlled. To live near trees is to accept some degree of risk. ***The only way to eliminate all risk is to eliminate all trees.***

While not a complete biological report, this report is a comprehensive assessment of the Davis-Meeker Gary Oak tree. It describes observations, including general conditions and past failure, and determines the risk, likelihood, and consequences of future failure. All observations are made from the ground, following the ISA Tree Risk Assessment Guidelines and industry best management practices. The risk assessment considers normal circumstances and typical weather conditions in the Puget Sound region. Information from the previous recent Arborist reports was used as part of important data collection for this risk assessment.

## Site

This oak tree lives in compact clay soil and asphalt pavement between a busy highway and an airport service road. Nearby targets that were considered were vehicle and bicycle traffic on the highway. The large airport hangar, the vehicle, bicycle, and pedestrian use of the service roadway, including two parking areas with multiple spaces, and service power lines to the hangar.



## Level 2 Basic Tree Risk Assessment



# Basic Tree Risk Assessment Form

Client Save the Davis-Meeker Gary Oak Date 6/19/2024 Time 0930  
 Address/Tree location 7637 Old Highway 99, Tumwater WA. 98501 Tree no. 1 Sheet 1 of 3  
 Tree species Garry Oak / Quercus garryana dbh 66' Height 81' Crown spread dia. 70'  
 Assessor(s) Paul Dubois Tools used Basic Assessment Tools, see page 3. Time frame 2 Years

### Target Assessment

Target number	Target description	Target protection	Target zone			Occupancy rate 1 - rare 2 - occasional 3 - frequent 4 - constant	Practical to move target?	Restriction practical?
			Target within drip line	Target within 1 x Ht.	Target within 1.5 x Ht.			
1	Vehicles and bicycles on Highway 99	Lower imbs	<input checked="" type="checkbox"/>			3	No	
2	Airpland Hanger			<input checked="" type="checkbox"/>		4	No	
3	Vehicles & Pedestrians on Airport service road	Lower limbs	<input checked="" type="checkbox"/>			2	No	
4	North & South Parking			<input checked="" type="checkbox"/>		3		Yes

### Site Factors

History of failures Large scaffold brance failures.Recent and older past. Topography Flat  Slope  \_\_\_\_\_ % Aspect \_\_\_\_\_  
 Site changes None  Grade change  Site clearing  Changed soil hydrology  Root cuts  Describe \_\_\_\_\_  
 Soil conditions Limited volume  Saturated  Shallow  Compacted  Pavement over roots  40% % Describe Highway, Service Road,  
 Prevailing wind direction SW Common weather Strong winds  Ice  Snow  Heavy rain  Describe Normal Puget Sound Weather. (NPSW)

### Tree Health and Species Profile

Vigor Low  Normal  High  Foliage None (seasonal)  None (dead)  Normal 95% % Chlorotic 0 % Necrotic 5 %  
 Pests/Biotic None observed Abiotic \_\_\_\_\_  
 Species failure profile Branches  Trunk  Roots  Describe Susceptible to white rot fungal decay, Root dceay, Sudden limb drop. Excellent CODIT reaction, long lived.

### Load Factors

Wind exposure Protected  Partial  Full  Wind funneling  \_\_\_\_\_ Relative crown size Small  Medium  Large   
 Crown density Sparse  Normal  Dense  Interior branches Few  Normal  Dense  Vines/Mistletoe/Moss  Moss patches throughout  
 Recent or expected change in load factors \_\_\_\_\_

### Tree Defects and Conditions Affecting the Likelihood of Failure

#### — Crown and Branches —

Unbalanced crown  LCR 65 %  
 Dead twigs/branches  5 % overall Max. dia. 5"  
 Broken/Hangers Number none observed Max. dia. N/A  
 Over-extended branches   
 Pruning history  
 Crown cleaned  Thinned  Raised   
 Reduced  Topped  Lion-tailed   
 Flush cuts  Other Lg newer pruning cuts observed over hwy 99  
 Small Deadwood in crown overhanging Highway 99 Condition(s) of concern Heatwood decay in large scaffold limbs  
 \*Small deadwood throughout crown.  
 Part Size 1" to 5" Fall Distance 30'  
 Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent

#### — Trunk —

Dead/Missing bark  Abnormal bark texture/color   
 Codominant stems  Included bark  Cracks   
 Sapwood damage/decay  Cankers/Galls/Burls  Sap ooze   
 Lightning damage  Heartwood decay  Conks/Mushrooms   
 Cavity/Nest hole 50 % circ. Depth \_\_\_\_\_ Poor taper   
 Lean \_\_\_\_\_ ° Corrected? \_\_\_\_\_  
 Response growth Good response growth observed  
 Condition(s) of concern Decay in trunk, codominant stems  
 Part Size 66" Fall Distance 81'  
 Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent

#### — Roots and Root Collar —

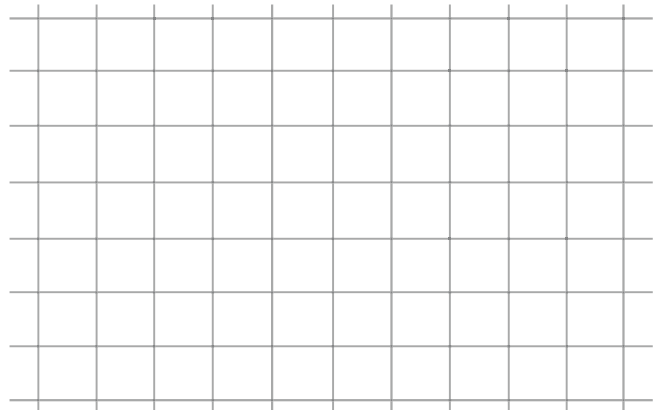
Collar buried/Not visible  Depth \_\_\_\_\_ Stem girdling   
 Dead  Decay  Conks/Mushrooms   
 Ooze  Cavity  50 % circ.  
 Cracks  Cut/Damaged roots  Distance from trunk \_\_\_\_\_  
 Root plate lifting  Soil weakness   
 Response growth Collar and root crown indicate good response growth  
 Condition(s) of concern Decay in root crown/collar  
 Part Size 66" Fall Distance 81'  
 Load on defect N/A  Minor  Moderate  Significant   
 Likelihood of failure Improbable  Possible  Probable  Imminent

### Risk Categorization

Target <i>(Target number or description)</i>	Tree part	Condition(s) of concern	Likelihood											Consequences				Risk rating <i>(from Matrix 2)</i>		
			Failure				Impact				Failure & Impact <i>(from Matrix 1)</i>									
			Improbable	Possible	Probable	Imminent	Very low	Low	Medium	High	Unlikely	Somewhat	Likely	Very likely	Negligible	Minor	Significant		Severe	
1	Crown & Branches.	Heartwood decay in large scaffold limbs			●				●									●		Moderate
1	Crown & Branches	Small diameter dead limbs <5"				●												●	●	Moderate
1	Trunk & Roots & Root Collar	Decay in trunk codominate stems Decay in root crown/collar.		●					●			●							●	Low
2	Trunk	Decay, Codominate Stem		●					●			●						●		Low
2	Roots & Root Crown	Decay in root crown / collar		●					●			●						●		Low
3	Crown & Branches	Decay large scaffold limbs			●			●				●							●	Low
3	Roots & Root Collar	Decay in root crown / collar		●				●				●							●	Low
3	Trunk	Decay, codominate stem		●				●				●							●	Low
4	Trunk, Roots & Root Collar	Decay in root crown/collar, Decay in trunk codominate stem,		●				●				●						●		Low
5	Crown & Branches	Heartwood Decay in large scaffold branches			●				●			●			●					Low
5	Trunk, Roots & Root Collar	Decay in root crown/collar Decay in trunk codominate stem		●				●				●					●			Low

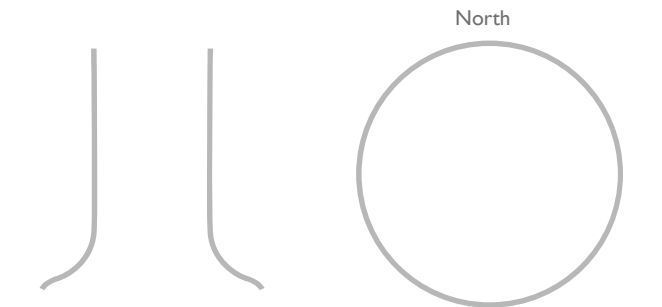
Matrix 1. Likelihood matrix.

Likelihood of Failure	Likelihood of Impact			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat likely	Likely	Very likely
Probable	Unlikely	Unlikely	Somewhat likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely



Matrix 2. Risk rating matrix.

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low



**Notes, explanations, descriptions**

Access to trunk, roots and root crown restricted by locked chain link fence.

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Some date such as DBH, cavity % and crown spread, as well as some trunk and root observations

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were taken from Tree Risk Assessment by Kevin M. Mc Farland on 6/14/ 2024.

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**Mitigation options**

1. Pruning to remove all deadwood. Selective weight reduction pruning >10% on lower scaffold limbs over Hwy and service road. **Residual risk** low
2. Install support system such as dynamic (compound box) cable system. **Residual risk** low
3. Restrict access beneath tree and parking areas. **Residual risk** low
4. Removal of the tree. **Residual risk** none

**Overall tree risk rating**    Low     Moderate     High     Extreme

**Overall residual risk**    None     Low     Moderate     High     Extreme     **Recommended inspection interval** 2 years

**Data**  Final  Preliminary    **Advanced assessment needed**  No  Yes-Type/Reason    Aerial inspect by Arborist with extensive experience/knowledge of ancient oak trees.

**Inspection limitations**  None  Visibility  Access  Vines  Root collar buried    Describe Locked gate and chain link fence beneath tree.

# ISA Basic Tree Risk Assessment

## Save The Davis-Meeker Gary Oak

### Target Assessment Continued:

Client Save the Davis-Meeker Gary Oak Date 6/19/2024 Time 0930  
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5	Service power lines, Phone & Cable lines	Lower imbs	✓			4	YES	

#### Tools Used:

All available tools were not used due to a lack of access (locked fence) to the trunk and root crown.

Tools onsite included: Mallet, Probe, Binoculars, D-tape, and Rangefinder.

#### Notes:

This assessment was not conducted in isolation but relied in part on previous professional Arborist assessments, including written and verbal public statements and pictures, which provided valuable insights into the tree's history and current condition.

The tree genera *Quercus* are among the species known to drop branches unexpectedly in calm conditions and high temperatures. This is called sudden branch drop (SBD) and is not well understood. Currently, it is impossible to predict failure or mitigate risk due to SBD, and it is not included in this report.

On my visit, I observed nesting birds. The nest is in a cavity roughly halfway up one of the main stems, which is a good indicator of the presence of decay.

## Risk Rating

The pre-mitigation risk rating per the basic risk assessment is **moderate**. My observations and previous arborist evaluations have noted decay is present in at least parts of the lower 2/3 of the woody portions of the tree. That decay is the main condition of concern in all the reports. Determining the extent of decay in the upper woody parts is difficult. Before applying the recommended mitigation efforts, I highly recommend an additional aerial/climbing inspection by an arborist familiar with ancient oak trees—specifically White Oaks. One such arborist I recommend, who has over 40 years of experience and is still climbing and working on big old Oaks, is Casey P. Roland of Roland Tree Care in Medford, Oregon. That inspection may change the risk rating and would likely provide information to help choose a mitigation option better. An aerial drone inspection would not be sufficient.

## Residual Risk and Mitigation

The following seven actions are recommended and necessary to reduce the current risk assessment rating.

1. Introduction of “Arbor” type wood chip mulch (chipped tree parts) onto the existing root zone to cover the entire zone out to the “Dripline” of the tree.
2. Aeration and Inoculation of the soil within the root zone with endo/ecto mycorrhizal fungal spores compatible with Oak species.

This is a long-game strategy. Nothing can be done about the decay already in the tree. However, we can improve the tree’s ability to defend against pathogens and strengthen the reaction wood growth process against decay. Compartmentalization of Decay in Trees (CODIT). The process of wood chip mulch breaking down not only helps prevent disease microorganisms such as *Phytophthora* and *Armillaria* from living in the soil, but it also becomes usable beneficial nutrients for the tree—bringing the forest to the tree, so to speak.

Fertilizing or introducing new soil can have the opposite effect by giving pathogens more favorable conditions to thrive and reproduce.

3. Remove all the rocks up against or touching the root crown. This will allow a critical and vulnerable area where woody roots join the stem to completely dry out and not hold moisture, making it easier for pathogens to enter.

## Residual Risk and Mitigation continued.

4. Selective pruning to remove deadwood greater than 1" in diameter and any limbs in active failure. This action alone will move one part of the risk rating (from Matrix 2) from **moderate to low**.
5. Selective pruning for weight reduction in the lower 2/3 of large scaffolding branches. No cuts should be over 3" in diameter and, when possible, made from parts beneath the larger limbs. No pruning or topping of any "green" limbs in the top 1/3 of the tree crown should be made. No more than 10% to 15% of the healthy "green" limbs in the entire crown should be removed during the pruning operation. This will reduce some weight in the decayed or over-extended limbs. All pruning should be done by or under the supervision of an ISA Certified Arborist to ANSI Z-133 requirements and industry best practices.
6. Install a support system, such as a dynamic cable system, per ANSI Z-133 Safety Requirements and ISA best practices and standards. This action will reduce load pressure on codominant and decayed limbs, moving the other risk rating (from Matrix 2) from **moderate to low** and ultimately reducing this tree's overall residual risk rating to **low**.  
*\* The recommended aerial inspection can determine the cable system's feasibility, type, and location.*
7. Restrict pedestrian access beneath the tree and move parking away from the dripline to 1.5 times the tree's height or as far as possible. This will eliminate or reduce the target occupancy rate.

Monitor and inspect the tree at least every two years. Prune as needed. Inspect and adjust the cable system at least every three years. Maintain wood chip mulch in the root zone.



## Conclusion

I strongly believe that this special tree can and should be retained. For generations, the benefits this life form has provided humans and our communities are priceless. While constantly evolving, we possess the technology, processes, and science to make informed decisions on how to accomplish best living with and beside old trees in the retrenchment stages of their life span, such as it is. It is easy to cut down and kill it; even 20 or 30 years ago, that may have been the only logical conclusion. Much has changed in our relatively young field of arboriculture, and we have much yet to know.

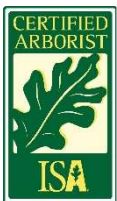
This report is not intended to disparage or refute the findings of any previous reports or data. Quite the opposite, I could not have completed this report without such work, and I have the utmost respect for anyone who chooses to work on and care for trees. I offer this as a professional opinion and to add to the data already collected and submitted. I am in awe of colleagues in the field of Arboriculture who choose to put themselves into the discussion of this type, as I believe their interests are honorable.

Respectfully Submitted.

*Paul A. Dubois VI*

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ISA Certified Arborist WE-0937A





## References

ISA Tree Risk Assessment Manual *Second Edition*

American National Standard for Arboriculture Operations. ANSI Z-133 2017

A New Tree Biology, Shigo & Trees, Associates

Arboriculture Care of Trees, Shrubs, and Vines in the Landscape, Harris

Arborist Report and Tree Risk Assessment by Kevin M. Mc Farland, ISA Certified Arborist PN-0373A City of Tumwater

Arborist Memorandum Tree Solutions Inc. by Tyler Bunton, ISA Certified Arborist PN-8715A

Written & Verbal Statements By:

Registered Consulting Arborist, ISA Board Certified Master Arborist, Scott D. Baker

ISA Certified Arborist, Ray Gleason

ISA Certified Arborist, Beowulf Brower

ISA Certified Arborist Jesse Brighten