October 2nd, 2019

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# AAI Engineering – JAE Oregon Building Expansion

## Arboricultural Impact Assessment and Inventory

### INTRODUCTION

A pre-construction arboricultural inspection and survey of 110 trees was carried out on September 19th, 2019 at approximately 7:00am to assess the impact of the proposed construction of the JAE Building Expansion (Tualatin OR). Tree species identification and condition assessment was requested by the project manager to address Tualatin Development Code TDC 73B.070(3) for Tree Preservation. This assessment is aimed to directly address the Tualatin Tree Code and provide a suitable protection plan for the trees impacted by the proposed building expansion construction.

A base survey/site plan has been supplied identifying the trees and area for arboricultural impact assessment for the Land Use Application associated with this project. In response, all of the relevant trees on site have been inspected and subject to arboricultural assessment to address, in particular, the 24 trees proposed for removal, and an additional 8 trees that are within close proximity development that may have modified post-construction growing mediums.

Of the 110 trees, there are in fact 41 trees that show technical measurements (DBH >12") that would otherwise qualify for onsite protection during construction/demolition activities. The assessment is summarized as follows, and further information is contained within the 'Tree Information and Construction Assessment' section of this document:

- Tree Removals (*Northern Section of Project)* – this portion of the subdivision proposes initial excavation and construction activities that will necessitate the removal 24 of 97 trees that range of conditions in terms health, structural stability, and retention value. The majority of the trees in question cannot be considered 'significant' from an arboricultural perspective, and several have poor structural stability and are located at the eastern section of edge-effected and marginally fragmented woodland. There is however one tree (ID#1972) that is a Specimen tree that has significant preservation value and may form part of a remnant grove of riparian vegetation in this area. This tree is of noteworthy arboricultural merit and is one of three dominant trees surveyed in relation to this portion of the proposed development.

- Tree Retention (*Southern Section of Project)* – the proposed development in this section proposes to retain and protect 13 trees that range in condition, genus, and retention value.

  An additional stormwater detention pond is proposed to be "reconditioned" around tree numbers 1922 – 1930. The proposal is to retain and protect these trees with fencing to follow the limits of construction. It is recommended that on-site arboricultural supervision during any associated excavation works in this area be required and tree roots greater than 2" diameter be retained and any root pruning documented.

- Trees at the Edge of Construction: Additional arboricultural supervision is highly recommended during excavation and building activities at the western edge of the proposed building extension. Given the close proximity to development, any work near the dip line or at closest proximity to this collective group of trees should be supervised by the project arborist to ensure they remain viable in a post construction medium.

- Trees Recommended for removal – it is recommended that two Black Cottonwoods (ID#2040 & 2041) be subject to removal and replacement in association with this development. Both trees displayed clear visual evidence symptomatic of trees approaching or at the end of their Safe Useful Life Expectancies. Although

they are outside of the building's footprint, they do form part of the grove of vegetation that should be managed appropriately in relation to this project.

- Significant or Specimen tree preservation – these trees have been included in this assessment to document their overall condition and contribution to the local urban forest. Tree 1972 36" DBH Black Cottonwood, Tree 1982 24" DBH Douglas fir, and Tree 1940 28" DBH Western red cedar have can be referenced and are not considered in the building foot print in this instance. These trees are considered to have a "high" to "significant" preservation value and work including tree removal should not negatively impact these individual trees.

- Mature Tree Preservation - For this portion of the development project, the applicant has demonstrated that development has been designed to avoid damaging mature trees, and provided a justification for the need to remove trees in association with this project from an developmental perspective, The applicant has identified a stand of native trees to the west of the proposed development and has provided protection measures with targeted/minimalized tree removal to preserve this section of vegetation.

- Impact to Urban Forest – the removal of the trees in this location does involve the removal of native trees that are dominant in the landscape. There are a few that are significant from an urban forestry perspective and would otherwise preclude appropriate development as it is proposed. However, the most dominant and noteworthy specimens for the most part are proposed for retention as part of this project, and the general condition of the urban forest will not be substantially modified provided tree protection measures are in place to minimize the impact to induvial trees.

- Tree protection measures for project - Standard tree protection fencing (6' chain-link, ANSI A300) should be erected and follow the tree protection plan provided in the 'Concept Tree Protection plan'. Absolutely NO encroachment beyond this area is permitted and no access into this area is allowed without permission from the project arborist. To avoid the removal of specimen trees and measures taken to protect tree health and structural stability, each trees drip line should also be considered during all construction activity https://www.tualatinoregon.gov/developmentcode/chapter-73b-landscaping-standards.

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## RECOMMENDATIONS

It is recommended that the seven trees proposed for removal are subject to a suitable mitigation/replacement strategy. All other trees subject to this assessment should preserved at all stages of development with on-site arboricultural supervision and guidance provided were specified in this report.

Although I do not normally recommend tree removal, in this instance this seems the best option to allow for fair urban forestry outcomes and to support fair and reasonable development.

Tree protection fencing is the most-common method for setting up a Root Protection Zone and is designed to act as a physical barrier of protective fencing at the edge of ANY construction activities which include the following:

- Soil disturbance of any kind.
- Storage of material of any kind.
- Preparation of materials.
- Pedestrian or vehicular access.

*Any variations, modifications, or access inside of the prescribed Tree Protection Fencing must be approved and under the direct supervision of the project arborist.*

Thank you for the opportunity for preparing this assessment and please feel free to contact me if you have any questions or would like to discuss this matter further.

Sincerely,

October 2nd, 2019

## TREE INFORMATION AND CONSTRUCTION ASSESSMENT:

| ID | Common Name | Latin Name | Status | DBH | Critical Root Zone (CRZ) | Tree Protection Zone (TPZ) | Height Rang | Crown Spre | Canopy Shap | Tree age | Conditio n (Health | Condition (Structure ) | Useful Life Expectancy | Crown Diebac k (%) | Reason for Removal | Suitability to Location | Preservation Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1922 | Paper birch | Betula papyrifera | Alive/Suitable for Retention | 14.21 | 7.105 | 14.21 | 30ft-50ft | 30 | Suppressed | Semi-mature | Good | Poor | 10 to 20 years | <25% | | Fair | Low |
| 1923 | Paper birch | Betula papyrifera | Alive/Suitable for Retention | 12.21 | 6.105 | 12.21 | 30ft-50ft | 30 | Suppressed | Semi-mature | Good | Poor | 10 to 20 years | <25% | | Fair | Low |
| 1924 | Paper birch | Betula papyrifera | Alive/Suitable for Retention | 9 | 4.5 | 9 | 30ft-50ft | 30 | Suppressed | Semi-mature | Good | Fair | 10 to 20 years | <25% | | Fair | Low |
| 1925 | Paper birch | Betula papyrifera | Alive/Suitable for Retention | 13.3 | 6.65 | 13.3 | 30ft-50ft | 30 | Suppressed | Semi-mature | Good | Poor | 10 to 20 years | <25% | | Fair | Low |
| 1926 | Paper birch | Betula papyrifera | Alive/Suitable for Retention | 7 | 3.5 | 7 | 30ft-50ft | 30 | Suppressed | Semi-mature | Good | Poor | 10 to 20 years | <25% | | Fair | Low |
| 1927 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 30 | 15 | 30 | 75ft-100ft | 35 | Asymmetrical | Mature | Fair | Good | 20 to 40 years | <25% | | Good | Moderate |
| 1928 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 29 | 14.5 | 29 | 75ft-100ft | 35 | Asymmetrical | Mature | Fair | Good | 20 to 40 years | <25% | | Good | Moderate |
| 1929 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 30 | 15 | 30 | 75ft-100ft | 35 | Asymmetrical | Mature | Fair | Good | 20 to 40 years | <25% | | Good | Moderate |
| 1930 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 11 | 5.5 | 11 | 50ft-75ft | 20 | Suppressed | Mature | Fair | Fair | 10 to 20 years | <25% | | Fair | Low |
| 1931 | Common crabapple | Malus sylvestris | Alive/Suitable for Retention | 7.81 | 3.905 | 7.81 | 15ft-30ft | 15 | Symmetrical | Semi-mature | Poor | Poor | 5 to 10 years | 25-50% | | Fair | Very low |
| 1932 | Flowering dogwood | Cornus florida | Alive/Suitable for Retention | 4 | 2 | 4 | <15ft | 8 | Symmetrical | Young | Fair | Poor | 10 to 20 years | <25% | | Good | Low |
| 1933 | European white birch | Betula pendula | Alive/Suitable for Retention | 11 | 5.5 | 11 | 30ft-50ft | 35 | Asymmetrical | Semi-mature | Poor | Fair | 1 to 5 years | 25-50% | | Fair | Low |
| 1934 | European white birch | Betula pendula | Alive/Suitable for Retention | 11 | 5.5 | 11 | 30ft-50ft | 35 | Symmetrical | Semi-mature | Poor | Fair | 1 to 5 years | 25-50% | | Fair | Low |
| 1935 | European white birch | Betula pendula | Alive/Suitable for Retention | 7 | 3.5 | 7 | 30ft-50ft | 30 | Asymmetrical | Semi-mature | Fair | Fair | 10 to 20 years | <25% | | Fair | Moderate |
| 1936 | European white birch | Betula pendula | Alive/Suitable for Retention | 13 | 6.5 | 13 | 30ft-50ft | 35 | Asymmetrical | Semi-mature | Fair | Fair | 10 to 20 years | <25% | | Fair | Moderate |
| 1937 | Western red cedar | Thuja plicata | Alive/Suitable for Retention | 14 | 7 | 14 | 30ft-50ft | 30 | Symmetrical | Semi-mature | Poor | Fair | 5 to 10 years | <25% | | Fair | Moderate |
| 1938 | Western red cedar | Thuja plicata | Alive/Suitable for Retention | 6 | 3 | 6 | 15ft-30ft | 10 | Symmetrical | Semi-mature | Poor | Fair | 5 to 10 years | <25% | | Fair | Moderate |
| 1939 | Western red cedar | Thuja plicata | Alive/Suitable for Retention | 13 | 6.5 | 13 | 30ft-50ft | 30 | Symmetrical | Semi-mature | Poor | Fair | 5 to 10 years | <25% | | Fair | Moderate |
| 1940 | Western red cedar | Thuja plicata | Alive/Suitable for Retention | 27.75 | 13.875 | 27.75 | 30ft-50ft | 35 | Symmetrical | Mature | Good | Poor | 10 to 20 years | <25% | | Poor | High |
| 1941 | Western red cedar | Thuja plicata | Alive/Suitable for Retention | 15.65 | 7.825 | 15.65 | 30ft-50ft | 35 | Symmetrical | Mature | Good | Fair | 20 to 40 years | <25% | | Poor | High |
| 1944 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 10 | 5 | 10 | 30ft-50ft | 35 | Symmetrical | Semi-mature | Fair | Fair | 10 to 20 years | | Development | | |
| 1945 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 18.44 | 9.22 | 18.44 | 30ft-50ft | 35 | Symmetrical | Semi-mature | Fair | Poor | 5 to 10 years | | Development | | |
| 1948 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 16 | 8 | 16 | 30ft-50ft | 30 | Symmetrical | Semi-mature | Good | Poor | 5 to 10 years | | Development | | |
| 1950 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 14 | 7 | 14 | 30ft-50ft | 30 | Symmetrical | Semi-mature | Fair | Fair | 5 to 10 years | | Development | | |
| 1951 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 18.6 | 9.3 | 18.6 | 30ft-50ft | 30 | Symmetrical | Semi-mature | Poor | Very Poor | 10 to 20 years | | Development | | |
| 1952 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 13.89 | 6.945 | 13.89 | 30ft-50ft | 30 | Symmetrical | Semi-mature | Poor | Very Poor | 10 to 20 years | | Development | | |
| 1954 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 16.55 | 8.275 | 16.55 | 30ft-50ft | 28 | Symmetrical | | Poor | Poor | 5 to 10 years | | Development | Poor | Low |
| 1955 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 22.67 | 11.335 | 22.67 | 30ft-50ft | 30 | Symmetrical | | Fair | Poor | 10 to 20 years | | Development | Poor | Low |
| 1956 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 8 | 4 | 8 | 30ft-50ft | 10 | Symmetrical | Semi-mature | Fair | Poor | 10 to 20 years | | Development | Poor | Low |
| 1957 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 9 | 4.5 | 9 | 30ft-50ft | 10 | Symmetrical | Semi-mature | Fair | Poor | 10 to 20 years | | Development | Poor | Low |
| 1958 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 13.6 | 6.8 | 13.6 | 30ft-50ft | 10 | Symmetrical | Young | Fair | Poor | 10 to 20 years | <25% | | Good | Moderate |
| 1959 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 8.25 | 4.125 | 8.25 | 30ft-50ft | 10 | Symmetrical | Young | Fair | Poor | 10 to 20 years | <25% | | Good | Moderate |
| 1960 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 7.81 | 3.905 | 7.81 | 30ft-50ft | 10 | Symmetrical | Young | Fair | Poor | 10 to 20 years | <25% | | Good | Moderate |
| 1961 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 10 | 5 | 10 | 30ft-50ft | 15 | Symmetrical | Young | Fair | Poor | 10 to 20 years | <25% | | Good | Moderate |

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| ID | Common Name | Latin Name | Status | DBH | Critical Root Zone (CRZ) | Tree Protection Zone (TPZ) | Height Range | Crown Spread | Canopy Shape | Tree age | Condition (Health) | Condition (Structure) | Useful Life Expectancy | Crown Dieback (%) | Reason for Removal | Suitability to Location | Preservation Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1964 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 11.49 | 5.745 | 11.49 | 30ft-50ft | 20 | Symmetrical | Young | Fair | Poor | 10 to 20 years | <25% | | Good | Moderate |
| 1966 | Douglas fir | Pseudotsuga menziesii | Alive/Suitable for Retention | 23 | 11.5 | 23 | 50ft-75ft | 30 | Asymmetrical | Semi-mature | Good | Good | 40 years + | | | Good | High |
| 1967 | Douglas fir | Pseudotsuga menziesii | Alive/Suitable for Retention | 17 | 8.5 | 17 | 50ft-75ft | 30 | Asymmetrical | Semi-mature | Good | Good | 40 years + | | | Good | High |
| 1968 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 14 | 7 | 14 | 30ft-50ft | 25 | Symmetrical | Semi-mature | Fair | Fair | 20 to 40 years | <25% | | Good | Moderate |
| 1969 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 10 | 5 | 10 | 30ft-50ft | 15 | Symmetrical | Semi-mature | Fair | Fair | 20 to 40 years | <25% | | Good | Moderate |
| 1970 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 14.14 | 7.07 | 14.14 | 30ft-50ft | 25 | Symmetrical | Semi-mature | Fair | Poor | 5 to 10 years | <25% | | Good | Moderate |
| 1971 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 15 | 7.5 | 15 | 50ft-75ft | 30 | Symmetrical | Semi-mature | Poor | Poor | 5 to 10 years | <25% | | Good | Moderate |
| 1972 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 36 | 18 | 36 | 75ft-100ft | 45 | Symmetrical | Mature | Fair | Poor | 20 to 40 years | <25% | | Excellent | Significant |
| 1973 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 21.21 | 10.605 | 21.21 | 75ft-100ft | 35 | Symmetrical | Mature | Fair | Poor | 20 to 40 years | <25% | | Good | High |
| 1974 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 8 | 4 | 8 | 50ft-75ft | 10 | Symmetrical | Semi-mature | Very Poor | Poor | 1 to 5 years | <25% | | Good | Low |
| 1975 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 21.21 | 10.605 | 21.21 | 75ft-100ft | 35 | Symmetrical | Mature | Fair | Poor | 20 to 40 years | <25% | | Excellent | High |
| 1976 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 14 | 7 | 14 | 50ft-75ft | 35 | Symmetrical | Mature | Fair | Good | 20 to 40 years | <25% | | Excellent | High |
| 1977 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 21.38 | 10.69 | 21.38 | 75ft-100ft | 35 | Symmetrical | Mature | Fair | Poor | 10 to 20 years | <25% | | Excellent | High |
| 1978 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 18 | 9 | 18 | 75ft-100ft | 35 | Symmetrical | Mature | Good | Fair | 40 years + | <25% | | Excellent | High |
| 1979 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 10 | 5 | 10 | 30ft-50ft | 12 | Suppressed | Mature | Fair | Fair | 10 to 20 years | <25% | | Fair | Moderate |
| 1980 | Douglas fir | Pseudotsuga menziesii | Alive/Suitable for Retention | 16 | 8 | 16 | 30ft-50ft | 25 | Symmetrical | Semi-mature | Good | Poor | 20 to 40 years | <25% | | Good | High |
| 1981 | Douglas fir | Pseudotsuga menziesii | Alive/Suitable for Retention | 21 | 10.5 | 21 | 50ft-75ft | 30 | Symmetrical | Semi-mature | Good | Good | 40 years + | <25% | | Good | High |
| 1982 | Douglas fir | Pseudotsuga menziesii | Alive/Suitable for Retention | 24 | 12 | 24 | 50ft-75ft | 30 | Symmetrical | Semi-mature | Good | Good | 40 years + | <25% | | Good | High |
| 1983 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 11 | 5.5 | 11 | 50ft-75ft | 35 | Symmetrical | Semi-mature | Good | Good | 40 years + | | Development | Fair | Moderate |
| 1984 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 14.87 | 7.435 | 14.87 | 50ft-75ft | 30 | Symmetrical | Semi-mature | Fair | Poor | 20 to 40 years | | Development | Fair | Moderate |
| 1985 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 8 | 4 | 8 | 50ft-75ft | 12 | Suppressed | Semi-mature | Fair | Good | 40 years + | | Development | Fair | Moderate |
| 1986 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 7.62 | 3.81 | 7.62 | 30ft-50ft | 12 | Suppressed | Semi-mature | Fair | Fair | 40 years + | | Development | Fair | Moderate |
| 1987 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 11.58 | 5.79 | 11.58 | 50ft-75ft | 25 | Suppressed | Semi-mature | Fair | Poor | 20 to 40 years | | Development | Fair | Moderate |
| 1988 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 17.03 | 8.515 | 17.03 | 50ft-75ft | 35 | Symmetrical | Semi-mature | Fair | Poor | 20 to 40 years | | Development | Fair | Moderate |
| 1989 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 14.42 | 7.21 | 14.42 | 50ft-75ft | 30 | Symmetrical | Semi-mature | Fair | Poor | 20 to 40 years | | Development | Fair | Moderate |
| 1990 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 9 | 4.5 | 9 | 50ft-75ft | 15 | Symmetrical | Semi-mature | Poor | Good | 20 to 40 years | <25% | | Fair | Low |
| 1991 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 11 | 5.5 | 11 | 50ft-75ft | 15 | Symmetrical | Semi-mature | Fair | Fair | 20 to 40 years | <25% | | Fair | Low |
| 1992 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 7 | 3.5 | 7 | 50ft-75ft | 10 | Suppressed | Semi-mature | Fair | Good | 40 years + | <25% | | Fair | Low |
| 1993 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 6 | 3 | 6 | 30ft-50ft | 10 | Suppressed | Semi-mature | Fair | Fair | 40 years + | <25% | Development | Fair | Low |
| 1994 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 17 | 8.5 | 17 | 50ft-75ft | 30 | Symmetrical | Semi-mature | Fair | Good | 40 years + | | Development | Fair | High |
| 1995 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 9.22 | 4.61 | 9.22 | 30ft-50ft | 15 | Suppressed | Semi-mature | Fair | Poor | 10 to 20 years | <25% | Development | Fair | Low |
| 1996 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 5 | 2.5 | 5 | 30ft-50ft | 10 | Suppressed | Semi-mature | Poor | Fair | 20 to 40 years | <25% | | Fair | Low |
| 1997 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 7 | 3.5 | 7 | 30ft-50ft | 10 | Suppressed | Semi-mature | Poor | Fair | 20 to 40 years | <25% | | Fair | Low |
| 1998 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 9.64 | 4.82 | 9.64 | 30ft-50ft | 25 | Suppressed | Semi-mature | Poor | Poor | 10 to 20 years | <25% | | Fair | Low |
| 1999 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 9.85 | 4.925 | 9.85 | 50ft-75ft | 15 | Suppressed | Semi-mature | Fair | Fair | 20 to 40 years | <25% | | Fair | Low |
| 2000 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 5 | 2.5 | 5 | 30ft-50ft | 15 | Suppressed | Semi-mature | Fair | Fair | 20 to 40 years | <25% | Development | Fair | Low |

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| ID | Common Name | Latin Name | Status | DBH | Critical Root Zone (CRZ) | Tree Protection Zone (TPZ) | Height Range | Crown Spread | Canopy Shape | Tree age | Condition (Health) | Condition (Structure) | Useful Life Expectancy | Crown Dieback (%) | Reason for Removal | Suitability to Location | Preservation Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2002 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 8 | 4 | 8 | 30ft-50ft | 15 | Suppressed | Semi-mature | Fair | Good | 20 to 40 years | <25% | | Good | Moderate |
| 2003 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 7 | 3.5 | 7 | 30ft-50ft | 15 | Suppressed | Semi-mature | Fair | Good | 20 to 40 years | <25% | | Good | Moderate |
| 2004 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 8 | 4 | 8 | 30ft-50ft | 15 | Suppressed | Semi-mature | Fair | Fair | 20 to 40 years | <25% | | Fair | Low |
| 2005 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 9.22 | 4.61 | 9.22 | 30ft-50ft | 15 | Suppressed | Semi-mature | Fair | Fair | 20 to 40 years | <25% | | Fair | Low |
| 2006 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 10.63 | 5.315 | 10.63 | 30ft-50ft | 20 | Suppressed | Semi-mature | Fair | Poor | 20 to 40 years | <25% | | Fair | Low |
| 2007 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 12.45 | 6.225 | 12.45 | 50ft-75ft | 35 | Suppressed | Semi-mature | Fair | Poor | 20 to 40 years | <25% | | Fair | Low |
| 2008 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 12.81 | 6.405 | 12.81 | 50ft-75ft | 30 | Suppressed | Semi-mature | Fair | Poor | 20 to 40 years | <25% | | Fair | Low |
| 2009 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 6 | 3 | 6 | 30ft-50ft | 10 | Suppressed | Semi-mature | Fair | Fair | 20 to 40 years | <25% | Development | Fair | Low |
| 2010 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 10.77 | 5.385 | 10.77 | 50ft-75ft | 25 | Suppressed | Semi-mature | Poor | Fair | 20 to 40 years | <25% | | Fair | Low |
| 2011 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 9 | 4.5 | 9 | 50ft-75ft | 20 | Suppressed | Semi-mature | Fair | Fair | 20 to 40 years | <25% | | Fair | Low |
| 2012 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 11.05 | 5.525 | 11.05 | 50ft-75ft | 25 | Suppressed | Semi-mature | Fair | Poor | 20 to 40 years | <25% | | Fair | Low |
| 2013 | Douglas fir | Pseudotsuga menziesii | Alive/Suitable for Retention | 11.05 | 5.525 | 11.05 | 50ft-75ft | 25 | Suppressed | Semi-mature | Good | Good | 40 years + | <25% | | Good | High |
| 2015 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 7 | 3.5 | 7 | 50ft-75ft | 12 | Suppressed | Semi-mature | Fair | Good | 40 years + | <25% | | Good | Moderate |
| 2016 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 11 | 5.5 | 11 | 50ft-75ft | 25 | Symmetrical | Semi-mature | Good | Good | 20 to 40 years | <25% | | Good | High |
| 2017 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 11 | 5.5 | 11 | 50ft-75ft | 25 | Symmetrical | Semi-mature | Good | Good | 20 to 40 years | <25% | | Good | High |
| 2018 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 15 | 7.5 | 15 | 50ft-75ft | 35 | Symmetrical | Semi-mature | Good | Good | 40 years + | <25% | | Good | High |
| 2019 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 9.49 | 4.745 | 9.49 | 50ft-75ft | 18 | Suppressed | Semi-mature | Fair | Poor | 20 to 40 years | <25% | | Good | Moderate |
| 2020 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 8.06 | 4.03 | 8.06 | 50ft-75ft | 18 | Suppressed | Semi-mature | Fair | Poor | 20 to 40 years | <25% | | Good | Moderate |
| 2021 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 10.82 | 5.41 | 10.82 | 50ft-75ft | 18 | Suppressed | Semi-mature | Fair | Poor | 20 to 40 years | <25% | | Good | Moderate |
| 2022 | Douglas fir | Pseudotsuga menziesii | Alive/Suitable for Retention | 14 | 7 | 14 | 30ft-50ft | 35 | Symmetrical | Semi-mature | Good | Good | 40 years + | | | Good | High |
| 2023 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 15.65 | 7.825 | 15.65 | 50ft-75ft | 35 | Symmetrical | Mature | Good | Poor | 20 to 40 years | | | Good | High |
| 2024 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 10 | 5 | 10 | 50ft-75ft | 25 | Symmetrical | Mature | Good | Poor | 20 to 40 years | | | Good | Moderate |
| 2025 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 10 | 5 | 10 | 50ft-75ft | 25 | Symmetrical | Semi-mature | Good | Good | 40 years + | | | Good | Moderate |
| 2026 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 8 | 4 | 8 | 50ft-75ft | 15 | Suppressed | Semi-mature | Good | Good | 40 years + | | | Good | Moderate |
| 2027 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 5 | 2.5 | 5 | 50ft-75ft | 10 | Suppressed | Young | Good | Good | 40 years + | | | Good | Moderate |
| 2028 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 7.21 | 3.605 | 7.21 | 50ft-75ft | 10 | Suppressed | Young | Good | Fair | 40 years + | | | Good | Moderate |
| 2029 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 5 | 2.5 | 5 | 50ft-75ft | 10 | Suppressed | Young | Good | Fair | 40 years + | | | Good | Moderate |
| 2030 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 7 | 3.5 | 7 | 50ft-75ft | 10 | Suppressed | Young | Good | Good | 40 years + | | | Good | Moderate |
| 2031 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 7 | 3.5 | 7 | 50ft-75ft | 10 | Suppressed | Young | Good | Fair | 40 years + | | | Good | Moderate |
| 2032 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 9.17 | 4.585 | 9.17 | 50ft-75ft | 15 | Suppressed | Young | Good | Poor | 20 to 40 years | | | Good | Moderate |
| 2033 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 5 | 2.5 | 5 | 50ft-75ft | 10 | Suppressed | Young | Fair | Fair | 20 to 40 years | | | Good | Moderate |
| 2034 | Douglas fir | Pseudotsuga menziesii | Alive/Suitable for Retention | 14 | 7 | 14 | 50ft-75ft | 30 | Symmetrical | Semi-mature | Good | Good | 40 years + | <25% | | Good | High |
| 2035 | Douglas fir | Pseudotsuga menziesii | Alive/Suitable for Retention | 12 | 6 | 12 | 50ft-75ft | 30 | Symmetrical | Semi-mature | Good | Good | 40 years + | <25% | | Good | High |
| 2036 | Northern red oak | Quercus rubra | Alive/Suitable for Retention | 12 | 6 | 12 | 30ft-50ft | 30 | Symmetrical | Semi-mature | Good | Fair | 40 years + | <25% | | Good | Moderate |
| 2037 | Northern red oak | Quercus rubra | Alive/Suitable for Retention | 10 | 5 | 10 | 15ft-30ft | 30 | Symmetrical | Semi-mature | Fair | Fair | 40 years + | <25% | | Good | Moderate |
| 2038 | Sugar maple | Acer saccharum | Alive/Suitable for Retention | 5 | 2.5 | 5 | 15ft-30ft | 15 | Symmetrical | Young | Good | Good | 40 years + | <25% | | Good | Low |
| 2039 | Sugar maple | Acer saccharum | Alive/Suitable for Retention | 5 | 2.5 | 5 | 15ft-30ft | 15 | Symmetrical | Young | Good | Good | 40 years + | <25% | | Good | Low |
| 2040 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 21 | 10.5 | 21 | 75ft-100ft | 30 | Asymmetrical | Semi-mature | Good | Good | 40 years + | | Diseased, Infrastructure Conflict | Poor | Low |
| 2041 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Proposed Tree Removal | 17 | 8.5 | 17 | 75ft-100ft | 45 | Asymmetrical | Semi-mature | Good | Very Poor | 5 to 10 years | | Diseased, Infrastructure Conflict | Poor | Moderate |
| 2042 | Black cottonwood | Populus balsamifera ssp. trichocarpa | Alive/Suitable for Retention | 19 | 9.5 | 19 | 75ft-100ft | 35 | Asymmetrical | Semi-mature | Good | Good | 20 to 40 years | | | Fair | Moderate |

October 2nd, 2019

**Tree Locations and Summary:** Tree by location (ID#), species, and DBH with RPZ displayed (NORTHERN ZONE)


**Total Trees** = 97

**Total Regulated (where standards apply) = 41** having a DBH greater than 12".

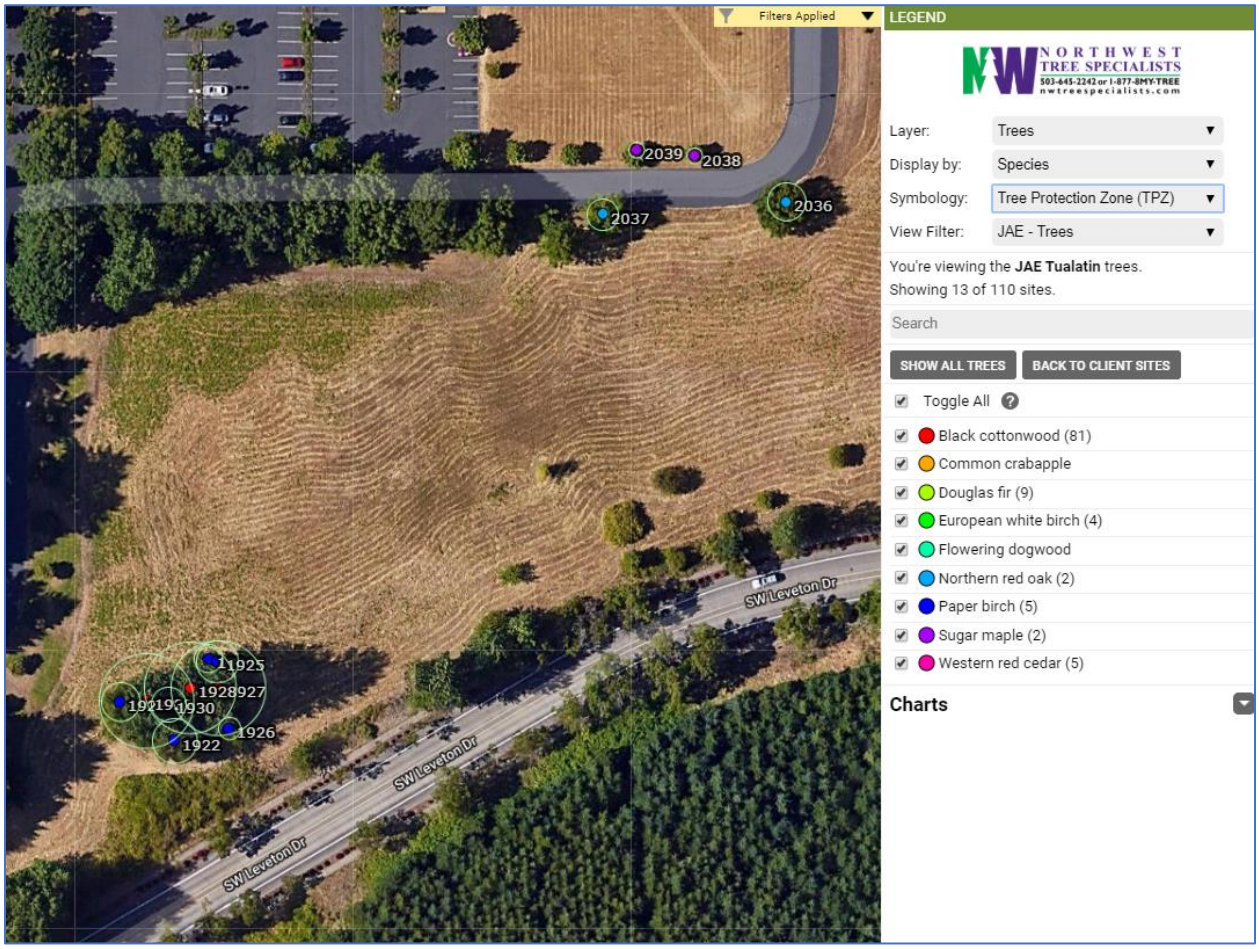
**Total Specimen Trees (where standards apply) = 3** (Tree 1972 36" DBH Black Cottonwood, Tree 1982 24" DBH Douglas fir, and Tree 1940 28"DBH Western red cedar).

**Number of Exempt Trees in Survey =** Trees 2041 and 2040 are in condition in terms of health and structure and should be removed as part of this development.

There are additional trees on site, however this is the initial tree survey for Tracks A and B and the associated development.

October 2nd, 2019

**Tree Locations and Summary:** Tree by location (ID#), species, and DBH with RPZ displayed (Southern Zone)




**Total Trees** = 13

**Total Regulated (where standards apply) =** 4 black cottonwoods are considered regulated considering condition and status.

**Number of Exempt Trees in Survey =** 5 Birch species may be considered invasive and may not be considered species of high retention value.

**Tree Locations:** Tree by location and status, and ID# for spatial reference (Northern and Southern Zones)

October 2nd, 2019

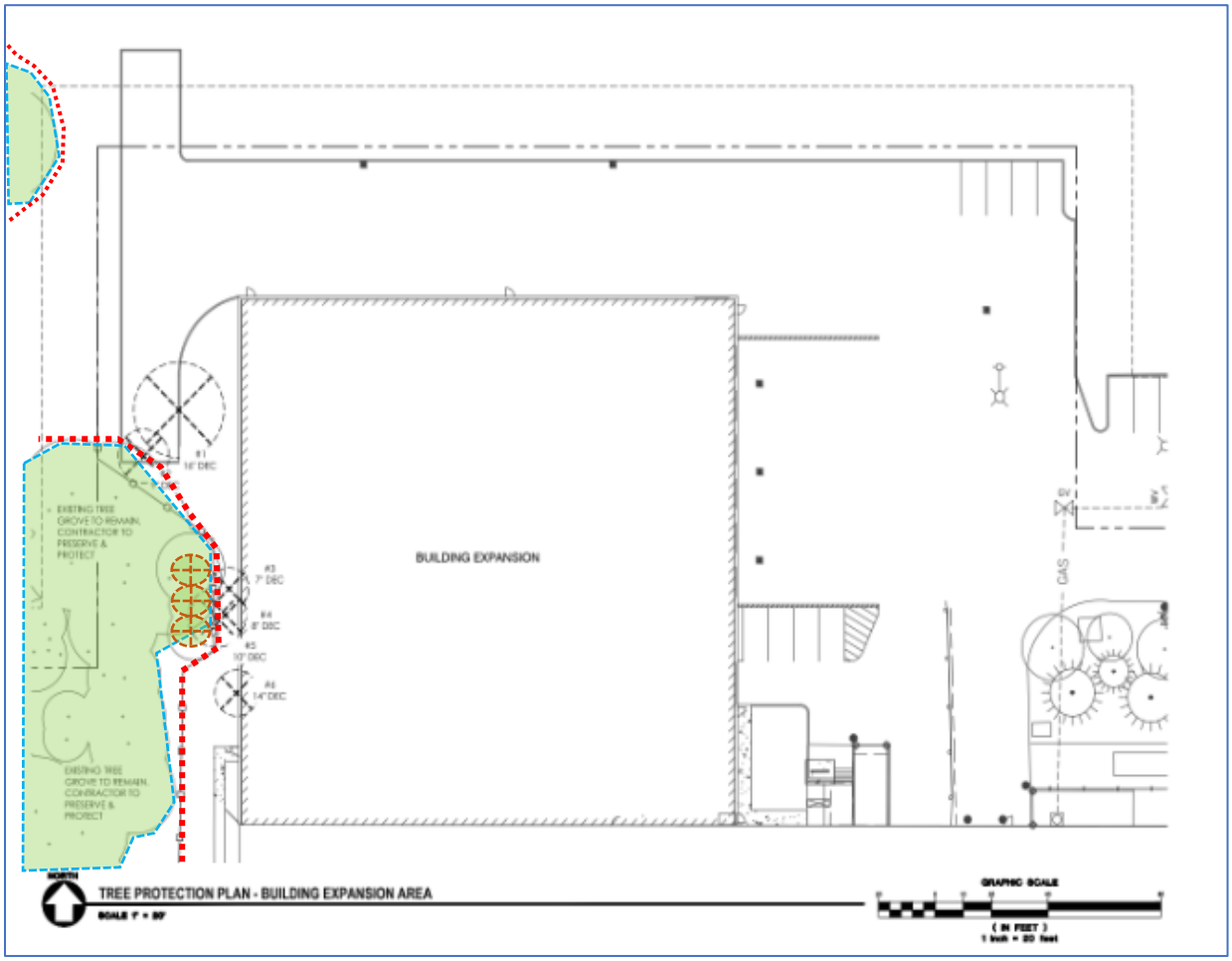

Trees Alive and Considered Suitable for Retention: 86, 78% (currently to be preserved during development)

Trees Proposed for removal: 24 trees, 21% (currently to be removed in the face of development)

*Of the 24 trees proposed for removal, two trees are considered dying or diseased and not suitable for retention and would otherwise be recommended for removal/replacement, irrespective of development.*

October 2nd, 2019

**Concept Tree Protection/Demo Plan:** Indicating trees to be removed as part of proposed demolition.




Showing trees proposed for removal.

Existing grove of vegetation to be preserved and to be subject to tree protection measures.

Proposed tree protection fencing at edge of excavation work – minimum 6' chain-link fencing.

Trees where on-site arboricultural supervision during excavation is recommended.