

Exhibit D: Tree Inventory and Habitat Assessment

Willamette Water Supply
Our Reliable Water

WILLAMETTE WATER SUPPLY SYSTEM

City of Sherwood Tree Inventory and Habitat Assessment Water Treatment Plant Site

Prepared for:

Tualatin Valley Water District




Prepared by:



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1 INTRODUCTION

The Willamette Water Supply System (WWSS) has been identified by the Tualatin Valley Water District (TVWD), the City of Beaverton (Beaverton), and the City of Hillsboro (Hillsboro) – collectively referred to as the Partners – as the next infrastructure project to deliver drinking water to municipalities in Washington County by developing the mid-Willamette River at Wilsonville as an additional water supply source. TVWD has been designated the Managing Agency for the WWSS Commission, and TVWD operates the Willamette Water Supply Program (WWSP) to plan, design, and construct the WWSS.

This report covers the study area for the proposed Willamette Water Supply System Water Treatment Plant (WWSS WTP or WTP), inclusive of the proposed SW Blake Street alignment on the north and west sides of the WTP site. The site is located in Washington County, Oregon (Township 2 South, Range 1 West, Section 28D, Willamette Meridian; tax lot ID 2S128D001200) (see Appendix A, Figure 1). The site is within the city limits of Sherwood and regional Urban Growth Boundary. It is designated Employment Industrial on the City of Sherwood Comprehensive Plan and Zoning Map.

This report covers the following topics pertinent to the City of Sherwood’s natural resource land use code:

- *existing tree inventory (using a woodland approach) and proposed impacts, including tree canopy assessment (Sherwood Zoning and Community Development Code (SZCDC) Section 16.142.070); and*
- *existing habitat and natural area inventory, proposed impacts, and assessment (SZCDC Chapter 16.144).*

Wetland and Clean Water Services (CWS) vegetated corridors (i.e., wetland buffers) are described in a separate CWS Site Assessment Report (DEA 2020) (Appendix B). These two reports together describe the natural resources present on the subject property.

2 LANDSCAPE SETTING AND RESOURCE OVERVIEW

The nearly 50-acre study area is located in the City of Sherwood, south of SW Tualatin-Sherwood Road, and between SW Dahlke Lane and SW 120th Avenue. SW 124th Avenue runs along the east property boundary and a farmed field lies north of the study area. A Portland General Electric (PGE) power line easement corridor crosses diagonally through the study area, appears to be maintained occasionally, and generally consists of shrub habitat. Several trails and local access routes are present on the site, including some established to support past geotechnical work and other site development investigations.

The site resides along a drainage divide between tributaries of the Tualatin River Basin and tributaries to the Willamette River Basin. The northwestern portion of the site drains to a wetland that then drains north to an off-site tributary to Hedges Creek. Hedges Creek is a tributary to the

Tualatin River. The southern and much of the eastern portions of the site drain southward to upland habitat and a large kolk pond wetland that appear to be part of the Coffee Lake Creek subbasin. However, there is no direct surface water connection to Coffee Lake Creek and ground water in this area may flow either to the Coffee Lake Creek subbasin or to the Rock Creek subbasin. The Coffee Lake Creek subbasin drains to the Willamette River, while the Rock Creek subbasin drains to the Tualatin River.

Much of the site is densely wooded with undulating topography and rocky outcroppings. Open areas, typically resulting from past disturbance, are vegetated by non-native grasses and Himalayan blackberry (*Rubus armeniacus*) thickets. Delineated wetlands were observed in depressions and are further described in the CWS Site Assessment report (DEA 2020) (Appendix B). A list of plant species commonly found on the site is provided in Appendix C.

Much of the site, particularly areas north of the PGE easement, is forested with native Oregon oak/madrone (*Quercus garryana/Arbutus menziesii*) forest, with patches of Douglas fir (*Pseudotsuga menziesii*) mixed in. Poison oak (*Toxicodendron diversilobum*) is pervasive in the understory. Most of this forested area lies over very thin soils with depth to bedrock occurring two feet or less below the surface. This area of shallow soils is part of the Tonquin Scablands geologic formation, which developed as a result of historic ice age floods that stripped away top soil and carved out what are known as “kolk” wetland features in the general area roughly 15,000 years ago (Washington County 1983).

Washington County (1983) describes the site and general surroundings as follows:

“This scoured upland east of the Rock Creek channel is the only major “scabland” not already destroyed by quarrying (northeast of the site) or committed to it by recent decisions (southeast). The parcels involved are ...2S1 28D tax lots 100 and 900...Again, the legal lots are not conterminous with the geologic feature, but do encompass it. The most prominent features –depressions and knobs—are located in the central eastern part of the described area. Small portions of the area have been quarried or otherwise significantly altered. The northern portion of this site has a 3 ½ acre wetland, apparently seasonal, below one of the flood spillways. It is located between two knolls, the western one having a dwarf oak and madrone woodland on cliffs above the seasonal pond...”

Oak woodlands are a “strategy habitat” type for the Willamette Valley Ecoregion as part of the larger Oregon Conservation Strategy (ODFW 2016). This habitat type has become quite rare in the Willamette Valley, predominantly as a result of land clearing and fire suppression. Without fire, this habitat type often can eventually transition to dominance by Douglas fir. Historically, natural wildfire and fires set by native peoples helped to maintain more of this community type on the landscape by setting back successional processes. In the case of the subject property, it is believed that the very shallow soils have helped to maintain the oak woodland community, with only deeper soil areas showing a clear transition to Douglas fir dominated forest. The shallow soils are also

believed to have resulted in the oak community taking on a stunted growth pattern, with many of the trees growing relatively short and narrow. However, some larger oaks with wide crown spread are present on-site, presumably where deeper soils allow for more typical grown patterns.

3 WOODLAND TREE INVENTORY AND CANOPY COVER ASSESSMENT

3.1 METHODS

This section describes the methods used to conduct the City of Sherwood woodland tree inventory and canopy cover assessment. Due to the heavily wooded nature of the site, and in particular the extensive amount of poison oak, a survey of all individual trees was not practical, nor safe. Based on communications with City planning staff, it was determined that a woodland tree inventory would be appropriate. The woodland tree inventory provides a more generalized characterization of trees on the site compared to a detailed recording of all trees.

Site visits were conducted in November of 2016 and December of 2017 as part of wetland delineation and CWS vegetated corridor documentation efforts. Visual observation of tree species and forest composition were noted during these visits and used to inform this woodland tree inventory.

Oregon Department of Geology and Mineral Industries (DOGAMI) lidar data was used to characterize tree canopy height mapping across the site as well as to define overall tree canopy. DOGAMI has publicly available lidar data, which includes canopy height information. The data consists of 3-foot by 3-foot pixels with each pixel having a canopy height value measured to within a hundredth of a foot. For the woodland tree inventory analysis, this data was grouped into height classes based on 20-foot height increments to simplify the data. These classes are shown on Figures 2 and 3 (Appendix A). Vegetation less than 20 feet tall was considered to not be a tree for purposes of this analysis.

3.2 WOODLAND INVENTORY EXISTING CONDITIONS

3.2.1 Species Composition and Distribution

As described in Section 2, the subject property is largely forested and contains Oregon oak woodland and Douglas fir plant communities. These communities occur in both distinct patches, as well as areas where the two communities are comingled. Areas with sparse to no tree cover also occur on the subject parcel, occurring in areas of past and/or ongoing disturbance. Figure 2 (Appendix A) shows various areas of the WTP site labeled A through D. These areas are representative of the various woodland characteristics found across the site and are described below.

Area A:

This area is representative of portions of the site with thin soils which typically contain Oregon oak woodland and trees that show a stunted growth pattern. Oregon oak tree diameter at breast height

(DBH) typically ranged between 6 to 12 inches and tree heights are typically less than 40 feet in height. Oregon oak trees tend to be spread out and have relatively low crown spread resulting in gaps in the tree canopy. A few larger Oregon oak trees may be found within this area, particularly as one heads east towards the steep slopes adjacent to Wetland G. Pacific madrone trees are also commonly found in this area.

Area B:

These areas tend to be dominated by Douglas fir trees, with large Oregon oaks found along the edges or intermixed with Douglas fir in select areas. Tree heights tend to range from 40 to 100 feet, with a few select locations having tree heights greater than 100 feet. Gaps in canopy cover is minimal. Oregon oak and Douglas fir DBH values are typically 24 inches or greater. Other tree species found within these areas include Pacific madrone, bitter cherry, and Douglas Hawthorne, Oregon ash was also prevalent along the margins of Wetlands C and G.

Area C:

These areas represent areas of past disturbance where vegetation has started to reestablish. Tree cover tends to be lacking or is relatively sparse. Vegetation may consist of grasses and blackberry, such as along portions of the proposed SW Blake Street alignment, or dense shrub and sapling tree growth such as along the irregularly maintained PGE power line easement. The area south of the PGE easement, proposed as a temporary construction staging area, was cleared in the past and has regrown with very dense native shrub and sapling trees, with a few specimens growing to above 20 feet.

Area D:

This area represents the small patch of agricultural area found along the northern edge of the site. This area is tilled annually, and no trees are present.

3.2.2 Existing Canopy Cover

Existing canopy cover is shown on Figure 2, along with a table of acreages by canopy height class. Within the 47.88-acre site, total canopy cover is 25.37 acres (includes trees associated with Wetland G and the CWS vegetated corridor).

3.3 CANOPY COVER POST-DEVELOPMENT ANALYSIS

An analysis of tree canopy cover post-development was conducted and is further described below. The analysis revealed that, post-development, the site will have approximately 43.84 percent tree canopy cover. This cover represents only the net developable site, which excludes proposed planting in SW Blake Street right-of-way and existing trees preserved in Wetland G and CWS vegetated corridor. The post-development cover meets the City requirement for a minimum of 30 percent tree canopy (SZCDC Section 16.142.070.C).

Canopy cover post-development was analyzed by overlaying the proposed site design with the tree canopy data layer (Figure 3, Appendix A). Specifically, a limits of disturbance (LOD) boundary was created by the design team to encompass all permanent and temporary ground and vegetation disturbing activities. For the purpose of this analysis, all trees and other vegetation within the LOD are presumed to be removed as a result of the project. Similarly, all trees and other vegetation outside of the LOD will remain. The canopy within the LOD was subtracted from overall site canopy to determine the remaining canopy post-development. Proposed tree plantings within the LOD were then added back into the calculation of post-development canopy cover in accordance with SZCDC Section 16.142.070.C (see Appendix D for proposed landscaping plans relevant to this analysis). The code states that when calculating the post-development canopy cover estimate, existing retained canopy is valued at two times its existing percent cover, and proposed tree plantings are valued at one time their estimated mature canopy cover. A detailed breakdown of canopy cover values by project area, relative to the net developable site acreage is provided in the table on Figure 3. Net developable site is defined in the code as site area without regulated natural resources (e.g., wetlands and CWS vegetated corridor buffers) and excluding roadways (e.g., proposed SW Blake Street).

4 TREE PROTECTION PLAN

In order to protect trees and associated understory vegetation outside of the LOD, the tree protection practices listed below will be followed. These practices consider the challenging nature of the site (rough and rocky topography, dense vegetation, and pervasive poison oak), which will make vegetation removal and marking the LOD difficult.

- The Tree Protection Plan provided in Appendix D will be followed.
- Vegetation clearing will generally occur from the interior portions of the site, working outward toward the edges of the LOD. When clearing comes within 25 feet of the LOD, the LOD shall be marked with bright flagging, orange construction fencing, or other suitable markers to clearly denote the LOD whose purpose is to prevent clearing equipment from venturing past the LOD and into protected forested areas. Once the LOD is marked, then vegetation clearing may commence up to the LOD.
- If there is concern about damaging trees outside of but near the LOD, the project arborist shall be contacted to assess the risk of tree mortality, weigh whether or not to remove the tree as a preventative safety measure, or determine if there are means to preserve the tree that do not conflict with safe construction of the site.
- Forested areas adjacent to the LOD will be fenced prior to earthwork and staging activities occurring within 50 feet of the LOD. Where feasible given site topography, fencing shall consist of 4-foot plastic protection-zone fencing or equivalent. All fencing shall be maintained during the duration of construction and removed upon completion of a given portion of the site.

- Erosion control measures shall generally be installed within or at the LOD edge and not be placed in the forested areas beyond the LOD.
- No on-site permanent or temporary disposal may occur beyond the limits of the LOD, including but not limited to, vegetation debris/slash, soil and rock, and construction materials.

5 RIPARIAN AND UPLAND HABITAT INVENTORY ASSESSMENT

5.1 EXISTING CONDITIONS ASSESSMENT

Riparian and upland habitats were mapped in accordance with City code Chapter 16.144.020.C. Delineated wetlands and CWS Vegetated Corridor boundaries were used to define the boundaries of riparian habitat and areas beyond these resources with tree canopy were defined as upland habitat (Figures 2 and 3, Appendix A). No threatened or endangered species were observed. Relevant code is provided below in italicized text, with findings/clarifications specific to delineation of resources at the WTP site provided as responses in non-italicized text.

C. When the Regionally Significant Fish and Wildlife Habitat map indicates there are resources on the site or within 50 feet of the site, the applicant shall provide plans that show the location of resources on the property. If resources are determined to be located on the property, the plans shall show the value of environmentally sensitive areas using the methodologies described in Sections 1 and 2 below.

The Metro Regionally Significant Fish and Wildlife Habitat map shall be the basis for determining the location and value of environmentally sensitive habitat areas.

Response: The Metro Regionally Significant Fish and Wildlife Habitat mapping within the WTP site is provided in Appendix A, Figure 4.

In order to specify the exact locations on site, the following methodology shall be used to determine the appropriate boundaries and habitat values:

1. *Verifying boundaries of inventoried riparian habitat. Locating habitat and determining its riparian habitat class is a four-step process:*

a. *Locate the Water Feature that is the basis for identifying riparian habitat.*

1. *Locate the top of bank of all streams, rivers, and open water within 200 feet of the property.*

Response: Site wetland delineations were conducted and concurred by DSL. A summary of the wetland results, including DSL concurrence letters is provided in the WTP site CWS Site Assessment Report (DEA 2020), which is provided in Appendix B. The delineation found no streams present on or within 200 feet of the property. Only wetlands were present and are shown on Figures 2 and 3, Appendix A.

2. *Locate all flood areas within 100 feet of the property.*

Response: Flood areas do not exist within 100 feet of the property.

3. *Locate all wetlands within 150 feet of the property based on the Local Wetland Inventory map and on the Metro 2002 Wetland Inventory map (available from the Metro Data Resource Center, 600 NE Grand Ave., Portland, OR 97232). Identified wetlands shall be further delineated consistent with methods currently accepted by the Oregon Division of State Lands and the US Army Corps of Engineers.*

Response: Site wetland delineations were conducted and concurred by DSL. A summary of the wetland results, including DSL concurrence letters is provided in the WTP site CWS Site Assessment Report (DEA 2020), which is provided in Appendix B.]

b. *Identify the vegetative cover status of all areas on the property that are within 200 feet of the top of bank of streams, rivers, and open water, are wetlands or are within 150 feet of wetlands, and are flood areas or are within 100 feet of flood areas. Vegetative cover status shall be as identified on the Metro Vegetative Cover map. In the event of a discrepancy between the Metro Vegetative Cover map and the existing site conditions, document the actual vegetative cover based on the following definitions along with a 2002 aerial photograph of the property;*

Response: For consistency with the tree inventory, DOGAMI Lidar data was used to conduct this analysis. The subject property has not experienced development or substantive land clearing since the 2002 aerial photography and tree cover is likely to have increased since that time. Therefore, high quality resources will not be under mapped relative to 2002 conditions.

1. *Low structure vegetation or open soils — Areas that are part of a contiguous area one acre or larger of grass, meadow, crop-lands, or areas of open soils located within 300 feet of a surface stream (low structure vegetation areas may include areas of shrub vegetation less than one acre in size if they are contiguous with areas of grass, meadow, crop-lands, orchards, Christmas tree farms, holly farms, or areas of open soils located within 300 feet of a surface stream and together form an area of one acre in size or larger).*

Response: This mapping criteria is not applicable since no streams are present within 300 feet of the subject property.

2. *Woody vegetation — Areas that are part of a contiguous area one acre or larger of shrub or open or scattered forest canopy (less than 60% crown-closure) located within 300 feet of a surface stream.*

Response: This mapping criteria is not applicable since no streams are present within 300 feet of the subject property.

3. *Forest canopy — Areas that are part of a contiguous grove of trees of one acre or larger in area with approximately 60% or greater crown closure, irrespective of whether the entire grove is within 200 feet of the relevant water feature.*

Response: The woodland tree inventory canopy layer, derived from DOGAMI Lidar canopy data, was used to conduct this analysis (see Figures 2 and 3 of Appendix A).

c. Determine whether the degree that the land slopes upward from all streams, rivers, and open water within 200 feet of the property is greater than or less than 25% (using the Clean Water Services Vegetated Corridor methodology); and

Response: CWS Vegetated Corridor boundaries were used to determine the extent of riparian habitat. The table below was used to classify the habitat within those boundaries.

d. Identify the riparian habitat classes applicable to all areas on the property using Table 8-1 below:

Distance in feet from Water Feature	Development/Vegetation Status			
	Developed areas not providing vegetative cover	Low structure vegetation or open soils	Woody vegetation (shrub and scatted forest canopy)	Forest Canopy (closed to open forest canopy)
Surface Streams				
0-50	Class II	Class I	Class I	Class I
50-100		Class II	Class I	Class I
100-150		Class II if slope >25%	Class II if slope >25%	Class II
150-200		Class II if slope >25%	Class II if slope >25%	Class II if slope >25%
Wetlands (Wetland feature itself is a Class I Riparian Area)				
0-100			Class I	Class I
100-150				Class II
Flood Areas (undeveloped portion of a flood area is a Class I Riparian area)				
0-100			Class II	Class II

Response: As previously noted, no streams are present within or proximate to the WTP site. Similarly, flood areas are not present. Therefore, riparian areas within the WTP site consist of the delineated wetlands and their associated vegetated corridors shown on Figures 2 and 3 (Appendix A). Based on the above table, all delineated wetlands and their associated vegetated corridors are Class I Riparian Area. This is because the wetlands are automatically classified as Class I and the CWS vegetated corridors are all less than 100 feet wide and contain woody vegetation and/or forest canopy.

2. Verifying boundaries of inventoried upland habitat. Upland habitat was identified based on the existence of contiguous patches of forest canopy, with limited canopy openings. The "forest canopy" designation is made based on analysis of aerial photographs, as part of determining the vegetative cover status of land within the region. Upland habitat shall be as identified on the HCA map. The perimeter of an area delineated as "forest canopy" on the Metro Vegetative Cover map may be adjusted to more precisely indicate the drip line of the trees within the canopied area.

Response: The woodland tree inventory canopy layer, derived from DOGAMI Lidar canopy data, was used to conduct this analysis. All tree canopy outside of riparian areas (i.e., wetlands and CWS Vegetated Corridor) was considered to be upland habitat. Metro’s mapping designated this habitat as Class B; however, as described in Section 2 this habitat is fairly unique within the region due to the presence of Oregon oak woodland, large conifer trees. Therefore, this habitat should be rated as Class A upland habitat.

5.2 IMPACT ASSESSMENT

The WWSP obtained permits from the USACE (permit ID: NWP-2015-0041) and DSL (permit ID: 60102RF Modified) to permanently impact the entirety of Wetlands A, B, D, E, and F. The Vegetated Corridors associated with these wetlands will also be permanently impacted in their entirety. Impacts to these resources were unavoidable in order to fit all the components of the WTP on the property. However, extensive effort was made to fully avoid impacts to the larger wetlands (Wetland C and G) and their diverse and intact Vegetated Corridors. Additional areas beyond the Vegetated Corridors were also avoided to the extent practicable to further protect valuable upland habitats (Preservation Areas East and West shown on Figure 3, Appendix A).

A minor temporary impact (1,154 square feet) to the Vegetated Corridor associated with Wetland C will occur and is shown on Figure 3 (Appendix A). This impact will result from construction of a stormwater outfall ditch. The disturbed area will be replanted with native forest species in accordance with CWS planting guidelines.

A minor permanent impact (1,476 square feet) will occur to the Vegetated Corridor associated with Wetland G. This will occur along the outer edge of the Vegetated Corridor and is a result of placement of a proposed forest overlook. The overlook is intended to provide educational opportunities about the unique habitats and geology of the area and will include interpretative signage. Alternate placement of this overlook was not feasible due to a combination of topographic constraints, desire to limit impacts to other high-quality upland or riparian (i.e., Vegetated Corridor) habitat. The overlook has also been sited close to the administrative building facilities to allow for easier access by the public, without having to travel through the treatment plant facilities.

5.3 MITIGATION

CWS does not require mitigation for permanently impacted Vegetated Corridors if the associated water quality sensitive area (e.g., wetland) will also be permanently impacted in its entirety. Therefore, no Vegetated Corridor mitigation is proposed for areas associated with Wetlands A, B, D, E, and F. Mitigation for impacts to these wetlands was conducted as part of the USACE and DSL permitting processes and included purchase of mitigation bank credits. The credits offset the loss of wetland functions, values, and acreage. Mitigation banks must undergo a thorough multi-agency review process and be well established before credits are available for sale. The mitigation credit purchase was approved by the Corps and DSL as acceptable mitigation under applicable federal and

state statutes as documented in the respective permit authorizations (USACE permit ID: NWP-2015-0041 and DSL permit ID: 60102RF Modified).

Mitigation for the temporary impact to the Wetland C Vegetated Corridor will be in the form of restoring the temporarily disturbed area (1,154 square feet) with native forest vegetation in accordance with CWS standards. Species will be similar to those currently found on site.

Mitigation for the permanent impacts to the Wetland G Vegetated Corridor will be provided by expanding the vegetated corridor by 1,548 square feet along its south side as shown on Figure 3, Appendix A.

CWS standards 3.06.2 require enhancement of on-site Vegetated Corridors that will not be impacted. However, all remaining on-site Vegetated Corridors already meet the criteria for CWS “good condition” classification, and therefore do not require enhancement.

6 PREPARERS AND CONTRIBUTORS

Ethan Rosenthal, DEA Ecologist performed the site visits and tree inventory that supported this report. Mr. Rosenthal prepared this report and Suzanne Carey, DEA Planner, provided quality assurance review. Shawna Hale, DEA Deputy Project Manager, provided editing assistance. Sara Gilbert, DEA Geographic Information System Specialist, prepared the report graphics.

7 LITERATURE CITATIONS

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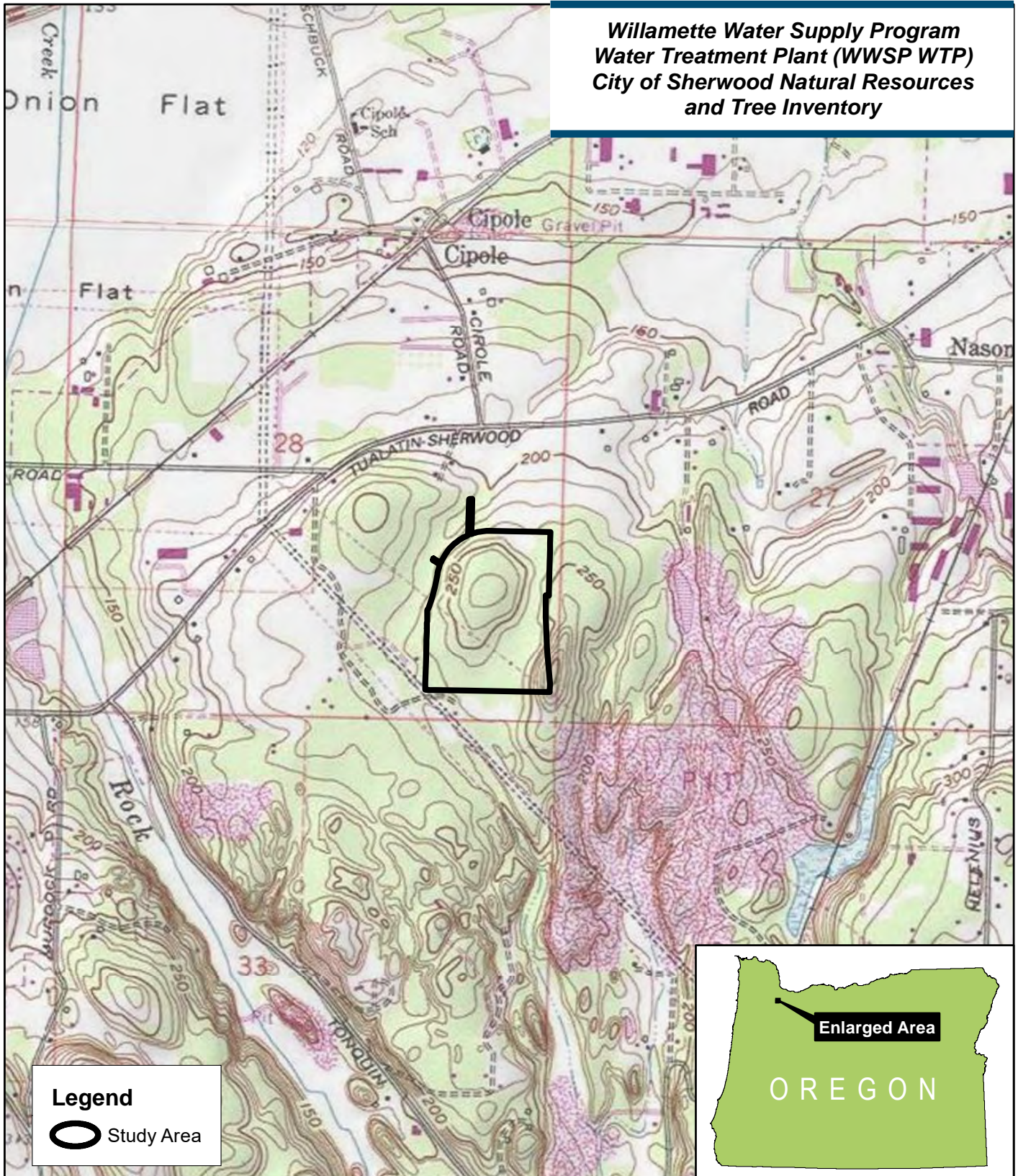
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U.S. Army Corps of Engineers (USACE). 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0). Final Technical Report ERDC/EL TR-10-3, May 2010. US Army Engineer Research and Development Center, Environmental Laboratory, Vicksburg Mississippi

8 APPENDICES

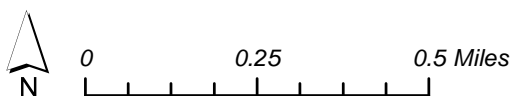
APPENDIX A: FIGURES

**Willamette Water Supply Program
Water Treatment Plant (WWSP WTP)
City of Sherwood Natural Resources
and Tree Inventory**



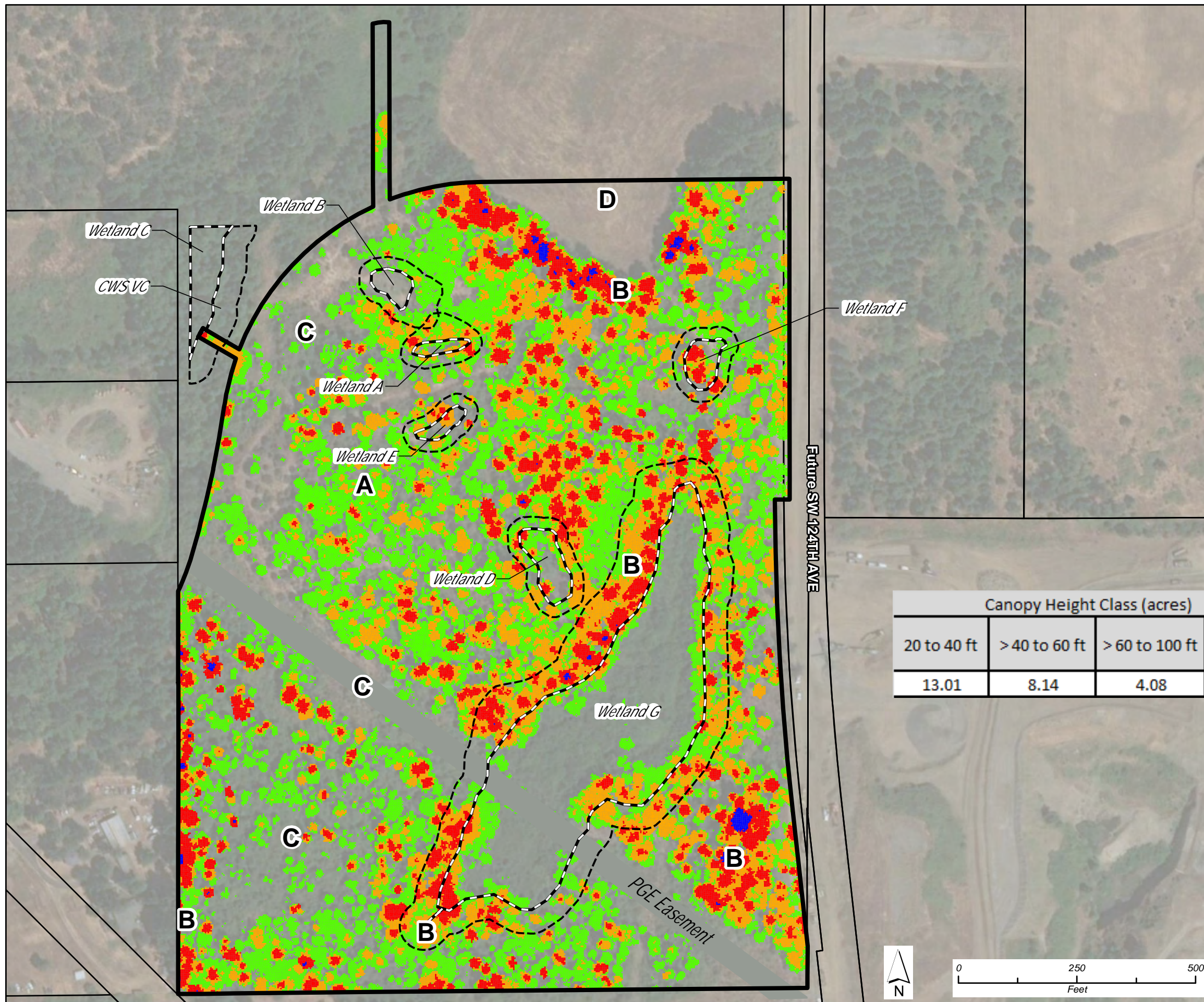
ESRI, ArcGIS Online, USA Topographic Maps. 30x60 GRID Quadrangles

Figure 1
Vicinity Map



**Willamette Water Supply Program
Water Treatment Plant (WWSP WTP)
City of Sherwood Natural Resources
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**Figure 2
Existing Conditions**



Study Area

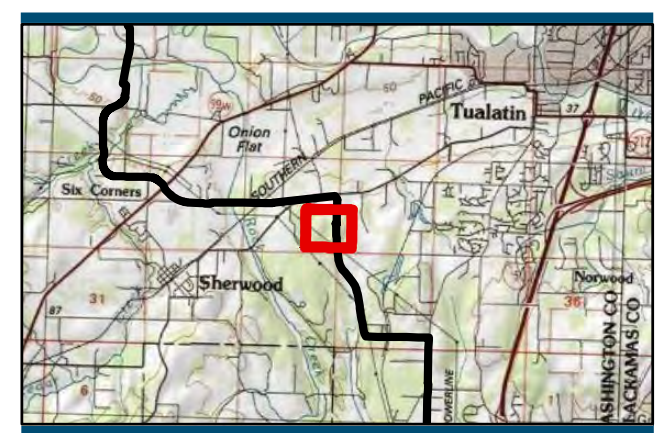
Vegetation Height and Description*

- 20 to 40 ft - Small to Medium Trees
- 40 to 60 ft - Medium Trees
- 60 to 100 ft - Tall Trees
- > 100 ft - Very Tall Trees
- Delineated Wetland
- CWS Vegetated Corridor (VC)
- Metro RLIS Taxlot (2019)

* Vegetation height in the area around the powerlines is assumed to be less than 20 ft

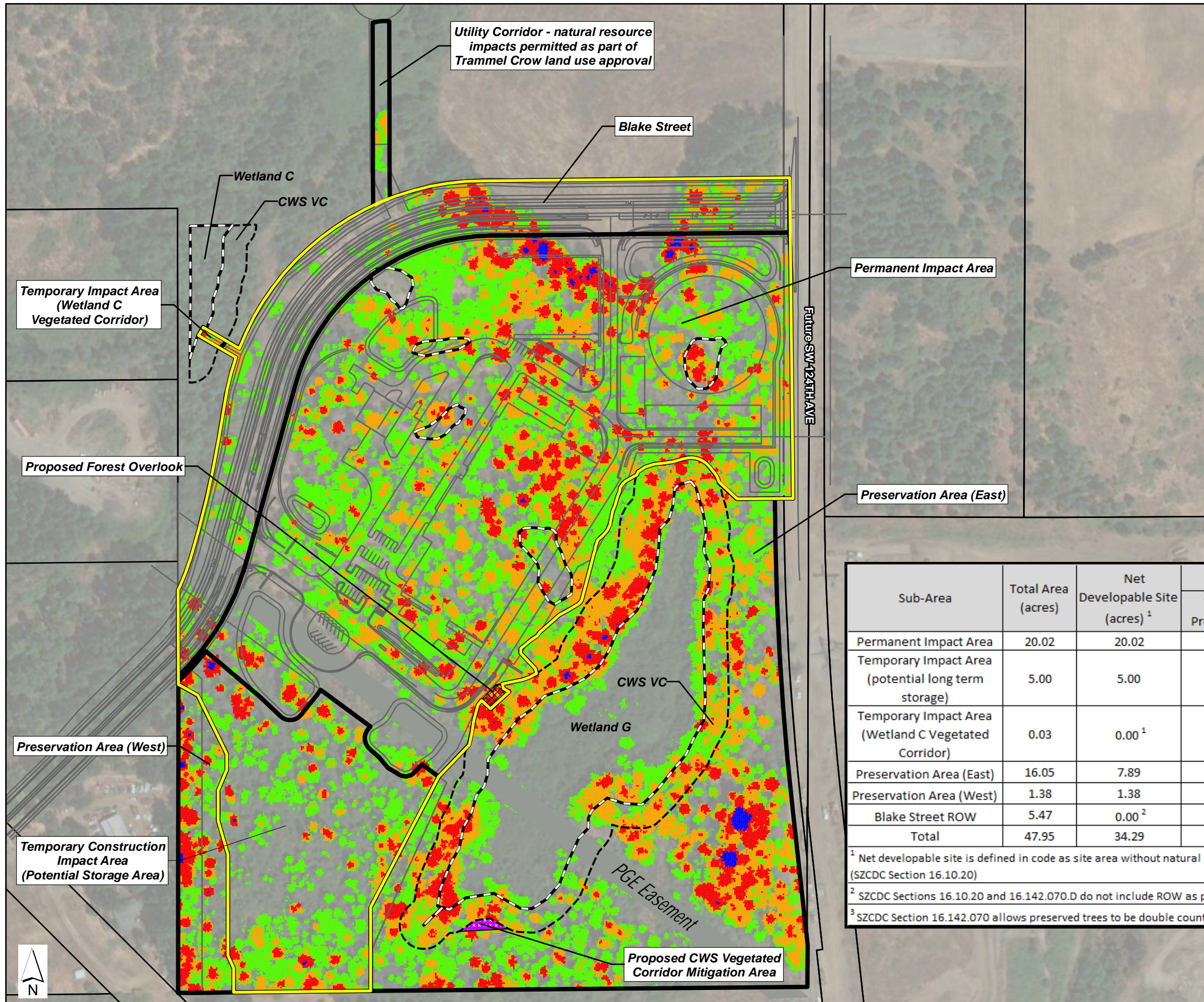
Note: Woodland characteristics found across the site (shown on figure as areas A-D) are described in detail in section 4.1.1 of the text

Canopy Height Class (acres)				Total Canopy (acres)
20 to 40 ft	> 40 to 60 ft	> 60 to 100 ft	> 100 ft	
13.01	8.14	4.08	0.14	25.37



**Willamette Water Supply Program
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Figure 3
*Proposed Development/
Tree Protection Plan*



— Limits of Disturbance (LOD)

Vegetation Height and Description*

- 20 to 40 ft - Small to Medium Trees
- 40 to 60 ft - Medium Trees
- 60 to 100 ft - Tall Trees
- > 100 ft - Very Tall Trees
- Delineated Wetland
- CWS Vegetated Corridor (VC)
- Proposed Forest Overlook
- Mitigation Area
- Metro RLIS Taxlot (2019)
- Design

7/29/2020

* Vegetation height in the area around the powerlines is assumed to be less than 20 ft

Sub-Area	Total Area (acres)	Net Developable Site (acres) ¹	Net Developable Site			
			Total Canopy Preserved (acres)	Total Canopy Proposed (acres)	Total Canopy (acres)	Total Canopy (%)
Permanent Impact Area	20.02	20.02	0.00	4.06	4.06	11.84%
Temporary Impact Area (potential long term storage)	5.00	5.00	0.00	0.00	0.00	0%
Temporary Impact Area (Wetland C Vegetated Corridor)	0.03	0.00 ¹	0.00	0.03	0.03	N/A
Preservation Area (East)	16.05	7.89	4.61	0.00	4.61	13.44% ³
Preservation Area (West)	1.38	1.38	0.88	0.00	0.88	2.56% ³
Blake Street ROW	5.47	0.00 ²	0.00	N/A	N/A	N/A
Total	47.95	34.29	5.49	4.09	9.58	43.84%³

¹ Net developable site is defined in code as site area without natural resources (Kolk Pond and CWS Vegetated Corridor buffer) and road ROW (SZCDC Section 16.10.20)

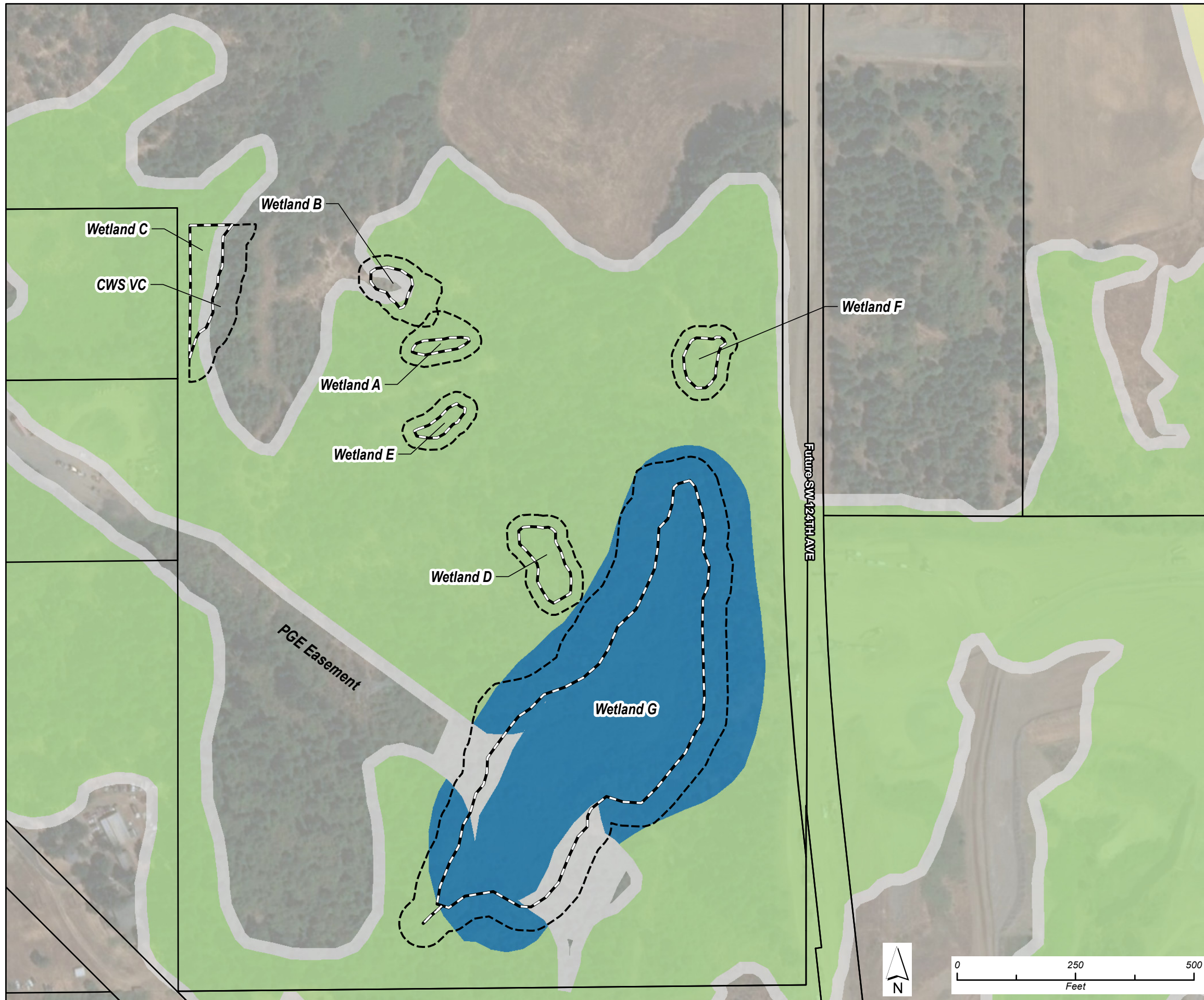
² SZCDC Sections 16.10.20 and 16.142.070.D do not include ROW as part of net developable site, therefore this acreage is effectively 0.00

³ SZCDC Section 16.142.070 allows preserved trees to be double counted/multiplied by 2 to determine total canopy



**Willamette Water Supply Program
Water Treatment Plant (WWSP WTP)
City of Sherwood Natural Resources
and Tree Inventory**

Figure 4
Metro Regionally Significant Habitat Areas



Study

- Study (Grey outline)
- Delineated Wetland (Dashed outline)
- CWS Vegetated Corridor (VC) (Dashed outline)
- Metro RLIS Taxlot (2019) (Thin grey outline)

Metro Title 13 Inventory

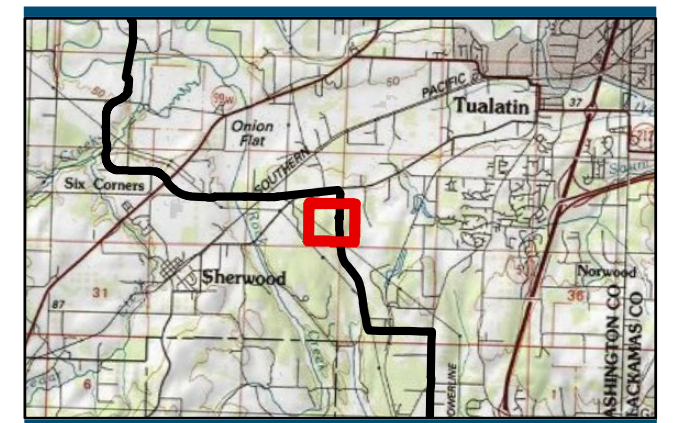
- Aquatic Impact Area (within 150 ft of streams, rivers, lakes, or wetlands; not considered regionally significant resources but could have some adverse impacts) (Light grey fill)

Upland Wildlife Habitat Quality

- Class B Area (secondary riparian value; medium value for wildlife habitat) (Light green fill)
- Class C Area (secondary riparian value that have low value for wildlife habitat) (Yellow fill)

Riparian Wildlife Habitat Quality

- Class I Area (supports 3 or more primary riparian functions) (Blue fill)



APPENDIX B: CWS SITE ASSESSMENT REPORT

SENSITIVE AREA CERTIFICATION FORM

Clean Water Services File Number

1. Property Information (example 1S234AB01400)

Tax lot ID(s): 2S128D001200

 Site Address: none, undeveloped lot
 City, State, Zip: Sherwood, OR
 Nearest cross street: SW 124th Ave and SW Tualatin Sherwood Rd

2. Owner Information

Name: Christina Walter, Permitting and Outreach Manager
 Company: Willamette Water Supply Program
 Address: 1850 SW 170th Avenue
 City, State, Zip: Beaverton, OR 97003
 Phone/Fax: 503-840-3830
 E-Mail: christina.walter@tvwd.org

3. Development Activity (check **all** that apply)

- Addition to single family residence (rooms, deck, garage)
 - Lot line adjustment Minor land partition
 - Residential condominium Commercial condominium
 - Residential subdivision Commercial subdivision
 - Single lot commercial Multi lot commercial
- Other New public water treatment plant

4. Applicant Information

Name: Christina Walter, Permitting and Outreach Manager
 Company: Willamette Water Supply Program
 Address: 1850 SW 170th Avenue
 City, State, Zip: Beaverton, OR 97003
 Phone/Fax: 503-840-3830
 E-Mail: christina.walter@tvwd.org

5. Check any of the following that apply to this project

- Adds less than 500 square feet of impervious surface.
- Does not encroach closer to the Sensitive Area than existing development on the property.
- Is not located on a slope greater than 25%.

6. Applicant Information

Name: _____
 Company: _____
 Address: _____
 City, State, Zip: _____
 Phone/Fax: _____
 E-Mail: _____

7. Will the project involve any off-site work? Yes No Unknown (check appropriate box)

If yes, location and description of off-site work:

Yes, a utility easement will extend onto the property to the north.

8. Additional comments or information that may be needed to understand your project:

none

9. An on-site, water quality sensitive area reconnaissance was completed on:

Date field dates Nov 3-4, 2016 and Dec 22, 2017 (report date = June 2020) By Ethan Rosenthal
 Title Ecologist Company David Evans and Associates, Inc.

SENSITIVE AREA CERTIFICATION FORM

Clean Water Services File Number

10. Existence of Water Quality Sensitive Areas (check all appropriate boxes)

As defined in the District's Design and Construction Standards:

- A. Water Quality Sensitive Areas do do not exist on the tax lot.
- B. Water Quality Sensitive Areas do do not exist within 200' on adjacent properties, or unable to evaluate adjacent property.
- C. Vegetated corridors do (228,690 SF) do not exist on the tax lot.
- D. Vegetated corridors do do not exist within 200' on adjacent properties, or unable to evaluate adjacent property.
- E. Impacts to sensitive areas and/or vegetated corridors will occur On-site Off-site None proposed at this time.
- F. If impacts, mitigation is On-site Off-site Other _____

11. Simplified Site Assessment containing the following information: (check only items submitted)

Please refer to Design and Construction Standards 19-5 section 3.02.2, as amended by Resolution and Order 19-22, for application requirements.

- Complete Certification Form (2 pages)
- Written description of the site and proposed activity.
- Site plan of the entire property.
- Photographs of the site labeled and keyed to the site plan.

12. Standard Site Assessment containing the following information: (check only items submitted)

Please refer to Design and Construction Standards 19-5 section 3.02.2, as amended by Resolution and Order 19-22, for application requirements.

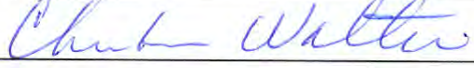
- Complete Certification Form (2 pages)
- Written description per Design and Construction Standards 19-5 section 3.13.3 b. 1, as amended by Resolution and Order 19-22
- Wetland Data sheets
- Vegetated Corridor Data sheets
- Existing Site Condition Figures
- Proposed Development Figures

By signing this form the Owner, or Owner's authorized agent or representative, acknowledges and agrees that employees of Clean Water Services have authority to enter the project site at all reasonable times for the purpose of inspecting project site conditions and gathering information related to the project site.

I certify that I am familiar with the information contained in this document, and to the best of my knowledge and belief, this information is true, complete, and accurate.

Applicant:

Print/Type Name Christina Walter Print/Type Title Permitting and Outreach Manager

Signature  Date 7/13/20

**See CWS Site Assessment
in Exhibit H**