

ARBORIST REPORT

ARBORIST SERVICES FOR HILLSIDE PARK

**Prepared for
Mithun**

**Prepared by
Herrera Environmental Consultants, Inc.**



Note:

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HERRERA QUALIFICATIONS

Established in 1980, Herrera Environmental Consultants, Inc. (Herrera) is an innovative, employee-owned, consulting firm focused on three practice areas: water, restoration, and sustainable development. Herrera’s interdisciplinary teams of scientists, engineers, and planners provide scientifically defensible and realistic solutions to complex resources challenges facing municipalities, utilities, government agencies, tribes, nonprofits, and businesses. Herrera’s philosophy is to integrate protection of environmental, cultural, and economic values into all our projects.

The following staff authored this report and conducted fieldwork in support of this report:

Ian David Crickmore, Certified Arborist

Ian David Crickmore is an ISA Certified Arborist with 8 years of professional experience in arboriculture relating to tree inventories, forest management and risk assessments. Ian David provides expert recommendations for the survival of trees and shrubs during construction, tree risk mitigation, planting oversight, tree health assessments, vegetation management and provides recommendations for the care of significant trees. Ian David has experience in proper tree care in accordance with ANSI (American National Standards Institute) A300 standards including proper pruning of trees, inspection of nursery stock quality, and proper tree planting to ensure survival. Ian David has been the lead arborist on tree inventories prior to construction on major infrastructure projects. This work includes the identification of significant trees and an analysis of tree impacts and tree conditions. He has authored arborist reports and tree protection plans.

Credentials

- ISA Certified Arborist, International Society of Arboriculture, WE-8333A
- ISA Tree Risk Assessment Qualified (TRAQ)

INTRODUCTION

This arborist report (hereafter referred to as the report) was prepared for the Hillside Park Play Area Project (hereafter referred to as the project). The purpose of this report is to help inform the decision-making process to identify potential locations for proposed park facilities. This report is not intended for submittal as part of permit applications, or to meet tree preservation or construction codes.

PROJECT LOCATION

The project area is within the city of Issaquah in King County, Washington, at Hillside Park. The tree assessment study area (hereafter referred to as the study area) extends approximately from where Mount McKinley Drive Southwest dead-ends at the park entrance and around the periphery of the baseball field, counterclockwise from the south to the northeast.

METHODS AND LIMITATIONS

Herrera conducted a tree assessment on February 18–19, 2021. Herrera assessed all significant trees in the study area, noting the species, height, diameter at breast height (DBH), crown spread, health, structure, and a general risk rating for each tree. DBH was measured at 4.5 feet with a diameter tape. Height and crown spread were visually estimated. The time frame considered in this assessment is 2 years. For trees with multiple conditions of concern, only the factor(s) with greatest associated risk rating were considered. Mitigation measures are only recommended for trees with *extreme*- or *high*-risk ratings.

Trees were evaluated using a condensed Level 2 Assessment based on the methods described in the *ISA Tree Risk Assessment Manual*. Health and structure were assessed based on the methods described in the *Council of Tree & Landscape Appraisers Guide for Plant Appraisal*. The *target* is a fundamental component of risk assessment. A target can be people, property, or activities that could be injured, damaged, or disrupted by a tree failure. Since this report is intended to inform a siting process for facilities to be used by the public, we assumed each tree to have the maximum likelihood of impacting a high value target, even when no target, or only a low value target, currently exist. Mitigation recommendations are also based on this assumption of maximum likelihood of impact and may not be appropriate if facilities are not constructed in the tree's vicinity. It is important to recognize that where there is no target, there is little to no risk.

DEFINITIONS

- **DBH:** Diameter at Breast Height, measured 4.5 feet above ground level.
- **Significant Tree:** Any tree greater than 6 inches DBH (or any Alder or Cottonwood greater than 8 in DBH).
- **Crown Spread:** The distance from the trunk to the outermost tip of the branches.
- **Target:** People, property, or activities that could be injured, damaged or disrupted by a tree failure.
- **Health**
 - **Excellent:** High vigor and nearly perfect health with little or no twig dieback, discoloration, or defoliation.
 - **Good:** Vigor is normal for the species. No significant damage due to diseases or poeses. Any twig dieback, defoliation, or discoloration is minor.
 - **Fair:** Reduced vigor. Damage due to insects or diseases may be significant and associated with defoliation but is not likely to be fatal. Twig dieback, defoliation, but is not likely to be fatal. Twig dieback, defoliation discoloration, and/or dead branches may comprise up to 50 percent of the crown.
 - **Poor:** Unhealthy and declining in appearance. Poor vigor. Low foliage density and poor foliage color are present. Potentially fatal pest infestation. Extensive twig and/or branch dieback.
 - **Very poor:** Poor vigor. Appears to be dying and is in the last stages of life. Little live foliage.
 - **Dead.**
- **Structure**
 - **Excellent:** Nearly ideal and free of defects.
 - **Good:** Well-developed structure. Defects are minor and can be corrected.
 - **Fair:** A single defect of significant nature or multiple moderate defects. Defects are not practical to correct or would require multiple treatments over several years.
 - **Poor:** A single serious defect or multiple significant defects. Recent change in tree orientation. Observed structural problems cannot be corrected. Failure may occur at any time.

- **Very poor:** Single or multiple severe defects. Failure is probable or imminent.
- **Dead.**
- **Likelihood of Failure**
 - **Imminent:** Failure has started or is most likely to occur in the near future, even if there is no significant wind or increased load.
 - **Probable:** Failure may be expected under normal weather conditions within the specified time frame.
 - **Possible:** Failure may be expected in extreme weather conditions but is unlikely during normal weather conditions within the specified time frame.
 - **Improbable:** The tree or tree part is not likely to fail during normal weather conditions and may not fail in extreme weather conditions within the specified time frame.
- **Likelihood of Impact**
 - **High:** the failed tree or tree part is likely to impact the target.
 - **Medium:** The failed tree or tree part could impact the target but is not expected to do so.
 - **Low:** There is a slight chance that the failed tree or tree part will impact the target.
 - **Very low:** the chance of the failed tree or tree part impacting the target is remote.
- **Consequences of Failure**
 - **Severe:** Serious personal injury or death, high-value property damage, or major disruption of important activities.
 - **Significant:** Substantial personal injury, moderate to high-value property damage, or considerable disruption of activities.
 - **Minor:** Minor personal injury, low to moderate-value property damage, or small disruption of activities.
 - **Negligible:** No personal injury, involve low-value property damage, or disruptions that can be replaced or repaired.
- **Risk Levels**

- **Extreme:** Failure is *imminent*, with a high likelihood of impacting the target and the consequences are *severe*. Mitigation measure should be taken as soon as possible.
- **High:** Consequences are *significant*, and likelihood of failure and impact is *very likely* or *likely*, or consequences are *severe*, and likelihood of failure is *likely*. Mitigation timing is dependent on the client's risk tolerance.
- **Moderate:** Consequences are minor, and likelihood of failure and impact is *very likely* or *likely*, or likelihood of failure is *somewhat likely*, and consequences are *significant* or *severe*. The decision of whether to implement risk and its timing is depended on the client's risk tolerance.
- **Low:** Consequences are *negligible*, when likelihood of failure and impact is *unlikely*, or consequences are *minor*, and likelihood is *somewhat likely*. Mitigation is generally not required.

FINDINGS AND RECOMMENDATIONS

Existing Tree Conditions

Herrera assessed 111 significant trees within the tree assessment area. Herrera identified 4 trees with an extreme risk rating, 43 trees with a high-risk rating, and 64 trees with a low to moderate risk ratings. The species distribution was dominated by 39 percent Western Red Cedars (*Thuja plicata*) and 33 percent Big Leaf Maple (*Acer macrophyllum*). The remaining 28 percent of the trees consisted of a mix of Red Alder (*Alnus rubra*), Western Hemlock (*Tsuga heterophylla*), Douglas Fir (*Pseudotsuga menziesii*), Black Cottonwood (*Populus trichocarpa*), Paper Birch (*Betula papyrifera*) and unidentified or partially identified species. See the supplementary excel table HillsideTreeData_20210301.xls for additional details of each tree found within the tree assessment study area, including mitigation recommendations.

Herrera was tasked to give particular attention to three preferred siting areas within the tree assessment study area. These three areas are identified in Figure A-1 in Appendix A. GPS survey is outside the scope of this assessment and all tree locations are approximate. Reference the third-party survey report commissioned by Mithun for actual tree locations. Additionally, only trees with high and extreme risk ratings are shown in Figure A-1.

Site 1: This site is dominated by the cedar grove at the park entrance. Soil conditions in this site are generally compacted, and the shallowest roots of several trees are partially exposed due to a high rate of foot traffic. Trees at this site would benefit from a layer of woodchips 3–6 inches deep over their critical root zones and spaced away from their trunks. Western Red Cedars are generally rot resistant and are not particularly prone to limb failure, although several trees in this area have small-diameter dead limbs that are typical of the species. On a whole, trees in this area appear to be healthy and have good structure. If a facility is placed in this area it is recommended that dead limbs be removed and care be taken to avoid damage to roots

wherever possible through the use low impact excavation methods, such as an air spade. One large cedar (ID #1282) has a major bend in trunk at approx. 3.5 feet from ground level. This bend is indicative of either a partial slope failure or that the tree was partially knocked over when it was a seedling. The trunk is vertical and straight above this bend and there is currently no indication of soil movement or root failure, which suggests the tree has been stable for the last several decades.

- High Risk trees Associated with Site 1:
 - #1289: A Western Red Cedar with codominant stems.
 - #1296: A Western Hemlock with a compromised base.

Site 2: This site is in the south east corner of the ball field. The site is generally flat and is more open than sites 1 and 3. While there are several hazardous trees associated with site 2, all but trees #1298 and #1339 and have moderate to low ecological and habitat value, making them particularly good candidates for removal . The soil conditions in the field do not appear to be compacted by foot traffic like at site 1 but may be affected by poor drainage. There is also a grouping of dead trees to the south east of site 2 that were intentionally killed with herbicide. These herbicide-killed trees are likely not tall or close enough to the site to effect it directly, but they should be removed for general park safety.

- High Risk Trees Associated with Site 2:
 - #1298: A multi-stem Bigleaf Maple with basal rot.
 - #1301: An unidentified completely dead deciduous tree.
 - #1302: A declining willow with heart rot.
 - #1310: A large mature and declining Black Cottonwood.
 - #1311: A Red Alder with major dead laterals.
 - #1339: A very large, mature, and declining Western Hemlock with extensive rot and decay.
 - #1404: A Bigleaf Maple with a dead codominant leader.

Site 3: This site is located to the northeast and downhill from the outfield. The site is situated in a clearing surrounded by a grove of trees dominated by three extremely large and mature Bigleaf Maples. These maples are in relatively good health for their advanced age but are also in a state of retrenchment and have dropped several large limbs up to 20 inches in diameter. All three trees have signs of decay at their bases. The trees in this area would be very hazardous to any proposed adjacent facility and currently provide a high degree of ecological function and

high-quality habitat. Construction at Site 3 would likely require removing most or all these mature trees.

- High Risk Trees Associated with Site 3:
 - #1487: A large Douglas Fir with multiple large, dead laterals.
 - #1510, 1525, 1531: The three mature Bigleaf Maples in retrenchment.
 - #1536: A Western Red Cedar with dead laterals.
 - #1537: A Western Red Cedar that failed after being knocked over by another adjacent tree, it is currently propped up by its neighbor.

Hazard Trees Not Associated with a Preferred Siting Area: The following 33 trees are not estimated to pose risks to targets within the preferred siting areas but should be considered hazardous to permanent or high frequency targets that may occur within their fall distance (or dripline if at risk of limb failure). Hazard mitigation is recommended if permanent or frequent targets are anticipated in proximity to any of these trees.

Hazard Trees Not Associated with a Preferred Siting Area.		
Species	Number	Tree ID
Alder Sp.	1	HEC5
Cherry species	1	1295
Big leaf maple	20	HEC1, HEC2, HEC4, HEC6, 1298, 1314, 1318, 1319, 1320, 1727, 1321, 1322, 1323, 1324, 1325, 1326, 1330, 1334, 1335, 1482
Black cottonwood	2	HEC3, 1429
Unknown conifer sp.	2	HEC7, HEC8
Paper Birch	1	1332
Red Alder	1	1292
Unknown Prunus sp.	4	1427, 1428, 1430, 1431
Western Red Cedar	1	1416

REFERENCES

Dunster, J.A.; E.T. Smiley; N. Matheny; and S. Lilly. 2017. Tree Risk Assessment Manual, 2nd edition. Champaign, Illinois. International Society of Arboriculture.

Gooding, R.; J. Clark; P. Severynen; B. Vicary; M. Duntemann; L. Burkhart; and E.T. Smiley. 2019. Guide for Plant Appraisal, 10th edition. Atlanta, Georgia. Council of Tree and Landscape Appraisers, International Society of Arboriculture.

APPENDIX A

Tree Data

