Hearings Examiner Meeting Agenda
Thursday, April 30, 2026, 4:00 PM
Council Chambers, 616 NE 4th AVE

NOTE: The City welcomes public meeting citizen participation. TTY Relay Service: 711. In compliance with the ADA, if you need special assistance to participate in a meeting, contact the City Clerk's office at (360) 834-6864, 72 hours prior to the meeting so reasonable accommodations can be made (28 CFR 35.102-35.104 ADA Title 1)

To Participate Remotely:

OPTION 1 -

1. Go to www.zoom.us and download the app or click "Join A Meeting" and use Meeting ID – 899 0051 1137
2. Or, from any device click https://cityofcamas-us.zoom.us/j/89900511137

OPTION 2 - Join by phone (audio only):
Dial 877-853-5257 and enter meeting ID# 899 0051 1137

For Public Comment:
Click the raise hand icon in the app or by phone, hit *9 to "raise your hand", or email to communitydevelopment@cityofcamas.us

These will be entered into the meeting record. Emails received up until one hour before the start of the meeting will be emailed to the Meeting Body prior to the meeting start time.

CALL TO ORDER

INTRODUCTIONS AND INSTRUCTIONS

HEARING ITEM

1. Stella Ridge Subdivision (File No. SUB25-1009)
   Presenter: Madeline Coulter, Planner

CLOSE OF MEETING

LAND USE DECISION

STAFF REPORT
Stella Ridge Subdivision
File No. SUB25-1009
(Consolidated files: Critical Area Review, SEPA Review, and Archaeological Review)
Report Date: April 22, 2026

TO	Hearings Examiner	**HEARING DATE**	April 30, 2026
PROPOSAL	To subdivide 24 acres into 158 lots on parcel that contains critical areas.		
LOCATION	The site is located at 4511 NW 18th Ave in the SE 1/4 Section 05, and NE 1/4 Section 08,Township 1 North, Range 3 East, of the Willamette Meridian; and described as tax parcels 125193000, 986055381, and 125185000.		
APPLICANT	AKS Engineering & Forestry, LLC Attn: Michael Andreotti 9600 NE 126th Ave Suite 2520 Vancouver, WA 98682	**OWNER**	Daley Dennis
APPLICATION SUBMITTED	September 12, 2025	**APPLICATION COMPLETE**	November 5, 2025
SEPA	The City issued a SEPA Mitigation Determination of Non-Significance (MDNS) on February 19, 2026, with a comment period that ended on March 5, 2026. The SEPA MDNS was mailed to property owners and published in the Post Record on February 19, 2026. Legal publication # 1081010.		
PUBLIC NOTICES	A Notice of Application and Public Hearing was mailed to property owners within 300 feet of the site and published in the Post Record on March 26, 2026. Legal publication #1088540.		

APPLICABLE LAW: The application was submitted on 9/12/2025, and the applicable codes are those codes that were in effect at the date of the application's first submittal. Camas Municipal Code (CMC) Title 16 Environment, Title 17 Land Development, and Title 18 Zoning, specifically (but not limited to): Chapter 17.11 Subdivision, Chapter 18.11 - Parking, Chapter 18.13 - Landscaping, and Chapter 18.55 Administrative Procedures. [Note: Citations from Camas Municipal Code (CMC) are indicated in *italic* type.]

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SUMMARY

An application has been made to the City of Camas for Preliminary Plat approval to subdivide 24 acres into 158 lots zoned Multi-Family Residential (MF-18). The site is currently vacant and contains critical areas and vegetation. The proposal includes stormwater, private streets, landscaping, and parking tracts.

The subject site is bordered to the north and west by Business Park and Light Industrial/Business Park zones with a manufacturing business. To the east and south is Community Commercial and Single-Family zones that contain developed single-family lots.

The proposed Preliminary Plat does or can comply with the applicable standards of the Camas Municipal Code (CMC) and Revised Code of Washington (RCW).

Chapter 16.31 Archaeological Preservation

An Archaeological Predetermination Report dated September 11, 2025, was prepared by Applied Archaeological Research, Inc. and was sent to the Department of Archaeology and Historic Preservation and the tribes. Based on the report, no further archaeological work is recommended at this time. The report and findings are not subject to the open public records act and as such, the City cannot disclose the results.

> **FINDING:** Staff finds a condition of approval is warranted that if potential artifacts are discovered during construction, work must immediately cease, and both the State Department of Archaeological and Historic Preservation and the City shall be notified.

Chapter 16 SEPA

A SEPA checklist was submitted, and a Mitigation Determination of Non-Significance (MDNS) was issued February 19, 2026, as the proposed development includes more than nine

residential dwelling units and contains critical areas per CMC 16.07.020.A.1. The comment period ended March 5, 2026, and two comments were received. One comment was from the Department of Ecology regarding waste and toxic cleanup. The second comment was from the Cowlitz Indian Tribe regarding an unanticipated discoveries protocol be attached to the permit.

The SEPA checklist mentions that there is soil contamination in the southeast corner of the site. The checklist further states that once the soil gas area is fully delineated and all soil testing is completed; the applicant will work with appropriate jurisdictions to mitigate the soil gas contamination. See page 18 section 7.a.1 and 7.a.2 of the SEPA checklist. Staff recommend a condition of approval to this effect.

> **FINDING:** Staff finds the comments provided by the Department of Ecology should be complied with. Staff also finds a copy of the unanticipated discovery protocol from the Cowlitz Indian Tribe shall be posted on site.

Chapter 16.51 Critical Areas

CMC Chapter 16.61 – Geological Hazardous Areas

16.59.060(C) Geotechnical Evaluation and Assessment. A critical area report for geologically hazardous areas shall first contain a site evaluation and, if required, an assessment of geological hazards.

City mapping identified the subject property within an area of geologically hazardous areas (i.e. steep slopes). As such, the applicant submitted a Preliminary Geotechnical Report prepared by Columbia West Engineering, Inc dated May 28, 2025, which identified the site gently slopes downward from west to east. The geotechnical report concludes that the property is geotechnical sound for the project provided the recommendations discussed throughout the report are complied with.

> **FINDINGS:** Staff finds the property to be developable based on the findings and recommendations in the Preliminary Geotechnical Report. The applicant will need to comply with the recommendations of the geotechnical report from Columbia West Engineering, Inc dated May 28, 2025.

CMC Chapter 16.53 - Wetlands

[GENERAL]: Clark County GIS mapping identified the subject property with wetlands on site. As such, the applicant submitted a Critical Areas Assessment and Preliminary Mitigation Plan dated August 2025, prepared by AKS Engineering and Forestry, LLC that identified three wetlands on site. The table below summarizes the wetland category, size, and buffer width per CMC 16.53.040.

Table 1: Critical Area Delineated and Required Buffer Widths

Critical Area	On-site Wetland Area	Wetland Category	Camas Criteria	Standard Buffer Width
Wetland A	2.26 acres	III	Low habitat score, high intensity land use	80 feet
Wetland B	0.19 acres	IV	Low habitat score, high intensity land use	50 feet
Wetland C	0.35 acres	III	Low habitat score, high intensity land use	80 feet
Wetland D (off-site)	0.21 acres	IV	Low habitat score, high intensity land use	50 feet

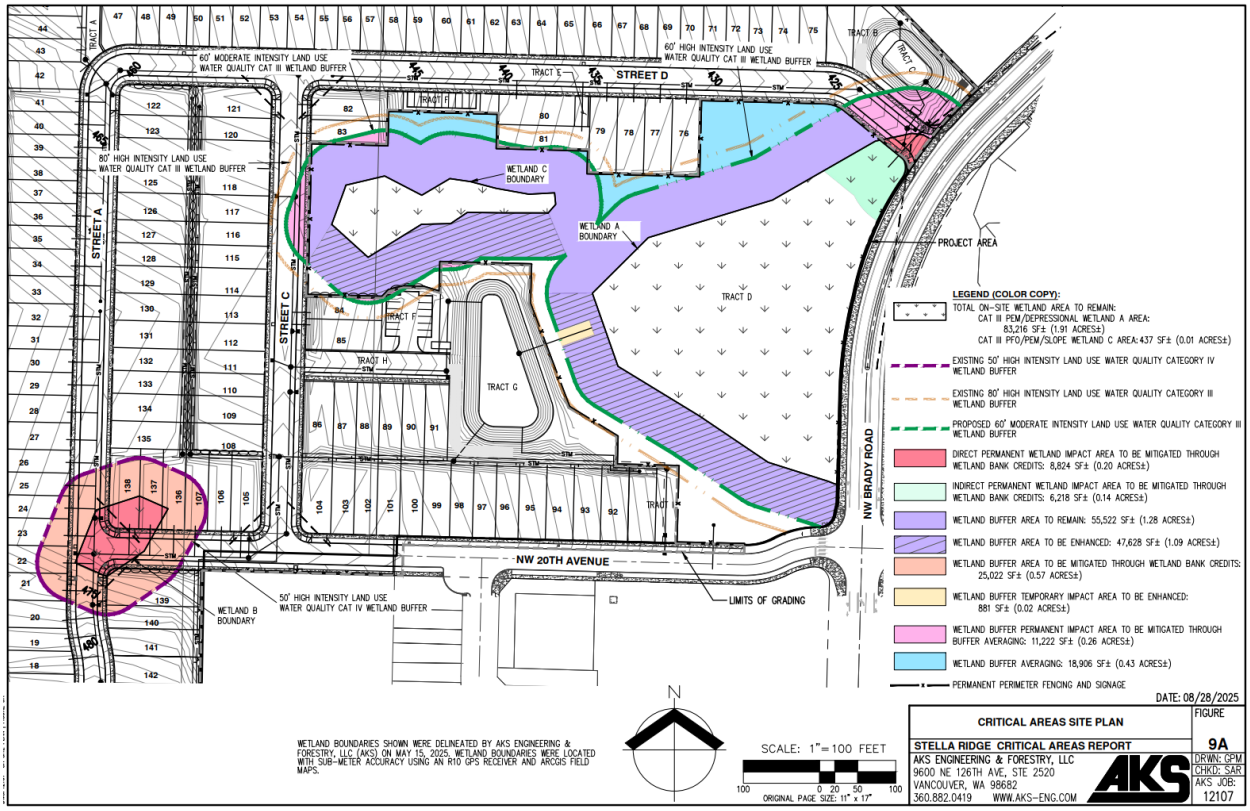
[BUFFER REDUCTION]: The applicant is proposing a buffer reduction for both Wetland A and C if they can meet the criteria in CMC 16.53.050.C.1.a:

i. *A relatively undisturbed, vegetated corridor at least one hundred feet wide is protected between the wetland and any other priority habitats that are present as defined by the Washington State Department of Fish and Wildlife [8]; and*

ii. *Measures to minimize the impacts of the land use adjacent to the wetlands are applied, such as infiltration of stormwater, retention of as much native vegetation and soils as possible, direction of noise and light away from the wetland, and other measures that may be suggested by a qualified wetland professional.*

FINDING: Wetland A and C are both wider than 100 feet and will maintain a corridor over 100 feet wide. Per the report, the reduction will not impact the functions and values of the wetlands. There will be a removal of invasive vegetation, restored native species, and an enhanced buffer with native species. Staff finds this criteria is met.

[IMPACTS]: After the buffer reduction, the applicant is proposing a total of .20 acres of direct permanent impacts (red) to Wetland A and B in the image below. There will be .14 acres of indirect permanent impacts (green) to Wetland A. There will also be .02 acres of temporary impacts (yellow) to Wetland A. There will be no impacts to Wetland D located off-site.



[BUFFER AVERAGING]: Averaging buffers are allowed in conjunction with any of the other provisions for reductions in buffer width (listed in subsection (C)(1) of this section) provided that minimum buffer widths listed in subsection (C)(1)(c) of this section are adhered to. The community development department shall have the authority to average buffer widths on a case-by-case basis, where a qualified wetlands professional demonstrates, as part of a critical area report, that all of the following criteria are met:

a. *The total area contained in the buffer after averaging is no less than that contained within the buffer prior to averaging;*
b. *Decreases in width are generally located where wetland functions may be less sensitive to adjacent land uses, and increases are generally located where wetland functions may be more sensitive to adjacent land uses, to achieve no net loss or a net gain in functions;*
c. *The averaged buffer, at its narrowest point, shall not result in a width less than seventy-five percent of the required width, provided that minimum buffer widths shall never be less than fifty feet for all Category I, Category II, and Category III wetlands, and twenty-five feet for all Category IV wetlands; and*
d. *Effect of Mitigation. If wetland mitigation occurs such that the rating of the wetland changes, the requirements for the category of the wetland after mitigation shall apply.*

FINDING: The applicant is proposing to buffer decrease by .26 acres (pink) and buffer increase to .43 acres (blue) which results in a larger buffer increase than decrease area. The areas proposed to be decreased provides less ecological function than what exists, therefore there is no net loss. The wetland width will not exceed the 75% reduction

allowed. The onsite mitigation is not anticipated to result in a change to the wetland ratings.

[MITIGATION SEQUENCING]:

Wetland A: There are unavoidable impacts to Wetland A as there will be a required stormwater facility and a new public access road (Street D) impacting the northeastern portion of the wetland. Per CMC 16.53.050.c.4 roads and utilities may cross wetlands if buffer functions are replaced, and impacts are minimized.

Wetland B: The impacts to Wetland B are unavoidable as access is required via 18th Avenue. Due to the narrow-shaped portion of the lot, the street will impact the wetland.

Wetland C: Impacts to wetlands are unavoidable as there are required infrastructure and grading that will impact the wetland buffer.

FINDING: Staff finds the mitigation sequencing requirements for each wetland are met.

[MITIGATION]: In addition to buffer averaging, the applicant is proposing to enhance .02 acres in Wetland A due to temporal loss and purchase credits for the direct and indirect impacts to Wetland A and B. The applicant is also proposing to enhance the buffers of Wetland A and C.

FINDING: Staff recommends a condition of approval that a plan sheet with the mitigation planting table be submitted prior to engineering plan approval.

Staff also recommends a condition of approval that the mitigation credits of .24 be purchased prior to final plat approval.

CMC Chapter 16.51 – General Provisions for Critical Areas

[TEMP/PERM FENCING]: Staff recommends a condition of approval for the installation of temporary construction fencing prior to construction that clearly marks in the field critical area buffers (i.e., wetlands and buffers) and fencing should remain throughout permitted construction activities.

In addition, prior to final acceptance, permanent signs and fencing should be installed at the edge of the critical area buffers per CMC 16.51.210.B and C. Sign and fencing specifications should be submitted to the City for review and approval prior to installation.

[CONSERVATION COVENANT]: Prior to final plat, a conservation covenant should be recorded with the County to ensure the long-term preservation of all the critical areas and any associated buffers, including maintenance of any mitigation actions, per CMC 16.51.240 and conditioned as such.

The applicant will be required to post a mitigation bond in an amount deemed acceptable by the city to ensure the wetland mitigation is fully functional per CMC 16.51.250.

FINDING: Staff finds the proposal, as conditioned, can or will comply with the applicable provisions of CMC Title 16 Environment as discussed above.

Chapter 17.11 Subdivisions

17.11.030(D) Criteria for Preliminary Plat Approval. The community development director or designee shall base his decision on an application on the following criteria:

1. The proposed subdivision is in conformance with the Camas Comprehensive Plan, Parks and Open Space Comprehensive Plan, Neighborhood Traffic Management Plan, and any other City adopted plans.

Comprehensive Plan

The subject property is designated as Multi-Family High Residential in the City's Comprehensive Plan, which includes the Multi-Family Residential (MF-18) zone designation.

Overall, the 2035 City of Camas Comprehensive Plan supports the subdivision through a number of land use policies such as the following:

- LU Policy 1.3: Maintain compatible use and design with the surrounding built and natural environments when considering new development or redevelopment.
- LU-1.5: Where compatible with surrounding uses, encourage redevelopment or infill development to support the efficient use of urban land.
- LU-3.3: Encourage connectivity between neighborhoods (vehicular and pedestrian) to support citywide connectivity and pedestrian access.
- H-1: Maintain the strength, vitality, and stability of all neighborhoods and promote the development of a variety of housing choices that meet the needs of all members of the community.
- H-1.6: Encourage in-fill development on vacant or underutilized sites, subject to design review guidelines, that have adequate urban services and ensure that the development is compatible with the surrounding neighborhood.

The proposed subdivision will help accommodate the projected growth through the utilization of existing land. The proposed houses, when built, will provide housing opportunities to meet the needs of the community in accordance with the Housing Element of the Comprehensive Plan.

Parks and Open Space Plan:

The 2022 Parks, Recreation and Open Space (PROS) Comprehensive Plan does not identify a required trail or park improvement adjacent to the subject parcel. Therefore, these plans are not applicable to this project.

Neighborhood Traffic Management Plan:

The city has a Neighborhood Traffic Management Plan (NTM). The NTM plan identifies the need for installation of acceptable traffic calming features when a proposed development will create 700 Average Daily Trips (ADT) or more.

The Transportation Impact Study (TIA) prepared by Kittelson & Associates (Exhibit 7, Table 3, page 14), dated September 8, 2025, found the project, which has proposed to develop 158 single-family detached dwelling units, is expected to generate approximately 1,537 new daily trips, Average Daily Trips (ADT) with 113 new AM Peak Hour trips (28 In / 85 Out) and 153 PM Peak Hour trips (96 In / 57 Out). Therefore, the proposed development will be required to install traffic calming features.

Based on the development layout, as shown on the updated Preliminary Plat (Exhibit 23), and on the projected ADTs, the city engineer recommends that the applicant be conditioned to work with engineering staff to determine the final design features for traffic calming devises at the following locations:

- Raised crosswalk or other similar device, and mid-block curb ramps on both sides of NW Umatilla Street at Tract I, Private Parking Area.
- Traffic circle at the intersection of NW Umatilla Street and NW 20th Avenue.
- Raised crosswalk or other similar device, and mid-block curb ramps on both sides of NW Umatilla Street between NW 20th Avenue and NW 22nd Avenue.
- A traffic calming device on NW 20th Avenue between NW Tidland Street and NW Brady Road, e.g., mid-block curb ramps on both sides of NW 20th Avenue and marked crosswalk, raised crosswalk, or other similar device.
- Raised crosswalk or other similar device, and mid-block curb ramps on both sides of NW Tidland Street in the vicinity of Tract G, Private Street.
- Raised crosswalk or other similar device, and mid-block curb ramps on both sides of NW 22nd Avenue at Tract E, Private Parking.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant is to work with engineering staff to revise the preliminary street plans and preliminary plat to include final design features for traffic calming devises at the following locations:

- Raised crosswalk or other similar device, and mid-block curb ramps on both sides of NW Umatilla Street at Tract I, Private Parking Area.
- Traffic circle at the intersection of NW Umatilla Street and NW 20th Avenue.
- Raised crosswalk or other similar device, and mid-block curb ramps on both sides of NW Umatilla Street between NW 20th Avenue and NW 22nd Avenue.
- A traffic calming device on NW 20th Avenue between NW Tidland Street and NW Brady Road, e.g., mid-block curb ramps on both sides of NW 20th Avenue and marked crosswalk, raised crosswalk, or other similar device.
- Raised crosswalk or other similar device, and mid-block curb ramps on both sides of NW Tidland Street in the vicinity of Tract G, Private Street.
- Raised crosswalk or other similar device, and mid-block curb ramps on both sides of NW 22nd Avenue at Tract E, Private Parking.

FINDING: Staff finds that, as conditioned, this development can or will meet the requirements for traffic calming as noted in the City's NTM plan.

Finding: Staff finds that the proposed project can or will be compatible with the aforementioned City plans.

2. Provisions have been made for water, storm drainage, erosion control and sanitary sewage disposal for the subdivision that are consistent with current standards and plans as adopted in the Camas Design Standard Manual.

Water:
In accordance with CMC 17.19.040.C.4 Water System, each lot within a development shall be served by a water distribution system designed and installed in accordance with the city's *Design Standards Manual* (CDSM).

There is an existing 12-inch ductile iron (DI) water main on the north side of NW 18th Avenue, an existing 8-inch ductile iron water main that dead-ends at the western dead-end of NW 20th Avenue, and an existing 16-inch ductile iron water on the east side of NW Brady Road.

Per CMC 17.19.040.C.4.a A minimum 1-inch water service is to be provided to each dwelling unit of the proposed development.

The preliminary composite utility plans (Exhibit 11, P6.0 & P6.1), dated October 23, 2025, propose to tap off the existing water main in NW 18th Avenue and extend an 8-inch water main from the intersection with proposed NW Umatilla Street north through the site to proposed NW 22nd Avenue with a dead-end blow off at Lot 158. *The proposed dead-end blow off at Lot 158 is not supported by staff.*

Staff recommends a condition of approval that prior to engineering plan approval, the composite utility plans should be revised with the 8-inch water main in proposed NW 22nd Avenue extended east to tie into the existing 16-inch water main in NW Brady Road.

Proposed Tract A (Private Street) shows four (4) 1-inch water services tapped off the 8-inch water main at the intersection of NW Umatilla Street and NW 22nd Avenue with the water meter boxes placed in the planter strips and the individual services to be extended north to serve Lots 90-93 at the time of home build. *This is supported by staff.*

The existing 8-inch water main that dead-ends at the west end of NW 20th Avenue is proposed to be extended to the west to the intersection with NW Umatilla Street and extended north at the intersection with proposed NW Tidland Street to proposed NW 22nd Avenue, with an 8-inch water main extended east from proposed NW Tidland Street at the intersection with proposed Tract G (Private Street) to serve Lots 64-69.

Per the preliminary composite utility plans (Exhibit 11, P6.0 & P6.1), the applicant has proposed 8-inch water mains and services to serve each Lot throughout the proposed development. The proposed 8-inch water mains are shown to be located in the following proposed public roads NW Umatilla Street, NW 20th Avenue, NW Tidland Street, and NW 22nd Avenue; and Tract G, Private Street.

Staff recommends a condition of approval that prior to final plat approval, a note should be added to the final plat stating that an access and maintenance easement is granted to the City over and under the proposed 8-inch water main located in Tract G, Private Street for the purpose of inspection, maintenance and operation of said public water main.

Proposed Plat Note:
Tract G – Private Street: An access and maintenance easement is granted to the City over and under the proposed 8-inch water main located in Tract G, Private Street for the purpose of inspection, maintenance and operation of said public water main.

Per CMC 17.19.040.C.4.a Locations of fire hydrants and flow rates shall be in accordance with city standards and the International Fire Code. The preliminary composite utility plans include new fire hydrants on NW Umatilla Street north of NW 20th Avenue; on the western end of NW 20th Avenue; on NW Tidland Street; and NW 22nd Avenue. There is not a new fire hydrant location shown on the southern section of NW Umatilla Street between existing NW 18th Avenue and the intersection of NW 20th Avenue. The nearest existing fire hydrant is on NW 18th Avenue approximately 250-feet east of the intersection with proposed NW Umatilla Street. The location of this existing fire hydrant on NW 18th Avenue it not feasible for serving the southern end of NW Umatilla Street as emergency services would have to block off a Collector to access this hydrant.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should submit revised composite utility plans that provide an additional fire hydrant on proposed NW Umatilla Street between proposed NW 20th Avenue and NW 18th Avenue.

Per CMC 17.19.040.C.4.d Landscaping in open space tracts must have a water service for an irrigation meter. Irrigation services are to be a minimum 1-inch service. The size of the irrigation meter is to be determined in advance and shown on the water utility plans and the landscape plans. The owner of the open space tract is responsible for installation of the meter and the water usage. Landscaping water services and meters are to be privately owned and maintained by the Owner and/or Homeowners Association (HOA).

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should submit revised water utility plans and landscape plans showing the locations and sizes of all proposed irrigation services and the size of each proposed irrigation meter.

FINDINGS: Staff finds that, as conditioned, adequate provisions for water can or will be made in accordance with CDSM and CMC 17.19.040.

<u>Storm Drainage</u>:
In accordance with CMC 17.19.040.C.3 the storm drainage collection system shall meet the requirements of the city's stormwater standards, the *Camas Design Standards Manual* (CDSM), and CMC 14.02 Stormwater Control.

Per Clark GIS Property Information and the Preliminary Stormwater Technical Information Report (TIR), the site for the proposed development, which consists of three (3) parcels is approximately 24.41 acres (1,063,299 sf) in size. Per Figure 1-3.1: Flow Chart for Determining Requirements for New Developments of Ecology's Stormwater Management Manual for Western Washington (SWMMWW), if the land-disturbing activities are greater than 5,000-square feet, minimum requirements (MRs) 1-9 will apply.

The proposed development will have land-disturbing activities greater than 5,000-square feet, therefore Minimum Requirements (MRs) 1-9 apply.

A Preliminary Stormwater Technical Information Report (PTIR), dated September 26, 2025 (Exhibit 9), was prepared by AKS Engineering & Forestry. Per the PTIR, stormwater runoff from the proposed development will be treated with StormFilter water quality vaults in Tract B and Tract F; and detained in the overground stormwater facilities in Tract B and Tract F.

- Stormwater from Tract F will be discharged to the wetland buffer around Wetland A and Wetland C in the Tract C Open Space on the west side of NW Brady Road.
- Stormwater from Tract B will be discharged from the northeast corner of the tract via a stormwater outfall and flow in a northeasterly direction at the back of sidewalk on NW Brady Road.
- Additionally, there are a series of private storm lines and private storm easements at the rear of Lots 35-50 (Sheet P.7.1); Lots 33-34; Lots 51-61; Lots 64-90; Lots 104-120; and Lots 129-158 (Sheet P7.0) with laterals to each lot for downspout connections and to collect rear yard runoff. The private storm lines are shown to drain to manholes and the overall storm conveyance mains located in the public roads.
- Those Lots without a rear yard private storm main are shown to have storm laterals stubbed from the public storm conveyance system to a cleanout located at the right-of-way for each of these lots.
- The rear yard private storm mains are to be owned and maintained by the homeowners that abut the private storm easements. A clear delineation between the private and public storm systems.

MR #1 – Preparation of Stormwater Site Plans: The preliminary stormwater plans (Exhibit 11, P7.0 & P7.1) were incomplete, as the plans did not include a full set of stormwater plans; which are to include plans, profiles, and details for the collection and conveyance system.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should submit a complete set of stormwater plans, which are to include plans, profiles, and details for the collection and conveyance system, and the stormwater facilities in Tracts A and F for review and approval, per MR #1 of the Preliminary TIR.

Staff recommends a condition of approval that prior to engineering plan approval, a note should be added to the stormwater plans stating that the stormwater facilities, including the StormFilter vaults, in Tract B and Tract F are to be owned and maintained by the Homeowners and/or Homeowners Association (HOA), with right-of-entry granted to the city for inspection purposes.

Staff recommends a condition of approval that prior to final plat approval, a note should be added to the final plat stating that the stormwater facilities, including the StormFilter vaults, in Tract B and Tract F are to be owned and maintained by the Homeowners and/or Homeowners Association (HOA), 2-years after final acceptance is issued. Right-of-entry shall be granted to the City for inspection purposes.

Proposed Plat Note:
The stormwater facilities, including the StormFilter vaults, in Tract B and Tract F are to be owned and maintained by the Homeowners and/or Homeowners Association (HOA), 2-years

after final acceptance is issued. Right-of-entry shall be granted to the City for inspection purposes.

Those portions of the stormwater system that are located within private roads and private storm easements are to be owned and maintained by the Homeowners and/or Homeowners Association (HOA), therefore a manhole is to be installed at the right-of-way where the stormwater mains transition from private to public.

Staff recommends a condition of approval that prior to engineering plan approval, the stormwater plans should be revised to include a stormwater manhole at the right-of-way between public and private roads and private storm easements, as the stormwater systems located in private roads and private storm easements are to be owned and maintained by the Homeowners Association (HOA).

Staff recommends a condition of approval that prior to final plat approval, a note should be added to the final plat stating that the private rear yard storm systems, located in a private storm easements, are to be owned and maintained by the homeowners and/or the Homeowners Association (HOA).

Proposed Plat Notes:

- Ownership and maintenance of the stormwater facilities, including the StormFilter vaults, located in Tract B and Tract F are the responsibility of the Homeowners and/Homeowners Association (HOA), 2-years after the issuance of Final Acceptance, with right-of-entry granted to the city for inspection purposes.
- Ownership and maintenance of the storm systems located within a private storm easement, are the responsibility of the Homeowners and/Homeowners Association (HOA).

MR #2 – Construction Stormwater Pollution Prevention Plan (SWPPP): The SWPPP was not included in the preliminary TIR. The SWPPP is a component of Ecology's NPDES Temporary Construction Stormwater Permit. Per the preliminary TIR, the SWPPP will be submitted "*prior to commencement of any construction activities on the project site."*

Staff recommends a condition of approval that prior to any land-disturbing activities, the applicant should be required to submit a site specific SWPPP in addition to Ecology's NPDES Temporary Construction Stormwater Permit, per MR #2. The SWPPP is to include 24-hour contactor information; and the name of the Project CESCL and CESCL certification number and expiration date. (CESCL = Certified Erosion Sediment Control Lead)

MR #3 – Source Control of Pollution: Source Control BMPs are different from the required erosion prevention and sediment control BMPs that are included in the SWPPP. The preliminary TIR did not address the various BMPs proposed for source control and stated that these will be addressed during engineering plan review of the "erosion control plans". However, source control BMPs are not typically included in site improvement plans or the SWPPP as these BMPs apply to source control practices such as material storage areas, equipment wash down areas, on-site spill prevention kits, employee training, etc.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should revise the Final Stormwater Technical Report (TIR) to include source control BMPs, per MR #3, for the proposed development.

MR #4 – Preservation of Natural Drainage Systems and Outfalls: Sufficiently addressed in Section A, Project Overview of the Preliminary TIR.

MR #5 – On-Site Stormwater Management: Sufficiently addressed in Section E of the Preliminary TIR.

MR #6 – Runoff Treatment Analysis and Design: Sufficiently addressed in Section F of the Preliminary TIR.

MR #7 – Flow Control Analysis and Design: Sufficiently addressed in Section G of the Preliminary TIR.

MR #8 – Wetlands Protection: Sufficiently addressed in Section H of the G Preliminary TIR.

MR #9 – Operation and Maintenance (O&M): An O&M Manual was not submitted with the preliminary TIR, but will be submitted with the Final TIR, as stated in Section N – Operations and Maintenance.

Staff recommends a condition of approval that_prior to engineering plan approval, the applicant should submit a Final Stormwater TIR that includes a standalone O&M Manual that addresses all aspects of stormwater maintenance, including the applicable sections from the city's *June 2022 Stormwater Sewer System Operations & Maintenance Manual and Ecology's Stormwater Maintenance Manual for Western Washington (SWMMWW).*

Per CMC 14.02 and 17.19.040, stormwater is not to negatively affect adjacent property owners. This requirement encompasses both roof drain downspouts and overland surface flow as noted below:

- CMC 14.02 Stormwater Control:
  14.02.010.B.2 Minimize damage to property from increased runoff rates and volumes.
- CMC 17.19 Design and Improvement Standards:
  17.19.040.C.3 Storm Drainage - The storm drainage collection system shall meet the requirements of the city's officially adopted storm water standards.
  17.19.040.C.3.e - All lots shall provide drainage for stormwater runoff from roof and footing drains to an approved drainage system. Rear yard low point area drains and/or storm drain lateral stubs connected to an approved drainage system shall be provided to each lot as necessary to prevent stormwater runoff impacts to adjoining parcels as determined by the city.

Per CMC 17.19.040.C.a, storm drainage facilities shall be placed on their own tract or within an open space tract and are to be owned and maintained by the homeowners and/or the HOA.

Per CMC 14.02.090.1 Stormwater facilities, located within residential subdivisions and short plats, shall be the maintenance responsibility of the applicant for two years after date of final acceptance. The 2-year maintenance period shall run concurrently with the city's required two-year warranty period that begins at final acceptance.

Prior to end of the two-year warranty period, and upon inspection by the city, the applicant shall ensure that a fully functional facility is turned over to the new owners (e.g., homeowners' associations/homeowners).

FINDINGS: Staff finds that, as conditioned, the applicant can and will make adequate provisions for stormwater control, conveyance, and water quality treatment.

Erosion Control:

In accordance with CMC 14.06 Erosion Control, adequate erosion control measures are to be provided during the site improvements for the proposed development in accordance with the *Camas Design Standards Manual* (CDSM) and Ecology's *Stormwater Management Manual for Western Washington* (SWMMWW).

Per Clark GIS Property Information and the Preliminary Stormwater Technical Information Report (TIR) (Exhibit 9), the site for the proposed development, which consists of three (3) parcels is approximately 24.41 acres (1,063,299 sf) in size.

Per CMC 17.21.030.A installation of erosion prevention / sediment control measures are required per an approved erosion and sediment control plan. The preliminary plans that were submitted with the application did not include a full set of erosion and sediment control plans.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should be required to submit a complete set of Erosion Sediment Control (ESC) plans, as a part of the site improvement plans for review and approval.

Per CMC 14.06.200 and CMC 17.21.030.B financial security for erosion control, in the amount of 200% of the estimated erosion control items is required prior to land-disturbing activities of one acre or more. The erosion control financial security is to be submitted to the city prior to start of any land-disturbing activities. Additionally, the applicant will be required to provide a copy of both their *NPDES General Construction Stormwater Permit* (GCSWP) and their *Stormwater Pollution Prevention Plan* (SWPPP), which is a requirement of the NPDES GCSWP permit. The NPDES GCSWP permit is issued by the Washington State Department of Ecology for land-disturbing activities of an acre or more.

Staff recommends a condition of approval that prior to any land-disturbing activities, a copy of Ecology's NPDES GCSWP permit, the SWPPP with contractor information, and the financial security for erosion and sediment control are to be submitted to the city.

Staff recommends a condition of approval that prior to any land-disturbing activities, which includes tree cutting, clearing and grading, and an approved set of engineering plans, including the erosion prevention and sediment control measures is required.

Per CMC 17.21.030.C construction of storm drainage facilities required to detain and dispose of stormwater is to commence prior to work on other portions of the project. The city may require the construction of a temporary storm drainage facility that would bypass and protect the permanent facility until such time as the rest of the project is complete and ready for the permanent facility to be brought online.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should be required to include location/s of temporary storm drainage facilities as part of the Erosion Sediment Control (ESC) plans.

FINDINGS: Staff finds that, as conditioned, adequate provisions for erosion control can or will be made.

Sanitary Sewage Disposal:

In accordance with CMC 17.19.040.C.2, sanitary sewers shall be provided and designed in accordance with the city's *Design Standards Manual* (CDSM).

There is an existing 8-inch STEF main that ends at easts of NW Sage Street, private road to the Parker Village subdivision. There is an existing 10-inch STEF main located on the west side of NW Brady Road.

The preliminary composite utility plans (Exhibit 11, P6.0 & P6.1), dated October 23, 2025, propose to extend an 8-inch PVC sanitary sewer STEF main from the end of the existing sanitary sewer main in NW 20th Avenue, throughout the proposed development, including from the southern end of NW Umatilla Street, north to NW 22nd Avenue, north in NW Tidland Street, and east via NW 22nd Avenue to tie into NW Brady Road.

Per the Pre-application Notes (Exhibit 2), the applicant is required to analyze the existing 10-inch STEF main in NW Brady Road and the existing 8-inch STEF main in NW 20th Avenue to verify that both lines can handle the additional inflow from the proposed development.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should submit documentation verifying that the existing 8-inch and 10-inch STEF mains can handle the additional inflow from the proposed development.

The preliminary composite utility plans also propose 4-inch sanitary sewer laterals to each dwelling unit in the proposed development, with 1,500-gallon STEF tanks to be installed on each lot with home construction. Per the Camas Design Standards Manual (CDSM), all sanitary sewer laterals are to be perpendicular to the sanitary sewer main.

Staff recommends a condition of approval that prior to engineering plan approval, that the composite utility plans should be revised showing all sanitary sewer laterals perpendicular to the sanitary sewer mains.

The lot dimensions for the proposed development range in lot width from 24-feet-wide to 36-feet-wide. The dimensions of a 1,500-gal STEF tank is 177-inches in length (14.75-feet) and 62-inches wide (5.17-feet). Additionally, the STEF tanks require a minimum 5-feet of clearance from the property line and a minimum 5-feet of clearance from the foundation for a single-family residence; and the tanks are required to be installed in the front yards for access and maintenance.

Based on this information and the number of single-family lots (158), the applicant was informed that the lots were too narrow for 1,500-gallon STEF tanks and that one or more community STEF tanks were required to serve the proposed development. The community STEF tanks are to be sized by the applicant's consultant and are to be based on the number of dwelling units to be served by each community STEF tank. Community STEF tanks are to be

owned and maintained by the Homeowners Association (HOA), with right-of-entry to the City for inspection purposes.

Per the updated preliminary plat (Exhibit 23), dated February 18, 2026, the applicant has added four sanitary facilities shown to be on Tract J, Tract K, Tract L, and Tract M. These Tracts are shown to vary in size from 24-feet-deep by 100-feet-long (Tract J); 24-feet-deep by 112-feet-long (Tract K); 24-feet-wide by 100-feet-long (Tract L); and 24-feet-wide by 70-feet-long (Tract M).

Depending on the design size of the community STEF tanks, and the required offsets of a minimum of 5-feet from property lines and from the 6-foot Public Utility Easement, the sanitary facility Tract dimensions may have to be revised.

Staff recommends a condition of approval that prior to engineering plan approval the applicant should submit the design and specifications for each of the STEF tanks proposed for Tracts J, K, L, and M, with verification that the tank sizes will meet the setback constraints on each of the Sanitary Facility Tracts.

Staff recommends a condition of approval that prior to final plat approval, a note is to be added to the plat stating that the sanitary facilities, STEF tanks, on Tracts J, K, L, and M are to be owned and maintained by the Homeowners Association (HOA), with right-of-entry granted to the city for inspection purposes.

Proposed Plat Note:
Tract J, Tract K, Tract L, and Tract M: These tracts are the locations of the community STEF tanks that serve the development. Ownership and maintenance of the Tracts and the community STEF tanks are the responsibility of the Homeowners Association (HOA). Right-of-entry is to be granted to the city for inspection purposes.

FINDING: Staff finds that, as conditioned, adequate provisions for sanitary sewer disposal can or will be made.

[Existing wells, septic tanks, and septic drain fields]:
Per CMC 17.19.020.A.3 requires abandonment of existing wells, septic tanks, and septic drain fields. Any existing wells, septic tanks and drain fields should be properly decommissioned in accordance with State and County guidelines. If applicable, any water rights associated with the decommissioned well(s) shall be transferred to the City.

FINDINGS: Staff finds that adequate provisions for decommissioning of existing wells and septic systems can or will be made.

FINDING: Staff finds that, as conditioned, adequate provisions can or will be made for water, storm drainage, erosion control, and sanitary sewage disposal that are consistent with the Camas Municipal Code and the Camas Design Standard Manual.

3. Provisions have been made for road, utilities, street lighting, street trees and other improvements that are consistent with the Six-Year Street Plan, the Camas Design Standards Manual and other State adopted standards and plans;

Roads:
Streets for the proposed development shall be designed in accordance with CMC 17.19.040.B Streets and the Camas Design Standards Manual (CDSM).

Per CMC 17.19.040.B.7 All street names, street numbers, and building numbers shall be assigned in accordance with CNC 12.24. Street naming is the responsibility of the Building Official. The street names and numbers, as shown on the preliminary plat (Exhibit 13) will be revised per the Building Official. These names are subject to change during the engineering plan review process.

Staff recommends a condition of approval that prior to engineering plan approval, the future interior street names and numbers, public and private, are to be revised in accordance to the street names and numbers as determined by the Building Official.

Staff recommends a condition of approval that prior to final plat approval, the preliminary plat is to be revised with the final street names and numbers as determined by the Building Official.

[Existing Public Roads]:
The proposed development is located on the north side of NW 18th Avenue, west of NW Tidland Street; and on the west side of NW Brady Road, south of NW 16th Avenue.

NW 18th Avenue is classified as an existing unimproved 2 or 3-lane Collector, NW Brady Road is classified as a fully improved 3-lane Arterial, and the existing east portion of NW 20th Avenue is classified as a local roadway. NW Brady Road is fully improved with curb, sidewalk, and planter strips on both sides of the road and a center two-way turn lane (TWTL).

Per 17.19.040.B.1 half-width street improvements along an existing roadway is required when it is determined to be appropriate by the city engineer.

Per 17.19.040.B.5 dedication of additional right-of-way may be required for a development when it is necessary to meet the minimum street width standards.

NW 18th Avenue
NW 18th Avenue, along the frontage of the proposed development, consists of an existing 50-foot right-of-way width, 24-feet of paved surface, and no curb, gutter, or sidewalk along the proposed frontage.

Per the Pre-Application Notes (Exhibit 2), the applicant is required to construct full-depth half-width street improvements from the existing centerline and dedicated sufficient right-of-way along the frontage of the proposed development to align with the frontage improvements to the east along the frontage of Parcel No. 986055382.

The preliminary street plans dated October 23, 2025 (Exhibit 11, P8.0 & P8.1), reference the frontage improvements along NW 18th Avenue and include sidewalk, planter strip, and 35-foot curb radii on both sides of the intersection of NW 18th Avenue and proposed NW Umatilla Street. The improvements do not reference the requirement for construction of the full-depth half-

width street improvements from the centerline of the existing road to the frontage of the proposed development.

Staff recommends a condition of approval that prior to engineering plan approval, the preliminary street plans should be revised to include construction of the full depth half-width street improvements from the centerline of the existing road to the frontage of the proposed development.

NW Brady Road

NW Brady Road, along the eastern frontage of the proposed development, is a fully improved roadway. The applicant will not be required to dedicate any additional right-of-way but will be required to construct the intersection improvements for proposed NW 22nd Avenue at NW Brady Road, including the minimum 35-foot curb radii, sidewalks, and curb ramps on both sides of the intersection. These improvements are shown on the preliminary street plans (Exhibit 11, P8.0 & P8.1).

NW 20th Avenue

The existing roadway was fully improved with curb and gutter on both sides to the west; sidewalk and planter strip on the south side only, and the 52-foot right-of-way width dedication with the Parker Village subdivision. The proposed improvements include the extension of NW 20th Avenue to the west, and constructing the full width, full depth local road, as well as to construct the remaining frontage improvements along the north side of the existing eastern portion of NW 20th Avenue. These improvements are shown on the preliminary street plans (Exhibit 11, P8.0 & P8.1).

[Interior Public Roads]:

Per CDSM Table 2 – General Guidelines for Geometry of a Roadway, a 2-lane local neighborhood road with a 52-foot-wide right-of-way width, a 28-foot paved surface, 5-foot-wide detached sidewalks and 5 to 7-foot planter strips on both sides, and parking permitted on one side only, requires approval from the city engineer. ***The city engineer supports the proposed 52-foot-wide interior public roads.***

Per CMC 17.19.040.B.12.c Centerline radii of curves shall be not less than three hundred feet on primary arterials, two hundred feet on secondary arterials, and seventy feet on other streets.

Per the updated preliminary plat (Exhibit 23, P3.0), dated February 18, 2026, the Centerline Curve Table, Curve #C2 is shown to have a centerline radius of 39-feet at the corner of NW Umatilla Street and NW 22nd Avenue. This does not meet the minimum centerline radii of 70-feet for a local roadway.

Staff recommends a condition of approval that prior to engineering plan approval, the preliminary plat and subsequently the preliminary street plans should be revised with the minimum centerline radius of seventy-feet (70-feet) for Curve #2, which is at the corner of NW Umatilla Street and NW 22nd Avenue.

Per CMC 17.19.040.B.12.e curb return radii shall be no less that thirty-five feet on arterial and collector streets, and no less than twenty-five feet on all other streets.

Per the preliminary plat (Exhibit 23) dated February 18, 2026, all curb radii as shown at the intersections of proposed and existing roads meet the minimum curb radii.

Per the preliminary street plans (Exhibit 11, P8.0 & P8.1) the majority of the curb ramps are shown to be per CDSM, Street Detail ST20 – Perpendicular Curb Ramp. These curb ramps are not preferred by staff as the pedestrian is 'directed' into the intersection of the roadway with the required turning space in the roadway.

Staff recommends a condition of approval that prior to engineering plan approval, the preliminary street plans are to be revised with the curb ramps per CDSM, Street Detail ST20A – Type 1 Dual Perpendicular Curb Ramp, which directs pedestrians perpendicular to the street in lieu of directing them into the intersection; or per CDSM Street Detail ST22 – Type 3 Combo Curb Ramp; ST23 – Type 4 Combo Curb Ramp; or ST24 – Mid-Block Curb Ramp.

Per CMC 17.19.040.B.10.b.i Block lengths shall not exceed the maximum access spacing for the roadway class per the city's Design Standards Manual. The maximum block length for a local roadway classification is 600-feet.

Per the preliminary Street Plans (Exhibit 11, P8.0 & P8.1), dated October 23, 2025; and the updated preliminary Plat (Exhibit 23), dated February 18, 2026; the block lengths as shown throughout the proposed development exceed the maximum block length of 600-feet, with the exception of the 250-foot block length between NW Umatilla Street and NW Tidland Street.

The remaining block lengths are as follows:

NW Umatilla Street, from NW 18th Avenue to NW 20th Avenue, is approximately 740-feet in length.

- This section is bordered on the west side by a fully improved commercial development, and on the east side by Parcel No. 98605538, which is owned by the city.
- There is a 24-foot-wide access and public utility easement on the east side for public access to the 10 off-street parking stalls on Tract I, Private Parking area; and for city access to the City's Parcel No. 98605538.
- This block length does not meet the maximum block length standard of 600-feet.

Access from the proposed subdivision to the commercial development to the west and the city parcel to the east is not required nor permitted. ***The city engineer is in support a deviation from the standard of a maximum block length of 600-feet with the following condition:***

- Construction of a raised crosswalk or other similar device, and mid-block curb ramps on both sides of NW Umatilla Street at Tract I, Private Parking area.

NW Umatilla Street, between NW 20th Avenue and NW 22nd Avenue, is approximately 640-feet in length.

- This section is bordered on the west side by a fully improved commercial development and property owned by the Camas School District.
- This block length does not meet the maximum block length standard of 600-feet.

Access from the proposed development to the commercial development and the Camas School District property to the west is not required nor permitted. ***The city engineer is in***

support a deviation from the standard of a maximum block length of 600-feet as the block length of 640-feet is acceptable with the following conditions:

- Construction of a traffic circle at the intersection of NW Umatilla Street and NW 20th Avenue.
- Construction of a raised crosswalk or other similar device, and mid-block curb ramps on both sides of NW Umatilla Street between NW 20th Avenue and NW 22nd Avenue.

NW 20th Avenue from NW Tidland Street to NW Brady Road is approximately 636-feet in length.

- This section is bordered on the north side by Lots 70-89 of the proposed development, with the extension to the west of NW 20th Avenue. The south side of NW 20th Avenue abuts the Parker Village Subdivision. The proposed development will not have road access to the Parker Village subdivision as NW Sage Street is a gated private road, however, NW 20th Avenue will provide direct access east to NW Brady Road.
- This block length does not meet the maximum block length standard of 600-feet.

Access from the proposed development to the north or south are due to the Parker Village subdivision improvements to the south and the existing wetlands to the north. ***The city engineer is in support of a deviation from the standard of a maximum block length of 600-feet as the block length of 636-feet is acceptable with the following condition:***

- Construction of a traffic calming device on NW 20th Avenue between NW Tidland Street and NW Brady road, e.g.; mid-block curb ramps on both sides of NW 20th Avenue and a marked crosswalk, a raised crosswalk, or other similar device.

NW Tidland Street from NW 20th Avenue to NW 22nd Avenue is approximately 640-feet in length with access Tract G, Private Street and Tract H, Private Parking area.

- This block length does not meet the maximum block length standard of 600-feet.

The city engineer is in support of a deviation from the block length standard of a maximum of 600-feet as the block length of 640-feet is acceptable with the following condition:

- Construction of a raised crosswalk or other similar device at or near Tract G for access to Tract H, Private Parking area.

NW 22nd Avenue from NW Tidland Street to NW Brady Road is approximately 880-feet in length with access to Tract E, Private Parking area, are located on the south side of the road, as is Tract C – Wetland and Open Space.

- This block left does not meet the maximum block length standard of 600-feet.
- Tract C – A Wetland and Open Space is on the south side of NW 22nd Avenue.
- The proposed development is bordered on the north side by Parcel No. 125208000, Analog Devices, Inc. (ADI) which takes access from NW Pacific Rim Blvd; and
- Parcels No. 185627000 and 125207000, JR Merit Enterprises; which has a 40-foot-wide access and utility easement from NW Pacific Rim Blvd. across Parcel No.125198000, NRP, LLC that was recorded in 2016 (AF 5314636).

The city engineer is in support of a deviation from the block length standard of a maximum of 600-feet with the following conditions:

- Construction of a raised crosswalk or other similar device, and mid-block curb ramps on both sides of NW 22nd Avenue at Tract E, Private Parking area.

[Private Roads]:
Per CMC 17.19.040.A.2 Adequate and reasonable provisions are to be made for the ownership, maintenance, and repair of all utilities and the proposed private street.

Per CDSM Table 1 – Guidelines for Geometry of Private Roadway A, access to four dwelling units or less requires a minimum tract width of 20-feet, a minimum 12-foot-wide paved surface, and no parking on either side. Additionally, per Note 3, dead-end roads in excess of 150-feet, as measured from the centerline of the adjacent road, require a dead-end turnaround.

Per CDSM Table 1 – Guidelines for Geometry of Private Roadway, Note 3, dead-end roads in excess of 150-feet, as measured from the centerline of the adjacent road, require a dead-end turnaround.

[Tract A – Private Street]
Per the preliminary plat (Exhibit 23), dated February 18, 2026, Tract A is shown to be 26-feet-wide, provides access to four dwelling units (Lots 90-93), and is approximately 110-feet in length as measured from the centerline of NW Umatilla Street/NW 22nd Avenue. A dead-end turnaround is not required, however, a 25-foot curb radii is required on both sides of Tract A. Additionally, Tract A is to be owned and maintained by Lots 90-93.

Parcels No. 125627000 and 125207000 are currently unimproved and zoned Business Park (BP). Under the BP zone, vehicular access from the proposed subdivision improvements is not required as there is a recorded access and utility easement over Parcel No. 125198000 for the benefit of Parcels No. 125627000 and 125207000. However, Tract A is to be extended to the northern property line of the proposed development, and a minimum 5-foot-wide sidewalk is to be constructed on the east side of Tract A with a public pedestrian access easement recorded over the 5-foot-wide sidewalk.

Staff recommends a condition of approval that prior to engineering plan approval, the preliminary street plans should be revised to include a 25-foot curb radii on both sides of Tract A (Private Road), Tract A extended to the northernmost property line of the proposed development, and a minimum 5-foot-wide public access sidewalk is to be constructed on the east side of the Tract.

Staff recommends a condition of approval that prior to final plat approval, the final plat should be revised to include a 25-foot curb radii on both sides of Tract A (Private Street), Tract A extended to the northernmost property line of the proposed development, and a minimum 5-foot-wide public access easement recorded over the sidewalk shown on the east side of Tract A. A note should be added to the final plat stating that the owners of Lots 90-93 are responsible for ownership and maintenance of the road in Tract A. The Homeowners Association (HOA) is responsible for ownership and maintenance of the 5-foot-wide public access sidewalk.

Proposed Plat Note:
Tract A, Private Street, is to be owned and maintained by the owners of Lots 90-93. The Homeowners Association (HOA) is responsible for ownership and maintenance of the 5-foot-wide public access sidewalk.

[Tract D – Private Street]
Per the preliminary plat (Exhibit 23), dated February 18, 2026, Tract D is shown to provide access to one dwelling unit, Lot 124, and is approximately 62-feet in length as measured from the centerline of NW 22nd Avenue. A dead-end turnaround is not required nor are 25-foot curb radii required on each side of the driveway access for this location. However, Tract D is to be owned and maintained by the owner of Lot 124.

Staff recommends a condition of approval that prior to final plat approval, a note should be added to the final plat stating that the owner of Lot 124 is responsible for ownership and maintenance of Tract D.

Proposed Plat Note:
Tract D, Private Street, is to be owned and maintained by the owner of Lot 124.

[Tract E – Private Parking]
Per the preliminary plat (Exhibit 23), dated February 18, 2026, Tract E is shown to provide ten (10) off-street parking stalls on the south side of NW 22nd Avenue between Lot 121 and Lot 123. The depth of the parking stalls are to be located on the south side of the right-of-way and the sidewalk along the front of the parking stalls is to be ADA accessible. Tract E is to be owned and maintained by the Homeowners and/Homeowners Association (HOA).

Staff recommends a condition of approval that prior to final plat approval, a note should be added to the final plat stating that Tract E, Private Parking is to be owned and maintained by the Homeowners and/or Homeowners Association (HOA).

Proposed Plat Note:
Tract E, Private Parking, is to be owned and maintained by the Homeowners and/or Homeowners Association (HOA).

Per CDSM Table 1 – Guidelines for Geometry of Private Roadway C, access to five or more dwelling units greater than 100-feet and not over 300-feet in length, requires a minimum tract width of 42-feet, a minimum 28-foot-wide paved surface, a 5-foot sidewalk and a 4.5-foot planter strip on one side, with on-street parking on one side only.

[Tract G – Private Street & Tract H – Private Parking]
Per the preliminary plat (Exhibit 23), dated February 18, 2026, Tract G is shown to provide access to six dwelling units, Lots 64-69, and is approximately 216-feet in length as measured from the centerline of NW Tidland Street. A dead-end turnaround is required. Tract H, a private off-street parking area, is shown to double as the dead-end turnaround for Tract G. As such, a 25-foot curb radii is required on both sides of Tract H.

The updated preliminary plat for Tract G shows the sidewalk and planter strip on the south side of the road. As the south side require driveways to Lots 64-69, the sidewalk and planter strip are to be located on the north side of Tract G.

Staff recommends a condition of approval that prior to engineering plan approval, the preliminary street plans and the preliminary plat should be revised to with the sidewalk and planter strip located on the north side of Tract G.

Tract G and Tract H are to be owned and maintained by Lots 64-69 and/or the Homeowners Association (HOA) as Tract G also provides access to the stormwater facility on Tract F for maintenance activities and inspection purposes.

Staff recommends a condition of approval that prior to engineering plan approval, the preliminary street plans should be revised to include a 25-foot curb radii on both sides of Tract G (Private Street).

Staff recommends a condition of approval that prior to engineering plan approval, the preliminary street plans and the preliminary plat should be revised with the sidewalk and planter strip located on the north side of Tract G.

Staff recommends a condition of approval that prior to final plat approval, the final plat should be revised to include a 25-foot curb radii on both sides of Tract G (Private Street) and on both sides of Tract H (Private Parking). Notes should be added to the final plat stating the Lots 64-69 and/or the Homeowners Association (HOA) are responsible for ownership and maintenance of Tract G and Tract H, as Tract G provides access to the stormwater facility on Tract F for maintenance activities and inspection purposes.

Proposed Plat Notes:
Tract G, Private Street, is to be owned and maintained by the owners of Lots 64-69 and/or the Homeowners Association (HOA) as Tract G provides access to the stormwater facility on Tract F for maintenance activities and inspection purposes.

Tract H, Private Parking, is to be owned and maintained by the owners of Lots 64-69.

Per CMC 17.19.040.A.2 Adequate and reasonable provisions are made for ownership, maintenance, and repair of all utilities and the proposed private streets.

Staff recommends a condition of approval that prior to final plat approval, a note is to be added to the plat stating that all private streets located in Tract A, Tract D, and Tract G; private off-street parking spaces on Tract E, Tract H, and Tract I; stormwater facilities on Tract B and Tract F; open space Tract C; and sanitary facilities on Tract J, Tract K, Tract L, and Tract M are to be owned and maintained by the Homeowners Association (HOA).

Per CMC 17.19.040.A.8 Provisions for adequate parking enforcement are to be recorded within a private covenant to ensure emergency vehicle access. These provisions shall be noted on the final plat (e.g., Towing service).

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should provide a design for a 'No Parking and Towing' sign for review and approval. Said sign is to include contact information for a private towing company, as the city does not provide towing on private roads or off-street parking areas, nor does the city enforce no parking on private roads or private parking areas.

Staff recommends a condition of approval that prior to final plat approval, a note is to be added to the plat stating that 'on-street parking is prohibited on both sides of Tract A, Tract D, and Tract G.

Proposed Plat Note:
Tract A, Tract D, and Tract G: On-street parking is prohibited on both sides of the street.

Staff recommends a condition of approval that prior to final acceptance the applicant should be required to install the 'No Parking and Towing' signs on the private roads and alleys.

FINDING: Staff finds that, as conditioned, adequate provisions for public and private roads can or will be made.

Utilities, Street Lighting, Street Trees, and Other Improvements:
[Street lighting]:
LED Street lighting is to be designed and installed along all street frontages in accordance with the Camas Design Standards Manual (CDSM) – Standards for Street Lighting.

The locations for streetlights are to be coordinated with the locations of other site features, such as street trees, driveways, and other utilities. Per CDSM, private streets in excess of 100-feet in length and serving more than five dwelling units are required to have streetlights. Any streetlights proposed for private streets are required to be metered separately and are to be owned and maintained by the HOA.

Per the preliminary plat (Exhibit 23), dated February 28, 2026, Tract G Private Street is in excess of 100-feet in length and is serving six (6) dwelling units and a private parking area with ten (10) parking stalls (Tract H).

Staff recommends a condition of approval that prior to engineering plan approval, a streetlight is to be added to the plans for Tract G, the private street that serves Lots 64-69, and the private parking area on Tract H. A note is to be added to the applicable plans that the streetlights on Tract G and/or H is to be metered separately and are to be owned and maintained by Lots 64-69 and/or the Homeowners Association (HOA).

Staff recommends a condition of approval that prior to engineering plan approval all streetlight locations are to be shown on the street, utility, and landscape plans.

Staff recommends a condition of approval that prior to the applicant's submittal of electrical plans to Clark Public Utilities, the preliminary electrical plans for streetlights, transformers, J-boxes, etc., which are prepared by others, should be submitted to the city for review and approval.

Staff recommends a condition of approval that prior to final plat approval a note is to be added to the plat stating that the streetlight that serves Tract G and H is to be metered separately and is to be owned and maintained by Lots 64-69 and/or the Homeowners Association (HOA).

Proposed Plat Note:
The streetlight that serves Tract G and H is to be metered separately and is to be owned and maintained by Lots 64-69 and/or the Homeowners Association (HOA).

[Driveways]:
Per the City of Camas Street Details for driveways (ST14-16), the driveway throat cannot exceed 40% of the total lot frontage.

The narrowest lot width (Lots 23 & 50) is 23.25-feet wide from the end of curb return to the north property line; therefore, the maximum driveway throat width is not to exceed 10-feet in width and is to be moved as far north as possible from the intersection with NW 18th Avenue. This maximum driveway throat width also applies to Lot 33.

The majority of the lots vary in width from 27-feet-wide to 30-feet-wide; therefore, the maximum driveway throat width is not to exceed 11-feet to 12-feet in width.

Interspersed throughout the proposed development are lots whose lot widths are 36-feet-wide; therefore, the maximum driveway throat width is not to exceed 14-feet in width.

> Staff recommends a conditional of approval that prior to engineering plan approval, as the driveway widths would vary from 10-feet-wide to 14-feet-wide depending on the lot width, where feasible, shared driveways should be provided between lots smaller than 25-feet in width, as the driveway throat shall not exceed 40% of the total lot frontage.

[Street trees and Landscaping]:
Street Trees: CMC 17.19.030(F)(1) requires each dwelling unit to be landscaped with at least one 2-inch caliper tree in the planter strip of the right-of-way, or similar location in the front yard of each dwelling unit. The applicant is proposing street trees, however, there is not one street tree per lot due to driveways and utilities. Staff finds, the proposal shall have one street tree per lot in the planter strip or in the front yard of each lot, where feasible. Staff recommends a condition of approval to this effect.

> Staff recommends a condition of approval that the prior to engineering plan approval, the street improvement plans and the landscape plans should include the site distance triangles at the intersections of all the proposed on-site roads; at the intersection of NW Umatilla Street at NW 18th Avenue; and at the intersection of NW 22nd Avenue at NW Brady Road.
>
> **FINDING:** Staff finds that the applicant can or will make adequate provisions as conditioned for roads, utilities, street lighting, street trees, and other improvements that are consistent with the six-year street plan, the Camas Design Standard Manual and other state adopted standards and plans.

4. Provisions have been made for dedications, easements, and reservations;

The applicant will be required to dedicate all public right-of-way at completion of the project and with final plat approval; this includes the frontage on NW 18th Avenue, full road widths for NW Umatilla Street, NW Tidland Street, NW 20th Avenue, NW 22nd Avenue, and at the intersection with NW Brady Road.

The applicant should provide adequate access and maintenance easements over and under the proposed water main and sewer main in the Tract G (Private Street) to the City at the time of final platting, for the purpose of inspection, maintenance and operation of said public water and sanitary sewer mains.

The stormwater treatment and detention facilities have been placed in separate tracts, Tract B and Tract F, with responsibility for ownership and maintenance and right-of-entry granted to the City for inspection purposes. The following plat notes are conditioned to be added to the final plat.

- Tract B shall be owned and maintained by the Homeowners and/or Homeowners Association (HOA), with right-of-entry granted to the City for inspection purposes.
- Tract F shall be owned and maintained by the Homeowners and/or Homeowners Association (HOA), with right-of-entry granted to the City for inspection purposes.
- The open space, Tract C; parking areas, Tracts E, H, and I; and the public access trail in Tract A are to be owned and maintained by the Homeowners and/or Homeowners Association (HOA). A public access easement is to be recorded over the public access trail in Tract A.

A homeowner's association (HOA) will be required for this development.

- A copy of the CC&Rs for the development will need to be submitted to the City for review and approval with the final plat application.
- The applicant is to make provisions in the CC&Rs for ownership and maintenance of the storm drainage system in Tract D, Tract G, Tract H, and Tract I; stormwater treatment & detention facilities in Tract B and Tract F; any fencing; the public trail in Tract A; landscaping, irrigation throughout the development and in the private roads in Tract A and Tract G; the private parking area in Tract H and Tract I; the private storm easements throughout the development; the open space in Tract C; and the private sanitary facilities in Tract J, Tract K, Tract L, and Tract M .
- Additionally, the applicant is to make adequate provisions for parking enforcement along private roads that are acceptable to the Fire Marshal. Further, all necessary easements, dedications, and tracts should be noted on the final plat.

  FINDING: Staff finds that adequate provisions for dedications, easements and reservations as conditioned can or will be made by the applicant at the time of final platting.

5. The design, shape, and orientation of the proposed lots are appropriate to the proposed use.

<u>Dimensional Standards</u>

The parcel is zoned Multi-Family Residential MF-18 and must follow the dimensional standards per CMC 18.09.050 Table 1.

The minimum lot size required is MF-18 is 2,100 square feet with a minimum width of 26 ft and depth of 60 ft. The minimum setbacks are as follows: Front: 10 ft and 20 ft for garage, Side: 3 ft, Street Side: 15 ft, and Rear: 10 ft. Each lot is more than 2,100 square feet and the setbacks are shown on the plat and exceeds the minimum lot width and depth.

Staff finds a setback table shall be shown on the final plat in addition to the setbacks dashed line shown on each lot.

The maximum building height for the MF-18 zoning is 50 ft with a 65% building lot coverage. Staff finds future single-family buildings shall meet these requirements and the lot coverage shall be a plat note on the recorded plat.

The MF-18 zone allows 111 units to 332 units on the 18.44 acres. The proposal includes 158 units; therefore, staff finds the density is met.

Beveling

Per CMC 18.09.080.B, *"When creating new lots via short plats or subdivisions that are adjacent to a different residential zone designation, the new lots along that common boundary shall be the maximum lot size allowed for the zone designation of the new development (if a lower density adjacent zone), or the minimum lot size allowed for the zone designation of the new development (if a greater density adjacent zone), as based on CMC 18.09.040 Table 2, Section A."*

The site is bordered by Business Park, Light Industrial/Business Park, Community Commercial, and Single-Family Residential R-7.5. However, the R-7.5 zoning is across NW 18th Avenue which does not requiring beveling. Staff finds that beveling is not required.

> **FINDING:** Staff finds the proposed lot sizes can conform to the requirements of the MF-18 zone of the density transfer provisions as conditioned.

6. The subdivision complies with the relevant requirements of the Camas land development and zoning codes, and all other relevant local regulations;

Landscaping

[General Landscaping]: Per CMC 18.13.055 Table 1, landscape buffering is not required for single family residences, therefore landscape buffering is not required.

[Tree Density]: A minimum of 20 tree units (TU) per net developable acre is required for residential developments per *CMC 18.13.051(A) Table 1 – Required Tree Density* and should be incorporated into the overall landscape plan. The entire site is approximately 6.08 acres. Per CMC 18.03.040 *"developed/net acreage means the total acreage of a land use development exclusive of open space and critical areas."* The open space and critical area tracts account for approximately 5.97 acres; therefore, the net developable acreage is 18.44 acres, requiring 369 TUs. The tree plan indicates that 193 tree units will remain and 176 tree units will be planted to total 369. The trees proposed for removal are affected by health decline and grading impacts, as outlined in the arborist's report dated September 2025.

> **FINDING:** Staff recommends a condition of approval that the arborist report is followed.

A final landscape, tree, and vegetation plan consistent with the landscaping standards in CMC Chapter 18.13 should be submitted to the City for review and approval prior to engineering plan approval. Plants utilized will need to be per the approved City's Tree list and per the Camas Design Manual planting specifications and landscape notes. For plants not on the approved City list, a characteristic card should be submitted to the City for review and approval. Irrigation and

landscaping should be installed or bonded prior to final acceptance per CMC 17.19.030.F.3. Street trees adjacent to lots should be installed prior to final occupancy or bonded for per CMC 17.19.030.F.4.

[Stormwater Facility Landscaping]: There is a stormwater facility proposed in Tract B and F. Staff finds per CMC 17.19.030.F.6., that these facilities shall be required to include a ten foot (10-foot) L2 landscaped buffering in accordance with criteria in the Camas Design Standards Manual if within thirty feet of any street or accessory structure.

Parking

Per CMC 18.11.130, two parking spaces per single family dwelling is required. The proposal for 158 lots does not include proposed building elevations; therefore, staff finds a condition is warranted that two parking spaces are required for each single-family residence.

Per CMC 17.19.040.B.10.e., when the average lot size is less than 7,400 square feet, then additional off-street parking is required at a ratio of one space per five lots. There are 158 lots, and the average lot size is less than 7,400 square feet, therefore 32 spaces are required. Staff finds the applicant has proposed 32 spaces and meets the requirements.

Retaining Walls:

CMC 18.17.060 allows for retaining walls up to 6 feet, unless approved by the Director. Exterior retaining walls facing the public right-of-way will be required to be "set back a distance of one foot for every foot in height of a fence in excess of allowed height" per CMC 18.17.060.D. and provide additional landscaping consisting of groundcover, shrubs, and trees. A condition is warranted.

Locations of all retaining walls proposed for construction during the infrastructure improvements are to be shown on the civil construction plans. Block retaining walls are reviewed, approved, and inspected by the Development Engineering Dept. Poured in-place retaining walls are reviewed, approved, and inspected by the Building Dept.

Staff recommends a condition of approval that prior to engineering plan approval, all retaining wall locations are to be shown on the civil construction plans. Requirements are as follows:

- Block retaining walls: submit plans, profiles, sections, and structural calcs for review and to with civil construction plans for review, approval, and inspection by Development Engineering.
- Pour in-place retaining walls: submit plans, profiles, sections, and structural calcs to Building Dept. as part of a building permit application. Building Dept. is responsible for review, approval, and inspection.

Signage

There was no signage proposed with the development. Therefore, staff recommends a condition of approval that future signage must meet CMC 18.15.

FINDING: As stated in the responses to criteria in this staff report and as conditioned herein, this proposal can or will meet all relevant codes, regulations, ordinances and other requirements as identified herein.

7. Appropriate provisions are made to address all impacts identified by the transportation impact study;

[Traffic Impact Analysis]:
Per CMC 18.18.040.E a Transportation Impact Analysis (TIS/TIA) may be required when a development will generate 200 or greater average daily trips (ADTs).

The Transportation Impact Study (TIA) prepared by Kittelson & Associates (Exhibit 7, Table 3, page 14), dated September 8, 2025, found the project, which has proposed to develop 158 single-family detached dwelling units, is expected to generate approximately 1,537 new daily trips, Average Daily Trips (ADT) with 113 new AM Peak Hour trips (28 In / 85 Out) and 153 PM Peak Hour trips (96 In / 57 Out).

The proposed development will provide vehicular access at three intersections: the new intersection of proposed NW Umatilla Street at NW 18th Avenue; the western extension of NW 20th Avenue from the intersection with NW Brady Road; and the new intersection of proposed NW 22nd Avenue at NW Brady Road. The new intersection of proposed NW 22nd Avenue at NW Brady Road is not included in the TIA, as this intersection was not proposed at the time the TIA was prepared.

> Staff recommends a condition of approval that the prior to engineering plan approval, a Supplemental Memo to the TIA is to be submitted with sight-distance and capacity addressed at the proposed intersection of NW 22nd Avenue at NW Brady Road.

Left-Turn Pocket Analysis
Per the pre-app notes (PA25-1049), the applicant was to address the potential for a left-turn pocket at the intersection of NW 18th Avenue and the proposed accessed road (NW Umatilla Street). The TIA does not address a left-turn pocket as requested. Additionally, at the time of the pre-application meeting, the applicant was not proposing the road connection at proposed NW 22nd Avenue at NW Brady Road.

> Staff recommends a condition of approval that the prior to engineering plan approval, a Supplemental Memo to the TIA is to be submitted with the analysis of a left-turn pocket on NW 18th Avenue and proposed NW Umatilla Street; and on NW Brady Road and proposed NW 22nd Avenue

Traffic Control Considerations
The TIA recommends the proposed development be required to install a 'stop sign' at the intersection of proposed NW Umatilla Street and NW 18th Avenue with other on-site traffic control devices installed with the proposed improvements per the Camas Design Standards Manual (CDSM) and the Manual on Uniform Traffic Control Devices (MUTCD). ***Staff concurs.***

> Staff recommends a condition of approval that the prior to engineering plan approval, the signing and striping plans are to include a 'Stop' sign at the intersections of proposed NW Umatilla Street and NW 18th Avenue; and at the intersection of proposed

NW 22nd Avenue and NW Brady Road; and other on-site traffic control devices as required per the CDSM and the MUTCD.

City of Vancouver Proportional Share Intersections

The City of Vancouver (COV) collects a proportionate share fee contribution for future improvement to a list of proportionate share intersections. A trip distribution analysis for the proposed development, to zero (0), is required to each of the intersections listed in the COV's Proportionate Share Table. The Table provides the fee associated per PM Peak Hour trip for each of these intersections. The TIS, addresses the proportionate share PM Peak Hour trip distribution and fee summary per intersection in Table 6 – City of Vancouver Proportionate Share Fee Summary (Exhibit 7, Page 21) as follows:

Mitigation Location	Mitigation Cost/Peak Hour Trip	Peak Hour Trips Added	Estimated Cost
137th Ave: 49th St to Fourth Plain Blvd		0	$0
Fourth Plain Blvd & 152nd Ave Signal	$333/PM	0	$0
Lieser/St. Helens/MacArthur		0	$0
176th Ave & SE 20th St	$400/PM	15	$6,000
192nd Avenue & NE 13th Street	$400/PM	6	$2,400
192nd Ave & SE 34th St	$150/PM	6	$900
192nd Ave & SR-14 ramps		59	$118,00
MacArthur & Andresen Roundabout		0	$0
MacArthur & Devine Roundabout		0	$0
Grove St/Columbia House Blvd/SR-14 WB Ramp		0	$0
NE 172nd Avenue & NE 18th Street	$300/PM	3	$900
NE 179th Place & NE 18th Street	$900/PM	4	$3,600
NE 187th Avenue & NE 18th Street		5	$6,000
NE 162nd Avenue & NE 9th Street		0	$0
NE 172nd Avenue & NE 9th Street		0	$0
NE 192nd Avenue & NE 9th Street		0	$0
NE 187th Avenue & SE 1st Street		0	$0
Total Proportional			**$137,80**

Staff recommends a condition of approval that the prior to final acceptance of the first phase that is constructed, regardless of the Phase referenced on the Preliminary Plat, the applicant is to provide proof of payment to the City of Vancouver of the Proportionate Share Fees in the amount of $137,800.00.

Findings and Recommendations (Exhibit 7, Page 22)

[Findings]:

- All study intersections experience performance levels that satisfy the applicable operating parameters today and in 2027 assuming full occupancy of the homes.
- The proposed site development is projected to add weekday PM peak hour trips to the following intersections where the City of Vancouver assesses proportional share mitigation payments:
    - SE 176th Avenue/SE 20th Street: 15 trips
    - NE 192nd Avenue/NE 13th Street: 6 trips
    - SE 192nd Avenue/SE 34th Street: 6 trips
    - SE 192nd Avenue/SR-14 Ramps: 59 trips
    - NE 172nd Avenue/NE 18th Street: 3 trips
    - NE 179th Place/NE 18th Street: 4 trips
    - NE 187th Avenue/NE 18th Street: 5 trips

[Recommendations]:
Based on the traffic operations analysis findings, we recommend the following in conjunction with the proposed site development.

- Post a STOP (R1-1) sign on the Street A southbound approach to NW 18th Avenue in accordance with applicable City of Camas standards and the *Manual on Uniform Traffic Control Devices* (MUTCD). Other on-site stop signs may be installed as appropriate, per the City of Camas direction.

  Staff concurs and a condition is warranted for an additional STOP (R1-1) sign at the intersection of proposed NW 23rd Avenue and NW Brady Road.

- Locate and maintain site landscaping, above-ground utilities, and site signage at all local street intersections within and adjacent to the site to provide adequate intersection sight distance per applicable City requirements.

  Staff Concurs and a condition is warranted.

- Subject to City of Vancouver concurrence, pay the following proportional share intersection fees as identified per City of Vancouver requirements:
    - $6,000 towards SE 176th Avenue/SE 20th Street mitigation
    - $2,400 towards NE 192nd Avenue/NE 13th Street mitigation
    - $900 towards SE 192nd Avenue/SE 34th Street mitigation
    - $118,000 towards SE 192nd Avenue/SR-14 ramps mitigation
    - $900 towards NE 172nd Avenue/NE 18th Street mitigation
    - $3,600 towards NE 179th Place/NE 18th Street mitigation
    - $6,000 towards NE 187th Avenue/NE 18th Street mitigation

  Staff concurs and a condition is warranted for proof of payment to the City of Vancouver.

FINDING: Staff finds that, as conditioned, this development can or will meet any impacts identified by the transportation impact study.

8. Appropriate provisions for maintenance of commonly owned private facilities have been made;

Per CMC 14.02.090.A.1 Stormwater facilities, located within residential subdivisions and short plats, shall be the maintenance responsibility of the applicant for two-years after the date of final acceptance. This maintenance period shall run concurrently with the city's required two-year warranty period that begins at final acceptance.

Per CMC 14.02090.C, the City shall have the right-of-entry and authority to inspect stormwater facilities for compliance with this chapter. A note is to be added to the final plat granted the city right-of-entry for inspection purposes. A condition of approval is warranted.

Per CMC 17.19.040.A.2 the HOA and/or homeowners are responsible for the ownership and maintenance of the private streets. A note is to be added to the final plat stating that all private roads and parking areas are to be owned and maintained by the individual property owners and/or homeowners association (HOA). A condition of approval is warranted.

FINDING: Staff finds that, as conditioned, this development can or will meet the appropriate provisions for maintenance of private facilities.

9. Appropriate provisions in accordance with RCW 58.17.110, are made for (a) the public health, safety, and general welfare, and (b)The public use and interest will be served by the platting of such subdivision and dedication;

FINDING: As discussed throughout this report, staff finds that the subdivision can be conditioned to provide the appropriate provisions for public health, safety, general welfare, and assure the public interest is served.

10. The application and plans shall be consistent with the applicable regulations of the adopted comprehensive plans, shoreline master plan, state, and local environmental acts, and ordinances in accordance with RCW36.70B.030.

FINDINGS: Staff concurs that the proposed subdivision can or will meet the requirements of RCW 58.17 and other applicable state and local laws that are in at the time of final platting. The final plat will be processed in accordance with the requirements of CMC 17.21.060.

PUBLIC COMMENTS

As of the writing of this staff report, staff received written public comments from the Department of Ecology (Exhibit #24) and the Cowlitz Indian Tribe (Exhibit #25). These comments are addressed throughout the staff report.

CONCLUSION

Based on the above findings and discussion provided in this staff report, staff concludes that Stella Ridge Subdivision (SUB25-1009) should be approved because it does comply with the applicable standards if all the conditions of approval are met.

RECOMMENDATION

Staff recommends APPROVAL of the preliminary plat of Stella Ridge Subdivision (SUB25-1009) subject to the following conditions of approval:

CONDITIONS OF APPROVAL

Standard Conditions:

1. Engineering site improvement plans shall be prepared in accordance with the City of Camas Design Standards Manual (CDSM) and CMC 17.19.040.
2. The engineering site improvement plans shall be prepared by a licensed civil engineer in Washington State and submitted to the City's Community Development Engineering Department for review and approval.
3. Per CMC 17.19.040.C.1 and 1.a: All utilities designed to serve the development shall be placed underground. Those utilities to be located beneath paved surfaces, including all service connections, shall be installed prior to application of any surface materials.
4. The installation of public improvements shall be in accordance with CMC 17.21 Procedures for Public Improvements.
5. After the land-use decision is issued, the applicant is to submit the Civil construction plans via the online portal at *www.cityofcamas.us/Permits/Civil Construction Application*.
6. Community Development (CDEV) Engineering shall collect a total 3% plan review and construction inspection (PR&CI) fee for the proposed development.
    a. Payment of the 1% plan review (PR) fee is required prior to start of initial plan review. Staff will review the preliminary engineer's estimate and invoice the applicant via the online portal.
    b. Payment of the 2% construction inspection (CI) fee is required prior to final plan approval. Staff will invoice the applicant via the online portal.
    c. Under no circumstances will the applicant be allowed to begin any land-disturbing activities prior to engineering plan approval.
7. If applicable, existing wells, septic tanks, and septic drain fields shall be decommissioned in accordance with state and county guidelines per CMC 17.19.020.

8. Prior to any land-disturbing activities of an acre or more, the applicant shall submit a copy of the *NPDES General Construction Stormwater Permit* (GCSWP), which is issued by the Washington State Dept. of Ecology, and the *Stormwater Pollution Prevention Plan* (SWPPP), which is required as a component of the NPDES GCSWP permit.
9. Prior to commencing any land-disturbing activities of an acre or more, the applicant shall submit an Erosion Control Bond in the amount of 200% of the cost for erosion control (ESC) measures, per CMC 14.06.200. Staff will provide a letter to the applicant with the required ESC amount.
10. If any item of archaeological interest is uncovered during a permitted land-disturbing action or activity, all ground disturbing activities shall immediately cease, and the applicant shall notify the City and the Department of Archaeology and Historic Preservation (DAHP).
11. The applicant shall comply with the recommendations of the geotechnical report (Exhibit 4) prepared by Columbia West Engineering, Inc., dated May 28, 2025, to minimize any potential hazards associated with construction.
12. Any entrance structures or signs proposed or required for this project will be reviewed and approved by the city.
    a. All designs will be in accordance with applicable City codes.
    b. The maintenance of the entrance structure will be the responsibility of the homeowners.
13. Final plat submittals shall meet the requirements of the CMC 17.11.060, CMC 17.01.050, and the Camas Design Standards Manual.
14. A homeowner's association (HOA) will be required and a copy of the CC&Rs for the development will need to be submitted to the City for review and approval. Specifically, the applicant will need to make provisions in the CC&Rs for ownership and maintenance of the private storm drainage systems, open spaces, retaining walls, fencing, walls, landscaping, irrigation, private roads, and tracts or easements outside of the City's right-of-way if applicable. Further, all necessary easements and dedications should be noted on the final plat.
15. Provisions for parking enforcement on private Tracts/access driveways, acceptable to the Fire Marshal, shall be included in the CC&Rs at the time of final platting.
16. Prior to final acceptance, the applicant shall remove all temporary erosion prevention and sediment control measures from the site at completion of all site improvements, which includes stabilization of all disturbed soil.
17. As a component for final acceptance, final as-built construction drawing submittals shall meet the requirements of the Camas Design Standards Manual (CDSM).
    a. The as-built cover sheet is to be the originally approved cover sheet signed by the City Engineer.
    b. As-builts are to be submitted as PDFs.
    c. As-builts are to be submitted in either AutoCad or Carlson formats.

18. Per CMC 17.21.050.B.2 and prior to final acceptance a 2-year warranty maintenance bond is to be submitted for all public improvements.
    a. Per CMC 17.21.070.A Upon final acceptance of the development improvements the two-year (2) warranty bond commences.
19. Per CMC 17.21.070.E A letter of final acceptance will be issued once all items listed in 17.21.070.B-C have been completed and approved by the city.
20. Per CMC 18.18.070.B, prior to the issuance of final occupancy permits, all public and private improvements shall be completed in accordance with CMC 17.21.070 Final Acceptance.
21. Automatic fire sprinklers installed per NFPA 13D or 13R shall be required in all new residential structures.
22. The applicant will be responsible for maintenance of all private improvements, including but not limited to stormwater facilities Tracts and easements, Open Space Tracts, parking areas, landscaping and irrigation, private STEP tanks, and any retaining walls.
23. Per CMC 17.21.060.H Permits for one sales office and/or one model home per plat or phase may be issued after the final plat is recorded, and prior to final acceptance. Building permit applications for any other residential buildings will not be accepted until after final acceptance.
24. At the time of building permit approval, the applicant shall pay the appropriate impact fees in accordance with the provisions of CMC 3.88.
25. The applicant shall take appropriate measures to ensure landscaping success for a minimum of three (3) years after issuance of Certificate of Occupancy. If plantings fail to survive, the property owner shall promptly replace them.
26. Unless construction of this site commences within five (5) years of issuance of this decision, this permit will expire.

Special Conditions of Approval:

Planning:

27. If potential artifacts are discovered during construction, work must immediately cease, and both the State Department of Archaeological and Historic Preservation and the City shall be notified.
28. The comments from Department of Ecology shall be complied with.
29. A copy of the unanticipated discovery protocol from the Cowlitz Indian shall be kept on site during construction activities.

<u>Prior to Engineering Plan Approval:</u>

Planning:

30. The 32 off-street parking spaces shall be shown on the final engineering plans.

31. The stormwater facilities shall include a ten-foot (10-foot) L2 landscape buffer in accordance with criteria in the Camas Design Standards Manual if within thirty feet of any street or accessory structure.
32. A final landscape, tree, and vegetation plan consistent with the landscaping standards in CMC Chapter 18.13 should be submitted to the City for review and approval prior to engineering plan approval. Plants utilized will need to be per the approved City's Tree list and per the Camas Design Manual planting specifications and landscape notes. For plants not on the approved City list, a characteristic card should be submitted to the City for review and approval. Irrigation and landscaping should be installed or bonded prior to final acceptance per CMC 17.19.030.F.3.
33. There shall be one street tree per lot in the planter strip or in the front yard of each lot, where feasible.
34. Temporary construction fencing that clearly marks the critical area buffers (i.e., wetlands and buffers) shall be shown on the engineering plans.
35. A plan sheet with the mitigation planting table per the Critical Area Report shall be submitted for review and approval.

Engineering:

[Neighborhood Traffic Management]

36. Prior to engineering plan approval, the applicant is to work with engineering staff to revise the preliminary street plans and preliminary plat to include design features for traffic calming devises at the following locations:
    a. Raised crosswalk or other similar device, and mid-block curb ramps on both sides of NW Umatilla Street at Tract I, Private Parking Area.
    b. Traffic circle at the intersection of NW Umatilla Street and NW 20th Avenue.
    c. Raised crosswalk or other similar device, and mid-block curb ramps on both sides of NW Umatilla Street between NW 20th Avenue and NW 22nd Avenue.
    d. A traffic calming device on NW 20th Avenue between NW Tidland Street and NW Brady Road, e.g., mid-block curb ramps on both sides of NW 20th Avenue and marked crosswalk, raised crosswalk, or other similar device.
    e. Raised crosswalk or other similar device, and mid-block curb ramps on both sides of NW Tidland Street in the vicinity of Tract G, Private Street.
    f. Raised crosswalk or other similar device, and mid-block curb ramps on both sides of NW 22nd Avenue at Tract E, Private Parking.

[Water]

37. Prior to engineering plan approval, the composite utility plans shall be revised with the 8-inch water main in proposed NW 22nd Avenue extended east to tie into the existing 16-inch water main in NW Brady Road.

38. Prior to engineering plan approval, the applicant shall submit revised composite utility plans that provide an additional fire hydrant on proposed NW Umatilla Street between proposed NW 20th Avenue and NW 18th Avenue.

39. Prior to engineering plan approval, the applicant shall submit revised water utility plans and landscape plans showing the locations and sizes of all proposed irrigation services and the size of each proposed irrigation meter.

[Storm Drainage]

40. Prior to engineering plan approval, the applicant shall submit a complete set of stormwater plans, which are to include plans, profiles, and details for the collection and conveyance system, and the stormwater facilities in Tracts A and F for review and approval, per MR #1 of the Preliminary TIR.

41. Prior to engineering plan approval, a note shall be added to the stormwater plans stating that the stormwater facilities, including the StormFilter vaults, in Tract B and Tract F are to be owned and maintained by the Homeowners and/or Homeowners Association (HOA), with right-of-entry granted to the city for inspection purposes.

42. Prior to engineering plan approval, the stormwater plans shall be revised to include a stormwater manhole at the right-of-way between public and private roads and private storm easements, as the stormwater systems located in private roads and private storm easements are to be owned and maintained by the Homeowners Association (HOA).

43. Prior to engineering plan approval, the applicant shall revise the Final Stormwater Technical Report (TIR) to include source control BMPs, per MR #3, for the proposed development.

44. Prior to engineering plan approval, the applicant shall submit a Final Stormwater TIR that includes a standalone O&M Manual that addresses all aspects of stormwater maintenance, including the applicable sections from the city's *June 2022 Stormwater Sewer System Operations & Maintenance Manual and Ecology's Stormwater Maintenance Manual for Western Washington (SWMMWW).*

[Erosion Control]

45. Prior to engineering plan approval, the applicant shall be required to submit a complete set of Erosion Sediment Control (ESC) plans, as a part of the site improvement plans for review and approval.

46. Prior to engineering plan approval, the applicant shall be required to include location/s of temporary storm drainage facilities as part of the Erosion Sediment Control (ESC) plans.

[Sanitary Sewage Disposal]

47. Prior to engineering plan approval, the applicant shall submit documentation verifying that the existing 8-inch and 10-inch STEF mains can handle the additional inflow from the proposed development.

48. Prior to engineering plan approval, the composite utility plans shall be revised showing all sanitary sewer laterals perpendicular to the sanitary sewer mains.

49. Prior to engineering plan approval, the applicant shall submit the design and specifications for each of the STEF tanks proposed for Tracts J, K, L, and M, with verification that the tank sizes will meet the setback constraints on each of the Sanitary Facility Tracts.

Roads

[NW 18th Avenue]

50. Prior to engineering plan approval, the preliminary street plans shall be revised to include construction of the full depth half-width street improvements from the centerline of the existing road to the frontage of the proposed development.

[Interior Public Roads]

51. Prior to engineering plan approval, the preliminary plat and subsequently the preliminary street plans should be revised with the minimum centerline radius of seventy-feet (70-feet) for Curve #2, which is the corner of NW Umatilla Street and NW 22nd Avenue.

Private Roads

[Tract A]

52. Prior to engineering plan approval, the preliminary street plans shall be revised to include a 25-foot curb radii on both sides of Tract A (Private Road), Tract A extended to the northernmost property line of the proposed development, and a minimum 5-foot-wide public access sidewalk is to be constructed on the east side of the Tract.

[Tract G & Tract H]

53. Prior to engineering plan approval, the preliminary street plans shall be revised to include a 25-foot curb radii on both sides of Tract G (Private Street).

54. Prior to engineering plan approval, the preliminary street plans shall be revised to include a 25-foot curb radii on both sides of Tract H (Private Parking).

55. Prior to engineering plan approval, the preliminary street plans and the preliminary plat should be revised with the sidewalk and planter strip located on the north side of Tract G.

[All Private Streets]

56. Prior to engineering plan approval, the applicant shall provide a design for a 'No Parking and Towing' sign for review and approval. Said sign is to include contact information for a private towing company, as the city does not provide towing on private roads or off-street parking areas, nor does the city enforce no parking on private roads or private parking areas.

Utilities, Street Lighting, Street Trees, and Other Improvements:

[Street lighting]

57. Prior to engineering plan approval, a streetlight is to be added to the plans for Tract, the private street that serves Lots 64-69, and the private parking area on Tract H. A note is to be added to the applicable plans that the streetlights on Tract G and/or H is to be metered separately and are to be owned and maintained by Lots 64-69 and/or the Homeowners Association (HOA).

58. Prior to engineering plan approval all streetlight locations are to be shown on the street, utility, and landscape plans.

59. Prior to the applicant's submittal of electrical plans to Clark Public Utilities, the preliminary electrical plans for streetlights, transformers, J-boxes, etc., which are prepared by others, should be submitted to the city for review and approval.

[Driveways]

60. Prior to engineering plan approval, the driveway widths would vary from 10-feet-wide to 14-feet-wide depending on the lot width, where feasible, shared driveways should be provided between lots smaller than 25-feet in width, as the driveway throat shall not exceed 40% of the total lot frontage.

[Street trees and Landscaping]

61. Prior to engineering plan approval, the street improvement plans and the landscape plans are to include the site distance triangles at the intersections of all the proposed on-site roads; at the intersection of NW Umatilla Street at NW 18th Avenue; and at the intersection of NW 22nd Avenue at NW Brady Road.

[Retaining Walls]

62. Prior to engineering plan approval, all retaining wall locations are to be shown on the civil construction plans. Requirements are as follows:

    a. Block retaining walls: submit plans, profiles, sections, and structural calcs for review and to with civil construction plans for review, approval, and inspection by Development Engineering.

    b. Pour in-place retaining walls: submit plans, profiles, sections, and structural calcs to Building Dept. as part of a building permit application. Building Dept. is responsible for review, approval, and inspection.

<u>Traffic Impact Analysis</u>

63. Prior to engineering plan approval, a Supplemental Memo to the TIA is to be submitted with sight-distance and capacity addressed at the proposed intersection of NW 22nd Avenue at NW Brady Road.

[Left-Turn Pocket Analysis]

64. Prior to engineering plan approval, a Supplemental Memo to the TIA is to be submitted with the analysis of a left-turn pocket on NW 18th Avenue and proposed NW Umatilla Street; and on NW Brady Road and proposed NW 22nd Avenue.

[Traffic Control Considerations]

65. Prior to engineering plan approval, the signing and striping plans are to include a 'Stop' sign at the intersections of proposed NW Umatilla Street and NW 18th Avenue; and at the intersection of proposed NW 22nd Avenue and NW Brady Road; and other on-site traffic control devices as required per the CDSM and the MUTCD.

Prior to Land-Disturbing Activities:

66. Prior to any land-disturbing activities, the applicant shall be required to submit a site specific SWPPP in addition to Ecology's NPDES Temporary Construction Stormwater Permit, per MR #2. The SWPPP is to include 24-hour contactor information; and the name of the Project CESCL and CESCL certification number and expiration date. (CESCL = Certified Erosion Sediment Control Lead).
67. Prior to any land-disturbing activities, a copy of Ecology's NPDES GCSWP permit, the SWPPP with contractor information, and the financial security for erosion and sediment control are to be submitted to the city.
68. Prior to any land-disturbing activities, which includes tree cutting, clearing and grading, and an approved set of engineering plans, including the erosion prevention and sediment control measures is required.
69. The installation of temporary construction fencing that clearly marks in the field critical area buffers (i.e., wetlands and buffers) is required and fencing shall remain throughout permitted construction activities.

Prior to Final Plat Approval:

Planning:

70. The mitigation credits of .24 shall be purchased prior to final plat approval and proof shall be submitted to the City for confirmation.
71. A conservation covenant shall be recorded with the County to ensure the long-term preservation of all the critical areas and any associated buffers, including maintenance of any mitigation actions.
72. The applicant shall post a mitigation bond in an amount deemed acceptable by the city to ensure the wetland mitigation is fully functional per CMC 16.51.250.
73. A setback table shall be shown on the final plat in addition to the setbacks dashed line shown on each lot.
74. A copy of the CC&R's shall be submitted to the city for review and approval.

Engineering:

[Water]

75. Prior to final plat approval, a note is to be added to the final plat stating that an access and maintenance easement is granted to the City over and under the proposed 8-inch water main located in Tract G, Private Street for the purpose of inspection, maintenance and operation of said public water main.

[Storm Drainage]

76. Prior to final plat approval, a note is to be added to the final plat stating that the stormwater facilities, including the StormFilter vaults, in Tract B and Tract F are to be owned and maintained by the Homeowners and/or Homeowners Association (HOA), 2-years after

final acceptance is issued. Right-of-entry shall be granted to the City for inspection purposes.

77. Prior to final plat approval, a note is to be added to the final plat stating that the private rear yard storm systems, located in a private storm easements, are to be owned and maintained by the homeowners and/or the Homeowners Association (HOA).

[Sanitary Sewage Disposal]

78. Prior final plat approval, a note is to be added to the plat stating that the sanitary facilities, STEF tanks, on Tracts J, K, L, and M are to be owned and maintained by the Homeowners Association (HOA), with right-of-entry granted to the city for inspection purposes.

[Roads]

Tract A – Private Street

79. Prior to final plat approval, the final plat shall be revised to include a 25-foot curb radii on both sides of Tract A (Private Street), Tract A extended to the northernmost property line of the proposed development, and a minimum 5-foot-wide public access easement recorded over the sidewalk shown on the east side of Tract A.

80. Prior to final plat approval, a note shall be added to the final plat stating that the owners of Lots 90-93 are responsible for ownership and maintenance of the road in Tract A. The Homeowners Association (HOA) is responsible for ownership and maintenance of the 5-foot-wide public access sidewalk.

Tract D – Private Street

81. Prior to final plat approval, a note shall be added to the final plat stating that the owner of Lot 124 is responsible for ownership and maintenance of Tract D.

Tract E – Private Parking

82. Prior to final plat approval, a note shall be added to the final plat stating that Tract E, Private Parking, is to be owned and maintained by the Homeowners and/or Homeowners Association (HOA).

Tract G – Private Street

83. Prior to final plat approval, the final plat shall be revised to include a 25-foot curb radii on both sides of Tract G (Private Street). A note should be added to the final plat stating the Lots 64-69 and/or the Homeowners Association (HOA) are responsible for ownership and maintenance of Tract G, as Tract G provides access to the stormwater facility on Tract F for maintenance activities and inspection purposes.

Tract H – Private Parking

84. Prior to final plat approval, the final plat shall be revised to include a 25-foot curb radii on both sides of Tract H (Private Parking). A note should be added to the final plat stating the Lots 64-69 and/or the Homeowners Association (HOA) are responsible for ownership and maintenance of Tract H.

All Private Streets

85. Prior to final plat approval, a note is to be added to the plat stating that 'on-street parking is prohibited on both sides of Tract A, Tract D, and Tract G.

Streetlighting

86. Prior to final plat approval a note is to be added to the plat stating that the streetlight that serves Tract G and H is to be metered separately and is to be owned and maintained by Lots 64-69 and/or the Homeowners Association (HOA).

Prior to Final Acceptance:

Planning:

87. The applicant shall delineate the soil gas contamination area and work with appropriate jurisdictions to mitigate the soil gas contamination.
88. Permanent signs and fencing shall be installed at the edge of the critical area buffers per CMC 16.51.210.B and C. Sign and fencing specifications shall be submitted to the City for review and approval prior to installation.

Engineering:

89. Prior to final acceptance of the first phase that is constructed, regardless of the Phase referenced on the Preliminary Plat, the applicant is to provide proof of payment to the City of Vancouver of the Proportionate Share Fees in the amount of $137,800.00.
90. Prior to final acceptance the applicant shall be required to install the 'No Parking and Towing' signs on the private roads and alleys.

Prior to Final Occupancy:

Planning:

91. Two off street parking spaces are required per lot and shall be shown on the building permit submittal.
92. Street trees adjacent to lots shall be installed prior to final occupancy or bonded for per CMC 17.19.030.F.4.

Proposed Plat Notes

1. A homeowner's association (HOA) will be required for this development. Copies of the C.C. & Rs shall be submitted and on file with the City of Camas.

2. Building permits will not be issued by the Building Department until all subdivision improvements are completed and Final Acceptance has been issued by the City.
3. The maximum building lot coverage is 65%.
4. Tree topping is not permitted within this development, nor removal of more than 20 percent of a tree's canopy. Trees that are determined to be hazardous by a licensed arborist may be removed after approval by the City. Required street trees shall be promptly replaced with an approved species.
5. In the event any item of archaeological interest is uncovered during a permitted ground disturbing action or activity, all ground disturbing activities shall immediately cease, and the applicant shall notify the City and the Department of Archaeology and Historic Preservation (DAHP).
6. Tract G – Private Street: An access and maintenance easement is granted to the City over and under the proposed 8-inch water main located in Tract G, Private Street for the purpose of inspection, maintenance and operation of said public water main.
7. The stormwater facilities, including the StormFilter vaults, in Tract B and Tract F are to be owned and maintained by the Homeowners and/or Homeowners Association (HOA), 2-years after final acceptance is issued. Right-of-entry shall be granted to the City for inspection purposes.
8. Ownership and maintenance of the stormwater facilities, including the StormFilter vaults, located in Tract B and Tract F are the responsibility of the Homeowners and/Homeowners Association (HOA), 2-years after the issuance of Final Acceptance, with right-of-entry granted to the city for inspection purposes.
9. Ownership and maintenance of the storm systems located within a private storm easement, are the responsibility of the Homeowners and/Homeowners Association (HOA).
10. Tract J, Tract K, Tract L, and Tract M: These tracts are the locations of the community STEF tanks that serve the development. Ownership and maintenance of the Tracts and the community STEF tanks are the responsibility of the Homeowners Association (HOA). Right-of-entry is to be granted to the city for inspection purposes.
11. Tract A, Private Street, is to be owned and maintained by the owners of Lots 90-93. The Homeowners Association (HOA) is responsible for ownership and maintenance of the 5-foot-wide public access sidewalk.
12. Tract D, Private Street, is to be owned and maintained by the owner of Lot 124.
13. Tract E, Private Parking, is to be owned and maintained by the Homeowners and/or Homeowners Association (HOA).
14. Tract G, Private Street, is to be owned and maintained by the owners of Lots 64-69 and/or the Homeowners Association (HOA) as Tract G provides access to the stormwater facility on Tract F for maintenance activities and inspection purposes.
15. Tract H, Private Parking, is to be owned and maintained by the owners of Lots 64-69.

16. Tract A, Tract D, and Tract G: On-street parking is prohibited on both sides of the street.
17. The streetlight that serves Tract G and H is to be metered separately and is to be owned and maintained by Lots 64-69 and/or the Homeowners Association (HOA).

2. Land Use Narrative



Stella Ridge
Type III Subdivision

Date: September 2025

Submitted to:
City of Camas
Community Development Department
616 NE 4th Avenue
Camas, WA 98607

Applicant:
Allied Development, LLC
16430 Scottsdale Road, Suite 210
Scottsdale, AZ 85254
Joe Deaser
(602) 932-9590
josephd@allieddev.com

AKS Job Number: 12107

AKS ENGINEERING & FORESTRY

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Stella Ridge
Type III Subdivision

Submitted to:

City of Camas
Community Development Department
616 NE 4th Avenue
Camas, WA 98607

Applicant:

Allied Development, LLC
16430 Scottsdale Road, Suite 210
Scottsdale, AZ 85254
Joe Deaser
(602) 932-9590
josephd@allieddev.com

Property Owners:

Daley Dennis
PO BOX 757
Rancho Santa Fe, CA 92067

Applicant's Consultant:

AKS Engineering & Forestry, LLC
9600 NE 126th Avenue, Suite 2520
Vancouver, WA 98682

Contact(s): Michael Andreotti, RLA
Email: andreottim@aks-eng.com
Phone: (360) 882-0419

Site Location:

4511 NW 18th Avenue
Camas, WA 98607

Clark County Parcels:

125193-000, 986055-381, and 125185-000

Site Size:

±24.41 acres (±1,063,300 square feet)

Land Use Districts:

Multifamily Residential-18 (MF-18)

I. Executive Summary

Through this application, Allied Development, LLC (Applicant), requests approval from the City of Camas (City) to subdivide the subject site (described below) into a 158-lot subdivision (Stella Ridge Subdivision) for the future construction of 158 single-family homes. The subdivision will gain access from NW Brady Road and NW 20th Avenue from the east and NW 18th Avenue from the south. Access to the individual lots will be provided through an internal street network that is being constructed with this project. Each lot will be provided with sanitary sewer, stormwater, and water service connections. Other dry utilities will also be provided for each lot. In addition to this narrative, the application package includes the materials necessary for the City to review and approve this submittal, including Preliminary Plans, Stormwater Technical Information Report (TIR), Geotechnical Site Investigation Report, Transportation Impact Study, Archaeological Predetermination, Critical Areas Assessment and Preliminary Mitigation Plan, Title Report, Pre-Application Conference Report, Mailing Labels, and State Environmental Policy Act (SEPA) checklist.

The highlights of this project, which will be discussed further in this narrative, include the following:

- Subdivision with 158 single-family lots
- 5.97 acres of open space for protection of critical areas.
- Construction of stormwater, parking, and private street tracts to serve the subdivision
- Construction of an internal street network to serve the subdivision.
- Construction of all necessary utilities needed to serve the development.

The written narrative includes findings of fact demonstrating that the application complies with all applicable approval criteria. These findings are supported by substantial evidence, including Preliminary Plans and other written documentation. This information, which is included in this application package, provides the basis for the City to approve the application.

II. Site Description/Setting

The subject site consists of three parcels and is ±24.41 acres in size. The site is addressed as 4511 NW 18th Avenue, Camas, WA 98607. The property is identified as Parcel Numbers 125193-000, 986055-381, and 125185-000 of the Southeast Quarter of Section 5, Township 1 North, Range 3 East; Northeast Quarter of Section 8, Township 1 North, Range 3 East; Southwest Quarter of Section 4, Township 1 North, Range 3 East, Willamette Meridian. The site is zoned Multifamily Residential-18 (MF-18) and is currently vacant. Properties to the northeast of the site are zoned Light Industrial Park/Business Park (LI/BP). The properties northwest and west of the site are zoned Business Park (BP). South of the site, across NW 18th Avenue, are properties zoned Residential-7,500 (R-7.5). South of the site, across NW 20th Avenue are properties zoned Community Commercial (CC). East of the site, across NW Brady Road, are properties zoned Residential-6,000 (R-6). The parcels to the north and northwest are currently vacant. Parcels west of the site are in use as a light industrial campus. The parcels to the south across NW 18th Avenue and NW 20th Avenue are in use a single-family residential. The parcels east of the site across NW Brady Road are in use as a single-family residential and a stormwater facility. The parcel east of the site along NW 18th Avenue is in use as a City water tower.

The site fronts NW Brady Road to the east, and NW 18th Avenue and NW 20th Avenue to the south. Access to the site is currently gained from NW 20th Avenue and NE 18th Avenue. NW Brady Road is classified as a 3-Lane Arterial road with a minimum 75.5-foot existing right-of-way, 8-foot attached sidewalk, and 46-foot paved width along the site frontage. NW 20th Avenue is classified as a 2-Lane Local/Sprinklered street

with a 52-foot existing right-of-way, 28-foot paved surface, and 5-foot detached sidewalk on the south side. NE 18th Avenue is classified as 2-Lane Collector with an existing 40-foot right-of-way and varied pavement width along the site frontage.

The site has rolling terrain that generally slopes from the south to the northeast. According to Clark County Geographic Information Services (GIS), no parts of the site have slopes greater than 15 percent and there are no areas of potential instability identified on-site. The existing vegetation on-site consists of grasses and shrubs, with deciduous and evergreen trees clustered in the middle of the site. AKS Engineering & Forestry, LLC (AKS) performed a Critical Areas Assessment for the site and identified three wetlands on site. The archaeological predictive for the site is low-moderate to moderate-high, and there are mapping indicators for archaeological site buffers on-site. All critical areas will be discussed in further detail later in this narrative.

III. Applicable Review Criteria

City of Camas Municipal Code

Title 12 Streets, Sidewalks and Public Places

Chapter 12.24 - Street Names

(…)

Response: All planned streets have been named according to the City of Camas *Street Naming Manual* (October 2010) and as identified in the pre-application report. Street names depicted on the Preliminary Plans are placeholders, and final road names will be determined prior to final platting.

Chapter 12.44 - Complete Streets Policy

(…)

12.44.030 - Policy.

(…)

F. Complete streets design recommendations will be incorporated into all publicly and privately funded projects as appropriate. The following complete streets components must be evaluated and considered in all phases of transportation project planning, design, construction, and operation:

1. Sidewalks and crosswalks.
2. Roadway and pedestrian scale lighting.
3. Bicycle accommodation.
4. Landscaping.
5. Use of raised medians for traffic safety, traffic flow and pedestrian refuge.
6. Adequate buffer areas for pedestrian safety, drainage and landscaping.
7. Lane widths appropriately sized for use and context of surrounding land uses.
8. On-street parking where appropriate for surrounding land uses.
9. Signage.

10. Level of connectivity to the existing transportation network.

Response: All roads within the project have been designed to comply with the City of Camas Complete Streets Policy. Sidewalks, crosswalks, roadways, landscaping, lighting, parking, signage, and other transportation facilities will be constructed to meet Camas Municipal Code (CMC).

Title 13 Public Services

Division I Water

Chapter 13.52 - Water System Development Charges

(…)

Response: It is understood that System Development Charges (SDCs) and connection fees described in this chapter apply to this project and that payment of the fees is required prior to connection. Water mains will be extended into the site, and each lot will be provided a service lateral from the main.

Division II Sewer System

Chapter 13.72 - Sewer Service Development Charge

(…)

Response: It is understood that SDCs and connection fees described in this section apply to this project and that payment of the fees is required prior to connection. Sanitary sewer mains will be extended into the site, and each lot will be served by a service lateral.

Title 14 Stormwater Provisions

Chapter 14.02 - Stormwater Control

(…)

Response: The stormwater generated by the proposed site improvements will be collected on-site and conveyed to two stormwater facilities for mechanical treatment and detention. The stormwater facilities will be privately owned and maintained by the homeowners' association (HOA). The stormwater improvements are designed to follow the pre-developed drainage pattern, flowing to the ultimate discharge point in the northeast corner of the site to be released via outfall and energy dissipator at approved rates. All proposed stormwater improvements are designed per City of Camas standards and the Washington State Department of Ecology (ECY) 2024 Stormwater Management Manual for Western Washington (SWMMWW). Refer to the Preliminary Stormwater Technical Information Report (TIR) and Preliminary Plans included with this application for more information.

Chapter 14.06 - Erosion and Sediment Control

(…)

14.06.030 - Applicability.

Any person proposing to undertake any land-disturbing activity, with the exception of any small parcel development, shall be required to meet the following standards:

A. Submit an erosion prevention/sediment control plan in compliance with this chapter which shall set forth the proposed erosion prevention/sediment

control measures and shall further satisfy the criteria of the standard details and specifications for erosion prevention/sediment control plans. The plan shall be submitted and approved by the city prior to the commencement of any land-disturbing activity. In addition, an erosion prevention/sediment control plan shall be submitted and approved by the city prior to the commencement of clearing, grading, fill, excavation, demolition, or construction related to any land development which requires a city permit, requires city approval, or is otherwise subject to SEPA review including, but not limited to, the following:

1. Subdivisions;

(…)

Response: This application is for a Type III Subdivision within the City of Camas; therefore, an Erosion and Sediment Control Plan is required. A Preliminary Erosion Control Plan is included in the Preliminary Plans. A detailed and site-specific Erosion Control Plan will be provided with final construction plans for review and approval by the City.

Title 15 Buildings and Construction

Chapter 15.04 - Building Code

15.04.010 - Adoption of referenced codes.

(…)

Response: This application is for a Type III Subdivision, and no structures are proposed with this application. Future single-family residences will be constructed on the lots created with this application. Those structures will be reviewed during the building permit review process. All future buildings will receive building permit approval prior to construction.

15.04.030 - Amendments to the referenced codes.

The adopted codes are amended as follows:

(…)

D. International Fire Code.

1. A new subsection is added to Section 907.1.1 to provide as follows:

(…)

12. Permits shall be obtained from the fire department as follows:

a. Except for one and two-family dwellings and as specified in Section 105 of the building code and Section 105R in the International Residential Code no building or structure regulated by the building and/or fire code shall be erected, constructed, enlarged, altered, repaired, moved, removed, converted or demolished unless a separate permit for each building or structure has first been obtained from the fire department.

b. A permit shall be obtained from the fire department prior to engaging in activities, operations, practices, or functions as specified in Section 105 of the fire code.

(…)

Response: There is an existing fire hydrant at the intersection of NW 20th Avenue and NW Brady Road in the northwest quadrant of the intersection. There is also an existing fire hydrant on the north side of NW 18th Avenue just to the east of the site. Fire hydrants are planned throughout the site and will be installed during construction. All planned fire hydrants within the subdivision will meet spacing requirements and all future homes in the development will be provided with fire sprinklers, as required by the City of Camas. Emergency access for all lots in the site will be from the existing and planned public streets. This project will comply with all other requirements of the International Fire Code (IFC) as adopted and amended by the City of Camas.

Chapter 15.17 - Automatic Fire Sprinklers

(…)

Response: This application is for a 158-lot subdivision, and no buildings are proposed at this time. All future homes in the subdivision will be provided with fire sprinklers as required by the City of Camas. This project will comply with all other requirements of the International Fire Code (IFC) as adopted and amended by the City of Camas.

Chapter 15.50 - Clearing and Grading

Response: Site clearing, grading, and excavation are required for the construction of this project; therefore, a Grading Permit is required. Grading plans are included in the Preliminary Plans and grading plans will be included in the engineering plans for final approval by the City.

Title 16 Environment

Chapter 16.07 - SEPA Categorical Exemption and Threshold Determinations

(…)

16.07.020 - Exemption levels.

A. The city establishes the following exempt levels for minor new construction based on local conditions, which is consistent with WAC 197-11-800(1):

Project Types	Exempt Levels in Camas
Single-family residential	Up to 9 dwelling units
Multifamily residential	Up to 9 dwelling units
Agricultural structures	Up to 30,000 square feet
Office, school, commercial, recreational, service or storage buildings (including associated parking lots)	Up to 30,000 square feet and associated parking lots of up to 40 spaces.
Parking lots not associated with a structure	Up to 20 parking spaces
Landfills and excavation	Up to 500 cubic yards

(…)

Response: This project is for a Type III Subdivision for the creation of 158 single-family residential lots; therefore, this project is not exempt from the State Environmental Policy Act (SEPA). A SEPA checklist has been prepared and is included with this application.

16.07.040 - Environmental checklist.

(…)

Response: A SEPA checklist has been prepared and submitted with this application. The lead agency for the SEPA checklist is the City of Camas.

Chapter 16.31 - Archaeological Resource Preservation

(…)

16.31.070 - Predetermination report required.

(…)

Response: This site is greater than 5 acres in size and according to Clark County GIS, the site's mapped archaeological probability is between low-moderate and moderate-high; therefore, an Archaeological Predetermination Report is required for this project. An Archaeological Predetermination Report was completed by Applied Archaeological Research, Inc. (AAR) on September 11, 2025. That report is included in this application. AAR completed a field survey and a records review was performed for records on file at the Department of Archaeology and Historic Preservation (DAHP). AAR did not identify any archaeological recourse and no structures greater than 45 years in age or structures that meet the requirements for listing in the National Register of Historic Places exist on site. Refer to the Archaeological Predetermination Report included with this application for more information.

Chapter 16.51 - General Provisions for Critical Areas

(…)

16.51.090 - Applicability.

The following proposed activities are subject to the criteria, guidelines, report requirements, conditions, and performance standards in this title:

(…)

H. Subdivision;

Response: This application is for a Type III Subdivision, for the creation of 158 single-family residential lots; therefore, this project is subject to the criteria, guidelines, conditions, and requirements of this chapter. AKS has prepared a Critical Areas Assessment and Preliminary Mitigation Plan for the site. Critical area protection, impacts, and mitigation are described in the Critical Areas Assessment and Preliminary Mitigation Plan.

(…)

16.51.130 Review required.

A. Review and evaluate the critical area report;

B. Determine whether the development proposal conforms to the purposes and performance standards of these provisions;

C. Assess potential impacts to the critical area and determine if they are necessary and unavoidable; and

D. Determine if any mitigation proposed by the applicant is sufficient to protect the functions and values of the critical area and public health, safety, and welfare concerns consistent with the goals, purposes, objectives, and requirements of these provisions.

Response: A Critical Areas Assessment and Preliminary Mitigation Plan was completed by AKS for the subject site. This report includes details on the protection, impacts, and mitigation of impacts for the on-site critical areas. Refer to the Critical Areas Assessment and Preliminary Mitigation Plan included with this application for additional information.

16.51.160 Mitigation requirements.

A. The applicant shall avoid all impacts that degrade the functions and values of a critical area or areas. Unless otherwise provided in these provisions, if alteration to the critical area is necessary, all adverse impacts to or from critical areas and management zones resulting from a development proposal or alteration shall be mitigated in accordance with an approved critical area report and SEPA documents.

(…)

Response: Wetland and wetland buffer impacts will occur with this project. The impacts are unavoidable due to City requirements for site access and circulation, grading, minimum lot dimensions, and required density. Wetland buffer reduction, wetland buffer averaging, and wetland mitigation, will be provided as identified in the Critical Areas Assessment and Preliminary Mitigation Plan. Refer to the Preliminary Plans and Critical Areas Assessment and Preliminary Mitigation Plan included with this application for more information.

Chapter 16.53 - Wetlands

(…)

Response: AKS prepared a Critical Areas Assessment and Preliminary Mitigation Plan for the site. The assessment identified three on-site wetlands, identified as Wetland A, B, and C. Wetland A is a Category III, seasonally saturated PEM wetland with an 80-foot high intensity land use water quality buffer, located in the eastern portion of the site. Wetland B is a Category IV, isolated seasonally saturated PEM wetland with a 50-foot high intensity land use water quality buffer, located in the western portion of the site. Wetland C is a Category III, isolated seasonally saturated PFO/PEM wetland with an 80-foot high intensity land use water quality buffer, location in the center of the site. The majority of Wetland A and Wetland C will be protected with the project, and a portion of Wetland A and Wetland B will be filled for the site to meet transportation and circulation requirements. The application will also utilize buffer reduction and buffer averaging to complete the project. Mitigation will be provided for all critical area impacts of the project. Refer to the Critical Areas Assessment and Preliminary Mitigation Plan included in this application for additional information.

Chapter 16.55 - Critical Aquifer Recharge Areas

(…)

16.53.030 Critical area report—Additional requirements for wetlands.

Response: AKS completed a Critical Areas Assessment and Preliminary Mitigation Plan that is included in the application package. Impacts to critical areas will occur on-site with this project and mitigation for these impacts is provided in the report. Refer to the Critical

Areas Assessment and Preliminary Mitigation Plan included in this application for additional information.

16.53.040 Standards.

(…)

B. Wetland Buffers.

Buffers. Wetland buffer widths shall be determined by the responsible official in accordance with the standards below:

1. All buffers shall be measured horizontally outward from the delineated wetland boundary or, in the case of a stream with no adjacent wetlands, the ordinary high water mark as surveyed in the field.

2. Buffer widths are established by comparing the wetland rating category and the intensity of land uses proposed on development sites per Tables 16.53.040-1, 16.53.040-2, 16.53.040-3 and 16.53.040-4. For Category IV wetlands, the required water quality buffers, per Table 16.53.040-1, are adequate to protect habitat functions.

Response: Wetland A is a Category III, seasonally saturated PEM wetland with an 80-foot high intensity land use water quality buffer, located in the eastern portion of the site. Wetland B is a Category IV, isolated seasonally saturated PEM wetland with a 50-foot high intensity land use water quality buffer, located in the western portion of the site. Wetland C is a Category III, isolated seasonally saturated PFO/PEM wetland with an 80-foot high intensity land use water quality buffer, location in the center of the site. The application will utilize buffer reduction and buffer averaging to complete the project. Mitigation will be provided for all critical area impacts of the project. Refer to the Critical Areas Assessment and Preliminary Mitigation Plan included with this application for additional information.

16.53.050 Wetland permits.

A. General.

(…)

Response: Road construction, construction of stormwater facilities, and residential lots will occur within portions of the wetlands and their buffers. Therefore, a wetland permit is required with this project. Refer to the Critical Areas Assessment and Preliminary Mitigation Plan included with this application for additional information.

B. Standards—General. Wetland permit applications shall be based upon a mitigation plan and shall satisfy the following general requirements:

1. The proposed activity shall not cause significant degradation of wetland functions;

2. The proposed activity shall comply with all state, local, and federal laws, including those related to sediment control, pollution control, floodplain restrictions, stormwater management, and on-site wastewater disposal.

Response: AKS has prepared a Critical Areas Assessment and Preliminary Mitigation Plan that is designed to satisfy the requirements of this section. Wetland B and a small portion of Wetland A will be filled with this project due to planned transportation and circulation improvements. As allowed by CMC 16.53.050, wetland buffer reduction and wetland buffer averaging are planned to avoid impacts to Wetland C and the protected portion of Wetland A. Wetland fill will be required for Wetland B due to unavoidable impacts for transportation and circulation. Mitigation will be provided for the necessary wetland fill. Refer to the Preliminary Plans and Critical Areas Assessment and Preliminary Mitigation Plan included with this application for additional information.

> C. Buffer Standards and Authorized Activities. The following additional standards apply for regulated activities in a wetland buffer to ensure no net loss of ecological functions and values:
>
> (…)
>
> 1. Buffer Reduction Incentives. Standard buffer widths may be reduced under the following conditions, provided that functions of the post-project wetland are equal to or greater after use of these incentives.
>
> a. Lower Impact Land Uses. The buffer widths recommended for proposed land uses with high-intensity impacts to wetlands can be reduced to those recommended for moderate-intensity impacts if both of the following criteria are met:
>
> i. A relatively undisturbed, vegetated corridor at least one hundred feet wide is protected between the wetland and any other priority habitats that are present as defined by the Washington State Department of Fish and Wildlife [8]; and
>
> ii. Measures to minimize the impacts of the land use adjacent to the wetlands are applied, such as infiltration of stormwater, retention of as much native vegetation and soils as possible, direction of noise and light away from the wetland, and other measures that may be suggested by a qualified wetland professional.
>
> b. Restoration. Buffer widths may be reduced up to twenty-five percent if the buffer is restored or enhanced from a pre-project condition that is disturbed (e.g., dominated by invasive species), so that functions of the post-project wetland and buffer are equal or greater. To the extent possible, restoration should provide a vegetated corridor of a minimum one hundred feet wide between the wetland and any other priority habitat areas as defined by the Washington State Department of Fish and Wildlife. The habitat corridor must be protected for the entire distance between the wetland and the priority habitat area by some type of permanent legal protection such as a covenant or easement. The restoration plan must meet requirements in subsection D of this section for a mitigation plan, and this section for a critical area report.
>
> c. Combined Reductions. Buffer width reductions allowed under subsections (C)(1)(a) and (C)(1)(b) of this section may

be added provided that minimum buffer widths shall never be less than seventy-five percent of required buffer width for all Categories I and II, or less than fifty feet for Category III wetlands, and twenty-five feet for all Category IV wetlands.

Response: Buffer reduction and buffer averaging is planned for Wetland A and C buffers. The application will generally direct noise and light away from the wetland and rear yard fences will be constructed with the homes to help prevent intrusion into the protected wetlands by pets. The reduced buffer will also be restored by removing invasive species and installing native plant species. Refer to the Preliminary Plans and Critical Areas Assessment and Preliminary Mitigation Plan included with this application for additional information.

2. Buffer Averaging. Averaging buffers is allowed in conjunction with any of the other provisions for reductions in buffer width (listed in subsection (C)(1) of this section) provided that minimum buffer widths listed in subsection (C)(1)(c) of this section are adhered to. The community development department shall have the authority to average buffer widths on a case-by-case basis, where a qualified wetlands professional demonstrates, as part of a critical area report, that all of the following criteria are met:

   a. The total area contained in the buffer after averaging is no less than that contained within the buffer prior to averaging;

   b. Decreases in width are generally located where wetland functions may be less sensitive to adjacent land uses, and increases are generally located where wetland functions may be more sensitive to adjacent land uses, to achieve no net loss or a net gain in functions;

   c. The averaged buffer, at its narrowest point, shall not result in a width less than seventy-five percent of the required width, provided that minimum buffer widths shall never be less than fifty feet for all Category I, Category II, and Category III wetlands, and twenty-five feet for all Category IV wetlands; and

   d. Effect of Mitigation. If wetland mitigation occurs such that the rating of the wetland changes, the requirements for the category of the wetland after mitigation shall apply.

Response: Buffer averaging is planned for the impacted portions for Wetland A and Wetland C buffers. The application will impact ±11,222 square feet of buffer and will average in ±18,906 square feet of buffer. The proposed buffer will be not less than 75 percent of the required width. Refer to the Preliminary Plans and Critical Areas Assessment and Preliminary Mitigation Plan included with this application for additional information.

(…)

3. Stormwater Facilities. Stormwater facilities are only allowed in buffers of wetlands with low habitat function (less than four points on the habitat section of the rating system form); provided, the facilities shall be built on the outer edge of the buffer and not degrade the existing buffer function, and are designed to blend with the natural landscape. Unless determined otherwise by the responsible official, the following activities shall be considered to degrade a

wetland buffer when they are associated with the construction of a stormwater facility:

Response: No stormwater facilities are proposed in the buffers. Refer to the Preliminary Plans and Critical Areas Assessment and Preliminary Mitigation Plan included with this application for additional information.

4. Road and Utility Crossings. Crossing buffers with new roads and utilities is allowed provided all the following conditions are met:

a. Buffer functions, as they pertain to protection of the adjacent wetland and its functions, are replaced; and

b. Impacts to the buffer and wetland are minimized.

(…)

Response: One planned road, NW Tidland Street, will cross the buffer for Wetland C. Buffer averaging will be used to replace the impacted buffer. Refer to the Preliminary Plans and Critical Areas Assessment and Preliminary Mitigation Plan included with this application for additional information.

Chapter 16.59 - Geologically Hazardous Areas

(…)

Response: A Geotechnical Soil Analysis Report was completed by Columbia West on May 28, 2025. Site and soil conditions are detailed in that Geotechnical Soil Analysis Report. Refer to the Geotechnical Soil Analysis Report included with this application for more information.

Chapter 16.61 - Fish and Wildlife Habitat Conservation Areas

(…)

Response: AKS prepared a Critical Areas Assessment and Preliminary Mitigation Plan for the site and determined that no fish and wildlife habitat conservation areas exist within the project boundary. Refer to the Critical Areas Assessment and Preliminary Mitigation Plan included with this application for additional information.

Title 17 Land Development

Chapter 17.11 - Subdivisions

(…)

17.11.030 - Preliminary subdivision plat approval.

A. Preapplication.

1. In accordance with CMC Chapter 18.55 the applicant must proceed with the formal preapplication process prior to application submittal review.

2. The applicant shall submit to the community development department the preapplication form and copies of their proposal drawn to an engineer scale on paper, showing lot sizes, topography, and overall lot dimensions.

Response: A pre-application conference was held on April 3, 2025, and the meeting notes for the pre-application conference were issued on April 14, 2025. The Pre-Application Conference Report is included with this application.

B. **Application. In addition to those items listed in CMC 18.55.110, the following items are required, in quantities specified by community development department, for a complete application for preliminary subdivision approval. Items may be waived if, in the judgment of the community development director or designee, the items are not applicable to the particular proposal:**

1. **Completed general application form as prescribed by the community development director, with the applicable application fees;**
2. **A complete and signed SEPA checklist. The SEPA submittal should also include a legal description of the parcel(s) from deed(s);**
3. **Complete applications for other required land use approvals applicable to the proposal;**
4. **A vicinity map showing location of the site;**
5. **A survey of existing significant trees as required under CMC Section 18.13.045;**
6. **All existing conditions shall be delineated. Site and development plans shall provide the following information:**
    - a. **A plat map meeting the standards identified in CMC Section 17.01.050,**
    - b. **Owners of adjacent land and the names of any adjacent subdivisions,**
    - c. **Lines marking the boundaries of the existing lot(s) (any existing lot to be eliminated should be a dashed line and so noted),**
    - d. **Names, locations, widths and dimensions of existing and proposed public street rights-of-way and easements and private access easements, parks and other open spaces, reservations and utilities,**
    - e. **Location of existing and proposed sidewalks, street lighting and street trees,**
    - f. **Location, footprint and setbacks of all existing structures on the site,**
    - g. **Lot area and dimensions for each lot,**
    - h. **Location of proposed new property lines and numbering of each lot,**
    - i. **Location of the proposed building envelopes and sewer tanks,**
    - j. **Location, dimension and purpose of existing and proposed easements. Provide recorded documents that identify the nature and extent of existing easements,**
    - k. **Location of any proposed dedications,**
    - l. **Existing and proposed topography at two-foot contour intervals extending to five feet beyond project boundaries,**
    - m. **Location of any critical areas and critical area buffers to indicate compliance with all applicable provisions of the critical areas legislation,**

n. Description, location and size of existing and proposed utilities, storm drainage facilities and roads to service the lots,

o. Location of all existing fire hydrants within five hundred feet of the proposal; and

p. Show location and height of proposed retaining walls. Provide cross sections for retaining walls over four-feet in height.

7. For properties with slopes of ten percent or greater a preliminary grading plan will be required with the development application that shows:

a. Two-foot contours,

b. The proposed lots and existing topography,

c. The proposed lots with proposed topography, and

d. Total quantities of cut and fill;

8. Preliminary stormwater plan and preliminary stormwater technical information report (TIR). The preliminary stormwater TIR is to be prepared in accordance with Ecology's latest edition Stormwater Management Manual for Western Washington (SWMMWW);

9. For properties with development proposed on slopes of ten percent or greater a preliminary geotechnical report will be consistent with CMC Chapter 16.59;

10. Clark County assessor's maps which show the location of each property within three hundred feet of the subdivision;

11. Applicant shall furnish one set of mailing labels for all property owners as provided in CMC Section 18.55.110;

12. Complete and submit a transportation impact study to determine the adequacy of the transportation system to serve a proposed development and to mitigate impacts of the proposal on the surrounding transportation system; and

13. A narrative addressing ownership and maintenance of open spaces, stormwater facilities, public trails and critical areas, and the applicable approval criteria and standards of the Camas Municipal Code. It should also address any proposed building conditions or restrictions.

14. An engineering estimate of costs for site improvements, both public and private.

(…)

Response: This application is for a Type III Subdivision for the creation of 158 single-family residential lots. This application package contains all the requirements listed in CMC 18.55.110 and the materials listed in this section including, Preliminary Plans that contain an Existing Conditions Plan, Vicinity Map, Preliminary Subdivision Plat, a Preliminary Composite Utility Plan, a Preliminary Tree Preservation and Removal Plan, a Preliminary Street Lighting Plan, a Preliminary Grading, Demolition, and Erosion Control Plan, a Preliminary Stormwater Plan, and a Preliminary Circulation Plan. Additionally, a SEPA checklist, an Archaeological Predetermination Report, a Stormwater TIR, a Geotechnical Soil Analysis

Report, a Transportation Impact Study, a Critical Areas Assessment and Preliminary Mitigation Plan, a Title Report, a Preliminary Tree Report, Mailing Labels, a Pre-Application Conference Report, and this Narrative are included in the application.

D. Criteria for Preliminary Plat Approval. The hearings examiner decision on an application for preliminary plat approval shall be based on the following criteria:

1. The proposed subdivision is in conformance with the Camas comprehensive plan, parks and open space comprehensive plan, neighborhood traffic management plan, and any other city adopted plans;

Response: The planned subdivision has been designed to meet all applicable goals of the Camas Comprehensive Plan. This project will provide stormwater, sewer, and water services for each lot in the planned subdivision. Additionally, roads, franchise utilities, street trees and landscape strips, street lighting, and pedestrian and circulation routes will be provided with this subdivision. These planned improvements will assist in serving the site, while mitigating impacts to the surrounding area. This project will provide housing and open space areas for the community by creating 158 single-family residential lots and a large open space tract for the protection of on-site critical areas. The planned open space tract will assist in blending the natural and built environments. A Transportation Impact Study has also been prepared.

2. Provisions have been made for water, storm drainage, erosion control and sanitary sewage disposal for the subdivision that are consistent with current standards and plans as adopted in the Camas Design Standard Manual;

Response: The planned subdivision will provide stormwater management, and water and sanitary sewer utilities. The stormwater generated by the proposed site improvements will be collected on-site and conveyed to two stormwater facilities for mechanical treatment and detention. The stormwater facilities will be privately owned and maintained by the homeowners' association (HOA). The stormwater improvements are designed to follow the pre-developed drainage pattern, flowing to the ultimate discharge point in the northeast corner of the site to be released via outfall and energy dissipator at approved rates. All proposed stormwater improvements are designed per City of Camas standards and the ECY 2024 SSWMMWW.

Water service for the site will be provided with a new proposed water main that will be looped through the site and tied into existing City of Camas water mains in NW 20th Avenue, NW 18th Avenue, and NW Brady Road. All lots will be provided with individual water meters and services, and all water improvements will be designed and constructed per City of Camas Engineering standards.

Sanitary sewer service for the project will be provided by new proposed sanitary sewer mains on-site, with existing connection points to the south in NW 20th Avenue and to the northwest in NW Brady Road. Service laterals for each lot will be provided via these mains, with each lot to be served with an on-lot Septic Tank Effluent Filter (STEF) tank system

constructed with the home-build. All sanitary sewer improvements will be designed and constructed per City of Camas Engineering standards.

3. **Provisions have been made for road, utilities, street lighting, street trees and other improvements that are consistent with the six-year street plan, the Camas Design Standard Manual and other state adopted standards and plans;**

Response: All planned roads meet or exceed the standards of the City of Camas six-year street plans and the Camas Design Standards Manual. All public roads within the planned subdivision will be constructed to 2-Lane Local/Sprinklered standards with a 52-foot-wide right-of-way, a 28-foot-wide paved surface, and 7-foot-wide planter strips and 5-foot-wide sidewalks on both sides of the road. NW 20th Avenue will be extended into the site, fully constructed to the 2-Lane Local/Sprinklered standards within the site's boundary, and the existing partially improved north half of NW 20th Avenue will be improved with a 7-foot-wide planter strip and 5-foot-wide sidewalk along the site's frontage. Half-width improvements will be provided for NW 18th Avenue to a 2-Lan Collector standard. Improvements will include a 10-foot right-of-way dedication, 18-foot half-width pavement, 6-foot planter strip, and 6-goot detached sidewalk. Planter strips are provided along public streets for street trees and street lighting. A Preliminary Landscape Plan, Preliminary Tree Preservation and Removal Plan, and a Preliminary Street Lighting Plan are included in the Preliminary Plans. Provisions have been made for utilities, as shown in the Utility Plans that are included in the Preliminary Plans. Refer to the Preliminary Plans included with this application for more information.

4. **Provisions have been made for dedications, easements and reservations;**

Response: The planned subdivision will dedicate right-of-way for three new public streets within the project site. NW 20th Avenue, an existing public road, will be extended into the site. Ten feet of right-of-way will be dedicated for NW 18th Avenue. y. Three private street tracts will be created to provide access to lots on-site. A 6-foot private utility easement (PUE) will be provided along the frontage of each lot with the final plat. Refer to the Preliminary Plans included with this application for more information.

5. **The design, shape and orientation of the proposed lots are appropriate to the proposed use;**

Response: As indicated on the Preliminary Plans submitted with this application, all lots are oriented to front a public right-of-way or private street tract and are appropriately shaped to allow for future home construction. Refer to the Preliminary Plans included with this application for more information.

6. **The subdivision complies with the relevant requirements of the Camas land development and zoning codes, and all other relevant local regulations;**

Response: As described and depicted in the plans and documents submitted with this application, this project complies with all requirements of the CMC and other relevant regulations. Refer to the submitted application materials and this narrative for more information.

7. **Appropriate provisions are made to address all impacts identified by the transportation impact study;**

Response: The Applicant's transportation engineering consultant, Kittelson & Associates, prepared a Transportation Impact Study (TIS). Trip generation was calculated for the 158-lot subdivision using the *ITE Trip Generation Manual 11th Edition.* The TIS states the project will generate 1,537 Average Daily Trips (ADT) with 113 a.m. peak hour trips and 153 p.m. peak hour trips. The TIS provides recommends a stop sign be installed on the NW Umatilla Street (Street A in the report recommendations) south bound approach to NW 18th Avenue and maintain vision clearance at all intersection with the development. The TIS also identified seven City of Vancouver proportional share intersection fees to be paid. Refer to the TIS included with this application for more information.

8. **Appropriate provisions for maintenance of commonly owned private facilities have been made;**

Response: All tracts within the subdivision will be owned and maintained by the HOA. Ownership and maintenance responsibility will be identified on the final plat.

9. **Appropriate provisions, in accordance with RCW 58.17.110, are made for:**

   a. **The public health, safety, and general welfare and for such open spaces, drainage ways, streets, or roads, alleys or other public ways, transit stops, potable water supplies, sanitary wastes, parks and recreation, playgrounds, schools and school grounds and all other relevant facts, including sidewalks and other planning features that assure safe conditions at schools bus shelter/stops, and for students who walk to and from school, and**

   b. **The public use and interest will be served by the platting of such subdivision and dedication;**

Response: As stated previously, the proposed development meets all applicable goals of the Camas Comprehensive Plan. The development will protect existing trees on-site to the greatest extent practicable, provide planting of new trees, protect critical areas, and provide mitigation for necessary impacts. The development will construct a street network to provide for vehicle and pedestrian circulation and provide safe walking routes to the school south of the site and nearby parks. The planned project will also pay all applicable impact fees. Refer to the Proposed Development Plans included with this application for more information.

10. **The application and plans shall be consistent with the applicable regulations of the adopted comprehensive plans, shoreline master plan, state and local environmental acts and ordinances in accordance with RCW 36.70B.030.**

Response: All plans and documents submitted with this application meet the requirements of this section.

17.11.040 - Phasing.

The subdivider may develop and record the subdivision in phases. Any phasing proposal shall be submitted for review at preliminary plat. In addition to meeting criteria in CMC Chapter 18.23, approval of the phasing plan shall be based upon making the following findings:

A. The phasing plan includes all land contained within the approved preliminary plat, including areas where off-site improvements are being made.

Response: This application is for a Type III Subdivision for the creation of 158 single-family residential lots, built in up to two phases. A Phasing Plan is included in the Preliminary Plans that are included with this application. Refer to the Preliminary Plans included with this application for additional information.

B. The sequence and timing of development is identified on a map.

Response: A Phasing Plan is included in the Preliminary Plans which identifies the first and second phases. It is anticipated that the phases will be constructed in numerical order; however, there is potential that the order of phase construction could change, or phases could be combined during final engineering. Refer to the Preliminary Plans included with this application for additional information.

C. Each phase shall consist of a contiguous group of lots that meets all pertinent development standards on its own. The phase cannot rely on future phases for meeting any city codes with the exception of storm drainage facilities. Storm drainage must be adequate for each phase, and the stormwater plan must adequately meet the needs of the entire development. Storm drainage facility must be included in the first phase.

Response: Each phase of this project has been designed to be constructed as a complete standalone project. Refer to the Preliminary Plans included with this application for additional information.

D. Each phase provides adequate circulation and utilities. Public works has determined that all street and other public improvements, including but not limited to erosion control improvements, are assured. Deferment of some improvements may be allowed pursuant to CMC Chapter 17.21.

(…)

Response: Each phase of this project has been designed to be constructed as a complete standalone project. Adequate circulation and utilities will be provided for each phase. Refer to the Preliminary Plans included with this application for additional information.

Chapter 17.19 - Design and Improvement Standards

(…)

17.19.020 - Improvements, supervision, inspections and permits required.

A. Required Improvements.

1. Every developer shall be required to grade and pave streets and alleys, install curbs and gutters, sidewalks, monuments, sanitary and storm sewers, water mains, fire hydrants, street lights and street name signs, underground transmission lines, provide and install centralized mail delivery boxes as determined by the U.S. Postal Service, together with all appurtenances in accordance with

specifications and standards in the Camas Design Standards Manual, the six-year street plan, and other state and local adopted standards and plans as may be applicable.

2. Other improvements installed at the option of the developer shall conform to city requirements.

3. Existing wells, septic tanks and septic drain fields shall be abandoned, in accordance with state and county guidelines regardless of lots or properties served by such utility unless otherwise approved by public works director.

Response: Paved streets, complete with curbs, gutters, and sidewalks will be constructed with this project. All lots will be provided with all required utilities, including sanitary sewer, water, and other private utilities. Streetlights, fire hydrants, and mail service delivery boxes will also be constructed with this project. All planned improvements are shown in the Preliminary Plans that are included with this application. There are no existing wells on-site or septic systems that serve the subject site.

17.19.030 - Tract, block and lot standards.

A. Environmental Considerations.

Response: The Applicant proposes to create ±260,070 square feet of open space for the protection of critical areas and natural vegetation. Wetlands A and C on-site will be protected in the open space tract, as many of the existing trees as practicable will also be protected in the open space tract. All other vegetation outside of the improvement area will be protected. Refer to the Proposed Development Plans included with this application for more information.

B. Blocks. Blocks shall be wide enough to allow two tiers of lots, except where abutting a major street or prevented by topographical conditions or size of the property, in which case the approval authority may approve a single tier.

Response: The planned subdivision includes two-tiered blocks where practicable. Lots in the center of the project area will generally create a two-tiered block. The site is bound by NW 20th Avenue and NW 18th Avenue to the south and NW Brady Road to the east. These existing public roads and adjacent critical areas and boundaries prevent two-tiered blocks in these locations. North and west of the site are parcels zoned BP and LI/BP; therefore, no new single-family lots will be constructed on those lots. Along the east boundary is a City owned property with a water tower. For these reasons, single-tiered blocks are proposed along the west, north, and east boundaries of the site. Refer to the Preliminary Plans included with this application for more information.

C. Compatibility with Existing Land Use and Plans.

1. Buffer Between Uses. Where single-family residential lots are to be adjacent to multiple-family, commercial or industrial land use districts, and where natural separation does not exist, adequate landscape buffer strips and/or solid fences for purposes of buffering sound, restricting access, pedestrian safety and privacy shall be provided.

2. Conformity with Existing Plans. The location of all streets shall conform to any adopted plans for streets in the city. The proposed

> land use shall respond to and complement city ordinances, resolutions and comprehensive plans.
>
> 3. Other City Regulations. All land use shall comply with all adopted city regulations. In the event of a conflict, the more restrictive regulation shall apply.
>
> (…)

Response: Rear yard solid fences will be constructed with future homes to provide separation from the residential lots and the business park/light industrial zoning and uses to the north and west and the water tower parcel to the east. NW 20th Avenue is stubbed to the east boundary of the site and will be extended into the site to provide connection to the internal street network. Street connections will also be made to NW 18th Avenue and NW Brady Road. Planned public roads that will circulate through the site have been designed to conform with existing City street standards. Refer to the Preliminary Plans included with this application for additional information.

> D. Lots. The lot size, width, shape and orientation shall conform to zoning provisions and the following:
>
> 1. Each lot must have frontage and access onto a public street, except as may otherwise be provided (e.g., approved private roads, access tracts);

Response: Each lot has been designed to front and have access onto a public or private road. Refer to the Preliminary Plans included with this application for additional information.

> 2. Side Lot Lines. The side lines of lots should generally run at right angles to the street upon which the lots face as far as practical, or on curved streets they shall be radial to the curve;

Response: Lots within the planned subdivision generally have their side lot lines at right angles to the road upon which they front. Refer to the Preliminary Plans included with this application for additional information.

> 3. Building Envelopes. No lot shall be created without a building envelope of a size and configuration suitable for the type of development anticipated:
>
> a. For single-family residential zones, a suitable size and configuration generally includes a building envelope capable of siting a forty-foot by forty-foot square dwelling within the building envelope,
>
> b. For multi-family zones, a suitable size and configuration generally includes a building envelope of twenty feet by forty feet.
>
> c. Other factors in considering the suitability of the size and configuration of any residential lot include the presence of, or proximity to critical areas, adjoining uses or zones, egress and ingress, and necessary cuts and fills;

Response: Building envelopes, in the form of setbacks, are depicted on the Preliminary Plans. Refer to the Preliminary Plans included with this application for additional information.

> 4. Where property is zoned and planned for commercial or industrial use, in conformance to the intent of the comprehensive plan, other

lot dimensions and areas may be permitted at the discretion of the approval authority;

Response: The project site is zoned MF-18; therefore, this standard does not apply.

5. Flag lots, access tracts, and private roads may be permitted only when the community development director or designee finds the applicant meets the criteria listed hereinafter:

(…)

Response: No flag lots are planned with this project; therefore, this standard does not apply.

6. Double Frontage Lots. Residential lots which have street frontage along two opposite lot lines shall be avoided, except for double frontage lots adjacent to an arterial or collector, which must comply with the following design standards:

(…)

Response: No double frontage lots are planned with this subdivision; therefore, this standard does not apply.

E. Tracts and Trails.

(…)

Response: This site is not located in the area of an officially designated trail, and no trails are planned within the on-site open space tracts; therefore, the standards of this section do not apply.

F. Landscaping.

1. Each dwelling unit within a new development shall be landscaped with at least one tree in the planting strip of the right-of-way, or similar location in the front yard of each dwelling unit, with the exception of flag lots and lots accessed by tracts. Required trees shall be a minimum two-inch diameter at breast height (dbh) to create a uniform streetscape (dbh is four and one-half feet above the ground as measured from upside of tree).

2. The city council finds that the existing mature landscaping of trees, and shrubs provide oxygen, filter the air, contribute to soil conservation and control erosion, as well as provide the residents with aesthetic and historic benefits. For these reasons, the city encourages the retention of existing trees that are not already protected as significant trees under the Camas Municipal Code. Generally, the city may allow the tree requirements under subsection (F)(1) of this section to be reduced at the request of the developer, by a ratio of two new trees in favor of one existing tree, provided such trees have been identified on approved construction plans.

3. Prior to final acceptance of any land development, the land developer shall install trees adjacent to or within all common areas and landscape tracts as specified in the Camas Design Standards Manual.

4. Street trees adjacent to individual lots must be installed prior to final occupancy or secured or bonded, and installed prior to expiration of the two-year warranty period, whichever comes first.

5. Landscaping shall conform to plant criteria in the Camas Design Standards Manual. Any planting of trees or shrubs within the right-

> of-way or vision clearance area must be shown on the construction drawings for approval.
>
> 6. Storm drainage facilities, pump stations and other visible facilities shall be required to include a ten foot L2 landscaped buffering in accordance with criteria in the Camas Design Standards Manual if within thirty feet of any street or accessory structure.

Response: One street tree is planned for each lot in the subdivision. Due to driveways, streetlights, and utilities, trees cannot be placed at 30 feet on center or directly in front of each lot throughout the project; however, the total number of required street trees are planned. The Applicant will retain as many existing trees as feasible. Street trees will be installed within the designed timeframe. Landscaping will conform to the Camas Design Standards Manual, and has been designed to not obstruct any vision clearance areas. All stormwater facilities in the planned subdivision have been designed with a 10-foot L2 landscape buffer as required. Refer to the Preliminary Plans included with this application for additional information.

> G. Non-City Utility Easements. Easements for electric lines or other public utilities may be required. Easements for utilities shall be a minimum of six feet in width and centered on front or side lot lines.
>
> (…)

Response: A 6-foot-wide PUE along the front and street side property lines will be provided on the final plat. A 6-foot-wide PUE is shown on the Preliminary Plans. Refer to the Preliminary Plans included with this application for additional information.

> J. Lighting. Street lighting shall conform to the Clark public utility standards and approved by the city. The developer shall bear the cost of the design and installation of the lighting system.

Response: Street lighting will be provided with this project. All lighting will be installed in conformance with City of Camas and Clark Public Utility standards. A Preliminary Street Lighting Plan is included in the Preliminary Plans. Refer to the Preliminary Plans included with this application for additional information.

> K. All residential streets shall conform to the guidelines and standards of the city neighborhood traffic management plan.

Response: All streets in this project have been designed to conform to the guidelines and standards of the *City of Camas Neighborhood Traffic Management Plan* (March 2001). A Preliminary Circulation Plan is included in the Preliminary Plans, and a Transportation Impact Study was prepared for this project. Refer to the Preliminary Plans included with this application for additional information.

> 17.19.040 - Infrastructure standards.
>
> A. Private Street. Private street(s) may be authorized when all of the following occur:
>
> 1. Allowing private streets in the area being developed will not adversely affect future circulation in neighboring lots of property or conflict with an existing adopted street plan;

Response: Three private streets are planned with this project. The private streets are labeled as Tract A, Tract D, and Tract G in the Preliminary Plans. Tract A will gain access from the corner of Whitman Street and NW 21st Avenue. Tract D will gain access from NW 21st Avenue, and Tract G will gain access from NW Tidland Street. Circulation is not required to the north or east and is not proposed through the critical area trat. Therefore, the private roads will not affect future circulation. Refer to the Preliminary Plans included with this application for more information.

2. **Adequate and reasonable provisions are made for the ownership, maintenance, and repair of all utilities and the proposed private streets;**

Response: All private street tracts will be owned and maintained by the HOA. A note describing private street ownership will be included on the final plat.

3. **The proposed private streets can accommodate potential full (future) development on the lots or area being developed;**

Response: Tract A will provide access to four lots. Tract D will provide access to two lots. Tract G will provide access to six lots and the stormwater facility in Tract F. No future lots beyond this subdivision will gain access from the private streets. The private streets have been designed to meet City standards based on the number of lots they provide access to and accommodate full development on the lots that will gain access from the private streets. Refer to the Preliminary Plans included with this application for more information.

4. **Connect to no more than one public street, unless it is an alley;**

Response: None of the planned private streets connect to more than one public street. Refer to the Preliminary Plans included with this application for more information.

5. **Conform to the Camas Design Standard Manual;**

Response: All private streets have been designed to comply with the City of Camas Design Standard Manual. Tract A will serve four lots and is 26 feet wide with no sidewalk planned. Tract B will serve two lots and is 20 feet wide with no sidewalk planned. Tract G provides access to six lots and is 216 feet long. Tract G is 42 feet wide with a 28-foot paved surface and sidewalk on one site. “No Parking” signs will be installed on one side of Tract G and on both sides of Tract A and Tract D. Refer to the Preliminary Plans included with this application for more information.

6. **Alleys shall be privately owned and maintained;**

Response: No alleys are planned with this project; therefore, this standard does not apply.

7. **Access requirements for recycle service, garbage service, and emergency vehicles are provided;**

Response: Garbage and recycling for lots on Tracts A and D will be collected at the right-of-way. Garbage and recycling for Tract G will occur at the lot front, with collection vehicles able to use the parking lots drive aisle in Tract H as a hammerhead turnaround. Refer to the Preliminary Plans included with this application for more information.

8. Provisions for adequate parking enforcement are recorded within a private covenant to ensure emergency vehicle access. These provisions shall be noted on the final plat, e.g. Towing service.

Response: A covenant providing provisions for parking enforcement will be recorded and will be noted on the final plat.

B. Streets.

1. Half Width Improvement. Half width improvements, when determined appropriate by the City Engineer, shall include utility easements, pedestrian pathway, storm water drainage, street lighting and signage, environmental permits, provisions for mitigation improvements and mitigation areas as necessary, bike lanes, and improvements to the centerline of the right-of-way as necessary to provide the minimum structural street section per the Camas Design Standard Manual.

Response: No half-width streets are proposed with the subdivision. Frontage improvements will be constructed for NW 18th Avenue and sidewalk and planter strip will be construction on the existing frontage of NW 20th Avenue when homes are constructed. Refer to the Preliminary Plans included with this application for more information.

2. Streets abutting the perimeter of a development shall be provided in accordance with CMC 17.19.040(B)(1) above, and the Design Standard Manual. Additional paving may be required to ensure safe and efficient roads to exist to serve the land development and provide bike lanes.

Response: No roads are planned abutting the perimeter of the development. Refer to the Preliminary Plans included with this application for more information.

3. The city engineer may approve a delay of frontage street improvements for development proposals under any of the following conditions:

Response: No delay in frontage improvements is requested; therefore, this standard does not apply.

4. In the event the frontage improvement is delayed, the owner must provide an approved form or financial surety in lieu of said improvements.

Response: No delay in frontage improvements is requested; therefore, this standard does not apply.

5. Dedication of additional right-of-way may be required for a development when it is necessary to meet the minimum street width standards or when lack of such dedication would cause or contribute to an unsafe road or intersection.

Response: The site has frontage on NW Brady Road to the east, and NW 18th Avenue and NW 20th Avenue to the south. NW Brady Road is classified as a 3-Lane Arterial and has a minimum 75.5-foot existing right-of-way along the site frontage, no additional dedication is required. NW 20th Avenue is classified as a 2-Lane Local/Sprinklered street with a 52-foot existing right-of-way, no additional right-of-way dedication is required. NE 18th Avenue is classified as 2-Lane Collector with an existing 40-foot right-of-way, 10 feet of right-of-way will be dedicated to provide the required 30-foot right-of-way half width. Refer to the Preliminary Plans included with this application for more information.

6. **Extension. Proposed street systems shall extend existing streets at the same or greater width unless otherwise approved by the public works department and authorized by city council in approval of the plat.**

   a. **Streets and pedestrian/bicycle paths shall be extended to the boundaries of the plat to ensure access to neighboring properties, unless the presence of critical areas or existing development render such extension infeasible. The design shall contribute to an integrated system of vehicular and pedestrian circulation.**

   b. **Grading of steep topography may be necessary to achieve this objective.**

Response: NW 20th Avenue is an existing public road that is stubbed to the east boundary of the site. NW 20th Avenue will be extended into the site and be improved to City of Camas Street Detail ST3 standards. Refer to the Preliminary Plans included with this application for more information.

7. **Names. All street names, street numbers, and building numbers shall be assigned in accordance with CMC 12.24**

Response: All planned streets have been named according to the City of Camas *Street Naming Manual* (October 2010) and as identified in the pre-application report. Street names depicted on the Preliminary Plans are placeholders, and final road names will be determined prior to final platting.

8. **Right-of-way, tract and pavement widths for streets shall be based on Table 17.19.040-1 and Table 17.19.040-2.**

Response: The site has frontage on NW Brady Road to the east, and NW 18th Avenue and NW 20th Avenue to the south. NW 20th Avenue is also stubbed to the site's east boundary. The planned subdivision will extend NW 20th Avenue into the site, construct three new public roads (NW Umatilla Street, NW Tidland Street, and NW 21st Avenue), and provide half-width frontage improvements for NW 18th Avenue.

NW Brady Road is classified as a 3-Lane Arterial and has a minimum 75.5-foot existing right-of-way along the site frontage, 46-foot existing paved width, and 8-foot attached sidewalk along the site frontage. No additional dedication or improvements are required.

Existing NW 20th Avenue is classified as a 2-Lane Local/Sprinklered street with a 52-foot existing right-of-way, 28-foot existing paved with, and a 7-foot planter and 5-foot detached sidewalk on the south side of the road. No additional right-of-way dedication is required and the 7-foot planter strip and 5-foot detached sidewalk will be constructed with the homes on the north side of the road.

NE 18th Avenue is classified as 2-Lane Collector with an existing 40-foot right-of-way and varying pavement width. The Applicant will dedicate an additional 10 feet of right-of-way to provide the required 30-foot right-of-way half width and construction 18-feet of half-width pavement, 6-foot planter strip, and 6-foot sidewalk along the site frontage.

The extension of NW 20th Avenue, NW Umatilla Street, NW Tidland Street, and NW 21st Avenue will be constructed to City of Camas Street Detail ST3 with a 52-foot-wide right-

of-way, a 28-foot-wide paved surface, and 7-foot-wide planter strips and 5-foot-wide sidewalks on both sides of the road. Refer to the Preliminary Plans included with this application for more information.

> 9. Intersections. Any intersection of streets that connect to a public street, whatever the classification, shall be at right angles as nearly as possible, shall not exceed fifteen degrees, and not be offset insofar as practical. All right-of-way lines at intersections with arterial streets shall have a corner radius of not less than twelve feet.

Response: All planned intersections are at right angles, or as close to right angles as possible. Offset intersections are not planned with this project. Refer to the Preliminary Plans included with this application for more information.

> 10. Street Layout. Street layout shall provide for the most advantageous development of the land development, adjoining area, and the entire neighborhood. Evaluation of street layout shall take into consideration potential circulation solutions for vehicle, bicycle and pedestrian traffic, and, where feasible, street segments shall be interconnected.
>
> a. Circulation Plan. Applicants shall submit a circulation plan at application which includes the subject site and properties within six hundred feet of the proposed development site. The plan shall incorporate the following features both on-site and off- site:
>
> i. The circulation plan shall be to an engineering scale at one inch = one hundred feet or the scale may be increased or decreased at a scale approved by the director;
>
> ii. Existing and proposed topography for slopes of ten percent or greater, with contour intervals not more than ten feet;
>
> iii. Environmental sensitive lands (geologic hazards, wetlands, floodplain, shoreline, etc.);
>
> iv. Existing and proposed streets, bicycle/pedestrian pathways, trails, transit routes; and
>
> v. Site access points for vehicles, pedestrians, bicycles, and transit.

Response: A Preliminary Circulation Plan meeting these standards is provided in the Preliminary Plans that are included with this application. The planned street network provides internal circulation and connections to existing infrastructure. Pedestrian circulation will be provided through the street network via sidewalks. On-site critical areas are contained within an open space tract that is depicted on the Preliminary Plans. Circulation is not proposed to the north or west as those properties are zoned LI or BP/LI and access to those parcels will be from NW 18th Avenue or NW Brady Road. Refer to the Preliminary Plans included with this application for more information.

> b. Cross-circulation shall be provided that meets the following:
>
> i. Block lengths shall not exceed the maximum access spacing standards for the roadway class per the

city's design standards manual. If block lengths greater than six hundred feet are approved pursuant to CMC Section 17.19.040.B.10.b.iii., a midway pedestrian connection shall be provided.

Response: Planned blocks are less than 600 feet in length, except where critical areas and tree protection areas and neighboring property constraints make block lengths less than 600 feet long impractical. Tract C is a planned open space tract for critical area and tree protection, which creates block lengths greater than 600 feet from NW Brady Road to NW Tidland Road. Due to the critical area protection, the block length in these areas cannot be reduced. No circulation is proposed or required to the west along NW Umatilla Street; therefore, the block length is greater than 600 feet long. Pedestrian connection is not necessary between the residential subdivision and the existing business. All other blocks within the project area are less than 600 feet in length. Refer to the Preliminary Plans included with the application for more information.

ii. Culs-de-sac and permanent dead-end streets over three hundred feet in length may be denied unless topographic or other physical constraints prohibit achieving this standard.

Response: No dead-end streets over 300 feet in length or cul-de-sacs are planned with this project; therefore, this standard does not apply. Refer to the Preliminary Plans included with this application for more information.

iii. When culs-de-sac or dead-end streets are permitted that are over three-hundred feet, a direct pedestrian and bicycle connection shall be provided to the nearest available street or pedestrian oriented use. Pedestrian connections need to meet Design Standards Manual for ADA accessibility in accordance with PROWAG and ADAAG.

(…)

Response: No dead-end streets over 300 feet in length or cul-de-sacs are planned with this project; therefore, this standard does not apply. Refer to the Preliminary Plans included with this application for more information.

d. Where critical areas are impacted, the standards and procedures for rights-of-way in the critical areas overlay zone shall be followed.

Response: Roadway construction will impact critical areas with this project. AKS has prepared a Critical Areas Assessment and Preliminary Mitigation Plan, which includes information on the critical area impacts and mitigation. Refer to the Critical Areas Assessment and Preliminary Mitigation Plan included with this application for additional information.

e. When the proposed development's average lot size is seven thousand four hundred square feet or less, one additional off- street parking space shall be required for every five units, notwithstanding the requirements of CMC Chapter 18.11. These spaces are intended to be located within a common tract.

(…)

Response: The project's average residential lot size is less than 7,400 square feet; therefore, additional off-street parking is required. There are 158 single-family residential lots planned with this project; therefore, a total of 32 additional parking spaces is required for the site. Thirty-two additional parking spaces are planned with this project. Those parking spaces are distributed throughout the site in common tracts. Refer to the Preliminary Plans included with this application for more information.

> 12. Street Design. When interior to a development, publicly owned streets shall be designed and installed to full width improvement as a means of insuring the public health, safety, and general welfare in accordance with the city comprehensive plans. Full width improvements shall include utility easements, sidewalks, bike lanes as necessary, and control of stormwater runoff, street lighting, and signage, as provided below.
>
> (…)

Response: All planned public streets within the project area have been designed to meet City of Camas design standards. All public roads are designed as City of Camas Street Detail ST3 with a 52-foot-wide right-of-way, a 28-foot-wide paved surface, and 7-foot-wide planter strips and 5-foot-wide sidewalks on both sides of the road. Street signage and lighting, stormwater facilities, and public utilities are also included in the street design. Refer to the Preliminary Plans included with this application for more information.

> 13. Sidewalks shall be constructed as specified in Camas Design Standard Manual. See Table 17.19.040-1 and Table 17.19.040-2 for dimensions.
>
> (…)

Response: All planned public and private streets within the project area have been designed to meet City of Camas design standards and Table 17.19.040-1 and Table 17.19.040-2 of the CMC. Where sidewalks are planned, they have been designed to be constructed as specified in the Camas Design Standard Manual. Refer to the Preliminary Plans included with this application for more information.

> C. Utilities.
>
> (…)
>
> 2. Sanitary sewers shall be provided to each lot at no cost to the city and designed in accordance with city standards.
>
> (…)

Response: Sanitary sewer service for the project will be provided by new proposed sanitary sewer mains on-site, with existing connection points to the south in NW 20th Avenue and to the northwest in NW Brady Road. Service laterals for each lot will be provided via these mains, with each lot to be served with an on-lot STEF tank system constructed with the home-build. All sanitary sewer improvements will be designed and constructed per City of Camas Engineering standards. Refer to the Preliminary Plans included with this application for more information.

> 3. Storm Drainage. The storm drainage collection system shall meet the requirements of the city's officially adopted storm water standards.

(…)

Response: The stormwater generated by the proposed site improvements will be collected on-site and conveyed to two stormwater facilities for mechanical treatment and detention. The stormwater facilities will be privately owned and maintained by the HOA. The stormwater improvements are designed to follow the pre-developed drainage pattern, flowing to the ultimate discharge point in the northeast corner of the site to be released via outfall and energy dissipator at approved rates. All proposed stormwater improvements are designed per City of Camas standards and the Washington State Department of Ecology (ECY) 2024 Stormwater Management Manual for Western Washington (SWMMWW). Refer to the Preliminary Stormwater Technical Information Report (TIR) and Preliminary Plans included with this application for more information.

4. Water System.

(…)

Response: Water service for the site will be provided with new proposed water main looped through the site and tied into existing City of Camas water mains in NW 20th Avenue, NW 18th Avenue, and NW Brady Road. All lots will be provided with individual water meters and services, and all water improvements will be designed and constructed per City of Camas Engineering standards. Refer to the Preliminary Plans included with this application for more information.

Chapter 17.21 - Procedures for Public Improvements

(…)

17.21.030 - Land disturbing activities—Erosion prevention/ sediment control.

Any person, company, corporation, group, entity or jurisdiction proposing to commence any land-disturbing activity, shall be required to meet the following standards:

A. Install all erosion prevention/sediment control measures required by the approved erosion prevention/sediment control plan prior to commencement of work.

B. For all land-disturbing activities of an acre or more, furnish to the city an approved form of security in the amount of two hundred percent of the engineer's estimated cost of the erosion prevention/sediment control measures, including associated labor, shown on the approved erosion prevention/sediment control plan.

C. Construct any storm drainage facilities required to detain and dispose of stormwater generated by the project, prior to commencement of work on other portions of the project. The city may require the construction of a temporary storm drainage facility that would bypass and protect the permanent facility until such time as the rest of the project is complete and ready for the permanent facility to be brought online.

D. Implementation of erosion prevention/sediment control measures in addition to those measures approved on the erosion prevention/sediment control plan may be required to address weather-related problems and to assure compliance with local, state and federal requirements for water quality. Any proposed additional erosion prevention/sediment control measures must be approved by the city prior to use. The city shall have the right to issue a stop work order on all construction not related to erosion prevention/sediment

control until such time as acceptable prevention and control measures are implemented.

Response: A Preliminary Grading, Demolition, and Erosion Control Plan is included in the Preliminary Plans. A detailed and site-specific Erosion Control Plan will be provided with final construction plans for sediment and pollution control. Refer to the Preliminary Plans included with this application for more information.

Title 18 Zoning

Chapter 18.09 - Density and Dimensions

(…)

18.09.050 - Density and dimensions—Multifamily residential zones.

Table 1—Density and Dimensions for Multifamily Residential Zones	
	MF-18
Density	
Maximum density (dwelling units per net acre)	18
Minimum density (dwelling units per net acre)	6.0
Standard lots	
Minimum lot area (square feet)	2,100
Minimum lot width (feet)	26
Minimum lot depth (feet)	60
Maximum gross floor area (GFA) per dwelling unit (square feet)	No max
Setbacks	
Minimum front yard/at garage front (feet)	10/20
Minimum side yard (feet)	3 Note 1
Minimum side yard, flanking a street (feet)	15
Minimum rear yard	10
Lot coverage	
Maximum building lot coverage	65%
Building height	
Maximum building height (feet)	50 Note 5

Table Notes:

1. The non-attached side of a dwelling unit shall be three feet, otherwise a zero-lot line is assumed.
5. Maximum four stories but not to exceed height listed.

Response: The subject site is within the MF-18 zoning district. The gross area for the site is ±24.41 acres, and there are ±5.97 acres of open space tract area planned with this project, resulting in a net area of ±18.44 acres. In the MF-18 zoning district, the minimum required density is six units per net acre, and the maximum allowable density is 18 units per net acre. The required minimum density for the project is 111 units (6 units/acre x 18.44 acres) and the maximum allowable density for the project is 332 units (18 units/acre x 18.44 acres). This project will provide 158 detached single-family residential lots.

The minimum planned lot area is 3,000 square feet in size, with a minimum 30-foot width, and a minimum 100-foot depth. The lot are designed to allow for a minimum front yard setback of 10 feet, minimum garage setback of 20 feet, minimum side setback of 3 feet, minimum street side yard setback of 15 feet, and minimum rear yard setback of 10 feet. The planned lots are large enough for homes to be constructed meeting the maximum building lot coverage of 65 percent and the maximum building height of 50 feet. Lot

dimensions, setbacks, areas, and density statistics are depicted in the Preliminary Plans. Refer to the Preliminary Plans included with this application for additional information.

Chapter 18.11 - Parking

(…)

18.11.030 Location.

Off-street facilities shall be located as hereafter specified. Such distance shall be the maximum walking distance measured from the nearest point of the parking facility to the nearest point of the building that such facility is required to serve:

A. For single-family or two-family dwelling and motels: on the same lot with the structure they are required to serve.

B. For multiple dwelling, rooming or lodging house: two hundred feet.

D. For uses other than those specified above: four hundred feet.

Response: All required parking spaces for the residential lots are located on the same lot as the residence. Refer to the Proposed Development Plans included with this application for more information.

18.11.100 - Residential parking.

Residential off-street parking space shall consist of a parking strip, driveway, garage, or a combination thereof, and shall be located on the lot they are intended to serve.

Response: Off-street parking will be provided for each future single-family home and will consist of garage and driveway spaces. Thirty-two additional off-street parking spaces will be provided in three common parking areas to serve residential parking needs. Refer to the Preliminary Plans included with this application for more information.

18.11.130 - Standards.

The minimum number of off-street parking spaces for the listed uses shall be shown in Table 18.11-1, Off-Street Parking Standards. The city shall have the authority to request a parking study when deemed necessary.

Use	Required Number of Off-Street Parking Spaces
Residential	
Single-family dwelling, duplex, rowhouse	2 per unit
Studio apartment	1
Apartment 1 bedroom/ 2+ bedrooms	1.5/2
Housing for elderly (apartment/unassisted)	.33 per unit
Retirement dwellings	2 per unit
Residential care facility/assisted living	1 per 2 beds + 1 per day shift employee

(…)

Response: The proposed application is for a 158-lot subdivision for the future construction of detached single-family homes. Two off-street parking spaces are required for each single-family dwelling unit. Each single-family lot will provide a minimum of two off-street parking spaces, with at least one driveway space and one garage space. Additionally, 32

off-street parking spaces are provided in common parking areas to meet the requirements of CMC 17.19.040.B.10.e. Refer to the Preliminary Plans included with this application for more information.

Chapter 18.13 - Landscaping

(…)

18.13.020 - Scope.

A. Unless otherwise exempted, the standards of this chapter shall apply to any site to be developed. All applicable development activities shall be required to prepare a landscape plan and shall be required to meet the minimum tree density herein created.

B. The standards of this chapter shall apply to the following:

1. Commercial, industrial, governmental uses, and land divisions;
2. Redevelopment including change of use when Site Plan Review is applicable (refer to Chapter 18.18 Site Plan Review);
3. Parking lots with greater than four spaces;
4. Development that is subject to Design Review (refer to Chapter 18.19 Design Review);
5. Undeveloped property converting to an allowed use in the zone (e.g. infill lots); and
6. Conditional uses. The standards for landscaping will be the same as the landscaping standards in commercial zones if conditional use will occur in a residential zone.

(…)

Response: This project is for a Type III Subdivision for the creation of 158 detached single-family residential lots; therefore, the requirements of this chapter apply.

18.13.040 - Procedure for landscape, tree and vegetation plans.

A. Applicants shall submit a detailed Landscape, Tree and Vegetation Plan with building and site improvement plans. Included in the plans (at a minimum) shall be type, size, and location of plants and materials.

Response: A tree survey was completed by AKS and is included in the Preliminary Tree Preservation and Removal Plans, which are included with this application. A Preliminary Landscape Plan is also included in the Preliminary Plans. Proposed plant type, size, and location are included in those plans. Refer to the Tree Report and Preliminary Plans included with this application for more information.

B. A tree survey must be included for any applicable development proposing to remove trees.

Response: A tree survey has been prepared by a certified arborist with AKS and is included with this application.

18.13.045 - Tree survey.

A. The applicant must submit a tree survey that is prepared by a certified arborist or professional forester.

Response: A tree survey has been prepared by a certified arborist with AKS and is included with this application.

> **B.** A tree survey must contain the following:
>
> **1.** Inventory.
>
> **a.** Map of the site, with tree locations numbered
>
> **b.** Include all significant trees that will be impacted by the proposed development, which may include trees off-site if canopies overhang the subject property. Open space tracts to be set aside for conservation purposes do not need to be included in survey.
>
> **c.** Provide the common and scientific name of inventoried trees.

Response: A tree inventory showing significant trees with location numbers has been completed by AKS and is shown on the Preliminary Tree Preservation and Removal Plans. Trees that will be protected and impacted with the project are identified on the Plans. Refer to the Preliminary Plans included with this application for more information.

> **2.** Assessment.
>
> **a.** Size. Measure and provide the diameter at breast height (DBH).
>
> **b.** Tree protection zone. (Refer to CMC 18.03.050 Environmental Definitions)
>
> **c.** Tree health. An overall assessment of the trees structural stability and failure potential based on specific structural features (e.g. decay, conks, co-dominate trunks, abnormal lean) and rated as good, fair or poor.
>
> **d.** Recommendation for preservation or removal. The recommendation will consider proposed grading, trenching, paving, fencing and other construction plans.
>
> **e.** If hazardous, then an evaluation of hazardous trees will include a numerical value of hazard based on the following: failure potential; size of part most likely to fail; and distance to target (e.g. new residence).

Response: A Tree Repot and Preliminary Tree Preservation and Removal Plans have been completed by an arborist with AKS. The report and plans include the information noted above. Refer to Preliminary Plans and Preliminary Tree Preservation and Removal Plans included with this application for more information.

18.13.050 - Standards for landscape, tree and vegetation plans.

> **(…)**
>
> **B.** Landscaping and trees shall be selected and located to deter sound, filter air contaminants, curtail erosion, minimize stormwater run-off, contribute to living privacy, reduce the visual impacts of large buildings and paved areas, screen, and emphasize or separate outdoor spaces of different uses or character.

Response: Street trees will be planted along all public streets within the subdivision. Landscaping will also be provided on the individual lots by the future homeowners and as landscape buffers around the stormwater facilities. Street trees, shrubs, and ground covers have been selected by a licensed landscape architect and have been selected to meet the standards of this section. Refer to the Preliminary Plans included with this application for more information.

> C. Landscape, Tree and Vegetation Plan must include a combination of trees, shrubs, and ground cover to achieve the purposes of this chapter.
>
> 1. Required landscaping shall be comprised of a minimum of sixty percent native vegetation (or adapted to northwest climate), or drought-tolerant vegetation, and fifty percent evergreen.
>
> 2. Deciduous trees shall have straight trunks, be fully branched, have a minimum caliper of two inches, be equivalent to a fifteen- gallon container size, and be adequately staked for planting.
>
> 3. Evergreen trees shall be a minimum of five feet in height, fully branched, and adequately staked for planting.

Response: All landscaping plants planned for use in this project are either native or adapted to the northwest climate. All plant materials will meet the requirements of this section. Refer to the Preliminary Plans included with this application for more information.

> D. Street trees will be required as part of the frontage improvements. Species, size and spacing of the trees must be consistent with the Design Standards Manual. Unless otherwise specified, trees must generally be spaced thirty feet apart. Substitute varieties are subject to approval by the City of Camas.

Response: Street trees are planned along all public streets within the project. Trees are designed to be spaced a minimum of 30 feet in the center where feasible. Due to driveways and utilities, there are areas where street trees cannot be installed at 30 feet on-center; however, one street tree is provided per single-family residential lot. Refer to the Preliminary Plans included with this application for more information.

> E. Proposed vegetation cannot be an invasive species as listed within the most current edition of the Clark County Noxious Weed List (e.g. English Ivy cultivars).

Response: None of the planned vegetation for the project is an invasive species. Refer to the Preliminary Plans included with this application for more information.

> F. Shrubs shall be a minimum of five-gallon pot size. Upright shrubs shall have a minimum height at planting of eighteen inches. Spreading shrubs at planting shall have a minimum width of eighteen inches (smaller shrub sizes may be approved where it is more appropriate within a particular landscape plan).

Response: All planned plant materials and planting sizes are shown on the Preliminary Plans included in the application package. Planting size is selected to provide the best opportunity for plant survival and integration into the overall site. Refer to the Preliminary Plans included with this application for more information.

> G. Ground Cover, defined as living material and not including bark chips or other mulch, shall be from containers of one gallon or larger. Plants shall be planted

and spaced in a triangular pattern which will result in eighty percent cover in three years. Lawn cannot be the primary ground cover within required landscape buffers unless approved for stormwater conveyance. Grass species, if used as ground cover, shall be native or drought-tolerant, and appropriate for the use of the area.

Response: All planned plant materials and planting sizes are shown on the Preliminary Plans included in the application package. Planting size is selected to provide the best opportunity for plant survival and integration into the overall site. Refer to the Preliminary Plans included with this application for more information.

H. Appropriate measures shall be taken, e.g., installation of irrigation system, to assure landscaping success. If plantings fail to survive, it is the responsibility of the property owner to replace them.

Response: Landscaped areas will be irrigated with an automatic irrigation system or adequate manual irrigation systems. All irrigation in common landscaped areas will be installed with the landscaping at the time of neighborhood construction and maintained by the HOA. All irrigation in planting strips adjacent to private lots will be installed with the home construction on that lot and be maintained by the property owner. All irrigation will be design-build by a landscape contractor.

I. Required trees, as they grow, shall be pruned in accordance with the International Society of Arboriculture. The pruned tree will provide at least ten feet of clearance above sidewalks and fourteen feet above street roadway surfaces.

Response: All trees will be pruned to the appropriate height per this section.

J. Existing trees may be used as street trees if there will be no damage from the development which will kill or weaken the tree. Sidewalks of variable width and elevation may be utilized to save existing street trees, subject to approval by the city.

Response: No existing trees will be used as street trees; therefore, this standard does not apply.

K. Vision clearance hazards shall be prohibited.

Response: No vision clearance hazards will be created with the planned landscape. Vision clearance triangles are depicted on the Preliminary Plans included with this application.

18.13.051 - Minimum tree density requirement.

A. Tree Density. A minimum tree density per net acre is required and must be incorporated within the overall landscape plan. The tree density may consist of existing trees, replacement trees or a combination of existing and replacement trees, pursuant to the priority established in Section 18.13.052.

18.13.051 Table 1: Required Tree Density

Proposed Activity	Required Minimum Tree Density per Net Acre	Required Tree Replacement
New Development	20 Tree Units	20 Tree Units per acre
Residential	20 Tree Units	20 Tree Units per acre

B. Tree Density Calculation. Specific instructions on how to perform tree density calculations are provided in the Design Standards Manual. "Tree Unit" is a

unit of measurement based upon the size of the diameter of the tree measured at the breast height ("dbh"). New trees are given a value of one (1) Tree Unit, as they must be a minimum of 2" dbh when planted. Tree Unit values are summarized in the following Table:

(…)

Response: The subject site has a gross area of ±24.41 acres with ±5.97 acres planned for open space. This results in a net area of ±18.44 acres for tree density calculations. Twenty tree units per acre are required; therefore, 369 tree units are required (±18.44 acres x 20 trees units per acre). A total of 369 tree units are planned with this project. The total tree units include 76 existing trees, totaling 193 tree units and 176 proposed trees, totaling 176 tree units Refer to the Preliminary Plans and Tree Report included with this application for more information.

18.13.055 - Landscape buffering standards.

A. Landscape buffers shall be in compliance with the below referenced table:

Table 1—Landscape Buffers

Abutting Zone ▶	Residential		Commercial		Business Park		Industrial	
Uses on Site ▼	Not Separated by a Street	Separated by a Street	Not Separated by a Street	Separated by a Street	Not Separated by a Street	Separated by a Street	Not Separated by a Street	Separated by a Street
Multifamily Residential	5' L1	5' L1	10' L3	10' L2	10' L2	10' L2	10' L2 w/F2 Fence	10' L3
Commercial	10' L3	5' L2	5' L1	5' L2	5' L2	5' L2	10' L3	10' L2
Industrial	10' L2 w/F2 Fence	10' L2	10' L3	L2	10' L3	5' L2	5' L2	5' L1

(…)

Response: All planned lots in the subdivision have been designed as single-family residential lots. Single-family residences are not required to provide a landscape buffer.

18.13.060 - Parking areas.

A. Parking areas are to be landscaped at all perimeters.

Response: There are three parking area tracts planned within the site. All the planned parking area tracts have been designed with a landscaped perimeter. Refer to the Preliminary Plans included with this application package for additional information.

B. All parking areas shall provide interior landscaping for shade and visual relief.

Response: No parking lots with interior landscape areas are proposed with this project; therefore, this standard does not apply. Refer to the Preliminary Plans included with this application for additional information.

C. Parking lots shall include a minimum ratio of one tree per six parking spaces.

Response: Thirty-two off-street parking spaces are planned with this project in common area tracts. Tract E contains 10 parking spaces requiring two trees. Tract H contains 12 parking spaces requiring two trees. Tract E contains 10 parking spaces requiring two trees. Two trees are provided in each parking area tract. Refer to the Preliminary Plans included with this application for additional information.

> D. Planter strips (medians) and tree wells shall be used within parking areas and around the perimeter to accommodate trees, shrubs and groundcover.

Response: The proposed parking areas do not include interior landscaping. No planter strips or tree wells are proposed. Refer to the Preliminary Plans included with this application for additional information.

> E. Planter areas for trees must provide a minimum of five hundred cubic feet of soil, and shall provide eight-foot by eight -foot minimum of clear planting space. For other vegetative buffer areas a minimum of a five foot clear width must be provided.

Response: All tree planting areas are a minimum of 8 feet wide and contain a minimum of 500 cubic feet of soil. Refer to the Preliminary Plans included with this application for additional information.

> F. Wheel stops should be used adjacent to tree wells and planter areas to protect landscaping from car overhangs.

Response: Curbs are proposed adjacent to planting areas to prevent vehicles from overhanging and damaging the plant material. Refer to the Preliminary Plans included with this application for additional information.

> G. Curbed planting areas shall be provided at the end of each parking aisle to protect parked vehicles.

Response: Curbed planting areas are provided at the end of each parking aisle to protect parked vehicles. Refer to the Preliminary Plans included with this application for additional information.

> H. No more than fifteen parking spaces shall be located in a row without a landscaped divider strip (See Figure 18.13.060-1).

Response: No more than 10 parking stalls are planned in a single row with this project. Refer to the Preliminary Plans included with this application for additional information.

Chapter 18.15 - Signs

Response: No signs are planned with this application. Any future sign will receive a sign permit prior to installation to ensure the sign meets the requirements of this chapter.

Chapter 18.17 - Supplemental Development Standards

(…)

18.17.030 - Corner lot vision clearance area.

Response: All corner lots will maintain a vision clearance area. No vehicle, fence, wall, landscaping, or other obstruction or planting will impede vision between a height of 42 inches and 10 feet above the sidewalk or 12 feet above the street. Refer to the Preliminary Plans included with this application for additional information.

18.17.050 - Fences and walls.

Response: All future fences for the residential lots will not exceed 6 feet in height; therefore, permits will not be required for fences. Refer to the Preliminary Plans included with this application for additional information.

18.17.060 - Retaining walls.

Response: Retaining walls are proposed with the project. No walls are anticipated to be greater than six feet tall. Wall locations and heights are shown on the Preliminary Plans. Refer to the Preliminary Plans included with this application for additional information.

IV. Conclusion

The Applicant is proposing a 158-lot single-family subdivision meeting the requirements of the City of Camas MF-18 zoning district and other applicable portions of the City of Camas Municipal Code.

The submittal requirements have been met and the required findings made for all applicable approval criteria. These findings serve as the basis for the City to approve the application and are supported by substantial evidence in the application materials. Therefore, the Applicant respectfully requests approval of the proposed project (Stella Ridge).

PRE-APPLICATION MEETING NOTES
PA25-1049

Meeting held via Zoom: Thursday, April 3, at 2:30 p.m.
Notes issued via email on April 14, 2025 / Revised April 25, 2025

Applicant:	AKS Engineering & Forestry LLC
City of Camas:	Madeline Coulter, Planner Ahmed Yanka, Engineering Brian Smith, Building Randy Miller, Fire Marshal
Location:	4511 NW 18TH AVE Parcel Number: 125193000
Zoning:	Multi-Family Residential (MF-18)
Description:	To construct 154 single family lots with associated stormwater facility, critical area, parking, and landscaping tracts.

NOTICE: Notwithstanding any representation by City staff at a pre-application conference, staff is not authorized to waive any requirement of the City Code. Any omission or failure by staff to recite all relevant applicable code requirements to an applicant shall not constitute a waiver of any standard or requirement by the City. [CMC 18.55.60 (C)] This pre-application conference shall be valid for a period of 180 days from the date of the meeting. If an application is not filed within 180 days of the conference or meeting, the applicant must schedule and attend another conference before the city will accept a permit application. [CMC 18.55.060 (D)] Any changes to the code or other applicable laws, which take effect between the pre-application conference and submittal of an application shall be applicable. [CMC 18.55.060 (D)] A link to the Camas Municipal Code (CMC) can be found on the City of Camas website, http://www.cityofcamas.us/ on the main page under "Business and Development".

PLANNING DIVISION **Madeline Coulter | (360) 817-1568 |mcoulter@cityofcamas.us**

Applicable codes for development include Title 16 Environment, Title 17 Land Development, and Title 18 Zoning, of the Camas Municipal Code (CMC), which can be found on the city website. Please note it remains the **applicant's responsibility** to review the CMC and address all applicable provisions. The following pre-application notes are based on application materials and site plan submitted to the City on March 5, 2025.

Application Requirements
Your proposal will need to comply with the general application requirements per **CMC Section 18.55.110** as follows:

1. A completed city application form and required fee(s), which are addressed at on-line submittal;
2. A complete list of the permit approval sought by the applicant;
3. A current (within thirty days prior to application) mailing list and mailing labels of owners of real property within three hundred feet of the subject parcel, certified as based on the records of the Clark County assessor;
4. A complete and detailed narrative description that describes the proposed development, existing site conditions, existing buildings, public facilities and services, and other natural features. The **narrative shall also explain how the criteria are or can be met**, and address any other information indicated by staff at the pre-application conference as being required;

5. Necessary drawings- All documents and reports shall be provided with the on-line application submittal;
6. Copy of the preapplication meeting notes; and
7. A development sign per CMC 18.55.110.H.

Preliminary Subdivision Review
The site development approval process will be considered under a Type III subdivision, which requires a public hearing where the hearings examiner will render the final decision. The application for preliminary plat shall contain information outlined in CMC 17.11.030.B. The application shall address in a narrative the criteria for approval CMC 17.11.030.D. Building height, setback and lot coverage can be found in CMC 18.09.040 Table 1 & 2.

Major Design Review
Design Review is required for all new developments within multi-family zones per CMC 18.19.020. The standards applicable to this property for Design Review are found in the Design Review Manual to include the *Standard Principles & Guidelines* in addition to the *Specific Principles & Guidelines for Multifamily Developments.*

A submittal for Design Review should include a site plan drawing, a detailed landscape plan, exterior building materials and colors, elevation views and lighting specifications and plan. A final design review decision may be consolidated and issued with the preliminary plat review decision.

Landscaping Regulations and Tree Density
A tree survey is required per CMC 18.13.040.B and must be prepared by a certified arborist or professional forester pursuant to the requirements outlined in CMC 18.13.045. A minimum 20-unit tree density per net acre is required and needs to be incorporated in the overall landscape plan per CMC 18.13.051.A. A preliminary landscape plan is required with the preliminary plat submittal.

Parking Regulations
The proposed use will need to meet the automobile parking requirement pursuant to CMC Chapter 18.11. When the proposed development's average lot size is seven thousand four hundred square feet or less, one additional off-street parking space shall be required for every five units, notwithstanding the requirements of CMC Chapter 18.11. These spaces are intended to be located within a common tract.

Critical Areas
Clark County GIS mapping identifies wetlands within the subject property. As such, a critical areas report is required if the proposed development is within or adjacent to (within 200-feet) a critical area per CMC Section 16.51.130. The general requirements for a critical areas report are found in CMC Section 16.51.140. The City's code contains additional requirements for each type of critical area that needs to be addressed in CMC Chapter 16.53. A preliminary mitigation plan is required if there will be impacts to the critical area.

SEPA
The proposed development is not categorically exempt from the requirements of the State Environmental Policy Act (SEPA) per CMC Section 16.07.020.A.

Archaeological Review
The site is located in an area of medium-high probability for the presence of archaeological objects and on a site that is more than 5 acres, therefore an archaeological predetermination is required per CMC Section 16.31.070.A. Proof of mailing or emailing to the tribes per CMC 16.31.160.

ENGINEERING **AHMED YANKA (360) 817-7258 ayanka@cityofcamas.us**
ANITA ASHTON (360) 817-7231 aashton@cityofcamas.us

General Requirements:

1. Final engineering site improvement plans shall be prepared in accordance with the Camas Design Standards Manual (CDSM) and CMC 17.19.040, by a licensed Civil Engineer in Washington State.
2. *Civil construction plans are not to be submitted until after Planning issues the land-use decision.*
3. *After the land-use decision is issued, the applicant is to submit civil construction plans via the online portal at www.cityofcamas.us/Permits under the 'Civil Construction Application'.*
4. CDev Engineering Dept. is responsible for plan review (PR) and construction inspection (CI) of the civil site improvements.
5. A 3% PR&CI fee is collected by engineering for all infrastructure improvements.
    a. A stamped preliminary engineer's estimate is to be submitted with the plans for first review.
    b. Payment of the 1% plan review (PR) fee shall be due prior to the start of the first review. Staff will review and approve the estimate and invoice the applicant.
    c. Payment of the 2% construction inspection (CI) fee is due prior to construction plan approval and release of approved plans to the applicant's consultant. Staff will invoice the applicant.
    d. Under no circumstances will the applicant be allowed to begin construction, including any land-disturbing activities prior to engineering plan approval.
6. *Per CMC 17.21.060.H Except for one sales office or one model home, building applications will not be accepted until after Final Acceptance has been issued for all infrastructure improvements.*
7. *Final acceptance is issued by the Community Development Engineering Dept.*
8. Any existing wells and septic tanks and septic drain fields shall be decommissioned in accordance with State and County guidelines per CMC 17.19.020 (A3).
9. The applicant will be required to purchase all permanent traffic control signs, street name signs, street lighting, and traffic control markings for the proposed development.
10. Work within the city right-of-way (ROW) will require submittal an encroachment permit and an approved traffic control plan (TCP), prior to the start of any work. This permit is not to be submitted via the online portal. It is to be submitted to the future site Inspector for review and approval.
11. Regulations for installation of public improvements, improvement agreements, bonding, final plating, and final acceptance can be found at CMC 17.21.
12. The applicant will be responsible for ensuring that private utilities; underground power, telephone, gas, CATV, interior street/parking lighting, and associated appurtenances are installed.

Neighborhood Traffic Management Plan

1. The City has a Neighborhood Traffic Management Plan (NTM). The NTM plan identifies the need for installation of acceptable traffic calming features when a proposed development will create 700 Average Daily Trips (ADT) or more.
2. The proposed development will result in 700 or more ADTs and will require traffic calming features. The applicant is to work with staff to determine an acceptable location for the traffic calming features.

Traffic/Transportation:

1. A transportation impact analysis (TIA) is required when a proposed development results in 199 vehicle trips per day (VPD) or more.
2. A transportation impact analysis (TIA) is required and shall be prepared in accordance with the

City's adopted Traffic Impact Study Guidelines as outlined in the CDSM

3. The Applicant will be required to have a traffic engineer analyze the following:
   a. Site distance access at applicants proposed access intersections.
   b. Vision clearance areas are to be addressed, per CMC 18.17.030.
   c. Address potential for left-turn pocket at access off NW 18th Avenue
   d. A traffic circulation plan showing on-site ingress and egress, per CMC 17.19.040 (B.10.a).
   e. Address movement conflicts with existing nearby intersections; and
   f. Provide trip AM and PM Peak distribution to and from the site.
   g. AM and PM Peak Hour analysis for intersections with 20 or more additional trips
4. The TIA will be sent to the City of Vancouver (COV) Traffic Engineer for review and comments.
5. COV will require trip distributions to the following intersections for proportionate share fees.

Proportionate Share Project Name	Fee Rate	Number of Trips	Proportionate Share Cost
137th Ave – from NE 49th St to Fourth Plain Blvd	$3,000 per PM peak hour trip		
Fourth Plain Blvd & NE 152nd Ave	$333 per PM peak hour trip		
Leiser / St. Helens / MacArthur	$2,000 per PM peak hour trip		
SE 176th Ave & SE 20th St	$400 per PM peak hour trip		
NE 192nd Ave & NE 13th St	$400 per PM peak hour trip		
SE 192nd Ave & SE 34th St	$150 per PM peak hour trip		
192nd Ave & SR-14 ramp terminals	$2,000 per PM peak hour trip		
SE 192nd Ave & Columbia Palisades Dr. (**east/west legs only**)	$830 per PM peak hour trip		
MacArthur Blvd & Andresen Rd Roundabout	$2,285 per PM peak hour trip		
MacArthur Blvd & Devine Rd Roundabout	$2,226 per PM peak hour trip		
Grove St / Columbia House Blvd / SR-14 WB off-ramp	$600 per **AM** peak hour trip		
NE 172nd Ave & NE 18th St	$300 per PM peak hour trip		
NE 179th Place & NE 18th St	$900 per PM peak hour trip		
NE 187th Ave & NE 18th St	$1,200 per PM peak hour trip		
NE 162nd Ave & NE 9th St	$1,500 per PM peak hour trip		
NE 172nd Ave & NE 9th St	$4,100 per PM peak hour trip		
NE 192nd Ave & NE 9th St	$1,100 per PM peak hour trip		
NE 187th Ave & SE 1st St	$ 1,100 per PM peak hour trip		
Total Proportionate Share Cost			**$XXXX**

Streets:

1. The proposed development is located on the west side of NW Brady Road, north and west of NW 20th Avenue and south of NW 18th Avenue.
2. LED street lighting is to be installed along all street frontages withing and adjacent to the proposed development, in accordance with CDSM.
3. Rolled curbs may be allowed depending on the design of the road, see Street Detail ST8.
    a. Rolled curb and gutter allowed on farrow frontages, with approval from the city engineer.
    b. Rolled curb and gutter with curb tight sidewalks are to be installed with a minimum 6-inch-thick sidewalks.
    c. Rolled curb and gutter is to transition to a full height curb and gutter at intersections and curb ramps.
    d. Rolled curbs are not permitted on the down slope side of a shed street section.

NW 18th Avenue:

1. NW 18th Avenue is designated as an existing 2 or 3 lane Collector per the 2016 Transportation Comprehensive Plan Map.
2. Per CMC 17.19.040 NW 18th Avenue frontage improvements will include right-of-way dedication and full-depth half-width street improvements from the existing centerline, including full depth street section, curb & gutter, sidewalks, landscaping, and street lighting.
3. NW 18th Avenue consists of 51-feet right-of way, 24-feet paved surface with 6-foot sidewalk and curb & gutter along the south side only.
4. The applicant will be required to dedicate sufficient right-of-way along the frontage to align with the right-of-way along the frontage of the city's reservoir site, parcel no 986055-382.
5. Per CMC 17.19.040.B12.e Curb return radii shall be no less than thirty-five feet on both sides of arterial and collector streets.
6. Left turn pocket into the site is required if one or more of the following:
    a. Warranted by traffic analysis.
    b. Ample room for striping upon half-width frontage improvements.

NW Brady Road:

1. NW Brady Road is designated as a fully improved 3-lane arterial along the frontage of the proposed development.
    a. The applicant will not be required to do any frontage improvements or dedicated right-of-way.
    b. There is an existing roadway connection with curb ramps on either side that was constructed with the NW Brady Road Improvement plans. The applicant is to connect the west-to-east leg of proposed Street A to NW Brady Road at this location.

Proposed Street A:

1. Proposed Street A is shown as a public street that is approximately 2206 feet as measured from the centerline of NW 18th Avenue.
2. Per CMC 17.19.040.B Street, public roads shall meet the requirements as shown on Table 17.19.040-2 'Minimum Public Street Standards'.
    a. The applicant has proposed constructing Street A as follows: 52-foot-wide right-of-way, 28-foot paved surface, 5-foot detached sidewalks and planter strips on both sides.
    b. As proposed, Street A meets the street standards for Local Road Section A with approval by city Engineer.
2. The applicant will be required to extend the west-to-east leg of proposed Street A to connect to NW Brady Road at the street intersection that was constructed with the NW Brady Road Improvements.

a. The location at which the west-to-east leg of Street A ties into NW Brady Road is to be a right-in and right-out only.
b. An intersection approach was constructed with the NW Brady Road improvements for future streets to connect at that location.

3. Per CDSM, Table 3 – Access Spacing Standards, the minimum access spacing on a collector is 330-feet minimum and 600-feet maximum.
4. The proposed access off NW 18th Avenue to the proposed development is approximately 145-feet from then nLIGHT Semiconductor driveway to the west.
    a. This location does not meet the minimum access spacing standards and would require a deviation request from the minimum access spacing standards to the city engineer.
    b. The city engineer would be in support of a deviation request from the access spacing standards on NW 18th Avenue.
5. The proposed access from NW 18th Avenue to the proposed development is approximately 176 feet from the driveway access to City of Camas Water Reservoir.
    a. This location does not meet the minimum access spacing standards and would require a deviation request from the minimum access spacing standards to the city engineer.
    b. A deviation from the access spacing standards is supported by the city engineer.

Proposed Street B aka NW 20th Avenue:

1. Proposed Street B is shown as a public street that is approximately 552-feet as measured from the centerline of proposed Street A.
2. Per CMC 17.19.040.B Street, public roads shall meet the requirements as shown on Table 17.19.040-2 'Minimum Public Street Standards'.
    a. The applicant has proposed to construct Street B as follows: 52-foot-wide right-of-way, 28-foot paved surface, 5-foot detached sidewalks and planter strips on both sides.
    b. As proposed, Street B meets the street standards for Local Road Section A with approval by city Engineer.
3. Staff is in support of the applicant extending NW 20th Avenue due west across city Parcel No. 986055-382 to proposed Street A.
4. The city is willing to dedicate right-of-way across said city parcel no. 986055-382.
5. The section of NW 20th Avenue that was constructed with Parker Village is to be signed as 'No Parking' on the north side of the street.
6. The applicant will be required to construct a curb tight sidewalk along the north side of the existing section of NW 20th Avenue.
7. The applicant should look at combined driveways when possible due to narrow lots and the existing vertical curb.

Proposed Tract E:

1. Proposed Tract E is approximately 264-feet in length as measured from the centerline of proposed Street B.
2. Per CDSM, Section III, Design Standards, Table 1, Section C – Guidelines for Geometry for a Private Road will apply:
    a. Private streets with access to 5 or more dwelling units (DU) and greater than 100-feet in length and not over 300-feet, require a minimum 42-foot-wide Tract, 28-foot paved surface, 5-foot sidewalks and 4.5-foot planter strips on one side, and street lighting.
    b. Per Table 1, Note 3 roads more than 150-feet from the centerline of the adjacent street require a dead-end turn around (aka cul-de-sac).
    c. Per CMC 17.19.040.B.B12.e Curb return radii shall be no less than twenty-five feet.

d. As, proposed, Tract E does not meet the minimum private street requirements.

Proposed Tract F:

1. Proposed Tract F is shown to be a private street that is approximately 120-feet in length as measured from the centerline of proposed Street b with access to 5 dwelling units (DU).
2. Per CDSM, Section III, Design Standards, Table 1, Section C – Guidelines for Geometry for a Private Road will apply:
    a. Proposed Tract E is approximately 120-feet in length as measured from the centerline of proposed Street B.
    b. Per CDSM, Section III, Design Standards, Table 1, Section C – Guidelines for Geometry for a Private Road will apply:
    c. Private streets with access to 5 or more dwelling units (DU) and greater than 100-feet in length and not over 300-feet, require a minimum 42-foot-wide Tract, 28-foot paved surface, 35-foot cul-de-sac, 5-foot sidewalks and 4.5-foot planter strips on one side, and street lighting.
    d. Per CMC 17.19.040.B.B12.e Curb return radii shall be no less than twenty-five feet.
    e. As, proposed, Tract F does not meet the minimum private street requirements.

Proposed Tract G:

1. Proposed Tract G is shown to be a private street that is approximately 307-feet in length as measured from the centerline of proposed Street A with access to 8 dwelling units (DU).
2. Per CDSM, Section III, Design Standards, Table 1, Section D – Guidelines for Geometry for a Private Road will apply:
    a. Private streets with access to 5 or more dwelling units (DU) and greater than 300-feet in length, require a minimum 48-foot-wide Tract, 28-foot paved surface, 5-foot detached sidewalks and 4.5-foot planter strips on both sides, no parking on one side and street lighting.
    b. Per Table 1, Note 3 roads more than 150-feet from the centerline of the adjacent street require a dead-end turn around.
    c. Per CMC 17.19.040.B.B12.e Curb return radii shall be no less than twenty-five feet.
    d. As proposed, Tract G does not meet the minimum private requirements.

Stormwater:

1. The combined site of the proposed development is approximately 24.41 acres in size.
2. The applicant shall submit a preliminary stormwater report (PTIR) in accordance with CMC 14.02 Stormwater Control and the most current edition of Ecology's *Stormwater Management Manual for Western Washington* ***(latest edition 2024 SWMMWW*)**.
3. Stormwater treatment and detention shall be designed in accordance with the latest edition of Ecology's ***Stormwater Management Manual for Western Washington (2024 SWMMWW).***
4. Refer to Ecology's *Figure I-3.2 Flow Chart for Determining Requirements for New-Development (Vol. I, Chapter 3, Page 109)*.
    a. As the project will result in 5,000 sf, or greater, of new plus replaced hard surface area; then all Minimum Requirements (#1-#9) will apply.
5. Per CMC 17.19.040.C.3.a Stormwater facilities are to be placed in a Tract, with right-of-entry to the City for inspection purposes.
6. Per CMC 14.02.090 ownership and maintenance of onsite stormwater facilities will be the responsibility of the Owner/HOA, per CMC 17.19.040 (C3).
7. Public and private storm easements, if required, are to be shown on the final engineering plans.

8. Provisions are to be provided for roof downspout controls. Stormwater from downspouts is not to be directed onto adjoining parcels. Reference CMC 14.02 and 17.19.040.C for roof downspout controls.

Erosion Control:

1. The combined site of the proposed development is approximately 24.21 acres in size.
2. Per CMC 17.21.030.B an erosion and sediment control (ESC) bond, in the amount 200% of the engineer's estimate for ESC measures, is to be submitted prior to any land-disturbing activities.
3. As the land-disturbing activities are greater than one acre, the applicant will be required to obtain an *NPDES Construction Stormwater General Permit* from Ecology, which includes the *Stormwater Pollution Prevention Plan (SWPPP)*. Copies of both are to be submitted to Engineering prior to any land-disturbing activities.
4. The applicant will be responsible for all erosion and sediment control measures to ensure that sediment laden water does not leave the site or impact adjacent parcels.
5. Mud tracking onto the road surface is discouraged and any mud tracking is to be cleaned up immediately.

Water:

1. There are three existing watermains located around the vicinity of the proposed development:
    a. A 16-inch ductile iron main located on the east side of NW Brady Road.
    b. A 12-inch ductile iron main located on the north side of NW 18th Avenue
    c. An 8-inch ductile iron main stubbed to the western end of NW 20th Avenue.
2. There is a 16-inch ductile iron water transmission main located on the north side of NW 20th Avenue behind the existing curb and gutter. It takes a 90-degree turn at the end of NW 20th Avenue and another 90-degree turn across the city's parcel no. 986055-382 to the reservoir.
    a. The applicant is NOT to tie into the 16-inch water main.
    b. If any portion of the existing 16-inch water transmission main is located outside of the right-of-way on the north side of NW 20th Avenue, a utility easement will be required over that portion of the existing 16-inch water transmission main that is outside of the right-of-way.
    c. A note is to be added to the water utility plans and the final plat stating that permanent structures are not to be built within the future utility easement.
3. Per CMC 17.19.040.C.4 Each lot within a proposed development shall be served by a water distribution system designed and installed in accordance with city design standards.
    a. The applicant will be required to design and construct a minimum 8-inch ductile iron water main to serve the proposed development.
    b. The 8-inch water main is to be designed as a looped system.
4. The applicant shall provide a minimum 1-inch water service, and water meter box to each of the single-family residential lots located within this development.
5. Landscaping in open space tracts must have a separate irrigation service, backflow prevention device, meter box, and irrigation meter.
    a. The owner of the tract is responsible for payment for all fees associated with the installation of the meter and the water usage.
    b. Irrigation meters are to be owned by the HOA.
6. The applicant will be required to provide new fire hydrants located within the new development, per CDSM and the FMO.
7. Trenching, backfill, and surface restoration on NW Brady Road, NW 18th Avenue and NW 20th Avenue will be required, per CDSM Detail G2 and G2A.
8. Applicant shall demonstrate that there are adequate fire flows available for the development.

9. The tap on the existing water main is to be performed by a tapping Contractor approved by the City's Water/Sewer Dept. Approved list of Contractor's provided below.
10. A 10-foot separation shall be maintained between water and sanitary sewer lines.

Sanitary Sewer:

1. There is an existing 10-inch STEF main located on the west side of NW Brady Road.
2. There is an existing 8-inch STEF discharge line from Parker Village Subdivision STEF Tank located approximately 250-feet east of the end of NW 20th Avenue.
3. The applicant will be required analyze the existing 10-inch STEF main and Parker Village Subdivision 8-inch STEF discharge line to ensure that both lines can handle the additional inflow from proposed development.
4. Per CMC 17.19.040.C.2 The applicant will be required design and construct a minimum 8-inch sanitary sewer STEF system to serve the proposed development.
    a. The applicant shall provide a separate conventional gravity sanitary lateral for each single-family residential lot located within the development.
    b. The applicant will be required to install community STEF Tank(s) that are to be owned and maintained by the HOA.
5. Trenching and surface restoration on NW Brady Road and NW 20th Avenue is to be per CDSM Details G2 and G2A.
6. A 10-foot separation is required, within the right-of-way and the private road serving the development, between the water service and sewer lateral.

City Approved Tapping Contractors:

1. A&A Drilling Services, Inc (water & pressure sewer):
   16734 SE Kens Ct. #B, Milwaukie, OR 97267, 800-548-3827,
   http://www.aadrilling.com
2. Ferguson Waterworks (water only):
   14103 NW 3rd Court, Vancouver, WA 98685, 360-896-8708,
   https://www.ferguson.com/branch/nw-3rd-ct-vancouver-wa-waterworks

Garbage and Recycling:

1. Garbage and recycling receptacles are to be placed at the city right-of-way for pickup.

Parks/Trails:

1. Not applicable

Impact Fees & System Development Charges (SDCs):

1. This development is in the South District.
2. Impact fees and SDCs are collected at time of building permit issuance.
3. The impact fees and SDCs noted below are for informational purposes only.
4. **Impact fees and SDCs are adjusted on January 1st of each year.**

Impact Fees for 2025 (South District):

Single Family:

1. Traffic Impact Fees (TIF) - $4,102.00
2. School Impact Fees (SIF) – $6,650.00
3. Park/Open Space (PIF) – Residential Scaled by Square Footage
    a. 0 to 1,000 sf - $4,259.00
    b. 1,001 to 2,000 sf - $7,802.00

c. 2,001 to 2,600 sf - $11,841.00
d. 2,601 sf and above - $13,549.00

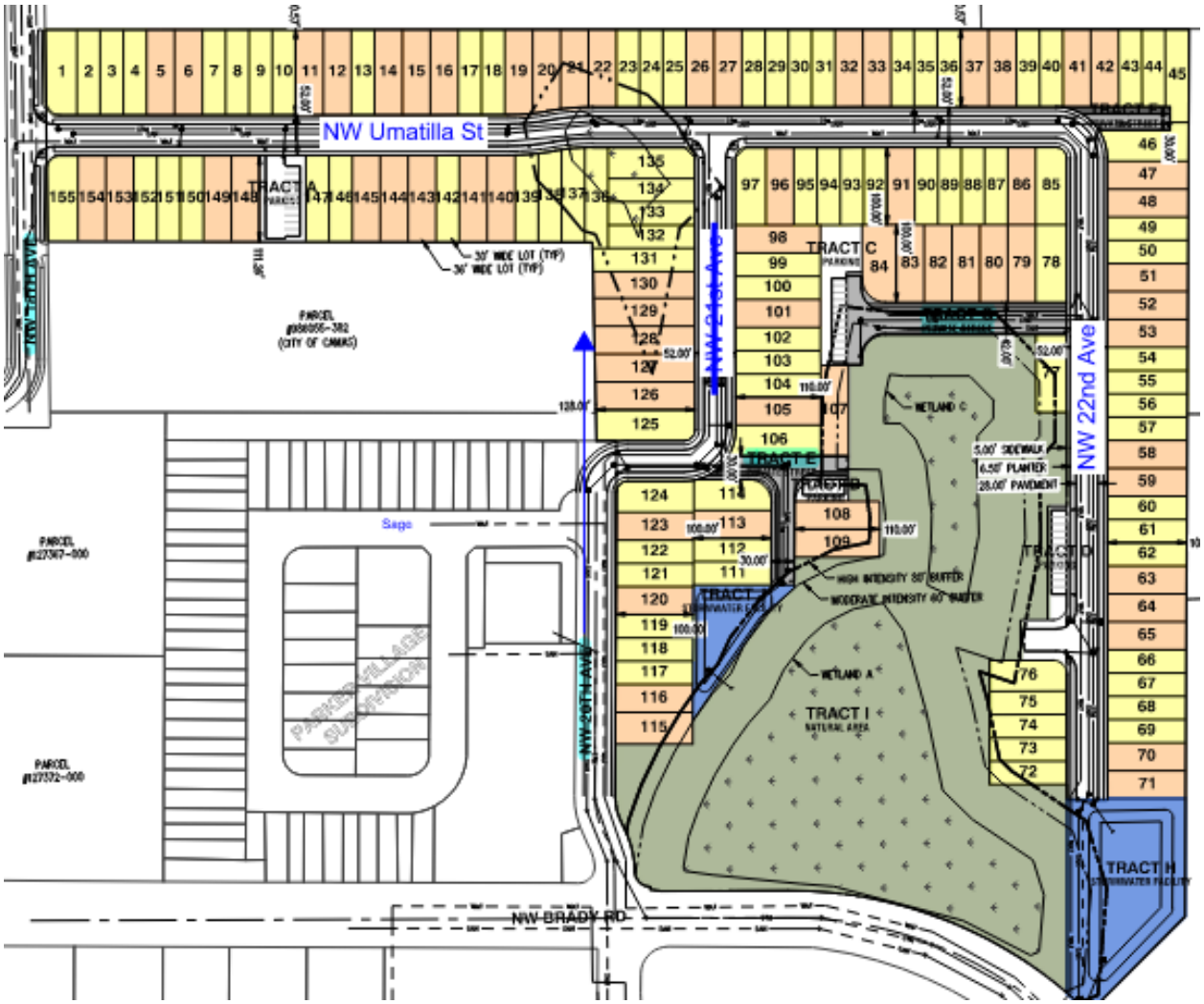
4. Fire (FIF) - $0.71 psf

System Development Charges (SDCs) – 2025 Charges:

1. Water –
   a. 3/4" meter - $9,337.00 + $495 connection fee
   b. 1" meter - $15,560.00 + $552 connection fee
2. Sewer – Residential
   a. Residential - $7,407.00 + STEF Inspection

BUILDING DIVISION **BRIAN SMITH (360) 817-1568 bsmith@cityofcamas.us**

1. Existing structures to be removed will need an asbestos survey and demolition permit.
2. Decommissioning of septic tanks and drain fields through Clark County Department of Health
3. Property corners shall be established by a licensed surveyor.
4. The structures will be reviewed under the most current building codes as adopted by the State of Washington.
5. The structural drawings and calculations shall be prepared and stamped by a Professional Engineer licensed by the State of Washington.
6. The required fire suppression system shall be in accordance with IBC and other applicable codes standards and shall be reviewed by the Camas Fire Marshal's office.
7. Storm water from adjacent properties and existing developments should be taken into consideration.
8. Storm sewer disposal and connections shall be identified on the approved plans.
9. All lots shall be provided a storm drain lateral at the lowest practical location.
10. Developer shall provide a designated concrete wash out area.
11. Impact fees and System Development charges shall be applicable
12. An approved monument sign for posting addresses shall be provided at all Flag lots, the monument sign, location and design a shall be noted on the Plat.



FIRE DEPARTMENT **RANDY MILLER (360) 834-6191 FMO@cityofcamas.us**

1) Any existing structures scheduled for demolition may be considered for use as a fire department training burn. Contact DFM Randy Miller at the FMO for further information. 360-834-6191
2) NFPA 13D Residential Fire Sprinklers required in all new dwellings. Additionally, it is recommended or may be required to mitigate access or turnaround issues, to install fire sprinklers in garages. Contact the FMO for further information.
3) If a larger water meter is required to meet fire flow and the larger meter is not required for reasons of the international residential code/building department, the SDC up-charges are waived and the minimal cost difference in the actual meter shall be paid.
4) A flow switch is optional but recommended to tie into the homes security system along with an outside bell.
5) If a PRV is needed for pressures over 80 PSI on the domestic supply, it shall be installed after the fire line supply. If the pressure is over 80 PSI a PRV may be needed on the toilet supply line supplied from the fire sprinkler system.
6) An inside bell or horn strobe is recommended (If system is not tied into a security system) Contact Randy Miller in the FMO for more information.

7) Water supply line from the meter into the structure shall be sized per the fire sprinkler contractors design calculations or a 2- inch line shall be installed.
8) Multiple Fire Hydrants required, will be evaluated based on IFC appendix C and the operational needs of the Fire Department.
9) Witnessed hydrant flushing required with the FMO on all new fire hydrant installations.
10) Access roads or flag lots to be a minimum 12-foot wide paved with a 20-foot wide clearance and a minimum 13.6-foot vertical clearance. These minimums may be greater per city of Camas engineering department.
11) Approved Fire Department turnaround required for dead end streets or access driveway over 150 ft to residential structures measured from the center line of where the access road leaves the public street.
12) Provide approved radiuses to access roads/driveways for tracts.
13) Obstructed access plan required for all private roads, flag lots serving more than one home or access tracts. Towing signs are the recommended plan unless an alternate method is provided and approved.
14) Any discovered underground oil or fuel storage tank during the development requires a decommissioning permit through the Fire Marshal Office.
15) A propane Permit is required with the Fire Marshals Office for any tank installation over 124 gallons.
16) Approved address monument required where the access road, flag lot or driveway leaves the public street. Contact the FMO for approval.
17) Temporary Addresses required at all times for each structure/lot until permanent address numbers are installed, please give attention to making the numbers extremely visible from the street, unlikely to be blocked by parked vehicles so emergency services can easily see & read in order to find 911 generated calls.
18) Please do not hesitate to contact the FMO if you have any questions. 360-834-6191 or FMO@cityofcamas.us

9. Title Report

Transaction Identification Data, for which the Company assumes no liability as set forth in Commitment Condition 5.e.:

Issuing Agent: First American Title Insurance Company National Commercial Services
Issuing Office: 2555 E. Camelback Road, Suite 350, Phoenix, AZ 85016
Issuing Office's ALTA® Registry ID: 1014780
Commitment Number: NCS-1249253-PHX1
Issuing Office File Number: NCS-1249253-PHX1
Property Address: Approx. 24.41 Acres, Camas, WA
Revision Number:

Reference No.: Approx. 24.41 Acres Camas, WA

Escrow Officer Name: Nanette DeRuiter
Escrow Officer Number: (602)567-8120
Escrow Officer Email: NDeRuiter@firstam.com
Escrow Assistant Name:
Escrow Assistant Number:
Escrow Assistant Email:
Title Officer Name: Sarah McDaniel
Title Officer Number: (602)567-8105
Title Officer Email: smcdaniel@firstam.com

SCHEDULE A

1. Commitment Date: January 30, 2025 at 7:30 AM

2. Policy to be Issued:

	Amount	Premium	Tax
a. ALTA® Standard Owner's Policy Proposed Insured: Allied Development, LLC, a Wyoming limited liability company The estate or interest to be insured: See Item 3 below	$10,500,000.00	$TBD	$TBD
b. ALTA® Extened Loan Policy Proposed Insured: TBD The estate or interest to be insured: See Item 3 below	$TBD	$TBD	$TBD
c. ALTA® Policy Proposed Insured: The estate or interest to be insured: See Item 3 below	$		

This page is only a part of a 2021 ALTA Commitment for Title Insurance issued by First American Title Insurance Company. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I—Requirements; and Schedule B, Part II—Exceptions; and a counter-signature by the Company or its issuing agent that may be in electronic form.

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3. The estate or interest in the Land at the Commitment Date is:

   Fee Simple

4. The Title is, at the Commitment Date, vested in:

   MacKay Family Clark County Properties LLC, a Washington limited liability company; Daniel P. MacKay and William A. MacKay, as Co-Trustees of the Donald G. Mackay Remainder Trust; Douglas B. MacDonald, as Trustee under the MacDonald Living Trust, dated February 9, 1988; and Dennis W. Daley, a married man as his sole and separate property

5. The Land is described as follows:

   See Exhibit A attached hereto and made a part hereof

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Commitment No. NCS-1249253-PHX1

SCHEDULE B, PART I—Requirements

All of the following Requirements must be met:

1. The Proposed Insured must notify the Company in writing of the name of any party not referred to in this Commitment who will obtain an interest in the Land or who will make a loan on the Land. The Company may then make additional Requirements or Exceptions.

2. Pay the agreed amount for the estate or interest to be insured.

3. Pay the premiums, fees, and charges for the Policy to the Company.

4. Documents satisfactory to the Company that convey the Title or create the Mortgage to be insured, or both, must be properly authorized, executed, delivered, and recorded in the Public Records.

5. If a proposed mortgage or deed of trust will secure, in whole or in part, construction advances, in order to consider providing coverage against statutory liens for services, labor, or materials arising from construction of improvements or work related to the Land, the Company will require:
   For all construction projects, copies of the following:
   1. Project budget, including hard costs, soft costs, equity contributions, and sources and uses.
   2. An indemnity agreement on a form to be provided, and executed by indemnitor(s) approved, by the Company.
   3. Direct contract(s) with any general contractor(s), including projected schedule for completion of construction.
   4. Draft loan agreement detailing construction advance disbursement controls (or separate disbursement agreement, if applicable) and guaranty/ees.
   5. An appraisal if lender has required one.

   If work or delivery of materials has commenced or will commence prior to closing, the Company will also require the following:
   1. A list of all contractors and subcontractors who have commenced or will commence work or delivery of materials, including, for each, the total contract amount and any amounts paid to date.
   2. Pay applications for the latest three (3) months, including invoices and conditional and unconditional lien waivers, from all contractors and subcontractors who have commenced work or delivery of materials.
   3. Priority Agreement, on a form to be provided by the Company, signed by the general contractor(s) and all subcontractor(s) who have commenced or will commence work or delivery of materials prior to closing.

   Upon receipt and review of the foregoing, the Company reserves the right to require additional documentation.

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Commitment No. NCS-1249253-PHX1

SCHEDULE B, PART II—Exceptions

Some historical land records contain Discriminatory Covenants that are illegal and unenforceable by law. This Commitment and the Policy treat any Discriminatory Covenant in a document referenced in Schedule B as if each Discriminatory Covenant is redacted, repudiated, removed, and not republished or recirculated. Only the remaining provisions of the document will be excepted from coverage.

The Policy will not insure against loss or damage resulting from the terms and conditions of any lease or easement identified in Schedule A, and will include the following Exceptions unless cleared to the satisfaction of the Company:

1. Any defect, lien, encumbrance, adverse claim, or other matter that appears for the first time in the Public Records or is created, attaches, or is disclosed between the Commitment Date and the date on which all of the Schedule B, Part I—Requirements are met.

2. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records.

3. Any facts, rights, interest, or claims which are not shown by the Public Records but which could be ascertained by an inspection of the Land or by making inquiry of persons in possession thereof.

4. Easements, claims of easement or encumbrances which are not shown by the Public Records.

5. Discrepancies, conflicts in boundary lines, shortage in area, encroachments, or any other facts which a correct survey would disclose, and which are not shown by the Public Records.

6. (a) Unpatented mining claims; (b) Reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) Water rights, claims or title to water, ditch or ditch right, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records; (d) Indian Tribal Codes or Regulations, Indian Treaty or Aboriginal Rights, including easements or equitable servitudes.

7. Any lien or right to a lien for services, labor, material or equipment, unless such lien is shown by the Public Records at Date of Policy and not otherwise excepted from coverage herein.

8. Any service, installation, connection, maintenance, construction, tap or reimbursement charges/costs for sewer, water, garbage or electricity.

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SCHEDULE B - SECTION 2
(continued)
SPECIAL EXCEPTIONS

9. Lien of Real Estate Excise Tax upon sale of said premises, or transfer of a controlling interest, if unpaid. As of the date herein, the excise tax rates are as follows:
Levy/Area Code:117023 as to Lots 1 and 2 and 117000 as to Lot 4

   State Excise Tax for real property classified as Timberland (RCW 84.34 or RCW 84.33) or Agricultural land (RCW 84.34.020):

   1.28% of the selling price

   All other State Excise Tax:
   1.10% of the selling price less than or equal to $525,000.00
   1.28% of the selling price from $525,000.01 to $1,525,000.00
   2.75% of the selling price from $1,525,000.01 to $ 3,025,000.00
   3.00% of the selling price over $3,025,000.00

   Local Excise Tax for the City of Camas
   .50% of the selling price

   In additional to Excise Tax due, a fee of $5.00 will be charged on all taxable transactions ($10.00 on all exempt transactions)

   NOTE: The subject property herein described contains multiple Levy/Area Codes. The multiple location code REETA will need to be completed disclosing each Levy/Area Code.

10. General Taxes for the year 2025.

Tax Account No.:	125193000	
Amount Billed:	$	23,861.03
Amount Paid:	$	0.00
Amount Due:	$	23,861.03
Assessed Land Value:	$	2,508,507.00
Assessed Improvement Value:	$	0.00

   (Affects Lot 1)

11. General Taxes for the year 2025.

Tax Account No.:	986055381	
Amount Billed:	$	7,546.78
Amount Paid:	$	0.00

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Amount Due:	$	7,546.78
Assessed Land Value:	$	791,085.00
Assessed Improvement Value:	$	0.00

(Affects Lot 2)

12. General Taxes for the year 2025.

Tax Account No.:	125185000	
Amount Billed:	$	70.76
Amount Paid:	$	0.00
Amount Due:	$	70.76
Assessed Land Value:	$	2,797,651.00
Assessed Improvement Value:	$	0.00

Said lands have been classified as Farm and Agricultural Land for tax purposes. They will be subject to further taxation and interest thereupon as provided by RCW 84.33 and 84.34 upon withdrawal from such classification or change in use. If the new owners wish to continue the classification or designation of said lands, it will be necessary that said new owners sign the Notice of Continuance section in the State Excise Tax Affidavit. If the new owners do not desire to continue such classification or designation, all compensating or additional tax shall be due and payable at the time of sale. For determination of any compensating or additional tax due, the County Assessor must be consulted prior to sale.

(Affects Lot 4)

13. City liens, if any, for the City of Camas

14. Easement, including terms and provisions contained therein:

Recording Date:	December 13, 1962
Recording Information:	G346982
In Favor of:	Public Utility District No. 1 of Clark County, a municipal corporation
For:	Pole lines and conductors for transmission of electric energy, incluidng communication facilities
Affects:	Lots 1 and 2

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15. A Deed of Trust to secure an original indebtedness of $300,000.00 recorded April 16, 2009 as Recording No. 4550925 of Official Records.

Dated:	April 1, 2009
Trustor:	Douglas B. MacDonald, Trustee of the MacDonald Living Trust, dated February 9, 1988
Trustee:	Stewart Title Company
Beneficiary:	Dennis W. Daley, a married man, as his sole and separate property

A document recorded May 12, 2020 as Recording No. 5732234 of Official Records provides that Clark County Title Company was substituted as trustee under the deed of trust.

The Deed of Trust/Mortgage was Partially reconveyed as to a portion by instrument recorded October 27, 2015 under Recording No. 5226702.

The Deed of Trust/Mortgage was Partially reconveyed as to a portion by instrument recorded May 12, 2020 under Recording No. 5732235.

16. The terms and provisions contained in the document entitled "Easement for Stormwater Discharge" recorded February 15, 2017 as Recording No. 5377609 of Official Records.

17. Restrictions, conditions, dedications, notes, easements and provisions, if any, as contained and/or delineated on the face of the 544 Reservoir Short Plat recorded March 24, 2010 as Book 4 of Short Plats, page 246, in Clark County, Washington.

18. Evidence of the authority of the individual(s) to execute the forthcoming document for MacKay Family Clark County Properties LLC, a Washington limited liability company, copies of the current operating agreement should be submitted prior to closing.

19. Terms, provisions, conditions of the Trust Agreement of the Donald G. MacKay Remainder Trust and any subsequent modifications, a copy of which should be submitted to this office for inspection.

20. A deed from the spouse of any married vestee herein be recorded in the public records, or the joinder of the spouse of any married vestee named herein on any conveyance, encumbrance or lease to be executed by the vestee.

The deed should contain the following statement:

"It is the express intent of the grantor, being the spouse of the grantee, to convey all right, title and interest of the grantor, community or otherwise, in and to the herein described property to the grantee as his/her sole and separate property."

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21. Evidence of the authority of the individual(s) to execute the forthcoming document for Allied Development, LLC, a Wyoming limited liability company, copies of the current operating agreement should be submitted prior to closing.

    NOTE: The Washington Corporation Division has no active record of Allied Development, LLC, a Wyoming limited liability company.

22. Terms, provisions, conditions of the Trust Agreement of MacDonald Living Trust dated February 9, 1988, and any subsequent modifications, a copy of which should be submitted to this office for inspection.

23. Furnish the following in connection with the interest of Douglas B. MacDonald, as Trustee under the MacDonald Living Trust, dated February 9, 1988:

    a) Ancillary Complaint and Motion for Appointment of Receiver.

    b) Appointment Motion, Appointment Order, and proof that such Order has been filed with the Superior Court, Clark County Washington.

    c) Proof that service of the Notice of Motion Appointing Receiver and all subsequent motions have been served on all parties having an identified recorded, unrecorded, or inchoate interest in the Land.

    d) Proof that any bond required in connection with either the appointment of the receiver or the sale by the receiver is properly posted.

    e) Motion for Hearing to Confirm Sale with Purchase and Sale Agreement attached.

24. Satisfaction and release of judgment in the Superior Court of Washington for King County Cause No. 12-2-17621-7-SEA, in favor of The Federal Deposit insurance Corporation, as the receiver for The Cowlitz Bank, a Washington State Banking Corporation, against Estate of Arch MacDonald; Soper Hill Properties, Inc., a Washington corporation; and Douglas B. MacDonald, in his capacity as Trustee for the MacDonald Living Trust, Personal Representative of the Estate of Arch MacDonald, and Personal Representative of the Estate of Pauline MacDonald, as Defendants.

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File Number: NCS-1249253-PHX1

INFORMATION NOTES

1. Effective January 1, 1997, and pursuant to amendment of Washington State Statutes relating to standardization of recorded documents, the following format and content requirements must be met. Failure to comply may result in rejection of the document by the recorder.

2. Any sketch attached hereto is done so as a courtesy only and is not part of any Title Commitment or Policy. It is furnished solely for the purpose of assisting in locating the Land and First American expressly disclaims any liability which may result from reliance made upon it.

3. The description can be abbreviated as suggested below if necessary to meet standard requirements. The full text of the description must appear in the document (s) to be insured.

   Lots 1, 2, & 4, SP 4/246

   APN: 125193000 and 986055381 and 125185000

4. A fee will be charged upon the cancellation of this Commitment pursuant to the Washington State Insurance Code and the filed Rate Schedule of the Company.

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Commitment No. NCS-1249253-PHX1

EXHIBIT A

The Land referred to herein below is situated in the County of Clark, State of Washington, and is described as follows:

Lots 1, 2 and 4 of 544 Reservoir Short Plat recorded March 24, 2020 in Book 4 of Short Plats, page 246, records of Clark County, Washington.

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ALTA COMMITMENT FOR TITLE INSURANCE
issued by
FIRST AMERICAN TITLE INSURANCE COMPANY

NOTICE

IMPORTANT—READ CAREFULLY: THIS COMMITMENT IS AN OFFER TO ISSUE ONE OR MORE TITLE INSURANCE POLICIES. ALL CLAIMS OR REMEDIES SOUGHT AGAINST THE COMPANY INVOLVING THE CONTENT OF THIS COMMITMENT OR THE POLICY MUST BE BASED SOLELY IN CONTRACT.

THIS COMMITMENT IS NOT AN ABSTRACT OF TITLE, REPORT OF THE CONDITION OF TITLE, LEGAL OPINION, OPINION OF TITLE, OR OTHER REPRESENTATION OF THE STATUS OF TITLE. THE PROCEDURES USED BY THE COMPANY TO DETERMINE INSURABILITY OF THE TITLE, INCLUDING ANY SEARCH AND EXAMINATION, ARE PROPRIETARY TO THE COMPANY, WERE PERFORMED SOLELY FOR THE BENEFIT OF THE COMPANY, AND CREATE NO EXTRACONTRACTUAL LIABILITY TO ANY PERSON, INCLUDING A PROPOSED INSURED.

THE COMPANY'S OBLIGATION UNDER THIS COMMITMENT IS TO ISSUE A POLICY TO A PROPOSED INSURED IDENTIFIED IN SCHEDULE A IN ACCORDANCE WITH THE TERMS AND PROVISIONS OF THIS COMMITMENT. THE COMPANY HAS NO LIABILITY OR OBLIGATION INVOLVING THE CONTENT OF THIS COMMITMENT TO ANY OTHER PERSON.

COMMITMENT TO ISSUE POLICY

Subject to the Notice; Schedule B, Part I—Requirements; Schedule B, Part II—Exceptions; and the Commitment Conditions, First American Title Insurance Company, a Nebraska Corporation (the "Company"), commits to issue the Policy according to the terms and provisions of this Commitment. This Commitment is effective as of the Commitment Date shown in Schedule A for each Policy described in Schedule A, only when the Company has entered in Schedule A both the specified dollar amount as the Proposed Amount of Insurance and the name of the Proposed Insured.

If all of the Schedule B, Part I—Requirements have not been met within six months after the Commitment Date, this Commitment terminates and the Company's liability and obligation end.

FIRST AMERICAN TITLE INSURANCE COMPANY

By: _____
Kenneth D. DeGiorgio, President

By: _____
Lisa W. Cornehl, Secretary

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COMMITMENT CONDITIONS

1. DEFINITIONS

a. "Discriminatory Covenant": Any covenant, condition, restriction, or limitation that is unenforceable under applicable law because it illegally discriminates against a class of individuals based on personal characteristics such as race, color, religion, sex, sexual orientation, gender identity, familial status, disability, national origin, or other legally protected class.

b. "Knowledge" or "Known": Actual knowledge or actual notice, but not constructive notice imparted by the Public Records.

c. "Land": The land described in Item 5 of Schedule A and improvements located on that land that by State law constitute real property. The term "Land" does not include any property beyond that described in Schedule A, nor any right, title, interest, estate, or easement in any abutting street, road, avenue, alley, lane, right-of-way, body of water, or waterway, but does not modify or limit the extent that a right of access to and from the Land is to be insured by the Policy.

d. "Mortgage": A mortgage, deed of trust, trust deed, security deed, or other real property security instrument, including one evidenced by electronic means authorized by law.

e. "Policy": Each contract of title insurance, in a form adopted by the American Land Title Association, issued or to be issued by the Company pursuant to this Commitment.

f. "Proposed Amount of Insurance": Each dollar amount specified in Schedule A as the Proposed Amount of Insurance of each Policy to be issued pursuant to this Commitment.

g. "Proposed Insured": Each person identified in Schedule A as the Proposed Insured of each Policy to be issued pursuant to this Commitment.

h. "Public Records": The recording or filing system established under State statutes in effect at the Commitment Date under which a document must be recorded or filed to impart constructive notice of matters relating to the Title to a purchaser for value without Knowledge. The term "Public Records" does not include any other recording or filing system, including any pertaining to environmental remediation or protection, planning, permitting, zoning, licensing, building, health, public safety, or national security matters.

i. "State": The state or commonwealth of the United States within whose exterior boundaries the Land is located. The term "State" also includes the District of Columbia, the Commonwealth of Puerto Rico, the U.S. Virgin Islands, and Guam.

j. "Title": The estate or interest in the Land identified in Item 3 of Schedule A.

2. If all of the Schedule B, Part I—Requirements have not been met within the time period specified in the Commitment to Issue Policy, this Commitment terminates and the Company's liability and obligation end.

3. The Company's liability and obligation is limited by and this Commitment is not valid without:

a. the Notice;
b. the Commitment to Issue Policy;
c. the Commitment Conditions;
d. Schedule A;

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e. Schedule B, Part I—Requirements; and
f. Schedule B, Part II—Exceptions; and

4. COMPANY'S RIGHT TO AMEND

The Company may amend this Commitment at any time. If the Company amends this Commitment to add a defect, lien, encumbrance, adverse claim, or other matter recorded in the Public Records prior to the Commitment Date, any liability of the Company is limited by Commitment Condition 5. The Company is not liable for any other amendment to this Commitment.

5. LIMITATIONS OF LIABILITY

a. The Company's liability under Commitment Condition 4 is limited to the Proposed Insured's actual expense incurred in the interval between the Company's delivery to the Proposed Insured of the Commitment and the delivery of the amended Commitment, resulting from the Proposed Insured's good faith reliance to:
   i. comply with the Schedule B, Part I—Requirements;
   ii. eliminate, with the Company's written consent, any Schedule B, Part II—Exceptions; or
   iii. acquire the Title or create the Mortgage covered by this Commitment.
b. The Company is not liable under Commitment Condition 5.a. if the Proposed Insured requested the amendment or had Knowledge of the matter and did not notify the Company about it in writing.
c. The Company is only liable under Commitment Condition 4 if the Proposed Insured would not have incurred the expense had the Commitment included the added matter when the Commitment was first delivered to the Proposed Insured.
d. The Company's liability does not exceed the lesser of the Proposed Insured's actual expense incurred in good faith and described in Commitment Condition 5.a. or the Proposed Amount of Insurance.
e. The Company is not liable for the content of the Transaction Identification Data, if any.
f. The Company is not obligated to issue the Policy referred to in this Commitment unless all of the Schedule B, Part I—Requirements have been met to the satisfaction of the Company.
g. The Company's liability is further limited by the terms and provisions of the Policy to be issued to the Proposed Insured.

6. LIABILITY OF THE COMPANY MUST BE BASED ON THIS COMMITMENT; CHOICE OF LAW AND CHOICE OF FORUM

a. Only a Proposed Insured identified in Schedule A, and no other person, may make a claim under this Commitment.
b. Any claim must be based in contract under the State law of the State where the Land is located and is restricted to the terms and provisions of this Commitment. Any litigation or other proceeding brought by the Proposed Insured against the Company must be filed only in a State or federal court having jurisdiction.
c. This Commitment, as last revised, is the exclusive and entire agreement between the parties with respect to the subject matter of this Commitment and supersedes all prior commitment negotiations, representations, and proposals of any kind, whether written or oral, express or implied, relating to the subject matter of this Commitment.

This page is only a part of a 2021 ALTA Commitment for Title Insurance issued by First American Title Insurance Company. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I—Requirements; and Schedule B, Part II—Exceptions; and a counter-signature by the Company or its issuing agent that may be in electronic form.

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d. The deletion or modification of any Schedule B, Part II—Exception does not constitute an agreement or obligation to provide coverage beyond the terms and provisions of this Commitment or the Policy.
e. Any amendment or endorsement to this Commitment must be in writing.
f. When the Policy is issued, all liability and obligation under this Commitment will end and the Company's only liability will be under the Policy.

7. IF THIS COMMITMENT IS ISSUED BY AN ISSUING AGENT
The issuing agent is the Company's agent only for the limited purpose of issuing title insurance commitments and policies. The issuing agent is not the Company's agent for closing, settlement, escrow, or any other purpose.

8. PRO-FORMA POLICY
The Company may provide, at the request of a Proposed Insured, a pro-forma policy illustrating the coverage that the Company may provide. A pro-forma policy neither reflects the status of Title at the time that the pro-forma policy is delivered to a Proposed Insured, nor is it a commitment to insure.

9. CLAIMS PROCEDURES
This Commitment incorporates by reference all Conditions for making a claim in the Policy to be issued to the Proposed Insured. Commitment Condition 9 does not modify the limitations of liability in Commitment Conditions 5 and 6.

10. CLASS ACTION
ALL CLAIMS AND DISPUTES ARISING OUT OF OR RELATING TO THIS COMMITMENT, INCLUDING ANY SERVICE OR OTHER MATTER IN CONNECTION WITH ISSUING THIS COMMITMENT, ANY BREACH OF A COMMITMENT PROVISION, OR ANY OTHER CLAIM OR DISPUTE ARISING OUT OF OR RELATING TO THE TRANSACTION GIVING RISE TO THIS COMMITMENT, MUST BE BROUGHT IN AN INDIVIDUAL CAPACITY. NO PARTY MAY SERVE AS PLAINTIFF, CLASS MEMBER, OR PARTICIPANT IN ANY CLASS OR REPRESENTATIVE PROCEEDING. ANY POLICY ISSUED PURSUANT TO THIS COMMITMENT WILL CONTAIN A CLASS ACTION CONDITION.

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4. Geotechnical Soil Analysis Report

Report of Geotechnical Engineering Services

NW 18th Avenue Subdivision

Camas, Washington

May 28, 2025

Geotechnical ■ Environmental ■ Special Inspections

Columbia West

Engineering, Inc



Geotechnical ▪ Environmental ▪ Special Inspections
Columbia West Engineering, Inc

Vancouver, Washington • Phone: 360-823-2900
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May 28, 2025

Allied Development
16430 North Scottsdale Road, Suite 210
Scottsdale, AZ 85254

Attention: Joe Deaser

Re: Report of Geotechnical Engineering Services
NW 18th Avenue Subdivision
4511 NW 18th Avenue
Camas, Washington
CWE Project: AlliedDev-1-01-1

Columbia West Engineering, Inc. (Columbia West) is pleased to present this report of geotechnical engineering services for the NW 18th Avenue Subdivision project located in Camas, Washington. Our services were conducted in accordance with our proposal dated March 27, 2025.

We appreciate the opportunity to work on the project. Please contact us if you have any questions regarding this report.

Sincerely,

Greg L. Williamson, PE
Senior Geotechnical Engineer

Daniel E. Lehto, PE, GE
Principal Engineer

DANIEL E. LEHTO
STATE OF WASHINGTON
44702
REGISTERED
PROFESSIONAL ENGINEER

Signed 05/28/2025

Expires 06/05/2025

GLW:DEL:kat
Attachments
Document ID: AlliedDev-1-01-1-052825-geor.docx

EXECUTIVE SUMMARY

This executive summary presents the primary geotechnical considerations associated with the proposed NW 18th Avenue Subdivision project located in Camas, Washington. Our conclusions and recommendations are based on the subsurface information presented in the report and proposed development information provided by the design and construction team. Detailed discussion of the geotechnical considerations summarized here is presented in respective sections of the report.

- Proposed residential structures may be supported by conventional spread footings bearing on firm, native soil or engineered structural fill.

- The near-surface native soil is sensitive to disturbance when at a moisture content that is above optimum. As discussed in the report, the subgrade should be protected from disturbance and damage by construction traffic.

- Moisture conditioning will be required to use the on-site soil as structural fill. Accordingly, extended dry weather will be required to adequately condition and place the soil as structural fill. Adequately compacting the on-site soil during the rainy season or during prolonged periods of rainfall will be difficult, if not impossible.

- Gravel, cobbles, and boulders were encountered in portions of the site that caused excavator refusal in four locations (test pits TP-8 through TP-10 and TP-12) at depths between 5.5 and 7 feet BGS. The site is underlain by the Basaltic Andesite of Prune Hill geologic formation and the soil encountered resembled residual soil that formed over this material. If deep excavations or utilities are planned, additional exploration may be warranted in specific locations to determine if conventional excavation equipment will be adequate to complete site construction.

- Groundwater seepage was encountered in a few of our test pits at depths between 5.5 and 8 feet BGS. Dewatering may be required for deeper utilities, particularly in areas of cut and during the wet season. Drainage mat construction may be required where fill material needs to be placed over wet soil or areas of shallow groundwater seepage.

- Based on the results of our subsurface explorations and infiltration testing results, infiltration is not a feasible option for stormwater management.

- Based on the results of infiltration testing, the near-surface native soil meets the classification criteria for WWHM Soil Group 4.

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ABBREVIATIONS AND ACRONYMS

AC	asphalt concrete
AOS	apparent opening size
ASCE	American Society of Civil Engineers
ASTM	ASTM International
BGS	below ground surface
g	gravitational acceleration (32.2 feet/second^2)
H:V	horizontal to vertical
in/hr	inch(es) per hour
km	kilometer(s)
MCE	maximum considered earthquake
NAVD 88	North American Vertical Datum of 1988
OSHA	Occupational Safety and Health Administration
pcf	pounds per cubic foot
pci	pounds per cubic inch
psf	pounds per square foot
PVC	polyvinyl chloride
ReMi	refraction microtremor
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
WSS	Washington Standard Specifications for Road, Bridge, and Municipal Construction (2024)
WWHM	Western Washington Hydrology Model

REPORT OF GEOTECHNICAL ENGINEERING SERVICES
NW 18TH AVENUE SUBDIVISION
CAMAS, WASHINGTON

1.0 INTRODUCTION

Columbia West is pleased to submit this report of geotechnical engineering services for the NW 18th Avenue Subdivision project located in Camas, Washington. The 24.41-acre site is located northwest of the intersection of NW Brady Road and NW 20th Avenue. The site is shown relative to surrounding physical features on Figure 1. The existing conditions and exploration locations are shown on Figure 2. Abbreviations and acronyms used herein are defined immediately following the Table of Contents.

2.0 PROJECT UNDERSTANDING

Based on our correspondence and review of a preliminary site plan, we understand the proposed development includes construction of a residential subdivision with 155 single-family residential lots, AC-paved public roadways and private streets, underground utilities, and stormwater management facilities. Adjacent to NW Brady Road, approximately 6.5 acres of the site are proposed as open space. We assume that future residential structures will be of wood-framed construction with relatively light foundation loads. Based on site topography, cuts and fills are expected to be up to several feet each. We should be contacted to revise our recommendations if the assumptions stated above are incorrect.

3.0 PURPOSE AND SCOPE

The purpose of our services was to provide geotechnical engineering recommendations for use in design and construction of the proposed residential structures. Specifically, we completed the following tasks:

- Reviewed information available in Columbia West's files from previous geological and geotechnical studies conducted at and in the vicinity of the site.
- Coordinated and managed the field exploration program, which included coordinating site access and scheduling subcontractors and Columbia West field staff.
- Excavated 12 test pits to depths between 5.5 and 15 feet BGS.
- Conducted infiltration testing in three of the test pits in accordance with City of Camas requirements.
- Maintained continuous logs of the explorations and collected soil samples at representative intervals for laboratory testing.
- Completed a laboratory testing program using select soil samples collected from the explorations, which included the following:
  - Twelve moisture content determinations in general accordance with ASTM D2216
  - Six particle-size analyses in general accordance with ASTM D1140
  - Three Atterberg limits tests in general accordance with ASTM D4318
- Prepared this geotechnical report that includes the following:
  - Summary of soil and groundwater conditions at the site
  - Assessment of seismic hazards
  - Exploration logs and laboratory testing results

- Recommendations for shallow spread footings, including foundation settlement potential
- Recommendations for floor slab subgrade preparation
- Recommendations for retaining walls, including lateral earth pressures, backfill, compaction, and drainage
- Recommendations for site preparation, including grading and drainage, stripping depths, fill type for imported material, compaction criteria, trench excavation and backfill, use of on-site soil, and wet/dry weather earthwork
- Recommendations for managing groundwater conditions that may affect the performance of structures and site improvements
- Infiltration testing results and WWHM soil group classifications
- Recommendations for AC pavement construction
- Code-based seismic design parameters in accordance with ASCE 7-16

4.0 SITE CONDITIONS

4.1 GEOLOGY

The site lies within the Willamette Valley/Puget Sound Lowland, a wide physiographic depression flanked by the mountainous Coast Range on the west and the Cascade Range on the east. Inclined or uplifted structural zones within the Willamette Valley/Puget Sound Lowland constitute highland areas, and depressed structural zones form sediment-filled basins. The site is located in the east portion of the Portland/Vancouver Basin, an open, somewhat elliptical, northwest-trending syncline approximately 60 miles wide.

The near-surface geology is expected to consist of Pleistocene-aged Basaltic Andesite of Prune Hill (Qbph; Evarts and O'Connor 2008). The unit is part of the Boring Volcanic Field, a series of volcanic vents that form several buttes or cone-shaped hills in the basin. The formation is exposed south of the site in the recently reclaimed Fisher Pit Quarry.

The Web Soil Survey identifies the surface soil primarily as Powell silt loam with a small swath mapped as Odne silt loam in the proposed open space area (USDA 2025). Powell and Odne series soils are generally fine-grained clays and silts with low permeability, moderate to high water capacity, and low shear strength. They are generally moisture sensitive, somewhat compressible, and described as having low to moderate shrink-swell potential. The erosion hazard is slight primarily based on slope grade. Odne soils are typically found in wetland areas and are mapped as "hydric" according to Clark County Maps Online (Clark County 2025).

4.2 SURFACE CONDITIONS

The 24.41-acre site is generally bounded by industrial development to the west, undeveloped acreage to the north, NW Brady Road to the east, and NW 18th Avenue to the south. The site consists of vacant, undeveloped land that is forested through the central area and vegetated with grass to the east and west. Along the southern site boundary, remnant asphalt, debris, and small piles of gravel are present adjacent to NW 18th Avenue. Review of historical aerial photographs indicates that the remnant materials may be associated with residential and agricultural structures that were present on the site between the 1970s and 1990s. The site slopes gently down from west to east with elevations ranging from approximately 520 to 420 feet (NAVD 88).

4.3 SUBSURFACE CONDITIONS

Subsurface conditions were explored by excavating 12 test pits (TP-1 through TP-12) to depths between 5.5 and 15 feet BGS. The exploration locations are shown on Figure 2. A description of the field exploration program and the exploration logs are presented in Appendix A. A description of the laboratory testing program and the testing results are presented in Appendix B. A summary of the subsurface conditions is presented below.

4.3.1 Tilled Zone/Topsoil and Root Zone

All of the test pits were explored through grass vegetation with 14 to 18 inches of tilled zone/topsoil and a 3- to 4-inch-thick root zone. The tilled zone/topsoil generally consists of sandy clay with trace organics.

4.3.2 Clay

Underlying the tilled zone/topsoil layer in all test pits, clay extends to depths between 5.5 and 15 feet BGS. The clay contains varying proportions of sand and is medium stiff in consistency. In test pits TP-6, TP-8 through TP-10, and TP-12, the clay contains gravel, cobbles, and boulders at depths below 4 to 10 feet BGS. We interpret the gravel to indicate the transition between the near-surface residual clay and underlying basaltic andesite bedrock. In test pits TP-8 through TP-10 and TP-12, refusal of the excavator was observed on boulders or basalt. The moisture content of the clay ranged from 20 to 31 percent at the time of exploration. Atterberg limits testing indicates that the clay exhibits low to high plasticity.

4.3.3 Basalt

Underlying the clay in test pits TP-8 through TP-10 and TP-12, refusal of the excavator was observed on boulders or basalt at depths between 5.5 and 7 feet BGS. The boulders and basalt appear to represent the Pleistocene-aged Basaltic Andesite of Prune Hill (Evarts and O'Connor 2008). Where encountered, boulders were up to 36 inches in diameter.

4.3.4 Groundwater

Groundwater seepage was observed in test pits TP-1, TP-3, and TP-8 at depths between 5.5 and 8 feet BGS. Based on our knowledge of the surrounding area, groundwater levels are subject to seasonal variation and may rise during extended periods of increased precipitation or flooding. Perched groundwater may also be present in localized areas at shallow depths, as indicated.

4.4 INFILTRATION TESTING

Infiltration testing was completed in three of the test pits to assist in the evaluation of stormwater infiltration facilities for the project. The infiltration testing was conducted using the single-ring, failing head test method in general accordance with the *Clark County Stormwater Manual* (Clark County 2021). Table 1 summarizes our infiltration testing results and fines content determinations. The exploration logs and laboratory testing results are presented in Appendices A and B, respectively. Based on the infiltration testing results and presence of shallow groundwater seepage and near-surface rock, infiltration is not considered to be a feasible option for stormwater management.

Table 1. Infiltration Testing Results

Location	Depth (feet BGS)	Soil Description	Fines Content[1] (percent)	Unfactored Saturated Hydraulic Conductivity (in/hr)
TP-5	2	CLAY (CL)	86	Negligible
TP-8	2	CLAY (CL)	86	Negligible
TP-11	2	CLAY (CL)	87	Negligible

1. Percent passing U.S. Standard No. 200 sieve

4.4.1 WWHM Soil Group Classification

As shown in Table 1, infiltration rates were negligible in the tested locations. Based on review of Table 7-2 of the USDA hydrologic soil group criteria (USDA 2009), Appendix 2-A of the 2021 *Clark County Stormwater Manual,* and the Clark County Western Washington Hydrology Model (WWHM) Soil Groupings Memorandum (Otak 2010), the near-surface native soil meets the classification criteria for WWHM Soil Group 4.

4.5 SEISMIC HAZARDS

4.5.1 Liquefaction

Liquefaction is caused by a rapid increase in pore water pressure that reduces the effective stress between soil particles. Granular soil, which relies on interparticle friction for strength, is susceptible to liquefaction and undergoes a loss of strength until the excess pore pressures dissipate. In general, loose, saturated sand soil with low silt and clay content is the most susceptible to liquefaction. Silty soil with low plasticity is moderately susceptible to liquefaction under relatively higher levels of ground shaking. As previously summarized, native subsurface conditions generally consist of clay underlain by basaltic andesite bedrock. Accordingly, liquefaction is not a geotechnical design consideration.

4.5.2 Lateral Spreading

Lateral spreading is a liquefaction-related seismic hazard and occurs on gently sloping or flat sites underlain by liquefiable sediment adjacent to an open face, such as a riverbank. Liquefied soil adjacent to an open face can flow toward the open face, resulting in lateral ground displacement. Since liquefaction is not considered a hazard at the site, lateral spreading is also not a geotechnical design consideration.

4.5.3 Fault Rupture

Based on USGS interactive fault mapping, the nearest mapped fault to the site is the Lacamas Lake fault, which is located approximately 3.3 km northeast of the site (USGS 2025). As such, fault rupture is not considered a hazard at the site.

5.0 DESIGN

5.1 FOUNDATION SUPPORT

5.1.1 General

Based on the results of our explorations and analysis, the proposed residential structures can be supported by spread footings bearing on firm, native soil or engineered structural fill.

Foundations should not be supported by unsuitable fill, soft soil, deleterious material, or disturbed soil. Although not observed in our test pits, undocumented fill may be present near NW 18th Avenue where previous residential and agricultural structures are shown on historical aerial photographs. If encountered during foundation excavation, these materials should be removed and replaced with structural fill. If footing subgrade soil is above its optimum moisture content at the time of subgrade preparation, we recommend placing a sufficient amount of crushed rock (typically 2 to 4 inches) to protect it from foot traffic. The crushed rock should consist of imported granular material as described in Section 6.4 (Materials).

5.1.2 Bearing Capacity

Continuous perimeter wall and isolated spread footings should have minimum widths of 18 and 24 inches, respectively. The bases of exterior footings should be at least 18 inches below the lowest adjacent exterior grade. The bases of interior footings should bear at least 12 inches below the base of the floor.

Footings bearing on subgrade prepared as recommended above should be sized based on an allowable bearing pressure of 1,500 psf. As the allowable bearing pressure is a net bearing pressure, the weight of the footing and associated backfill may be ignored when calculating footing sizes. The recommended allowable bearing pressure applies to the total of dead plus long-term live loads and may be increased by 50 percent for transient lateral forces such as seismic or wind.

5.1.3 Settlement

Foundations designed in accordance with this report are expected to experience post-construction settlement of less than 1 inch. Differential post-construction settlement between comparably loaded footing elements is not expected to exceed 0.5 inch over a distance of 50 feet.

5.1.4 Resistance to Sliding

Lateral loads on building and retaining wall footings can be resisted by passive earth pressure on the sides of structures and by friction on the bases of footings. Our analysis indicates that the available passive earth pressure for footings confined by the on-site soil or planned structural fill is 250 pcf, modeled as an equivalent fluid pressure. Adjacent floor slabs, pavement, or the upper 12-inch depth of unpaved areas should not be considered when calculating passive resistance. An allowable coefficient of friction equal to 0.35 can be used for footings supported on native soil. If a minimum of 6 inches of gravel are placed at the base of a footing, the coefficient of friction can be increased to 0.4.

5.1.5 Subgrade Observation and Preparation

All footing subgrade should be evaluated by a representative of Columbia West to confirm suitable bearing conditions. Observations should also confirm that loose or soft material, organic material, unsuitable fill, prior topsoil zones, and softened subgrade (if present) have been removed. Localized deepening of footing excavations may be required to penetrate any deleterious or soft material, particularly during wet weather conditions. Footing excavations should be backfilled with compacted crushed aggregate.

5.2 FLOOR SLABS

Floor slabs can be supported on firm, competent, native soil or engineered structural fill prepared as described in this report. Floor slabs with maximum floor loads of 150 psf may be designed assuming a modulus of subgrade reaction, k, of 125 pci.

To provide a capillary break, slabs should be underlain by at least 6 inches of compacted crushed aggregate that contains less than 5 percent fines by dry weight. Geotextile may be used below the crushed aggregate layer to increase subgrade support. Recommendations for floor slab aggregate base and subgrade geotextile are discussed in Section 6.4 (Materials).

All slab subgrade should be evaluated by a member of our geotechnical staff to confirm suitable bearing conditions. Observations should also confirm that loose or soft material, organic material, unsuitable fill, prior topsoil zones, and softened subgrade have been removed and replaced with structural fill. In addition, contaminated base rock for the slabs should be removed and replaced prior to pouring the slab.

5.3 SEISMIC DESIGN CRITERIA

Seismic design for the proposed residential structures is prescribed by ASCE 7-16. Based on the results of subsurface exploration and our experience running ReMi arrays on nearby sites, an appropriate site class for the site is Site Class D. Seismic design parameters for Site Class D are presented in Table 2.

Table 2. Seismic Design Parameters in Accordance with ASCE 7-16[1]

Parameter	Short Period (T_s)	1-Second Period (T_1)
MCE spectral response acceleration, S	S_s = 0.836 g	S_1 = 0.359 g
Site class	D	
Site coefficient, F	F_a = 1.17	F_v = 1.94
Adjusted spectral response acceleration, S_M	S_{MS} = 0.97 g	S_{M1} = 0.70 g
Design spectral response acceleration, S_D	S_{DS} = 0.65 g	S_{D1} = 0.46 g

1. The structural engineer should evaluate ASCE 7-16 code requirements and exceptions to determine if these parameters are valid for design.

Columbia West recommends the project structural engineer evaluate the requirements and exceptions presented in ASCE 7-16 to determine if the parameters for Site Class D provided in Table 2 can be used for design or if a site-specific seismic hazard evaluation is required (not anticipated for typical residential structures).

5.4 RETAINING STRUCTURES

Lateral earth pressures should be considered in design of retaining walls and below-grade structures. Hydrostatic pressure and additional surcharge loading should also be considered. Retaining wall foundation construction and bearing capacity should adhere to the specifications in Section 5.1 (Foundation Support).

Permanent retaining walls that are not restrained from rotation should be designed for active earth pressures using an equivalent fluid pressure of 35 pcf. Walls that are restrained from rotation should be designed for an at-rest equivalent fluid pressure of 55 pcf. The recommended earth pressures assume a maximum wall height of 10 feet with well-drained, level backfill. These values also assume that adequate drainage is provided behind retaining walls to prevent hydrostatic pressure from developing. Lateral earth pressures induced by surcharge loads may be estimated using the criteria presented on Figure 3.

Seismic forces may be calculated by superimposing a uniform lateral force of $9H^2$ pounds per lineal foot of wall, where H is the total wall height in feet. The force should be applied as a uniformly distributed load with the resultant located at 0.6H from the base of the wall.

5.4.1 Wall Drainage and Backfill

A minimum 6-inch-diameter, perforated collector pipe should be placed at the bases of retaining walls. The pipe should be embedded in a minimum 2-foot-wide zone of angular drain rock that is wrapped in a drainage geotextile fabric and extends up the back of the wall to within 1 foot of finished grade. The drain rock and geotextile drainage fabric should meet the specifications in Section 7.6 (Materials). Perforated collector pipes should discharge at an appropriate location away from the base of the wall. Discharge pipes should not be tied directly into stormwater drainage systems, unless measures are taken to prevent backflow into the drainage system of the wall.

Backfill placed behind walls and extending a horizontal distance of ½H, where H is the height of the retaining wall, should consist of select granular material placed and compacted as described in Section 6.4.1 (Structural Fill).

Settlement of up to 1 percent of the wall height commonly occurs immediately adjacent to the wall as the wall rotates and develops active lateral earth pressures. Consequently, we recommend that construction of flatwork adjacent to retaining walls be delayed at least four weeks after placement of wall backfill, unless survey data indicates that settlement is complete prior to that time.

5.5 PAVEMENT

We understand that public roadways for the subdivision will be constructed in accordance with jurisdictional standards. For dry weather construction, pavement surface sections should bear on competent subgrade consisting of firm, native soil or engineered structural fill. Wet weather construction may require an increased thickness of aggregate base as discussed in Section 6.2 (Construction Traffic and Staging).

In general, AC paving is not recommended during cold weather (temperatures less than 40 degrees Fahrenheit). Compacting under these conditions can result in low compaction and premature pavement distress. Each AC mix design has a recommended compaction temperature range that is specific for the particular AC binder used. In colder temperatures, it is more difficult to maintain the temperature of the AC mix, as it can lose heat while stored in the delivery truck, as it is placed, and in the time between placement and compaction. In Washington, the AC surface temperature during paving should be at least 40 degrees Fahrenheit for lift thicknesses greater

than 2.5 inches and at least 50 degrees Fahrenheit for lift thicknesses between 2 and 2.5 inches. If AC paving must take place during cold weather construction as defined in this section, the contractor and design team should discuss options for minimizing risk to pavement serviceability.

5.6 DRAINAGE

At a minimum, site drainage should include surface water collection and conveyance to properly designed stormwater management structures and facilities. In general, drainage design should conform to City of Camas regulations. Finished site grading should be conducted with positive drainage away from structures at a minimum 2 percent slope for a distance of at least 10 feet. Depressions or shallow areas that may retain ponding water should be avoided.

Recommendations for foundation drains and subdrains are presented in the following sections. Drain rock and geotextile drainage fabric should meet the requirements in Section 6.4 (Materials). Drains should be closely monitored after construction to assess their effectiveness. If additional surface or shallow subsurface seepage becomes evident, the drainage provisions may require modification or additional drains. We should be consulted to provide appropriate recommendations.

5.6.1 Foundation Drains

Roof drains are recommended for all structures. Perimeter building foundation drains should be considered for shallow foundations constructed below existing site grades but are not necessary for the functionality of the buildings.

Foundation and roof drains, where installed, should consist of separate systems that gravity flow away from foundations to an approved discharge location. Perimeter foundation drains should consist of 4-inch-diameter, perforated PVC pipe surrounded by a minimum 2-foot-wide zone of clean, washed drain rock wrapped with geotextile drainage fabric. The wrapped drain rock zone should extend up the sides of embedded walls to within 12 inches of proposed finished grade. Foundation drains should be constructed with a minimum slope of 0.5 percent. The invert elevation of the drainpipe should be at least 18 inches below the elevation of the floor slab.

5.6.2 Subdrains

Subdrains should be considered if portions of the site are cut below surrounding grades. Shallow groundwater or seepage should be conveyed via a drainage channel or perforated pipe into an approved discharge. Recommendations for design and installation of perforated drainage pipe may be performed on a case-by-case basis by Columbia West during construction. Failure to provide adequate surface and subsurface drainage may result in soil slumping or unanticipated settlement of structures exceeding tolerable limits.

5.6.3 Drainage Mat

Site construction in some areas may occur at or near the groundwater table or in areas of existing preferential pathways for surface and subsurface water flow, particularly if work is conducted during wet weather conditions. A drainage mat is typically required in areas that require structural fill placed on top of a natural drainage swale or known seep or spring area. Dewatering may be necessary, and a drainage mat may be required to achieve sufficient elevation for fill placement. A typical drainage mat is shown on Figure 4. Columbia West should determine drainage mat

location, extent, and thickness when subsurface conditions are exposed. Drainage mats may need to be constructed in conjunction with subdrains to convey captured water to an approved discharge location.

5.7 PERMANENT SLOPES

Fill slopes should consist of structural fill material as discussed in Section 6.4.1 (Structural Fill). Fill placed on existing grades steeper than 5H:1V should be horizontally benched at least 10 feet into the slope. Fill slopes greater than 6 feet in height should be vertically keyed into existing subsurface soil. Drainage implementations, including subdrains or perforated drainpipe trenches, may also be necessary in proximity to cut and fill slopes if seeps or springs are encountered. Drainage design may be performed on a case-by-case basis. The extent, depth, and location of drainage may be determined in the field by Columbia West during construction when soil conditions are exposed. Failure to provide adequate drainage may result in soil sloughing, settlement, or erosion.

Final cut or fill slopes at the site should not exceed 2H:1V or 10 feet in height without individual slope stability analysis. The values above assume a minimum horizontal setback for loads of 10 feet from the top of the cut or fill slope face or overall slope height divided by three (H/3), whichever is greater.

Concentrated drainage or water flow over the face of slopes should be prohibited, and adequate protection against erosion is required. Fill slopes should be overbuilt, compacted, and trimmed at least 2 feet horizontally to provide adequate compaction of the outer slope face. Proper cut and fill slope construction is critical to overall project stability and should be observed and documented by Columbia West.

6.0 CONSTRUCTION

6.1 SITE PREPARATION

Vegetation, organic material, remnant pavement, unsuitable fill, and deleterious material should be cleared from areas identified for structures and grading. Vegetation, root zones, organic material, and debris should be removed from the site. Stripped topsoil should also be removed or used only as landscape fill in non-structural areas with slopes less than 25 percent. The post-construction maximum depth of landscape fill placed or spread at any location onsite should not exceed 1 foot. Actual stripping depths should be determined based on visual observations made during construction when soil conditions are exposed.

6.1.1 Subgrade Evaluation

Upon completion of stripping and prior to the placement of structural fill, exposed subgrade soil should be evaluated by proof rolling with a fully loaded dump truck or similar heavy, rubber-tired construction equipment. When the subgrade is too wet for proof rolling or inaccessible to a loaded dump truck, a foundation probe may be used to identify areas of soft, loose, or unsuitable soil. Subgrade evaluation should be performed by Columbia West. If soft or yielding subgrade areas are identified during evaluation, we recommend the subgrade be over excavated and backfilled with compacted imported granular fill.

6.1.2 Test Pit Locations

Test pits excavated during our explorations were backfilled loosely with on-site soil. These excavations should be located and properly backfilled with structural fill during site improvement construction. Trees, stumps, and associated roots should also be removed from structural areas, individually and carefully. Resulting cavities and excavation areas should be backfilled with engineered structural fill.

6.2 CONSTRUCTION TRAFFIC AND STAGING

Near-surface, clay soil will be easily disturbed during construction. If not carefully executed, site preparation, excavation, and grading can create extensive soft areas, resulting in significant repair costs. Earthwork planning should include considerations for minimizing subgrade disturbance, particularly during wet weather conditions.

If construction occurs during wet weather conditions or if the moisture content of the surficial soil is more than a few percentage points above optimum, site stripping and cutting may need to be accomplished using track-mounted equipment. Under these conditions, granular access pads and staging areas will also be necessary to provide a firm support base and sustain construction equipment.

Based on our experience, between 12 and 18 inches of imported granular material are generally required in staging areas and between 18 and 24 inches in areas supporting construction traffic. In areas of heavy construction traffic, geotextile separation fabric may be placed between the subgrade soil and imported granular material to increase subgrade support and minimize fines migration into the aggregate base layer.

Project stakeholders should understand that wet weather construction is risky and costly. Proper construction methods and techniques are critical to overall project integrity and should be observed and documented by Columbia West.

6.3 EXCAVATION

Conventional earthmoving equipment in proper working condition should be capable of making necessary site excavations to the depths of our test pit explorations. Gravel, cobbles, and boulders representing weathered basaltic andesite were encountered in the west portion of the site at depths as shallow as 4 feet BGS. In these locations, refusal of the excavator was observed as shallow as 5.5 feet BGS. Difficult excavation conditions should be anticipated in areas underlain by shallow bedrock. If utility or grading design requires excavations beyond the depths explored during our test pit explorations, a location-specific exploration is recommended to determine if specialized equipment or blasting of intact bedrock may be required.

Temporary excavation sidewalls should maintain a vertical cut to a depth of approximately 4 feet BGS in near-surface clay, provided groundwater seepage is not present in the sidewalls. In sandy soil, excavations will likely slough and cave, even at shallow depths. Open-cut excavation techniques may be used to excavate trenches between 4 and 8 feet deep, provided the walls of the excavation are cut at a maximum slope of 1.5H:1V and groundwater seepage does not occur. Excavation side slopes should be reduced to a stable inclination if excessive sloughing or raveling occurs.

Groundwater seepage was observed in our test pits at depths between 5.5 and 8 feet BGS. Recommendations as described in Section 6.3.1 (Construction Dewatering) should be considered where subsurface construction activities intersect the shallow groundwater table.

Shoring may be required if open-cut excavations are not feasible. As a wide variety of shoring and dewatering systems are available, we recommend that the contractor be responsible for selecting the appropriate shoring and dewatering systems. If box shoring is used, the contractor should understand it is a safety feature used to protect workers and does not prevent caving. If excavations are left open, caving of the sidewalls may occur. The presence of caved material will limit the ability to properly backfill and compact trenches. The contractor should be prepared to fill voids between the box shoring and the sidewalls of the trenches with sand or gravel before caving occurs.

All excavations should be made in accordance with applicable OSHA requirements and regulations of the state, county, and local jurisdiction. While this report describes certain approaches to excavation and dewatering, the contract documents should specify that the contractor is responsible for selecting the excavation and dewatering methods, monitoring the excavations for safety, and providing shoring (as required) to protect personnel and adjacent structural elements.

6.3.1 Construction Dewatering

The contractor should be responsible for temporary drainage of surface water, perched water, and groundwater, if encountered. Dewatering should be performed to the extent necessary to prevent standing water and/or erosion of the exposed site soil. During rough and finished grading of building pad areas, the contractor should keep all footing excavations and slab subgrade soil free of standing water.

The contractor's proposed dewatering plan should be capable of maintaining groundwater levels at least 2 feet below the bases of proposed trench excavations. Without adequate trench dewatering, running soil, caving, and sloughing will increase backfill volumes and may result in damage to adjacent structures or utilities. Significant pumping and dewatering may be required to temporarily reduce the groundwater elevation to the recommended depth. Dewatering via a sump within excavation zones may be insufficient to control groundwater and provide excavation side slope stability. Dewatering may be more feasibly conducted by installing a system of temporary well points and pumps around proposed excavation areas or utility trenches.

If groundwater is present at the bases of utility excavations, we recommend placing 18 to 24 inches of stabilization material at the bases of the excavation. Subgrade geotextile placed directly over trench subgrade soil may reduce the required thickness of the stabilization material. The actual thickness of stabilization material should be determined at the time of construction based on observed field conditions. Trench stabilization material should be placed in one lift and compacted until well keyed. Stabilization material and geotextile fabric should meet the requirements in Section 6.4 (Materials).

We note that these recommendations are for guidance only. Dewatering of excavations is the sole responsibility of the contractor, as the contractor is in the best position to select these systems based on their means and methods.

6.4 MATERIALS

6.4.1 Structural Fill

6.4.1.1 General

Areas proposed for fill placement should be appropriately prepared as described in Section 6.1 (Site Preparation). Engineered fill placement should be observed by Columbia West. Compaction of engineered structural fill should be verified by nuclear gauge field compaction testing performed in accordance with ASTM D6938. Field compaction testing should be performed for each vertical foot of engineered fill placed.

Various materials may be acceptable for use as structural fill. Structural fill should be free of organic material or other unsuitable material and meet the specifications provided in the following sections. Representative samples of proposed engineered structural fill should be submitted for laboratory testing and approval by Columbia West prior to placement.

6.4.1.2 On-Site Soil

The on-site clay will be suitable for use as structural fill if adequately dried and moisture conditioned to achieve recommended compaction specifications. Native clay soil with a plasticity index greater than 25 should be evaluated at the time of construction and approved by Columbia West prior to use as structural fill. We note that clay meeting this criteria was observed in test pit TP-1 at a depth of 5 feet BGS. The high plasticity clay will likely require blending with non-plastic or low plasticity soil prior to use as structural fill.

Laboratory testing indicates that the moisture content of the native soil was above optimum at the time of exploration. Moisture conditioning will likely be necessary to dry the soil prior to applying compaction effort. In addition, near-surface clay soil will be moisture sensitive and difficult, if not impossible, to compact during wet weather conditions. Therefore, structural fill placement using on-site soil should be performed during dry summer months if possible.

If excavated or blasted bedrock is proposed for use as engineered fill, individual fragment size should not exceed 6 inches. Larger fragments should either be removed or crushed into acceptable sizes. Rock fragments should be well dispersed within the fill to prevent nesting. Crushing and mixing processes should be observed by Columbia West.

On-site soil used as structural fill should be placed in loose lifts not exceeding 8 inches in thickness and compacted using standard conventional compaction equipment. The soil moisture content should be within a few percentage points of optimum conditions. The soil should be compacted to at least 95 percent of maximum dry density, as determined by ASTM D698. Compacted on-site fill soil should be covered shortly after placement.

The on-site soil will likely expand during excavation and transport and consolidate during compaction. Development of site-specific expansion and consolidation factors is beyond the scope of this study. We can provide site-specific factors upon request.

6.4.1.3 Imported Granular Material

Imported granular material should consist of pit- or quarry-run rock, crushed rock, or crushed gravel and sand. The imported granular material should also be durable, angular, and fairly well graded between coarse and fine material; should have less than 5 percent fines by dry weight; and should have at least two mechanically fractured faces. Imported granular material should be placed in loose lifts not exceeding 12 inches in thickness and compacted to at least 95 percent of maximum dry density as determined by ASTM D1557. During wet weather conditions or where wet subgrade conditions are present, the initial loose lift of granular fill should be approximately 18 inches thick and should be compacted with a smooth-drum roller operating in static mode.

6.4.1.4 Trench Backfill

Trench backfill placed below, adjacent to, and up to at least 12 inches above utility lines (i.e., the pipe zone) should consist of well-graded granular material meeting WSS 9-03.12(3) – Gravel Backfill for Pipe Zone Bedding. Pipe zone backfill should be compacted to at least 90 percent of maximum dry density as determined by ASTM D1557 or as required by the local jurisdictional agency or pipe manufacturer.

Within structural areas (below pavement and building pads), trench backfill above the pipe zone should consist of WSS 9-03.19 – Bank Run Gravel for Trench Backfill or WSS 9 03.14(2) – Select Borrow with a maximum particle size of 2½ inches. Trench backfill material within 18 inches of the top of utility pipes should be hand compacted (i.e., no heavy compaction equipment). Remaining trench backfill should be compacted to at least 95 percent of maximum dry density as determined by ASTM D1557 or as required by the local jurisdictional agency or pipe manufacturer.

Outside of structural areas, trench backfill placed above the pipe zone should be compacted to at least 90 percent of maximum dry density as determined by ASTM D1557 or as required by the local jurisdictional agency or pipe manufacturer.

6.4.1.5 Stabilization Material

Stabilization material used to create haul roads for construction traffic or at the base of unstable trench subgrade should consist of pit- or quarry-run rock or crushed rock. The material should have a maximum particle size of 6 inches and less than 5 percent by dry weight passing the U.S. Standard No. 4 sieve, should have at least two mechanically fractured faces, and should be free of organic material and other deleterious material. Material meeting the specifications in WSS 9-27.3(6) – Stone is generally acceptable for use. Stabilization material should be placed in lifts between 12 and 18 inches thick and compacted to a firm condition with a smooth-drum roller without using vibratory action.

6.4.1.6 Drain Rock

Drain rock should consist of angular, granular material with a maximum particle size of 2 inches and less than 2 percent fines by dry weight. Drain rock should be free of roots, organic material, and other unsuitable material and should have at least two mechanically fractured faces. Drain rock should be compacted to a firm, unyielding condition. Drain rock should be completely wrapped in a geotextile drainage fabric meeting the requirements presented below.

6.4.1.7 Retaining Wall Backfill

Backfill placed behind retaining walls and extending a horizontal distance of ½H, where H is the height of the retaining wall, should consist of imported granular material as described above and should have less than 7 percent fines by dry weight. We recommend the wall backfill be separated from general fill, native soil, and/or topsoil using a geotextile fabric that meets the specifications provided below for drainage geotextiles.

The wall backfill should be compacted to a minimum of 95 percent of maximum dry density as determined by ASTM D1557. However, backfill located within a horizontal distance of 3 feet from a retaining wall should only be compacted to approximately 90 percent of maximum dry density as determined by ASTM D1557. Backfill placed within 3 feet of the wall should be compacted in lifts less than 6 inches thick using hand-operated tamping equipment (such as a jumping jack or vibratory plate compactor). If flatwork (sidewalks or pavement) will be placed atop the wall backfill, we recommend that the upper 2 feet of material be compacted to 95 percent of maximum dry density as determined by ASTM D1557.

6.4.1.8 Retaining Wall Leveling Pad

Imported granular material placed at the bases of retaining wall footings should consist of select granular material. The granular material should be ¾- to 1-inch-minus aggregate size and should have at least two mechanically fractured faces. The leveling pad material should be placed in a 6- to 12-inch-thick lift and compacted to not less than 95 percent of maximum dry density as determined by ASTM D1557.

6.4.1.9 Floor Slab Aggregate Base

Aggregate base for building floor slabs should consist of 1¼-inch-minus crushed aggregate meeting WSS 9-03.9(3) – Crushed Surfacing. Slab aggregate base should be compacted to at least 95 percent of maximum dry density as determined by ASTM D1557.

6.4.2 Geotextile Fabric

6.4.2.1 Subgrade Geotextile

Subgrade geotextile should meet the specifications in WSS 9-33.2(1), Table 3, Geotextile for Separation or Soil Stabilization. The geotextile should be installed in accordance with the manufacturer's recommendations. A minimum initial aggregate base lift of 6 inches is required over geotextiles. All stabilization material should be underlain by a subgrade geotextile.

6.4.2.2 Drainage Geotextile

Subgrade geotextile should meet the specifications in WSS 9-33.2(1), Table 2, Geotextile for Underground Drainage Filtration Properties. The AOS should be between U.S. Standard No. 70 and No. 100 sieves. The water permittivity should be greater than 1.5/sec. The geotextile should be installed in accordance with the manufacturer's recommendations. A minimum initial aggregate base lift of 6 inches is required over geotextiles.

6.5 EROSION CONTROL

Soil at this site is susceptible to erosion by wind and water; therefore, erosion control measures should be carefully planned and installed before construction begins. Surface water runoff should be collected and directed away from sloped areas to prevent water from running down the slope

face. Measures that can be employed to reduce erosion include the use of silt fences, hay bales, buffer zones of natural growth, sedimentation ponds, and granular haul roads. All erosion control methods should be in accordance with local jurisdiction standards.

7.0 OBSERVATION OF CONSTRUCTION

Satisfactory pavement, earthwork, and foundation performance depends to a large degree on the quality of construction. Sufficient observation of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. Columbia West should be retained to observe subgrade preparation, fill placement, foundation excavations, drainage system installation, and pavement placement and to review laboratory compaction and field moisture-density information.

Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations. Recognition of changed conditions requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated.

8.0 LIMITATIONS

We have prepared this report for use by the addressee and members of the design and construction team for the proposed project. This report is subject to the limitations expressed in Appendix C.

♦ ♦ ♦

We appreciate the opportunity to be of service to you. Please call if you have questions concerning this report or if we can provide additional services.

Sincerely,

Greg L. Williamson, PE
Senior Geotechnical Engineer

Daniel E. Lehto, PE, GE
Principal Engineer

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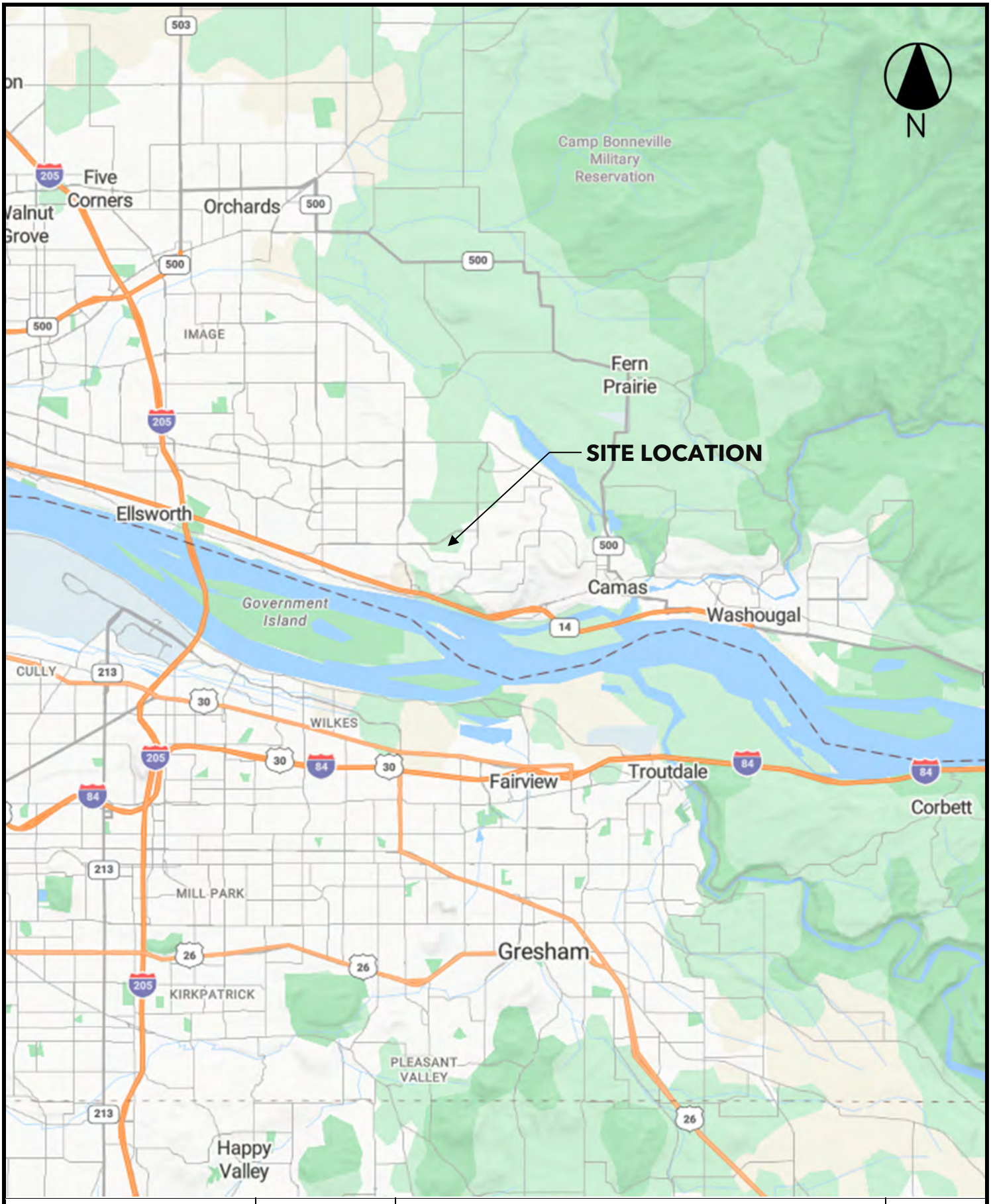
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FIGURES



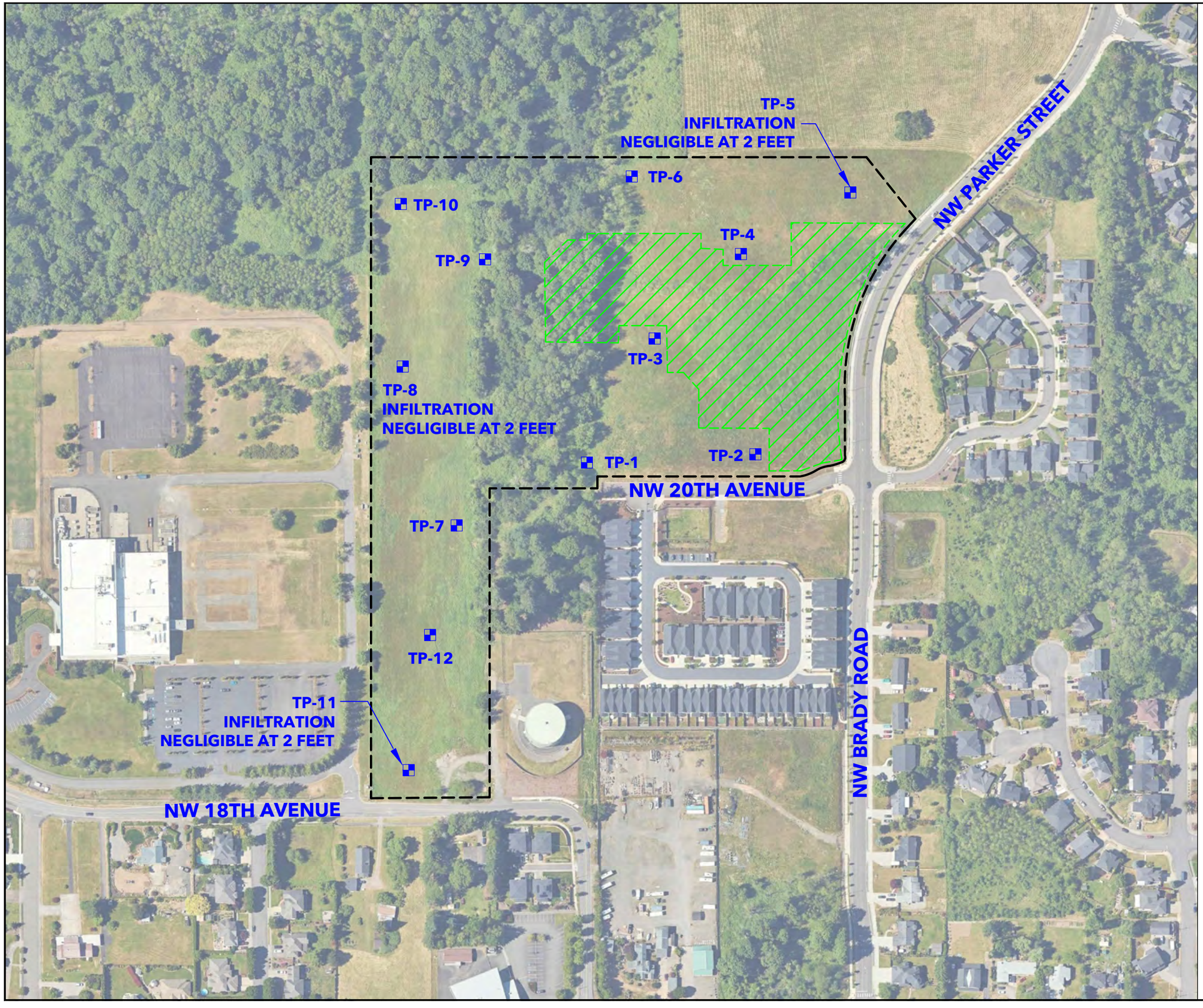
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PROJECT NO.: ALLIEDDEV-1-01-1

MAY 2025

VICINITY MAP
NW 18TH AVENUE SUBDIVISION
CAMAS, WASHINGTON

FIGURE 1



LEGEND

- SITE BOUNDARY
- TEST PIT
- PROPOSED OPEN SPACE

N

0 100 200 300 400

NOTES:
1. AERIAL PHOTO SOURCED FROM GOOGLE EARTH.
2. EXPLORATION LOCATIONS ARE APPROXIMATE AND NOT SURVEYED.
3. REFER TO REPORT TEXT FOR EXPLORATION DESCRIPTIONS.

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NW 18TH AVENUE SUBDIVISION
CAMAS, WASHINGTON
4511 NW 18TH AVENUE

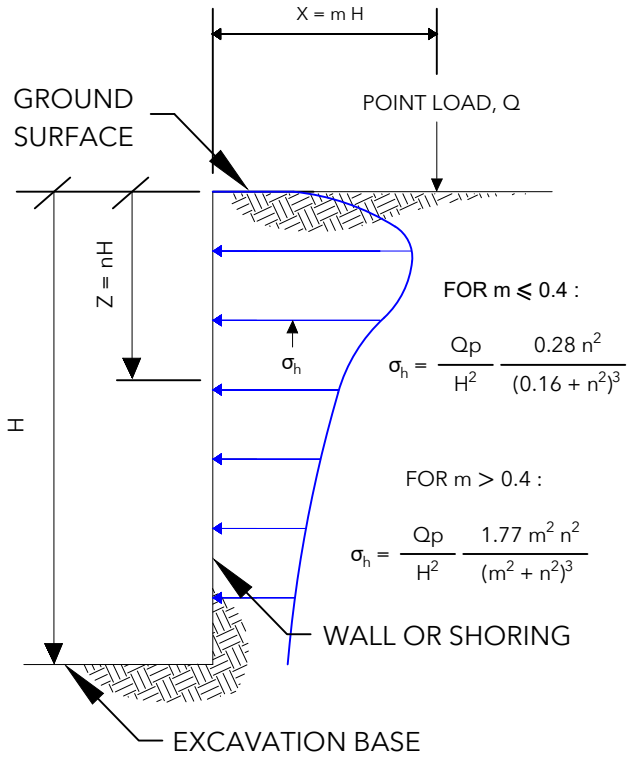
SITE PLAN

PROJECT NO:
ALLIEDDEV-1-01-1

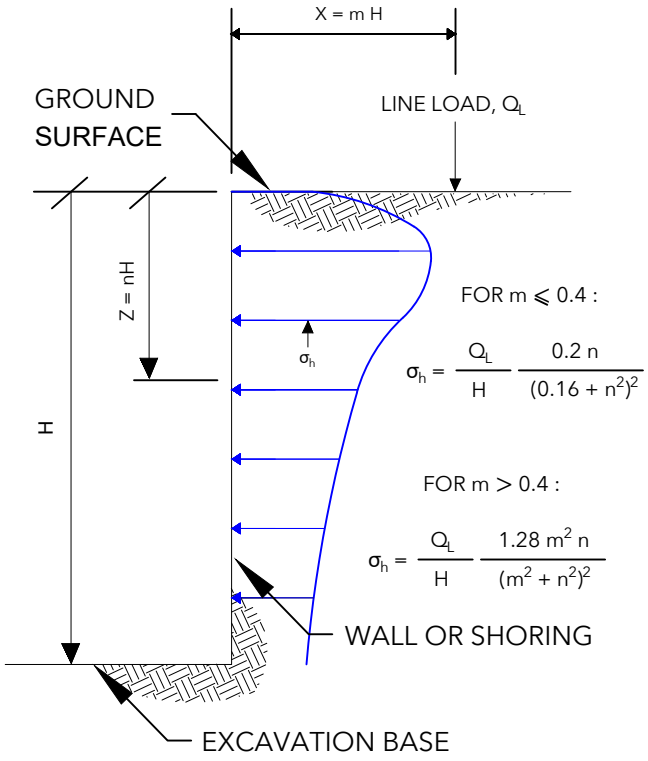
MAY 2025

FIGURE
2

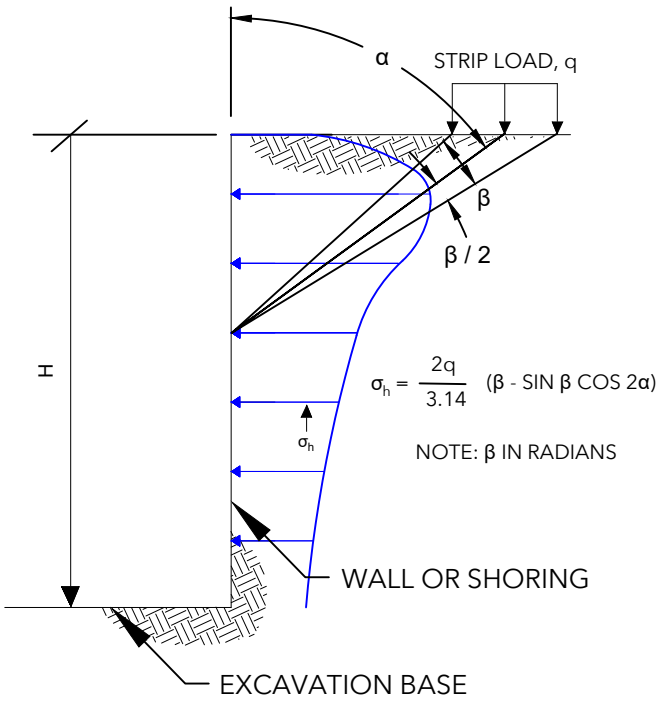
VERTICAL POINT LOAD



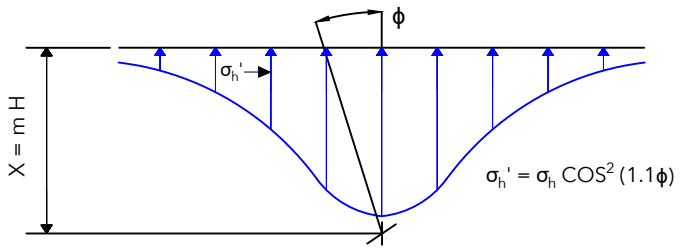
LINE LOAD PARALLEL TO WALL



STRIP LOAD PARALLEL TO WALL

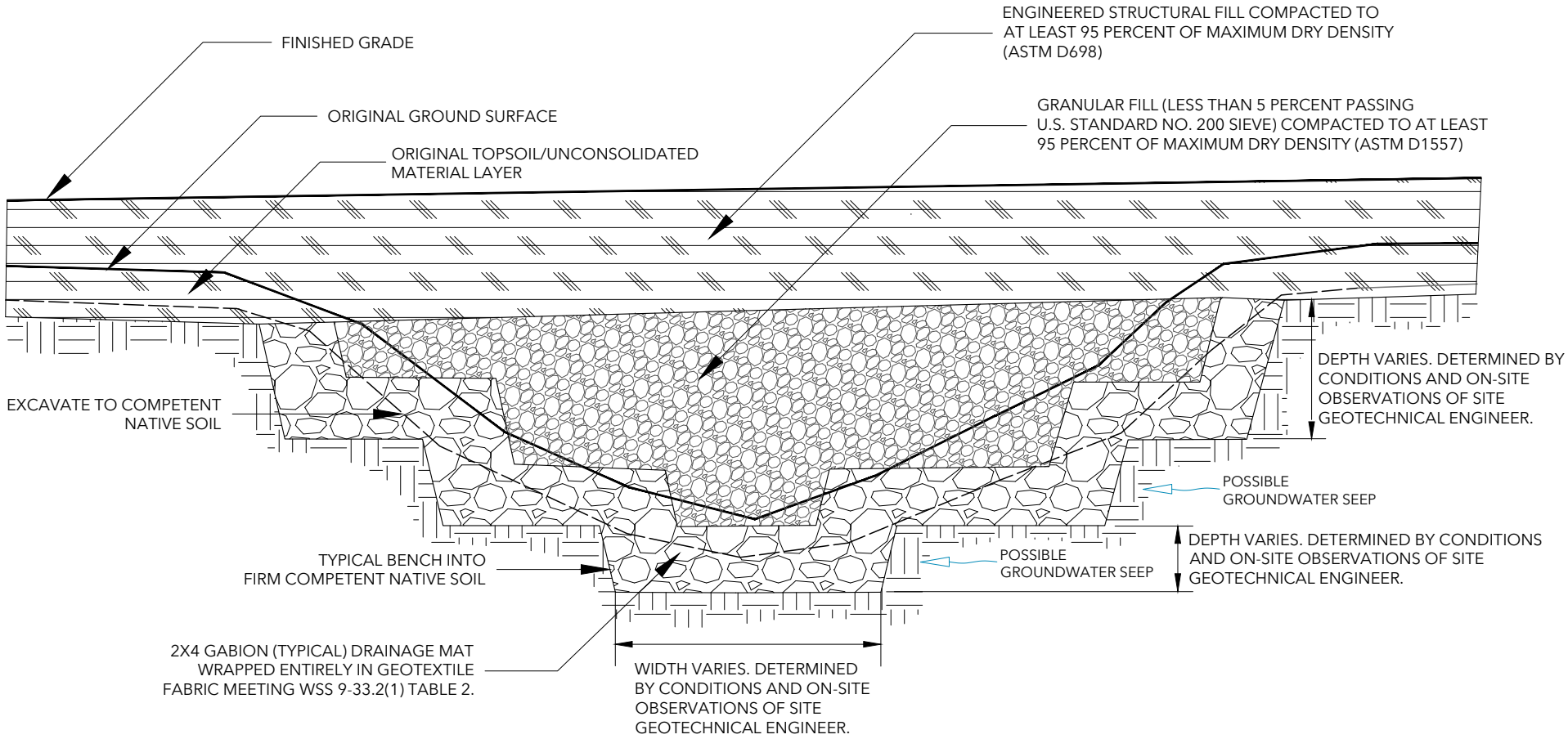


VERTICAL POINT LOAD HORIZONTAL PRESSURE DISTRIBUTION



NOTES:

1. FIGURE SHOULD BE USED JOINTLY WITH RECOMMENDATIONS PRESENTED IN THE REPORT TEXT.
2. LATERAL EARTH PRESSURES ASSUME RIGID WALLS WITH BACKFILL MATERIALS HAVING A POISSON'S RATIO OF 0.5.
3. TOTAL LATERAL EARTH PRESSURES RESULTING FROM COMBINED LOADS MAY BE CALCULATED USING SUPERPOSITION.
4. DRAWING IS NOT TO SCALE.



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TYPICAL DRAINAGE MAT CROSS SECTION

NOTES:
1. DRAWING IS NOT TO SCALE.
2. DRAWING REPRESENTS TYPICAL DRAINAGE MAT SECTION AND MAY NOT BE SITE-SPECIFIC.

FIGURE 141

APPENDIX A

APPENDIX A
FIELD EXPLORATIONS

GENERAL

We explored subsurface conditions at the site by excavating 12 test pits (TP-1 through TP-12) to depths between 5.5 and 15 feet BGS. Excavation services were provided by L&S Contractors of Yacolt, Washington, on April 29, 2025, using a track-mounted excavator. The explorations were logged on a full-time basis by Columbia West personnel. The exploration logs are presented in this appendix.

The exploration locations are shown on Figure 2. The exploration locations were determined in the field by pacing or measuring from existing site features. This information should be considered accurate only to the degree implied by the methods used.

SOIL SAMPLING

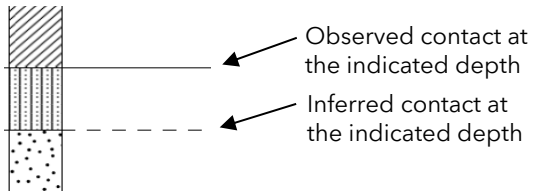
Representative disturbed samples of soil observed in the test pit explorations were collected from the test pit walls and base using the excavator bucket. Sampling methods and intervals are shown on the exploration logs.

SOIL CLASSIFICATION

The soil samples were classified in the field in accordance with the "Exploration Legend" and "Soil Classification System," which are presented in this appendix. The exploration logs indicate the depths at which the soil characteristics change, although the change could be gradual. If the change occurred between sample locations, the depth was interpreted. Classifications are shown on the exploration logs.

EXPLORATION LEGEND

SAMPLER TYPE	DESCRIPTION
SPT	Sample collected from the indicated depth in general accordance with ASTM D1586, *Standard Test Method Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils,* using an SPT sampler and 140-pound hammer
SH	Sample collected from the indicated depth in general accordance with ASTM D1587, *Standard Practice for Thin-Walled Tube Sampling of Fine-Grained Soils for Geotechnical Purposes,* using a thin-walled Shelby tube, or in general accordance with ASTM D6519, *Standard Practice for Sampling of Soil Using the Hydraulically Operated Stationary Piston Sampler,* using a thin-walled tube
D&M	Sample collected from the indicated depth in general accordance with ASTM D3550, *Standard Practice for Thick Wall, Ring-Lined, Split Barrel, Drive Sampling of Soils,* using a Dames & Moore sampler and 140-pound hammer or pushed
CSS	Sample collected from the indicated depth in general accordance with ASTM D3550, *Standard Practice for Thick Wall, Ring-Lined, Split Barrel, Drive Sampling of Soils,* using a 3-inch-outside diameter California split-spoon sampler and 140-pound hammer
DP	Sample collected from the indicated depth in general accordance with ASTM D6282, *Standard Guide for Direct Push Soil Sampling for Environmental Site Characterizations,* using a direct-push soil sampler
GRAB	Grab sample collected from the indicated depth
CORE	Pavement or rock core interval at the indicated depth



GEOTECHNICAL ABBREVIATIONS			
ATT	Atterberg limits	PP	Pocket penetrometer
CBR	California bearing ratio	P200	Percent passing No. 200 sieve
CON	Consolidation test	RES	Resilient modulus
DD	Dry density	SIEV	Sieve analysis
DS	Direct shear	TS	Torvane shear
HYD	Hydrometer	tsf	Tons per square foot
MC	Moisture content	UC	Unconfined compressive strength
MD	Moisture-density relationship	UU	Unconsolidated undrained triaxial test
NP	Non-plastic	VS	Vane shear
OC	Organic content	WD	Wet density
ENVIRONMENTAL ABBREVIATIONS			
CA	Sample submitted for chemical analysis	ND	Not detected
		NS	No sheen
PID	Photoionization detector headspace analysis	SS	Slight sheen
		MS	Moderate sheen
ppm	Parts per million	HS	Heavy sheen

SOIL CLASSIFICATION SYSTEM

PARTICLE-SIZE CLASSIFICATION

COMPONENT	ASTM / USCS		AASHTO	
	Size Range	Sieve Size Range	Size Range	Sieve Size Range
Boulders	Greater than 300 mm	Greater than 12 inches	--	--
Cobbles	75 mm to 300 mm	3 inches to 12 inches	Greater than 75 mm	Greater than 3 inches
Gravel	75 mm to 4.75 mm	3 inches to No. 4 sieve	75 mm to 2.00 mm	3 inches to No. 10 sieve
Coarse	75 mm to 19.0 mm	3 inches to 3/4-inch sieve	--	--
Fine	19.0 mm to 4.75 mm	3/4-inch to No. 4 sieve	--	--
Sand	4.75 mm to 0.075 mm	No. 4 to No. 200 sieve	2.00 mm to 0.075 mm	No. 10 to No. 200 sieve
Coarse	4.75 mm to 2.00 mm	No. 4 to No. 10 sieve	2.00 mm to 0.425 mm	No. 10 to No. 40 sieve
Medium	2.00 mm to 0.425 mm	No. 10 to No. 40 sieve	--	--
Fine	0.425 mm to 0.075 mm	No. 40 to No. 200 sieve	0.425 mm to 0.075 mm	No. 40 to No. 200 sieve
Fines (Silt and Clay)	Less than 0.075 mm	Passing No. 200 sieve	Less than 0.075 mm	Passing No. 200 sieve

CONSISTENCY FOR COHESIVE SOIL

CONSISTENCY	SPT N-VALUE (blows per foot)	D&M N-VALUE (blows per foot)	POCKET PENETROMETER (unconfined compressive strength [tsf])
Very soft	0 to 2	0 to 3	Less than 0.25
Soft	2 to 4	3 to 6	0.25 to 0.5
Medium stiff	4 to 8	6 to 12	0.5 to 1.0
Stiff	8 to 15	12 to 25	1.0 to 2.0
Very stiff	15 to 30	25 to 65	2.0 to 4.0
Hard	Greater than 30	Greater than 30	Greater than 4.0

RELATIVE DENSITY FOR GRANULAR SOIL

RELATIVE DENSITY	SPT N-VALUE (blows per foot)	D&M N-VALUE (blows per foot)
Very loose	0 to 4	0 to 11
Loose	4 to 10	11 to 26
Medium dense	10 to 30	26 to 74
Dense	30 to 50	74 to 120
Very dense	Greater than 50	Greater than 120

MOISTURE DESIGNATIONS

TERM	FIELD IDENTIFICATION
Dry	Very low moisture, dry to touch
Moist	Damp, color appears darkened, without visible moisture, cohesive soil will clump, sand will bulk
Wet	Visible free water, usually saturated

ADDITIONAL CONSTITUENTS

Percent	SILT AND CLAY IN		Percent	SAND AND GRAVEL IN		Percent	SECONDARY MATERIAL
	Fine-Grained Soil	Coarse-Grained Soil		Fine-Grained Soil	Coarse-Grained Soil		Organics and Man-Made Debris
< 5	trace	trace	< 5	trace	trace	< 4	trace
5 – 12	minor	with	5 – 15	minor	minor	4 – 12	some
> 12	some	silty/clayey	15 – 30	with	with		
			> 30	sandy/gravelly	with		

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TEST PIT NUMBER: TP-1

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 8:15 AM
LOGGED BY S. Chandra
TIME COMPLETED 8:43 AM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (LL-PL-PI)	FINES (%)	REMARKS
					Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (14-inch-thick tilled zone, 3-inch-thick root zone). 1.2					
					Medium stiff, brown with orange mottled CLAY, minor sand, moist, high plasticity, sand is fine.					
5	Grab	TP1.1					31	62-25-37	89	
			CH							
					Brown with orange-gray mottles, wet at 8 feet.					
10	Grab	TP1.2					29			
					14.0					
					Exploration completed at 14 feet.					
15										

GROUNDWATER: Slow seepage at 8 feet

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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TEST PIT NUMBER: TP-2

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 8:50 AM
LOGGED BY S. Chandra
TIME COMPLETED 9:27 AM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
	Grab	TP2.1			Medium stiff, dark brown sandy CLAY, trace organics and gravel, moist, medium plasticity (18-inch-thick tilled zone, 3-inch-thick root zone). 1.5			
	Grab	TP2.2	CL		Medium stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity, sand is fine. 14.0		27	
5								
10								
					Exploration completed at 14 feet.			
15								

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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Columbia West Engineering, Inc

TEST PIT NUMBER: TP-3

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 9:30 AM
LOGGED BY S. Chandra
TIME COMPLETED 9:55 AM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	FINES (%)	REMARKS
					Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone).				
					1.5				
					Medium stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity, sand is fine.				
	Grab	TP3.1					29		
5									
	Grab	TP3.2					29	90	
			CL		Wet at 7 feet.				
10									
					14.0				
					Exploration completed at 14 feet.				
15									

GROUNDWATER: Moderate seepage at 7 feet

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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Columbia West Engineering, Inc

TEST PIT NUMBER: TP-4

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 9:58 AM
LOGGED BY S. Chandra
TIME COMPLETED 10:18 AM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
	Grab	TP4.1			Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone). 1.5			
5	Grab	TP4.2	CL		Medium stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity, sand is fine. 14.0			
10					Exploration completed at 14 feet.			
15								

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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Columbia West Engineering, Inc

TEST PIT NUMBER: TP-5

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 10:21 AM
LOGGED BY S. Chandra
TIME COMPLETED 11:30 AM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	FINES (%)	REMARKS
					Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone). 1.5				
	SH	TP5.1	CL		Medium stiff, brown with orange mottled CLAY, minor sand, moist, low to medium plasticity, sand is fine.	2.5	24	86	Infiltration test at 2 feet.
5	Grab	TP5.2							
10					14.0				
					Exploration completed at 14 feet.				
15									

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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TEST PIT NUMBER: TP-6

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 10:52 AM
LOGGED BY S. Chandra
TIME COMPLETED 11:15 AM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
					Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone). 1.5	1.0		
	Grab	TP6.1			Medium stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity, sand is fine.		27	
5								
	Grab	TP6.2	CL					
10					With cobbles, cobbles are subrounded and up to 12 inches in diameter at 10 feet.			Very stiff, difficult excavation at 10 feet.
15					15.0 Exploration completed at 15 feet.			

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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TEST PIT NUMBER: TP-7

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 11:40 AM
LOGGED BY S. Chandra
TIME COMPLETED 12:05 PM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
					Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone). 1.5			
	Grab	TP7.1	CL		Medium stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity, sand is fine.		28	
	Grab	TP7.2						
5								
10	Grab	TP7.3			14.0			
					Exploration completed at 14 feet.			
15								

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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TEST PIT NUMBER: TP-8

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 12:07 PM
LOGGED BY S. Chandra
TIME COMPLETED 12:24 PM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (LL-PL-PI)	FINES (%)	REMARKS
					Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone).					
					1.5					
	SH	TP8.1	CL		Medium stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity.		20	32-20-12	86	Infiltration test at 2 feet.
5	Grab	TP8.2			With cobbles and boulders, cobbles are subrounded and up to 12 inches in diameter, boulders are subrounded and up to 36 inches in diameter at 4 feet. Wet at 5.5 feet.					
					5.5					
					Exploration terminated at 5.5 feet due to refusal on boulders.					
10										
15										

GROUNDWATER: Perched at 5.5 feet

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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TEST PIT NUMBER: TP-9

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 12:26 PM
LOGGED BY S. Chandra
TIME COMPLETED 12:40 PM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	FINES (%)	REMARKS
					Medium stiff, brown sandy CLAY, trace organics, moist, low plasticity (14 inches of topsoil, 4-inch-thick root zone). 1.2				
					Medium stiff to stiff, brown with orange mottled CLAY with sand, moist, medium plasticity, sand is fine.				
	Grab	TP9.1	CL			3	24	82	
5	Grab	TP9.1			With cobbles and boulders, cobbles are subrounded and up to 12 inches in diameter, boulders are subrounded and up to 24 inches in diameter at 4 feet. 5.5				
					Exploration terminated at 5.5 feet due to refusal on basalt.				
10									
15									

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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TEST PIT NUMBER: TP-10

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 12:46 PM
LOGGED BY S. Chandra
TIME COMPLETED 1:05 PM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
	Grab	TP10.1			Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone).			
					1.5			
					Medium stiff to stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity.			
	Grab	TP10.2	CL				29	
5					With gravel, cobbles, and boulders, gravel is rounded, cobbles are rounded and up to 12 inches in diameter, boulders are rounded and up to 24 inches in diameter at 6 feet.			
					7.0			
					Exploration terminated at 7 feet due to refusal on basalt.			
10								
15								

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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TEST PIT NUMBER: TP-11

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 1:10 PM
LOGGED BY S. Chandra
TIME COMPLETED 1:58 PM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (LL-PL-PI)	FINES (%)	REMARKS
	Grab	TP11.1			Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone). 1.5					
	SH	TP11.2			Medium stiff to stiff, brown with orange mottled CLAY, minor sand, moist, low plasticity.		26	31-23-8	87	Infiltration test at 2 feet.
	Grab	TP11.3								
5			CL							
	Grab	TP11.4								
10					Very stiff at 10 feet. 12.0					
					Exploration completed at 12 feet.					
15										

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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Columbia West Engineering, Inc

TEST PIT NUMBER: TP-12

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 2:00 PM
LOGGED BY S. Chandra
TIME COMPLETED 2:15 PM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
					Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone). 1.5			
5	Grab	TP12.1	CL		Medium stiff to stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity, sand is fine.			
					With cobbles and boulders, cobbles are rounded and up to 12 inches in diameter, boulders are rounded and up to 24 inches in diameter at 5.5 feet. 5.5			
					Exploration terminated at 5.5 feet due to refusal.			
10								
15								

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

APPENDIX B

APPENDIX B
LABORATORY TESTING

GENERAL

Laboratory testing was conducted on select soil samples to confirm field classifications and determine the index engineering properties. The laboratory classifications are shown on the exploration logs if those classifications differed from the field classifications. The locations of the tested samples are shown on the exploration logs. Descriptions of the tests are presented below, and results of the testing are presented in this appendix.

MOISTURE CONTENT

The natural moisture content of select soil samples was determined in general accordance with ASTM D 2216. The natural moisture content is a ratio of the weight of the water to dry soil in a test sample and is expressed as a percentage.

PARTICLE-SIZE ANALYSIS

Particle-size analysis was completed on select soil samples in general accordance with ASTM D1140 (P200). This test is a quantitative determination of the percent passing the U.S. Standard No. 200 sieve by dry weight.

ATTERBERG LIMITS TESTING

Atterberg limits (plastic and liquid limits) testing was performed on select soil samples in general accordance with ASTM D4318. The plastic limit is defined as the moisture content where the soil becomes brittle. The liquid limit is defined as the moisture content where the soil begins to act similar to a liquid. The plasticity index is the difference between the liquid and plastic limits.

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MOISTURE CONTENT, PERCENT PASSING NO. 200 SIEVE BY WASHING

PROJECT	CLIENT	PROJECT NO.	
NW 18th Avenue Subdivision 4511 NW 18th Avenue Camas, Washington	Allied Development 16430 N Scottsdale Road, Suite 210 Scottsdale, AZ 85254	AlliedDev-1-01-1	
		ISSUE DATE: 05/21/25	PAGE: 1 of 1
		DATE SAMPLED: 04/29/25	SAMPLED BY: S. Chandra

LABORATORY TEST DATA

TEST PROCEDURE: ASTM D2216 - Method A, ASTM D1140

LAB ID	CONTAINER MASS (g)	MOIST MASS + CONTAINER (g)	DRY MASS + CONTAINER (g)	AFTER WASH DRY MASS + CONTAINER (g)	FIELD ID	SAMPLE DEPTH (ft)	PERCENT MOISTURE CONTENT	PERCENT PASSING NO. 200 SIEVE
S25-1005	579.10	842.98	781.03	600.63	TP1.1	5	31%	89%
S25-1006	86.86	273.12	230.87	-	TP1.2	12	29%	-
S25-1007	86.63	265.27	227.54	-	TP2.2	3	27%	-
S25-1008	86.51	283.20	239.17	-	TP3.1	4	29%	-
S25-1009	541.75	852.67	782.05	565.74	TP3.2	7	29%	90%
S25-1010	561.52	863.57	805.51	595.62	TP5.1	2	24%	86%
S25-1011	87.29	313.81	265.73	-	TP6.1	3	27%	-
S25-1012	87.75	297.67	251.72	-	TP7.1	2	28%	-
S25-1013	574.83	854.33	807.67	608.39	TP8.1	2	20%	86%
S25-1014	547.98	822.00	769.65	588.87	TP9.1	3	24%	82%
S25-1015	87.15	377.78	311.97	-	TP10.2	4	29%	-
S25-1016	550.38	884.13	816.10	585.65	TP11.2	2	26%	87%

NOTES:

DATE TESTED: 05/15/25
TESTED BY: M. Scherette

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ATTERBERG LIMITS REPORT

PROJECT	CLIENT	PROJECT NO.	
NW 18th Avenue Subdivision 4511 NW 18th Avenue Camas, Washington	Allied Development 16430 N Scottsdale Road, Suite 210 Scottsdale, AZ 85254	AlliedDev-1-01-1	
		ISSUE DATE: 05/21/25	PAGE: 1 of 1
		LAB ID: S25-1005	FIELD ID: TP1.1
		DATE SAMPLED: 04/29/25	SAMPLED BY: S. Chandra

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
CLAY	Test Pit TP-1 depth = 5 feet	no data provided

LABORATORY TEST DATA

LABORATORY EQUIPMENT: Liquid Limit Machine, Hand Rolled

TEST PROCEDURE: ASTM D4318 - Method A

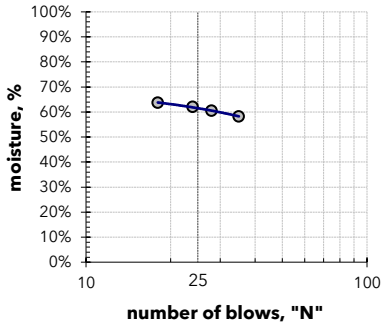
ATTERBERG LIMITS

liquid limit =	62
plastic limit =	25
plasticity index =	37

LIQUID LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	32.15	32.13	31.74	33.38
dry soil + pan weight, g =	27.84	27.76	27.50	28.48
pan weight, g =	20.43	20.54	20.67	20.78
N (blows) =	35	28	24	18
moisture, % =	58.2 %	60.5 %	62.1 %	63.6 %

LIQUID LIMIT



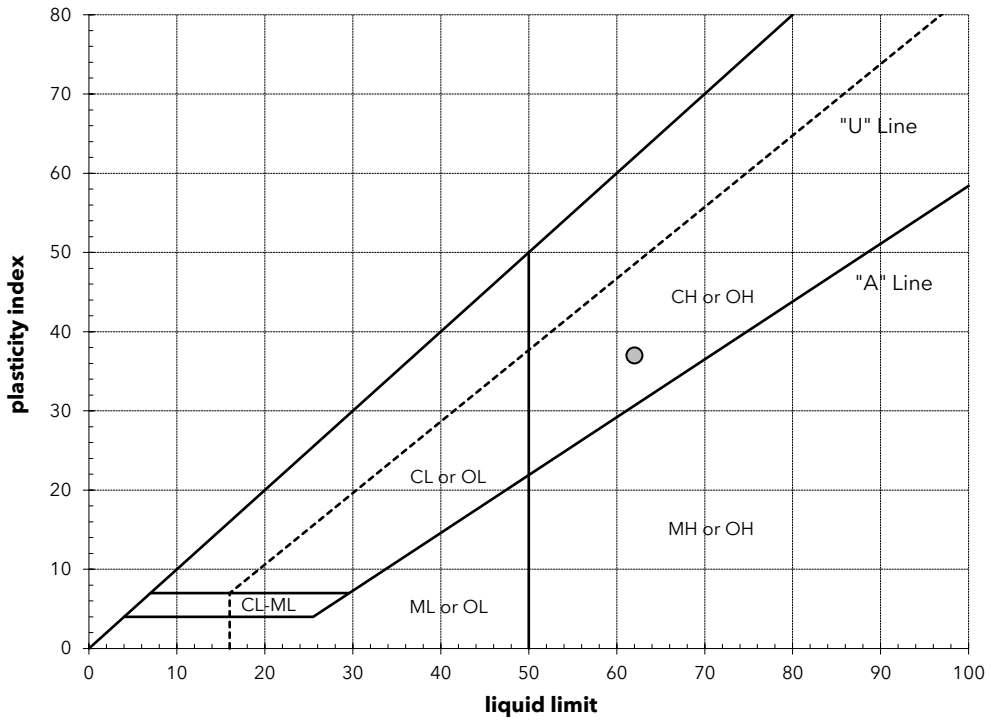
SHRINKAGE

shrinkage limit =	n/a
shrinkage ratio =	n/a

PLASTIC LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	27.63	27.61		
dry soil + pan weight, g =	26.28	26.16		
pan weight, g =	20.93	20.42		
moisture, % =	25.2 %	25.3 %		

PLASTICITY CHART



ADDITIONAL DATA

% gravel =	n/a
% sand =	n/a
% silt and clay =	n/a
% silt =	n/a
% clay =	n/a
moisture content =	31%

DATE TESTED	TESTED BY
05/19/25	M. Scherette

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ATTERBERG LIMITS REPORT

PROJECT	CLIENT	PROJECT NO.	
NW 18th Avenue Subdivision 4511 NW 18th Avenue Camas, Washington	Allied Development 16430 N Scottsdale Road, Suite 210 Scottsdale, AZ 85254	AlliedDev-1-01-1	
		ISSUE DATE: 05/21/25	PAGE: 1 of 1
		LAB ID: S25-1013	FIELD ID: TP8.1
		DATE SAMPLED: 04/29/25	SAMPLED BY: S. Chandra

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
CLAY	Test Pit TP-8 depth = 2 feet	no data provided

LABORATORY TEST DATA

LABORATORY EQUIPMENT: Liquid Limit Machine, Hand Rolled

TEST PROCEDURE: ASTM D4318 - Method A

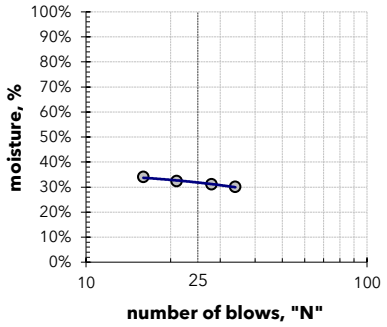
ATTERBERG LIMITS

liquid limit =	32
plastic limit =	20
plasticity index =	12

LIQUID LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	31.49	31.41	33.51	30.55
dry soil + pan weight, g =	29.02	28.81	30.44	28.13
pan weight, g =	20.82	20.43	20.96	21.01
N (blows) =	34	28	21	16
moisture, % =	30.1 %	31.0 %	32.4 %	34.0 %

LIQUID LIMIT



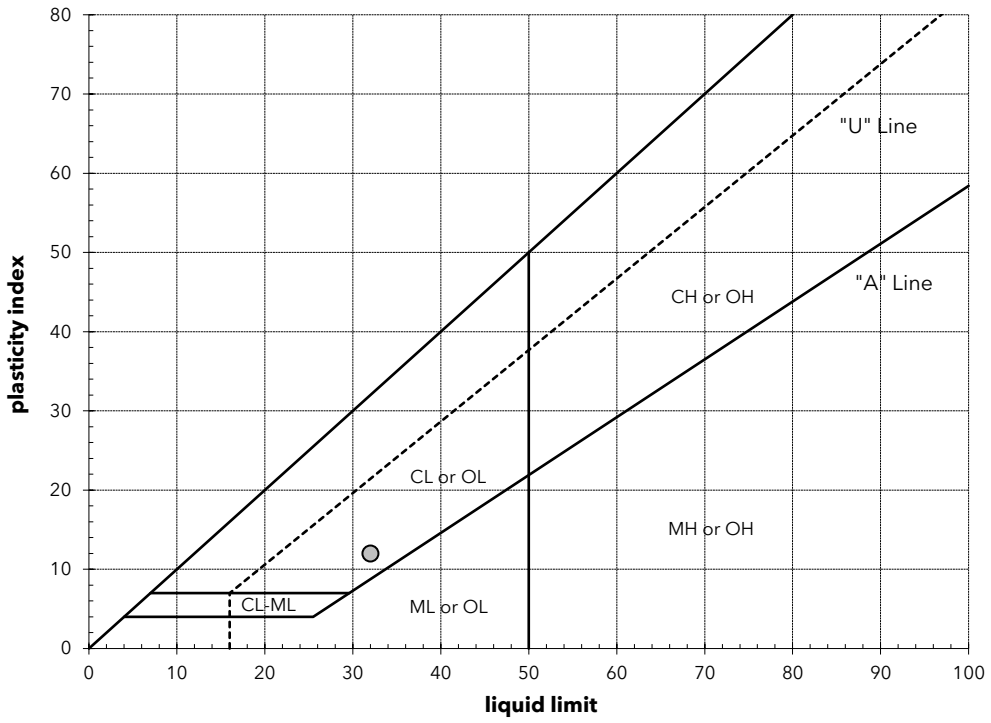
SHRINKAGE

shrinkage limit =	n/a
shrinkage ratio =	n/a

PLASTIC LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	27.24	27.78		
dry soil + pan weight, g =	26.17	26.65		
pan weight, g =	20.87	21.02		
moisture, % =	20.2 %	20.1 %		

PLASTICITY CHART



ADDITIONAL DATA

% gravel =	n/a
% sand =	n/a
% silt and clay =	n/a
% silt =	n/a
% clay =	n/a
moisture content =	20%

DATE TESTED	TESTED BY
05/16/25	G. Hausmann

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ATTERBERG LIMITS REPORT

PROJECT	CLIENT	PROJECT NO.	
NW 18th Avenue Subdivision 4511 NW 18th Avenue Camas, Washington	Allied Development 16430 N Scottsdale Road, Suite 210 Scottsdale, AZ 85254	AlliedDev-1-01-1	
		ISSUE DATE: 05/21/25	PAGE: 1 of 1
		LAB ID: S25-1016	FIELD ID: TP11.2
		DATE SAMPLED: 04/29/25	SAMPLED BY: S. Chandra

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
CLAY	Test Pit TP-11 depth = 2 feet	no data provided

LABORATORY TEST DATA

LABORATORY EQUIPMENT: Liquid Limit Machine, Hand Rolled

TEST PROCEDURE: ASTM D4318 - Method A

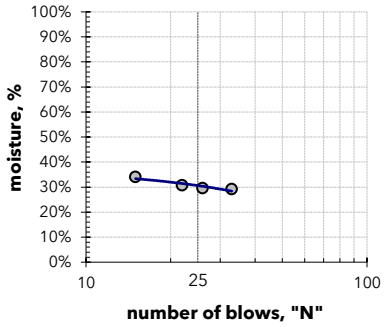
ATTERBERG LIMITS

liquid limit =	31
plastic limit =	23
plasticity index =	8

LIQUID LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	30.63	35.01	31.06	32.49
dry soil + pan weight, g =	28.33	31.77	28.70	29.56
pan weight, g =	20.43	20.81	21.02	20.96
N (blows) =	33	26	22	15
moisture, % =	29.1 %	29.6 %	30.7 %	34.1 %

LIQUID LIMIT



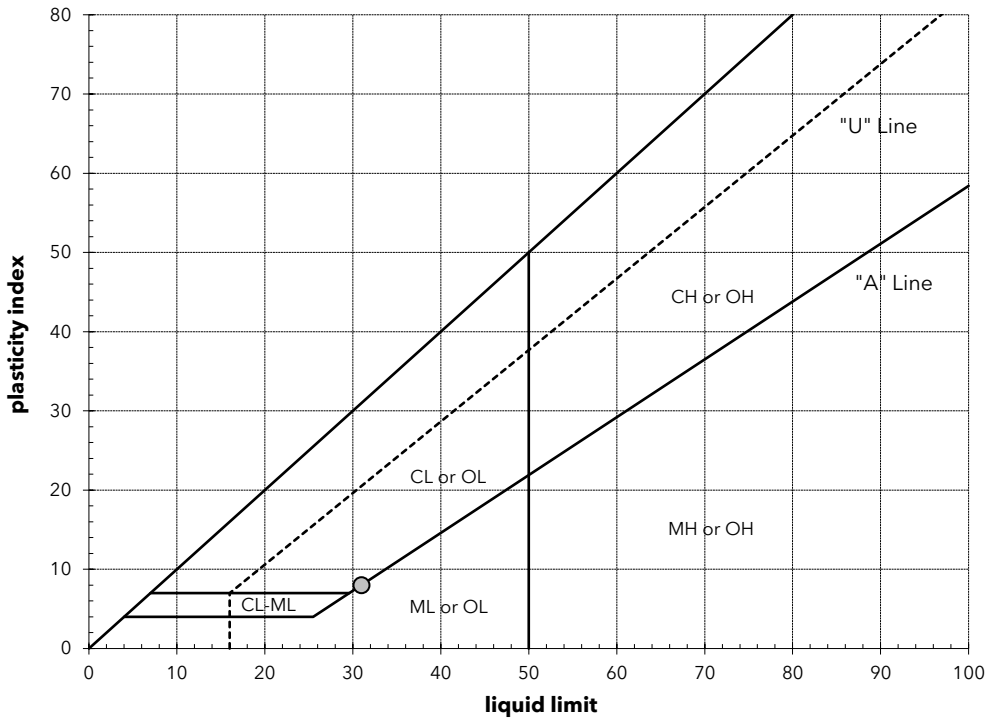
SHRINKAGE

shrinkage limit =	n/a
shrinkage ratio =	n/a

PLASTIC LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	28.99	29.48		
dry soil + pan weight, g =	27.46	27.90		
pan weight, g =	20.87	21.02		
moisture, % =	23.2 %	23.0 %		

PLASTICITY CHART



ADDITIONAL DATA

% gravel =	n/a
% sand =	n/a
% silt and clay =	n/a
% silt =	n/a
% clay =	n/a
moisture content =	26%

DATE TESTED	TESTED BY
05/19/25	G. Hausmann

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CWE-S14-021524

APPENDIX C

APPENDIX C
REPORT LIMITATIONS AND IMPORTANT INFORMATION

Report Purpose, Use, and Standard of Care

This report has been prepared in accordance with standard fundamental principles and practices of geotechnical engineering and/or environmental consulting, and in a manner consistent with the level of care and skill typical of currently practicing local engineers and consultants. This report has been prepared to meet the specific needs of specific individuals for the indicated site. It may not be adequate for use by other consultants, contractors, or engineers, or if change in project ownership has occurred. It should not be used for any other reason than its stated purpose without prior consultation with Columbia West Engineering, Inc. (Columbia West). It is a unique report and not applicable for any other site or project. If site conditions are altered, or if modifications to the project description or proposed plans are made after the date of this report, it may not be valid. Columbia West cannot accept responsibility for use of this report by other individuals for unauthorized purposes, or if problems occur resulting from changes in site conditions for which Columbia West was not aware or informed.

Report Conclusions and Preliminary Nature

This geotechnical or environmental report should be considered preliminary and summary in nature. The recommendations contained herein have been established by engineering interpretations of subsurface soils based upon conditions observed during site exploration. The exploration and associated laboratory analysis of collected representative samples identifies soil conditions at specific discreet locations. It is assumed that these conditions are indicative of actual conditions throughout the subject property. However, soil conditions may differ between tested locations at different seasonal times of the year, either by natural causes or human activity. Distinction between soil types may be more abrupt or gradual than indicated on the soil logs. This report is not intended to stand alone without understanding of concomitant instructions, correspondence, communication, or potential supplemental reports that may have been provided to the client.

Because this report is based upon observations obtained at the time of exploration, its adequacy may be compromised with time. This is particularly relevant in the case of natural disasters, earthquakes, floods, or other significant events. Report conclusions or interpretations may also be subject to revision if significant development or other manmade impacts occur within or in proximity to the subject property. Groundwater conditions, if presented in this report, reflect observed conditions at the time of investigation. These conditions may change annually, seasonally or as a result of adjacent development.

Additional Investigation and Construction Observation

Columbia West should be consulted prior to construction to assess whether additional investigation above and beyond that presented in this report is necessary. Even slight variations in soil or site conditions may produce impacts to the performance of structural facilities if not adequately addressed. This underscores the importance of diligent construction observation and testing to verify soil conditions do not differ materially or significantly from the interpreted conditions utilized for preparation of this report.

Therefore, this report contains several recommendations for field observation and testing by Columbia West personnel during construction activities. Actual subsurface conditions are more readily observed and discerned during the earthwork phase of construction when soils are exposed. Columbia West cannot accept responsibility for deviations from recommendations described in this report or future performance of structural facilities if another consultant is retained during the construction phase or Columbia West is not engaged to provide construction observation to the full extent recommended.

Collected Samples

Uncontaminated samples of soil or rock collected in connection with this report will be retained for thirty days. Retention of such samples beyond thirty days will occur only at client's request and in return for payment of storage charges incurred. All contaminated or environmentally impacted materials or samples are the sole property of the client. Client maintains responsibility for proper disposal.

Report Contents

This geotechnical or environmental report should not be copied or duplicated unless in full, and even then only under prior written consent by Columbia West, as indicated in further detail in the following text section entitled Report Ownership. The recommendations, interpretations, and suggestions presented in this report are only understandable in context of reference to the whole report. Under no circumstances should the soil boring or test pit excavation logs, monitor well logs, or laboratory analytical reports be separated from the remainder of the report. The logs or reports should not be redrawn or summarized by other entities for inclusion in architectural or civil drawings, or other relevant applications.

Report Limitations for Contractors

Geotechnical or environmental reports, unless otherwise specifically noted, are not prepared for the purpose of developing cost estimates or bids by contractors. The extent of exploration or investigation conducted as part of this report is usually less than that necessary for contractor's needs. Contractors should be advised of these report limitations, particularly as they relate to development of cost estimates. Contractors may gain valuable information from this report, but should rely upon their own interpretations as to how subsurface conditions may affect cost, feasibility, accessibility and other components of the project work. If believed necessary or relevant, contractors should conduct additional exploratory investigation to obtain satisfactory data for the purposes of developing adequate cost estimates. Clients or developers cannot insulate themselves from attendant liability by disclaiming accuracy for subsurface ground conditions without advising contractors appropriately and providing the best information possible to limit potential for cost overruns, construction problems, or misunderstandings.

Report Ownership

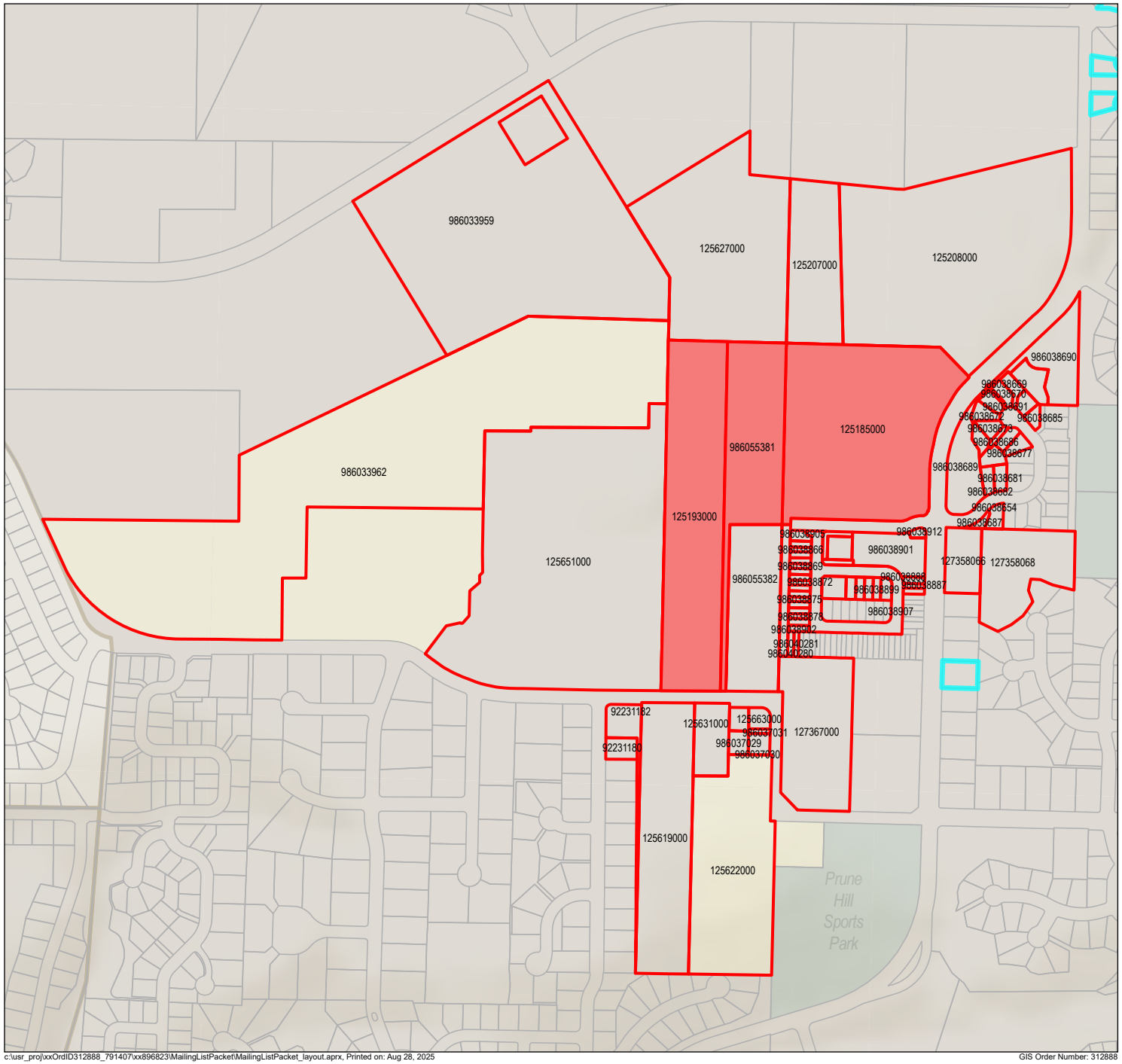
Columbia West retains the ownership and copyright property rights to this entire report and its contents, which may include, but may not be limited to, figures, text, logs, electronic media, drawings, laboratory reports, and appendices. This report was prepared solely for the client, and other relevant approved users or parties, and its distribution must be contingent upon prior express written consent by Columbia West. Furthermore, client or approved users may not use, lend, sell, copy, or distribute this document without express written consent by Columbia West.

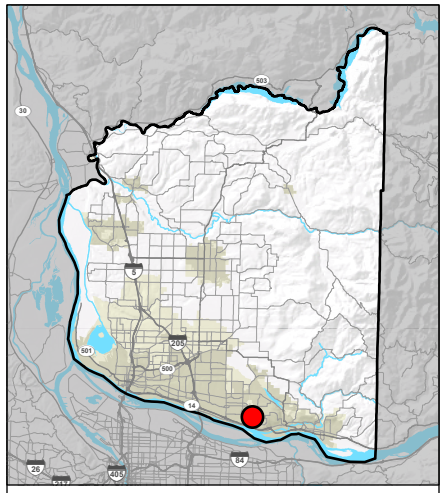
Client does not own nor have rights to electronic media files that constitute this report, and under no circumstances should said electronic files be distributed or copied. Electronic media is susceptible to unauthorized manipulation or modification, and may not be reliable.

Consultant Responsibility

Geotechnical and environmental engineering and consulting is much less exact than other scientific or engineering disciplines, and relies heavily upon experience, judgment, interpretation, and opinion often based upon media (soils) that are variable, anisotropic, and non-homogenous. This often results in unrealistic expectations, unwarranted claims, and uninformed disputes against a geotechnical or environmental consultant. To reduce potential for these problems and assist relevant parties in better understanding of risk, liability, and responsibility, geotechnical and environmental reports often provide definitive statements or clauses defining and outlining consultant responsibility. The client is encouraged to read these statements carefully and request additional information from Columbia West if necessary.

12. Mailing Labels





PID(s): 125185000, 125193000, 986055381, 300-Foot Buffer

KEY

- Subject Property
- Buffer Selection
- Parcels

CLARK COUNTY, WASHINGTON

N

NOTE: *Information shown on this map was collected from several sources. Clark County accepts no responsibility for any inaccuracies that may be present.*

0 300 600 900 Feet

c:\usr_proj\xxOrdID312888_791407\xx896823\MailingListPacket\MailingListPacket_layout.aprx, Printed on: Aug 28, 2025

GIS Order Number: 312888

Owner Name	Mailing Address
ALONZO DAVID L	16420 SE MCGILLIVRAY BLVD STE 103 PMB 437,VANCOUVER,W
ARABI NEGAR NEMATIAN	4010 NW 20TH AVE, CAMAS,WA, 98607
BAGAL MAHESH & BAGAL MAHESHWARI	1727 NW TIDLAND ST, CAMAS,WA, 98607
BARRON HATFIELD FAMILY LLLP	5511 NW 234th ST, RIDGEFIELD,WA, 98642
BEALE LINDA	4011 NW 20TH AVE, CAMAS,WA, 98607
BECK JACK G & BECK LOUANN M	4318 NW SAGE LP, CAMAS,WA, 98607
BITRA RATNA K & BITRA VIJAY	4072 NW 20TH AVE, CAMAS,WA, 98607
BROWNING JUSTIN C & KOVARIK DAVID K	1737 NW TIDLAND ST, CAMAS,WA, 98607
BYUN JI-HYUN TRUSTEE	PO BOX 2684,VANCOUVER,WA, 98668
CAMAS SCHOOL DISTRICT #117	841 NE 22ND AVE, CAMAS,WA, 98607
CAMDAVS REALTY LLC	2219 NW SIERRA WAY, CAMAS,WA, 98607
CHANG WENDY	4071 NW 20TH AVE, CAMAS,WA, 98607
CHIA CHU-TIEN & CHIA YI-JEN TRUSTEES	8420 SE 17TH CIR,VANCOUVER,WA, 98664
CHOU YOM C & YANG WON-HUEI	2435 SUDDABY,TUSTIN, CA, 92782
CITY OF CAMAS	430 NE EVERETT ST, CAMAS,WA, 98607
CITY OF CAMAS	616 NE 4TH AVE, CAMAS,WA, 98607
CROWN POINTE HOMEOWNERS ASSOCIATION	1708 NW WHITMAN ST, CAMAS,WA, 98607
DALEY DENNIS W ETAL	PO BOX 757, RANCHO SANTA FE, CA, 92067
DESHPANDE SACHIN G & DESHPANDE MONIKA S	4021 NW 20TH AVE, CAMAS,WA, 98607
DUGGAL KUNAL & DEWAN UPASNA	4007 NW 20TH AVE, CAMAS,WA, 98607
ERWIN JILL L	PO BOX 771, CAMAS,WA, 98607
FERDASZEWSKI RACHEL A & FERDASZEWSKI JOSHUA K	1747 NW TIDLAND ST, CAMAS,WA, 98607
GABRIO WILLIAM G & GABRIO JANET I	4320 NW SAGE LOOP, CAMAS,WA, 98607
HANCOCK CHAD E & HANCOCK LAUREL R	1668 NW WHITMAN ST, CAMAS,WA, 98607
HEREFORD FARMS LLC	26 MEADOHAWK LN, LAS VEGAS, NV, 89135
HPA BORROWER 2018-1 MS LLC	120 S RIVERSIDE PLZ STE 2000, CHICAGO, IL, 60606
JOHNSTONE MARY HELEN	1831 NW SAGE ST, CAMAS,WA, 98607
JR MERIT ENTERPRISES LLC	4505 NE 68TH DR,VANCOUVER,WA, 98661
KAHN BARBARA	1837 NW SAGE ST, CAMAS,WA, 98607
KATES CLOSE LLC	16420 SE MCGILLIVRAY BLVD #103-197,VANCOUVER,WA, 9868
KATES COVE HOMEOWNERS ASSOCIATION	16420 SE MCGILLIVRAY BLVD NO 103,VANCOUVER,WA, 98683
KIM KYUNG J & KIM JESSICA J TRUSTEES	THE KIM FAMILY TRUST 03/12/2021, CAMAS,WA, 98607
LEIF BAYLEY ELIZABETH & LEIF KYLE MICHAEL	4014 NW 20TH AVE, CAMAS,WA, 98607
LINEAR TECHNOLOGY CORP	1 ANALOG WAY,WILMINGTON, MA, 01887
LOUMAN ELIZABETH & LOUMAN JACK A TRUSTEES	4312 NW SAGE LP, CAMAS,WA, 98607
LUGLIANI INVESTMENT COMPANY LLC	16701 SE MCGILLIVRAY BLVD 160,VANCOUVER,WA, 98684
MACKAY JOHN G	4345 NW 16TH AVE, CAMAS,WA, 98607
MADUGULA ROHINI K & MADUGULA KOMAL	4019 NW 20TH AVE, CAMAS,WA, 98607
MORIARTY TERRA	3255 NW VALLEY ST, CAMAS,WA, 98607
NELSON JEFFREY	4075 NW 20TH AVE, CAMAS,WA, 98607
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NRP LLC	4600 NW PACIFIC RIM BLVD, CAMAS,WA, 98604
PARKER VILLAGE HOA	800 NE TENNEY RD #110-348,VANCOUVER,WA, 98685
PARRISH HARRY A TRUSTEE	HARRY PARRISH 2021 REV LIV TRUST, CAMAS,WA, 98607

Owner Name	Mailing Address
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SHOJAEI MEHRDAD	4233 NW SAGE LOOP, CAMAS, WA, 98607
SINGH HINDPREET & SINGH GURJIT	2239 NW OXFORD ST, CAMAS, WA, 98607
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THEEDA SANDEEP & ADDAGATLA NISHITHA	4015 NW 20TH AVE, CAMAS, WA, 98607
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WRIGHT MARC & WRIGHT SPRING	4217 NW SAGE LOOP, CAMAS, WA, 98607
YE YING TRUSTEE	1004 NE 112TH AVE, VANCOUVER, WA, 98684
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92231182	4640 NW 18TH AVE	CAMAS	WA	98607
125185000			WA	0
125193000	4511 NW 18TH AVE	CAMAS	WA	98607
125207000			WA	0
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125619000	4612 NW 18TH AVE	CAMAS	WA	98607
125622000	1601 NW TIDLAND ST	CAMAS	WA	98607
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127358066	1934 NW BRADY RD	CAMAS	WA	98607
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986038872	1849 NW SAGE ST	CAMAS	WA	98607
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986038875	1831 NW SAGE ST	CAMAS	WA	98607
986038876	1825 NW SAGE ST	CAMAS	WA	98607
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#103-197
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Occupant PID 125619000
4612 NW 18TH AVE
CAMAS, WA 98607

Occupant PID 125622000
1601 NW TIDLAND ST
CAMAS, WA 98607

Occupant PID 125631000
4516 NW 18TH AVE
CAMAS, WA 98607

Occupant PID 125651000
4637 NW 18TH AVE
CAMAS, WA 98607

Occupant PID 125663000
1747 NW TIDLAND ST
CAMAS, WA 98607

Occupant PID 127358066
1934 NW BRADY RD
CAMAS, WA 98607

Occupant PID 127367000
4345 NW 16TH AVE
CAMAS, WA 98607

Occupant PID 986033962
5125 NW NAN HENRIKSEN WAY
CAMAS, WA 98607

Occupant PID 986037028
1737 NW TIDLAND ST
CAMAS, WA 98607

Occupant PID 986037029
1727 NW TIDLAND ST
CAMAS, WA 98607

Occupant PID 986037030
1717 NW TIDLAND ST
CAMAS, WA 98607

Occupant PID 986038654
4072 NW 20TH AVE
CAMAS, WA 98607

Occupant PID 986038668
4014 NW 20TH AVE
CAMAS, WA 98607

Occupant PID 986038669
4012 NW 20TH AVE
CAMAS, WA 98607

Occupant PID 986038670
4010 NW 20TH AVE
CAMAS, WA 98607

Occupant PID 986038671
4007 NW 20TH AVE
CAMAS, WA 98607

Occupant PID 986038672
4011 NW 20TH AVE
CAMAS, WA 98607

Occupant PID 986038673
4015 NW 20TH AVE
CAMAS, WA 98607

Occupant PID 986038674
4019 NW 20TH AVE
CAMAS, WA 98607

Occupant PID 986038675
4021 NW 20TH AVE
CAMAS, WA 98607

Occupant PID 986038676
4023 NW 20TH AVE
CAMAS, WA 98607

Occupant PID 986038677
4025 NW 20TH AVE
CAMAS, WA 98607

Occupant PID 986038681
4071 NW 20TH AVE
CAMAS, WA 98607

Occupant PID 986038682
4075 NW 20TH AVE
CAMAS, WA 98607

Occupant PID 986038685
4016 NW 20TH AVE
CAMAS, WA 98607

Occupant PID 986038690
2282 NW BRADY RD
CAMAS, WA 98607

Occupant PID 986038865
1941 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986038866
1935 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986038867
1927 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986038868
1923 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986038869
1915 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986038870
1911 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986038871
1855 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986038872
1849 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986038873
1843 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986038874
1837 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986038875
1831 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986038876
1825 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986038877
1819 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986038878
1811 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986038879
1805 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986038886
4305 NW SAGE LOOP
CAMAS, WA 98607

Occupant PID 986038887
4307 NW SAGE LOOP
CAMAS, WA 98607

Occupant PID 986038888
4309 NW SAGE LOOP
CAMAS, WA 98607

Occupant PID 986038896
4320 NW SAGE LOOP
CAMAS, WA 98607

Occupant PID 986038897
4318 NW SAGE LOOP
CAMAS, WA 98607

Occupant PID 986038898
4314 NW SAGE LOOP
CAMAS, WA 98607

Occupant PID 986038899
4312 NW SAGE LOOP
CAMAS, WA 98607

Occupant PID 986038900
4310 NW SAGE LOOP
CAMAS, WA 98607

Occupant PID 986038901
4320 NW 20TH AVE
CAMAS, WA 98607

Occupant PID 986038908
1940 NW SAGE ST
CAMAS, WA 98607

Occupant PID 986040280
4215 NW SAGE LOOP
CAMAS, WA 98607

Occupant PID 986040281
4217 NW SAGE LOOP
CAMAS, WA 98607

7. Critical Areas Assessment and Preliminary Mitigation Plan

Stella Ridge Subdivision
Critical Areas Assessment and Preliminary Mitigation Plan
Camas, Washington

Date: August 2025

Prepared for: Allied Development, LLC
16430 N Scottsdale Road, Suite 210
Scottsdale, Arizona 85254

Prepared by: AKS Engineering & Forestry, LLC
Stacey Reed, PWS, Senior Wetland Scientist
Eli Pogue, Natural Resources Specialist

Study Area: Clark County Parcels 125193-000, 986055-381, and 125185-000
Camas, Washington

AKS Job Number: 12107

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Introduction

AKS Engineering & Forestry, LLC (AKS) was contracted by Allied Development, LLC (Applicant) to conduct a critical areas assessment on ±24.26 acres site consisting of Clark County Parcels 125193-000, 986055-381, and 125185-000 of Township 1 North, Range 3 East, Section 5, Willamette Meridian, Clark County, Washington. The site is addressed at 4511 NW 18th Avenue, Camas, Washington (Figures 1 and 2; latitude 45.594088, longitude -122.456633). This report addresses the City of Camas (City) Code of Ordinances (CCO) Chapter 16.51–General Provisions and Chapter 16.53–Wetlands. No other critical areas, such as critical aquifer recharge areas, frequently flooded areas, geologically hazardous areas, or fish and wildlife habitat conservation areas, are addressed in this report. No priority Oregon white oaks (*Quercus garryana*) or potentially jurisdictional streams or priority species or habitat were identified on the site.

AKS conducted a site visit on May 15, 2025, and delineated two Palustrine Emergent (PEM) wetlands referred to as Wetlands A and B, and one Palustrine Forested (PFO)/PEM wetland referred to as Wetland C in the study area. According to the Washington State Department of Ecology's (ECY's) *Washington State Wetland Rating System for Western Washington: 2014 Update, Version 2* (Hruby 2023), Wetland A was rated as a Category III wetland with a habitat score of 3. Wetland B was rated as Category IV wetland with a habitat score of 3. Wetland C was rated as a Category III wetland with a habitat score of 4. An off-site wetland to the west, referred to as Wetland D, was rated as a Category IV wetland with a habitat score of 3. The project proposes residential development, which is considered high-intensity land use. Per CCO, Category IV wetlands (Wetlands B and D) with high-intensity land use require a 50-foot-wide water quality buffer. Category III wetlands (Wetlands A and C) require an 80-foot-wide high-intensity land use buffer.

The project consists of a residential subdivision, referred to as Stella Ridge, and includes attached single-family homes, new public roads, stormwater facilities, and open space. Unavoidable permanent direct and indirect impacts to a portion of Category III Wetland A are necessary for a new public road. Unavoidable permanent direct impacts to all of Category IV Wetland B is unavoidable for road alignment access from NW 18th Avenue. Direct and indirect permanent wetland impacts will be compensated through the purchase of wetland mitigation bank credits at the Terrace Wetland Mitigation Bank, per CCO 16.61.030.3a. Allied Development, LLC (Applicant) will obtain approval from ECY prior to direct and indirect non-federally regulated wetland impacts.

Unavoidable impacts to the buffer adjacent to Wetland A are necessary for stormwater facilities and the new public access road. According to CCO, 16.53.050.C.4, crossing buffers for new roads is allowed if buffer functions are replaced and impacts have been minimized.

A buffer width reduction adjacent to Wetlands A and C is proposed to accommodate the layout consistent with City standards. The buffer width reduction will not exceed 25 percent of the standard Category III wetland buffer width and portions of the buffer will be enhanced by removing invasive vegetation species followed by dense native woody plantings, in accordance with CCO 16.53.050.C.1. To compensate for the minor encroachment within the reduced buffer width, the buffer will be widened in another area through buffer averaging in accordance with CCO 16.53.050.C.2, exceeding the minimum requirements resulting in a net gain of on-site wetland buffer habitat.

All remaining critical areas will be set aside in a separate non-buildable tract with a conservation covenant for protection against future development. Permanent fencing and signage will be installed along the outer limits of the final wetland buffer.

Site Description and Land Use History

The project site is undeveloped. A gravel driveway is present in the southern portion of the project area adjacent to NW 18th Avenue. The project area is surrounded by residential and Light Industrial Park/Business Park (LI/BP) land uses.

The eastern and western portions of the project area (Parcels 125193-000 and 125185-000) has been used for agriculture (hay and pasture). Vegetation in these areas were dominated by large sweet vernal grass (*Anthoxanthum odoratum;* FACU), Kentucky blue grass (*Poa pratensis;* FAC), field meadow foxtail (*Alopecurus pratensis;* FAC), and garden vetch (*Vicia sativa;* UPL). The central portion of the project area (Parcel 986055-381) consists of a forested area dominated by Oregon ash (*Fraxinus latifolia;* FACW), bigleaf maple (*Acer macrophyllum;* FACU), Pacific ninebark (*Physocarpus capitatus;* FACW), Nootka rose (*Rosa nutkana*; FAC), California dewberry (*Rubus ursinus*; FACU), common snowberry (*Symphoricarpos albus;* FACU), pineland sword fern (*Polystichum munitum;* FACU), Siberian spring beauty (*Claytonia siberica;* FAC) and fragrant fringecup (*Tellima grandiflora;* FACU).

Topography in the study area slopes gently to the east. The project area lies within the Lake River-Frontal Columbia River sub-watershed of the Salmon Creek-Frontal Columbia River watershed, located in the Salmon-Washougal Water Resource Inventory Area (WRIA).

Background Mapping

Soils

The following soils are mapped within the study area, according to the Natural Resources Conservation Service (NRCS) Clark County, Washington Area Soil Survey Map and hydric soils list (Figure 3):

- Powell silt loam (Unit PoB), 0 to 8 percent slopes; Non-hydric
- Odne silt loam (Unit OdB), 0 to 5 percent slopes; Hydric

Wetland and Waters Mapping

According to the US Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) Map, no wetlands are mapped in the project area (Figure 4). A Freshwater Emergent Wetland is mapped off-site to the west within 300 feet of the project area (referred to as Wetland D under this study).

According to Clark County's Geographic Information Services (GIS) MapsOnline portal, no modeled wetlands are mapped within the project area. An area of modeled wetland is mapped in the vicinity of the NWI-mapped wetland within 300 feet of the project area (Figure 5).

Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) Mapping

According to the Clark County GIS MapsOnline Priority Habitats and Species (PHS) map, a potential riparian habitat area is mapped in the northeastern portion of the project area (Figure 6). The potential riparian area appears to be associated with stream located off-site to the east (see Figure 7). The riparian habitat buffer associated with the off-site stream is functionally severed by existing NW Brady Road and does not extend into the project area. Intact riparian habitat is not present in the project area.

According to a Washington Department of Fish and Wildlife (WDFW) PHS webmap, caves or cave-rich Areas are mapped within the township the project area is located in. No caves are present in the project area. Evidence of priority habitat or priority species was not observed by AKS species during the site visit on May 15, 2025.

Washington State Department of Natural Resources (DNR) Mapping
According to the Washington State Department of Natural Resources (DNR) Forest Practices Application Mapping Tool, no waters are mapped within the project area. A Type F stream is mapped within 300 feet off-site to the east (Figure 7). No wetlands of high conservation value are mapped within or adjacent to the study area by DNR.

Delineation Methodology

Fieldwork was conducted on May 15, 2025, by AKS' qualified professional Natural Resource Specialists Emma Eichhorn and Margret Harburg.

The methodology used to determine the presence of wetlands followed the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)* (Wakeley et al. 2010). The *National Wetland Plant List* (USACE 2022) was used to assign wetland indicator status to plants for the appropriate region. ECY's *Washington State Wetland Rating System for Western Washington: 2014 Update, Version 2* (Hruby 2023) was used to determine the hydrogeomorphic (HGM) classification for each wetland. The USFWS Cowardin classification system (Cowardin et al. 1979) was used to describe the wetland in terms of the vegetation community (e.g. emergent, scrub-shrub, and forested community types).

Soils, vegetation, and indicators of hydrology were recorded at 33 sample plot locations on standardized wetland determination data forms to document conditions (Appendix A). Sample plot locations and the boundaries of the wetlands were flagged in the field and mapped using a Trimble R8 Global Navigation Satellite System (GNSS) and ArcGIS Field Maps with submeter accuracy.

Maps illustrating the surveyed wetland boundaries are included as Figures 8 and 8A. Representative ground level site photographs are included in Appendix B. References cited and literature used are listed at the end of this report.

Precipitation Prior to Site Visit

Recent precipitation data were obtained from the Applied Climate Information System (ACIS) Vancouver Pearson AP Weather Station. According to the Vancouver Pearson Weather Station data, 0.08 inches of rainfall was recorded on the day of the May 2025 site visit, and 0.32 inches were recorded in the two weeks prior. The water year to date (since October 1, 2024) was 28.93 inches, which was 90 percent of normal. Precipitation data is available upon request.

Precipitation for the three-month period leading up to the site visit was analyzed using the US Army Corps of Engineers (USACE) Antecedent Precipitation Tool (APT), Version 2.0 (USACE 2023). Based on the APT reports, monthly observed precipitation for the three months preceding the site visit on May 15, 2025, were considered normal. The APT report is included in Appendix D. According to the APT, the site visit was conducted within normal precipitation conditions.

Delineation Results

Wetlands

Wetland A

Wetland A is a seasonally saturated PEM wetland located in the eastern part of the project area. The primary sources of wetland hydrology are a seasonally high groundwater table and direct precipitation. Wetland A is on a gentle slope where water flows freely in one direction, lacking outflow. Therefore, Wetland A was rated under the Depressional HGM classification.

Vegetation within the wetland is dominated by reed canary grass (*Phalaris arundinacea;* FACW) and garden bird's-foot trefoil (*Lotus corniculatus;* FAC). There is a small area (less than 10 percent of total wetland area) dominated by Oregon ash, Hooker's willow (*Salix hookeriana;* FACW), Nootka rose, and English hawthorn (*Crataegus monogyna;* FAC) located in the northeastern portion of the wetland, as documented at Plot 11. No special habitat features such as large, downed woody debris or priority snags were observed within the wetland.

The wetland boundary was delineated based on a distinct change in topography that coincided with a change in vegetation along with a lack of hydric soil indicators in the adjacent upland. The adjacent upland is slightly higher in elevation and dominant in large sweet vernal grass and garden vetch. Wetland A does not extend off-site.

Wetland B

Wetland B is an isolated seasonally saturated PEM wetland located in the western portion of the project site, located upslope and hydrologically disconnected from Wetland A. The primary sources of wetland hydrology are a seasonally high groundwater table and direct precipitation. Wetland B is on a gentle slope where water flows freely in one direction, lacking a surface outlet. Therefore, Wetland B was rated under the Slope HGM classification.

Vegetation within the wetland is dominated by reed canary grass, field meadow foxtail, and garden bird's-foot trefoil. The wetland boundary was delineated based on a distinct change in topography that coincided with a change in vegetation. The wetland is within a lower elevation concave landform dominant in reed canary grass, with lesser amounts of large sweet vernal grass, and lacking garden vetch. The adjacent upland is on a higher elevation convex landform with vegetation dominant in large sweet vernal grass and garden vetch. Upland plots lacked hydric soils. Wetland B does not extend off-site.

Wetland C

Wetland C is an isolated seasonally saturated PFO/PEM wetland located in the central portion of the project site, also upslope and hydrologically disconnected from Wetland A. The primary sources of wetland hydrology are a seasonally high groundwater table and direct precipitation. Wetland C is on a gentle slope where water flows freely in one direction. Therefore, Wetland C was rated under the Slope HGM classification.

Vegetation in the wetland is dominated by Oregon ash, Pacific ninebark, Nootka rose, taperfruit shortscale sedge (*Carex leptopoda;* FAC), thick-head sedge (*Carex pachystachya;* FAC), and American brooklime

(*Veronica americana;* OBL) in the PFO portion of the wetland and reed canary grass and creeping buttercup (*Ranunculus repens;* FAC) in the PEM portion of the wetland.

The wetland boundary was delineated based on a subtle change in topography that coincided with a change in vegetation along with a lack of hydric soils in the upland. The PEM portion of the wetland is within a lower elevation, slightly concave in shape, and is dominant in reed canary grass and creeping buttercup. The adjacent upland is slightly higher in elevation and dominant in large sweet vernal grass and garden vetch. The PFO portion of the wetland is dominant in Oregon ash, Pacific ninebark, and sedge species. The adjacent upland is slightly higher in elevation than the wetland and dominated by bigleaf maple, vine maple, California dewberry, pineland sword fern, common snowberry, and fragrant fringecup. Upland plots lacked hydric soil indicators. Wetland C does not extend off-site.

Wetland D (Off-Site)

Wetland D is an isolated wetland mapped on the NWI off-site to the west. The property west of the project area was not accessible by AKS; therefore, the approximate boundary of Wetland D was digitized based on GIS data derived from USFWS. The wetland rating was based on high-resolution aerial imagery and available background mapping. Conditions associated with Wetland D do not extend onto the project area. This off-site wetland was mapped in order to be in compliance with CCO 16.53.030.B.2 and determine if wetland buffer extends onto project site.

Buffer Widths

Wetland Category Rating and Applicable Buffer

Protective wetland buffers were assigned based on wetland category, habitat function score, and proposed land use intensity of the project in accordance with CCO 16.53.040.B. Wetlands were rated according to ECY's *Washington State Wetland Rating System for Western Washington: 2014 Update Version 2* (Hruby 2023). Wetland A was rated as a Category III wetland with a habitat score of 3, Wetlands B and D were rated as Category IV wetlands with a habitat score of 3. Wetland C was rated as a Category III wetland with a habitat score of 4. Wetland rating forms and figures are included in Appendix C.

The residential development proposed is considered *high* land use intensity. According to CCO Table 16.53.040-1, Category IV wetlands have a required water quality buffer width of 50 feet. Category III wetlands have a required water quality buffer width of 80 feet. Figures 8 and 8A illustrate the extent of wetland buffers on the project site. The eastern portion of the buffer associated with Wetland A is functionally severed by existing NW Brady Road, resulting in a buffer width less than 50 feet per CCO 16.53.040.B.4.b.ii.

Table 1: Critical Area Delineated and Required Buffer Widths

Critical Area	On-site Wetland Area	Wetland Category	Camas Criteria	Standard Buffer Width
Wetland A	2.26 acres	III	Low habitat score, high intensity land use	80 feet
Wetland B	0.19 acres	IV	Low habitat score, high intensity land use	50 feet
Wetland C	0.35 acres	III	Low habitat score, high intensity land use	80 feet
Wetland D (off-site)	0.21 acres	IV	Low habitat score, high intensity land use	50 feet

Project Critical Area Impacts

This project consists of a ±158-lot attached single-family subdivision. The project will provide needed housing within the City of Camas and will not result in a net loss of wetland functions. The Critical Areas Site Plan is included as Figures 9 and 9A.

Category IV Wetland Direct Impacts

The project requires direct permanent impacts to the entirety of Wetland B for Street A and NW 20th Avenue. The extension of NW 20th Avenue is fixed based on its existing location. The north-south Street A connection is also fixed, as the City requires connection to existing NW 18th Avenue to the south. An existing water tower and residential development are present on the adjacent parcel to the south, making an alignment to the east to avoid wetland for a south connection to NW 18th Avenue not feasible.

Category III Wetland Direct and Indirect Impacts

The project requires direct permanent impacts to a portion of Wetland A for the intersection of Street D and NW Brady Road. The intersection of Street D and NW Brady Road is fixed based on City requirements, making wetland avoidance not feasible. Direct and indirect wetland impacts will be mitigated through a bank credit purchase in accordance with CCO 16.53.050.D.5.a. The project area is within the Terrace Wetland Mitigation Bank service area. Therefore, purchasing credits from the Terrace Wetland Mitigation Bank will ensure there is no net loss of wetland function or values within the local watershed.

Wetland Buffer Impacts for Stormwater Facilities

Impacts to the outermost portion of Wetland A's buffer are necessary for the construction of stormwater facilities. According to CCO 16.53.050.C.3, stormwater facilities are allowed within buffers of wetlands with low habitat (habitat score of less than 4) if they are built on the outer edge of the wetland buffer, are designed to blend in with the natural landscape, and will not degrade the existing buffer function. Buffer impacts for stormwater facilities near Wetland A will be adjacent to areas of direct wetland impacts, resulting in no direct loss of wetland buffer function post construction. Construction of the stormwater facilities will not result in the disturbance of plant species listed as rare, threatened, or endangered by the City or any state or federal management agency. No removal of trees greater than 4 inches diameter breast height (DBH) will occur for the construction of the stormwater facility in wetland buffer. Grading for the stormwater facilities will not result in slopes steeper than 4:1 horizontal to vertical. No concrete

structures, maintenance access roads, or pretreatment facilities will be constructed within the buffer. Buffer impacts for the stormwater facilities will be mitigated by utilizing buffer averaging.

Wetland Buffer Impacts for Streets and Residential Lot

Impacts within buffers adjacent to Wetlands A, B, and C are necessary for new roads (referred to as Street A, Street C, and Street D). Crossing buffers with new roads is allowed if buffer and wetland impacts are minimized and if buffer functions are replaced, according to CCO 16.53.050.C.4. Steps to avoid and minimize buffer impacts for the roads are described in the following section (Mitigation Sequencing).

Buffer impacts for Street D will occur adjacent to an area of Wetland A that will be filled (wetland impact mitigated through purchase of wetland bank credits) and the buffer impacts will be mitigated through on-site buffer width reduction and buffer averaging in accordance with CCO 16.53.050.C.2.

Since Wetland B will be filled in its entirety, wetland buffer impacts adjacent to Wetland B will be mitigated by purchase of wetland mitigation bank credits.

Wetland Buffer Width Reduction Plan

The standard buffer width for Category III Wetlands A and C is 80 feet under a high-intensity land use buffer. We are proposing a buffer width reduction to the 60-foot (25 percent) buffer reduction with buffer restoration in tandem with buffer averaging in compliance with CCO 16.53.050.C.1. The reduced buffer width will not interfere with the functions and values of the wetlands. Portions of the remaining on-site buffer will be restored by removing invasive species and installing native species. The removal of invasive vegetation and installation of native plantings will provide increased structural complexity to support diverse biological habitat and greater ecosystem functions when compared to existing conditions. The buffer enhancement areas will be monitored for invasive species cover for a minimum of five years after planting.

Wetland Buffer Averaging

The project requires minor unavoidable encroachment in the reduced 60-foot-wide moderate intensity land use buffer for Street C, stormwater facility, and a portion of Lot 83.

According to CCO 16.53.50.C.2, buffer averaging is allowed if the following criteria are met:

a. The total area contained in the buffer after averaging is no less than that contained within the buffer prior to averaging;

b. Decreases in width are generally located where wetland functions may be less sensitive to adjacent land uses, and increases are generally located where wetland functions may be more sensitive to adjacent land uses, to achieve no net loss or a net gain in functions;

c. The averaged buffer, at its narrowest point, shall not result in a width less than seventy-five percent of the required width, provided that minimum buffer widths shall never be less than fifty feet for all Category I, Category II, and Category III wetlands, and twenty-five feet for all Category IV wetlands; and

d. Effect of Mitigation. If wetland mitigation occurs such that the rating of the wetland changes, the requirements for the category of the wetland after mitigation shall apply.

Response: A wider buffer will be provided in the northern section adjacent to the reduced area, which will exceed the area of buffer impact resulting in a net positive of wetland buffer. To compensate for Wetland C's reduced buffer width adjacent to Street C, a wider buffer will be provided on the northern side of Wetland C. The buffer averaging area will be

within a forested area contiguous with Wetland C where a diverse cover of native trees, shrubs, and herbaceous vegetation are dominant and would benefit from protection. Buffer averaging exceeds the minimum requirement, resulting in a net gain of wetland buffer on the site.

Temporary Wetland Buffer Impacts

Temporary encroachment within the buffer associated with Wetland A is required to install the stormwater outfall. According to CCO Section 16.53.050.C.5, the activity within buffer is temporary (will be completed within three months), and will not result in permanent structure in the buffer. The temporarily disturbed area will be restored to preexisting contours and planted with native vegetation and will therefore not result in a reduction in buffer functions and can be considered an allowed use within the buffer without mitigation.

Mitigation Sequencing

The project requires unavoidable wetland and buffer encroachment for stormwater facilities, streets, and residential lots. Mitigation sequencing outlined in CCO 16.51.170 is demonstrated below:

A. Avoiding the impact altogether by not taking a certain action or parts of an action (usually by either finding another site or changing the location on the site);

Response:

Street D and NW Brady Road Intersection: Impacts to Wetland A and its adjacent buffer are unavoidable due to the required alignment for Street D and NW Brady Road intersection. There is no opportunity to realign Street D to the north to avoid wetland as it would not meet the City's intersection spacing requirements from the existing NW 20th Avenue intersection to the south.

Street A and NW 20th Avenue: The location of Wetland B makes wetland impacts for Street A unavoidable. The connection for Street A must come from existing NW 18th Avenue located to the south of the project site. Due to the location of an existing water tower on the adjacent parcel to the south, shifting Street A to the west is not possible. Shifting Street A to the east would still result in impacts to the entirety of the wetland, either directly or indirectly.

Street C: Impacts to the buffer adjacent to Wetland C are unavoidable because Street C is necessary to provide access to ±20 residential lots. Street C cannot be realigned to the west to avoid the buffer because residential lots are located on the west side of the street. The lots are designed to meet the City's density requirements and cannot be reconfigured or located elsewhere on the project area.

Stormwater Facility: Impacts to Wetland A's buffer for the stormwater facilities are unavoidable due to existing topographic conditions in the project area. The stormwater facilities must be located in the lowest areas on the site to receive runoff from upslope impervious areas.

Residential Lot 83: Impact to Wetland C's buffer for Lot 83 is unavoidable. The lots are designed to meet the City's requirements and cannot be reconfigured or located elsewhere in the project area. The lot layout chosen is the layout that resulted in the least amount of impacts to the existing wetlands on-site.

B. **Minimizing impacts by limiting the degree or magnitude of the action and its implementation, by using appropriate technology, or by taking affirmative steps, such as project design, developable area configuration, relocation, or timing, to avoid or reduce impacts;**

Response: The site plan has been designed to minimize wetland and buffer impacts to the greatest extent practical. Wetland impacts for the streets are minimized by improving the minimum width required by the City. The stormwater facilities are the minimum size necessary to serve the subdivision and cannot be reduced in size.

C. **Minimizing or eliminating the hazard by restoring or stabilizing the hazard area through engineered or other methods;**

Response: This is not applicable. No hazard areas are present on the project site.

D. **Reducing or eliminating the impact or hazard over time by preservation and maintenance operations during the life of the action;**

Response: The remaining wetland and buffer areas will be preserved in separate tracts in accordance with CCO 16.51.240 and CCO 16.53.040.B.3.

E. **Compensating for the impact to critical areas by replacing, enhancing, or providing substitute resources or environments;**

Response: Unavoidable direct and indirect wetland impacts will be mitigated through the purchase of wetland credits from the Terrace Wetland Mitigation Bank, which is within the same watershed as the project site. The purchase of mitigation bank credits will offset the loss of wetland functions and values by creating, restoring, enhancing, and preserving higher functioning wetlands in the watershed. Mitigation for impacts for wetland impacts will be in-kind with regard to Cowardin and HGM classifications.

A combination of on-site buffer width reduction and averaging will compensate for unavoidable buffer encroachment. The buffer averaging and enhancement will ensure no net loss of buffer area or function, and will provide a wider, high function buffer between Wetland C and Street D.

F. **Monitoring the hazard or other required mitigation and taking remedial action when necessary; and**

Response: The on-site buffer enhancement area will be monitored in accordance with CCO 16.51.180.D. If performance standards are not met, a contingency plan in accordance with CCO 16.51.180.E will be implemented.

G. **Rectifying the impact to critical areas by repairing, rehabilitating, or restoring the affected environment to the historical conditions, or the conditions existing at the time of the initiation of the project.**

Response: Functional loss from direct and indirect permanent wetland impacts, as well as temporary impacts will be replaced by purchasing bank credits from the Terrace Wetland Mitigation Bank, which restores wetland to pre-settlement conditions. Unavoidable buffer encroachment will be rectified by providing a wider buffer elsewhere through buffer averaging.

Preliminary Mitigation Plan

Preliminary Mitigation Plan Goals and Objectives

The following mitigation environmental goals and objectives have been established to ensure no net loss of wetland functions and values resulting from the project:

Goal 1 – Ensure no net loss of wetland functions

Mitigation Objective 1: Purchase 0.24 wetland credits from the Terrace Wetland Mitigation Bank. The project site is within the same local watershed as the mitigation bank and within the service area described in the Mitigation Banking Instrument. The project will result in 0.17 acres of direct permanent impacts to Category IV PEM Slope Wetland B. According to the MBI, the typical credit-debit ratio for Category IV Wetlands is 0.85:1 bank credit to impact acreage, requiring the purchase of 0.14 wetland bank credits.

The project will also require 0.03 acres of direct permanent impacts and 0.14 acres indirect impacts to Category III PEM Depressional Wetland A. According to the MBI, the credit-debit ratio for direct impacts to Category III Wetlands is 1:1 bank credit to impact acreage. According to the MBI, the credit-debit ratio for indirect impacts is 0.5:1, requiring the purchase of 0.10 credits to account for impacts to Wetland A.

The bank provides credits for re-establishment and rehabilitation of the PFO, Palustrine, scrub-shrub (PSS), and PEM wetlands of the Slope and Depressional HGM class. Therefore, the mitigation will be in-kind with regard to Cowardin and HGM classification and will fully compensate for wetland functions and values lost as a result of the project. The purchase of bank credits prior to the project will ensure no temporal loss of wetland functions and values.

Buffers at the Terrace Mitigation Bank provide protection of high-quality wetland within the local watershed, as well as their own inherent ecological functions and values. Therefore, the purchase of wetland bank credits (Mitigation Objective 1) will fully compensate for buffer impacts associated with the direct wetland impacts.

Mitigation Objective 1 Performance Standard: Submittal of proof of wetland mitigation bank credit purchase to the City.

Goal 2 – Ensure no net loss of wetland buffer functions

Mitigation Objective 2: Enhance a minimum of 1.09 acres of remaining degraded condition buffer associated with Wetland A. A table including recommendations for enhancement species and quantities is included in Appendix E. The existing condition of the wetland buffer enhancement area consists of non-native grasses and offers little benefit to the wetland.

Mitigation Objective 2 Performance Standard: A minimum of 80 percent survival of planted native woody plantings will occur within the enhancement area during a three-year monitoring period.

Goal 3 – Provide long-term protection for the on-site wetland and buffers

Mitigation Objective 3a: The remaining on-site wetlands and buffers will be placed in separate tracts with conservation covenants. The conservation covenants will be designated on the face of a plat or recorded drawing in a format approved by the City. The conservation covenants will include assurance that native vegetation will be preserved for the purpose of preventing harm to property and the environment, including but not limited to controlling surface water runoff and erosion, buffering, and protecting plants and wildlife habitat.

Mitigation Objective 3a Performance Standard: Submittal of a recorded plat designation to the City.

Mitigation Objective 3b: Install permanent boundary fencing and signage along the outer boundary of the final averaged wetland buffers. Fencing will consist of a minimum 42-inch-high vinyl-coated chain-link or wooden split rail style. Signs will be placed at an interval of at least one per lot or every 100 feet. The signs will be 12 inches by 18 inches in size and posted on 6-foot-high green steel posts. The signage will be worded as follows:

Wetland and Buffer Area —
Retain in a natural state.

Mitigation Objective 3b Performance Standard: Evidence of wetland buffer signage submitted with Year 1 monitoring report.

Preliminary Project Schedule

The following preliminary project schedule outlines the proposed timeline for project development and implementation of mitigation measures. Construction of the project may begin in the summer of 2026. The buffer enhancement planting areas will be planted in the fall of 2026, serving as Year 0.

Table 2: Preliminary Mitigation Measures Schedule

Activity	Date
Year 0 (2026)	
Purchase of Terrace Mitigation Bank credits	Spring Year 0
Project construction	Begins Summer Year 0
Installation of buffer enhancement planting	Late Fall Year 0
Install irrigation	Fall Year 0
Enhancement as-built report including copy of recorded protection instruments and financial assurance	90 days following completion of planting; Winter Year 0
Year 1 (2027)	
First year monitoring site visit	Spring/Summer Year 1
Invasive species control	Spring/Summer/Fall Year 1
Supplemental seeding/planting (if needed)	Fall Year 1
Supplemental irrigation (if needed)	Summer Year 1
First year monitoring report, including establishment of permanent monitoring plot and photo point locations	November 1 of Year 1
Year 2 (2028)	
Second year monitoring site visit	Spring/Summer Year 2
Invasive species control	Spring/Summer/Fall Year 2
Supplemental seeding/planting (if needed)	Fall Year 2
Supplemental irrigation (if needed)	Summer Year 2
Second year monitoring report, including evaluation of performance standards and recommendations	November 1 of Year 2
Year 3 (2029)	
Third year monitoring site visit	Spring/Summer Year 3
Invasive species control	Spring/Summer/Fall Year 3
Supplemental seeding/planting (if needed)	Fall Year 3
Remove irrigation	End of Fall Year 3

Activity	Date
Third year final monitoring report documenting self-sustaining conditions	November 1 of Year 3

Preliminary Mitigation Monitoring and Contingency

The Applicant will monitor the on-site buffer enhancement area for a minimum of three full growing seasons. Monitoring will consist of establishing an appropriate number of monitoring plot locations across the buffer averaging area to be assessed. At each plot, absolute cover of invasive and non-native species, along with general site observations, will be recorded. Representative site photographs will be taken from established photo points across the buffer enhancement areas. Vegetation monitoring plot and photo point locations will be determined during the first monitoring year.

Monitoring reports will be submitted to the City by November 1 following each growing season. Each monitoring report will consist of photographs and a discussion of performance standards, maintenance activities, problems and successes, and any maintenance needs or contingency actions necessary to ensure success of the mitigation project. Success will be achieved when monitoring results indicate that performance standards are being met at the end of the third-year monitoring period, or thereafter as necessary.

Contingency actions to ensure the performance standards are met include the following:

- Removal of invasive species if invasive species cover is greater than 20 percent.
- If removal of invasive species results in bare ground areas larger than 25 square feet, the area should be replanted with native shrubs and seeded with native grasses suitable for site conditions.
- Replacement of wetland buffer boundary signage that has gone missing or become damaged or illegible.

Statement of Preparation

This assessment was prepared in accordance with US Army Corps of Engineers and Washington State Department of Ecology wetland delineation reporting standards and with the City of Camas critical areas ordinance (CCO 16.51 and 16.53). Fieldwork and reporting were conducted by wetland professionals qualified to conduct natural resource projects in Washington. Information contained in this document should be considered preliminary and used at your own risk until it has been reviewed and approved in writing by the appropriate local, state, or federal agencies with jurisdiction over natural resources on the site.

This report was prepared by the following:



Emma Eichhorn
Natural Resource Specialist
Fieldwork and Report Preparation



Stacey Reed, PWS
Senior Wetland Scientist
Report QA/QC



Eli Pogue
Natural Resources Specialist
Report Preparation

Literature Cited and Referenced

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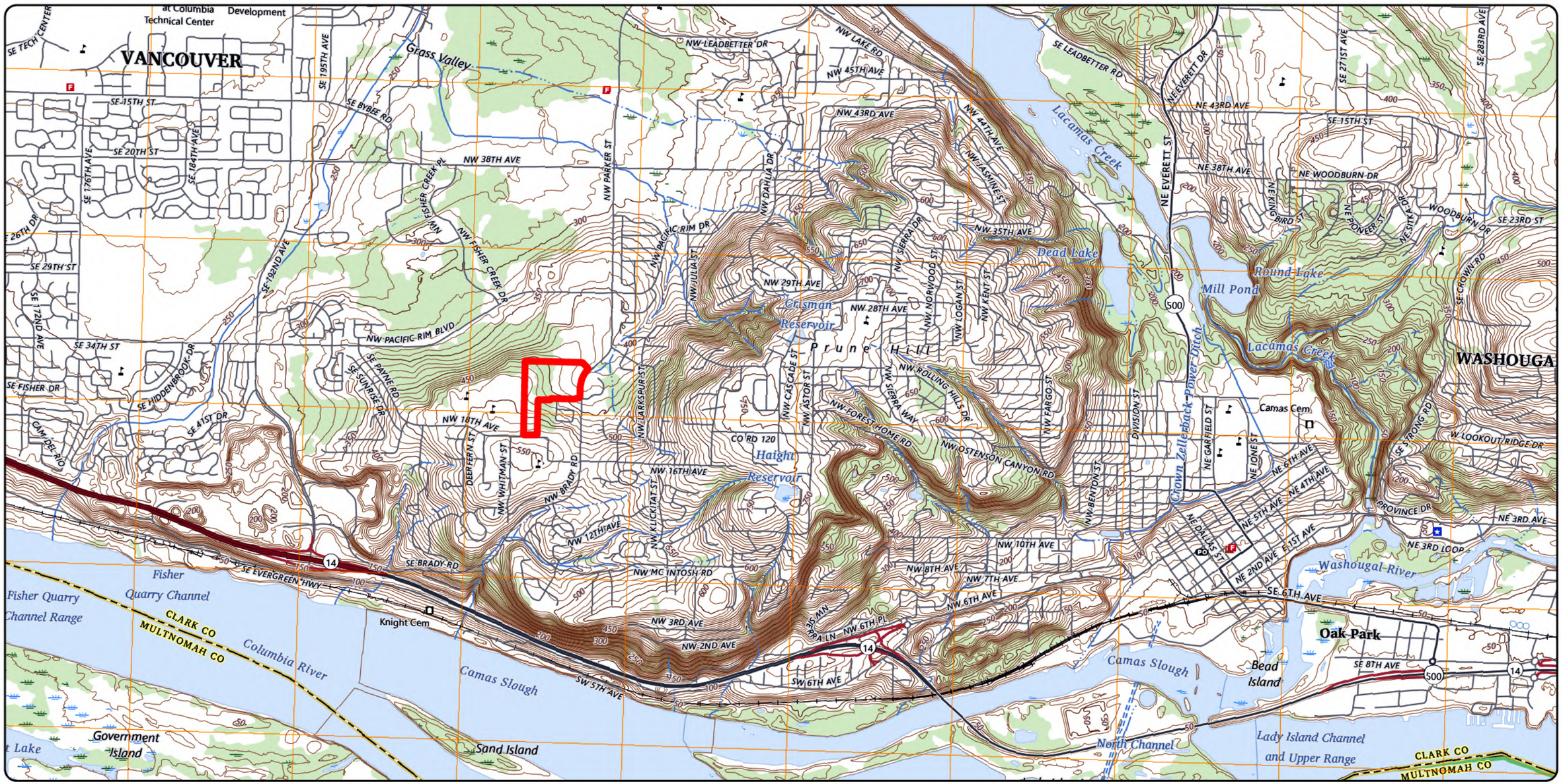
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Report Figures: Figure 1-9



Legend

Study Area Boundary

Source: USGS 7.5' topographic series quadrangle for Camas, WA obtained from USGS.gov (2023).

Figure 1
USGS Vicinity Map

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Stella Ridge
Critical Areas Report

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Legend

- Parcels
- Study Area (Surveyed Property Boundary)

Figure 2
Parcels Map

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Stella Ridge
Critical Areas Report

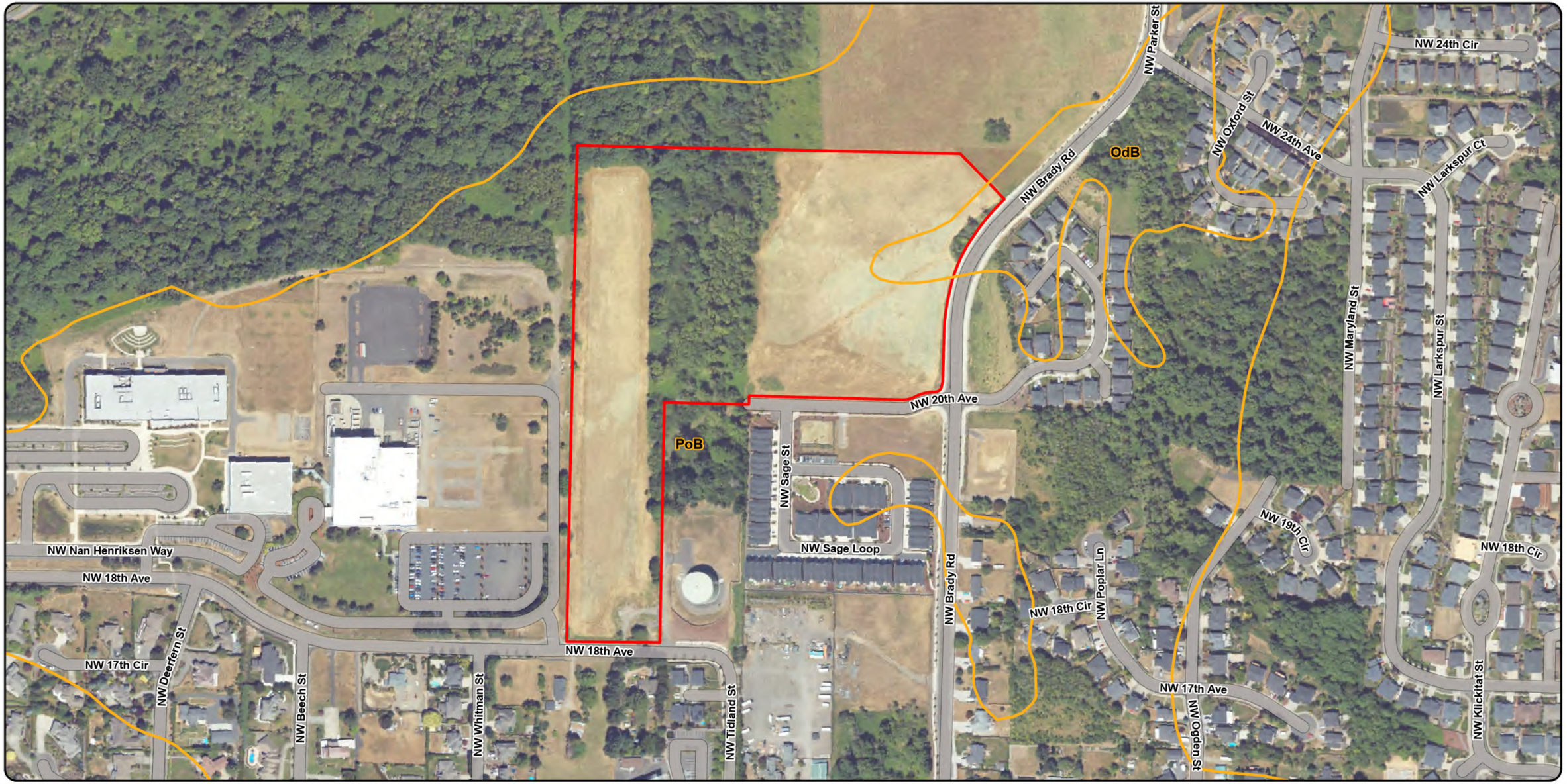
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Source: 2023 Aerial Photograph obtained from National Agricultural Imagery Program. Parcels obtained from Clark County.

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Legend

NRCS Soil Units

- OdB: Odne silt loam, 0 to 5 percent slopes - Hydric
- PoB: Powell silt loam, 0 to 8 percent slopes - Non-hydric
- Study Area (Surveyed Property Boundary)

Source: 2023 Aerial Photograph obtained from National Agricultural Imagery Program. Soils obtained from National Resources Conservation Service (NRCS).

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Figure 3
NRCS Soils Map

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Critical Areas Report

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Source: 2023 Aerial Photograph obtained from National Agricultural Imagery Program. Wetlands obtained from National Wetland Inventory (NWI).

Legend

Wetlands

- Freshwater Emergent Wetland
- Riverine
- Study Area (Surveyed Property Boundary)

Figure 4
NWI Map

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Source: 2023 Aerial Photograph obtained from National Agricultural Imagery Program. Modeled Wetlands obtained from Clark County.

Legend

- Wetlands Modeled by Clark County
- Study Area Boundary

Figure 5
Clark County Modeled and Permitted Wetland Map

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Critical Areas Report

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Legend

Riparian Habitat Area

Study Area Boundary

Source: 2023 Aerial Photograph obtained from National Agricultural Imagery Program. Riparian Habitat Area obtained Clark County.

Figure 6
Clark County Priority Habitat and Species Map

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Legend

Streams

F Fish

N N Non-fish

Study Area Boundary

Source: 2023 Aerial Photograph obtained from National Agricultural Imagery Program. Streams from Washington Department of Natural Resources.

Figure 7
WA DNR Water Type Map

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Critical Areas Report

N

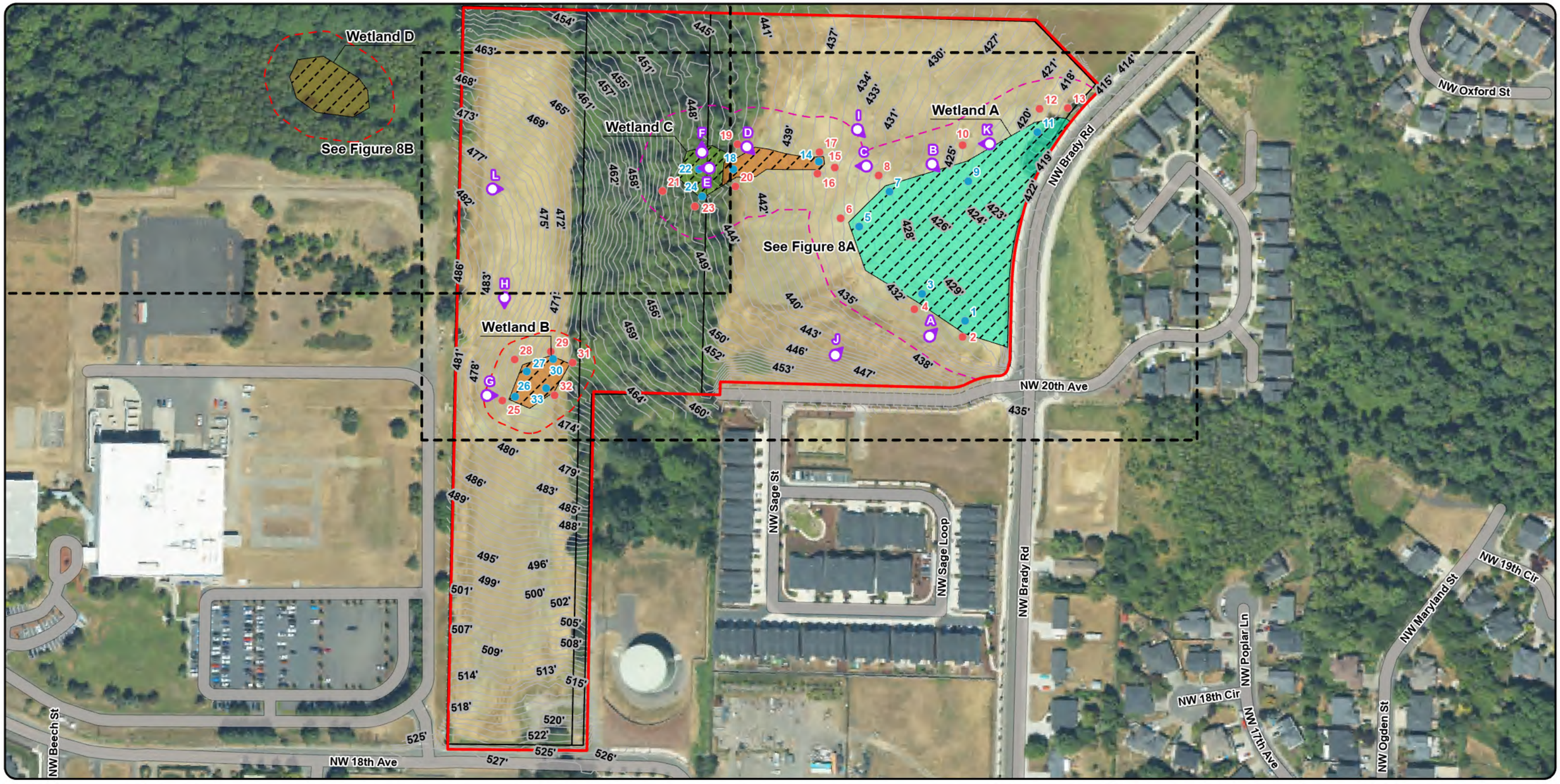
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AKS wetland boundaries shown were delineated by AKS Engineering & Forestry, LLC (AKS) on May 15, 2025. Wetland boundaries and plots shown were mapped with sub-meter accuracy using a Trimble R8S GPS receiver and ArcGIS Field Maps.

Source: Aerial Photograph obtained from ESRI, ArcGIS Online. Taxlots obtained from Clark County. 1ft interval contours derived from AKS professional land survey from May 7 to June 12, 2025.

Legend

Sample Plots
- Upland
- Wetland
- Photo Point
- Contours 1ft
- Project Area
- Taxlots

Onsite Wetlands
- Wetland A, Category III, PEM/ Depressional - 2.25 acres
- Wetland B, Category IV, PEM/ Slope - 0.17 acres
- Wetland C, Category III, PFO/ Slope - 0.16 acres
- Wetland C, Category III, PEM/ Slope - 0.18 acres

Offsite Wetlands
- Wetland D, Category IV, PSS/ Slope - 0.31 acres

- 50-foot Category IV Wetland High Intensity Land Use Water Quality Buffer
- 80-foot Category III Wetland High Intensity Land Use Water Quality Buffer

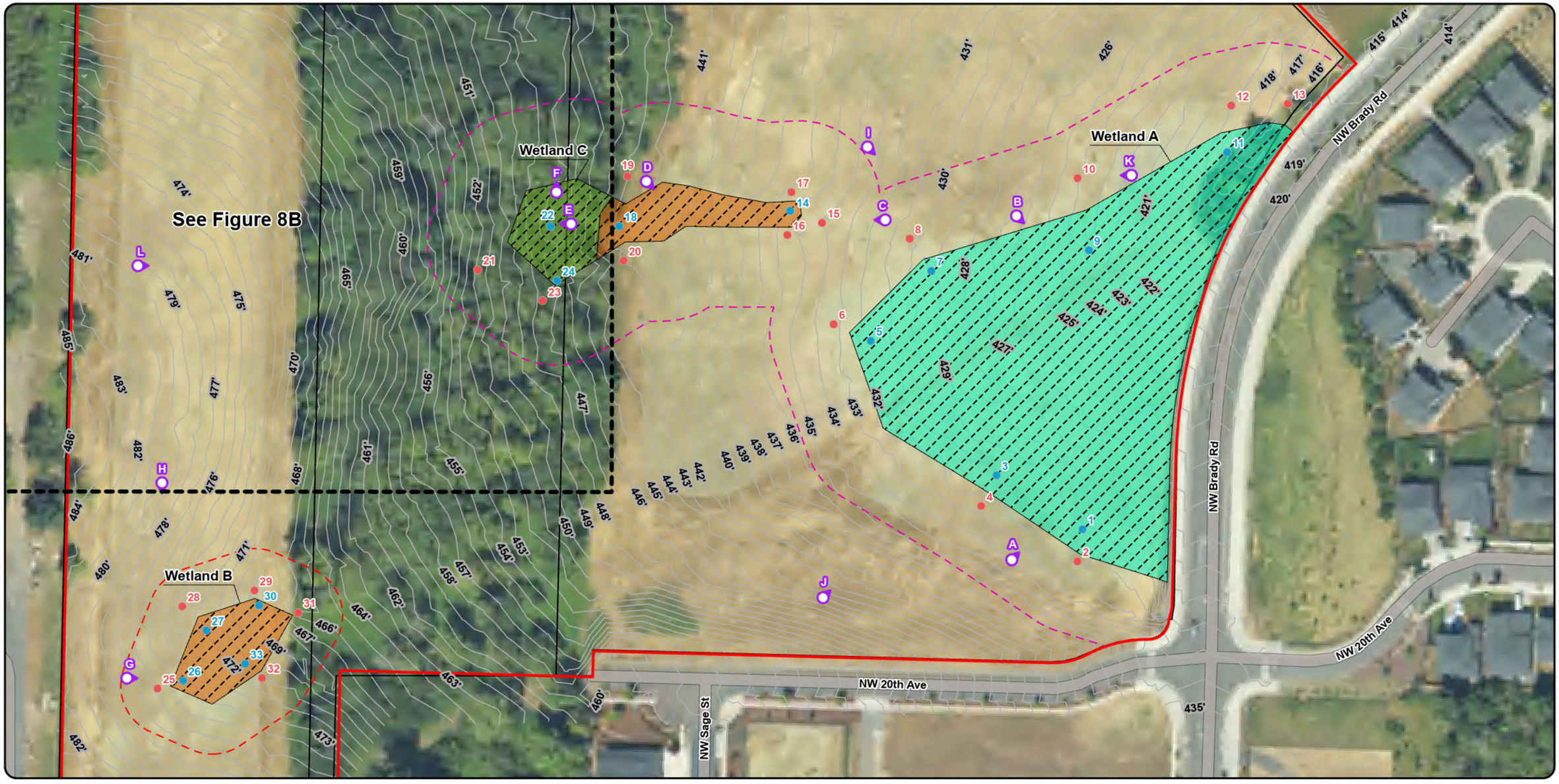
Figure 8
Critical Areas Delineation Overview Map

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Stella Ridge
Critical Areas Report

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Legend

Sample Plots
- Upland
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- Photo Point
- Contours 1ft
- Project Area
- Taxlots

Onsite Wetlands
- Wetland A, Category III, PEM/ Depressional - 2.25 acres
- Wetland B, Category IV, PEM/ Slope - 0.17 acres
- Wetland C, Category III, PFO/ Slope - 0.16 acres
- Wetland C, Category III, PEM/ Slope - 0.18 acres

- 50-foot Category IV Wetland High Intensity Land Use Water Quality Buffer
- 80-foot Category III Wetland High Intensity Land Use Water Quality Buffer

Figure 8A
Critical Areas Delineation Map

AKS Job: 12107
Stella Ridge
Critical Areas Report

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0 50 100 Feet

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Source: Aerial Photograph obtained from ESRI, ArcGIS Online. Taxlots obtained from Clark County. 1ft interval contours derived from AKS professional land survey from May 7 to June 12, 2025.

Sample Plots
- Upland
- Wetland
- Photo Point
- Contours 1ft
- Project Area
- Taxlots

Legend

Onsite Wetlands
- Wetland C, Category III, PFO/ Slope - 0.16 acres

Offsite Wetlands
- Wetland D, Category IV, PSS/ Slope - 0.31 acres

- 50-foot Category IV Wetland High Intensity Land Use Water Quality Buffer
- 80-foot Category III Wetland High Intensity Land Use Water Quality Buffer

Figure 8B
Critical Areas Delineation Map

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Stella Ridge
Critical Areas Report

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OFF-SITE 50' HIGH INTENSITY LAND USE WATER QUALITY CAT IV WETLAND BUFFER

OFF-SITE WETLAND

60' MODERATE INTENSITY LAND USE WATER QUALITY CAT III WETLAND BUFFER

80' HIGH INTENSITY LAND USE WATER QUALITY CAT III WETLAND BUFFER

WETLAND B BOUNDARY

50' HIGH INTENSITY LAND USE WATER QUALITY CAT IV WETLAND BUFFER

WETLAND C BOUNDARY

WETLAND A BOUNDARY

LIMITS OF GRADING

PROJECT AREA

SEE FIGURE 9A

TRACT A

TRACT B

TRACT C

TRACT D

TRACT E

TRACT F

TRACT G

TRACT H

TRACT I

TRACT J

STREET A

STREET C

STREET D

NW BRADY ROAD

NW 20TH AVENUE

SHARP DRIVE

NW SAGE STREET

NW SAGE LOOP

PARKER VILLAGE SUBDIVISION

STM

LEGEND (COLOR COPY):

TOTAL ON-SITE WETLAND AREA TO REMAIN:
CAT III PEM/DEPRESSIONAL WETLAND A AREA: 83,216 SF± (1.91 ACRES±)
CAT III PFO/PEM/SLOPE WETLAND C AREA: 437 SF± (0.01 ACRES±)

EXISTING 50' HIGH INTENSITY LAND USE WATER QUALITY CATEGORY IV WETLAND BUFFER

EXISTING 80' HIGH INTENSITY LAND USE WATER QUALITY CATEGORY III WETLAND BUFFER

PROPOSED 60' MODERATE INTENSITY LAND USE WATER QUALITY CATEGORY III WETLAND BUFFER

DIRECT PERMANENT WETLAND IMPACT AREA TO BE MITIGATED THROUGH WETLAND BANK CREDITS: 8,824 SF± (0.20 ACRES±)

INDIRECT PERMANENT WETLAND IMPACT AREA TO BE MITIGATED THROUGH WETLAND BANK CREDITS: 6,218 SF± (0.14 ACRES±)

WETLAND BUFFER AREA TO REMAIN: 55,522 SF± (1.28 ACRES±)

WETLAND BUFFER AREA TO BE ENHANCED: 47,628 SF± (1.09 ACRES±)

WETLAND BUFFER AREA TO BE MITIGATED THROUGH WETLAND BANK CREDITS: 25,022 SF± (0.57 ACRES±)

WETLAND BUFFER TEMPORARY IMPACT AREA TO BE ENHANCED: 881 SF± (0.02 ACRES±)

WETLAND BUFFER PERMANENT IMPACT AREA TO BE MITIGATED THROUGH BUFFER AVERAGING: 11,222 SF± (0.26 ACRES±)

WETLAND BUFFER AVERAGING: 18,906 SF± (0.43 ACRES±)

PERMANENT PERIMETER FENCING AND SIGNAGE

WETLAND BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC (AKS) ON MAY 15, 2025. WETLAND BOUNDARIES WERE LOCATED WITH SUB-METER ACCURACY USING AN R10 GPS RECEIVER AND ARCGIS FIELD MAPS.

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DATE: 08/28/2025

CRITICAL AREAS SITE PLAN (OVERVIEW)

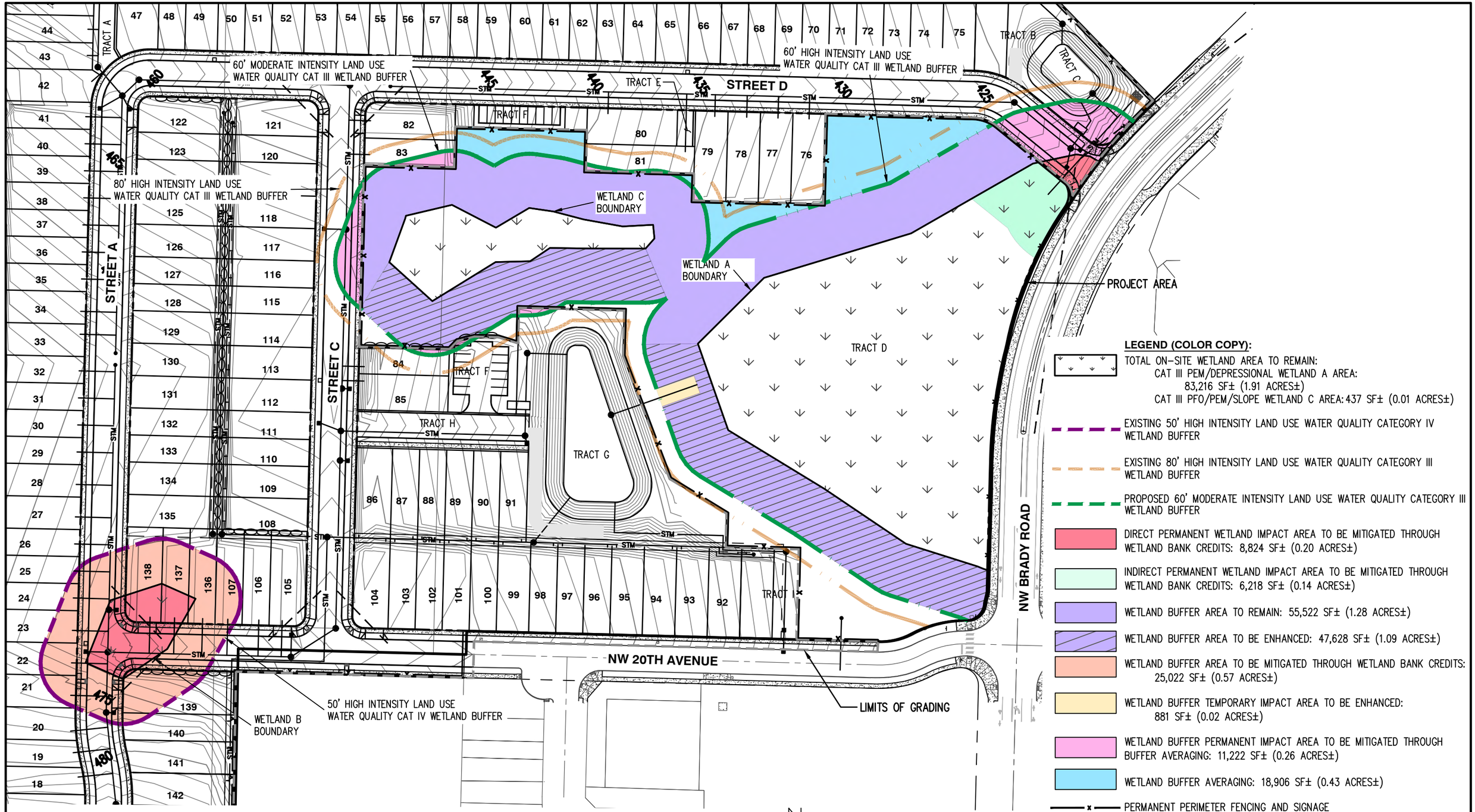
FIGURE 9

STELLA RIDGE CRITICAL AREAS REPORT

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VANCOUVER, WA 98682
360.882.0419 WWW.AKS-ENG.COM

DRWN: GPM
CHKD: SAR
AKS 12107

DWG: 12107 CA SITE PLAN | FIGURE 9



LEGEND (COLOR COPY):

TOTAL ON-SITE WETLAND AREA TO REMAIN:
CAT III PEM/DEPRESSIONAL WETLAND A AREA:
83,216 SF± (1.91 ACRES±)
CAT III PFO/PEM/SLOPE WETLAND C AREA: 437 SF± (0.01 ACRES±)

EXISTING 50' HIGH INTENSITY LAND USE WATER QUALITY CATEGORY IV WETLAND BUFFER

EXISTING 80' HIGH INTENSITY LAND USE WATER QUALITY CATEGORY III WETLAND BUFFER

PROPOSED 60' MODERATE INTENSITY LAND USE WATER QUALITY CATEGORY III WETLAND BUFFER

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PERMANENT PERIMETER FENCING AND SIGNAGE

DATE: 08/28/2025

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CRITICAL AREAS SITE PLAN

FIGURE 9A

STELLA RIDGE CRITICAL AREAS REPORT

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DRWN: GPM
CHKD: SAR
AKS 12107

DWG: 12107 CA SITE PLAN | FIGURE 9A

Appendix A: Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 1

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Phalaris arundinacea*	75%	Yes	FACW
2. *Lotus corniculatus*	20%	Yes	FAC
3. *Poa pratensis*	3%	No	FAC
4. *Anthoxanthum odoratum*	2%	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 75	x 2 =	150
FAC species 23	x 3 =	69
FACU species 2	x 4 =	8
UPL species 0	x 5 =	0
Column Totals: 100 (A)		227 (B)

Prevalence Index = B/A = 2.27

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 1

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[0]	Remarks
0-5	10YR 3/2	100					SiL	
5-9	10YR 3/2	95	7.5YR 3/4	5	C	M	SiL	
9-13	10YR 3/2	90	7.5YR 3/4	10	C	M	SiL	
13-16	10YR 4/2	90	7.5YR 3/4	10	C	M	SiL	

[0]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 2

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Anthoxanthum odoratum*	58%	Yes	FACU
2. *Lotus corniculatus*	15%	No	FAC
3. *Phalaris arundinacea*	10%	No	FACW
4. *Cirsium arvense*	10%	No	FAC
5. *Alopecurus pratensis*	5%	No	FAC
6. *Poa pratensis*	2%	No	FAC
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 10	x 2 =	20
FAC species 32	x 3 =	96
FACU species 58	x 4 =	232
UPL species 0	x 5 =	0
Column Totals: 100 (A)		348 (B)

Prevalence Index = B/A = 3.48

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: 2

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-10	10YR 3/2	100					SiL	
10-16	10YR 3/2	97	7.5YR 3/4	3	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 3

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or ____)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or ____)			
1. *Phalaris arundinacea*	60%	Yes	FACW
2. *Carex densa*	10%	No	OBL
3. *Carex feta*	10%	No	FACW
4. *Lotus corniculatus*	10%	No	FAC
5. *Cirsium arvense*	5%	No	FAC
6. *Anthoxanthum odoratum*	3%	No	FACU
7. *Poa pratensis*	2%	No	FAC
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or ____)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 10	x 1 =	10
FACW species 70	x 2 =	140
FAC species 17	x 3 =	51
FACU species 3	x 4 =	12
UPL species 0	x 5 =	0
Column Totals: 100 (A)		213 (B)

Prevalence Index = B/A = 2.13

Hydrophytic Vegetation Indicators:
- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 3

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[0]	Remarks
0-7	10YR 3/2	100					SiL	
7-11	10YR 3/2	95	7.5YR 3/4	5	C	M	SiL	
11-16	10YR 3/2	85	7.5YR 3/4	15	C	M	SiL	

[0]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): >16
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >16

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 4

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): None | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X		
Wetland Hydrology Present?	Yes ____	No X		

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Anthoxanthum odoratum*	69%	Yes	FACU
2. *Lotus corniculatus*	20%	Yes	FAC
3. *Cirsium arvense*	10%	No	FAC
4. *Vicia hirsuta*	1%	No	NOL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 30	x 3 =	90
FACU species 69	x 4 =	276
UPL species 1	x 5 =	5
Column Totals: 100 (A)		371 (B)

Prevalence Index = B/A = 3.71

Hydrophytic Vegetation Indicators:
- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:

SOIL

Sampling Point: 4

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-10	10YR 3/2	100					SiL	
10-16	10YR 3/2	90	7.5YR 4/6	10	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 5

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Odne silt loam, 0 to 5 percent slopes (Unit OdB) - Hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Phalaris arundinacea*	64%	Yes	FACW
2. *Lotus corniculatus*	30%	Yes	FAC
3. *Anthoxanthum odoratum*	5%	No	FACU
4. *Poa pratensis*	1%	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 64	x 2 =	128
FAC species 31	x 3 =	93
FACU species 5	x 4 =	20
UPL species 0	x 5 =	0
Column Totals: 100 (A)		241 (B)

Prevalence Index = B/A = 2.41

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 5

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[0]	Remarks
0-6	10YR 3/2	100					SiL	
6-16	10YR 3/2	90	7.5YR	10	C	M	SiL	

[0]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___	
Water Table Present?	Yes ___	No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >16	

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 6

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): <5

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or ____)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or ____)			
1. *Phalaris arundinacea*	65%	Yes	FACW
2. *Lotus corniculatus*	20%	Yes	FAC
3. *Poa pratensis*	5%	No	FAC
4. *Anthoxanthum odoratum*	5%	No	FACU
5. *Alopecurus pratensis*	5%	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or ____)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 65	x 2 =	130
FAC species 30	x 3 =	90
FACU species 5	x 4 =	20
UPL species 0	x 5 =	0
Column Totals: 100 (A)		240 (B)

Prevalence Index = B/A = 2.40

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL | **Sampling Point:** 6

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-9	10YR 3/2	100					SiL	
9-16	10YR 3/2	97	7.5YR 4/4	3	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 7

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): <5

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Phalaris arundinacea*	45%	Yes	FACW
2. *Lotus corniculatus*	30%	Yes	FAC
3. *Poa pratensis*	10%	No	FAC
4. *Carex densa*	10%	No	OBL
5. *Anthoxanthum odoratum*	5%	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 10	x 1 =	10
FACW species 45	x 2 =	90
FAC species 40	x 3 =	120
FACU species 5	x 4 =	20
UPL species 0	x 5 =	0
Column Totals: 100 (A)		240 (B)

Prevalence Index = B/A = 2.40

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 7

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[0]	Remarks
0-6	10YR 3/2	100					SiL	
6-16	10YR 3/2	90	7.5YR 3/4	10			SIL	

[0]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___	
Water Table Present?	Yes ___	No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >16	

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 8

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): None | Slope (%): <10

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No X**
Hydric Soil Present?	Yes ____	No X		
Wetland Hydrology Present?	Yes ____	No X		

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Anthoxanthum odoratum*	43%	Yes	FACU
2. *Lotus corniculatus*	25%	Yes	FAC
3. *Alopecurus pratensis*	15%	No	FAC
4. *Poa pratensis*	10%	No	FAC
5. *Cirsium arvense*	5%	No	FAC
6. *Carex densa*	1%	No	OBL
7. *Rumex crispus*	1%	No	FAC
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 1	x 1 =	1
FACW species 0	x 2 =	0
FAC species 56	x 3 =	168
FACU species 43	x 4 =	172
UPL species 0	x 5 =	0
Column Totals: 100 (A)		341 (B)

Prevalence Index = B/A = 3.41

Hydrophytic Vegetation Indicators:
- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ____ **No X**

Remarks:

SOIL

Sampling Point: 8

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-10	10YR 3/2	100						
10-16	10YR 3/2	90	7.5YR 3/4	10	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 9

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Odne silt loam, 0 to 5 percent slopes (Unit OdB) - Hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Phalaris arundinacea*	45%	Yes	FACW
2. *Lotus corniculatus*	30%	Yes	FAC
3. *Alopecurus pratensis*	15%	No	FAC
4. *Poa pratensis*	5%	No	FAC
5. *Anthoxanthum odoratum*	5%	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 45	x 2 =	90
FAC species 50	x 3 =	150
FACU species 5	x 4 =	20
UPL species 0	x 5 =	0
Column Totals: 100 (A)		260 (B)

Prevalence Index = B/A = 2.60

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 9

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[0]	Remarks
0-7	10YR 3/2	100					SiL	
7-13	10YR 3/2	90	7.5YR 3/4	10	C	M	SiL	
13-16	10YR 4/2	90	7.5YR 4/6	10	C	M	SiL	

[0]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____	
Water Table Present?	Yes _____	No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): >16	

Wetland Hydrology Present? **Yes** X **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 10

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): None | Slope (%): <5

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No X**
Hydric Soil Present?	Yes ____	No X		
Wetland Hydrology Present?	Yes ____	No X		

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1. *Rubus armeniacus*	2%	No	FAC
2.			
3.			
4.			
5.			
	2% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Anthoxanthum odoratum*	52%	Yes	FACU
2. *Lotus corniculatus*	25%	Yes	FAC
3. *Phalaris arundinacea*	10%	No	FACW
4. *Poa pratensis*	5%	No	FAC
5. *Bromus hordeaceus*	5%	No	FACU
6. *Vulpia myuros*	1%	No	FACU
7. *Vicia sativa*	1%	No	UPL
8. *Vicia hirsuta*	1%	No	NOL
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 10	x 2 =	20
FAC species 32	x 3 =	96
FACU species 58	x 4 =	232
UPL species 2	x 5 =	10
Column Totals: 102 (A)		358 (B)
Prevalence Index = B/A =		3.51

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL | **Sampling Point:** 10

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-9	10YR 3/2	100					SiL	
9-12	10YR 3/2	98	7.5YR 4/4	2	C	M	SiL	
12-15	10YR 3/2	90	7.5YR 4/4	10	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >15	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >15	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 11

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Odne silt loam, 0 to 5 percent slopes (Unit OdB) - Hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	25%	Yes	FACW
2.			
3.			
4.			
	25% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1. *Salix hookeriana*	30%	Yes	FACW
2. *Rosa nutkana*	5%	No	FAC
3. *Crataegus monogyna*	5%	No	FAC
4.			
5.			
	40% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Phalaris arundinacea*	85%	Yes	FACW
2. *Poa pratensis*	15%	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 140	x 2 =	280
FAC species 25	x 3 =	75
FACU species 0	x 4 =	0
UPL species 0	x 5 =	0
Column Totals: 165 (A)		355 (B)

Prevalence Index = B/A = 2.15

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 11

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[0]	Remarks
0-7	10YR 3/2	100					SiL	
7-10	10YR 3/2	95	7.5YR 3/4	5	C	M	SiL	
12-16	10YR 3/2	90	7.5YR 3/4	10	C	M	SiL	

[0]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 12

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): None | Slope (%): <5

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Odne silt loam, 0 to 5 percent slopes (Unit OdB) - Hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X		
Wetland Hydrology Present?	Yes ____	No X		

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1. *Rubus armeniacus*	5%	Yes	FAC
2.			
3.			
4.			
5.			
	5% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Bromus hordeaceus*	49%	Yes	FACU
2. *Anthoxanthum odoratum*	25%	Yes	FACU
3. *Vicia sativa*	15%	No	UPL
4. *Lotus corniculatus*	5%	No	FAC
5. *Cirsium arvense*	5%	No	FAC
6. *Galium aparine*	1%	No	FACU
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	75	x 4 =	300
UPL species	15	x 5 =	75
Column Totals:	105 (A)		420 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:

SOIL | **Sampling Point:** 12

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-11	10YR 3/2	100					SiL	
11-16	10YR 4/3	100					SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): >16
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >16

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 13

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Odne silt loam, 0 to 5 percent slopes (Unit OdB) - Hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X		
Wetland Hydrology Present?	Yes ____	No X		

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1. *Rubus armeniacus*	2%	No	FAC
2.			
3.			
4.			
5.			
	2% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Bromus hordeaceus*	70%	Yes	FACU
2. *Phalaris arundinacea*	20%	Yes	FACW
3. *Galium aparine*	5%	No	FACU
4. *Poa pratensis*	3%	No	FAC
5. *Vicia sativa*	1%	No	UPL
6. *Cirsium vulgare*	1%	No	FACU
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 20	x 2 =	40
FAC species 5	x 3 =	15
FACU species 76	x 4 =	304
UPL species 1	x 5 =	5
Column Totals: 102 (A)		364 (B)

Prevalence Index = B/A = 3.57

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL | **Sampling Point:** 13

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[0]	Remarks
0-16	10YR 3/2	100					SiL	

[0]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 14

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): <5

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or ____)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or ____)			
1. *Phalaris arundinacea*	60%	Yes	FACW
2. *Lotus corniculatus*	15%	No	FAC
3. *Poa pratensis*	10%	No	FAC
4. *Bromus hordeaceus*	5%	No	FACU
5. *Alopecurus pratensis*	5%	No	FAC
6. *Anthoxanthum odoratum*	3%	No	FACU
7. *Carex feta*	2%	No	FACW
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or ____)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 62	x 2 =	124
FAC species 30	x 3 =	90
FACU species 8	x 4 =	32
UPL species 0	x 5 =	0
Column Totals: 100 (A)		246 (B)

Prevalence Index = B/A = 2.46

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 14

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-7	10YR 3/2	100					SiL	
7-16	10YR 3/2	90	7.5YR 3/4	10	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): >16
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >16

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 15

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): None | Slope (%): <5

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Phalaris arundinacea*	45%	Yes	FACW
2. *Anthoxanthum odoratum*	20%	Yes	FACU
3. *Alopecurus pratensis*	15%	No	FAC
4. *Poa pratensis*	10%	No	FAC
5. *Bromus hordeaceus*	5%	No	FACU
6. *Lotus corniculatus*	5%	No	FAC
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 45	x 2 =	90
FAC species 30	x 3 =	90
FACU species 25	x 4 =	100
UPL species 0	x 5 =	0
Column Totals: 100 (A)		280 (B)

Prevalence Index = B/A = 2.80

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL | **Sampling Point:** 15

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[0]	Remarks
0-10	10YR 3/2	100					SiL	
10-16	10YR 3/2	95	7.5YR 3/4	5	C	M	SiL	

[0]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 16

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): None | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Anthoxanthum odoratum*	60%	Yes	FACU
2. *Bromus hordeaceus*	10%	No	FACU
3. *Holcus lanatus*	10%	No	FAC
4. *Lotus corniculatus*	10%	No	FAC
5. *Poa pratensis*	5%	No	FAC
6. *Carex feta*	5%	No	FACW
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 5	x 2 =	10
FAC species 25	x 3 =	75
FACU species 70	x 4 =	280
UPL species 0	x 5 =	0
Column Totals: 100 (A)		365 (B)

Prevalence Index = B/A = 3.65

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- 5 - Wetland Non-Vascular Plants[1]
- Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: 16

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-9	10YR 3/2	100					SiL	
9-16	10YR 3/2	95	7.5YR 3/4	5	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 17

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 5-10

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Anthoxanthum odoratum*	60%	Yes	FACU
2. *Lotus corniculatus*	25%	Yes	FAC
3. *Vicia sativa*	10%	No	UPL
4. *Cirsium arvense*	5%	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 30	x 3 =	90
FACU species 60	x 4 =	240
UPL species 10	x 5 =	50
Column Totals: 100 (A)		380 (B)

Prevalence Index = B/A = 3.80

Hydrophytic Vegetation Indicators:
- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL | **Sampling Point:** 17

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[0]	Remarks
0-8	10YR 3/2	100					SiL	
8-11	10YR 3/2	98	7.5YR 4/4	2	C	M	SiL	
11-16	10YR 3/2	95	7.5YR 3/4	5	C	M	SiL	

[0]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 18

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	10%	Yes	FACW
2.			
3.			
4.			
	10% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1. *Salix species*	40%	Yes	FAC*
2.			
3.			
4.			
5.			
	40% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Lotus corniculatus*	40%	Yes	FAC
2. *Ranunculus repens*	20%	Yes	FAC
3. *Anthoxanthum odoratum*	20%	Yes	FACU
4. *Phalaris arundinacea*	10%	No	FACW
5. *Holcus lanatus*	5%	No	FAC
6. *Poa pratensis*	5%	No	FAC
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 20	x 2 =	40
FAC species 110	x 3 =	330
FACU species 20	x 4 =	80
UPL species 0	x 5 =	0
Column Totals: 150 (A)		450 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL | **Sampling Point:** 18

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-5	10YR 3/2	95	7.5YR 3/4	5	C	M/PL	SiL	
5-16	10YR 3/2	90	7.5YR 3/4	10	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): >16
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >16

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 19

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 5-10

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	10%	Yes	FACW
2.			
3.			
4.			
	10% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1. *Rubus armeniacus*	30%	Yes	FAC
2. *Rosa nutkana*	5%	No	FAC
3. *Corylus cornuta*	5%	No	FACU
4.			
5.			
	40% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Anthoxanthum odoratum*	74%	Yes	FACU
2. *Lotus corniculatus*	15%	No	FAC
3. *Ranunculus repens*	5%	No	FAC
4. *Phalaris arundinacea*	5%	No	FACW
5. *Tellima grandiflora*	1%	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 15	x 2 =	30
FAC species 55	x 3 =	165
FACU species 80	x 4 =	320
UPL species 0	x 5 =	0
Column Totals: 150 (A)		515 (B)

Prevalence Index = B/A = 3.43

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL | **Sampling Point:** 19

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[0]	Remarks
0-10	10YR 3/2	100					SiL	
10-16	10YR 3/2	95	7.5YR 3/4	5	C	M	SiL	

[0]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 20

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Anthoxanthum odoratum*	50%	Yes	FACU
2. *Ranunculus repens*	20%	Yes	FAC
3. *Lotus corniculatus*	20%	Yes	FAC
4. *Phalaris arundinacea*	5%	No	FACW
5. *Vicia sativa*	5%	No	UPL
6.			
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 5	x 2 =	10
FAC species 40	x 3 =	120
FACU species 50	x 4 =	200
UPL species 5	x 5 =	25
Column Totals: 100 (A)		355 (B)

Prevalence Index = B/A = 3.55

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 20

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-12	10YR 3/2	100					SiL	
12-16	10YR 3/2	95	7.5YR 3/4	5	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): >16
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >16

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 21

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): <5

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X

Is the Sampled Area within a Wetland? Yes ____ No X

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer macrophyllum*	40%	Yes	FACU
2.			
3.			
4.			
	40% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1. *Corylus cornuta*	30%	Yes	FACU
2. *Symphoricarpos albus*	10%	Yes	FACU
3. *Acer circinatum*	5%	No	FAC
4.			
5.			
	45% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Polystichum munitum*	5%	No	FACU
2. *Tellima grandiflora*	5%	No	FACU
3. *Geranium robertianum*	1%	No	FACU
4. *Geum macrophyllum*	1%	No	FAC
5. *Ranunculus repens*	1%	No	FAC
6. *Galium aparine*	1%	No	FACU
7. *Claytonia sibirica*	1%	No	FAC
8.			
9.			
10.			
11.			
	15% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1. *Rubus ursinus*	5%	Yes	FACU
2.			
	5% = Total Cover		

% Bare Ground in Herb Stratum 85%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	8	x 3 =	24
FACU species	57	x 4 =	228
UPL species	0	x 5 =	0
Column Totals:	65 (A)		252 (B)

Prevalence Index = B/A = 3.88

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL

Sampling Point: 21

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-13	10YR 3/2	100					SiL	
13-16	10YR 4/3	100					SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 22

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	80%	Yes	FACW
2.			
3.			
4.			
	80% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1. *Rosa nutkana*	15%	Yes	FAC
2. *Lonicera involucrata*	5%	Yes	FAC
3.			
4.			
5.			
	20% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Carex pachystachya*	30%	Yes	FAC
2. *Carex leptopoda*	20%	Yes	FAC
3. *Veronica americana*	20%	Yes	OBL
4. *Stachys chamissonis*	5%	No	FACW
5. *Juncus effusus*	5%	No	FACW
6. *Claytonia sibirica*	1%	No	FAC
7. *Geum macrophyllum*	1%	No	FAC
8. *Ranunculus parviflorus*	1%	No	FACU
9.			
10.			
11.			
	83% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 17%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 20	x 1 =	20
FACW species 90	x 2 =	180
FAC species 72	x 3 =	216
FACU species 1	x 4 =	4
UPL species 0	x 5 =	0
Column Totals: 183 (A)		420 (B)

Prevalence Index = B/A = 2.30

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 22

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-3	10YR 3/2	90	7.5YR 3/4	10	C	M	SiL	
3-16	10YR 3/2	80	7.5YR 3/4	20	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): >16
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >16

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 23

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 5-10

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No X**
Hydric Soil Present?	Yes ____	No X		
Wetland Hydrology Present?	Yes ____	No X		

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	70%	Yes	FACW
2.			
3.			
4.			
	70% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1. *Symphoricarpos albus*	75%	Yes	FACU
2. *Acer circinatum*	10%	No	FAC
3. *Amelanchier alnifolia*	5%	No	FACU
4.			
5.			
	90% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Polystichum munitum*	5%	No	FACU
2. *Circaea alpina*	5%	No	FAC
3. *Ranunculus parviflorus*	1%	No	FACU
4. *Tellima grandiflora*	1%	No	FACU
5. *Fragaria vesca*	1%	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
	13% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 87%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 70	x 2 =	140
FAC species 15	x 3 =	45
FACU species 88	x 4 =	352
UPL species 0	x 5 =	0
Column Totals: 173 (A)		537 (B)

Prevalence Index = B/A = 3.10

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ____ **No X**

Remarks:

SOIL

Sampling Point: 23

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-16	10YR 3/2	100					SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 24

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	80%	Yes	FACW
2.			
3.			
4.			
	80% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1. *Rosa nutkana*	15%	Yes	FAC
2. *Physocarpus capitatus*	10%	Yes	FACW
3.			
4.			
5.			
	25% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Carex leptopoda*	5%	Yes	FAC
2. *Carex pachystachya*	5%	Yes	FAC
3. *Tellima grandiflora*	5%	Yes	FACU
4. *Claytonia sibirica*	5%	Yes	FAC
5. *Nemophila parviflora*	5%	Yes	NOL
6. *Ranunculus parviflorus*	5%	Yes	FACU
7. *Geum macrophyllum*	5%	Yes	FAC
8. *Epilobium ciliatum*	5%	Yes	FACW
9.			
10.			
11.			
	40% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1. *Rubus ursinus*	5%	Yes	FACU
2.			
	5% = Total Cover		

% Bare Ground in Herb Stratum 60%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 12 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

	Total % Cover of:	Multiply by:	
OBL species	0	x 1 =	0
FACW species	95	x 2 =	190
FAC species	35	x 3 =	105
FACU species	15	x 4 =	60
UPL species	5	x 5 =	25
Column Totals:	150 (A)		380 (B)

Prevalence Index = B/A = 2.53

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 24

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-7	10YR 3/2	100					SiL	
7-16	10YR 3/2	95	7.5YR 3/4	5	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): >16
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >16

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 25

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 5-10

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X		
Wetland Hydrology Present?	Yes ____	No X		

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Anthoxanthum odoratum*	55%	Yes	FACU
2. *Vicia sativa*	10%	No	UPL
3. *Vicia hirsuta*	10%	No	NOL
4. *Schedonorus arundinaceus*	5%	No	FAC
5. *Lotus corniculatus*	5%	No	FAC
6. *Alopecurus pratensis*	5%	No	FAC
7. *Phalaris arundinacea*	5%	No	FACW
8. *Cirsium arvense*	3%	No	FAC
9. *Myosotis discolor*	2%	No	FAC
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 5	x 2 =	10
FAC species 20	x 3 =	60
FACU species 55	x 4 =	220
UPL species 20	x 5 =	100
Column Totals: 100 (A)		390 (B)

Prevalence Index = B/A = 3.90

Hydrophytic Vegetation Indicators:
- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:

SOIL

Sampling Point: 25

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-9	10YR 3/2	100					SiL	
9-16	10YR 3/2	95	7.5YR 4/6	5	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 26

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Phalaris arundinacea*	40%	Yes	FACW
2. *Lotus corniculatus*	30%	Yes	FAC
3. *Anthoxanthum odoratum*	20%	Yes	FACU
4. *Poa pratensis*	5%	No	FAC
5. *Alopecurus pratensis*	5%	No	FAC
6. *Vicia sativa*	1%	No	UPL
7.			
8.			
9.			
10.			
11.			
	101% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 40	x 2 =	80
FAC species 40	x 3 =	120
FACU species 20	x 4 =	80
UPL species 1	x 5 =	5
Column Totals: 101 (A)		285 (B)

Prevalence Index = B/A = 2.82

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 26

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-4	10YR 3/2	100					SiL	
4-16	10YR 3/2	95	7.5YR 4/6	5	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 27

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Alopecurus pratensis*	45%	Yes	FAC
2. *Phalaris arundinacea*	20%	Yes	FACW
3. *Anthoxanthum odoratum*	10%	No	FACU
4. *Poa pratensis*	10%	No	FAC
5. *Vicia hirsuta*	4%	No	NOL
6. *Myosotis discolor*	1%	No	FAC
7.			
8.			
9.			
10.			
11.			
	90% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 10%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 20	x 2 =	40
FAC species 56	x 3 =	168
FACU species 10	x 4 =	40
UPL species 4	x 5 =	20
Column Totals: 90 (A)		268 (B)

Prevalence Index = B/A = 2.98

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: 27

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-4	10YR 3/2	100					SiL	
4-16	10YR 3/2	95	10YR 4/6	5	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___	
Water Table Present?	Yes ___	No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >16	

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 28

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): 5-10

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No X**
Hydric Soil Present?	Yes ____	No X		
Wetland Hydrology Present?	Yes ____	No X		

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Poa pratensis*	30%	Yes	FAC
2. *Anthoxanthum odoratum*	30%	Yes	FACU
3. *Vicia sativa*	10%	No	UPL
4. *Schedonorus arundinaceus*	5%	No	FAC
5. *Plantago lanceolata*	5%	No	FACU
6. *Vicia hirsuta*	5%	No	NOL
7. *Lupinus bicolor*	3%	No	NOL
8. *Dactylis glomerata*	2%	No	FACU
9.			
10.			
11.			
	90% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 10%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 0	x 2 =	0
FAC species 35	x 3 =	105
FACU species 37	x 4 =	148
UPL species 18	x 5 =	90
Column Totals: 90 (A)		343 (B)

Prevalence Index = B/A = 3.81

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

SOIL | **Sampling Point:** 28

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-16	10YR 3/2	100					SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): >16
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >16

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 29

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): None | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Alopecurus pratensis*	40%	Yes	FAC
2. *Phalaris arundinacea*	20%	Yes	FACW
3. *Galium aparine*	15%	No	FACU
4. *Vicia sativa*	15%	No	UPL
5. *Vicia hirsuta*	5%	No	NOL
6. *Schedonorus arundinaceus*	5%	No	FAC
7.			
8.			
9.			
10.			
11.			
	100% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 20	x 2 =	40
FAC species 45	x 3 =	135
FACU species 15	x 4 =	60
UPL species 20	x 5 =	100
Column Totals: 100 (A)		335 (B)

Prevalence Index = B/A = 3.35

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL | **Sampling Point:** 29

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-5	10YR 3/2	100					SiL	
10-16	10YR 3/2	95	7.5YR 3/4	5	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 30

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or ____)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or ____)			
1. *Phalaris arundinacea*	60%	Yes	FACW
2. *Alopecurus pratensis*	15%	No	FAC
3. *Poa pratensis*	5%	No	FAC
4. *Lotus corniculatus*	5%	No	FAC
5. *Geranium molle*	4%	No	NOL
6. *Myosotis discolor*	1%	No	FAC
7.			
8.			
9.			
10.			
11.			
	90% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or ____)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 10%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 60	x 2 =	120
FAC species 26	x 3 =	78
FACU species 0	x 4 =	0
UPL species 4	x 5 =	20
Column Totals: 90 (A)		218 (B)

Prevalence Index = B/A = 2.42

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL | **Sampling Point:** 30

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-4	10YR 3/2	100					SiL	
4-7	10YR 3/2	99	7.5YR 4/6	1	C	M	SiL	
7-16	10YR 3/2	90	7.5YR 3/4	10	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 31

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): None | Slope (%): <3

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	20%	Yes	FACW
2.			
3.			
4.			
	20% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1. *Rubus armeniacus*	90%	Yes	FAC
2.			
3.			
4.			
5.			
	90% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Geum macrophyllum*	5%	Yes	FAC
2. *Tellima grandiflora*	5%	Yes	FACU
3. *Fragaria vesca*	1%	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	11% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 89%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 20	x 2 =	40
FAC species 95	x 3 =	285
FACU species 6	x 4 =	24
UPL species 0	x 5 =	0
Column Totals: 121 (A)		349 (B)
Prevalence Index = B/A =		2.88

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL | **Sampling Point:** 31

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-9	10YR 3/2	100					SiL	
9-16	10YR 3/2	95	7.5YR 3/3	5	C	M	SiL	Faint

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 32

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Convex | Slope (%): <5

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?**	**Yes** ____ **No X**
Hydric Soil Present?	Yes ____	No X		
Wetland Hydrology Present?	Yes ____	No X		

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Anthoxanthum odoratum*	40%	Yes	FACU
2. *Phalaris arundinacea*	20%	Yes	FACW
3. *Poa pratensis*	15%	No	FAC
4. *Cirsium arvense*	10%	No	FAC
5. *Vicia sativa*	5%	No	UPL
6. *Lotus corniculatus*	5%	No	FAC
7. *Alopecurus pratensis*	3%	No	FAC
8. *Vicia hirsuta*	1%	No	NOL
9. *Bromus sterilis*	1%	No	UPL*
10.			
11.			
	99% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 1%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 20	x 2 =	40
FAC species 33	x 3 =	99
FACU species 40	x 4 =	160
UPL species 7	x 5 =	35
Column Totals: 100 (A)		334 (B)

Prevalence Index = B/A = 3.34

Hydrophytic Vegetation Indicators:
- ____ 1 - Rapid Test for Hydrophytic Vegetation
- ____ 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:
*Assumed indicator status

SOIL

Sampling Point: 32

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-10	10YR 3/2	100					SiL	
10-16	10YR 3/2	95	7.5YR 3/4	5	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___ No X	Depth (inches): ___	
Water Table Present?	Yes ___ No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___ No X	Depth (inches): >16	

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: Stella Ridge | City/County: Camas/Clark | Sampling Date: 5/15/2025

Applicant/Owner: Allied Development LLC | State: Washington | Sampling Point: 33

Investigator(s): Emma Eichhorn and Margret Harburg | Section, Township, Range: Section 38, T.1N, R.3E

Landform (hillslope, terrace, etc.): Hillslope | Local relief (concave, convex, none): Concave | Slope (%): <5

Subregion (LRR): A. Northwest Forests and Coast | Lat: | Long: | Datum: NAD 1983

Soil Map Unit Name: Powell silt loam, 0 to 8 percent slopes (Unit PoB) - Non-hydric | NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes X** **No ____**
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Precipitation:
According to the ACIS Vancouver Pearson Airprot weather station, 0.08 inches of rainfall were received on the day of the site visit and 0.38 inches was received within the two weeks prior. Since October 1, 2024, 28.85 inches of rainfall were received, which is 90 percent of normal.

Remarks:

VEGETATION

Tree Stratum (Plot Size: 30' r or)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0% = Total Cover		
Sapling/Shrub Stratum (Plot Size: 10' r or)			
1.			
2.			
3.			
4.			
5.			
	0% = Total Cover		
Herb Stratum (Plot Size: 5' r or)			
1. *Phalaris arundinacea*	25%	Yes	FACW
2. *Alopecurus pratensis*	20%	Yes	FAC
3. *Poa pratensis*	20%	Yes	FAC
4. *Lotus corniculatus*	20%	Yes	FAC
5. *Anthoxanthum odoratum*	15%	No	FACU
6. *Myosotis discolor*	1%	No	FAC
7.			
8.			
9.			
10.			
11.			
	101% = Total Cover		
Woody Vine Stratum (Plot Size: 10' r or)			
1.			
2.			
	0% = Total Cover		

% Bare Ground in Herb Stratum 0%

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species 0	x 1 =	0
FACW species 25	x 2 =	50
FAC species 61	x 3 =	183
FACU species 15	x 4 =	60
UPL species 0	x 5 =	0
Column Totals: 101 (A)		293 (B)

Prevalence Index = B/A = 2.90

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vascular Plants[1]
- ____ Problematic Hydrophytic Vegetation (Explain)[1]

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? **Yes X** **No ____**

Remarks:
*Assumed indicator status

SOIL | **Sampling Point:** 33

Profile Description (Describe to the depth needed to document the indicator or confirm the absence of indicators):

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture[o]	Remarks
0-6	10YR 3/2	100					SiL	
6-16	10YR 3/2	95	7.5YR 3/4	5	C	M	SiL	

[o]Texture: S = sand; Si = silt; C = clay; L = loam or loamy. Texture Modifier: co = coarse; f = fine; vf = very fine; + = heavy (more clay); - = light (less clay)

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators (Applicable to all LRRs, unless otherwise noted):

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (except MLRA 1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (except MLRA 1, 2, 4A, and 4B)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (LRR A)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (MLRA 1, 2, 4A, and 4B)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (LRR A)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___	
Water Table Present?	Yes ___	No X	Depth (inches): >16	
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >16	

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix B: Representative Site Photographs



Photo A. View of Wetland A looking northeast. The wetland boundary was based on topography and a distinct change in vegetation, with reed canary grass dominant in the wetland and large sweet vernal grass dominant in the upland.



Photo B. View of Wetland A looking southeast. NW Brady Road runs along the east boundary of the project area.



Photo C. View of Plots 14 and 15 (pink flags) and wetland boundary in the eastern portion of Wetland C (orange flags) looking west.



Photo D. View of the PEM portion of Wetland C and adjacent upland looking southeast. The wetland boundary was based on topography and a distinct change in vegetation, with reed canary grass dominant in the wetland and large sweet vernal grass dominant in the upland.

Photos taken by Emma Eichhorn on May 15, 2025.



Photo E. View of Plot 22 looking north, depicting conditions in the PFO portion of Wetland C.



Photo F. View of upland conditions adjacent to the PFO portion of Wetland C. The understory was dominant in FAC California dewberry, fragrant fringecup, Siberian spring beauty, and pineland sword fern.



Photo G. View of Plots 24 and 25 and Wetland B boundary looking east. The wetland was dominated by reed canary grass and lacked garden vetch, which was dominant in the upland.



Photo H. General conditions in the western part of the project area looking south. Wetland B is pictured in lower elevation concave hillslope dominant in reed canary grass.

Photos taken by Emma Eichhorn on May 15, 2025.



Photo I. View of general conditions in the eastern portion of the study area looking southeast, with Wetland A pictured in the background.



Photo J. View of general conditions in the eastern portion of the study area looking northeast.



Photo K. View of upland conditions in the eastern portion of the study area looking west.



Photo L. View of upland conditions in the western portion of the study area looking east.

Photos taken by Emma Eichhorn on May 15, 2025.

Appendix C:
Wetland Rating Form and Figures

Wetland ID: Wetland A

AKS Job Title (AKS Job # 1234)

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 5/28/2024

Rated by Emma Eichhorn Trained by Ecology? ☐ Yes ☑ No Date of training: _____

HGM Class used for rating Depressional Wetland has multiple HGM classes? ☑ Yes ☐ No

NOTE: Form is not complete with out the figures requested (*figures can be combined*).
Source of base aerial photo/map National Agriculture Imagery Program (NAIP)

OVERALL WETLAND CATEGORY **III** (based on functions ☑ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

_____ **Category I** - Total score = 23 - 27
_____ **Category II** - Total score = 20 - 22
X **Category III** - Total score = 16 - 19
_____ **Category IV** - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	List appropriate rating (H, M, L)			
Site Potential	M	M	L	
Landscape Potential	L	M	L	
Value	H	H	L	**Total**
Score Based on Ratings	6	7	3	**16**

Score for each function based on three ratings (*order of ratings is not important*)

9 = H, H, H
8 = H, H, M
7 = H, H, L
7 = H, M, M
6 = H, M, L
6 = M, M, M
5 = H, L, L
5 = M, M, L
4 = M, L, L
3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Estuarine	
Wetland of High Conservation Value	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	**X**

Maps and Figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods*)	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (*can be added to another figure*)	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	1
Hydroperiods	H 1.2	2
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	3
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to another figure*)	S 4.1	3
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	S 2.1, S 5.1	1
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	4
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	5

HGM Classification of Wetland in Western Washington

For questions 1 -7, the criteria described must apply to the entire unit being rated.
If hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1 - 7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

☑ NO - go to 2 ☐ **YES** - the wetland class is **Tidal Fringe** - go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

☑ **NO - Saltwater Tidal Fringe (Estuarine)** ☐ **YES - Freshwater Tidal Fringe**
*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it.
Groundwater and surface water runoff are NOT sources of water to the unit.

☑ NO - go to 3 ☐ **YES** - The wetland class is **Flats**
*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
- ☐ The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
- ☐ At least 30% of the open water area is deeper than 6.6 ft (2 m).

☑ NO - go to 4 ☐ **YES** - The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
- ☑ The wetland is on a slope (*slope can be very gradual*),
- ☑ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
- ☐ The water leaves the wetland **without being impounded.**

☑ NO - go to 5 ☐ **YES** - The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
- ☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
- ☐ The overbank flooding occurs at least once every 2 years.

☑ NO - go to 6 ☐ **YES** - The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding.

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

☑ NO - go to 7 ☐ **YES** - The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☑ NO - go to 8 ☐ **YES** - The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have ***more than 2 HGM classes*** *within a wetland boundary, classify the wetland as Depressional for the rating.*

NOTES and FIELD OBSERVATIONS:

Wetland ID: Wetland A

AKS Job Title (AKS Job # 1234)

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 ☐ Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 ☐ Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	3
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (*use NRCS definitions*). Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > $^1/_{10}$ of area points = 1 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	5
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	0
Total for D 1 Add the points in the boxes above	**8**

Rating of Site Potential If score is: ☐ **12 - 16 = H** ☑ **6 - 11 = M** ☐ **0 - 5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	0
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	0
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1 - D 2.3? Source Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	**0**

Rating of Landscape Potential If score is: ☐ **3 or 4 = H** ☐ **1 or 2 = M** ☑ **0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)? Yes = 2 No = 0	2
Total for D 3 Add the points in the boxes above	**0**

Rating of Value If score is: ☑ **2 - 4 = H** ☐ **1 = M** ☑ **0 = L** *Record the rating on the first page*

Wetland ID: Wetland A

AKS Job Title (AKS Job # 1234)

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	4
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 ☐ Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 ☐ The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	0
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* ☐ The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 ☐ Entire wetland is in the Flats class points = 5	3
Total for D 4 Add the points in the boxes above	**7**

Rating of Site Potential If score is: ☐ **12 - 16 = H** ☑ **6 - 11 = M** ☐ **0 - 5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic function of the site?	
D 5.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	0
D 5.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	0
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5 Add the points in the boxes above	**1**

Rating of Landscape Potential If score is: ☐ **3 = H** ☑ **1 or 2 = M** ☐ **0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon ● Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 ☑ ● Surface flooding problems are in a sub-basin farther down-gradient. points = 1 ☐ Flooding from groundwater is an issue in the sub-basin. points = 1 ☐ The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. Explain why points = 0 ☐ There are no problems with flooding downstream of the wetland. points = 0	2
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 Add the points in the boxes above	**2**

Rating of Value If score is: ☑ **2 - 4 = H** ☐ **1 = M** ☐ **0 = L** *Record the rating on the first page*

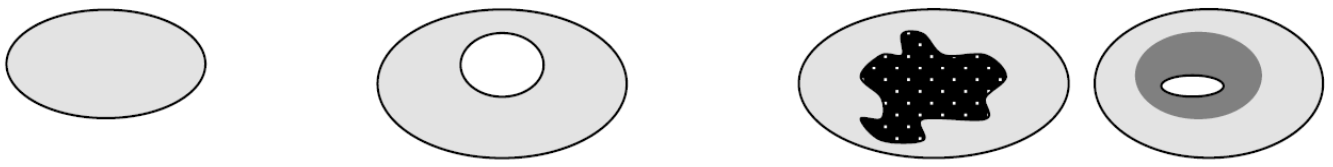
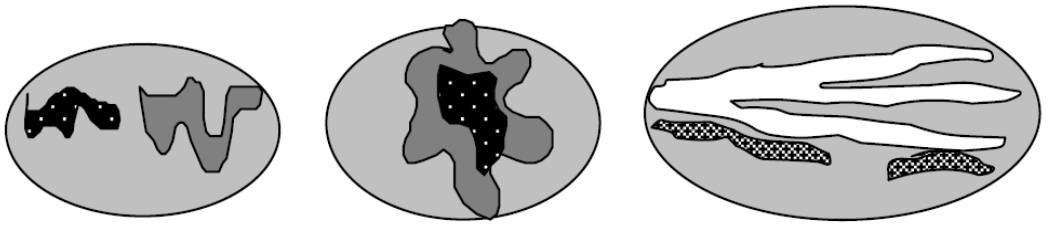
Wetland ID: Wetland A

AKS Job Title (AKS Job # 1234)

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ☐ Aquatic bed — 4 structures or more: points = 4 ☑ Emergent — 3 structures: points = 2 ☐ Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points - 1 ☐ Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if*: ☐ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	0
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ☐ Permanently flooded or inundated — 4 or more types present: points = 3 ☐ Seasonally flooded or inundated — 3 types present: points = 2 ☐ Occasionally flooded or inundated — 2 types present: points = 1 ☑ Saturated only — 1 types present: points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☐ Seasonally flowing stream in, or adjacent to, the wetland ☐ **Lake Fringe wetland** — **2 points** ☐ **Freshwater tidal wetland** — **2 points**	0
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	1
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points — **Low** = 1 point — **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3 points 	0

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ☑ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long) ☐ Standing snags (dbh > 4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (*cut shrubs or trees that have not yet weathered where wood is exposed*) ☐ At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (*structures for egg-laying by* ☐ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	1
Total for H 1 Add the points in the boxes above	**2**

Rating of Site Potential If Score is: ☐ **15 - 18 = H** ☐ **7 - 14 = M** ☑ **0 - 6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat function of the site?	
H 2.1 Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* 10.5 % undisturbed habitat + (3.6 % moderate & low intensity land uses / 2) = 12.3% If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20 - 33% of 1 km Polygon points = 2 10 - 19% of 1 km Polygon points = 1 < 10 % of 1 km Polygon points = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* 26 % undisturbed habitat + (12.4 % moderate & low intensity land uses / 2) = 32.2% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3 Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (-2) ≤ 50% of 1km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	**0**

Rating of Landscape Potential If Score is: ☐ **4 - 6 = H** ☐ **1 - 3 = M** ☑ **< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated*. Site meets ANY of the following criteria: points = 2 ☐ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☐ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) with in 100m points = 1 Site does not meet any of the criteria above points = 0	0

Rating of Value If Score is: ☐ **2 = H** ☐ **1 = M** ☑ **0 = L** *Record the rating on the first page*

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.
http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here:
http://wdfw.wa.gov/conservation/phs/list/

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE**: This question is independent of the land use between the wetland unit and the priority habitat.*

- ☐ **Aspen Stands**: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- ☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- ☐ **Herbaceous Balds**: Variable size patches of grass and forbs on shallow soils over bedrock.
- ☐ **Old-growth/Mature forests**: Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- ☐ **Oregon White Oak**: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- ☐ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Westside Prairies**: Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).
- ☐ **Instream**: The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- ☐ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page*).
- ☐ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- ☐ **Cliffs**: Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- ☐ **Talus**: Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☐ **Snags and Logs**: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland ID: Wetland A

AKS Job Title (AKS Job # 1234)

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine Wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes - Go to **SC 1.1** ☑ No = **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ Yes = **Category I** ☐ No - Go to **SC 1.2**	
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina* , see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. ☐ Yes = **Category I** ☐ No = **Category II**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes - Go to **SC 2.2** ☑ No - Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = **Category I** ☐ No = **Not WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes - **Contact WNHP/WDNR and to SC 2.4** ☑ No = **Not WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = **Category I** ☐ No = **Not WHCV**	
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions*** *.* SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐ Yes - Go to **SC 3.3** ☑ No - Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes - Go to **SC 3.3** ☑ No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = **Is a Category I bog** ☐ No - Go to **SC 3.4** **NOTE**: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? ☐ Yes = **Is a Category I bog** ☐ No = **Is not a bog**	

SC 4.0. Forested Wetlands

Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.***

☐ **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.

☐ **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80-200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).

☐ Yes = **Category I** ☑ No = **Not a forested wetland for this section**

SC 5.0. Wetlands in Coastal Lagoons

Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?

☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks

☐ The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*)

☐ Yes - Go to **SC 5.1** ☑ No = **Not a wetland in a coastal lagoon**

SC 5.1. Does the wetland meet all of the following three conditions?

☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).

☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.

☐ The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2)

☐ Yes = **Category I** ☐ No = **Category II**

SC 6.0. Interdunal Wetlands

Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.***

In practical terms that means the following geographic areas:

☐ Long Beach Peninsula: Lands west of SR 103

☐ Grayland-Westport: Lands west of SR 105

☐ Ocean Shores-Copalis: Lands west of SR 115 and SR 109

☐ Yes - Go to **SC 6.1** ☑ No = **Not an interdunal wetland for rating**

SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?

☐ Yes = **Category I** ☐ No - Go to **SC 6.2**

SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?

☐ Yes = **Category II** ☐ No - Go to **SC 6.3**

SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?

☐ Yes = **Category III** ☐ No = **Category IV**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form



NAIP AERIAL (JUNE, 2023)
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"= 200 FEET

200 0 40 100 200

ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 08/11/2025

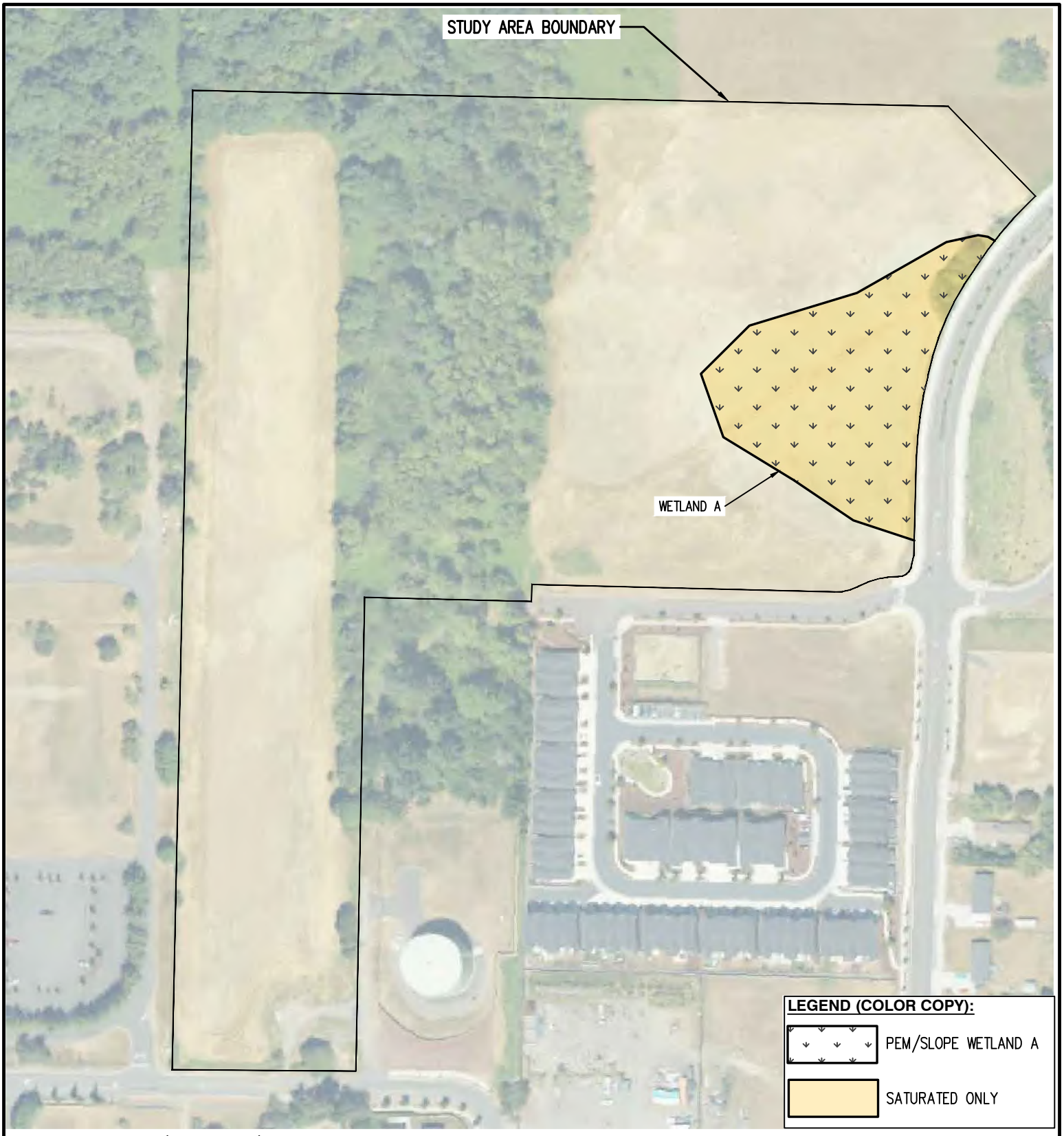
COWARDIN CLASSIFICATION AND 150' BUFFER
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE 1

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
P: 360.882.0419 F: 360.882.0426 aks-eng.com

DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND A RATING FIGURE | FIGURE 1



NAIP AERIAL (JUNE, 2023)
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"= 200 FEET

200 0 40 100 200

ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 08/11/2025

HYDROPERIODS **NW 18TH AVENUE CRITICAL AREAS ASSESSMENT**	FIGURE **2**
AKS ENGINEERING & FORESTRY, LLC 9600 NE 126TH AVE, STE 2520 VANCOUVER, WA 98682 P: 360.882.0419 F: 360.882.0426 aks-eng.com	DRWN: RAS CHKD: EE AKS 12107

DWG: 12107 WETLAND A RATING FIGURE | FIGURE 2



NAIP AERIAL (JUNE, 2023)
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"= 200 FEET

200 0 40 100 200

ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 08/11/2025

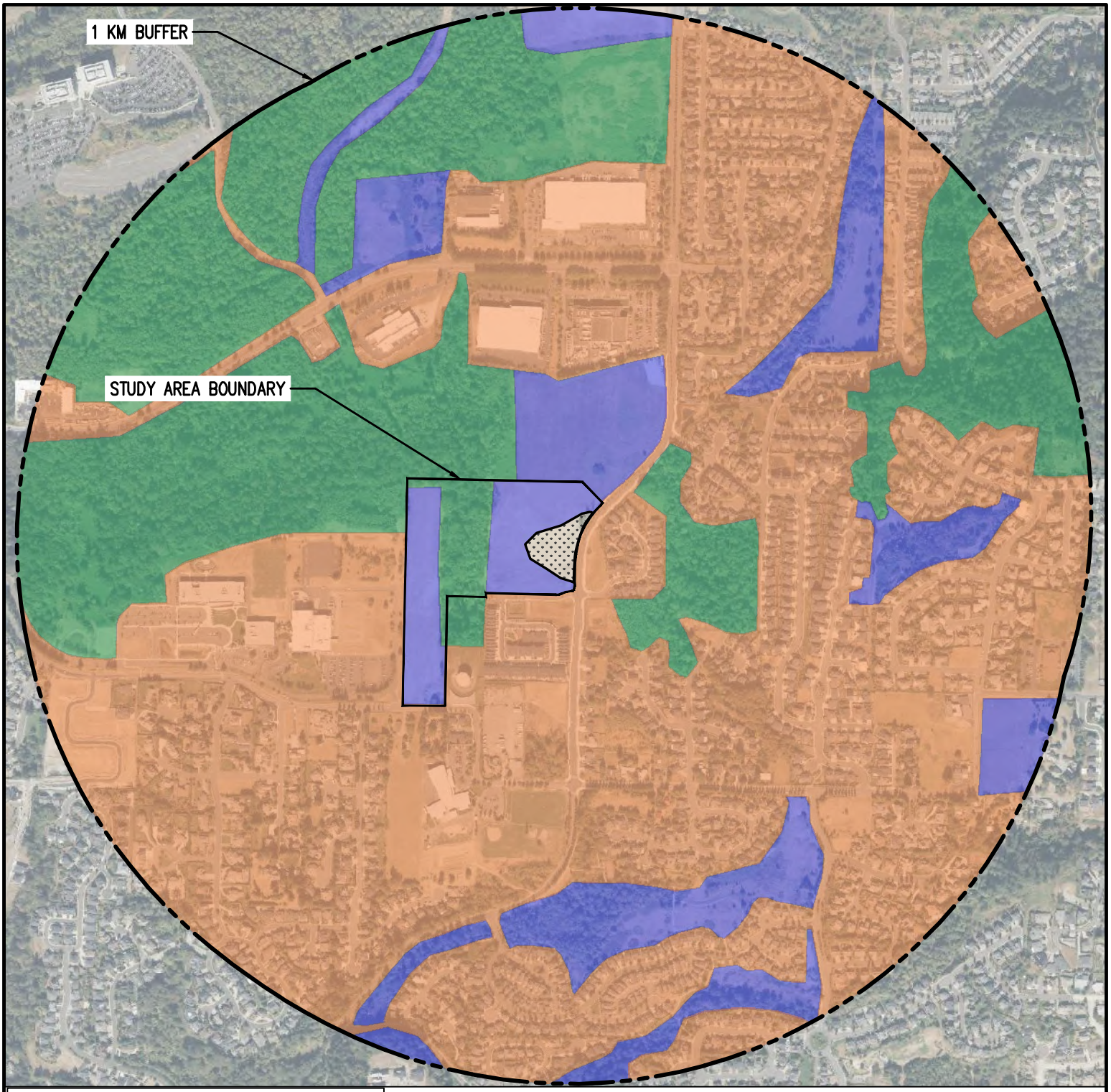
PLANT COVER
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE 3

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
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DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND A RATING FIGURE | FIGURE 3



LEGEND (COLOR COPY):

- PEM/SLOPE WETLAND A
- RELATIVELY UNDISTURBED HABITAT
- MODERATE/LOW INTENSITY LAND USE
- HIGH INTENSITY LAND USE

1KM AERIAL DERIVED FROM BING IMAGERY
WESTERN WA WETLAND RATING FORM

DATE: 08/11/2025

SCALE: 1"= 900 FEET

900 0 180 450 900

ORIGINAL PAGE SIZE: 8.5" X 11"

N

1KM BUFFER AND LAND USE INTENSITY
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE 4

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DWG: 12107 WETLAND A RATING FIGURE | FIGURE 4



Assessed Water/Sediment

Water
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

Sediment
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

WQ Improvement Projects
- TMDL - Approved
- 4B - Approved
- STI - Approved
- ARP - Approved
- TMDL - In Development
- STI - In Development
- ARP - In Development

Subbasins (8 digit HUCs)
- HUC boundary

TITLE	**Salmon Creek Watershed Bacteria and Turbidity Total Maximum Daily Load (Water Cleanup Plan): Detailed Implementation Plan**	
	Publication number	Date Published
	05-10-037	March 2005

TITLE	**Salmon Creek Temperature Total Maximum Daily Load: Water Quality Improvement Report and Implementation Plan**	
	Publication number	Date Published
	11-10-044	October 2011

WASHINGTON DEPARTMENT OF ECOLOGY
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"=1000 FEET

1000 0 200 500 1000

ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 08/11/2025

303d AND TMDLs
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE **5**

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DWG: 12107 WETLAND A RATING FIGURE | FIGURE 5

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland B Date of site visit: 5/15/2025

Rated by Emma Eichhorn Trained by Ecology? ☐ Yes ☑ No Date of training _____

HGM Class used for rating Slope Wetland has multiple HGM classes? ☐ Yes ☑ No

NOTE: Form is not complete with out the figures requested (*figures can be combined*).
Source of base aerial photo/map National Agriculture Imagery Program (NAIP)

OVERALL WETLAND CATEGORY IV (based on functions ☑ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

_____ **Category I** - Total score = 23 - 27
_____ **Category II** - Total score = 20 - 22
_____ **Category III** - Total score = 16 - 19
X **Category IV** - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	List appropriate rating (H, M, L)			
Site Potential	M	L	L	
Landscape Potential	L	L	L	
Value	H	H	L	**Total**
Score Based on Ratings	6	5	3	**14**

Score for each function based on three ratings (*order of ratings is not important*)

9 = H, H, H
8 = H, H, M
7 = H, H, L
7 = H, M, M
6 = H, M, L
6 = M, M, M
5 = H, L, L
5 = M, M, L
4 = M, L, L
3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Estuarine	
Wetland of High Conservation Value	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	

Maps and Figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods*)	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (*can be added to another figure*)	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	1
Hydroperiods	H 1.2	2
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	3
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to another figure*)	S 4.1	3
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	S 2.1, S 5.1	1
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	4
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	5

300

HGM Classification of Wetland in Western Washington

For questions 1 -7, the criteria described must apply to the entire unit being rated.
If hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1 - 7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

☑ NO - go to 2 ☐ **YES** - the wetland class is **Tidal Fringe** - go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

☐ **NO - Saltwater Tidal Fringe (Estuarine)** ☐ **YES - Freshwater Tidal Fringe**
*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it.
Groundwater and surface water runoff are NOT sources of water to the unit.

☑ NO - go to 3 ☐ **YES** - The wetland class is **Flats**
*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
☐ The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
☐ At least 30% of the open water area is deeper than 6.6 ft (2 m).

☑ NO - go to 4 ☐ **YES** - The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
☑ The wetland is on a slope (*slope can be very gradual*),
☑ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
☑ The water leaves the wetland **without being impounded.**

☐ NO - go to 5 ☑ **YES** - The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
☐ The overbank flooding occurs at least once every 2 years.

☐ NO - go to 6 ☐ **YES** - The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding.

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

☐ NO - go to 7 ☐ **YES** - The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☑ NO - go to 8 ☐ **YES** - The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have ***more than 2 HGM classes*** *within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland ID: Wetland B

AKS Job Title (AKS Job # 12107

SLOPE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: (*a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance*) Slope is 1% or less — points = 3 Slope is > 1% - 2% — points = 2 Slope is > 2% - 5% — points = 1 Slope is greater than 5% — points = 0	1
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (*use NRCS definitions*): Yes = 3 No = 0	0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. *Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.* Dense, uncut, herbaceous plants > 90% of the wetland area — points = 6 Dense, uncut, herbaceous plants > ½ of area — points = 3 Dense, woody, plants > ½ of area — points = 2 Dense, uncut, herbaceous plants > ¼ of area — points = 1 Does not meet any of the criteria above for plants — points = 0	6
Total for S 1 — Add the points in the boxes above	**7**

Rating of Site Potential If score is: ☐ **12 = H** ☑ **6 - 11 = M** ☐ **0 - 5 = L** *Record rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	0
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other Sources Yes = 1 No = 0	0
Total for S 2 — Add the points in the boxes above	**0**

Rating of Landscape Potential If score is: ☐ **1 - 2 = M** ☑ **0 = L** *Record rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	0
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list.* Yes = 1 No = 0	1
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the basin in which the unit is found*? Yes = 2 No = 0	2
Total for S 3 — Add the points in the boxes above	**3**

Rating of Value If score is: ☑ **2 - 4 = H** ☐ **1 = M** ☐ **0 = L** *Record rating on the first page*

303

Wetland ID: Wetland B

AKS Job Title (AKS Job # 12107

SLOPE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream erosion

S 4.0. Does the site have the potential to reduce flooding and stream erosion?

S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.*		0
Dense, uncut, **rigid** plants cover > 90% of the area of the wetland	points = 1	
All other conditions	points = 0	

Rating of Site Potential If score is: ☐ **1 = M** ☑ **0 = L** *Record rating on the first page*

S 5.0. Does the landscape have the potential to support hydrologic functions of the site?

S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff?	Yes = 1 No = 0	0

Rating of Landscape Potential If score is: ☐ **1 = M** ☑ **0 = L** *Record rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?

S 6.1. Distance to the nearest areas downstream that have flooding problems:		2
The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)	points = 2	
Surface flooding problems are in a sub-basin farther down-gradient	points = 1	
No flooding problems anywhere downstream	points = 0	
S 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	Yes = 2 No = 0	0
Total for S 6	Add the points in the boxes above	**2**

Rating of Value If score is: ☑ **2 - 4 = H** ☐ **1 = M** ☐ **0 = L** *Record rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland ID: Wetland B

AKS Job Title (AKS Job # 12107

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

☐ Aquatic bed	4 structures or more: points = 4
☑ Emergent	3 structures: points = 2
☐ Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points - 1
☐ Forested (areas where trees have > 30% cover)	1 structure: points = 0

If the unit has a Forested class, check if:

☐ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

0

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

☐ Permanently flooded or inundated	4 or more types present: points = 3
☐ Seasonally flooded or inundated	3 types present: points = 2
☐ Occasionally flooded or inundated	2 types present: points = 1
☑ Saturated only	1 types present: points = 0
☐ Permanently flowing stream or river in, or adjacent to, the wetland	
☐ Seasonally flowing stream in, or adjacent to, the wetland	
☐ **Lake Fringe wetland**	**2 points**
☐ **Freshwater tidal wetland**	**2 points**

0

H 1.3. Richness of plant species

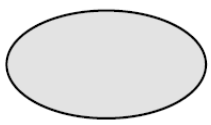
Count the number of plant species in the wetland that cover at least 10 ft^2.
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

If you counted:	> 19 species	points = 2
	5 - 19 species	points = 1
	< 5 species	points = 0

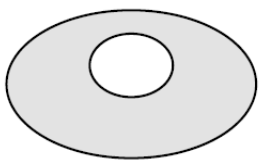
0

H 1.4. Interspersion of habitats

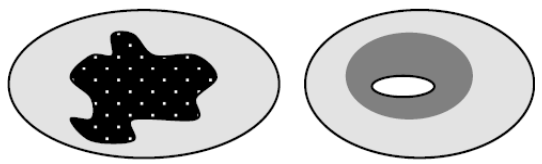
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



None = 0 points

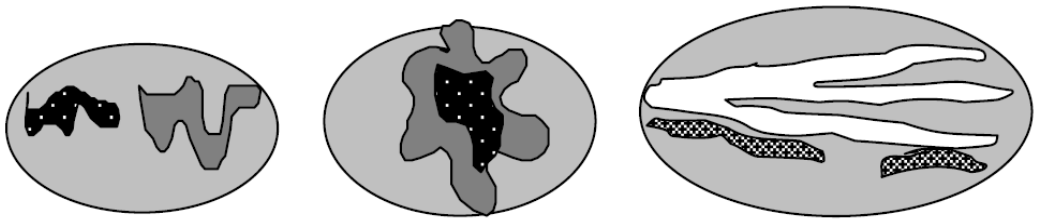


Low = 1 point



Moderate = 2 points

All three diagrams in this row are **HIGH** = 3 points



0

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ☐ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long) ☐ Standing snags (dbh > 4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (*cut shrubs or trees that have not yet weathered where wood is exposed*) ☐ At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (*structures for egg-laying by amphibians*) ☐ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	0
Total for H 1 Add the points in the boxes above	**0**

Rating of Site Potential If Score is: ☐ **15 - 18 = H** ☐ **7 - 14 = M** ☑ **0 - 6 = L** *Record rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat function of the site?	
H 2.1 Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* 11.5 % undisturbed habitat + (4.2 % moderate & low intensity land uses / 2) = 13.6% If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20 - 33% of 1 km Polygon points = 2 10 - 19% of 1 km Polygon points = 1 < 10 % of 1 km Polygon points = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* 26.8 % undisturbed habitat + (10.9 % moderate & low intensity land uses / 2) = 32.25% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3 Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (-2) ≤ 50% of 1km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	**0**

Rating of Landscape Potential If Score is: ☐ **4 - 6 = H** ☐ **1 - 3 = M** ☑ **< 1 = L** *Record rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated*. Site meets ANY of the following criteria: points = 2 ☐ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☐ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) with in 100m points = 1 Site does not meet any of the criteria above points = 0	0

Rating of Value If Score is: ☐ **2 = H** ☐ **1 = M** ☑ **0 = L** *Record rating on the first page*

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.
http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here:
http://wdfw.wa.gov/conservation/phs/list/

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE**: This question is independent of the land use between the wetland unit and the priority habitat.*

- ☐ **Aspen Stands**: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- ☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- ☐ **Herbaceous Balds**: Variable size patches of grass and forbs on shallow soils over bedrock.
- ☐ **Old-growth/Mature forests**: Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- ☐ **Oregon White Oak**: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- ☐ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Westside Prairies**: Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).
- ☐ **Instream**: The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- ☐ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page*).
- ☐ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- ☐ **Cliffs**: Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- ☐ **Talus**: Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☐ **Snags and Logs**: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland ID: Wetland B

AKS Job Title (AKS Job # 12107

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine Wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes - Go to **SC 1.1** ☑ No = **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ Yes = **Category I** ☐ No - Go to **SC 1.2**	
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina* , see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. ☐ Yes = **Category I** ☐ No = **Category II**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes - Go to **SC 2.2** ☑ No - Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = **Category I** ☐ No = **Not WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes - **Contact WNHP/WDNR and to SC 2.4** ☑ No = **Not WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = **Category I** ☐ No = **Not WHCV**	
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions*** *.* SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐ Yes - Go to **SC 3.3** ☑ No - Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes - Go to **SC 3.3** ☑ No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = **Is a Category I bog** ☐ No - Go to **SC 3.4** **NOTE**: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? ☐ Yes = **Is a Category I bog** ☐ No = **Is not a bog**	

SC 4.0. Forested Wetlands

Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.***

☐ **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.

☐ **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).

☐ Yes = **Category I** ☑ No = **Not a forested wetland for this section**

SC 5.0. Wetlands in Coastal Lagoons

Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?

☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks

☐ The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*)

☐ Yes - Go to **SC 5.1** ☑ No = **Not a wetland in a coastal lagoon**

SC 5.1. Does the wetland meet all of the following three conditions?

☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).

☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.

☐ The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2)

☐ Yes = **Category I** ☐ No = **Category II**

SC 6.0. Interdunal Wetlands

Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.***

In practical terms that means the following geographic areas:

☐ Long Beach Peninsula: Lands west of SR 103

☐ Grayland-Westport: Lands west of SR 105

☐ Ocean Shores-Copalis: Lands west of SR 115 and SR 109

☐ Yes - Go to **SC 6.1** ☑ No = **Not an interdunal wetland for rating**

SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?

☐ Yes = **Category I** ☐ No - Go to **SC 6.2**

SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?

☐ Yes = **Category II** ☐ No - Go to **SC 6.3**

SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?

☐ Yes = **Category III** ☐ No = **Category IV**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form



NAIP AERIAL (JUNE, 2023)
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"= 200 FEET

200 0 40 100 200

ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 05/27/2025

COWARDIN CLASSIFICATION AND 150' BUFFER
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE 1

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
P: 360.882.0419 F: 360.882.0426 aks-eng.com

DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND B RATING FIGURE | FIGURE 1



NAIP AERIAL (JUNE, 2023)
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"= 200 FEET

200 0 40 100 200

ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 05/27/2025

HYDROPERIODS
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE **2**

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9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
P: 360.882.0419 F: 360.882.0426 aks-eng.com

DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND B RATING FIGURE | FIGURE 2



NAIP AERIAL (JUNE, 2023)
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"= 200 FEET

200 0 40 100 200

ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 05/27/2025

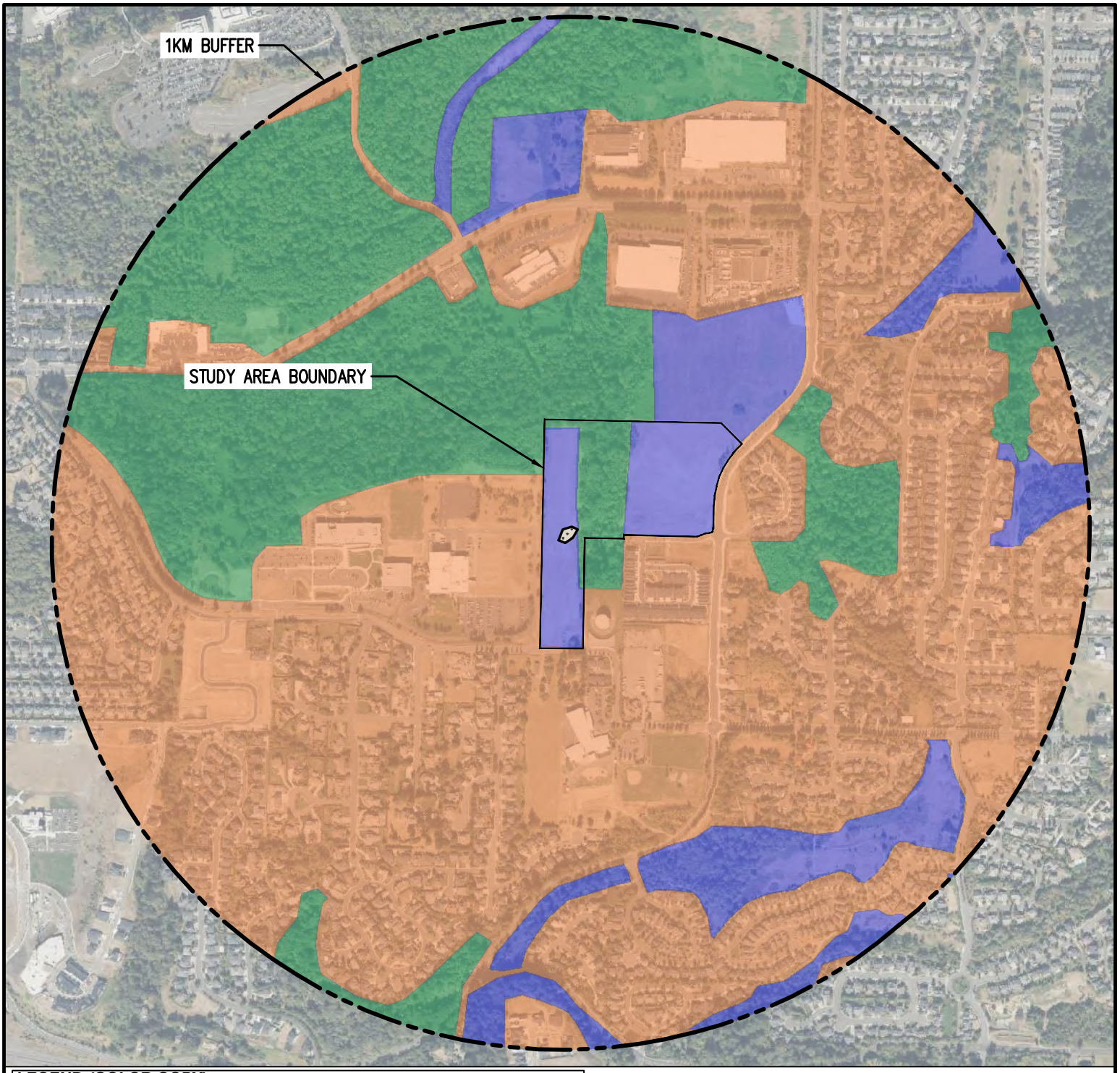
PLANT COVER
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE 3

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
P: 360.882.0419 F: 360.882.0426 aks-eng.com

DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND B RATING FIGURE | FIGURE 3



LEGEND (COLOR COPY):

- PEM/SLOPE WETLAND B
- RELATIVELY UNDISTURBED HABITAT
- MODERATE/LOW INTENSITY LAND USE
- HIGH INTENSITY LAND USE

1KM AERIAL DERIVED FROM BING IMAGERY
WESTERN WA WETLAND RATING FORM

DATE: 05/27/2025

N

SCALE: 1"= 900 FEET

900 0 180 450 900

ORIGINAL PAGE SIZE: 8.5" X 11"

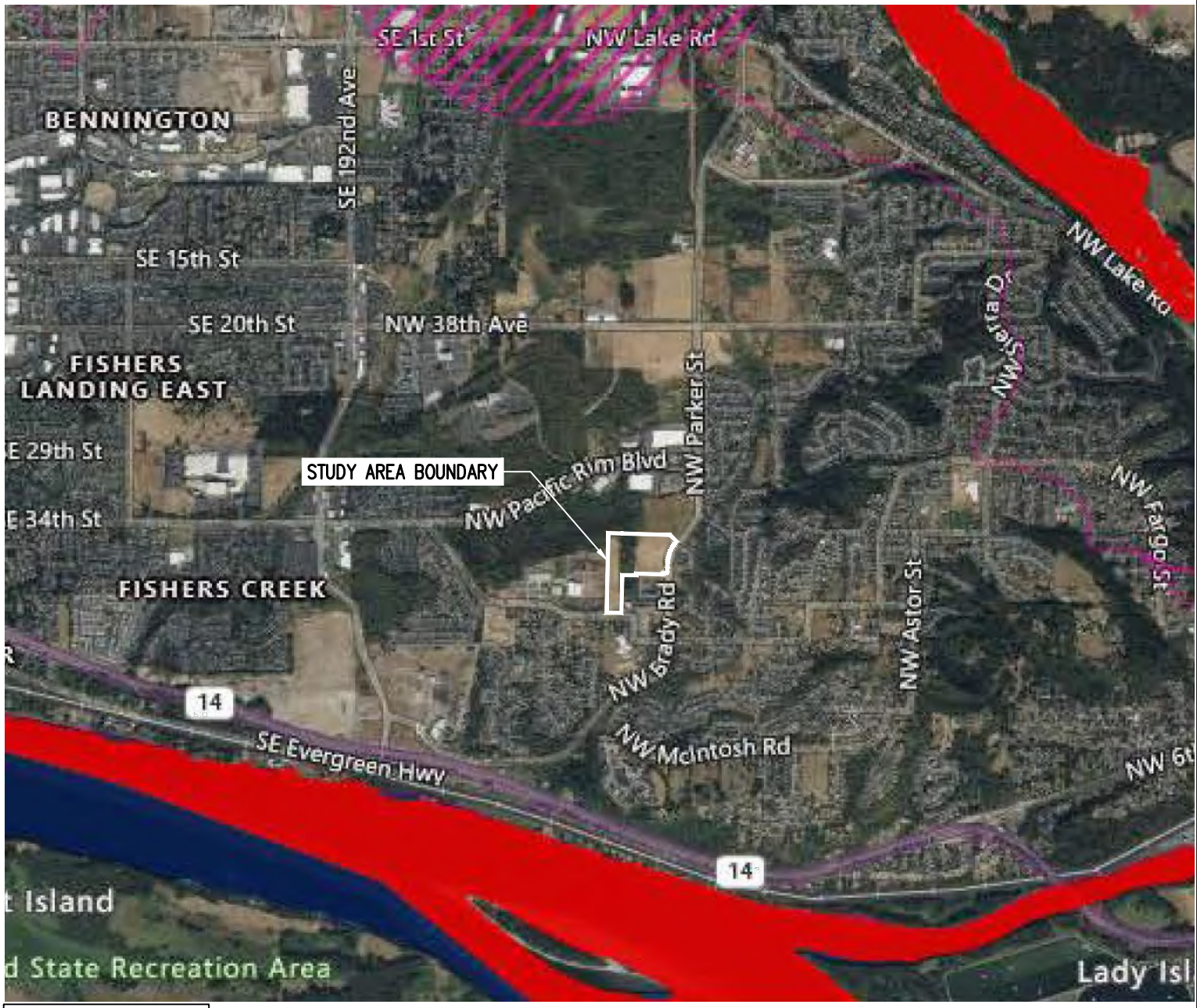
1KM BUFFER AND LAND USE INTENSITY
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE 4

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
P: 360.882.0419 F: 360.882.0426 aks-eng.com

DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND B RATING FIGURE | FIGURE 4



Assessed Water/Sediment

Water
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

Sediment
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

WQ Improvement Projects
- TMDL - Approved
- 4B - Approved
- STI - Approved
- ARP - Approved
- TMDL - In Development
- STI - In Development
- ARP - In Development

Subbasins (8 digit HUCs)
- HUC boundary

TITLE	**Salmon Creek Watershed Bacteria and Turbidity Total Maximum Daily Load (Water Cleanup Plan): Detailed Implementation Plan**	
	Publication number	Date Published
	05-10-037	March 2005

TITLE	**Salmon Creek Temperature Total Maximum Daily Load: Water Quality Improvement Report and Implementation Plan**	
	Publication number	Date Published
	11-10-044	October 2011

WASHINGTON DEPARTMENT OF ECOLOGY
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"= 900 FEET

900 0 180 450 900

ORIGINAL PAGE SIZE: 8.5" X 11"

DATE: 05/27/2025

303d AND TMDLs
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE **5**

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
P: 360.882.0419 F: 360.882.0426 aks-eng.com

DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND B RATING FIGURE | FIGURE 5

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland C Date of site visit: 5/15/2025

Rated by Emma Eichhorn Trained by Ecology? ☐ Yes ☑ No Date of training _____

HGM Class used for rating Slope Wetland has multiple HGM classes? ☐ Yes ☑ No

NOTE: Form is not complete with out the figures requested (*figures can be combined*).
Source of base aerial photo/map National Agriculture Imagery Program (NAIP)

OVERALL WETLAND CATEGORY IV (based on functions ☑ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

_____ **Category I** - Total score = 23 - 27
_____ **Category II** - Total score = 20 - 22
X **Category III** - Total score = 16 - 19
_____ **Category IV** - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	List appropriate rating (H, M, L)			
Site Potential	M	M	M	
Landscape Potential	L	L	L	
Value	H	H	L	**Total**
Score Based on Ratings	6	6	4	**16**

Score for each function based on three ratings (*order of ratings is not important*)
9 = H, H, H
8 = H, H, M
7 = H, H, L
7 = H, M, M
6 = H, M, L
6 = M, M, M
5 = H, L, L
5 = M, M, L
4 = M, L, L
3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Estuarine	
Wetland of High Conservation Value	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	

Maps and Figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods*)	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (*can be added to another figure*)	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	1
Hydroperiods	H 1.2	2
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	3
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to another figure*)	S 4.1	3
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	S 2.1, S 5.1	1
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	4
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	5

HGM Classification of Wetland in Western Washington

For questions 1 -7, the criteria described must apply to the entire unit being rated.
If hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1 - 7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

☑ NO - go to 2 ☐ **YES** - the wetland class is **Tidal Fringe** - go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

☐ **NO - Saltwater Tidal Fringe (Estuarine)** ☐ **YES - Freshwater Tidal Fringe**
*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it.
Groundwater and surface water runoff are NOT sources of water to the unit.

☑ NO - go to 3 ☐ **YES** - The wetland class is **Flats**
*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
☐ The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
☐ At least 30% of the open water area is deeper than 6.6 ft (2 m).

☑ NO - go to 4 ☐ **YES** - The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
☑ The wetland is on a slope (*slope can be very gradual*),
☑ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
☑ The water leaves the wetland **without being impounded.**

☐ NO - go to 5 ☑ **YES** - The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
☐ The overbank flooding occurs at least once every 2 years.

☐ NO - go to 6 ☐ **YES** - The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding.

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

☐ NO - go to 7 ☐ **YES** - The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☑ NO - go to 8 ☐ **YES** - The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have ***more than 2 HGM classes*** *within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland ID: Wetland C

AKS Job Title (AKS Job # 12107

SLOPE WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: (*a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance*) Slope is 1% or less — points = 3 Slope is > 1% - 2% — points = 2 Slope is > 2% - 5% — points = 1 Slope is greater than 5% — points = 0	1
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (*use NRCS definitions*): Yes = 3 No = 0	0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. *Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.* Dense, uncut, herbaceous plants > 90% of the wetland area — points = 6 Dense, uncut, herbaceous plants > ½ of area — points = 3 Dense, woody, plants > ½ of area — points = 2 Dense, uncut, herbaceous plants > ¼ of area — points = 1 Does not meet any of the criteria above for plants — points = 0	6
Total for S 1 — Add the points in the boxes above	**7**

Rating of Site Potential If score is: ☐ **12 = H** ☑ **6 - 11 = M** ☐ **0 - 5 = L** *Record rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	0
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other Sources Yes = 1 No = 0	0
Total for S 2 — Add the points in the boxes above	**0**

Rating of Landscape Potential If score is: ☐ **1 - 2 = M** ☑ **0 = L** *Record rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	0
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list.* Yes = 1 No = 0	1
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? A*nswer YES if there is a TMDL for the basin in which the unit is found*? Yes = 2 No = 0	2
Total for S 3 — Add the points in the boxes above	**3**

Rating of Value If score is: ☑ **2 - 4 = H** ☐ **1 = M** ☐ **0 = L** *Record rating on the first page*

Wetland ID: Wetland C

AKS Job Title (AKS Job # 12107

SLOPE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream erosion

S 4.0. Does the site have the potential to reduce flooding and stream erosion?

S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.*		1
Dense, uncut, **rigid** plants cover > 90% of the area of the wetland	points = 1	
All other conditions	points = 0	

Rating of Site Potential If score is: ☑ **1 = M** ☐ **0 = L** *Record rating on the first page*

S 5.0. Does the landscape have the potential to support hydrologic functions of the site?

S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff?	Yes = 1 No = 0	0

Rating of Landscape Potential If score is: ☐ **1 = M** ☑ **0 = L** *Record rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?

S 6.1. Distance to the nearest areas downstream that have flooding problems:		2
The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)	points = 2	
Surface flooding problems are in a sub-basin farther down-gradient	points = 1	
No flooding problems anywhere downstream	points = 0	
S 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	Yes = 2 No = 0	0
Total for S 6	Add the points in the boxes above	**2**

Rating of Value If score is: ☑ **2 - 4 = H** ☐ **1 = M** ☐ **0 = L** *Record rating on the first page*

NOTES and FIELD OBSERVATIONS:

320

Wetland ID: Wetland C

AKS Job Title (AKS Job # 12107

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

☐ Aquatic bed	4 structures or more: points = 4	2
☑ Emergent	3 structures: points = 2	
☐ Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points - 1	
☑ Forested (areas where trees have > 30% cover)	1 structure: points = 0	

If the unit has a Forested class, check if:

☑ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

☐ Permanently flooded or inundated	4 or more types present: points = 3	2
☐ Seasonally flooded or inundated	3 types present: points = 2	
☑ Occasionally flooded or inundated	2 types present: points = 1	
☑ Saturated only	1 types present: points = 0	
☐ Permanently flowing stream or river in, or adjacent to, the wetland		
☐ Seasonally flowing stream in, or adjacent to, the wetland		
☐ **Lake Fringe wetland**	**2 points**	
☐ **Freshwater tidal wetland**	**2 points**	

H 1.3. Richness of plant species

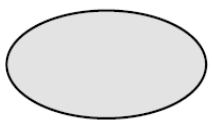
Count the number of plant species in the wetland that cover at least 10 ft^2.
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

2

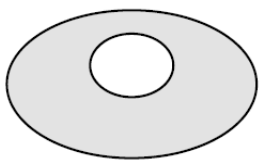
If you counted:	> 19 species	points = 2
	5 - 19 species	points = 1
	< 5 species	points = 0

H 1.4. Interspersion of habitats

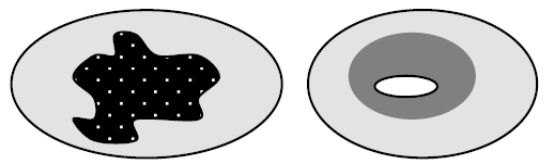
Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*



None = 0 points



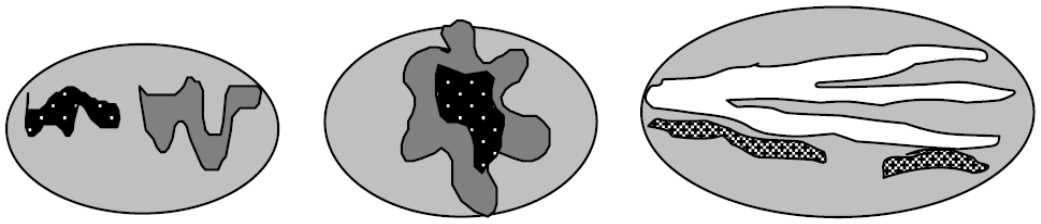
Low = 1 point



Moderate = 2 points

1

All three diagrams in this row are **HIGH** = 3 points



H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ☑ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long) ☐ Standing snags (dbh > 4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (*cut shrubs or trees that have not yet weathered where wood is exposed*) ☐ At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (*structures for egg-laying by amphibians*) ☐ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	1
Total for H 1 Add the points in the boxes above	**8**

Rating of Site Potential If Score is: ☐ **15 - 18 = H** ☐ **7 - 14 = M** ☑ **0 - 6 = L** *Record rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat function of the site?	
H 2.1 Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* 11.8 % undisturbed habitat + (4 % moderate & low intensity land uses / 2) = 13.8% If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20 - 33% of 1 km Polygon points = 2 10 - 19% of 1 km Polygon points = 1 < 10 % of 1 km Polygon points = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* 60.2 % undisturbed habitat + (28.7 % moderate & low intensity land uses / 2) = 74.55% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3 Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (-2) ≤ 50% of 1km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	**0**

Rating of Landscape Potential If Score is: ☐ **4 - 6 = H** ☐ **1 - 3 = M** ☑ **< 1 = L** *Record rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated*. Site meets ANY of the following criteria: points = 2 ☐ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☐ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) with in 100m points = 1 Site does not meet any of the criteria above points = 0	0

Rating of Value If Score is: ☐ **2 = H** ☐ **1 = M** ☑ **0 = L** *Record rating on the first page*

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.
http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here:
http://wdfw.wa.gov/conservation/phs/list/

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE**: This question is independent of the land use between the wetland unit and the priority habitat.*

- ☐ **Aspen Stands**: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- ☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- ☐ **Herbaceous Balds**: Variable size patches of grass and forbs on shallow soils over bedrock.
- ☐ **Old-growth/Mature forests**: Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- ☐ **Oregon White Oak**: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- ☐ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Westside Prairies**: Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).
- ☐ **Instream**: The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- ☐ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page*).
- ☐ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- ☐ **Cliffs**: Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- ☐ **Talus**: Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☐ **Snags and Logs**: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland ID: Wetland C

AKS Job Title (AKS Job # 12107

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine Wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes - Go to **SC 1.1** ☑ No = **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ Yes = **Category I** ☐ No - Go to **SC 1.2**	
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina* , see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. ☐ Yes = **Category I** ☐ No = **Category II**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes - Go to **SC 2.2** ☑ No - Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = **Category I** ☐ No = **Not WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes - **Contact WNHP/WDNR and to SC 2.4** ☑ No = **Not WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = **Category I** ☐ No = **Not WHCV**	
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions*** *.* SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐ Yes - Go to **SC 3.3** ☑ No - Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes - Go to **SC 3.3** ☑ No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = **Is a Category I bog** ☐ No - Go to **SC 3.4** **NOTE**: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? ☐ Yes = **Is a Category I bog** ☐ No = **Is not a bog**	

SC 4.0. Forested Wetlands

Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.***

☐ **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.

☐ **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).

☐ Yes = **Category I** ☑ No = **Not a forested wetland for this section**

SC 5.0. Wetlands in Coastal Lagoons

Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?

☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks

☐ The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*)

☐ Yes - Go to **SC 5.1** ☑ No = **Not a wetland in a coastal lagoon**

SC 5.1. Does the wetland meet all of the following three conditions?

☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).

☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.

☐ The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2)

☐ Yes = **Category I** ☐ No = **Category II**

SC 6.0. Interdunal Wetlands

Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.***

In practical terms that means the following geographic areas:

☐ Long Beach Peninsula: Lands west of SR 103

☐ Grayland-Westport: Lands west of SR 105

☐ Ocean Shores-Copalis: Lands west of SR 115 and SR 109

☐ Yes - Go to **SC 6.1** ☑ No = **Not an interdunal wetland for rating**

SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?

☐ Yes = **Category I** ☐ No - Go to **SC 6.2**

SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?

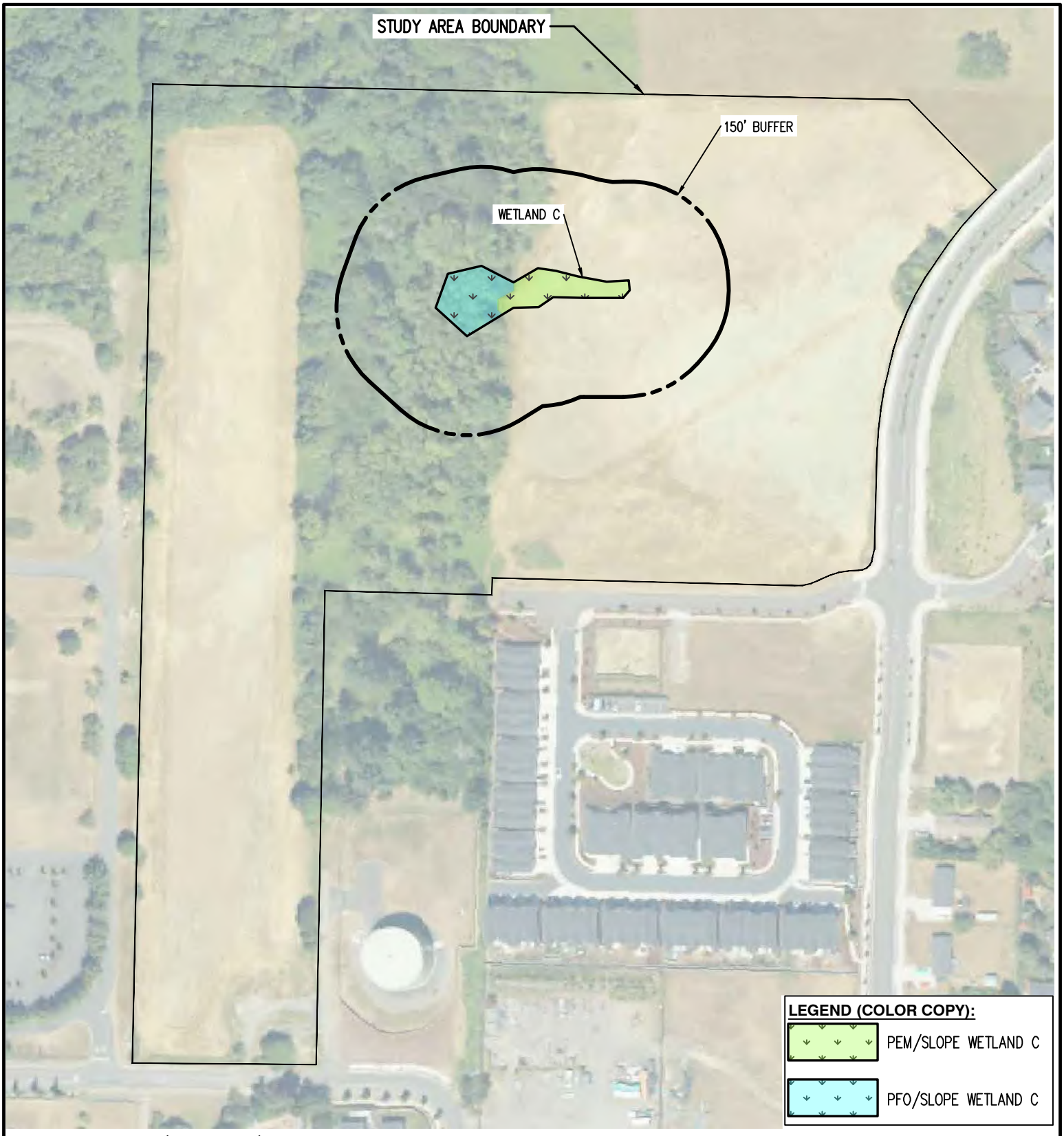
☐ Yes = **Category II** ☐ No - Go to **SC 6.3**

SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?

☐ Yes = **Category III** ☐ No = **Category IV**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form



NAIP AERIAL (JUNE, 2023)
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"= 200 FEET

200 0 40 100 200

ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 05/27/2025

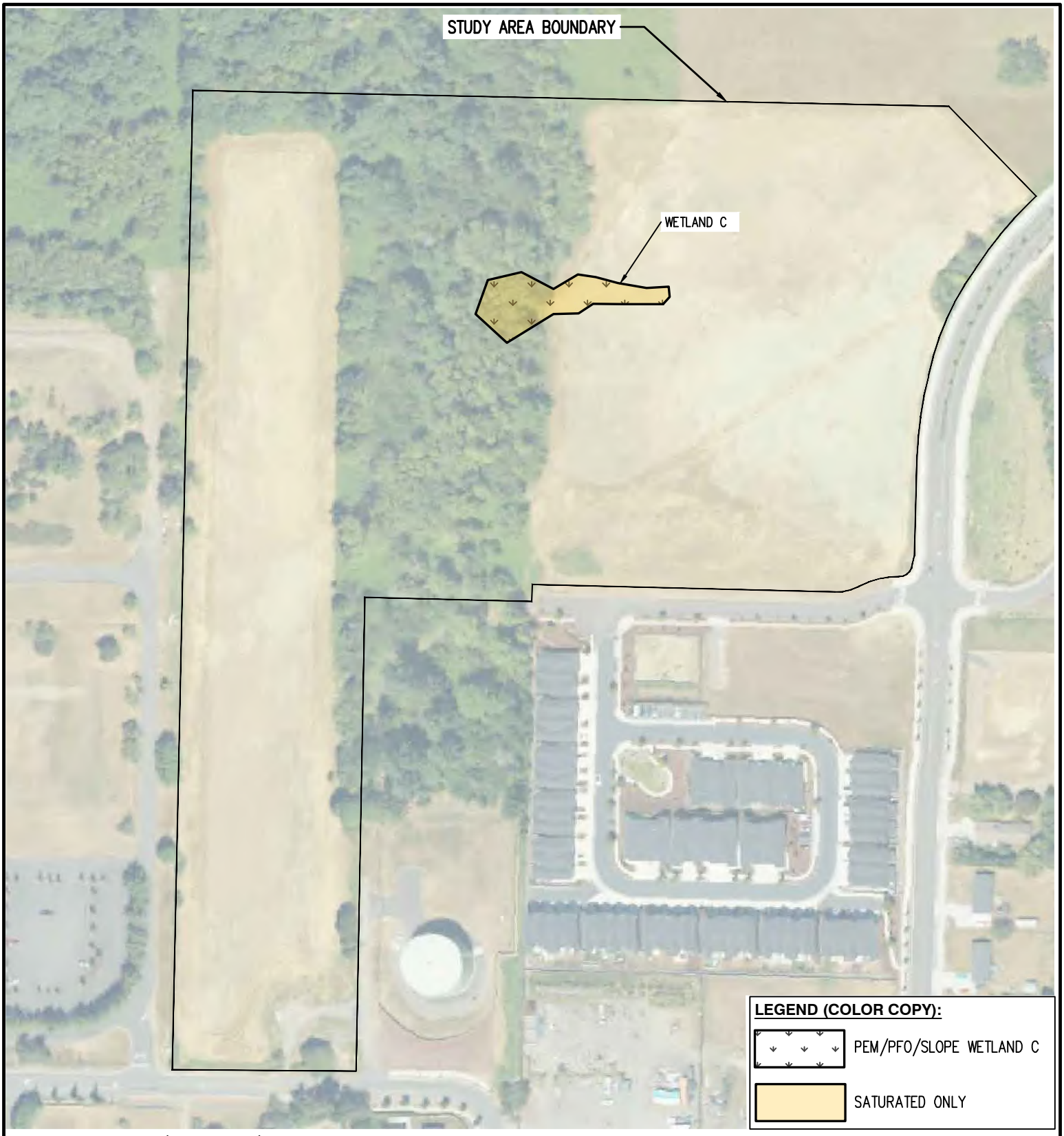
COWARDIN CLASSIFICATION AND 150' BUFFER
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE 1

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
P: 360.882.0419 F: 360.882.0426 aks-eng.com

DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND C RATING FIGURE | FIGURE 1



NAIP AERIAL (JUNE, 2023)
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"= 200 FEET

200 0 40 100 200

ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 05/27/2025

HYDROPERIODS
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE **2**

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DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND C RATING FIGURE | FIGURE 2



NAIP AERIAL (JUNE, 2023)
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"= 200 FEET

200 0 40 100 200

ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 05/27/2025

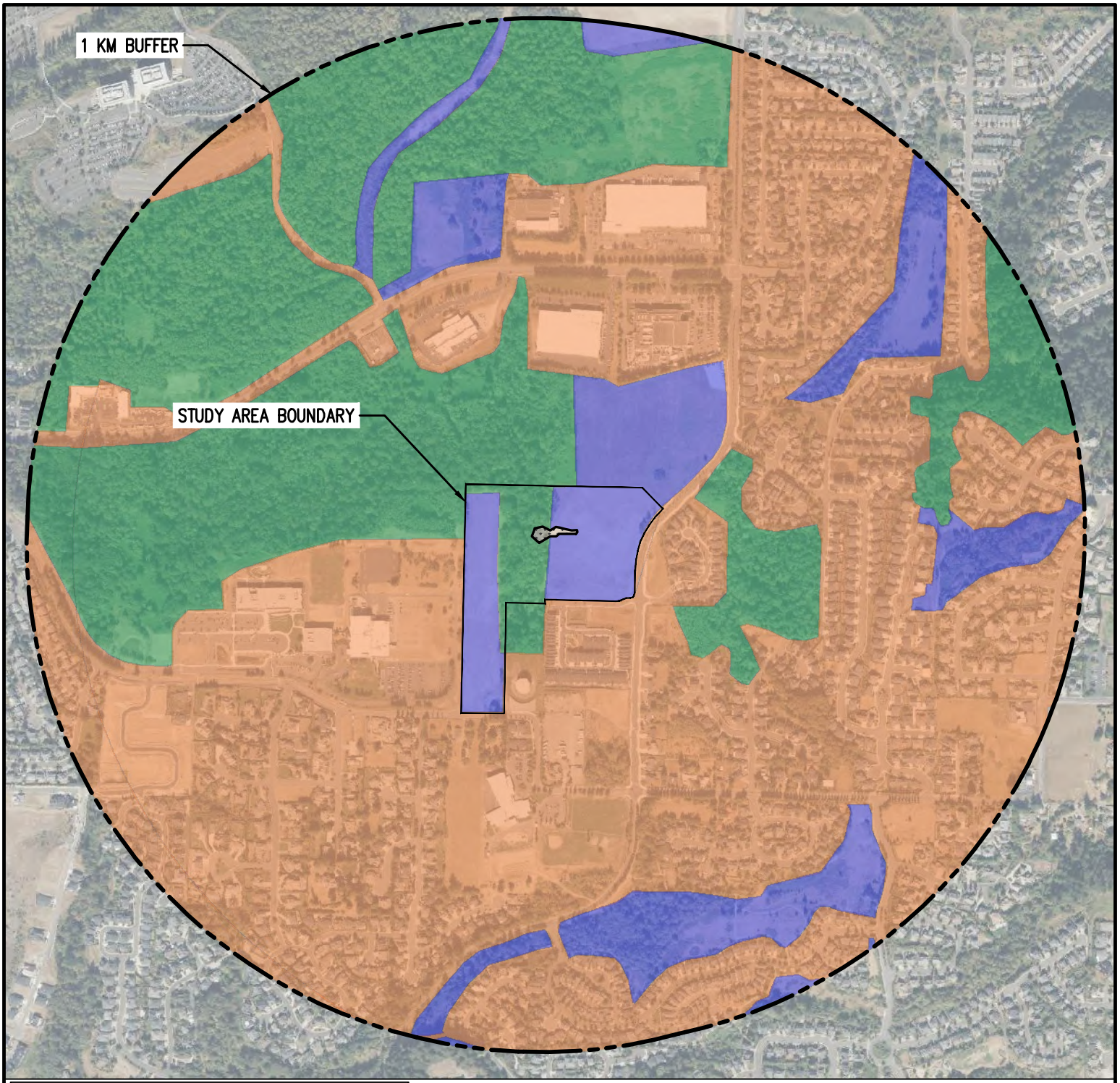
PLANT COVER
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE 3

AKS ENGINEERING & FORESTRY, LLC
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VANCOUVER, WA 98682
P: 360.882.0419 F: 360.882.0426 aks-eng.com

DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND C RATING FIGURE | FIGURE 3



LEGEND (COLOR COPY):

- PEM/PFO/SLOPE WETLAND C
- RELATIVELY UNDISTURBED HABITAT
- MODERATE/LOW INTENSITY LAND USE
- HIGH INTENSITY LAND USE

1KM AERIAL DERIVED FROM BING IMAGERY
WESTERN WA WETLAND RATING FORM

DATE: 05/27/2025

SCALE: 1"= 900 FEET

900 0 180 450 900

ORIGINAL PAGE SIZE: 8.5" X 11"

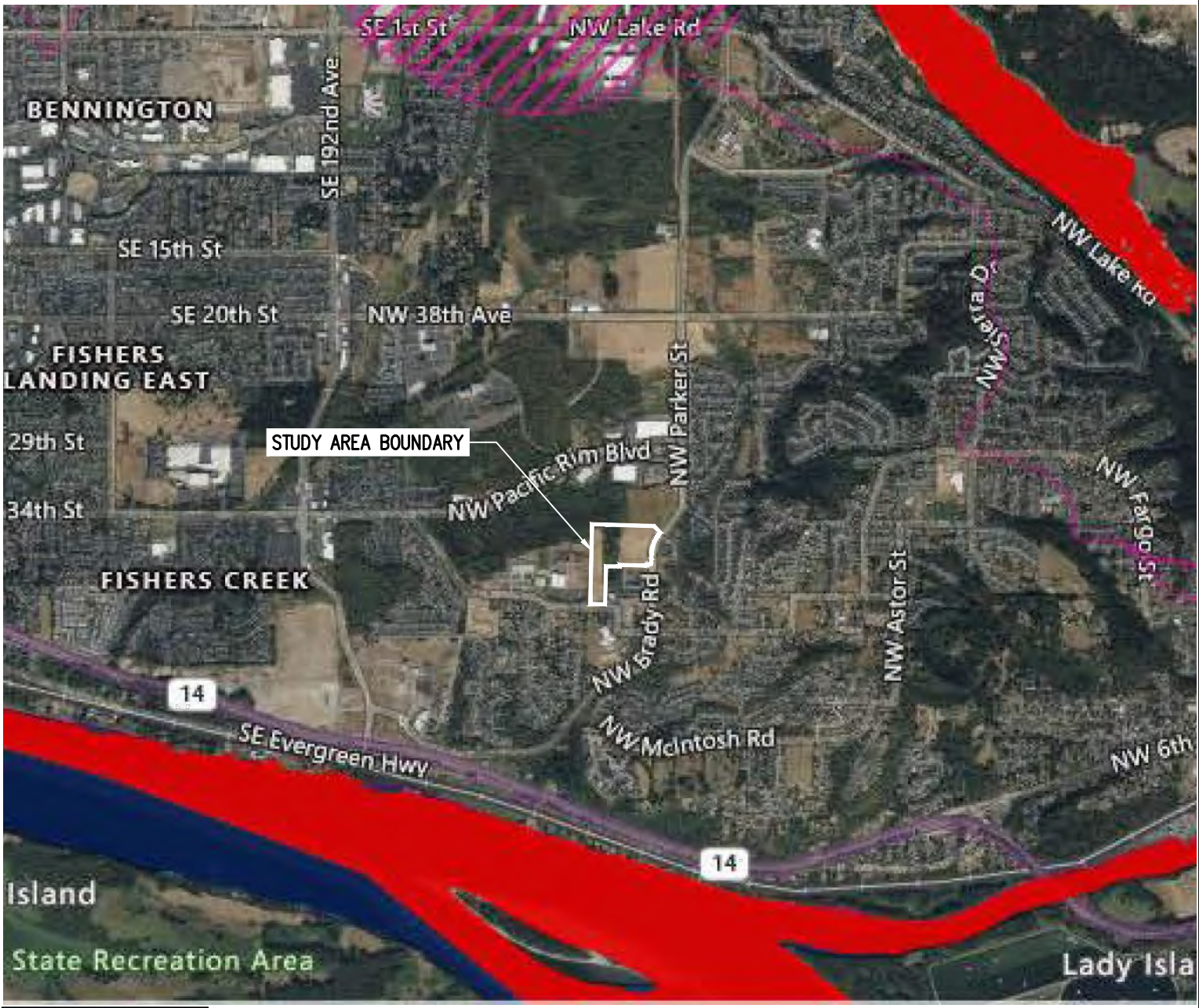
1KM BUFFER AND LAND USE INTENSITY
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE 4

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
P: 360.882.0419 F: 360.882.0426 aks-eng.com

DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND C RATING FIGURE | FIGURE 4



Assessed Water/Sediment

Water
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

Sediment
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

WQ Improvement Projects
- TMDL - Approved
- 4B - Approved
- STI - Approved
- ARP - Approved
- TMDL - In Development
- STI - In Development
- ARP - In Development

Subbasins (8 digit HUCs)
- HUC boundary

TITLE	**Salmon Creek Watershed Bacteria and Turbidity Total Maximum Daily Load (Water Cleanup Plan): Detailed Implementation Plan**	
	Publication number	Date Published
	05-10-037	March 2005

TITLE	**Salmon Creek Temperature Total Maximum Daily Load: Water Quality Improvement Report and Implementation Plan**	
	Publication number	Date Published
	11-10-044	October 2011

WASHINGTON DEPARTMENT OF ECOLOGY
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"=1000 FEET

1000 0 200 500 1000

ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 05/27/2025

303d AND TMDLs
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE **5**

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
P: 360.882.0419 F: 360.882.0426 aks-eng.com

DRWN: RAS
CHKD: EE
AKS 12107

330

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland D Date of site visit: 5/15/2025

Rated by Emma Eichhorn Trained by Ecology? ☐ Yes ☑ No Date of training _____

HGM Class used for rating Slope Wetland has multiple HGM classes? ☐ Yes ☑ No

NOTE: Form is not complete with out the figures requested (*figures can be combined*).
Source of base aerial photo/map National Agriculture Imagery Program (NAIP)

OVERALL WETLAND CATEGORY IV (based on functions ☑ or special characteristics ☐)

1. Category of wetland based on FUNCTIONS

_____ **Category I** - Total score = 23 - 27
_____ **Category II** - Total score = 20 - 22
_____ **Category III** - Total score = 16 - 19
X **Category IV** - Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	List appropriate rating (H, M, L)			
Site Potential	L	M	L	
Landscape Potential	L	L	L	
Value	H	H	L	**Total**
Score Based on Ratings	5	6	3	**14**

Score for each function based on three ratings (*order of ratings is not important*)

9 = H, H, H
8 = H, H, M
7 = H, H, L
7 = H, M, M
6 = H, M, L
6 = M, M, M
5 = H, L, L
5 = M, M, L
4 = M, L, L
3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	Category
Estuarine	
Wetland of High Conservation Value	
Bog	
Mature Forest	
Old Growth Forest	
Coastal Lagoon	
Interdunal	
None of the above	

Maps and Figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	
Hydroperiods	D 1.4, H 1.2	
Location of outlet (*can be added to map of hydroperiods*)	D 1.1, D 4.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	D 2.2, D 5.2	
Map of the contributing basin	D 4.3, D 5.3	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream (*can be added to another figure*)	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	1
Hydroperiods	H 1.2	2
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	3
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to another figure*)	S 4.1	3
Boundary of area within 150 ft of the wetland (*can be added to another figure*)	S 2.1, S 5.1	1
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	4
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	5
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	5

HGM Classification of Wetland in Western Washington

For questions 1 -7, the criteria described must apply to the entire unit being rated.
If hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1 - 7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

☑ NO - go to 2 ☐ **YES** - the wetland class is **Tidal Fringe** - go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

☐ **NO - Saltwater Tidal Fringe (Estuarine)** ☐ **YES - Freshwater Tidal Fringe**
*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it.
Groundwater and surface water runoff are NOT sources of water to the unit.

☑ NO - go to 3 ☐ **YES** - The wetland class is **Flats**
*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
☐ The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
☐ At least 30% of the open water area is deeper than 6.6 ft (2 m).

☑ NO - go to 4 ☐ **YES** - The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
☑ The wetland is on a slope (*slope can be very gradual*),
☑ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
☑ The water leaves the wetland **without being impounded.**

☐ NO - go to 5 ☑ **YES** - The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
☐ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
☐ The overbank flooding occurs at least once every 2 years.

☐ NO - go to 6 ☐ **YES** - The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding.

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

☐ NO - go to 7 ☐ **YES** - The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☑ NO - go to 8 ☐ **YES** - The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have ***more than 2 HGM classes*** *within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland ID: Wetland D

AKS Job Title (AKS Job # 12107

Water Quality Functions - Indicators that the site functions to improve water quality	
S 1.0. Does the site have the potential to improve water quality?	
S 1.1. Characteristics of the average slope of the wetland: (*a 1% slope has a 1 ft vertical drop in elevation for every 100 ft of horizontal distance*) Slope is 1% or less — points = 3 Slope is > 1% - 2% — points = 2 Slope is > 2% - 5% — points = 1 Slope is greater than 5% — points = 0	1
S 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic (*use NRCS definitions*): Yes = 3 No = 0	0
S 1.3. Characteristics of the plants in the wetland that trap sediments and pollutants: Choose the points appropriate for the description that best fits the plants in the wetland. *Dense means you have trouble seeing the soil surface (>75% cover), and uncut means not grazed or mowed and plants are higher than 6 in.* Dense, uncut, herbaceous plants > 90% of the wetland area — points = 6 Dense, uncut, herbaceous plants > ½ of area — points = 3 Dense, woody, plants > ½ of area — points = 2 Dense, uncut, herbaceous plants > ¼ of area — points = 1 Does not meet any of the criteria above for plants — points = 0	3
Total for S 1 — Add the points in the boxes above	**4**

Rating of Site Potential If score is: ☐ **12 = H** ☐ **6 - 11 = M** ☑ **0 - 5 = L** *Record rating on the first page*

S 2.0. Does the landscape have the potential to support the water quality function of the site?	
S 2.1. Is > 10% of the area within 150 ft on the uphill side of the wetland in land uses that generate pollutants? Yes = 1 No = 0	0
S 2.2. Are there other sources of pollutants coming into the wetland that are not listed in question S 2.1? Other Sources — Yes = 1 No = 0	0
Total for S 2 — Add the points in the boxes above	**0**

Rating of Landscape Potential If score is: ☐ **1 - 2 = M** ☑ **0 = L** *Record rating on the first page*

S 3.0. Is the water quality improvement provided by the site valuable to society?	
S 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	0
S 3.2. Is the wetland in a basin or sub-basin where water quality is an issue? *At least one aquatic resource in the basin is on the 303(d) list.* Yes = 1 No = 0	1
S 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? *Answer YES if there is a TMDL for the basin in which the unit is found?* Yes = 2 No = 0	2
Total for S 3 — Add the points in the boxes above	**3**

Rating of Value If score is: ☑ **2 - 4 = H** ☐ **1 = M** ☐ **0 = L** *Record rating on the first page*

SLOPE WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream erosion

S 4.0. Does the site have the potential to reduce flooding and stream erosion?

Wetland ID: Wetland D

AKS Job Title (AKS Job # 12107

S 4.1. Characteristics of plants that reduce the velocity of surface flows during storms: Choose the points appropriate for the description that best fits conditions in the wetland. *Stems of plants should be thick enough (usually > 1/8 in), or dense enough, to remain erect during surface flows.*		1
Dense, uncut, **rigid** plants cover > 90% of the area of the wetland	points = 1	
All other conditions	points = 0	

Rating of Site Potential If score is: ☑ **1 = M** ☐ **0 = L** *Record rating on the first page*

S 5.0. Does the landscape have the potential to support hydrologic functions of the site?		
S 5.1. Is more than 25% of the area within 150 ft upslope of wetland in land uses or cover that generate excess surface runoff?	Yes = 1 No = 0	0

Rating of Landscape Potential If score is: ☐ **1 = M** ☑ **0 = L** *Record rating on the first page*

S 6.0. Are the hydrologic functions provided by the site valuable to society?		
S 6.1. Distance to the nearest areas downstream that have flooding problems:		2
The sub-basin immediately down-gradient of site has flooding problems that result in damage to human or natural resources (e.g., houses or salmon redds)	points = 2	
Surface flooding problems are in a sub-basin farther down-gradient	points = 1	
No flooding problems anywhere downstream	points = 0	
S 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan?	Yes = 2 No = 0	0
Total for S 6	Add the points in the boxes above	**2**

Rating of Value If score is: ☑ **2 - 4 = H** ☐ **1 = M** ☐ **0 = L** *Record rating on the first page*

NOTES and FIELD OBSERVATIONS:

Wetland ID: Wetland D

AKS Job Title (AKS Job # 12107

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

☐ Aquatic bed	4 structures or more: points = 4	0
☐ Emergent	3 structures: points = 2	
☑ Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points - 1	
☐ Forested (areas where trees have > 30% cover)	1 structure: points = 0	

If the unit has a Forested class, check if:

☐ The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

☐ Permanently flooded or inundated	4 or more types present: points = 3	0
☐ Seasonally flooded or inundated	3 types present: points = 2	
☐ Occasionally flooded or inundated	2 types present: points = 1	
☑ Saturated only	1 types present: points = 0	
☐ Permanently flowing stream or river in, or adjacent to, the wetland		
☐ Seasonally flowing stream in, or adjacent to, the wetland		
☐ **Lake Fringe wetland**	**2 points**	
☐ **Freshwater tidal wetland**	**2 points**	

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.
Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

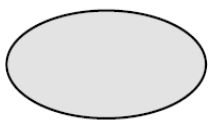
1

If you counted:	> 19 species	points = 2
	5 - 19 species	points = 1
	< 5 species	points = 0

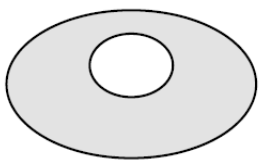
H 1.4. Interspersion of habitats

Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*

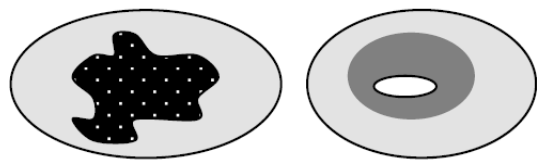
0



None = 0 points

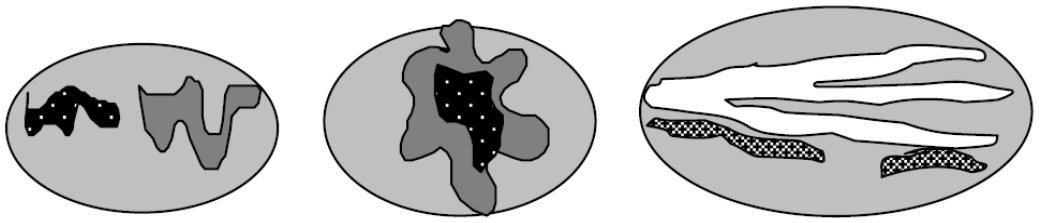


Low = 1 point



Moderate = 2 points

All three diagrams in this row are **HIGH** = 3 points



H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ☐ Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long) ☐ Standing snags (dbh > 4 in) within the wetland ☐ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (*cut shrubs or trees that have not yet weathered where wood is exposed*) ☐ At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (*structures for egg-laying by amphibians*) ☐ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	0
Total for H 1 Add the points in the boxes above	**1**

Rating of Site Potential If Score is: ☐ **15 - 18 = H** ☐ **7 - 14 = M** ☑ **0 - 6 = L** *Record rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat function of the site?	
H 2.1 Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* 11.5 % undisturbed habitat + (4.2 % moderate & low intensity land uses / 2) = 13.6% If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20 - 33% of 1 km Polygon points = 2 10 - 19% of 1 km Polygon points = 1 < 10 % of 1 km Polygon points = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* 32.5 % undisturbed habitat + (8.3 % moderate & low intensity land uses / 2) = 36.65% Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10 - 50% and in 1-3 patches points = 2 Undisturbed habitat 10 - 50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3 Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (-2) ≤ 50% of 1km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	**0**

Rating of Landscape Potential If Score is: ☐ **4 - 6 = H** ☐ **1 - 3 = M** ☑ **< 1 = L** *Record rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated*. Site meets ANY of the following criteria: points = 2 ☐ It has 3 or more priority habitats within 100 m (see next page) ☐ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ☐ It is mapped as a location for an individual WDFW priority species ☐ It is a Wetland of High Conservation Value as determined by the Department of Natural Resources ☐ It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) with in 100m points = 1 Site does not meet any of the criteria above points = 0	0

Rating of Value If Score is: ☐ **2 = H** ☐ **1 = M** ☑ **0 = L** *Record rating on the first page*

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp.
http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here:
http://wdfw.wa.gov/conservation/phs/list/

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE**: This question is independent of the land use between the wetland unit and the priority habitat.*

- ☐ **Aspen Stands**: Pure or mixed stands of aspen greater than 1 ac (0.4 ha).
- ☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).
- ☐ **Herbaceous Balds**: Variable size patches of grass and forbs on shallow soils over bedrock.
- ☐ **Old-growth/Mature forests**: Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.
- ☐ **Oregon White Oak**: Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).
- ☐ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Westside Prairies**: Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).
- ☐ **Instream**: The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- ☐ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page*).
- ☐ **Caves**: A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- ☐ **Cliffs**: Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.
- ☐ **Talus**: Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ☐ **Snags and Logs**: Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland ID: Wetland D

AKS Job Title (AKS Job # 12107

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. List the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine Wetlands Does the wetland meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt ☐ Yes - Go to **SC 1.1** ☑ No = **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ Yes = **Category I** ☐ No - Go to **SC 1.2**	
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina* , see page 25) ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. ☐ Yes = **Category I** ☐ No = **Category II**	
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? ☐ Yes - Go to **SC 2.2** ☑ No - Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? ☐ Yes = **Category I** ☐ No = **Not WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf ☐ Yes - **Contact WNHP/WDNR and to SC 2.4** ☑ No = **Not WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? ☐ Yes = **Category I** ☐ No = **Not WHCV**	
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions*** *.* SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? ☐ Yes - Go to **SC 3.3** ☑ No - Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? ☐ Yes - Go to **SC 3.3** ☑ No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? ☐ Yes = **Is a Category I bog** ☐ No - Go to **SC 3.4** **NOTE**: If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? ☐ Yes = **Is a Category I bog** ☐ No = **Is not a bog**	

SC 4.0. Forested Wetlands

Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.***

☐ **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more.

☐ **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm).

☐ Yes = **Category I** ☑ No = **Not a forested wetland for this section**

SC 5.0. Wetlands in Coastal Lagoons

Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?

☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks

☐ The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon (*needs to be measured near the bottom*)

☐ Yes - Go to **SC 5.1** ☑ No = **Not a wetland in a coastal lagoon**

SC 5.1. Does the wetland meet all of the following three conditions?

☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100).

☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.

☐ The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2)

☐ Yes = **Category I** ☐ No = **Category II**

SC 6.0. Interdunal Wetlands

Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.***

In practical terms that means the following geographic areas:

☐ Long Beach Peninsula: Lands west of SR 103

☐ Grayland-Westport: Lands west of SR 105

☐ Ocean Shores-Copalis: Lands west of SR 115 and SR 109

☐ Yes - Go to **SC 6.1** ☑ No = **Not an interdunal wetland for rating**

SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)?

☐ Yes = **Category I** ☐ No - Go to **SC 6.2**

SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger?

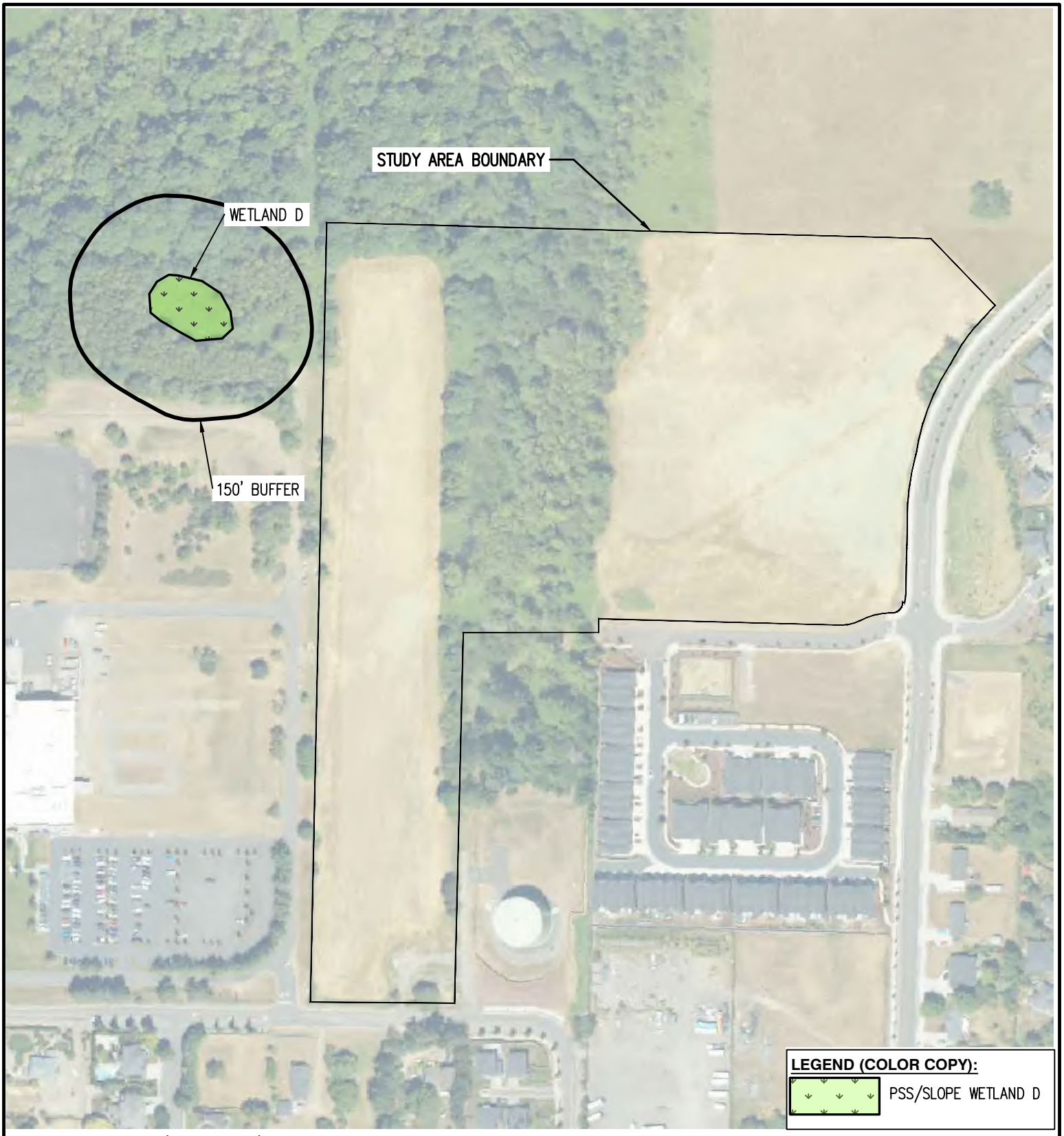
☐ Yes = **Category II** ☐ No - Go to **SC 6.3**

SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?

☐ Yes = **Category III** ☐ No = **Category IV**

Category of wetland based on Special Characteristics

If you answered No for all types, enter "Not Applicable" on Summary Form



NAIP AERIAL (JUNE, 2023)
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"= 250 FEET

250 0 50 125 250

ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 05/27/2025

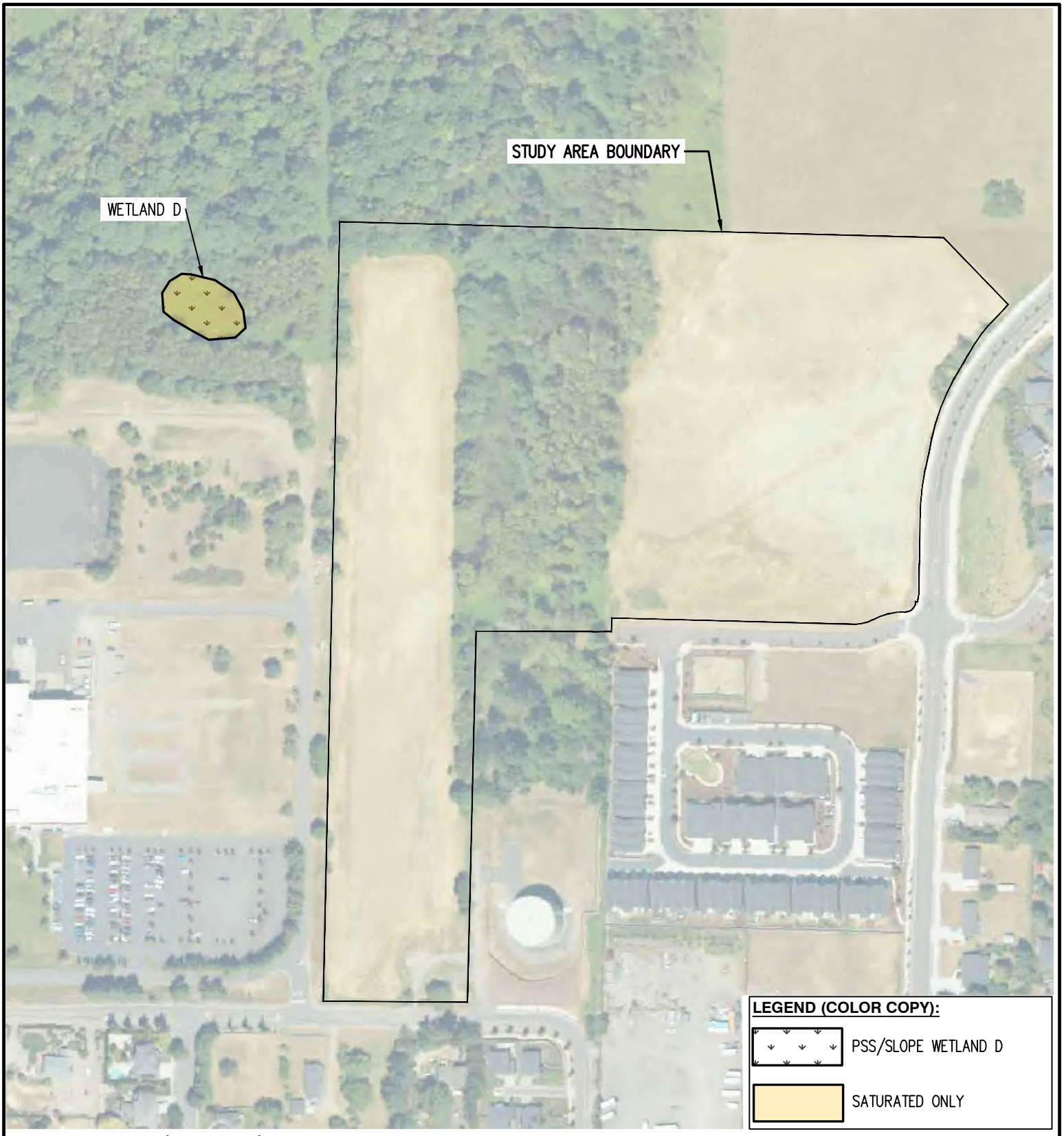
COWARDIN CLASSIFICATION AND 150' BUFFER
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE 1

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
P: 360.882.0419 F: 360.882.0426 aks-eng.com

DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND D RATING FIGURE | FIGURE 1



NAIP AERIAL (JUNE, 2023)
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"= 250 FEET

250 0 50 125 250

ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 05/27/2025

HYDROPERIODS
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE 2

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
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DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND D RATING FIGURE | FIGURE 2



NAIP AERIAL (JUNE, 2023)
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"= 250 FEET

250 0 50 125 250

ORIGINAL PAGE SIZE: 8.5" x 11"

DATE: 05/27/2025

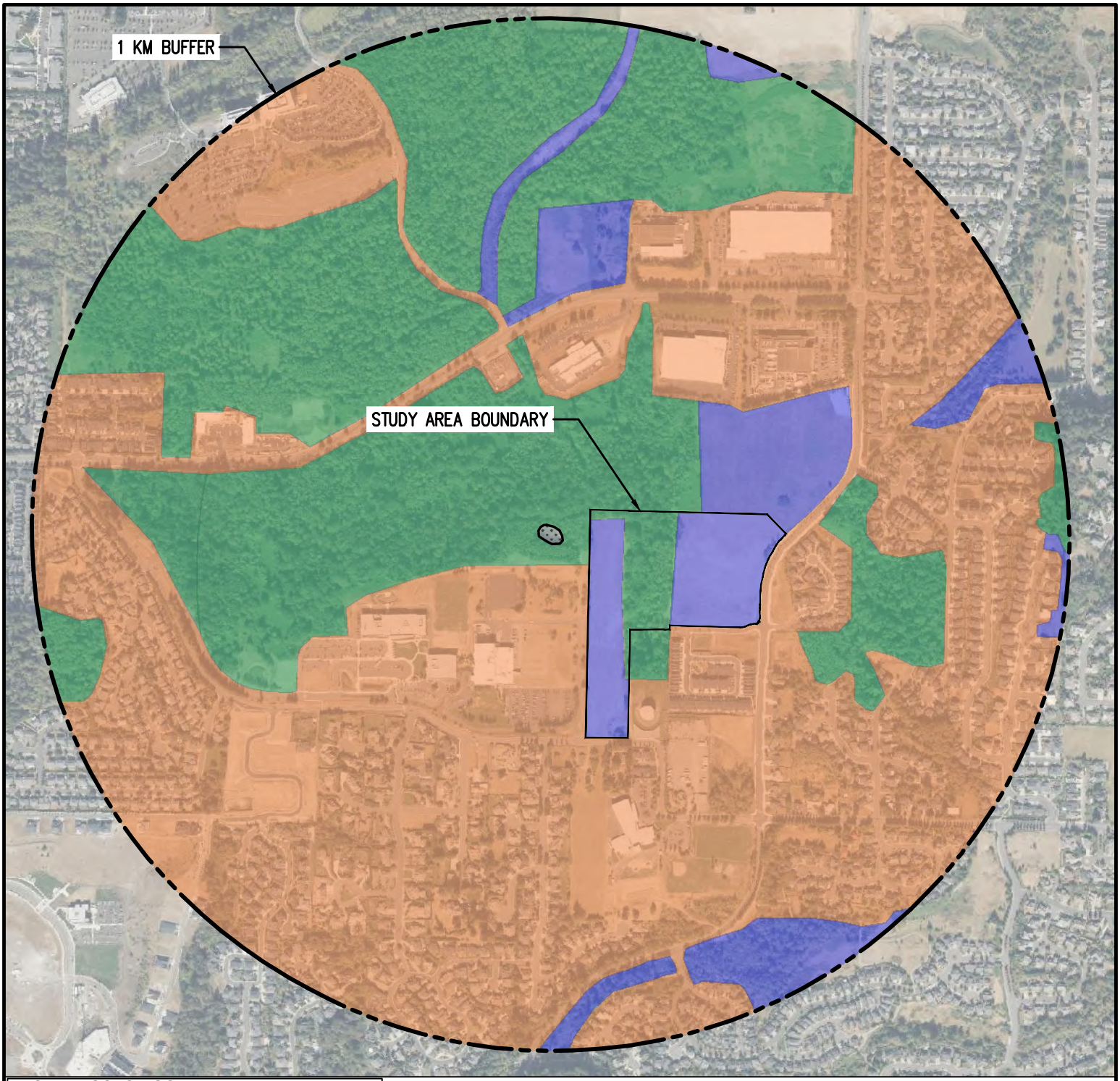
PLANT COVER
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE 3

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
P: 360.882.0419 F: 360.882.0426 aks-eng.com

DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND D RATING FIGURE | FIGURE 3



LEGEND (COLOR COPY):

- PSS/SLOPE WETLAND D
- RELATIVELY UNDISTURBED HABITAT
- MODERATE/LOW INTENSITY LAND USE
- HIGH INTENSITY LAND USE

1KM AERIAL DERIVED FROM BING IMAGERY
WESTERN WA WETLAND RATING FORM

DATE: 05/27/2025

SCALE: 1"= 900 FEET

900 0 180 450 900

ORIGINAL PAGE SIZE: 8.5" X 11"

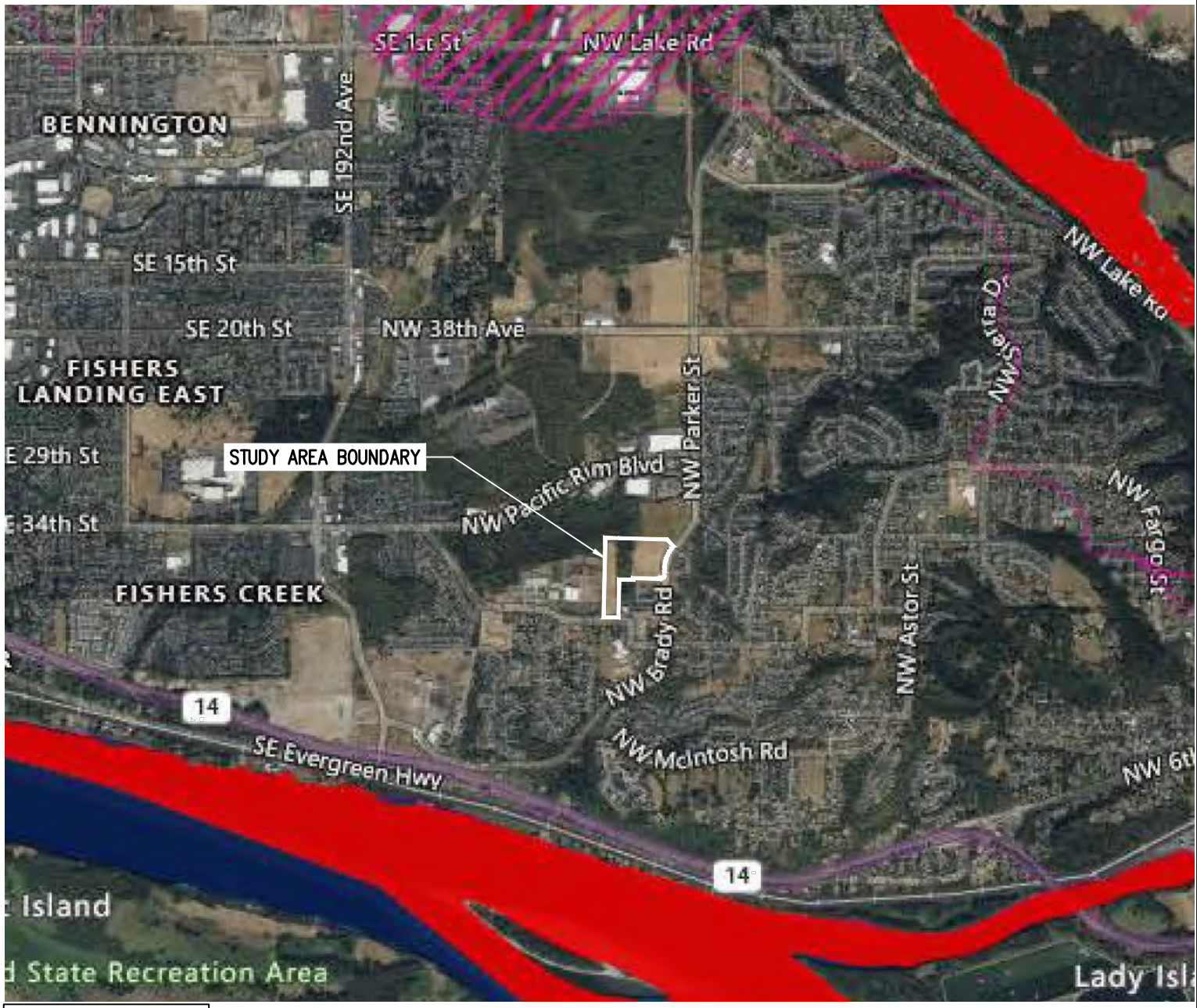
1KM BUFFER AND LAND USE INTENSITY
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE 4

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
P: 360.882.0419 F: 360.882.0426 aks-eng.com

DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND D RATING FIGURE | FIGURE 4



Assessed Water/Sediment

Water
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

Sediment
- Category 5 - 303d
- Category 4C
- Category 4B
- Category 4A
- Category 2
- Category 1

WQ Improvement Projects
- TMDL - Approved
- 4B - Approved
- STI - Approved
- ARP - Approved
- TMDL - In Development
- STI - In Development
- ARP - In Development

Subbasins (8 digit HUCs)
- HUC boundary

TITLE	**Salmon Creek Watershed Bacteria and Turbidity Total Maximum Daily Load (Water Cleanup Plan): Detailed Implementation Plan**
	Publication number: 05-10-037 — Date Published: March 2005

TITLE	**Salmon Creek Temperature Total Maximum Daily Load: Water Quality Improvement Report and Implementation Plan**
	Publication number: 11-10-044 — Date Published: October 2011

WASHINGTON DEPARTMENT OF ECOLOGY
WESTERN WA WETLAND RATING FORM

N

SCALE: 1"= 900 FEET

900 0 180 450 900

ORIGINAL PAGE SIZE: 8.5" X 11"

DATE: 05/27/2025

303d AND TMDLs
NW 18TH AVENUE CRITICAL AREAS ASSESSMENT

FIGURE **5**

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
P: 360.882.0419 F: 360.882.0426 aks-eng.com

DRWN: RAS
CHKD: EE
AKS 12107

DWG: 12107 WETLAND D RATING FIGURE | FIGURE 5

Appendix D:
APT Information

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	45.59301, -122.45557
Observation Date	2025-05-15
Elevation (ft)	495.779
Drought Index (PDSI)	Mild drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2025-05-15	1.704331	3.253937	0.641732	Dry	1	3	3
2025-04-15	2.95315	4.551181	3.669291	Normal	2	2	4
2025-03-16	3.136221	5.800394	6.271654	Wet	3	1	3
Result							Normal Conditions - 10

Figures and tables made by the Antecedent Precipitation Tool Version 2.9

US Army Corps of Engineers

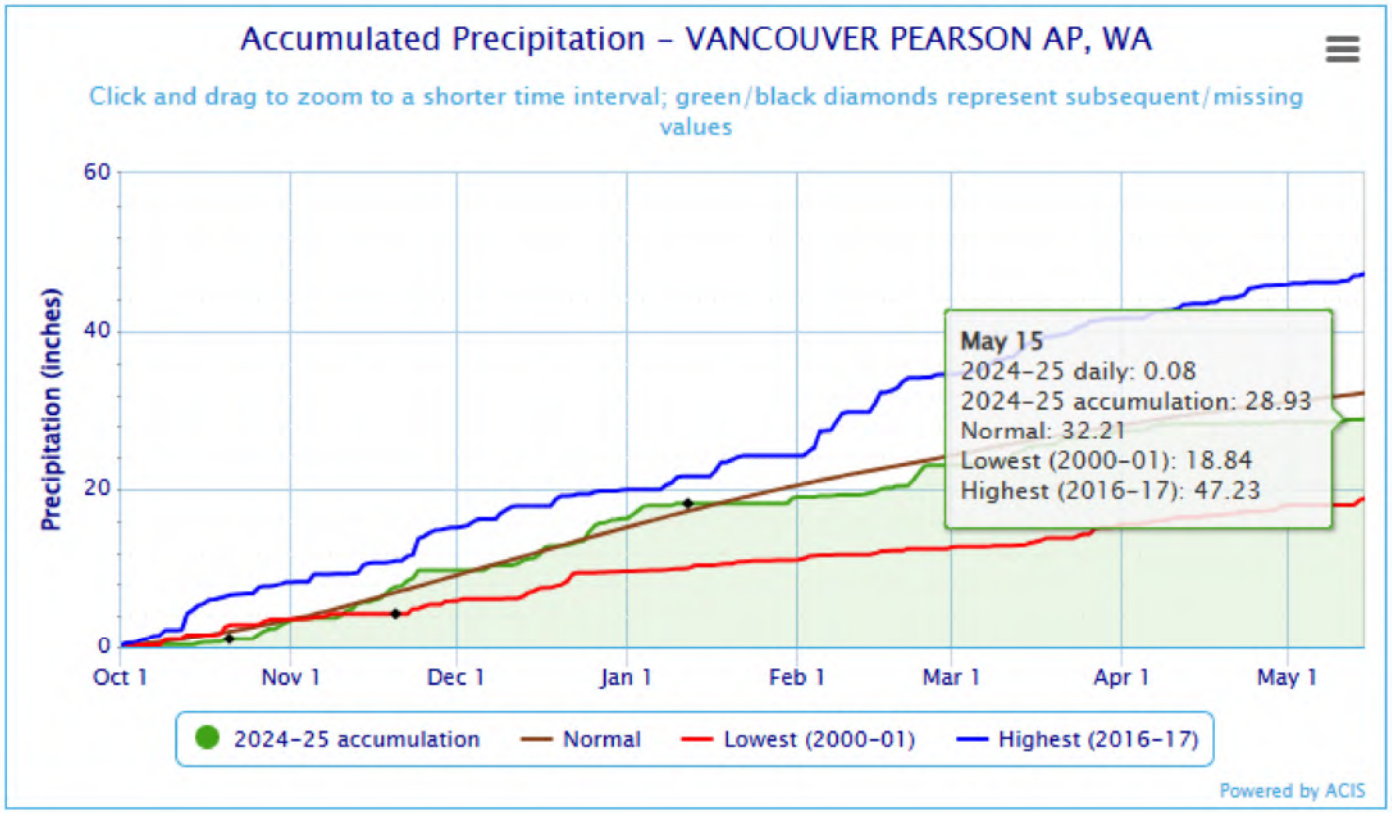
ERDC

Developed by:
U.S. Army Corps of Engineers and
U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
PORTLAND WFO	45.5608, -122.5383	20.997	4.578	474.782	4.234	10366	90
PORTLAND 4.6 ENE	45.5548, -122.5645	139.108	1.334	118.111	0.758	4	0
PORTLAND INTL AP	45.5958, -122.6092	21.982	4.196	0.985	1.892	983	0

AgACIS for Clark County

AgACIS



Note regarding subsequent/missing values

Climatological Data for VANCOUVER PEARSON AP, WA - May 2025

Date	Max Temperature	Min Temperature	Avg Temperature	GDD Base 40	GDD Base 50	Precipitation	Snowfall	Snow Depth
2025-05-01	81	42	61.5	22	12	0.00	M	M
2025-05-02	73	46	59.5	20	10	0.00	M	M
2025-05-03	62	46	54.0	14	4	T	M	M
2025-05-04	65	36	50.5	11	1	0.00	M	M
2025-05-05	76	39	57.5	18	8	0.00	M	M
2025-05-06	83	43	63.0	23	13	0.00	M	M
2025-05-07	71	44	57.5	18	8	0.00	M	M
2025-05-08	70	39	54.5	15	5	0.00	M	M
2025-05-09	77	40	58.5	19	9	0.00	M	M
2025-05-10	70	47	58.5	19	9	0.00	M	M
2025-05-11	61	51	56.0	16	6	0.16	M	M
2025-05-12	61	50	55.5	16	6	0.15	M	M
2025-05-13	61	46	53.5	14	4	0.01	M	M
2025-05-14	64	51	57.5	18	8	T	M	M
2025-05-15	59	50	54.5	15	5	0.08	M	M
2025-05-16	63	50	56.5	17	7	0.01	M	M
2025-05-17	63	52	57.5	18	8	0.79	M	M
2025-05-18	60	50	55.0	15	5	T	M	M
2025-05-19	65	50	57.5	18	8	0.09	M	M
2025-05-20	63	51	57.0	17	7	0.02	M	M
2025-05-21	68	49	58.5	19	9	0.00	M	M
2025-05-22	64	52	58.0	18	8	0.01	M	M
2025-05-23	69	50	59.5	20	10	0.00	M	M
2025-05-24	80	46	63.0	23	13	0.00	M	M
2025-05-25	66	48	57.0	17	7	0.00	M	M
2025-05-26	71	54	62.5	23	13	T	M	M
2025-05-27	83	45	64.0	24	14	0.00	M	M
2025-05-28	83	54	68.5	29	19	0.00	M	M
2025-05-29	70	54	62.0	22	12	0.05	M	M
2025-05-30	86	50	68.0	28	18	0.00	M	M
2025-05-31	69	52	60.5	21	11	0.00	M	M
Average|Sum	69.6	47.6	58.6	587	277	1.37	M	M

Appendix E: Buffer Enhancement species and quantities

Stella Ridge Subdivision Wetland A Buffer Planting Specifications

Planting specifications for ±28,425 square feet of Buffer Enhancement as shown on Figures 9A-9B .

Scientific Name	Common Name	Size*	Spacing/Seeding Rate	Quantity
Trees (total 124)= SF x 0.05				
Salix hookeriana	Hooker's Willow	2 gallon	15 feet on center	31
Alnus rubra	Red Alder	2 gallon	10 feet on center	31
Populus balsamifera	Black cottonwood	2 gallon	10 feet on center	31
Cornus sericea	Red osier dogwood	2 gallon	10 feet on center	31
Shrubs (total 268)= SF x 0.01				
Rhamnus purshiana	Cascara	1 gallon	4-5 feet on center	165
Lonicera involucrata	Black twinberry	1 gallon	4-5 feet on center	165
Corylus cornuta	Beaked hazelnut	1 gallon	4-5 feet on center	165
Rosa nutkana	dull Oregon grap	1 gallon	4-5 feet on center	165

**Bare root plants may be substituted for container plants based on availability. If bare root plants are used, they must be planted during the late winter/early spring dormancy period.*

Planting Notes

1) Container stock shall be installed only from February 1 through May 1 and October 1 through November 15. Bare root stock shall be installed only from December 15 through April 15. Plantings outside these times may require additional measures to ensure survival which shall be specified on the plans.

2) All non-native invasive vegetation shall be removed from planting areas prior to installing native enhancement plantings. Invasive species control shall be consistent with the County's vegetation management and approved noxious/invasive weed list.

3) Appropriate plant selection, along with adequate site preparation and maintenance, reduces the need for irrigation. However, unless site hydrology is currently adequate, a County approved irrigation system or equivalent (i.e., polymer, plus watering) shall be used during the two-year plant establishment period. Watering shall be at a minimum rate of at least one inch per week from June 15 through October 15.

4) Trees, shrubs, and groundcovers planted shall be mulched at a minimum of three inches in depth and 18 inches in diameter, to retain moisture and discourage weed growth around newly installed plant material. Appropriate mulches are made from composted bark or leaves that have not been chemically treated.

5) Depending on site conditions, appropriate measure shall be taken to limit wildlife-related plant damage.

Stella Ridge Subdivision Wetland B Buffer Planting Specifications

Planting specifications for ±19,203 square feet of Buffer Enhancement as shown on Figures 9A-9B .

Scientific Name	Common Name	Size*	Spacing/Seeding Rate	Quantity
Trees (total 124)= SF x 0.05				
Salix hookeriana	Hooker's Willow	2 gallon	15 feet on center	20
Alnus rubra	Red Alder	2 gallon	10 feet on center	20
Populus balsamifera	Black cottonwood	2 gallon	10 feet on center	20
Cornus sericea	Red osier dogwood	2 gallon	10 feet on center	20
Shrubs (total 268)= SF x 0.01				
Rhamnus purshiana	Cascara	1 gallon	4-5 feet on center	115
Lonicera involucrata	Black twinberry	1 gallon	4-5 feet on center	115
Corylus cornuta	Beaked hazelnut	1 gallon	4-5 feet on center	115
Rosa nutkana	dull Oregon grap	1 gallon	4-5 feet on center	115

**Bare root plants may be substituted for container plants based on availability. If bare root plants are used, they must be planted during the late winter/early spring dormancy period.*

Planting Notes

1) Container stock shall be installed only from February 1 through May 1 and October 1 through November 15. Bare root stock shall be installed only from December 15 through April 15. Plantings outside these times may require additional measures to ensure survival which shall be specified on the plans.

2) All non-native invasive vegetation shall be removed from planting areas prior to installing native enhancement plantings. Invasive species control shall be consistent with the County's vegetation management and approved noxious/invasive weed list.

3) Appropriate plant selection, along with adequate site preparation and maintenance, reduces the need for irrigation. However, unless site hydrology is currently adequate, a County approved irrigation system or equivalent (i.e., polymer, plus watering) shall be used during the two-year plant establishment period. Watering shall be at a minimum rate of at least one inch per week from June 15 through October 15.

4) Trees, shrubs, and groundcovers planted shall be mulched at a minimum of three inches in depth and 18 inches in diameter, to retain moisture and discourage weed growth around newly installed plant material. Appropriate mulches are made from composted bark or leaves that have not been chemically treated.

5) Depending on site conditions, appropriate measure shall be taken to limit wildlife-related plant damage.

6. Transportation Impact Study

KITTELSON & ASSOCIATES
851 SW 6th Avenue, Suite 600
Portland, OR 97204
P 503.228.5230

TRANSPORTATION IMPACT STUDY

September 8, 2025 Project# 31765

To: James E Carothers, PE & Anita Ashton
City of Camas Community Development Engineering
616 NE 4th Avenue
Camas, WA 98607

From: Chris Brehmer, PE, Claire Dougherty, PE, Julia Kuhn, PE, Sutapa Banerjee & Chancellor Reynolds

CC: Joe Deaser, Allied Development
John Meier, PE, AKS Engineering & Forestry LLC

RE: Stella Ridge Transportation Impact Study

Allied Development, the Applicant, proposes to develop 158 detached single-family homes on a 24.41 acre property located between NW Brady Road and NW 18th Avenue. A Transportation Impact Study (TIS) is required per City of Camas Municipal Code (CMC) Section 17.11.030.B.12 as part of the land use approvals for the new homes. This memorandum documents the TIS analysis, findings, and recommendations. No capacity based mitigation measures were identified at the study intersections operated and maintained by the City of Camas.

Subject to City review and direction, the following recommendations were identified to be implemented in conjunction with site development:

- Post a STOP (R1-1) sign on the Street A (NW Umatilla Street) southbound approach to NW 18th Avenue in accordance with applicable City of Camas standards and the *Manual on Uniform Traffic Control Devices* (MUTCD). Other on-site stop signs may be installed as appropriate per City of Camas direction.
- Locate and maintain site landscaping, above-ground utilities, and site signage at all local street intersections within and adjacent to the site to provide adequate intersection sight distance per applicable City requirements.
- Subject to City of Vancouver concurrence, pay the following proportional share intersection fees as identified per City of Vancouver requirements:
  - $6,000 towards SE 176th Avenue/SE 20th St mitigation
  - $2,400 towards NE 192nd Avenue/NE 13th Street mitigation
  - $900 towards SE 192nd Avenue/SE 34th Street mitigation
  - $118,000 towards SE 192nd Avenue/SR-14 ramps mitigation
  - $900 towards NE 172nd Avenue/NE 18th Street mitigation
  - $3,600 towards NE 179th Place/NE 18th Street mitigation
  - $6,000 towards NE 187th Avenue/NE 18th Street mitigation

The details of the study methodology, findings, and recommendations are summarized herein.

INTRODUCTION

Allied Development proposes to develop 158 single family detached homes on property located on the west side of NW Brady Road generally north of NW 18th Avenue. Vehicular site access for the proposed homes will be via a new north-south street connection to NW 18th Avenue (NW Umatilla Street) and a new

street extension connection to NW 20th Avenue (NW 21st Avenue). Construction is expected to begin in 2026 with full buildout anticipated by 2027. Figure 1 shows the site vicinity map, and Figure 2 shows a preliminary site plan.

STUDY METHODOLOGY

The City of Camas' *Transportation Impact Study Guidelines* (Reference 1) require preparation and submittal of a TIS for each proposed development that generates 200 or more daily vehicle trips. The 200 daily trip threshold is met this development, triggering a TIS.

The study intersections were determined through a scoping process with City of Camas staff and include the following City intersections:

- SE Bybee Road/SE 20th Street
- NW Fisher Creek Drive/NW 38th Avenue
- NW Parker Street/NW 38th Avenue
- NW Parker Street/NW Pacific Rim Boulevard
- NW Brady Road/NW 20th Avenue
- NW Brady Road/NW 16th Avenue
- NW Brady Road/NW McIntosh Road
- NW Grand Ridge Road/NW Brady Road
- Future Street/NW 18th Avenue

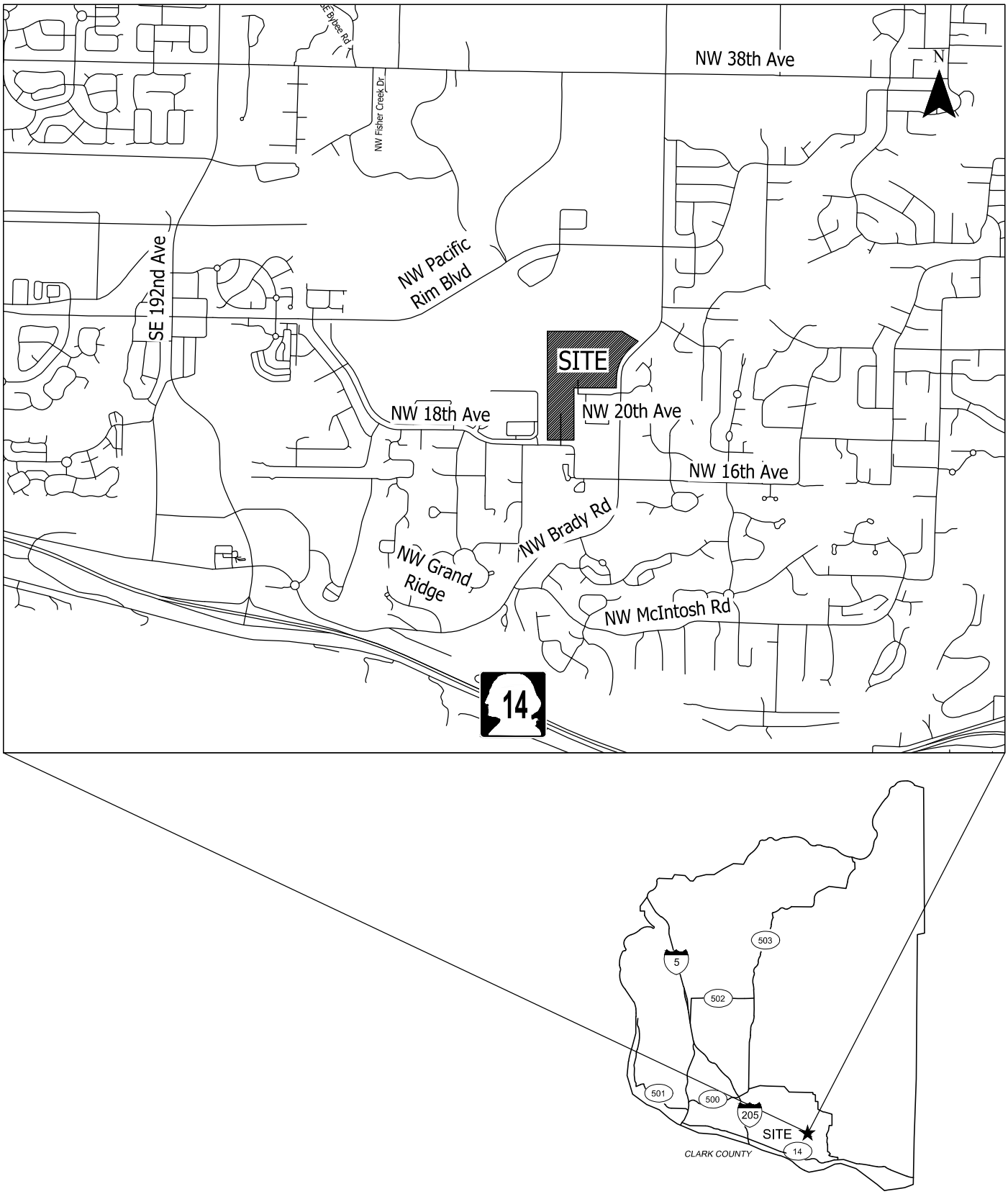
The study intersection list reflects a combination of City of Camas trip thresholds, the anticipated site trip distribution pattern and trip assignment, and City staff scoping direction. *Appendix A includes documentation from the scoping process - during the scoping process, 151 housing units were anticipated however through site plan refinement 158 housing units are currently proposed.*

Analysis Scenarios

Weekday morning (7-9 AM) and weekday afternoon commuter peak period (4-6 PM) traffic conditions were assessed for the following analysis scenarios:

- Year 2025 existing traffic conditions
- Year 2027 background traffic conditions (including identified in-process developments, but not including any site-generated traffic volumes related to the proposed development); and,
- Year 2027 total traffic conditions (including site-generated traffic volumes to the proposed development).

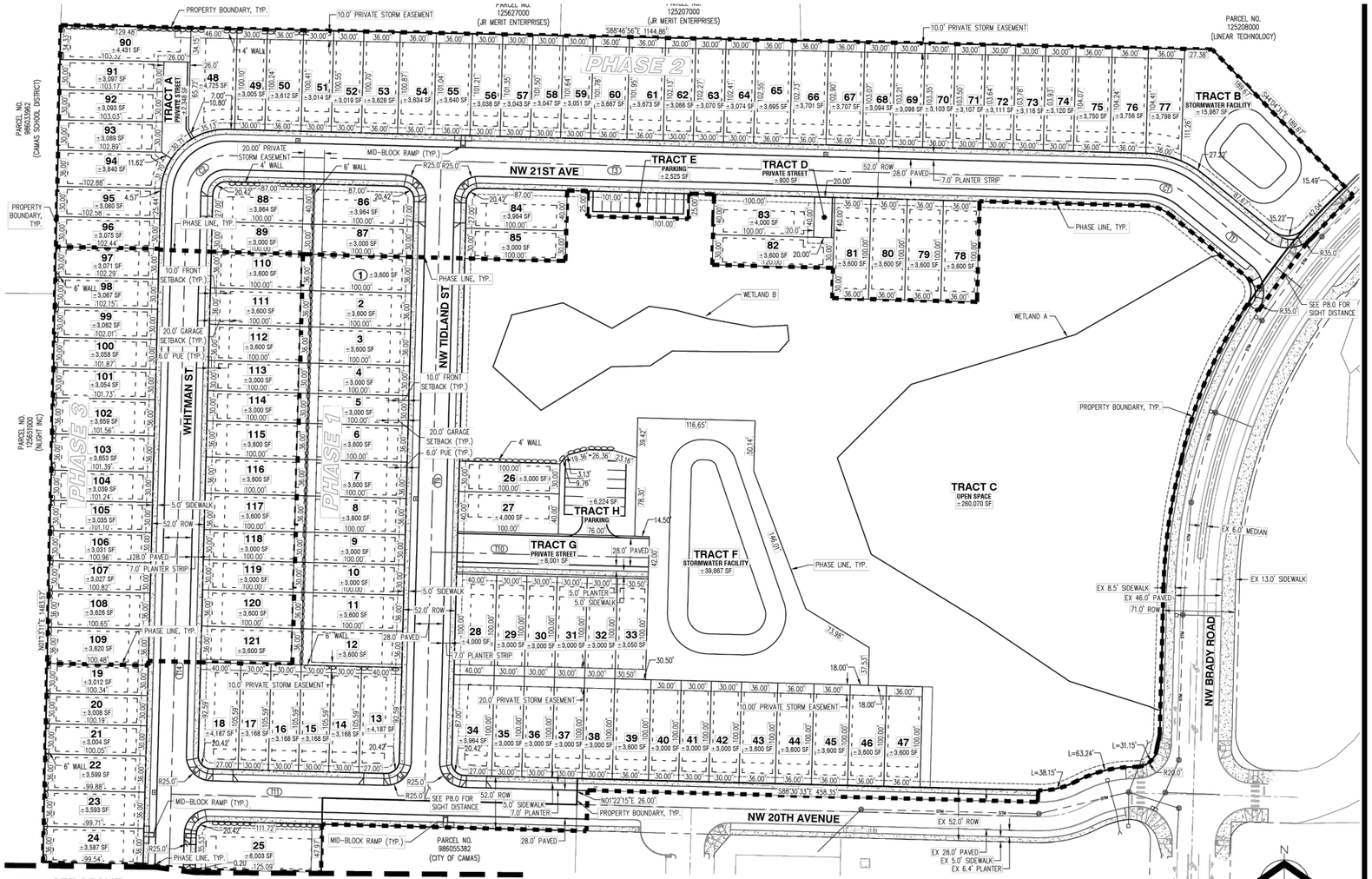
The SE Bybee Road/SE 20th Street intersection will be vacated and SE Bybee Road realigned to form the north approach of the signalized NW Fisher Creek Road/NW 38th Street intersection in conjunction with private development by others. Accordingly, only existing conditions are analyzed at the NW Fisher Creek Road/NW 38th Street intersection and SE Bybee Rad volumes are rerouted for the future conditions analysis.



Site Vicinity Map
Camas, Washington

Figure
1

H:\31\31765 - 12107 NW 18th Ave\report\figs\31765_figureset.dwg Sep 05, 2025 - 11:32am - cdougherty Layout Tab: Fig1 Site Vicinity Map



APPLICANT/CONTACT
ALLIED DEVELOPMENT, LLC
CONTACT: JOSEPH DEASER
16430 N SCOTTSDALE RD, STE 210
SCOTTSDALE, AZ 85254
PH: (602) 932-9590
EMAIL: JOSEPHD@ALLIEDDEV.COM

OWNER
DALEY DENNIS
PO BOX 757
RANCHO SANTA FE, CA 92067

PROJECT PURPOSE
PHASED SUBDIVISION WITH 156 SINGLE-FAMILY RESIDENTIAL LOTS WITH ASSOCIATED ROAD AND SITE IMPROVEMENTS.

SITE AREA
24.41 AC (1,063,300 SF)

EXISTING LAND USE
UNDEVELOPED PROPERTY ZONED MULTIFAMILY RESIDENTIAL (MF-18)

CONTACT/ENGINEERING/PLANNING/ ARBORIST/SURVEYING/LANDSCAPE ARCHITECT/NATURAL RESOURCES
AKS ENGINEERING & FORESTRY, LLC.
CONTACT: MICHAEL ANDREOTTI
9600 NE 126TH AVENUE, SUITE 2520
VANCOUVER, WA 98682
PH: 360-882-0419
FAX: 360-882-0426
E-MAIL: ANDREOTTIM@AKS-ENG.COM

GEOTECHNICAL ENGINEER
COLUMBIA WEST ENGINEERING, INC.
CONTACT: DANIEL E. LEHTO, PE, GE
11917 NE 95TH STREET
VANCOUVER, WA 98682
PH: 360-823-2900

PROPERTY DESCRIPTION
LOCATED IN THE SOUTHEAST 1/4 OF SECTION 5, THE NORTHEAST 1/4 OF SECTION 8, AND SOUTHWEST 1/4 OF SECTION 4, TOWNSHIP 1 NORTH, RANGE 3 EAST, WILLAMETTE MERIDIAN, CLARK COUNTY, WASHINGTON. PROPERTY SERIAL NO.'S 125193-000, 986055-381, & 125185-000.

VERTICAL DATUM
CLARK COUNTY VERTICAL DATUM NGVD29(47); ELEVATIONS ARE BASED ON CLARK COUNTY BENCHMARK "LACAMAS-50", LOCATED TO THE NE OF THE INTERSECTION OF NW 16TH AVE & NW BRADY RD; ELEVATION = 521.19 FEET (NAVD29(47)).

LOT STATISTICS

SINGLE FAMILY DETACHED:	158
TOTAL LOTS:	158

SITE STATISTICS

PARCEL ZONE:	MULTI-FAMILY (MF-18)
GROSS AREA:	±24.41 AC (±1,063,300 SF)
TOTAL ROW DEDICATION:	±3.99 AC (±173,800 SF)
PROPOSED AVERAGE LOT AREA:	±3,495 SF

RESIDENTIAL PARKING STATISTICS

REQUIRED PARKING:	32 SPACES (158 LOTS/5 LOTS/SPACE)
TRACT E:	10 SPACES
TRACT H:	12 SPACES
TRACT I:	10 SPACES
TOTAL PROPOSED	32 SPACES

TRACT	PURPOSE	AREA
TRACT A	PRIVATE STREET	2,348 SF
TRACT B	STORMWATER FACILITY	15,967 SF
TRACT C	OPEN SPACE	260,070 SF
TRACT D	PRIVATE STREET	800 SF
TRACT E	PARKING	2,525 SF
TRACT F	STORMWATER FACILITY	39,667 SF
TRACT G	PRIVATE STREET	8,001 SF
TRACT H	PARKING	6,772 SF
TRACT I	PARKING	6,224 SF
TOTAL		*342,374 SF

*HOA TO OWN ALL TRACTS.

DEVELOPMENT STANDARDS (MF-18)

MINIMUM FRONT YARD SETBACK:	10 FEET
GARAGE SETBACK:	20 FEET
MINIMUM SIDE YARD:	3* FEET
MINIMUM STREET SIDE YARD:	15 FEET
MINIMUM REAR YARD:	10 FEET

* THE NON-ATTACHED SIDE OF A DWELLING UNIT SHALL BE THREE FEET, OTHERWISE A ZERO-LOT LINE IS ASSUMED.

DENSITY CALCULATIONS (MF-18)

MAXIMUM DENSITY (18 DU/AC X 18.44 AC):	332 UNITS
MINIMUM DENSITY (6 DU/AC X 18.44 AC):	111 UNITS
PROPOSED DESNITY (DU/AC):	158 UNITS
REQUIRED MINIMUM LOT AREA:	2,100 SF
REQUIRED MINIMUM LOT WIDTH:	26 FT
REQUIRED MINIMUM LOT DEPTH:	60 FT

THE PURPOSE OF THIS PRELIMINARY PLAT IS TO SHOW THE PROPOSED LOT DIMENSIONS AND AREAS FOR PLANNING PURPOSES. THIS IS NOT AN OFFICIAL PLAT AND IS NOT TO BE USED FOR SURVEY PURPOSES.

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, SUITE 2520
VANCOUVER, WA 98682
360.882.0419
WWW.AKS-ENG.COM

ENGINEERING · SURVEYING · NATURAL RESOURCE
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

PRELIMINARY SUBDIVISION PLAT
STELLA RIDGE SUBDIVISION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	8/29/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	NTL

P3.0

H:\12107\12107 NW 18th Ave\report\figs\12107_figureset.dwg Sep 05, 2025 - 11:34am - cdougherty Layout Tab: Fig2 Proposed Site Plan

RECEIVED FROM AKS ENGINEERING AND FORESTRY, LLC: (SEPTEMBER 2, 2025)

Preliminary Site Plan
Camas, Washington

Figure
2

Capacity Analysis Methodology

Intersection level-of-service and volume-to-capacity (v/c) analyses described in this report were performed at signalized and unsignalized intersections in accordance with the procedures stated in the *Highway Capacity Manual, 7th Edition* (Reference 2) methodology using Vistro 2024 software.

LOS Standards

City of Camas

Camas uses level of service (LOS) for traffic operations. Minor and local streets must meet LOS C standards, and collector and arterial streets must meet LOS D standards. If site traffic contributes to traffic operations that exceed the LOS D standard, then the TIS recommendations need to include mitigations or roadways improvements.

REPORT FORMAT

This report addresses the following transportation topics:

- Existing land use and transportation system conditions within the site vicinity, including facilities for people walking, bicycles and taking transit, as well as traffic safety and intersection operations;
- Planned developments and transportation improvements within the study area;
- Forecast year 2027 background traffic conditions during the weekday AM and PM peak hours;
- Weekday AM and PM peak hour site trip generation and distribution estimates;
- Forecast year 2027 total traffic conditions with site development during the weekday AM and PM peak hours; and,
- Conclusions and recommendations.

EXISTING CONDITIONS

The existing conditions analysis identifies site conditions and the current operational and geometric characteristics of streets within the study area. The purpose of this section is to set the stage for a basis of comparison to future conditions. The study intersections were inventoried in May 2025.

Site Conditions and Adjacent Land Uses

The proposed development is generally located on the west side of NW Brady Road north of NW 18th Avenue. The approximately 24.4-acre site is comprised of Parcel Numbers 125193000, 986055381, and 125185000. These three parcels are zoned multifamily residential (MF-18). The surrounding land use includes light industrial zoning to the north and west of the site with residential to the south and east.

The subject site is vacant today. The site accesses the public roadway system at NW 18th Avenue and NE 20th Avenue. Residential homes are generally located to the east and south, including Parker Village, which

is an existing gated residential community located on the south side of NW 20th Avenue with a single vehicular local street connection (NW Sage Street) to NW 20th Avenue. A City of Camas water facility is located north of NW 18th Avenue generally between the proposed development site and Parker Village.

The NLight, Inc. Global Headquarters borders the project site directly to the west. Discovery High School and Odyssey Middle School are located further to the west of the project site along the north side of NW 18th Avenue while Prune Hill Elementary school is located to the south and can be accessed via the intersection of NW Tidland Street and NW 16th Avenue.

Transportation Facilities

Table 1 provides a summary of the existing City of Camas streets closest to the site. Figure 3 illustrates the existing lane configurations and traffic control devices at the study intersections.

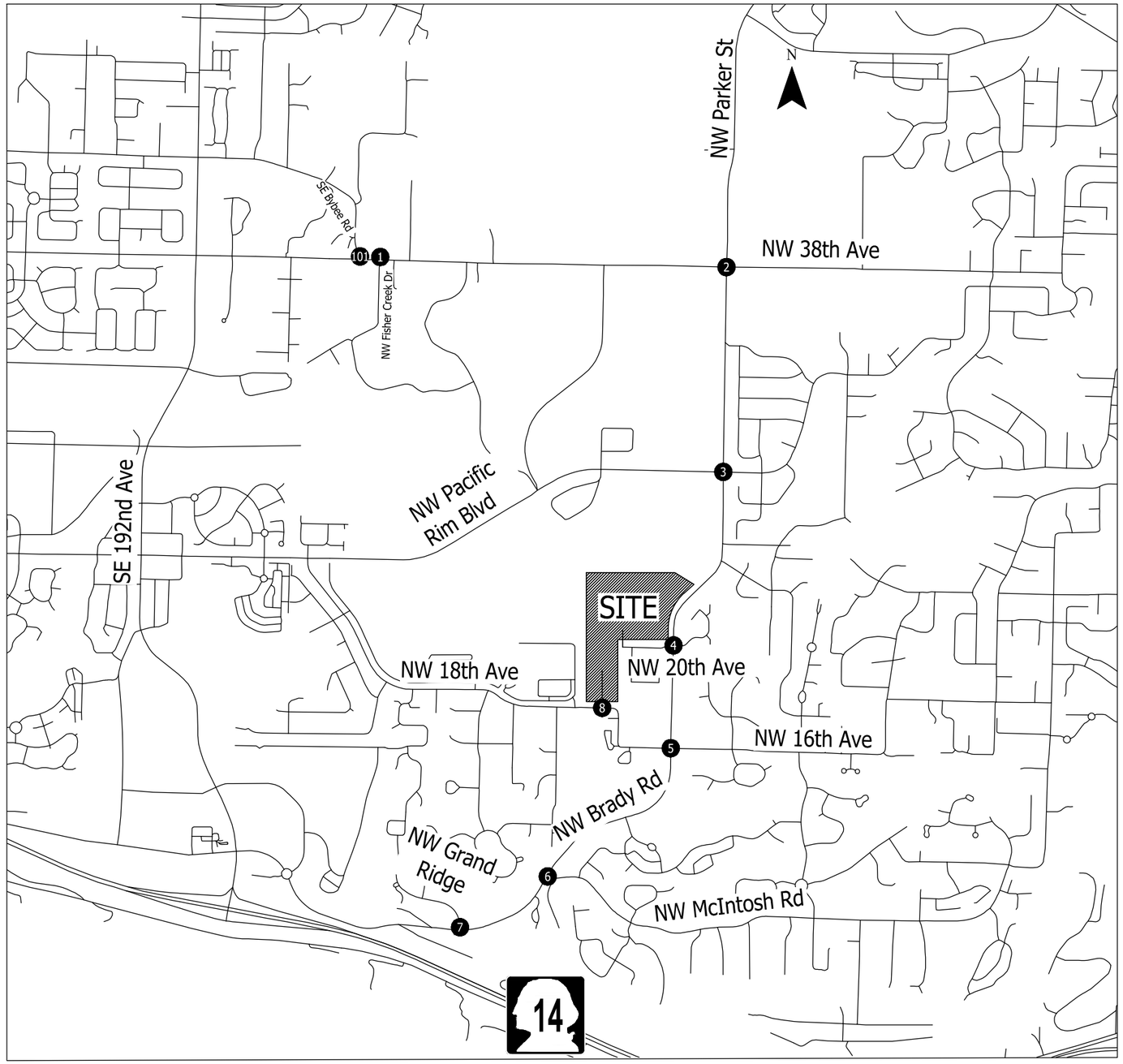
Table 1. Existing Transportation Facilities

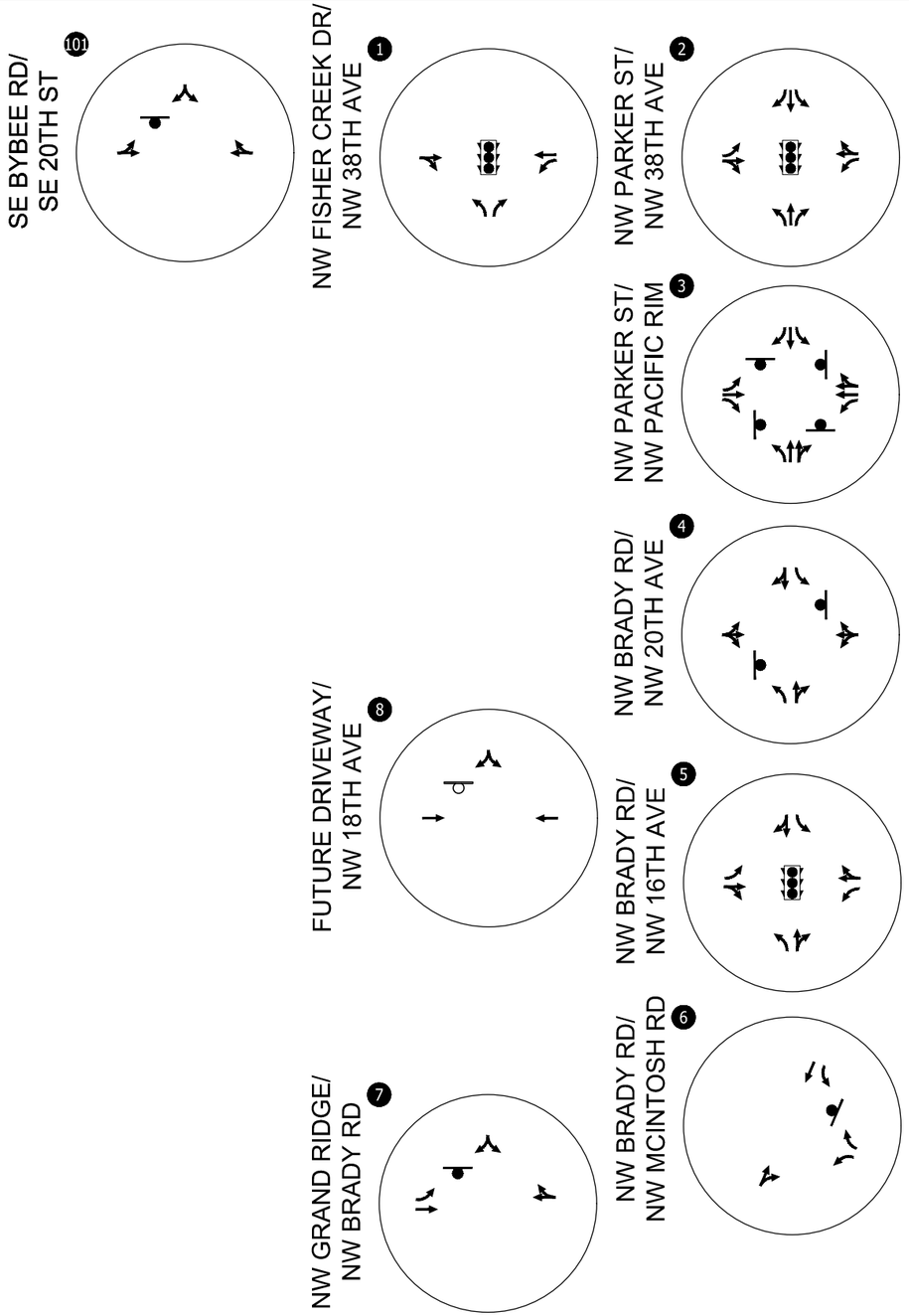
Street	Classification[1]	Cross-Section	Posted Speed	Sidewalks Present?	Bike Lanes Present?
NW 38th Avenue	Arterial	3-lane	40 mph	Yes	Yes
NW Parker Street	Arterial	4-lane	35 mph	Yes	Yes
NW Brady Road	Arterial	2-lane	35 mph	Partial	No
NW 16th Avenue (East of NW Brady Road)	Arterial	2-lane	25 mph	Yes	Yes
NW 18th Avenue	Collector	2-lane	25 mph	Partial	Partial
NW Pacific Rim Boulevard (West of NW Parker Street)	Arterial	5-lane	40 mph	Yes	No
NW Pacific Rim Boulevard (East of NW Parker Street)	Collector	2-lane	25 mph	Yes	No
NW McIntosh Road	Arterial	2-lane	30 mph	Yes	Partial
SE Bybee Road	Collector	2-lane	25 mph	No	No
NW Grand Ridge Drive	Local	2-lane	25 mph	Yes	No

[1] 2035 *City of Camas 2035 Comprehensive Plan (Transportation Element,* Reference 3*)*.

Facilities for Non-Motorized Users

As shown in Table 1, with the exception of some NW Brady Road and NW 18th Avenue segments (including the site frontage), sidewalks are generally present along roadways nearest the site and will connect people walking throughout the community. Bicycle lanes are absent along some arterial and collector roads as noted. The proposed development will provide a westbound bicycle lane and sidewalk along the site frontage on NW 18th Avenue and anticipates construction of sidewalks but no bike lanes along local streets on-site.





Stop Sign
Traffic Signal
Study Intersections
Future Stop Sign
Site area

Existing Lane Configurations
& Traffic Control Devices
Camas, Washington

Figure
3

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KITTELSON & ASSOCIATES

Transit Facilities

C-Tran provides transit service within the City of Camas. There are no fixed-route transit services currently operated in the site vicinity. The nearest fixed-route service provides north-south service along SE 192nd Avenue on the border of Vancouver and Camas and is located approximately 1½ miles west of the project site.

Given the lack of transit service within a convenient ½ mile walking distance today and for the foreseeable future, no transit-related trip reductions were assumed in this study and no transit-related mitigation measures are recommended as part of the proposed development.

TRAFFIC SAFETY

The Washington State Department of Transportation (WSDOT) provided crash records for the five-year period from January 1, 2020 to December 31, 2024. The data was reviewed to identify potential crash trends or safety needs at the study intersection. Table 2 summarizes the reported crash type, severity and calculated crash rate by intersection. *Appendix B contains the WSDOT crash data*.

Table 2. Intersection Crash Frequency and Severity (January 2020 through December 2024)

#	Intersection	Collision Type								Crash Severity			Total Number of Crashes	Crash Rate[2]
		Rear-end	Turning	Angle	Side Swipe	Backing	Fixed Object	Ped/Bike	Other	PDO[1]	Injury	Fatality		
1	NW Fisher Creek Drive/NW 38th Avenue	-	-	-	-	-	-	-	-	-	-	-	**0**	0.00
2	NW Parker Street/NW 38th Avenue	1	1	-	-	-	1	-	-	2	1	-	**3**	0.10
3	NW Parker Street/NW Pacific Rim Blvd.	-	-	4	1	-	-	-	-	3	2	-	**5**	0.26
4	NW Brady Road/NW 20th Avenue	-	-	-	-	-	-	-	-	-	-	-	**0**	0.00
5	NW Brady Road/NW 16th Avenue	-	1	1	-	-	-	-	-	2	-	-	**2**	0.10
6	NW Brady Road/NW McIntosh Road	-	-	-	-	-	1	-	-	1	-	-	**1**	0.07
7	NW Grand Ridge Drive/NW Brady Road	2	-	-	-	-	-	-	-	1	1	-	**2**	0.13
8	Future Street/NW 18th Avenue	-	-	-	-	-	-	-	-	-	-	-	**0**	0.00
101	SE Bybee Road/SE 20th Street	-	-	1	-	-	-	-	-	-	1	-	**1**	0.05

[1] Property Damage Only
[2] Crash rate is calculated as the number of crashes per million entering vehicles.

The sections that follow provide identification of crash types and/or factors contributing to the reported crashes.

Walking and Biking Related Crashes

As shown in Table 2, there were there were reported no pedestrian or biking related crashes at any of the intersections during the study period.

Crash Severity

There were no reported fatal crashes at the study intersections. None of the study intersections experienced a crash rate greater than 1.0 crashes per million entering vehicles (i.e., the metric used by the City to assess whether further analyses are warranted).

Of the five reported crashes at the NE Parker Street/NE Pacific Rim Boulevard intersection:

- The injury-related crashes occurred during daylight conditions and both involved collisions between southbound through movements and westbound through movements. The most severe injury for both instances was listed as "suspected minor injury".
- Four crashes involved vehicles entering at an angle of which three did not grant proper right of way at the all-way stop. The reported crashes all involved different movements and no pattern was apparent.

No crash trends requiring mitigation were identified at the study intersections through the crash data review.

Other Considerations

Field observations noted a crest vertical curve on NW Brady Road impacts the available sight distance for the northbound and southbound left turn movements at the NW Brady Road/NW 16th Avenue signalized intersection (refer to Photo 1). The intersection was observed to operate with protected and permissive left turn phasing for the northbound and southbound movements during a May 2025 site visit. While the crash data does not show a trend of left turning crashes on the northbound and southbound approaches, the City can choose to verify the appropriateness of a permissive left turn phase per WSDOT *Design Manual* Chapter 1330.07 guidance regardless of the proposed development.

Photo 1. Northbound left-turn Driver View on NW Brady Road at NW 16th Avenue

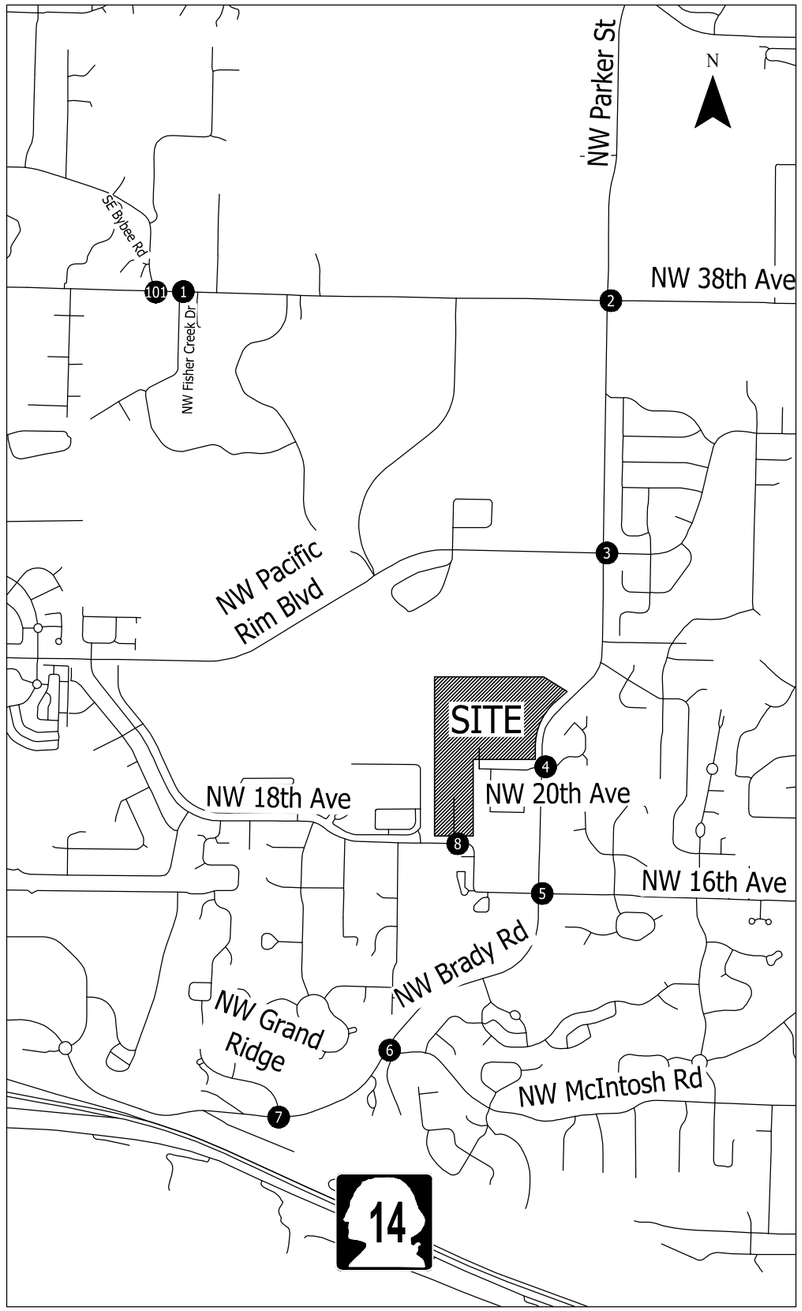


Kittelson & Associates, Inc. Image captured May 28, 2025

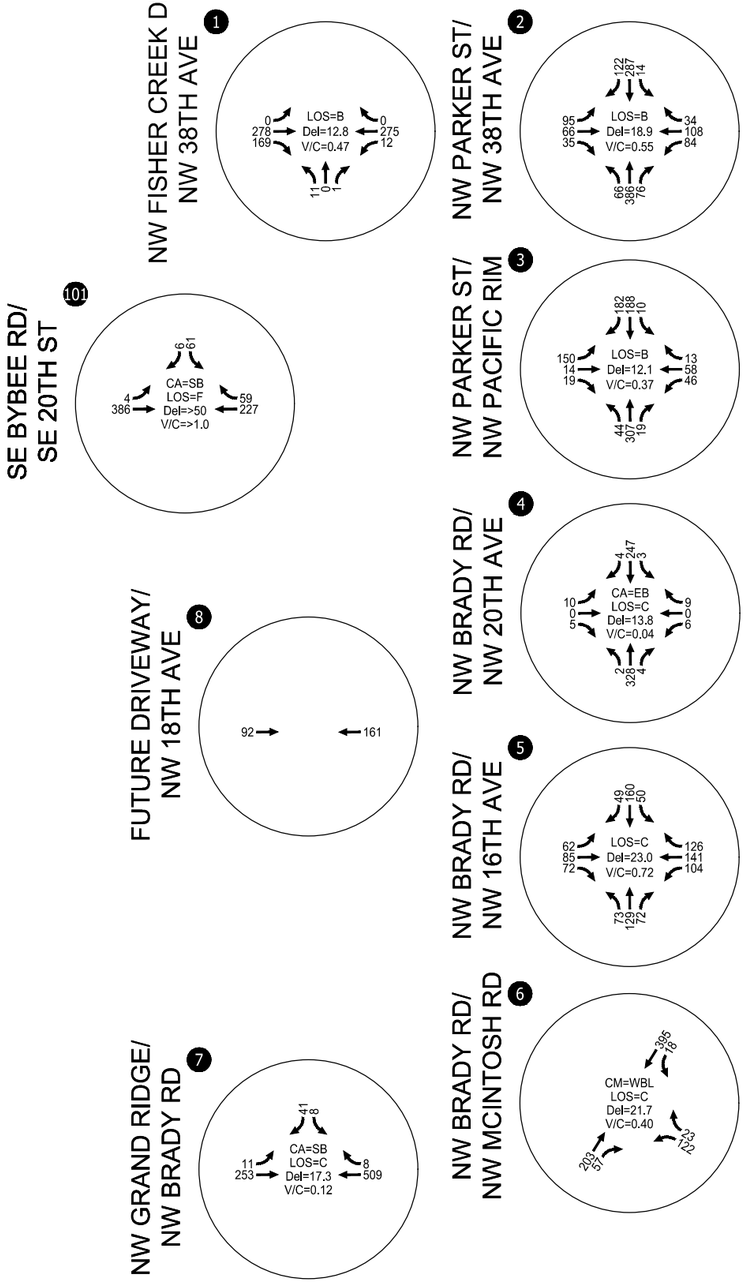
Traffic Volumes and Peak Hour Operations

Vehicle turning movement, pedestrian and bicycle counts were collected at the study intersections on a mid-week day in May 2025 during the morning (7:00 – 9:00 AM) and evening (4:00 - 6:00 PM) hours when local schools were in-session and there were no adverse weather conditions. *Appendix C contains the traffic count sheets used in this study*.

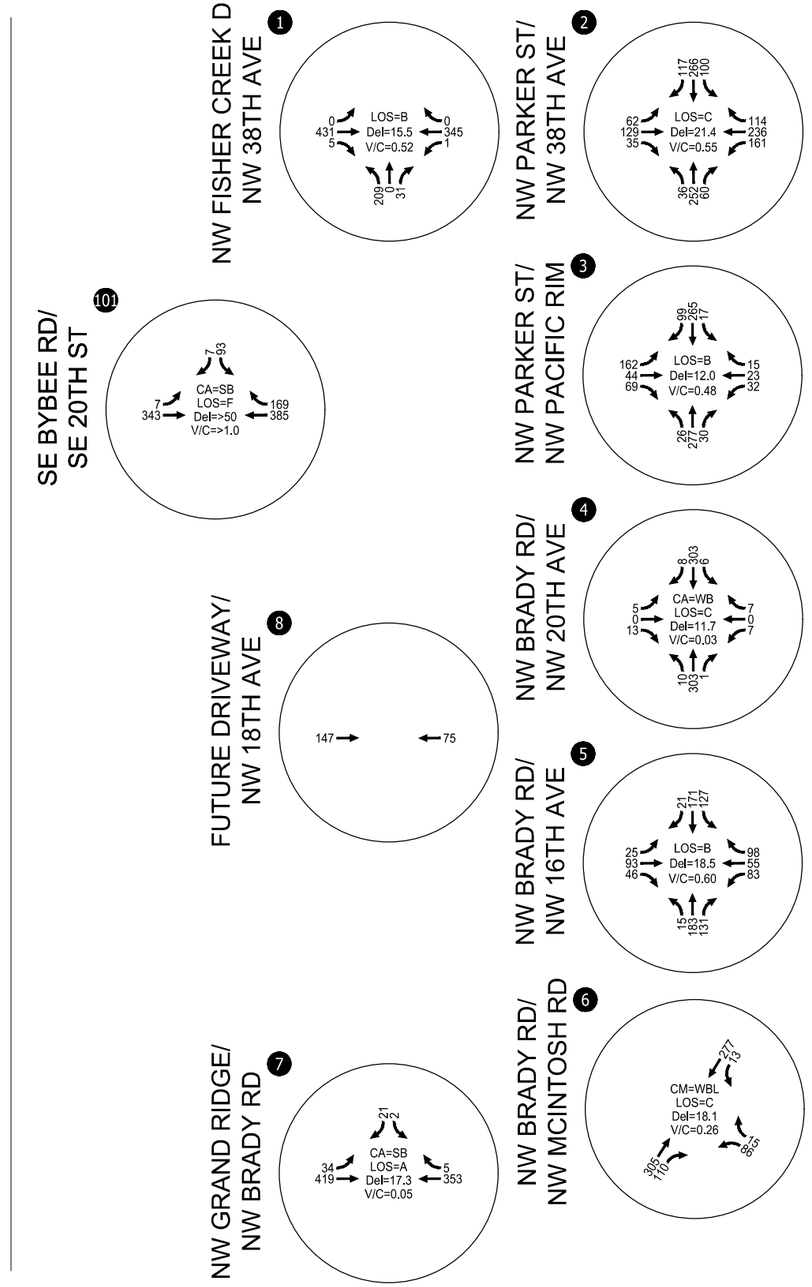
The weekday AM and PM peak hour traffic volumes and the associated intersection operations are shown in Figure 4. As shown, all study intersections except the stop controlled southbound approach to the SE Bybee Road/SE 20th Street intersection satisfy the City's applicable LOS D standard during AM and PM peak hour conditions. The existing lengthy peak hour delays on the southbound SE Bybee Road approach to SE 20th Street will be mitigated through realignment of SE Bybee Road to the signalized NW Fisher Creek Drive intersection as discussed in the future conditions section of this report. *Appendix D contains the existing conditions analysis worksheets.*



WEEKDAY AM PEAK HOUR



WEEKDAY PM PEAK HOUR



CM = INTERSECTION MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/ CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = INTERSECTION VOLUME-TO-CAPACITY RATIO (SIGNALIZED)/ CRITICAL MOVEMENT VOLUME-TO-CAPACITY RATIO (UNSIGNALIZED)

Existing 2025 Traffic Volumes and Intersection Operations
Weekday AM & PM Peak Hours
Camas, Washington

Figure 4

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2027 BACKGROUND TRAFFIC CONDITIONS

The year 2027 background traffic analysis identifies how the study intersections will operate prior to the construction and occupancy of the proposed homes. This analysis includes traffic attributed to planned developments within the study area but does not include traffic from the proposed homes.

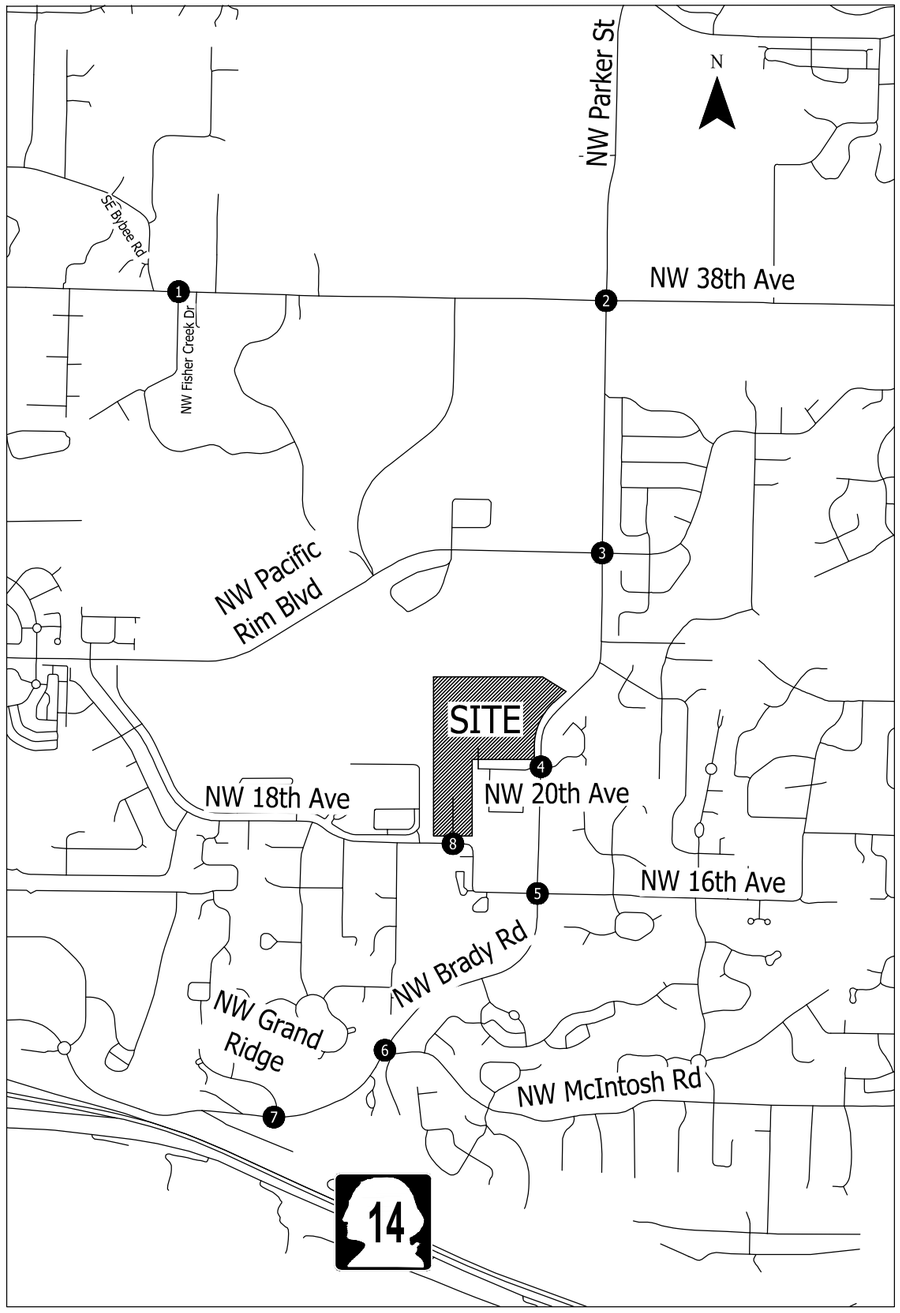
Planned Developments & Transportation Improvements

City staff identified the following previously approved developments to include in the traffic forecasts for the year 2027 (trip documentation is provided in *Appendix E*):

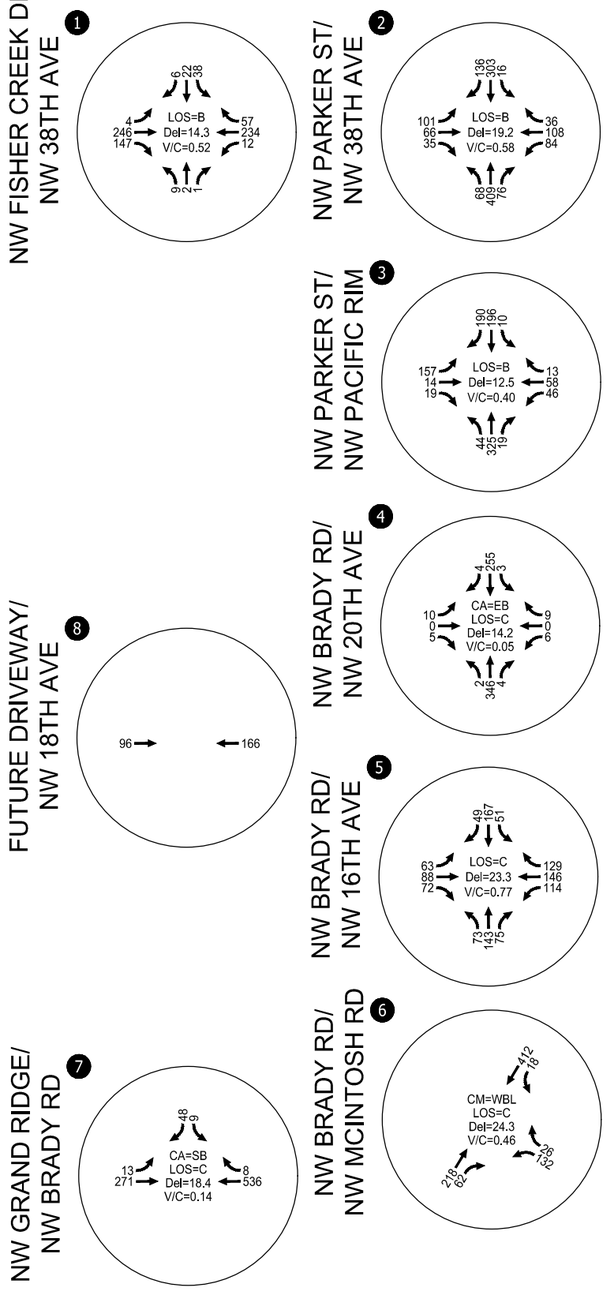
- Camas Woods and Camas Woods 2, located east of SR 500 between Everett Drive and NE 8th Street;
- McIntosh Subdivision, located south of NW McIntosh Road west of NW Fremont Street;
- 18th Ave Subdivision, located east of NW Hood Street/NW 16th Avenue and south of NW 18th Avenue west of NW Hancock Drive;
- Green Mountain Planned Residential Development (PRD), located east of NE Ingle Road north of NE 28th Street;
- Camas Meadows phase 3, located north of NW Lake Road southeast of NW Camas Meadows Drive and west of NW Lakespur Road;
- Hood Street Subdivision, located north of NW 16th Avenue and west of NW Hood Street and NW 18th Avenue;
- Firestone (Valley View Estates), located south of SE 40th Street east of SE Payne Road while connecting south to SE Grand Ridge Drive; and,
- Fresinus Kidney Care, located north of NW Lake Road and east of NW Lakespur Road.

The background conditions analysis assumes the realignment of SE Bybee Road to form the north approach of the signalized NW Fisher Creek Drive/NW 38th Street intersection. The realignment is being constructed in conjunction with a local development project and Clark County has programmed the future phasing and timing of the future north leg into the signal controller as of May 2025. Given the planned realignment, the projected 2027 vehicle turning movements at SE Bybee Road/SE 20th Avenue (Intersection #101) were reassigned to NW Fisher Creek Drive/NW 38th Street (intersection #1) as shown in Appendix E Figure E1.

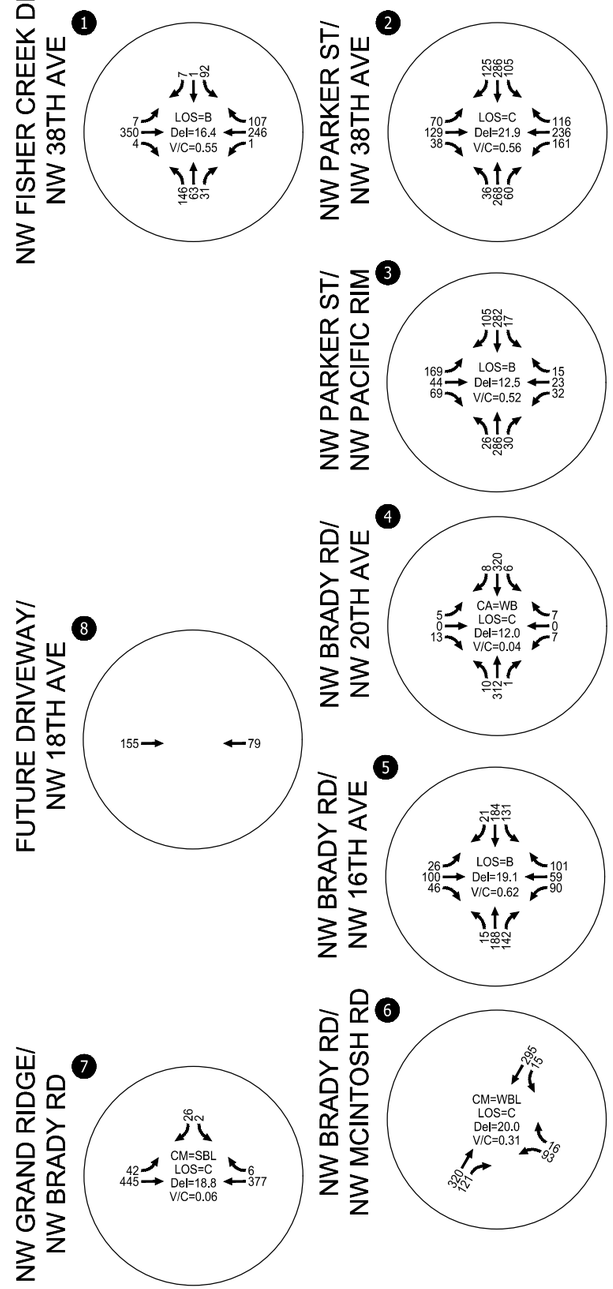
Figure 5 shows the projected background traffic volumes and corresponding intersection operations. All study intersections are forecast to continue to meet the City's LOS D requirement. *Appendix F contains the year 2027 background traffic analysis worksheets.*



WEEKDAY AM PEAK HOUR



WEEKDAY PM PEAK HOUR



CM = INTERSECTION MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/ CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = INTERSECTION VOLUME-TO-CAPACITY RATIO (SIGNALIZED)/ CRITICAL MOVEMENT VOLUME-TO-CAPACITY RATIO (UNSIGNALIZED)

Background 2027 Traffic Volumes and Intersection Operations
Weekday AM & PM Peak Hours
Camas, Washington

Figure 5

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PROPOSED DEVELOPMENT

The Applicant proposes to construct 158 detached single-family homes on the project site with buildout and occupancy anticipated by 2027. Vehicular site access for the homes will be via a new north-south street connection to NW 18th Avenue (NW Umatilla Street) and a new street extension of NW 20th Avenue to access NW Brady Road as shown in Figure 2.

Trip Generation Estimate

Table 3 summarizes the estimated site vehicle trips as calculated based on fitted equation trip rates contained in *the Trip Generation Manual, 11th Edition* (Reference 4).

Table 3. Estimated Site Trip Generation

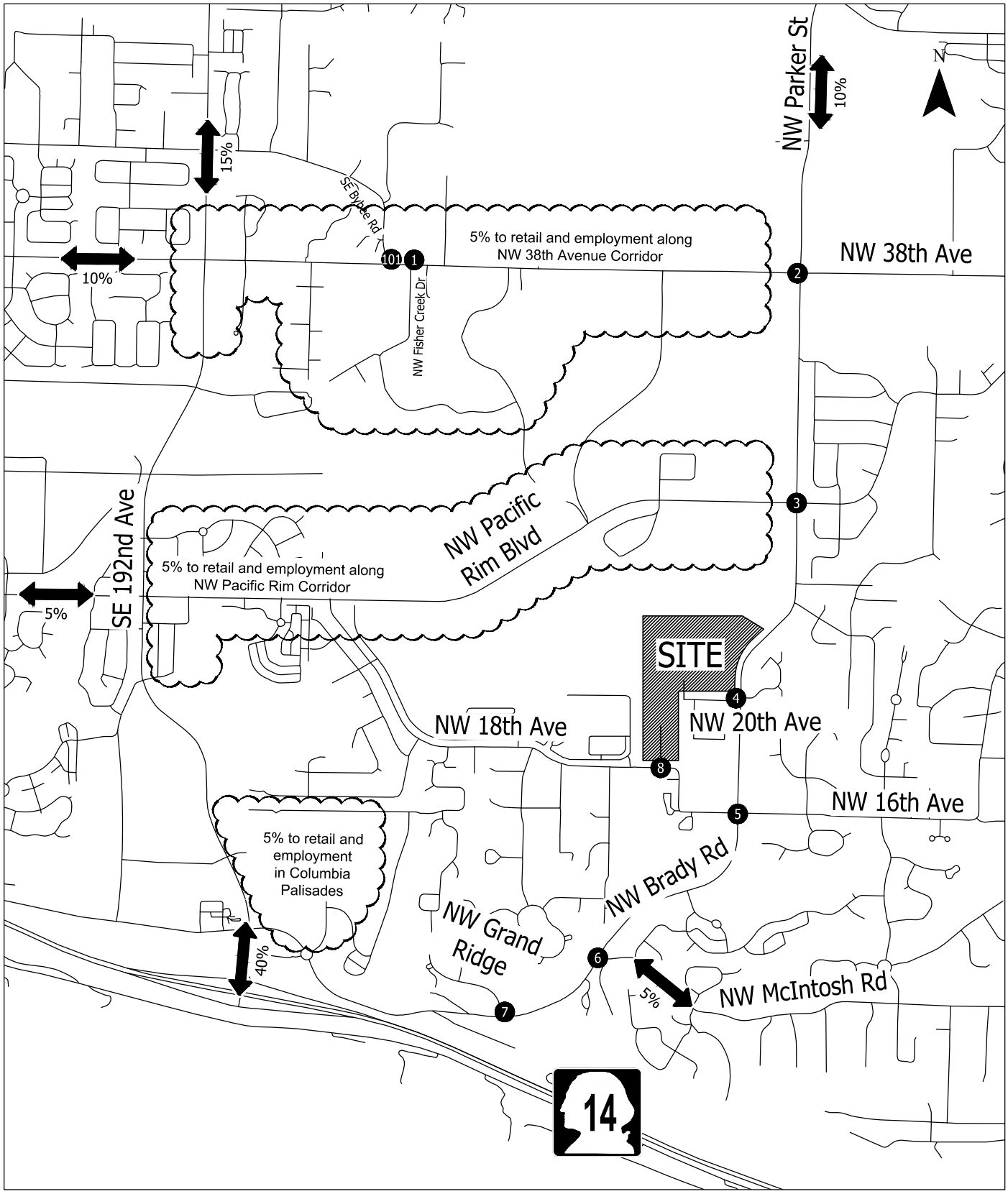
Land Use	ITE Code	Size (Units)	Daily Trips	Weekday AM Peak			Weekday PM Peak		
				Total	In	Out	Total	In	Out
Detached Single-Family Homes	210	158	1,537	113	28	85	153	96	57

Trip Distribution and Assignment

An estimated trip distribution pattern for the planned residential land uses was developed based on review of Southwest Washington Regional Transportation Council (RTC) modeling provided for Transportation Analysis Zone (TAZ) #1769 that encompasses the project site, local and regional employment areas, retail commercial areas, as well as consideration of the local roadway network[1].

Figure 6 shows the estimated trip distribution pattern and Figure 7 shows the resulting site-generated trip assignment for AM and PM peak hours.

[1] The RTC modeling data for TAZ #1769 is heavily weighted to land uses involving jobs and is not directly applicable to the proposed residential land use. Specifically, the RTC base model assumes 1 household and 664 jobs. As such, the model projects few trips north or east of the site and with 75% destined west along SE 34th Street to 192nd Avenue and the majority of those then traveling to SR 14.



Study Intersections

XX% Trip Distribution Percentage

Estimated Trip Distribution Pattern
Camas, Washington

Figure
6

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Site-Generated Trip Assignment
Weekday AM & PM Peak Hours
Camas, Washington

Figure
7

H:\31\31765 - 12107 NW 18th Ave\report\figs\31765_figureset.dwg Sep 05, 2025 - 11:49am - cdougherty Layout Tab: Fig7 Site Trip Assignments

2027 TOTAL TRAFFIC CONDITIONS

The total traffic conditions analysis forecasts how the study intersections will operate with the traffic associated with full occupancy of the proposed residential development. The site-generated trips shown in Figure 7 were added to the 2027 background traffic volumes reflected in Figure 5 to arrive at the 2027 total traffic volumes shown in Figure 8. Figure 8 also shows the resulting intersection operations under total traffic conditions. For ease of comparison, Table 4 and Table 5 summarize intersection operations for the AM and PM peak hour analysis periods, respectively. All of the study intersections were found to continue to satisfy the City's LOS performance standard.

Appendix G contains the year 2027 total traffic analysis worksheets.

WEEKDAY AM PEAK HOUR

WEEKDAY PM PEAK HOUR

CM = INTERSECTION MOVEMENT (UNSIGNALIZED)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/ CRITICAL MOVEMENT LEVEL OF SERVICE (UNSIGNALIZED)
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
V/C = INTERSECTION VOLUME-TO-CAPACITY RATIO (SIGNALIZED)/ CRITICAL MOVEMENT VOLUME-TO-CAPACITY RATIO (UNSIGNALIZED)

Total 2027 Traffic Volumes and Operations
Weekday AM & PM Peak Hours
Camas, Washington

Figure
8

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Table 4. Projected Weekday AM Peak Hour Study Intersection Operations Summary

ID	Study Intersection	Traffic Control	LOS Standard	Existing Conditions	2027 Background Traffic	2027 Total Traffic
1	NW Fisher Creek Drive/ NW 38th Avenue	Signalized	LOS D	LOS=B Del=12.8 V/C=0.47	LOS=B Del=14.3 V/C=0.52	LOS=B Del=14.4 V/C=0.53
2	NW Parker Street/ NW 38th Avenue	Signalized	LOS D	LOS=B Del=18.9 V/C=0.55	LOS=B Del=19.2 V/C=0.58	LOS=B Del=19.5 V/C=0.57
3	NW Parker Street/ NW Pacific Rim Boulevard	AWSC	LOS D	LOS=B Del=12.1 V/C=0.37	LOS=B Del=12.5 V/C=0.40	LOS=B Del=12.9 V/C=0.42
4	NW Brady Road/ NW 20th Avenue	TWSC	LOS D	CA=EB LOS=C Del=13.8 V/C=0.04	CA=EB LOS=C Del=14.2 V/C=0.05	CA=EB LOS=C Del=16.3 V/C=0.23
5	NW Brady Road/ NW 16th Avenue	Signalized	LOS D	LOS=C Del=23.0 V/C=0.72	LOS=C Del=23.3 V/C=0.77	LOS=C Del=24.3 V/C=0.88
6	NW Brady Road/ NW McIntosh Road	TWSC	LOS D	CM=WBL LOS=C Del=21.7 V/C=0.40	CM=WBL LOS=C Del=24.3 V/C=0.46	CM=WBL LOS=D Del=28.2 V/C=0.51
7	NW Grand Ridge Road/ NW Brady Road	TWSC	LOS D	CA=SB LOS=C Del=17.3 V/C=0.12	CA=SB LOS=C Del=18.4 V/C=0.14	CA=SB LOS=C Del=19.6 V/C=0.16
8	Future Street/ NW 18th Avenue	TWSC	LOS D	Future Intersection	Future Intersection	CA=SB LOS=B Del=10.6 V/C=0.02
101	SE Bybee Road/ SE 20th Street	TWSC	LOS D	CA=SB **LOS=F** Del > 50.0 V/C > 1.0	Closed/ Realigned	Closed/ Realigned

Where: TWSC = Two-way Stop Control, LOS = Level of Service, CA = Critical Approach, CM = Critical Movement, V/C = Volume-to-Capacity ratio, NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, R = Right-turn. **Bold indicates operating requirement is exceeded.**

Table 5. Projected Weekday PM Peak Hour Study Intersection Operations Summary

ID	Study Intersection	Traffic Control	LOS Standard	Existing Conditions	2027 Background Traffic	2027 Total Traffic
1	NW Fisher Creek Drive/ NW 38th Avenue	Signalized	LOS D	LOS=B Del=15.5 V/C=0.52	LOS=B Del=16.4 V/C=0.55	LOS=B Del=16.6 V/C=0.57
2	NW Parker Street/ NW 38th Avenue	Signalized	LOS D	LOS=C Del=21.4 V/C=0.55	LOS=C Del=21.9 V/C=0.56	LOS=C Del=22.5 V/C=0.56
3	NW Parker Street/ NW Pacific Rim Boulevard	AWSC	LOS D	LOS=B Del=12.0 V/C=0.48	LOS=B Del=12.5 V/C=0.52	LOS=B Del=13.5 V/C=0.60
4	NW Brady Road/ NW 20th Avenue	TWSC	LOS D	CA=WB LOS=C Del=11.7 V/C=0.03	CA=WB LOS=C Del=12.0 V/C=0.04	CA=EB LOS=C Del=16.0 V/C=0.17
5	NW Brady Road/ NW 16th Avenue	Signalized	LOS D	LOS=B Del=18.5 V/C=0.60	LOS=B Del=19.1 V/C=0.62	LOS=B Del=19.7 V/C=0.65
6	NW Brady Road/ NW McIntosh Road	TWSC	LOS D	CM=WBL LOS=C Del=18.1 V/C=0.26	CM=WBL LOS=C Del=20.0 V/C=0.31	CM=WBL LOS=C Del=22.8 V/C=0.35
7	NW Grand Ridge Road/ NW Brady Road	TWSC	LOS D	CA=SB LOS=C Del=17.3 V/C=0.05	CA=SB LOS=C Del=18.8 V/C=0.06	CA=SB LOS=C Del=20.3 V/C=0.06
8	Future Street/ NW 18th Avenue	TWSC	LOS D	Future Intersection	Future Intersection	CA=SB LOS=B Del=10.1 V/C=0.01
101	SE Bybee Road/ SE 20th Street	TWSC	LOS D	CA=SB **LOS=F** Del > 50.0 V/C > 1.0	Closed/ Realigned	Closed/ Realigned

Where: TWSC = Two-way Stop Control, LOS = Level of Service, CA = Critical Approach, CM = Critical Movement, V/C = Volume-to-Capacity ratio, NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, R = Right-turn. **Bold indicates operating requirement is exceeded.**

Traffic Control Considerations

We recommend the proposed development post a STOP (R1-1) sign on the southbound Street A approach to NW 18th Avenue in conjunction with site development in accordance with applicable City of Camas standards and the *Manual on Uniform Traffic Control Devices* (MUTCD). Other on-site stop signs may be installed as appropriate per City of Camas direction.

CITY OF VANCOUVER PROPORTIONATE SHARE CONTRIBUTIONS

The City of Vancouver collects proportionate share fee contributions from all future developments that add one or more site-generated trips to an adopted list of intersections that require mitigation. Table 6 provides a summary of the current proportional share fee intersections, the mitigation cost per trip, the estimated number of site-generated trips added based on the current site plan by land use type as well as the corresponding mitigation fee anticipated. We anticipate the final fee amount due will be determined at the time of site plan application and payment will be paid prior to building permit issuance.

Table 6. City of Vancouver Proportionate Share Fee Summary

Mitigation Location	Mitigation Cost/Peak Hour Trip	Peak Hour Trips Added	Estimated Mitigation Cost
137th Ave: 49th St to Fourth Plain Blvd	$3,000/PM	0	$0
Fourth Plain Blvd & 152nd Ave Signal	$333/PM	0	$0
Lieser/St. Helens/MacArthur	$2,000/PM	0	$0
176th Ave & SE 20th St	$400/PM	15	$6,000
192nd Avenue & NE 13th Street	$400/PM	6	$2,400
192nd Ave & SE 34th St	$150/PM	6	$900
192nd Ave & SR-14 ramps	$2,000/PM	59	$118,000
MacArthur & Andresen Roundabout	$2,285/PM	0	$0
MacArthur & Devine Roundabout	$2,226/PM	0	$0
Grove St/Columbia House Blvd/SR-14 WB Ramp	$600/AM	0	$0
NE 172nd Avenue & NE 18th Street	$300/PM	3	$900
NE 179th Place & NE 18th Street	$900/PM	4	$3,600
NE 187th Avenue & NE 18th Street	$1,200/PM	5	$6,000
NE 162nd Avenue & NE 9th Street	$1,500/PM	0	$0
NE 172nd Avenue & NE 9th Street	$4,100/PM	0	$0
NE 192nd Avenue & NE 9th Street	$1,100/PM	0	$0
NE 187th Avenue & SE 1st Street	$1,100/PM	0	$0
Total Proportional Share Cost			$137,800

SUMMARY FINDINGS & RECOMMENDATIONS

Based on the transportation impact analysis results, the proposed Strella Ridge residential homes can be developed while maintaining acceptable operations at the study.

Findings & Recommendations

- All study intersections experience performance levels that satisfy the applicable operating parameters today and in 2027 assuming full occupancy of the homes.
- The proposed site development is projected to add weekday PM peak hour trips to the following intersections where the City of Vancouver assesses proportional share mitigation payments:
  - SE 176th Avenue/SE 20th Street: 15 trips
  - NE 192nd Avenue/NE 13th Street: 6 trips
  - SE 192nd Avenue/SE 34th Street: 6 trips
  - SE 192nd Avenue/SR-14 Ramps: 59 trips
  - NE 172nd Avenue/NE 18th Street: 3 trips
  - NE 179th Place/NE 18th Street: 4 trips
  - NE 187th Avenue/NE 18th Street: 5 trips

Recommendations

Based on the traffic operations analysis findings, we recommend the following in conjunction with the proposed site development.

- Post a STOP (R1-1) sign on the Street A southbound approach to NW 18th Avenue in accordance with applicable City of Camas standards and the *Manual on Uniform Traffic Control Devices* (MUTCD). Other on-site stop signs may be installed as appropriate per City of Camas direction.
- Locate and maintain site landscaping, above-ground utilities, and site signage at all local street intersections within and adjacent to the site to provide adequate intersection sight distance per applicable City requirements.
- Subject to City of Vancouver concurrence, pay the following proportional share intersection fees as identified per City of Vancouver requirements:
  - $6,000 towards SE 176th Avenue/SE 20th St mitigation
  - $2,400 towards NE 192nd Avenue/NE 13th Street mitigation
  - $900 towards SE 192nd Avenue/SE 34th Street mitigation
  - $118,000 towards SE 192nd Avenue/SR-14 ramps mitigation
  - $900 towards NE 172nd Avenue/NE 18th Street mitigation
  - $3,600 towards NE 179th Place/NE 18th Street mitigation
  - $6,000 towards NE 187th Avenue/NE 18th Street mitigation

REFERENCES

1. City of Camas. *Transportation Impact Study Guidelines*. June 10, 2019.

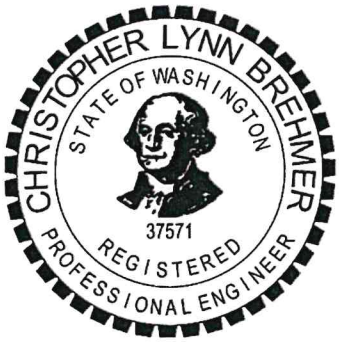
2. Transportation Research Board. *Highway Capacity Manual, 7th Edition*. 2022.

3. City of Camas. Camas 2035. https://www.cityofcamas.us/sites/default/files/fileattachments/community_development/page/5971/comprehensive_plan_camas_2035.pdf

4. Institute of Transportation Engineers. *Trip Generation Manual, 11th Edition*. September 2021.

LIST OF APPENDICES

A. Traffic Study Scoping Documentation
B. Traffic Count Data
C. WSDOT Crash Data
D. Existing Conditions Analysis Worksheets
E. In-Process Data
F. Year 2027 Background Traffic Conditions Analysis Worksheets
G. Year 2027 Total Traffic Conditions Analysis Worksheets



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Appendix A: Traffic Study Scoping Documentation

KITTELSON & ASSOCIATES
851 SW 6th Avenue, Suite 600
Portland, OR 97204
P 503.228.5230

SCOPING MEMORANDUM

May 7, 2025 Project# 31765

To: James E Carothers, PE & Anita Ashton
City of Camas Community Development Engineering

From: Chris Brehmer, PE & Julia Kuhn, PE

CC: John Meier, PE, AKS Engineering & Forestry, LLC
Joe Deaser, Allied Development

RE: NW 18th Avenue Residential Transportation Impact Study Scoping Request (PA 25-1049)

This memorandum documents project assumptions and a proposed analysis methodology associated with transportation impact study (TIS) preparation for the proposed NW 18th Avenue residential development in Camas. Details of the TIS assumptions and methodology are documented herein based on preliminary pre-application conference feedback as well as guidance in the City of Camas *Transportation Impact Study Guidelines*.

We request that you please review this material and provide us with your comments, suggestions and any questions. We will proceed with the TIS analysis pending City scoping confirmation.

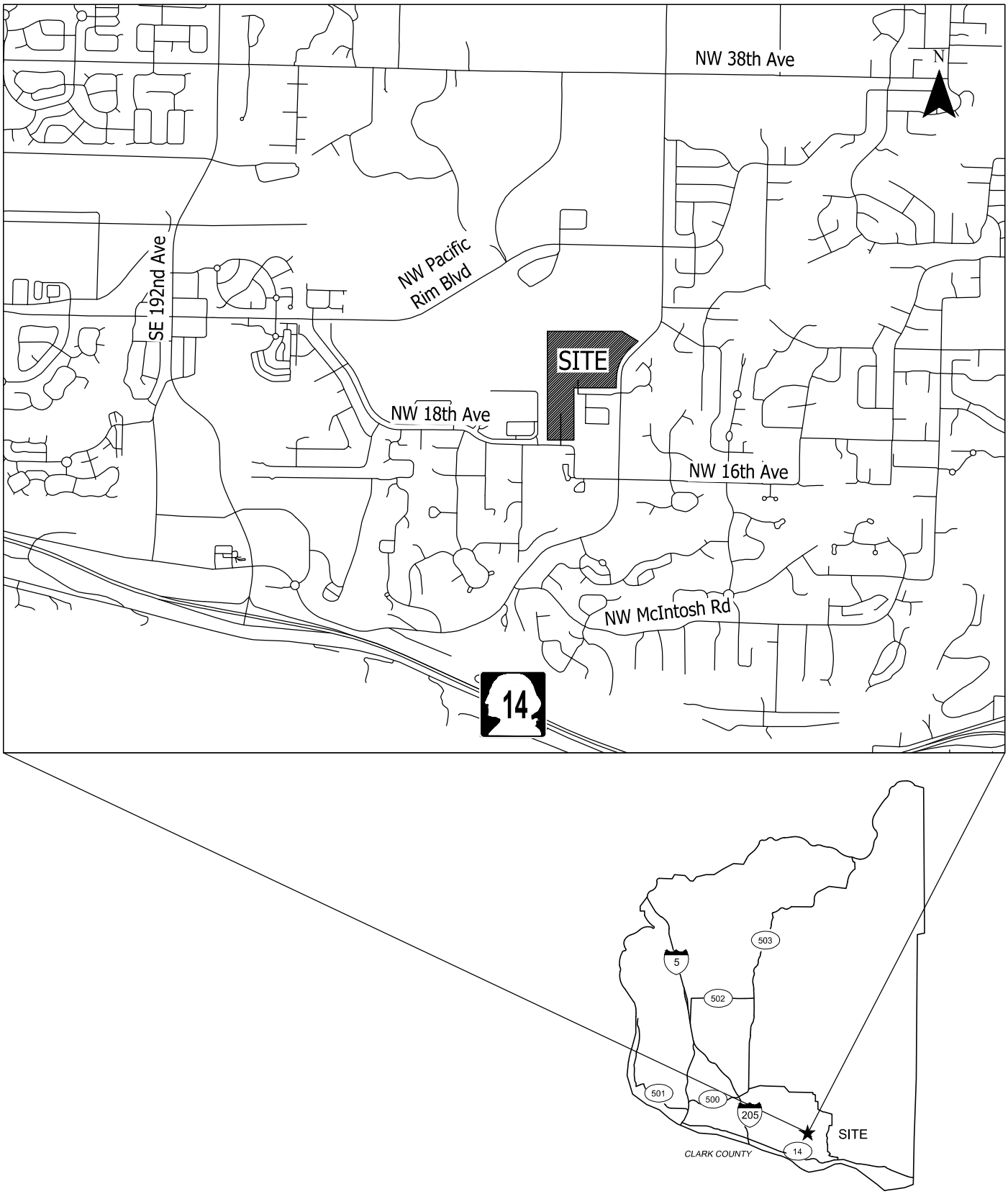
PROPOSED PROJECT

Allied Development proposes to develop 151 single family detached homes on property located on the west side of NW Brady Road generally north of NW 18th Avenue[1]. Vehicular site access is proposed via a new north-south street connection to NW 18th Avenue (NW Umatilla Street) and a new street extension connection to NW 20th Avenue (NW 21st Avenue). Construction is expected to begin in 2026 with full buildout anticipated by 2027.

Figure 1 shows a site vicinity map and Figure 2 shows the preliminary site plan. The project site and property north of the site are both vacant today. Residential homes are generally located to the east and south, including Parker Village, which is an existing gated residential community located on the south side of NW 20th Avenue with a single vehicular local street connection (NW Sage Street) to NW 20th Avenue. A City of Camas water facility is located north of NW 18th Avenue generally between the proposed development site and Parker Village.

The NLight, Inc. Global Headquarters borders the project site directly to the west. Discovery High School and Odyssey Middle School are located off-site further to the west of the project site along the north side of NW 18th Avenue while Prune Hill Elementary school is located to the south and can be accessed via the intersection of NW Tidland Street and NW 16th Avenue.

[1] Parcel Numbers: 125193000, 986055381, and 125185000



Site Vicinity Map
Camas, Washington

Figure
1

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AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE., STE. 2520
VANCOUVER, WA 98682
360.882.0419
WWW.AKS-ENG.COM

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

SCALE: 1"=60 FEET

60 0 12 30 60

Know what's **below.** **Call** before you dig.

PROPOSED LAYOUT
NW 18TH AVENUE
JOE DEASER
CAMAS WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	
DESIGNED BY:	MAZ
DRAWN BY:	MAZ
CHECKED BY:	MAJ

PA002

AKS DRAWING FILE: 12107PA002.DWG | LAYOUT: PA002

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RECEIVED FROM AKS ENGINEERING AND FORESTRY, LLC: (APRIL 18, 2024)

Preliminary Site Plan
Camas, Washington

Figure
2

Exhibit 7 SUB25-1009

ESTIMATED TRIP GENERATION

Weekday daily, AM, and PM peak hour vehicle trips for the proposed homes were estimated using data from the *Trip Generation Manual, 11th Edition*, published by the Institute of Transportation Engineers (ITE), as summarized in Table 1 below. The residential trip estimates shown in Table 1 reflect fitted equation trip rates.

Table 1. Estimated Site Trip Generation

Land Use	ITE Code	Size (units)	Daily Trips	Weekday AM Peak			Weekday PM Peak		
				Total	In	Out	Total	In	Out
Detached Single-Family Homes	210	151	1,474	108	27	81	146	92	54

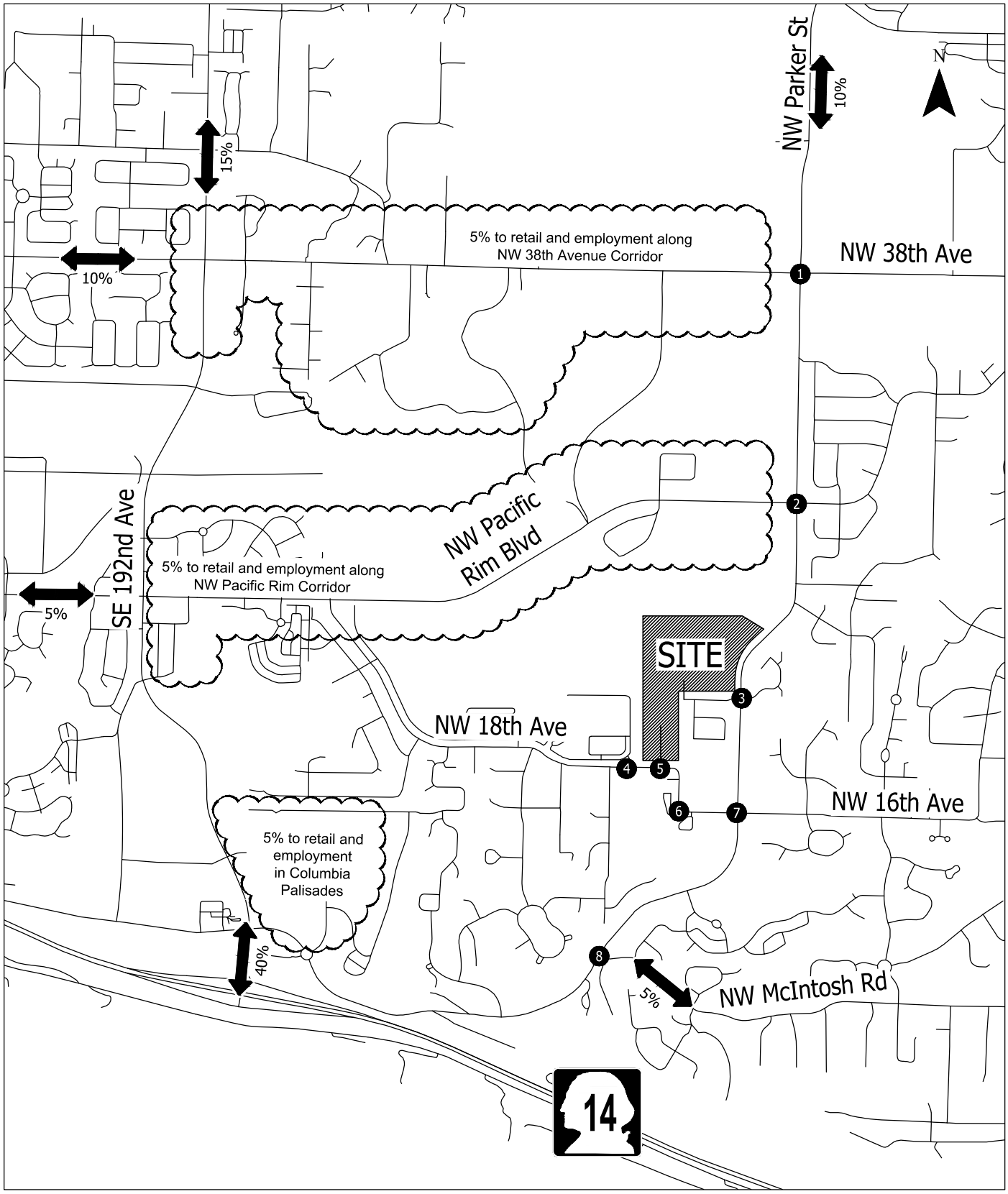
According to the City of Camas' *Transportation Impact Study Guidelines*, a TIS is required when a proposed development generates 200 or more daily vehicle trips. As Table 1 shows, this threshold has been met for this project, triggering a TIS.

ESTIMATED TRIP DISTRIBUTION PATTERN

An estimated trip distribution pattern for the planned residential land uses was developed based on review of Southwest Washington Regional Transportation Council (RTC) modeling provided for Transportation Analysis Zone (TAZ) #1769 that encompasses the project site, local and regional employment areas, retail commercial areas, as well as consideration of the local roadway network[2].

Figures 3 and 4 illustrate the estimated trip distribution pattern and corresponding new site-generated trip assignment to potential study intersections during the weekday AM and PM peak hours based on the trip estimates in Table 1.

[2] The RTC modeling data for TAZ #1769 is heavily weighted to land uses involving jobs and is not directly applicable to the proposed residential land use. Specifically, the RTC base model assumes 1 household and 664 jobs. As such, the model projects few trips north or east of the site and with 75% destined west along SE 34th Street to 192nd Avenue and the majority of those then traveling to SR 14.



Study Intersections

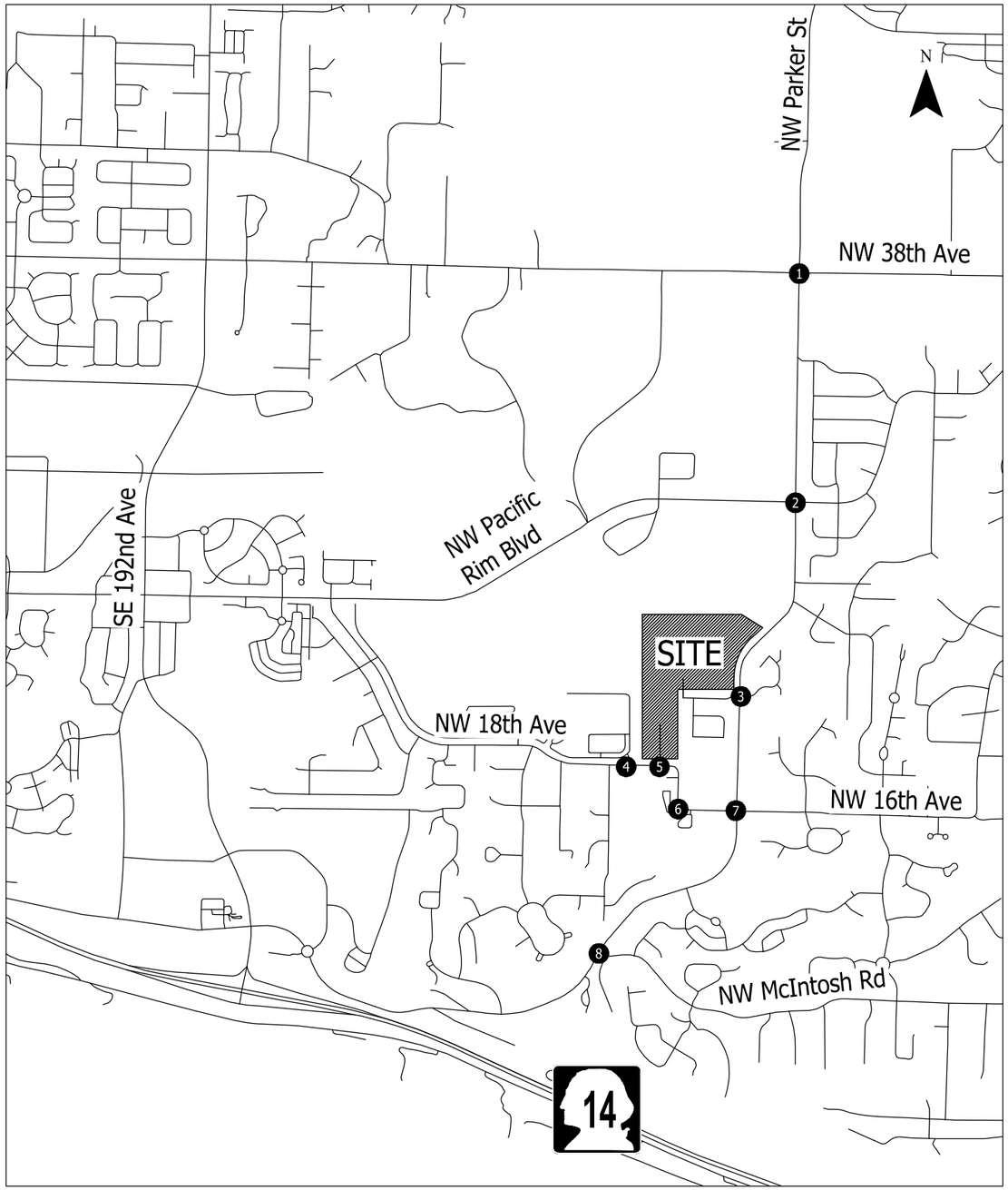
A Site Driveway

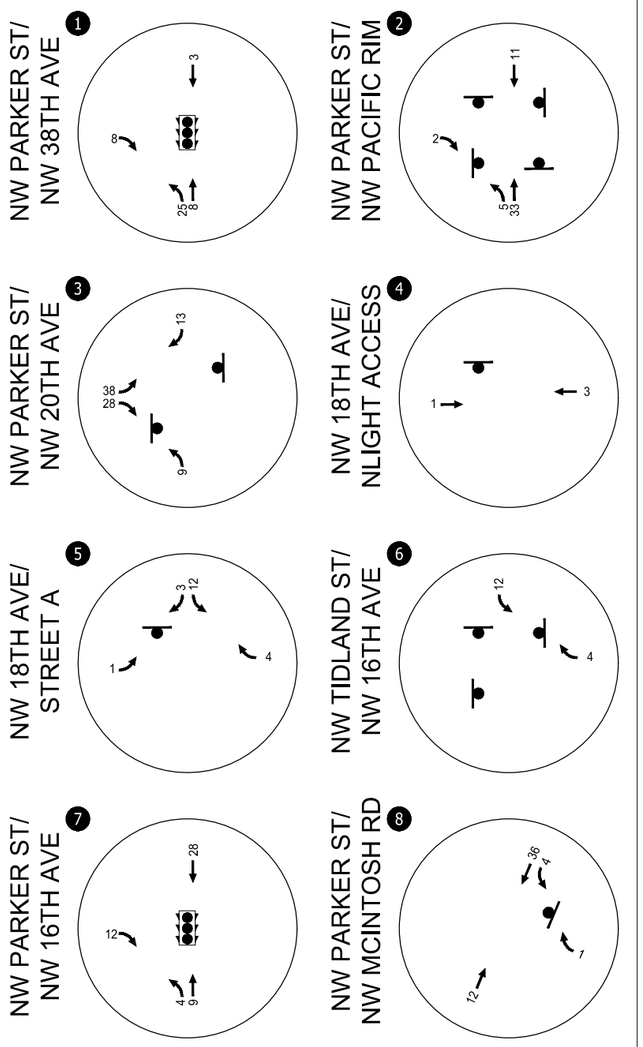
XX% Trip Distribution Percentage

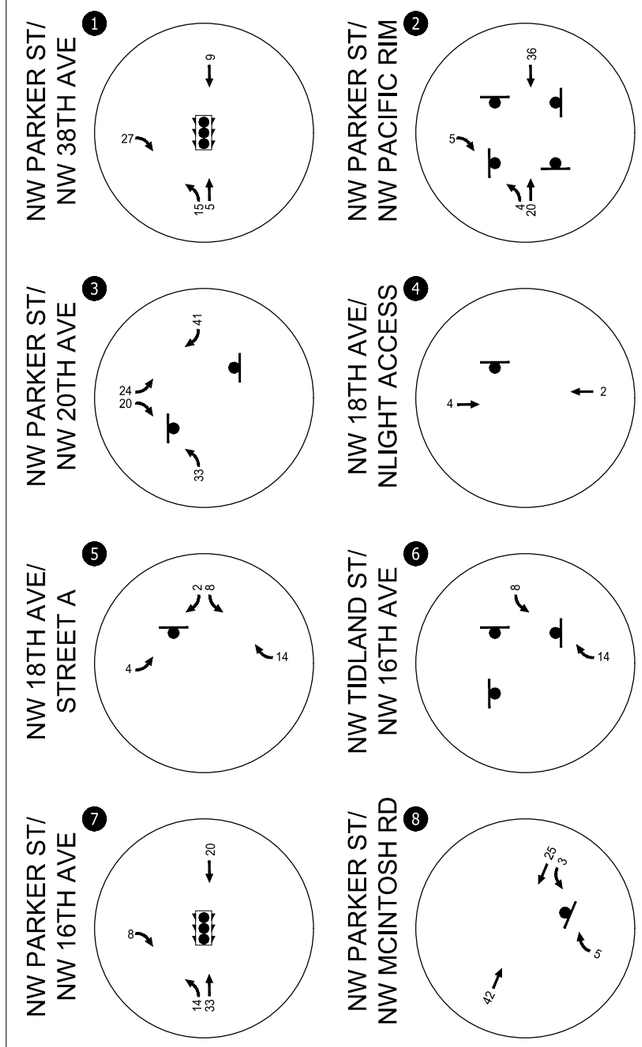
Study Intersections and Trip Distribution Pattern Camas, Washington

Figure 3

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Stop Sign

Traffic Signal

Study Intersections

Site-Generated Trip Assignment
Weekday AM & PM Peak Hours
Camas, Washington

Figure
4

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Exhibit 7 SUB25-1009

PROPOSED STUDY INTERSECTIONS

The City of Camas requires City intersections to be included in a TIS if 20 or more peak hour trips are added from the development. Based on the 20-trip threshold, the preliminary trip distribution pattern and the trip assignments outlined above, the intersections listed in Table 2 have been identified for potential inclusion in the TIS. We request City staff review and confirm the TSI study intersections.

Table 2. Potential Study Intersections

ID	Potential Study Intersection	Traffic Control	City Facility Designation
1	NW 38th Avenue/NW Parker Street	Traffic Signal	Arterial
2	NW Pacific Rim Blvd./NW Parker Street	All Way Stop	Arterial
3	NW 20th Avenue/NW Brady Road	Two Way Stop	Arterial
4	NW 18th Avenue/NLight Inc. Access*	Two Way Stop	Collector
5	NW 18th Avenue/Future Street	Two Way Stop	Collector
6	NW Tidland Street/NW 16th Avenue	All Way Stop	Collector
7	NW 16th Avenue/NW Brady Road	Traffic Signal	Arterial
8	NW McIntosh Road/NW Brady Road	Two Way Stop	Arterial

*Potential study intersection based on proximity, not impacted by more than 20 peak hour trips. City staff direction requested as to whether to include.

City of Vancouver Proportional Share Intersections

In addition to the above list of Camas study intersections, we will track site-generated trips through impacted City of Vancouver proportional share intersections and summarize those findings in tabular form as part of the final report.

ANALYSIS METHODOLOGY

All study intersection operations analysis will be completed using Vistro software and the *Highway Capacity Manual, 7th Edition* methodologies.

MOBILITY STANDARDS

Camas uses level of service (LOS) for traffic operations. Minor and local streets must meet LOS C standards, and collector and arterial streets must meet LOS D standards. All of the proposed study intersections listed in Table 2 appear subject to the LOS D requirement.

If site traffic contributes to traffic operations that exceed the LOS D standard, then the TIS recommendations need to include mitigations or roadways improvements.

STUDY TIME PERIODS

We propose to analyze the one-hour peak within the weekday morning (7-9 AM) and weekday PM (4-6 PM) commuter peak periods. The following analysis scenarios will be analyzed assuming project buildout by the year 2029:

- Year 2025 existing traffic conditions – weekday AM and weekday PM peak hours.
- Year 2027 background traffic conditions (including background growth and identified in-process developments, but not including any site-generated traffic volumes related to the proposed development) – weekday AM and weekday PM peak hours.
- Year 2027 total traffic conditions (including site-generated traffic volumes to the proposed development) – weekday AM and weekday PM peak hours.

2027 TRAFFIC VOLUMES & IN-PROCESS DEVELOPMENTS

Based on previous development projects in Camas, we propose to add in-process development trips to the 2025 existing conditions traffic counts to develop future year 2027 traffic volumes. The following are known in-process developments for which site trips for each will be included at all impacted study intersections as background vehicular trips:

- Firestone Ridge (formerly Valley View Estates);
- Camas Woods; and,
- Camas Woods 2.

We ask that City staff please identify and provide relevant in-process developments to be included in the background traffic conditions analysis.

We also request information on any funded transportation improvement projects that should be assumed to be in place at the study intersections for the background traffic conditions analysis.

NEXT STEPS

We look forward to City staff comments regarding the proposed study intersections, intersection analysis periods, trip generation and trip distribution assumptions, etc.

Please contact us if you have any questions as you review this material.

Appendix B: WSDOT Crash Data

KAI Int #	KAI Int Name	JURISDICTION	COUNTY	CITY	PRIMARY TRAFFICWAY	BLOCK NUMBER	INTERSECTING TRAFFICWAY	DIST FROM REF POINT	MI or FT	COMP DIR FROM REF POINT
2	NW Parker St/NW 38th Ave	City Street	Clark	Camas	NW 38TH AVE		NW PARKER ST			
2	NW Parker St/NW 38th Ave	City Street	Clark	Camas	NW 38TH AVE		NW PARKER ST			
2	NW Parker St/NW 38th Ave	City Street	Clark	Camas	NW PARKER ST	4301	NW 38TH AVE			
3	NW Parker St/ NW Pacific Rim	City Street	Clark	Camas	NW PACIFIC RIM BLVD	4000	NW PARKER ST			
3	NW Parker St/ NW Pacific Rim	City Street	Clark	Camas	NW PARKER ST	2665	NW PACIFIC RIM BLVD			
3	NW Parker St/ NW Pacific Rim	City Street	Clark	Camas	NW PARKER ST	2665	NW PACIFIC RIM BLVD			
3	NW Parker St/ NW Pacific Rim	City Street	Clark	Camas	NW PARKER ST	2800	NW PACIFIC RIM DR			
3	NW Parker St/ NW Pacific Rim	City Street	Clark	Camas	NW PARKER ST		NW PACIFIC RIM DR			
5	NW Brady Rd/NW 16th Ave	City Street	Clark	Camas	NW 16TH AVE	0	NW BRADY RD			
5	NW Brady Rd/NW 16th Ave	City Street	Clark	Camas	NW BRADY RD	0	NW 16TH AVE			
6	NW Brady Rd/NW McIntosh R	City Street	Clark	Camas	NW BRADY RD	20820	NW MCINTOSH RD			
7	NW Grand Ridge Dr/ NW Brad	City Street	Clark	Camas	SE BRADY RD	20300	SE GRAND RIDGE DR			
7	NW Grand Ridge Dr/ NW Brad	City Street	Clark	Camas	SE BRADY RD	20300		129	F	W
101	SE Bybee Rd/SE 20th St	City Street	Clark	Camas	SE 20TH ST	19782	SE BYBEE RD			

REFERENCE POINT NAME	MILEPOST	A/B	SR ONLY ACCUMULATIVE ROUTE MILEPOST (ARM)	SR ONLY HISTORY / SUSPENSE IND	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	# INJ	# FAT	# VEH	# PEDS	# BIKES
				No	EE50958	02/15/2024	18:38	No Apparent Injury	0	0	3	0	0
				No	ED21294	12/31/2022	14:54	Possible Injury	2	0	2	0	0
				No	ED25221	01/15/2023	23:27	No Apparent Injury	0	0	1	0	0
				No	EB83957	10/29/2021	13:01	Suspected Minor Injury	2	0	2	0	0
				No	EA90008	12/15/2020	15:00	No Apparent Injury	0	0	2	0	0
				No	EF43043	11/27/2024	16:37	No Apparent Injury	0	0	2	0	0
				No	ED69489	06/10/2023	15:01	No Apparent Injury	0	0	2	0	0
				No	EE69287	04/14/2024	10:06	Suspected Minor Injury	2	0	2	0	0
				No	EA22449	03/10/2020	17:55	No Apparent Injury	0	0	2	0	0
				No	EA17171	02/21/2020	14:20	No Apparent Injury	0	0	2	0	0
				No	EE09430	10/14/2023	10:39	No Apparent Injury	0	0	1	0	0
				No	EC81583	09/07/2022	14:58	Possible Injury	1	0	2	0	0
SE GRAND RIDGE DR				No	EA13950	02/11/2020	14:40	No Apparent Injury	0	0	2	0	0
				No	EF36499	11/15/2024	10:58	Possible Injury	2	0	2	0	0

VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP
Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related
Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related
Pickup,Panel Truck or Vanette under 10,000 lb		At Intersection and Related
Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related
Not Stated	Passenger Car	At Intersection and Related
Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related
Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related
Pickup,Panel Truck or Vanette under 10,000 lb	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related
Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related
Passenger Car	Passenger Car	At Intersection and Related
Passenger Car		At Intersection and Related
Passenger Car	Pickup,Panel Truck or Vanette under 10,000 lb	At Intersection and Related
Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	Intersection Related but Not at Intersection
Pickup,Panel Truck or Vanette under 10,000 lb	Passenger Car	At Intersection and Related

WEATHER	ROADWAY SURFACE CONDITION	LIGHTING CONDITION	FIRST COLLISION TYPE / OBJECT STRUCK
Overcast	Dry	Dusk	From same direction - both going straight - one stopped - rear-end
Overcast	Wet	Daylight	From opposite direction - one left turn - one straight
Clear	Wet	Dark-Street Lights On	Linear Curb
Overcast	Dry	Daylight	Entering at angle
Overcast	Wet	Daylight	Same direction -- both turning left -- both moving -- sideswipe
Clear or Partly Cloudy	Dry	Daylight	Entering at angle
Clear or Partly Cloudy	Dry	Daylight	Entering at angle
Overcast	Dry	Daylight	Entering at angle
Overcast	Dry	Daylight	From opposite direction - one left turn - one straight
Clear or Partly Cloudy	Dry	Daylight	Entering at angle
Overcast	Dry	Daylight	Linear Curb
Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - rear-end
Clear or Partly Cloudy	Dry	Daylight	From same direction - both going straight - one stopped - rear-end
Clear	Dry	Daylight	Entering at angle

VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM	VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)
Going Straight Ahead	Stopped at Signal or Stop Sign	West	East	Vehicle Stopped	Vehicle Stopped	Follow Too Closely
Making Left Turn	Going Straight Ahead	West	North	East	West	Did Not Grant RW to Vehicle
Making Left Turn		South	West			Exceeding Stated Speed Limit
Going Straight Ahead	Going Straight Ahead	North	South	East	West	None
Making Left Turn	Making Left Turn	West	North	West	North	Other Contributing Circ Not Listed
Going Straight Ahead	Going Straight Ahead	South	North	West	East	Did Not Grant RW to Vehicle
Going Straight Ahead	Going Straight Ahead	North	South	East	West	Operating Handheld Cell Phone
Going Straight Ahead	Going Straight Ahead	North	South	East	West	Did Not Grant RW to Vehicle
Making Left Turn	Going Straight Ahead	West	North	East	West	Did Not Grant RW to Vehicle
Making Right Turn	Going Straight Ahead	South	East	West	East	Other Contributing Circ Not Listed
Going Straight Ahead		North	South			None
Going Straight Ahead	Stopped for Traffic	Southwest	Northeast	Southwest	Northeast	Other Distractions
Going Straight Ahead	Stopped for Traffic	West	East	Vehicle Stopped	Vehicle Stopped	Follow Too Closely
Making Left Turn	Going Straight Ahead	North	East	East	West	Did Not Grant RW to Vehicle

MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)
		None		
		None		
Disregard Traffic Sign and Signals				
		Disregard Traffic Sign and Signals		
		Exceeding Stated Speed Limit	Disregard Traffic Sign and Signals	Racing
		None		
Did Not Grant RW to Vehicle	Other Distractions	None		
		None		
		None		
		None		
		None		
		None		
		None		

FIRST IMPACT LOCATION (City, County & Misc Trafficways - 2010 forward)	WA STATE PLANE SOUTH - X 2010 - FORWARD	WA STATE PLANE SOUTH - Y 2010 - FORWARD
Lane of Primary Trafficway	1141189.36	105908.28
Lane of Primary Trafficway	1141189.36	105908.28
Intersecting Trafficway	1141189.36	105908.28
Lane of Primary Trafficway	1141136.86	103418.15
Lane of Primary Trafficway	1141146.37	103378.16
Lane of Primary Trafficway	1141146.37	103378.16
Lane of Primary Trafficway	1141187.78	103413.29
Lane of Primary Trafficway	1141147.49	103418.89
Lane of Primary Trafficway	1140524.42	100033.22
Lane of Primary Trafficway	1140524.42	100033.22
Outside Shoulder of Primary Trafficway	1139002.47	98480.53
Lane of Primary Trafficway	1137955.56	97817.12
Lane of Primary Trafficway	1137828.12	97823.28
Lane of Primary Trafficway	1136720.64	106007.67

Appendix C: Traffic Count Data

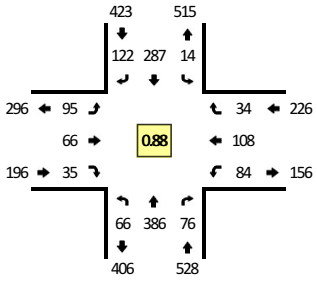
Type of peak hour being reported: Intersection Peak

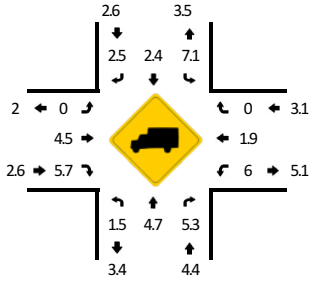
Method for determining peak hour: Total Entering Volume

LOCATION: NW Parker St -- NW 38th Ave
CITY/STATE: Camas, WA

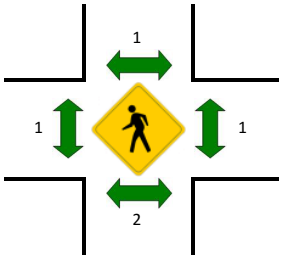
QC JOB #: 17043029
DATE: Thu, May 15 2025

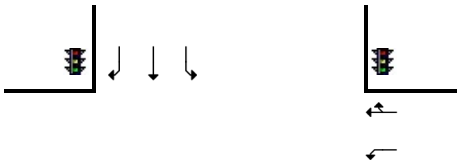
Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 7:50 AM -- 8:05 AM

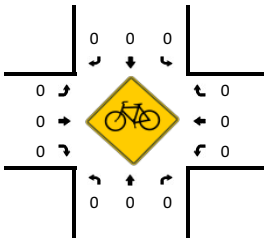


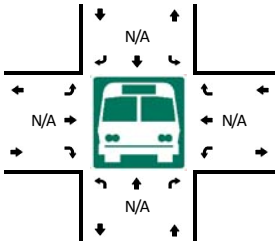


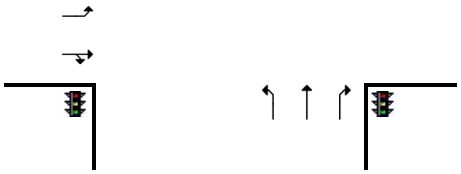
TRUE DATA TO IMPROVE MOBILITY

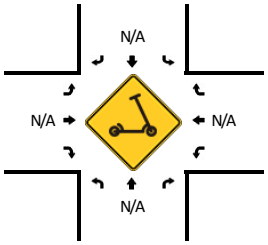












R* = RTOR

5-Min Count Period Beginning At	NW Parker St (Northbound)					NW Parker St (Southbound)					NW 38th Ave (Eastbound)					NW 38th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	1	9	1	0	1	0	9	4	0	2	3	2	3	0	0	8	11	1	0	0	55	
7:05 AM	4	12	1	0	0	0	13	5	0	3	5	1	0	0	0	9	8	0	0	0	61	
7:10 AM	2	10	1	0	1	1	10	3	0	0	1	4	0	0	1	11	4	0	0	1	50	
7:15 AM	6	20	0	0	0	0	18	4	0	0	4	1	0	0	1	6	5	0	0	0	65	
7:20 AM	5	15	1	0	0	0	14	3	0	1	1	4	2	0	1	7	10	0	0	1	65	
7:25 AM	2	14	0	0	2	1	11	5	0	2	5	2	0	0	0	9	7	0	0	0	60	
7:30 AM	2	5	1	0	2	1	7	1	0	3	5	1	1	0	0	8	9	3	0	0	49	
7:35 AM	5	25	2	0	2	2	12	5	0	0	7	3	1	0	1	7	7	1	0	1	81	
7:40 AM	7	10	4	0	0	1	17	0	0	6	7	8	4	0	1	9	16	1	0	0	91	
7:45 AM	3	26	2	0	4	2	18	5	0	4	13	5	1	0	1	10	9	2	0	1	106	
7:50 AM	7	40	1	0	3	1	17	11	0	3	15	9	7	0	0	8	7	2	0	1	132	
7:55 AM	6	45	8	0	6	1	27	6	0	1	8	8	3	0	1	7	9	1	0	0	137	952
8:00 AM	8	25	3	0	2	1	26	6	0	5	15	8	2	0	1	6	11	0	0	0	119	1016
8:05 AM	12	24	5	0	3	1	28	7	0	1	5	4	0	0	0	4	16	1	0	0	111	1066
8:10 AM	3	22	0	0	1	1	24	10	0	1	8	6	3	0	1	7	8	1	0	0	96	1112
8:15 AM	5	25	2	0	2	0	19	3	0	4	3	5	3	0	0	5	6	2	0	1	85	1132
8:20 AM	5	25	2	0	1	1	25	5	0	5	6	4	0	0	0	11	8	2	0	0	100	1167
8:25 AM	3	30	6	0	1	0	18	10	0	1	11	6	4	0	2	9	9	1	0	2	113	1220
8:30 AM	4	37	7	0	3	0	22	4	0	2	9	6	2	0	0	6	8	2	0	2	114	1285
8:35 AM	6	35	2	0	2	2	27	8	0	2	8	1	2	0	3	5	6	4	0	1	114	1318
8:40 AM	3	45	3	0	4	3	24	11	0	4	5	5	0	0	1	8	10	4	0	0	130	1357
8:45 AM	4	33	5	0	4	3	30	8	0	4	2	4	0	0	0	8	10	5	0	2	122	1373
8:50 AM	5	34	1	0	4	4	35	6	0	7	4	3	2	0	0	6	10	1	0	0	122	1363
8:55 AM	3	11	2	0	2	3	35	3	0	0	4	7	2	0	0	8	6	2	0	1	89	1315

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	84	440	92	0	44	12	280	128	0	36	152	100	56	0	8	84	108	16	0	4	1644
Heavy Trucks	4	8	8			4	4	0			0	0	0			12	4	0			44
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

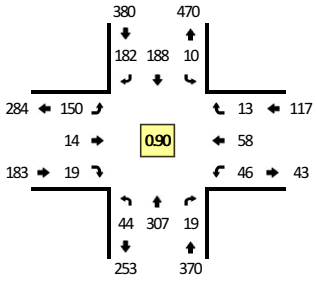
Type of peak hour being reported: Intersection Peak

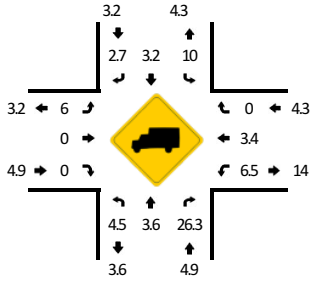
Method for determining peak hour: Total Entering Volume

LOCATION: NW Parker St -- NW Pacific Rim Dr
CITY/STATE: Camas, WA

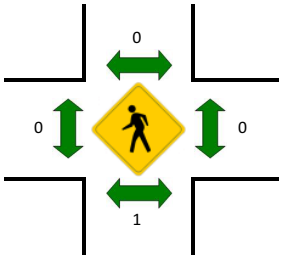
QC JOB #: 17043031
DATE: Thu, May 15 2025

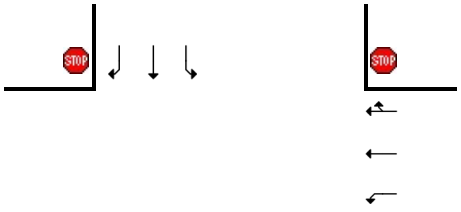
Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 8:30 AM -- 8:45 AM

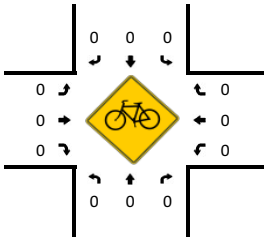


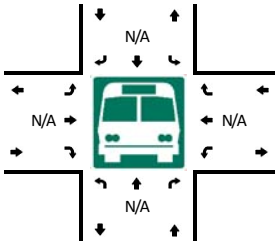


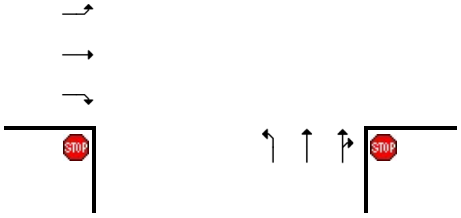
TRUE DATA TO IMPROVE MOBILITY

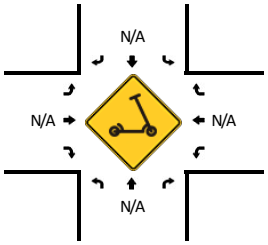












R* = RTOR

5-Min Count Period Beginning At	NW Parker St (Northbound)					NW Parker St (Southbound)					NW Pacific Rim Dr (Eastbound)					NW Pacific Rim Dr (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	4	9	1	0	0	1	14	6	0	0	3	1	2	0	0	1	2	0	0	0	44	
7:05 AM	3	8	0	0	0	1	15	2	0	0	6	1	4	0	0	4	3	1	0	0	48	
7:10 AM	5	11	1	0	0	1	15	7	0	0	7	1	2	0	0	4	3	0	0	0	57	
7:15 AM	3	13	1	0	0	0	16	7	0	0	10	1	2	0	0	2	2	0	0	0	57	
7:20 AM	2	13	0	0	0	1	13	12	0	0	4	0	1	0	0	3	2	0	0	0	51	
7:25 AM	4	11	0	0	0	0	9	9	0	0	7	0	0	0	0	2	2	0	0	0	44	
7:30 AM	6	12	3	0	0	0	15	4	0	0	3	0	0	0	0	4	0	0	0	0	47	
7:35 AM	3	10	3	0	0	0	9	8	0	0	10	2	1	0	0	4	3	2	0	0	55	
7:40 AM	6	13	1	0	0	0	20	12	0	0	7	2	2	0	0	4	6	1	0	0	74	
7:45 AM	4	26	2	0	0	0	15	12	0	0	9	0	2	0	0	4	2	0	0	0	76	
7:50 AM	9	26	1	0	0	1	14	16	0	0	23	2	1	0	0	4	5	0	0	0	102	
7:55 AM	7	30	0	0	0	0	15	19	0	0	15	1	2	0	0	5	5	4	0	0	103	758
8:00 AM	2	30	2	0	0	0	18	10	0	0	4	1	1	0	0	6	5	2	0	0	81	795
8:05 AM	6	26	1	0	0	2	11	17	0	0	11	2	1	0	0	5	4	2	0	0	88	835
8:10 AM	2	19	3	0	0	2	19	19	0	0	10	1	1	0	0	6	7	0	0	0	89	867
8:15 AM	3	17	1	0	0	1	6	12	0	0	9	0	1	0	0	0	4	2	0	0	56	866
8:20 AM	3	19	3	0	0	0	17	19	0	0	9	0	1	0	0	0	9	1	0	0	81	896
8:25 AM	3	21	3	0	0	0	17	12	0	0	13	1	3	0	0	1	5	0	0	0	79	931
8:30 AM	2	36	3	0	0	1	13	18	0	0	15	1	2	0	0	2	5	1	0	0	99	983
8:35 AM	2	28	1	0	0	0	14	13	0	0	15	2	3	0	0	6	6	0	0	0	90	1018
8:40 AM	4	36	1	0	0	2	24	13	0	0	11	0	2	0	0	6	2	1	0	0	102	1046
8:45 AM	1	19	0	0	0	1	20	14	0	0	15	3	1	0	0	5	1	0	0	0	80	1050
8:50 AM	5	24	1	0	0	0	27	7	0	0	14	5	0	0	0	2	2	2	0	0	89	1037
8:55 AM	1	12	0	0	0	1	32	13	0	0	3	1	0	0	0	1	4	0	0	0	68	1002

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	32	400	20	0	0	12	204	176	0	0	164	12	28	0	0	56	52	8	0	0	1164
Heavy Trucks	0	16	8			0	0	4			12	0	0			4	0	0			44
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

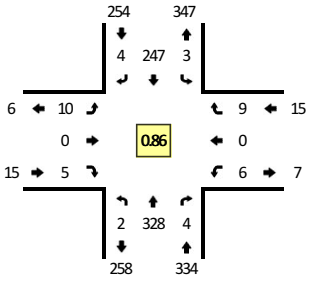
Type of peak hour being reported: Intersection Peak

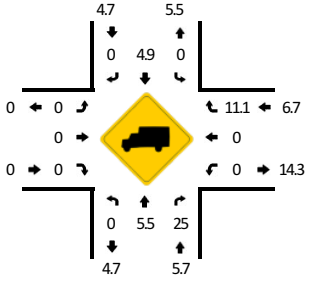
Method for determining peak hour: Total Entering Volume

LOCATION: NW Brady Rd -- NW 20th Ave
CITY/STATE: Camas, WA

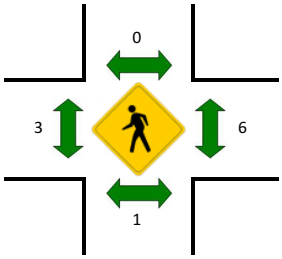
QC JOB #: 17043033
DATE: Thu, May 15 2025

Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 7:50 AM -- 8:05 AM

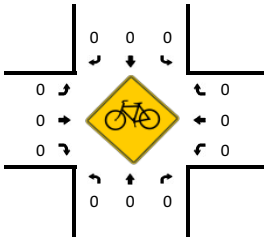


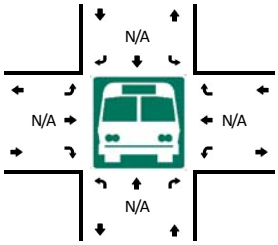


TRUE DATA TO IMPROVE MOBILITY

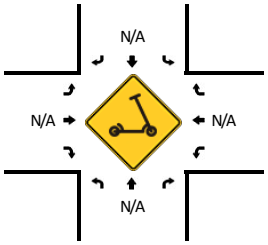












R* = RTOR

5-Min Count Period Beginning At	NW Brady Rd (Northbound)					NW Brady Rd (Southbound)					NW 20th Ave (Eastbound)					NW 20th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	8	0	0	0	1	13	0	0	0	3	0	1	0	0	0	0	1	0	0	27	
7:05 AM	1	6	0	0	0	0	24	1	0	0	1	0	1	0	0	0	0	0	0	0	34	
7:10 AM	0	17	0	0	0	0	20	0	0	0	1	0	1	0	0	1	0	0	0	0	40	
7:15 AM	0	11	0	0	0	0	18	0	0	0	1	0	1	0	0	0	0	0	0	0	31	
7:20 AM	0	14	0	0	0	0	19	1	0	0	0	0	0	0	0	0	0	0	0	0	34	
7:25 AM	0	13	0	0	0	0	10	0	0	0	1	1	0	0	0	1	0	0	0	0	26	
7:30 AM	1	16	0	0	0	0	22	0	0	0	0	0	0	0	0	0	0	1	0	0	40	
7:35 AM	0	18	0	0	0	0	15	0	0	0	1	0	4	0	0	1	0	1	0	0	40	
7:40 AM	0	11	0	0	0	1	24	0	0	0	2	0	2	0	0	0	0	1	0	0	41	
7:45 AM	0	33	0	0	0	0	21	0	0	0	1	0	0	0	0	1	0	0	0	0	56	
7:50 AM	0	27	1	0	0	0	26	0	0	0	0	0	1	0	0	1	0	2	0	0	58	
7:55 AM	2	30	0	0	0	1	24	0	0	0	1	0	0	0	0	1	0	1	0	0	60	487
8:00 AM	0	37	1	0	0	0	22	0	0	0	0	0	2	0	0	0	0	0	0	0	62	522
8:05 AM	0	26	0	0	0	0	17	1	0	0	2	0	0	0	0	0	0	1	0	0	47	535
8:10 AM	0	22	0	0	0	0	22	1	0	0	0	0	0	0	0	1	0	0	0	0	46	541
8:15 AM	0	18	0	0	0	1	14	0	0	0	0	0	0	0	0	0	0	0	0	0	33	543
8:20 AM	0	16	0	0	0	0	13	0	0	0	2	0	0	0	0	1	0	1	0	0	33	542
8:25 AM	0	26	2	0	0	0	19	1	0	0	1	0	0	0	0	0	0	0	0	0	49	565
8:30 AM	0	31	0	0	0	0	22	0	0	0	2	0	0	0	0	1	0	1	0	0	57	582
8:35 AM	0	31	0	0	0	1	17	1	0	0	0	0	1	0	0	0	0	1	0	0	52	594
8:40 AM	0	31	0	0	0	0	30	0	0	0	1	0	1	0	0	0	0	2	0	0	65	618
8:45 AM	2	13	0	0	0	1	21	0	0	0	0	0	0	0	0	0	0	1	0	0	38	600
8:50 AM	1	24	0	0	0	1	28	0	0	0	2	0	1	0	0	0	0	1	0	0	58	600
8:55 AM	0	10	0	0	0	0	28	1	0	0	0	0	0	0	0	0	0	0	0	0	39	579

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	8	376	8	0	0	4	288	0	0	0	4	0	12	0	0	8	0	12	0	0	720
Heavy Trucks	0	12	4			0	8	0			0	0	0			0	0	4			28
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

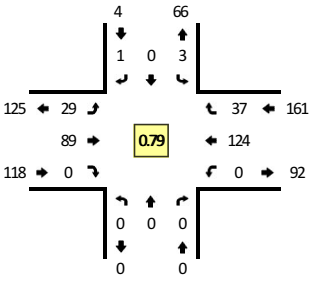
Type of peak hour being reported: Intersection Peak

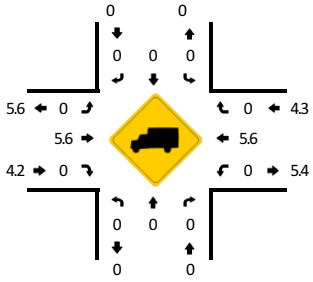
Method for determining peak hour: Total Entering Volume

LOCATION: Sharp Dr -- NW 18th Ave
CITY/STATE: Camas, WA

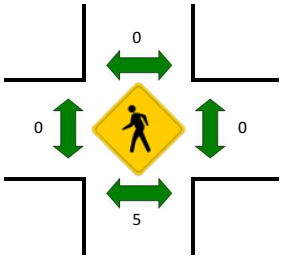
QC JOB #: 17043035
DATE: Thu, May 15 2025

Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 7:50 AM -- 8:05 AM

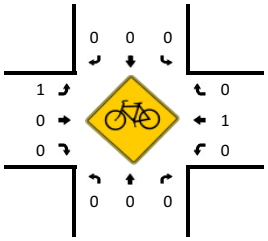


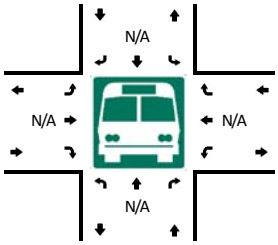


TRUE DATA TO IMPROVE MOBILITY

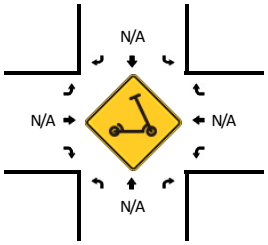












R* = RTOR

5-Min Count Period Beginning At	Sharp Dr (Northbound)					Sharp Dr (Southbound)					NW 18th Ave (Eastbound)					NW 18th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2	2	0	0	6	
7:05 AM	0	0	0	0	0	0	0	0	0	0	3	7	0	0	0	0	4	1	0	0	15	
7:10 AM	0	0	0	0	0	0	0	1	0	0	2	4	0	0	0	0	3	4	0	0	14	
7:15 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0	4	
7:20 AM	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	4	1	0	0	9	
7:25 AM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	5	5	0	0	14	
7:30 AM	0	0	0	0	0	1	0	1	0	0	1	4	0	0	0	0	9	5	0	0	21	
7:35 AM	0	0	0	0	0	0	0	0	0	0	1	6	0	0	0	0	2	2	0	0	11	
7:40 AM	0	0	0	0	0	0	0	0	0	0	1	6	0	0	0	0	3	0	0	0	10	
7:45 AM	0	0	0	0	0	0	0	0	0	0	1	14	0	0	0	0	4	3	0	0	22	
7:50 AM	0	0	0	0	0	0	0	0	0	0	5	7	0	0	0	0	10	3	0	0	25	
7:55 AM	0	0	0	0	0	0	0	0	0	0	2	12	0	0	0	0	13	2	0	0	29	180
8:00 AM	0	0	0	0	0	0	0	0	0	0	3	8	0	0	0	0	23	2	0	0	36	210
8:05 AM	0	0	0	0	0	1	0	0	0	0	4	1	0	0	0	0	7	2	0	0	15	210
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	7	4	0	0	15	211
8:15 AM	0	0	0	0	0	0	0	0	0	0	4	2	0	0	0	0	4	3	0	0	13	220
8:20 AM	0	0	0	0	0	0	0	0	0	0	3	10	0	0	0	0	8	7	0	0	28	239
8:25 AM	0	0	0	0	0	0	0	0	0	0	1	12	0	0	0	0	12	2	0	0	27	252
8:30 AM	0	0	0	0	0	0	0	0	0	0	3	8	0	0	0	0	10	4	0	0	25	256
8:35 AM	0	0	0	0	0	1	0	1	0	0	1	8	0	0	0	0	10	2	0	0	23	268
8:40 AM	0	0	0	0	0	1	0	0	0	0	1	12	0	0	0	0	6	3	0	0	23	281
8:45 AM	0	0	0	0	0	0	0	0	0	0	2	5	0	0	0	0	14	3	0	0	24	283
8:50 AM	0	0	0	0	0	1	0	0	0	0	2	4	0	0	0	0	6	3	0	0	16	274
8:55 AM	0	0	0	0	0	1	0	0	0	0	2	3	0	0	0	0	5	3	0	0	14	259

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	0	0	0	0	0	40	108	0	0	0	0	184	28	0	0	360
Heavy Trucks	0	0	0			0	0	0			0	4	0			0	0	0			4
Buses																					
Pedestrians		4					0					0					0				4
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

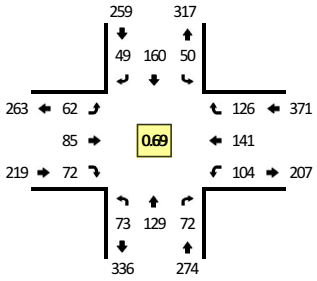
Type of peak hour being reported: Intersection Peak

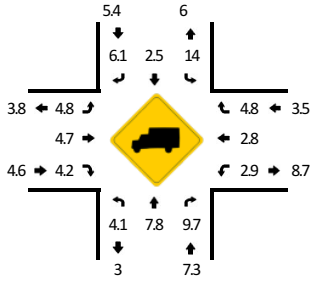
Method for determining peak hour: Total Entering Volume

LOCATION: NW Brady Rd -- NW 16th Ave
CITY/STATE: Camas, WA

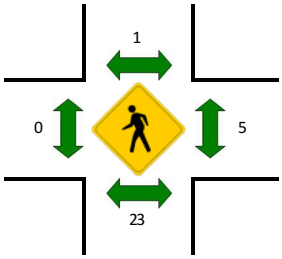
QC JOB #: 17043039
DATE: Thu, May 15 2025

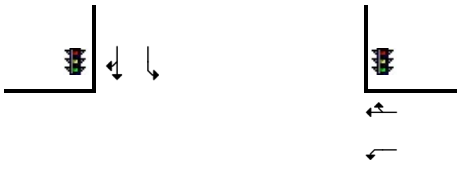
Peak-Hour: 7:40 AM -- 8:40 AM
Peak 15-Min: 7:50 AM -- 8:05 AM

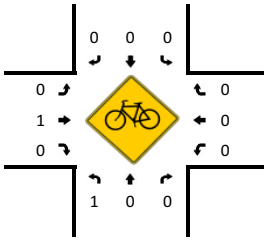


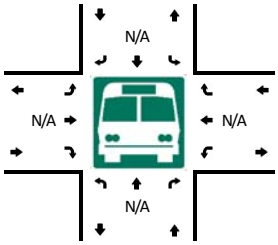


TRUE DATA TO IMPROVE MOBILITY

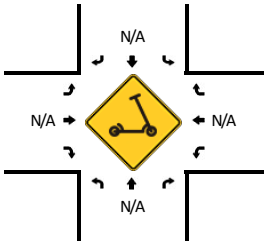












R* = RTOR

5-Min Count Period Beginning At	NW Brady Rd (Northbound)					NW Brady Rd (Southbound)					NW 16th Ave (Eastbound)					NW 16th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	3	2	0	1	2	10	1	0	0	0	0	0	0	0	10	5	4	0	2	40	
7:05 AM	1	3	6	0	0	5	13	2	0	1	0	2	0	0	1	13	3	1	0	0	51	
7:10 AM	4	11	1	0	1	5	17	2	0	0	0	2	0	0	0	13	3	4	0	5	68	
7:15 AM	1	6	1	0	1	2	15	2	0	2	0	0	0	0	0	11	3	3	0	2	49	
7:20 AM	2	7	2	0	1	2	10	3	0	1	1	0	0	0	0	14	3	4	0	1	51	
7:25 AM	6	6	0	0	4	1	11	2	0	0	1	3	0	0	1	19	8	3	0	3	68	
7:30 AM	5	9	4	0	2	1	14	1	0	1	2	1	0	0	1	15	9	4	0	2	71	
7:35 AM	4	6	3	0	0	0	21	0	0	0	3	1	1	0	0	22	7	6	0	2	76	
7:40 AM	10	7	5	0	0	5	20	3	0	1	2	5	8	0	3	15	7	3	0	3	97	
7:45 AM	6	16	7	0	0	2	13	3	0	1	8	15	7	0	1	13	21	2	0	3	118	
7:50 AM	17	15	2	0	3	3	15	8	0	1	3	10	5	0	4	3	30	9	0	3	131	
7:55 AM	10	10	3	0	0	2	10	11	0	2	12	13	12	0	6	11	18	11	0	3	134	954
8:00 AM	9	12	8	0	1	4	20	4	0	1	14	16	13	0	4	14	14	4	0	3	141	1055
8:05 AM	3	12	5	0	3	8	9	2	0	0	4	3	3	0	2	7	8	9	0	3	81	1085
8:10 AM	2	6	2	0	0	5	16	1	0	0	1	2	0	0	0	5	6	7	0	4	57	1074
8:15 AM	4	8	3	0	1	2	12	1	0	0	1	3	0	0	0	5	2	6	0	3	51	1076
8:20 AM	4	9	5	0	1	3	8	3	0	0	5	1	0	0	0	13	10	3	0	0	65	1090
8:25 AM	2	15	6	0	1	3	12	0	0	1	5	8	0	0	1	6	9	6	0	8	83	1105
8:30 AM	3	10	4	0	4	8	13	4	0	1	4	6	1	0	0	9	9	6	0	6	88	1122
8:35 AM	3	9	6	0	2	5	12	1	0	0	3	3	2	0	0	3	7	14	0	7	77	1123
8:40 AM	2	12	5	0	1	6	17	5	0	0	1	8	2	0	0	10	4	8	0	6	87	1113
8:45 AM	2	9	7	0	3	6	13	1	0	1	2	7	0	0	0	12	12	2	0	1	78	1073
8:50 AM	5	11	5	0	1	9	17	1	0	1	1	4	0	0	0	13	5	7	0	5	85	1027
8:55 AM	2	7	1	0	0	10	16	2	0	0	0	2	1	0	0	11	3	1	0	3	59	952

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	144	148	68	0	16	36	180	108	0	16	116	156	176	0	56	112	248	132	0	36	1748
Heavy Trucks	0	8	4			0	4	0			0	8	8			4	0	12			48
Buses																					
Pedestrians		56					0					0					20				76
Bicycles	4	0	0			0	0	0			0	4	0			0	0	0			8
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

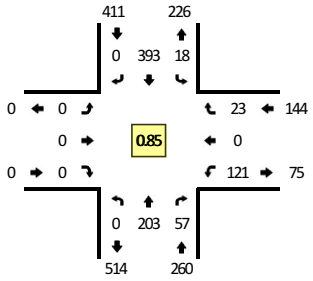
Type of peak hour being reported: Intersection Peak

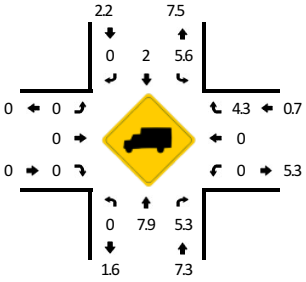
Method for determining peak hour: Total Entering Volume

LOCATION: NW Brady Rd -- NW McIntosh Rd
CITY/STATE: Camas, WA

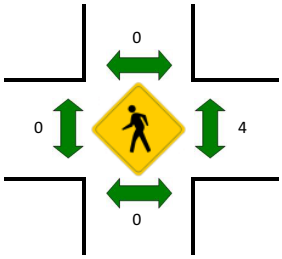
QC JOB #: 17043041
DATE: Thu, May 15 2025

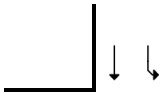
Peak-Hour: 7:10 AM -- 8:10 AM
Peak 15-Min: 7:50 AM -- 8:05 AM

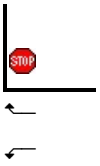


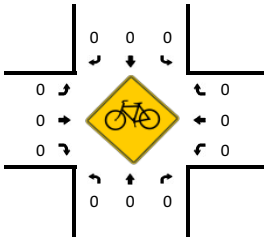


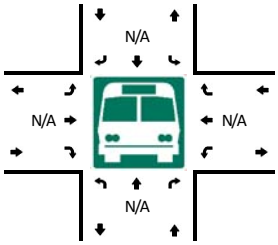
TRUE DATA TO IMPROVE MOBILITY



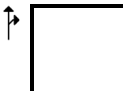


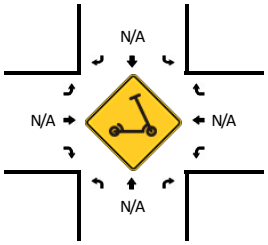












R* = RTOR

5-Min Count Period Beginning At	NW Brady Rd (Northbound)					NW Brady Rd (Southbound)					NW McIntosh Rd (Eastbound)					NW McIntosh Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	5	5	0	0	0	16	0	0	0	0	0	0	0	0	7	0	1	0	0	34	
7:05 AM	0	11	1	0	0	1	25	0	0	0	0	0	0	0	0	9	0	0	0	0	47	
7:10 AM	0	14	3	0	0	0	33	0	0	0	0	0	0	0	0	10	0	0	0	0	60	
7:15 AM	0	13	2	0	0	2	28	0	0	0	0	0	0	0	0	7	0	1	0	0	53	
7:20 AM	0	8	1	0	0	0	26	0	0	0	0	0	0	0	0	7	0	0	0	0	42	
7:25 AM	0	15	3	0	0	3	23	0	0	0	0	0	0	0	0	12	0	1	0	0	57	
7:30 AM	0	23	5	0	0	0	35	0	0	0	0	0	0	0	0	15	0	0	0	0	78	
7:35 AM	0	12	6	0	0	0	39	0	0	0	0	0	0	0	0	11	0	0	0	0	68	
7:40 AM	0	21	5	0	0	3	46	0	0	0	0	0	0	0	0	10	0	3	0	0	88	
7:45 AM	0	23	3	0	0	1	39	0	0	0	0	0	0	0	0	10	0	0	0	0	76	
7:50 AM	0	21	7	0	0	0	23	0	0	0	0	0	0	0	0	5	0	12	0	0	68	
7:55 AM	0	16	6	0	0	4	36	0	0	0	0	0	0	0	0	9	0	3	0	0	74	745
8:00 AM	0	25	8	0	0	4	44	0	0	0	0	0	0	0	0	14	0	2	0	0	97	808
8:05 AM	0	12	8	0	0	1	21	0	0	0	0	0	0	0	0	11	0	1	0	0	54	815
8:10 AM	0	12	2	0	0	2	24	0	0	0	0	0	0	0	0	11	0	1	0	0	52	807
8:15 AM	0	10	3	0	0	2	17	0	0	0	0	0	0	0	0	5	0	1	0	0	38	792
8:20 AM	0	17	3	0	0	1	17	0	0	0	0	0	0	0	0	4	0	3	0	0	45	795
8:25 AM	0	22	2	0	0	2	21	0	0	0	0	0	0	0	0	4	0	2	0	0	53	791
8:30 AM	0	14	5	0	0	0	20	0	0	0	0	0	0	0	0	7	0	3	0	0	49	762
8:35 AM	0	18	4	0	0	3	17	0	0	0	0	0	0	0	0	7	0	1	0	0	50	744
8:40 AM	0	16	4	0	0	1	28	0	0	0	0	0	0	0	0	9	0	3	0	0	61	717
8:45 AM	0	21	6	0	0	1	28	0	0	0	0	0	0	0	0	6	0	3	0	0	65	706
8:50 AM	0	17	5	0	0	2	25	0	0	0	0	0	0	0	0	6	0	1	0	0	56	694
8:55 AM	0	9	3	0	0	4	30	0	0	0	0	0	0	0	0	8	0	0	0	0	54	674

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	248	84	0	0	32	412	0	0	0	0	0	0	0	0	112	0	68	0	0	956
Heavy Trucks	0	16	0			4	20	0			0	0	0			0	0	0			40
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

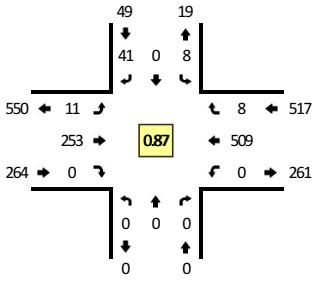
Type of peak hour being reported: Intersection Peak

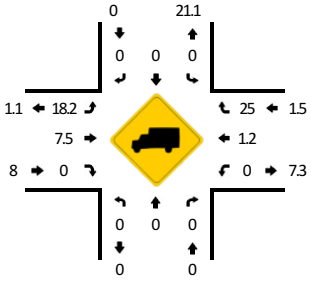
Method for determining peak hour: Total Entering Volume

LOCATION: SE Grand Ridge Dr -- NW Brady Rd
CITY/STATE: Camas, WA

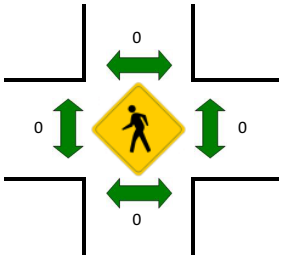
QC JOB #: 17043043
DATE: Thu, May 15 2025

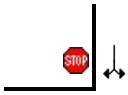
Peak-Hour: 7:10 AM -- 8:10 AM
Peak 15-Min: 7:35 AM -- 7:50 AM

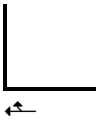


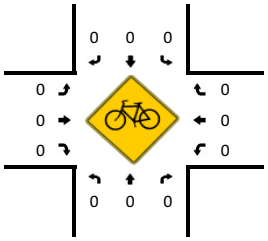


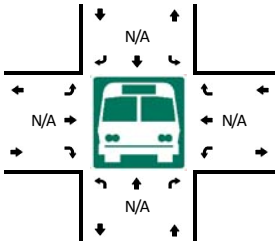
TRUE DATA TO IMPROVE MOBILITY

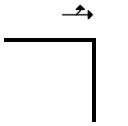




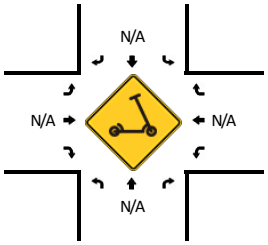












R* = RTOR

5-Min Count Period Beginning At	SE Grand Ridge Dr (Northbound)					SE Grand Ridge Dr (Southbound)					NW Brady Rd (Eastbound)					NW Brady Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	0	0	0	0	0	0	2	0	0	0	10	0	0	0	0	25	0	0	0	37	
7:05 AM	0	0	0	0	0	0	0	2	0	0	0	13	0	0	0	0	33	0	0	0	48	
7:10 AM	0	0	0	0	0	2	0	4	0	0	0	16	0	0	0	0	39	0	0	0	61	
7:15 AM	0	0	0	0	0	0	0	6	0	0	1	13	0	0	0	0	34	0	0	0	54	
7:20 AM	0	0	0	0	0	0	0	2	0	0	2	12	0	0	0	0	35	0	0	0	51	
7:25 AM	0	0	0	0	0	1	0	3	0	0	2	20	0	0	0	0	33	1	0	0	60	
7:30 AM	0	0	0	0	0	1	0	3	0	0	1	23	0	0	0	0	53	0	0	0	81	
7:35 AM	0	0	0	0	0	0	0	5	0	0	0	19	0	0	0	0	49	0	0	0	73	
7:40 AM	0	0	0	0	0	0	0	2	0	0	0	25	0	0	0	0	56	1	0	0	84	
7:45 AM	0	0	0	0	0	1	0	3	0	0	0	27	0	0	0	0	51	0	0	0	82	
7:50 AM	0	0	0	0	0	1	0	7	0	0	0	26	0	0	0	0	22	4	0	0	60	
7:55 AM	0	0	0	0	0	1	0	2	0	0	2	23	0	0	0	0	46	2	0	0	76	767
8:00 AM	0	0	0	0	0	0	0	1	0	0	3	32	0	0	0	0	54	0	0	0	90	820
8:05 AM	0	0	0	0	0	1	0	3	0	0	0	17	0	0	0	0	37	0	0	0	58	830
8:10 AM	0	0	0	0	0	0	0	6	0	0	2	15	0	0	0	0	32	2	0	0	57	826
8:15 AM	0	0	0	0	0	0	0	2	0	0	0	13	0	0	0	0	23	0	0	0	38	810
8:20 AM	0	0	0	0	0	1	0	3	0	0	2	20	0	0	0	0	20	0	0	0	46	805
8:25 AM	0	0	0	0	0	1	0	4	0	0	1	22	0	0	0	0	27	0	0	0	55	800
8:30 AM	0	0	0	0	0	0	0	2	0	0	1	22	0	0	0	0	25	0	0	0	50	769
8:35 AM	0	0	0	0	0	1	0	1	0	0	4	18	0	0	0	0	23	0	0	0	47	743
8:40 AM	0	0	0	0	0	0	0	3	0	0	2	23	0	0	0	0	39	0	0	0	67	726
8:45 AM	0	0	0	0	0	0	0	4	0	0	4	24	0	0	0	0	35	0	0	0	67	711
8:50 AM	0	0	0	0	0	1	0	0	0	0	4	22	0	0	0	0	28	3	0	0	58	709
8:55 AM	0	0	0	0	0	0	0	3	0	0	3	12	0	0	0	0	38	0	0	0	56	689

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	4	0	40	0	0	0	284	0	0	0	0	624	4	0	0	956
Heavy Trucks	0	0	0			0	0	0			0	24	0			0	0	0			24
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

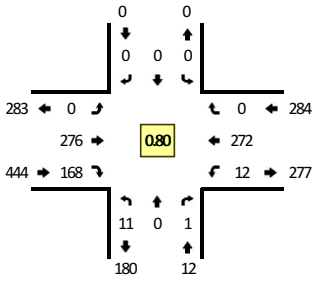
Type of peak hour being reported: Intersection Peak

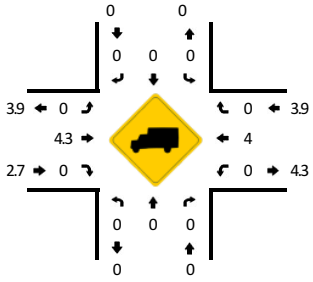
Method for determining peak hour: Total Entering Volume

LOCATION: NW Fisher Creek Dr -- SE 20th St/NW 38th Ave
CITY/STATE: Camas, WA

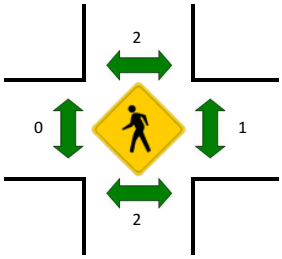
QC JOB #: 17043045
DATE: Thu, May 15 2025

Peak-Hour: 7:35 AM -- 8:35 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

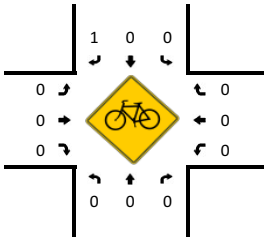


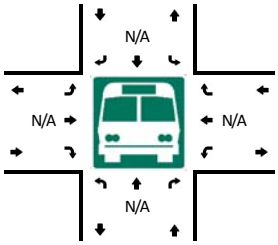


TRUE DATA TO IMPROVE MOBILITY

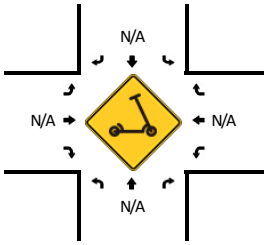












R* = RTOR

5-Min Count Period Beginning At	NW Fisher Creek Dr (Northbound)					NW Fisher Creek Dr (Southbound)					SE 20th St/NW 38th Ave (Eastbound)					SE 20th St/NW 38th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	2	0	0	0	0	0	0	0	0	0	0	12	41	0	2	6	8	0	0	0	71	
7:05 AM	1	0	0	0	0	0	0	0	0	0	0	12	20	0	0	2	8	0	0	0	43	
7:10 AM	1	0	0	0	0	0	0	0	0	0	0	7	16	0	0	2	11	0	0	0	37	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	10	16	0	0	0	9	0	0	0	35	
7:20 AM	2	0	0	0	0	0	0	0	0	0	0	5	12	0	0	3	16	0	0	0	38	
7:25 AM	0	0	0	0	0	0	0	0	0	0	0	13	17	0	0	3	9	0	0	0	42	
7:30 AM	1	0	0	0	0	0	0	0	0	0	0	11	18	0	0	3	9	0	0	0	42	
7:35 AM	0	0	0	0	0	0	0	0	0	0	0	22	11	0	0	2	11	0	0	0	46	
7:40 AM	2	0	0	0	1	0	0	0	0	0	0	19	15	0	1	0	26	0	0	0	64	
7:45 AM	2	0	0	0	0	0	0	0	0	0	0	28	18	0	0	2	22	0	0	0	72	
7:50 AM	0	0	0	0	0	0	0	0	0	0	0	34	27	0	0	2	19	0	0	0	82	
7:55 AM	1	0	0	0	0	0	0	0	0	0	0	30	25	0	0	0	22	0	0	0	78	650
8:00 AM	1	0	0	0	0	0	0	0	0	0	0	27	12	0	1	1	26	0	0	0	68	647
8:05 AM	0	0	0	0	0	0	0	0	0	0	0	18	13	0	0	1	33	0	0	0	65	669
8:10 AM	2	0	0	0	0	0	0	0	0	0	0	13	9	0	0	0	28	0	0	0	52	684
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	23	8	0	0	2	16	0	0	0	49	698
8:20 AM	1	0	0	0	0	0	0	0	0	0	0	18	4	0	0	0	28	0	0	0	51	711
8:25 AM	2	0	0	0	0	0	0	0	0	0	0	23	9	0	1	2	21	0	0	0	58	727
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	21	14	0	0	0	20	0	0	0	55	740
8:35 AM	0	0	0	0	0	0	0	0	0	0	0	10	7	0	0	1	19	0	0	0	37	731
8:40 AM	1	0	0	0	0	0	0	0	0	0	0	14	2	0	0	0	23	0	0	0	40	707
8:45 AM	1	0	0	0	0	0	0	0	0	0	0	9	3	0	0	1	25	0	0	0	39	674
8:50 AM	0	0	1	0	0	0	0	0	0	0	0	7	5	0	0	2	26	0	0	0	41	633
8:55 AM	0	0	0	0	0	0	0	0	0	0	0	19	3	0	0	1	17	0	0	0	40	595

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	12	0	0	0	0	0	0	0	0	0	0	368	280	0	0	16	252	0	0	0	928
Heavy Trucks	0	0	0			0	0	0			0	4	0			0	4	0			8
Buses																					
Pedestrians		0					0					0					4				4
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

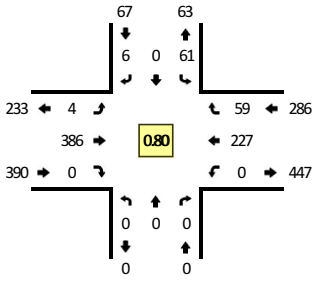
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

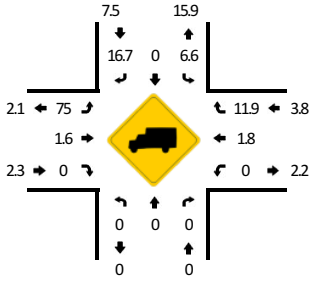
LOCATION: SE Bybee Rd -- SE 20th St/NW 38th Ave
CITY/STATE: Camas, WA

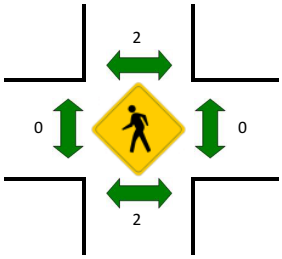
QC JOB #: 17043047
DATE: Thu, May 15 2025

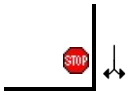
Peak-Hour: 7:35 AM -- 8:35 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

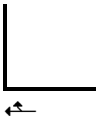


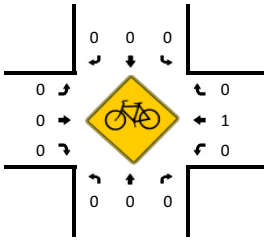


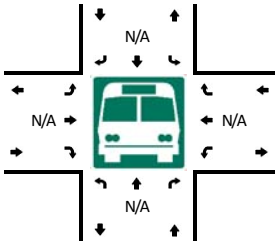


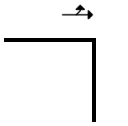




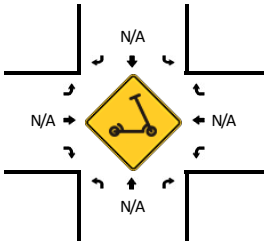












R* = RTOR

5-Min Count Period Beginning At	SE Bybee Rd (Northbound)					SE Bybee Rd (Southbound)					SE 20th St/NW 38th Ave (Eastbound)					SE 20th St/NW 38th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	0	0	0	0	8	0	0	0	0	0	47	0	0	0	0	9	1	0	0	65	
7:05 AM	0	0	0	0	0	2	0	0	0	0	0	30	0	0	0	0	8	1	0	0	41	
7:10 AM	0	0	0	0	0	4	0	1	0	0	0	19	0	0	0	0	9	3	0	0	36	
7:15 AM	0	0	0	0	0	5	0	0	0	0	0	21	0	0	0	0	8	1	0	0	35	
7:20 AM	0	0	0	0	0	1	0	0	0	0	0	17	0	0	0	0	13	5	0	0	36	
7:25 AM	0	0	0	0	0	3	0	0	0	0	0	28	0	0	0	0	8	1	0	0	40	
7:30 AM	0	0	0	0	0	5	0	1	0	0	1	22	0	0	0	0	7	2	0	0	38	
7:35 AM	0	0	0	0	0	9	0	1	0	0	0	25	0	0	0	0	9	3	0	0	47	
7:40 AM	0	0	0	0	0	2	0	0	0	0	0	32	0	0	0	0	22	6	0	0	62	
7:45 AM	0	0	0	0	0	9	0	0	0	0	0	38	0	0	0	0	16	6	0	0	69	
7:50 AM	0	0	0	0	0	9	0	0	0	0	0	52	0	0	0	0	17	4	0	0	82	
7:55 AM	0	0	0	0	0	4	0	0	0	0	0	55	0	0	0	0	21	0	0	0	80	631
8:00 AM	0	0	0	0	0	6	0	1	0	0	0	29	0	0	0	0	19	9	0	0	64	630
8:05 AM	0	0	0	0	0	3	0	2	0	0	1	29	0	0	0	0	26	8	0	0	69	658
8:10 AM	0	0	0	0	0	4	0	1	0	0	1	20	0	0	0	0	23	8	0	0	57	679
8:15 AM	0	0	0	0	0	5	0	0	0	0	1	24	0	0	0	0	11	4	0	0	45	689
8:20 AM	0	0	0	0	0	2	0	0	0	0	0	22	0	0	0	0	24	7	0	0	55	708
8:25 AM	0	0	0	0	0	2	0	1	0	0	0	32	0	0	0	0	16	1	0	0	52	720
8:30 AM	0	0	0	0	0	6	0	0	0	0	1	28	0	0	0	0	23	3	0	0	61	743
8:35 AM	0	0	0	0	0	0	0	1	0	0	0	16	0	0	0	0	16	3	0	0	36	732
8:40 AM	0	0	0	0	0	3	0	1	0	0	0	13	0	0	0	0	18	6	0	0	41	711
8:45 AM	0	0	0	0	0	1	0	0	0	0	0	11	0	0	0	0	19	6	0	0	37	679
8:50 AM	0	0	0	0	0	2	0	0	0	0	1	13	0	0	0	0	21	4	0	0	41	638
8:55 AM	0	0	0	0	0	3	0	0	0	0	0	17	0	0	0	0	19	1	0	0	40	598

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	88	0	0	0	0	0	580	0	0	0	0	216	40	0	0	924
Heavy Trucks	0	0	0			0	0	0			0	4	0			0	0	0			4
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

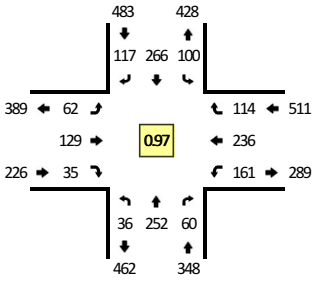
Type of peak hour being reported: Intersection Peak

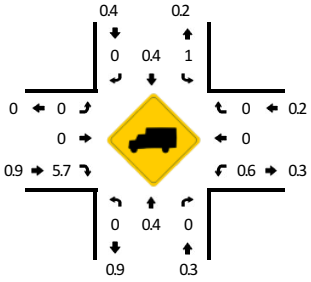
Method for determining peak hour: Total Entering Volume

LOCATION: NW Parker St -- NW 38th Ave
CITY/STATE: Camas, WA

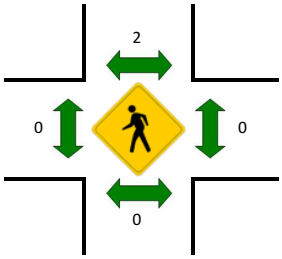
QC JOB #: 17043030
DATE: Thu, May 15 2025

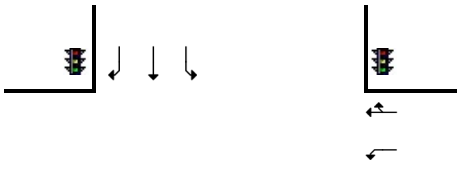
Peak-Hour: 4:50 PM -- 5:50 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

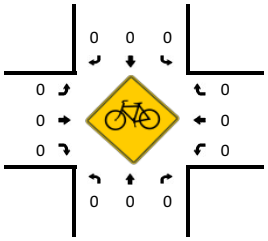


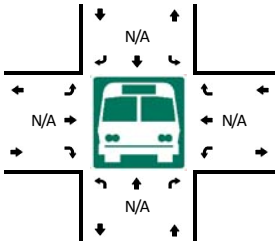


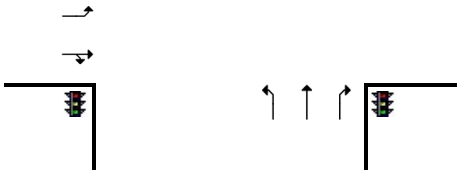
TRUE DATA TO IMPROVE MOBILITY

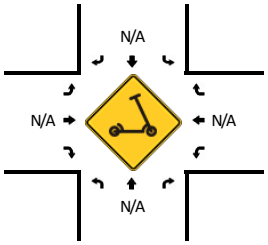












R* = RTOR

5-Min Count Period Beginning At	NW Parker St (Northbound)					NW Parker St (Southbound)					NW 38th Ave (Eastbound)					NW 38th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	3	12	0	0	2	5	21	3	0	4	9	9	0	0	0	9	14	9	0	2	102	
4:05 PM	2	16	1	0	1	2	16	7	0	3	6	16	1	0	1	10	17	3	0	1	103	
4:10 PM	1	13	6	0	3	13	16	4	0	7	5	9	1	0	0	11	13	5	0	2	109	
4:15 PM	1	9	1	0	3	3	25	3	0	3	5	16	0	0	0	12	23	9	0	2	115	
4:20 PM	1	17	4	0	3	10	16	3	0	4	5	7	1	0	1	4	11	8	0	5	100	
4:25 PM	4	12	4	0	6	4	13	3	0	2	5	11	3	0	0	9	23	8	0	2	109	
4:30 PM	1	17	4	0	2	9	22	0	0	4	4	7	1	0	0	9	16	5	0	1	102	
4:35 PM	3	11	5	0	2	7	20	3	0	3	6	11	1	0	0	11	11	8	0	0	102	
4:40 PM	3	15	0	0	2	9	23	2	0	6	5	6	4	0	0	9	16	8	0	4	112	
4:45 PM	3	24	4	0	6	3	20	3	0	4	6	8	0	0	1	13	16	9	0	1	121	
4:50 PM	4	24	1	0	2	8	18	8	0	6	4	14	1	0	1	18	21	6	0	1	137	
4:55 PM	3	18	1	0	2	9	14	3	0	4	6	12	1	0	0	17	16	10	0	5	121	1333
5:00 PM	3	28	1	0	2	8	18	2	0	6	7	13	3	0	1	13	25	10	0	2	142	1373
5:05 PM	2	28	2	0	5	3	19	2	0	3	7	14	2	0	0	14	17	4	0	1	123	1393
5:10 PM	1	15	5	0	4	8	22	1	0	4	4	11	4	0	2	19	24	12	0	2	138	1422
5:15 PM	1	17	4	0	6	7	30	5	0	7	7	11	1	0	0	11	21	8	0	0	136	1443
5:20 PM	3	13	3	0	2	15	27	6	0	6	6	9	4	0	0	9	15	8	0	3	129	1472
5:25 PM	8	21	4	0	1	9	23	6	0	7	6	6	1	0	1	12	24	9	0	3	141	1504
5:30 PM	5	20	3	0	2	11	19	4	0	6	3	8	1	0	2	18	17	8	0	2	129	1531
5:35 PM	4	18	1	0	0	5	28	1	0	11	4	10	2	0	2	6	21	8	0	1	122	1551
5:40 PM	2	24	2	0	4	6	24	3	0	6	6	14	2	0	0	13	17	3	0	2	128	1567
5:45 PM	0	26	0	0	3	11	24	7	0	3	2	7	3	0	1	11	18	5	0	1	122	1568
5:50 PM	2	21	3	0	2	5	27	3	0	5	6	14	4	0	2	13	20	9	0	0	136	1567
5:55 PM	3	27	4	0	2	3	22	3	0	5	5	10	2	0	0	7	14	6	0	1	114	1560

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	48	204	80	0	36	124	320	148	0	80	76	104	28	0	4	128	240	124	0	24	1768
Heavy Trucks	0	0	0			0	0	0			0	0	0			0	0	0			0
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

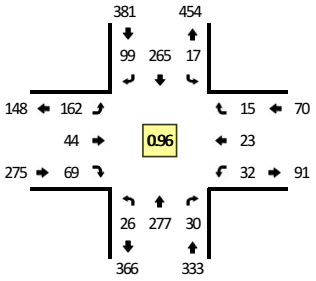
Type of peak hour being reported: Intersection Peak

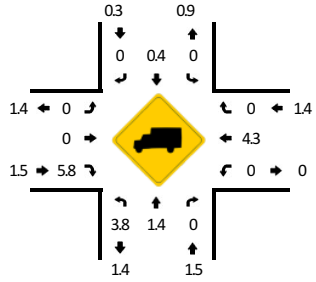
Method for determining peak hour: Total Entering Volume

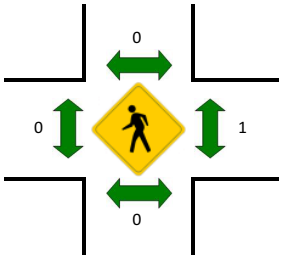
LOCATION: NW Parker St -- NW Pacific Rim Dr
CITY/STATE: Camas, WA

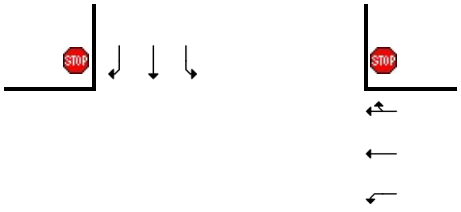
QC JOB #: 17043032
DATE: Thu, May 15 2025

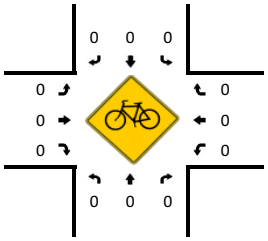
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Peak 15-Min: 5:30 PM -- 5:45 PM

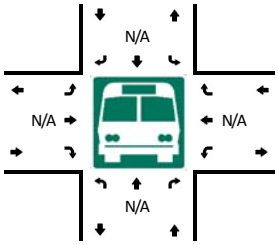


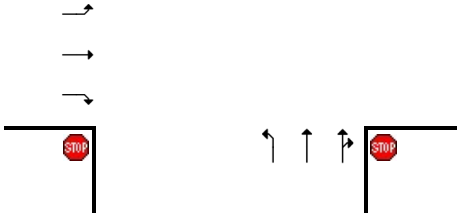


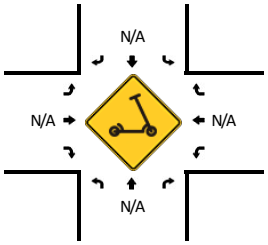












R* = RTOR

5-Min Count Period Beginning At	NW Parker St (Northbound)					NW Parker St (Southbound)					NW Pacific Rim Dr (Eastbound)					NW Pacific Rim Dr (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	3	16	0	0	0	0	23	6	0	0	14	2	3	0	0	1	2	0	0	0	70	
4:05 PM	2	17	1	0	0	0	16	11	0	0	11	7	9	0	0	1	4	2	0	0	81	
4:10 PM	3	18	1	0	0	1	17	6	0	0	17	2	4	0	0	5	2	2	0	0	78	
4:15 PM	1	18	4	0	0	1	15	7	0	0	9	0	4	0	0	1	4	1	0	0	65	
4:20 PM	3	14	2	0	0	0	14	8	0	0	10	0	3	0	0	1	2	2	0	0	59	
4:25 PM	2	18	7	0	0	0	26	7	0	0	6	1	6	0	0	0	2	2	0	0	77	
4:30 PM	0	24	1	0	0	1	16	6	0	0	9	4	6	0	0	3	2	0	0	0	72	
4:35 PM	3	21	1	0	0	0	23	4	0	0	10	4	11	0	0	0	0	0	0	0	77	
4:40 PM	2	30	0	0	0	0	16	7	0	0	5	3	6	0	0	0	3	2	0	0	74	
4:45 PM	2	23	3	0	0	2	24	9	0	0	9	5	2	0	0	1	0	0	0	0	80	
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4:55 PM	3	19	1	0	0	1	22	9	0	0	7	2	7	0	0	4	1	0	0	0	76	890
5:00 PM	0	15	4	0	0	2	30	11	0	0	14	4	14	0	0	1	3	0	0	0	98	918
5:05 PM	1	18	4	0	0	2	24	12	0	0	10	1	9	0	0	4	3	2	0	0	90	927
5:10 PM	3	24	3	0	0	1	21	6	0	0	13	3	2	0	0	3	1	2	0	0	82	931
5:15 PM	5	25	3	0	0	2	20	13	0	0	17	5	4	0	0	2	1	2	0	0	99	965
5:20 PM	2	33	3	0	0	1	14	4	0	0	14	4	6	0	0	1	2	1	0	0	85	991
5:25 PM	0	27	0	0	0	1	28	4	0	0	7	5	3	0	0	2	0	1	0	0	78	992
5:30 PM	6	30	2	0	0	2	20	10	0	0	16	4	7	0	0	2	1	0	0	0	100	1020
5:35 PM	2	19	1	0	0	3	21	6	0	0	18	6	2	0	0	7	6	0	0	0	91	1034
5:40 PM	0	19	2	0	0	0	24	7	0	0	16	4	6	0	0	2	2	3	0	0	85	1045
5:45 PM	4	29	4	0	0	0	20	10	0	0	13	3	2	0	0	3	2	4	0	0	94	1059
5:50 PM	2	17	2	0	0	0	23	6	0	0	10	2	2	0	0	0	1	2	0	0	67	1045
5:55 PM	2	13	3	0	0	2	26	4	0	0	19	3	4	0	0	3	3	2	0	0	84	1053

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	32	272	20	0	0	20	260	92	0	0	200	56	60	0	0	44	36	12	0	0	1104
Heavy Trucks	0	8	0			0	0	0			0	0	0			0	4	0			12
Buses																					
Pedestrians		0					0					0					4				4
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

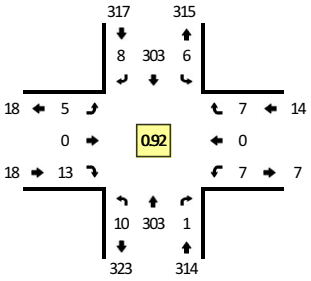
Type of peak hour being reported: Intersection Peak

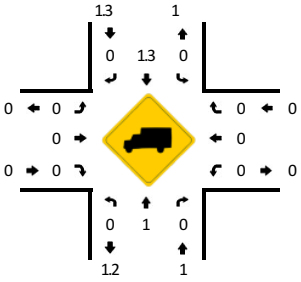
Method for determining peak hour: Total Entering Volume

LOCATION: NW Brady Rd -- NW 20th Ave
CITY/STATE: Camas, WA

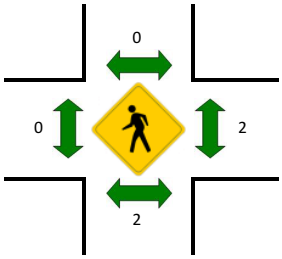
QC JOB #: 17043034
DATE: Thu, May 15 2025

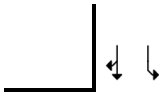
Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

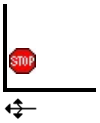


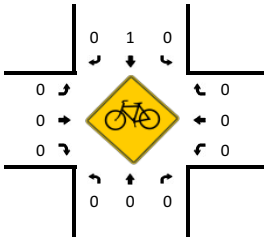


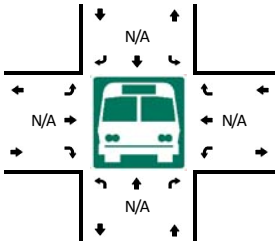
TRUE DATA TO IMPROVE MOBILITY

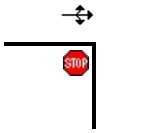


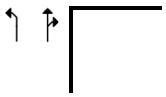


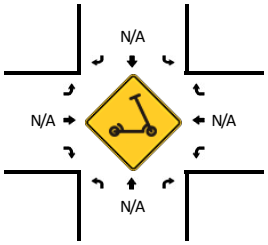












R* = RTOR

5-Min Count Period Beginning At	NW Brady Rd (Northbound)					NW Brady Rd (Southbound)					NW 20th Ave (Eastbound)					NW 20th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	0	11	1	0	0	1	24	0	0	0	0	0	0	0	0	0	0	0	0	0	37	
4:05 PM	0	20	0	0	0	0	15	3	0	0	0	0	0	0	0	0	0	1	0	0	39	
4:10 PM	2	19	0	0	0	0	24	1	0	0	2	0	0	0	0	0	0	0	0	0	48	
4:15 PM	0	21	0	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	46	
4:20 PM	1	19	0	0	0	0	15	0	0	0	1	0	1	0	0	0	0	0	0	0	37	
4:25 PM	2	26	2	0	0	1	23	1	0	0	1	0	0	0	0	0	0	0	0	0	56	
4:30 PM	0	20	0	0	0	1	20	1	0	0	2	0	0	0	0	0	0	0	0	0	44	
4:35 PM	1	21	0	0	0	0	35	1	0	0	1	0	0	0	0	0	0	1	0	0	60	
4:40 PM	2	33	0	0	0	0	14	0	0	0	0	0	1	0	0	0	0	0	0	0	50	
4:45 PM	1	24	0	0	0	0	22	0	0	0	0	0	1	0	0	1	0	2	0	0	51	
4:50 PM	0	23	0	0	0	1	27	2	0	0	0	0	0	0	0	0	0	1	0	0	54	
4:55 PM	2	20	0	0	0	1	27	1	0	0	1	0	0	0	0	0	0	1	0	0	53	575
5:00 PM	0	17	0	0	0	3	29	0	0	0	0	0	0	0	0	1	0	0	0	0	50	588
5:05 PM	1	24	0	0	0	0	33	0	0	0	0	0	7	0	0	1	0	0	0	0	66	615
5:10 PM	1	30	1	0	0	1	24	2	0	0	0	0	1	0	0	2	0	0	0	0	62	629
5:15 PM	0	26	0	0	0	0	25	0	0	0	0	0	0	0	0	2	0	0	0	0	53	636
5:20 PM	1	31	0	0	0	0	17	1	0	0	1	0	0	0	0	0	0	2	0	0	53	652
5:25 PM	1	32	0	0	0	0	25	0	0	0	1	0	2	0	0	0	0	0	0	0	61	657
5:30 PM	0	22	0	0	0	0	25	1	0	0	1	0	1	0	0	0	0	0	0	0	50	663
5:35 PM	0	25	1	0	0	2	24	1	0	0	1	0	2	0	0	0	0	0	0	0	56	659
5:40 PM	1	20	0	0	0	0	26	1	0	0	2	0	0	0	0	0	0	1	0	0	51	660
5:45 PM	0	24	0	0	0	0	23	1	0	0	1	0	0	0	0	0	0	1	0	0	50	659
5:50 PM	2	17	0	0	0	0	23	0	0	0	0	0	0	0	0	0	0	1	0	0	43	648
5:55 PM	0	15	1	0	0	1	25	0	0	0	2	0	1	0	0	0	0	0	0	0	45	640

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	8	320	4	0	0	4	328	8	0	0	0	0	32	0	0	20	0	0	0	0	724
Heavy Trucks	0	0	0			0	8	0			0	0	0			0	0	0			8
Buses																					
Pedestrians		8					0					0					8				16
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

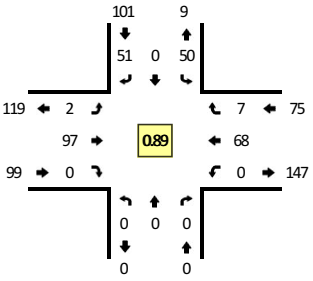
Type of peak hour being reported: Intersection Peak

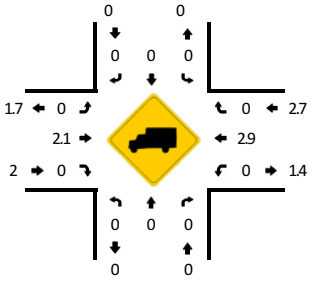
Method for determining peak hour: Total Entering Volume

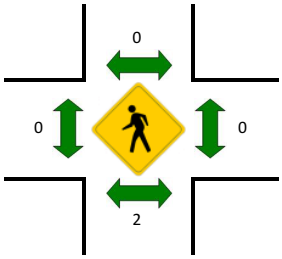
LOCATION: Sharp Dr -- NW 18th Ave
CITY/STATE: Camas, WA

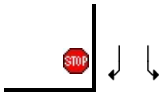
QC JOB #: 17043036
DATE: Thu, May 15 2025

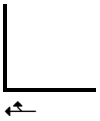
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

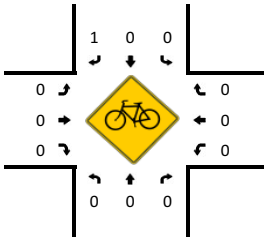


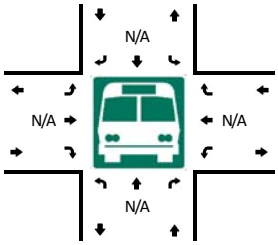


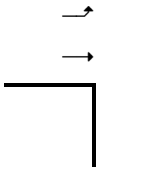




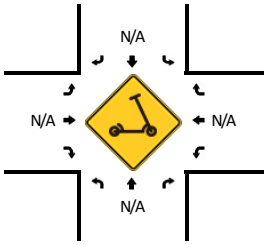












R* = RTOR

5-Min Count Period Beginning At	Sharp Dr (Northbound)					Sharp Dr (Southbound)					NW 18th Ave (Eastbound)					NW 18th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	0	0	0	0	0	2	0	0	0	0	0	5	0	0	0	0	4	0	0	0	11	
4:05 PM	0	0	0	0	0	0	0	1	0	0	0	9	0	0	0	0	5	0	0	0	15	
4:10 PM	0	0	0	0	0	4	0	2	0	0	1	3	0	0	0	0	7	1	0	0	18	
4:15 PM	0	0	0	0	0	0	0	1	0	0	0	7	0	0	0	0	4	0	0	0	12	
4:20 PM	0	0	0	0	0	3	0	0	0	0	1	8	0	0	0	0	5	0	0	0	17	
4:25 PM	0	0	0	0	0	1	0	2	0	0	0	9	0	0	0	0	6	1	0	0	19	
4:30 PM	0	0	0	0	0	2	0	7	0	0	0	8	0	0	0	0	6	1	0	0	24	
4:35 PM	0	0	0	0	0	5	0	6	0	0	1	9	0	0	0	0	5	2	0	0	28	
4:40 PM	0	0	0	0	0	2	0	4	0	0	0	9	0	0	0	0	5	0	0	0	20	
4:45 PM	0	0	0	0	0	5	0	2	0	0	0	8	0	0	0	0	7	0	0	0	22	
4:50 PM	0	0	0	0	0	2	0	2	0	0	1	12	0	0	0	0	4	1	0	0	22	
4:55 PM	0	0	0	0	0	4	0	3	0	0	0	7	0	0	0	0	6	0	0	0	20	228
5:00 PM	0	0	0	0	0	5	0	1	0	0	0	9	0	0	0	0	3	1	0	0	19	236
5:05 PM	0	0	0	0	0	5	0	3	0	0	0	10	0	0	0	0	7	0	0	0	25	246
5:10 PM	0	0	0	0	0	4	0	1	0	0	0	7	0	0	0	0	5	1	0	0	18	246
5:15 PM	0	0	0	0	0	5	0	9	0	0	0	7	0	0	0	0	5	0	0	0	26	260
5:20 PM	0	0	0	0	0	9	0	7	0	0	0	6	0	0	0	0	8	0	0	0	30	273
5:25 PM	0	0	0	0	0	2	0	6	0	0	0	5	0	0	0	0	7	1	0	0	21	275
5:30 PM	0	0	0	0	0	5	0	3	0	0	0	6	0	0	0	0	3	0	0	0	17	268
5:35 PM	0	0	0	0	0	4	0	1	0	0	0	10	0	0	0	0	3	0	0	0	18	258
5:40 PM	0	0	0	0	0	4	0	0	0	0	0	8	0	0	0	0	5	0	0	0	17	255
5:45 PM	0	0	0	0	0	2	0	1	0	0	0	7	0	0	0	0	4	0	0	0	14	247
5:50 PM	0	0	0	0	0	5	0	0	0	0	0	4	0	0	0	0	3	0	0	0	12	237
5:55 PM	0	0	0	0	0	1	0	2	0	0	0	8	0	0	0	0	3	0	0	0	14	231

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	64	0	88	0	0	0	72	0	0	0	0	80	4	0	0	308
Heavy Trucks	0	0	0			0	0	0			0	0	0			0	0	0			0
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

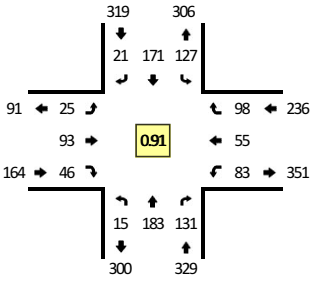
Type of peak hour being reported: Intersection Peak

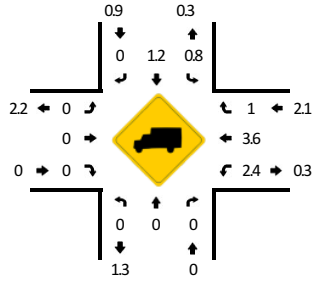
Method for determining peak hour: Total Entering Volume

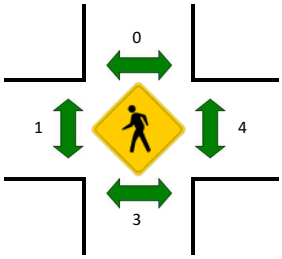
LOCATION: NW Brady Rd -- NW 16th Ave
CITY/STATE: Camas, WA

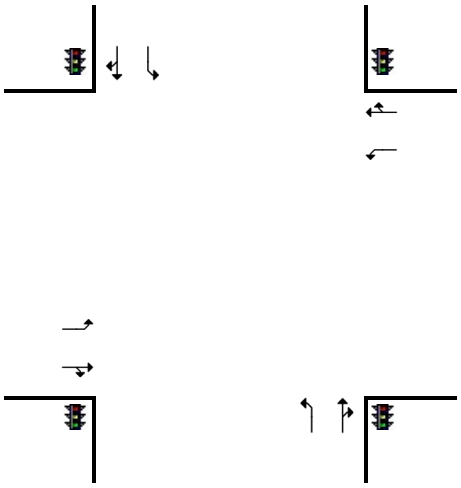
QC JOB #: 17043040
DATE: Thu, May 15 2025

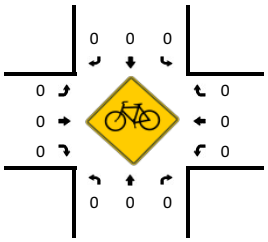
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

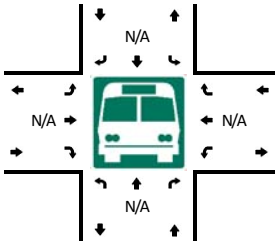


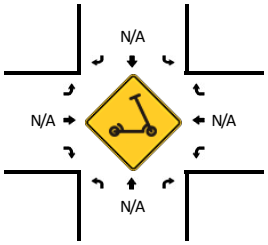












R* = RTOR

5-Min Count Period Beginning At	NW Brady Rd (Northbound)					NW Brady Rd (Southbound)					NW 16th Ave (Eastbound)					NW 16th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	0	9	10	0	3	11	10	1	0	0	1	7	0	0	1	6	3	3	0	0	65	
4:05 PM	1	16	6	0	0	6	10	2	0	0	1	7	2	0	0	13	3	4	0	2	73	
4:10 PM	2	6	6	0	0	5	18	0	0	0	0	4	2	0	2	6	5	10	0	4	70	
4:15 PM	0	9	9	0	3	15	10	1	0	0	3	5	0	0	0	8	1	5	0	4	73	
4:20 PM	1	19	8	0	5	8	6	0	0	0	1	6	2	0	2	5	6	4	0	0	73	
4:25 PM	1	17	6	0	1	11	12	1	0	0	1	9	1	0	0	9	4	4	0	3	80	
4:30 PM	2	10	11	0	2	9	9	1	0	0	2	3	0	0	2	5	5	5	0	5	71	
4:35 PM	2	14	4	0	1	12	19	1	0	1	2	10	3	0	1	7	3	5	0	4	89	
4:40 PM	0	15	7	0	1	11	4	0	0	1	4	5	0	0	1	8	4	11	0	2	74	
4:45 PM	1	15	6	0	2	8	11	1	0	1	1	7	1	0	0	8	9	5	0	5	81	
4:50 PM	1	15	7	0	5	13	14	1	0	0	2	11	7	0	0	8	8	3	0	2	97	
4:55 PM	1	12	8	0	3	13	12	4	0	0	3	8	2	0	0	6	5	7	0	4	88	934
5:00 PM	1	10	10	0	1	11	14	0	0	1	0	9	3	0	0	9	3	2	0	1	75	944
5:05 PM	1	16	10	0	1	11	28	2	0	0	3	9	5	0	1	7	5	4	0	3	106	977
5:10 PM	1	17	9	0	4	15	15	0	0	0	4	11	0	0	2	6	3	8	0	3	98	1005
5:15 PM	0	20	10	0	1	10	15	2	0	0	1	5	2	0	0	6	5	1	0	5	83	1015
5:20 PM	1	17	9	0	3	7	8	0	0	1	4	7	5	0	4	10	6	5	0	8	95	1037
5:25 PM	0	16	13	0	3	9	16	2	0	0	1	3	3	0	1	7	4	6	0	4	88	1045
5:30 PM	1	13	4	0	0	9	13	1	0	1	2	5	3	0	3	5	3	7	0	2	72	1046
5:35 PM	5	17	6	0	1	12	14	2	0	0	2	10	2	0	0	6	0	5	0	3	85	1042
5:40 PM	2	15	8	0	7	9	11	1	0	1	2	8	1	0	1	5	4	4	0	1	80	1048
5:45 PM	0	10	4	0	4	9	16	1	0	0	1	6	1	0	0	6	4	6	0	6	74	1041
5:50 PM	0	14	13	0	4	7	15	0	0	0	1	9	1	0	1	7	3	3	0	1	79	1023
5:55 PM	0	10	7	0	4	9	17	2	0	0	0	6	1	0	0	6	3	7	0	0	72	1007

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	8	212	140	0	24	144	232	16	0	0	32	100	40	0	12	76	52	96	0	44	1228
Heavy Trucks	0	0	0			4	4	0			0	0	0			4	4	0			16
Buses																					
Pedestrians		4					0					4					0				8
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

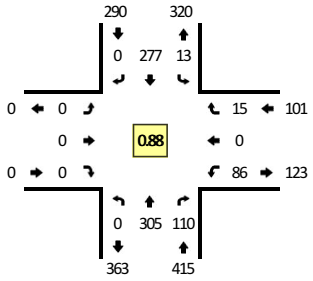
Type of peak hour being reported: Intersection Peak

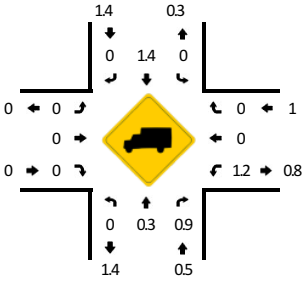
Method for determining peak hour: Total Entering Volume

LOCATION: NW Brady Rd -- NW McIntosh Rd
CITY/STATE: Camas, WA

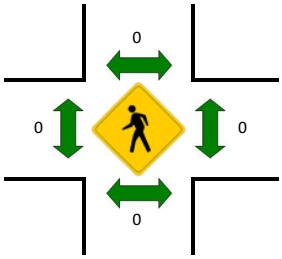
QC JOB #: 17043042
DATE: Thu, May 15 2025

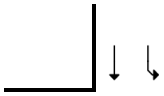
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

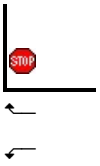


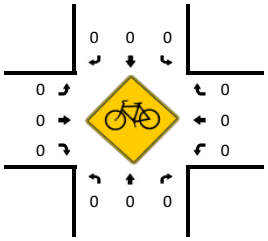


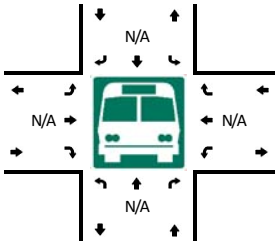
TRUE DATA TO IMPROVE MOBILITY



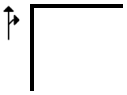


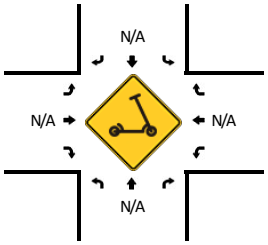












R* = RTOR

5-Min Count Period Beginning At	NW Brady Rd (Northbound)					NW Brady Rd (Southbound)					NW McIntosh Rd (Eastbound)					NW McIntosh Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	0	21	10	0	0	0	19	0	0	0	0	0	0	0	0	5	0	2	0	0	57	
4:05 PM	0	19	7	0	0	1	23	0	0	0	0	0	0	0	0	6	0	4	0	0	60	
4:10 PM	0	18	8	0	0	2	22	0	0	0	0	0	0	0	0	7	0	0	0	0	57	
4:15 PM	0	16	12	0	0	0	23	0	0	0	0	0	0	0	0	6	0	2	0	0	59	
4:20 PM	0	32	5	0	0	3	11	0	0	0	0	0	0	0	0	11	0	2	0	0	64	
4:25 PM	0	20	11	0	0	0	19	0	0	0	0	0	0	0	0	9	0	2	0	0	61	
4:30 PM	0	23	11	0	0	0	17	0	0	0	0	0	0	0	0	6	0	1	0	0	58	
4:35 PM	0	17	2	0	0	1	25	0	0	0	0	0	0	0	0	8	0	5	0	0	58	
4:40 PM	0	24	12	0	0	1	18	0	0	0	0	0	0	0	0	4	0	0	0	0	59	
4:45 PM	0	23	6	0	0	0	20	0	0	0	0	0	0	0	0	9	0	2	0	0	60	
4:50 PM	0	31	12	0	0	2	26	0	0	0	0	0	0	0	0	7	0	3	0	0	81	
4:55 PM	0	15	8	0	0	1	19	0	0	0	0	0	0	0	0	5	0	1	0	0	49	723
5:00 PM	0	23	12	0	0	0	20	0	0	0	0	0	0	0	0	5	0	1	0	0	61	727
5:05 PM	0	25	14	0	0	3	33	0	0	0	0	0	0	0	0	2	0	0	0	0	77	744
5:10 PM	0	30	11	0	0	2	27	0	0	0	0	0	0	0	0	7	0	2	0	0	79	766
5:15 PM	0	27	12	0	0	0	22	0	0	0	0	0	0	0	0	10	0	1	0	0	72	779
5:20 PM	0	31	4	0	0	1	21	0	0	0	0	0	0	0	0	13	0	1	0	0	71	786
5:25 PM	0	27	8	0	0	1	28	0	0	0	0	0	0	0	0	6	0	1	0	0	71	796
5:30 PM	0	21	5	0	0	1	21	0	0	0	0	0	0	0	0	6	0	2	0	0	56	794
5:35 PM	0	23	10	0	0	0	21	0	0	0	0	0	0	0	0	8	0	1	0	0	63	799
5:40 PM	0	29	8	0	0	2	19	0	0	0	0	0	0	0	0	8	0	0	0	0	66	806
5:45 PM	0	19	8	0	0	2	18	0	0	0	0	0	0	0	0	8	0	0	0	0	55	801
5:50 PM	0	33	13	0	0	1	20	0	0	0	0	0	0	0	0	5	0	1	0	0	73	793
5:55 PM	0	18	8	0	0	0	23	0	0	0	0	0	0	0	0	5	0	1	0	0	55	799

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	328	148	0	0	20	328	0	0	0	0	0	0	0	0	76	0	12	0	0	912
Heavy Trucks	0	0	4			0	8	0			0	0	0			0	0	0			12
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

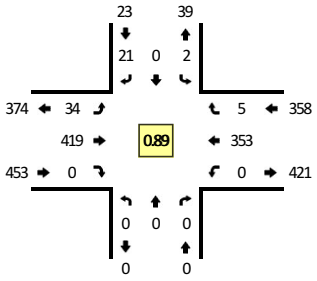
Type of peak hour being reported: Intersection Peak

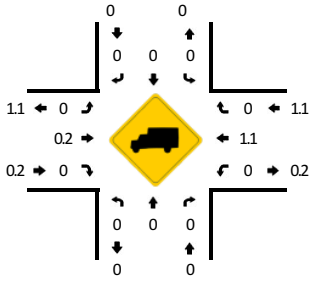
Method for determining peak hour: Total Entering Volume

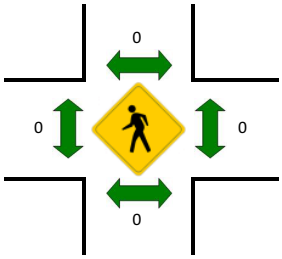
LOCATION: SE Grand Ridge Dr -- NW Brady Rd
CITY/STATE: Camas, WA

QC JOB #: 17043044
DATE: Thu, May 15 2025

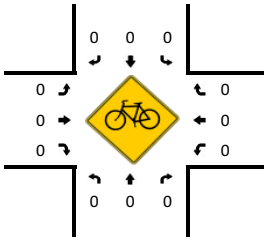
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

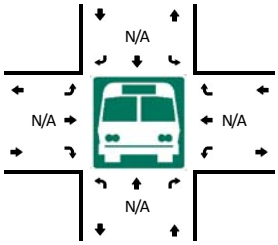




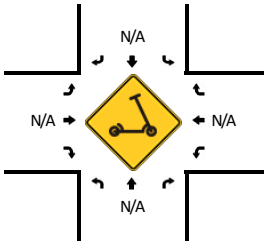












R* = RTOR

5-Min Count Period Beginning At	SE Grand Ridge Dr (Northbound)					SE Grand Ridge Dr (Southbound)					NW Brady Rd (Eastbound)					NW Brady Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	0	0	0	0	0	1	0	2	0	0	3	30	0	0	0	0	24	0	0	0	60	
4:05 PM	0	0	0	0	0	0	0	2	0	0	2	21	0	0	0	0	29	0	0	0	54	
4:10 PM	0	0	0	0	0	0	0	3	0	0	2	27	0	0	0	0	29	0	0	0	61	
4:15 PM	0	0	0	0	0	0	0	0	0	0	1	32	0	0	0	0	29	0	0	0	62	
4:20 PM	0	0	0	0	0	0	0	1	0	0	3	34	0	0	0	0	21	1	0	0	60	
4:25 PM	0	0	0	0	0	0	0	0	0	0	1	33	0	0	0	0	29	0	0	0	63	
4:30 PM	0	0	0	0	0	0	0	2	0	0	5	31	0	0	0	0	22	0	0	0	60	
4:35 PM	0	0	0	0	0	0	0	2	0	0	6	22	0	0	0	0	35	0	0	0	65	
4:40 PM	0	0	0	0	0	0	0	4	0	0	3	37	0	0	0	0	21	0	0	0	65	
4:45 PM	0	0	0	0	0	0	0	3	0	0	2	27	0	0	0	0	29	0	0	0	61	
4:50 PM	0	0	0	0	0	0	0	3	0	0	1	41	0	0	0	0	34	0	0	0	79	
4:55 PM	0	0	0	0	0	0	0	1	0	0	1	27	0	0	0	0	23	0	0	0	52	742
5:00 PM	0	0	0	0	0	1	0	0	0	0	5	34	0	0	0	0	25	0	0	0	65	747
5:05 PM	0	0	0	0	0	0	0	0	0	0	5	40	0	0	0	0	32	1	0	0	78	771
5:10 PM	0	0	0	0	0	0	0	0	0	0	3	41	0	0	0	0	38	0	0	0	82	792
5:15 PM	0	0	0	0	0	0	0	2	0	0	3	36	0	0	0	0	32	0	0	0	73	803
5:20 PM	0	0	0	0	0	0	0	2	0	0	0	36	0	0	0	0	34	1	0	0	73	816
5:25 PM	0	0	0	0	0	0	0	2	0	0	0	35	0	0	0	0	34	0	0	0	71	824
5:30 PM	0	0	0	0	0	1	0	2	0	0	3	29	0	0	0	0	25	1	0	0	61	825
5:35 PM	0	0	0	0	0	0	0	3	0	0	1	37	0	0	0	0	31	0	0	0	72	832
5:40 PM	0	0	0	0	0	0	0	4	0	0	4	29	0	0	0	0	24	1	0	0	62	829
5:45 PM	0	0	0	0	0	0	0	6	0	0	2	27	0	0	0	0	26	1	0	0	62	830
5:50 PM	0	0	0	0	0	0	0	0	0	0	5	45	0	0	0	0	25	0	0	0	75	826
5:55 PM	0	0	0	0	0	0	0	0	0	0	3	30	0	0	0	0	27	0	0	0	60	834

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	0	0	8	0	0	44	468	0	0	0	0	408	4	0	0	932
Heavy Trucks	0	0	0			0	0	0			0	4	0			0	8	0			12
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-411

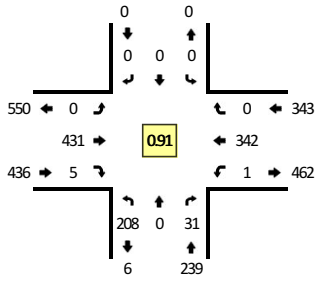
Type of peak hour being reported: Intersection Peak

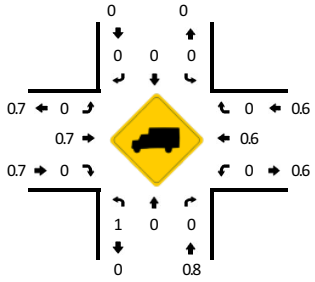
Method for determining peak hour: Total Entering Volume

LOCATION: NW Fisher Creek Dr -- SE 20th St/NW 38th Ave
CITY/STATE: Camas, WA

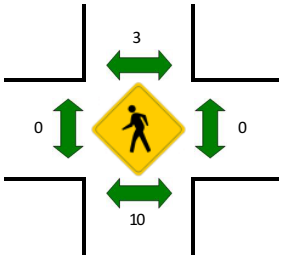
QC JOB #: 17043046
DATE: Thu, May 15 2025

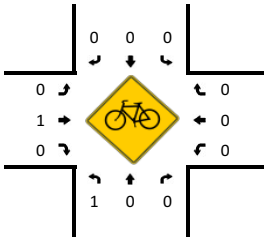
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

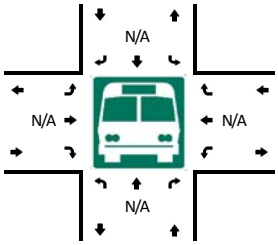


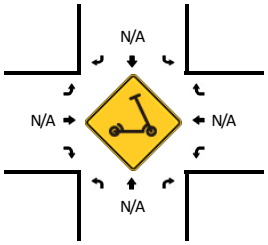


TRUE DATA TO IMPROVE MOBILITY









R* = RTOR

5-Min Count Period Beginning At	NW Fisher Creek Dr (Northbound)					NW Fisher Creek Dr (Southbound)					SE 20th St/NW 38th Ave (Eastbound)					SE 20th St/NW 38th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	30	0	4	0	1	0	0	0	0	0	0	22	0	0	0	0	27	0	0	0	84	
4:05 PM	36	0	2	0	1	0	0	0	0	0	0	26	0	0	0	0	24	0	0	0	89	
4:10 PM	27	0	0	0	2	0	0	0	0	0	0	27	0	0	0	0	33	0	0	0	89	
4:15 PM	15	0	2	0	1	0	0	0	0	0	0	31	0	0	0	0	31	0	0	0	80	
4:20 PM	18	0	0	0	1	0	0	0	0	0	0	41	1	0	0	0	28	0	0	0	89	
4:25 PM	14	0	1	0	1	0	0	0	0	0	0	29	0	0	0	0	28	0	0	0	73	
4:30 PM	13	0	0	0	0	0	0	0	0	0	0	38	0	0	0	0	25	0	0	0	76	
4:35 PM	24	0	0	0	2	0	0	0	0	0	0	29	1	0	0	0	33	0	0	0	89	
4:40 PM	14	0	1	0	0	0	0	0	0	0	0	27	0	0	0	0	23	0	0	0	65	
4:45 PM	14	0	1	0	1	0	0	0	0	0	0	38	0	0	0	0	25	0	0	0	79	
4:50 PM	17	0	2	0	3	0	0	0	0	0	0	52	2	0	0	0	23	0	0	0	99	
4:55 PM	10	0	2	0	3	0	0	0	0	0	0	43	1	0	0	1	29	0	0	0	89	1001
5:00 PM	18	0	2	0	1	0	0	0	0	0	0	32	0	0	0	0	35	0	0	0	88	1005
5:05 PM	32	0	2	0	2	0	0	0	0	0	0	33	0	0	0	0	29	0	0	0	98	1014
5:10 PM	19	0	1	0	2	0	0	0	0	0	0	38	0	0	0	0	33	0	0	0	93	1018
5:15 PM	12	0	0	0	1	0	0	0	0	0	0	30	1	0	0	0	29	0	0	0	73	1011
5:20 PM	11	0	1	0	1	0	0	0	0	0	0	44	1	0	0	0	25	0	0	0	83	1005
5:25 PM	8	0	1	0	4	0	0	0	0	0	0	37	0	0	0	1	30	0	0	0	81	1013
5:30 PM	7	0	1	0	0	0	0	0	0	0	0	41	0	0	0	0	32	0	0	0	81	1018
5:35 PM	10	0	0	0	0	0	0	0	0	0	0	31	0	0	0	0	23	0	0	0	64	993
5:40 PM	2	0	3	0	0	0	0	0	0	0	0	35	0	0	0	0	21	0	0	0	61	989
5:45 PM	5	0	0	0	1	0	0	0	0	0	0	39	0	0	0	0	27	0	0	0	72	982
5:50 PM	1	0	0	0	0	0	0	0	0	0	0	34	0	0	0	0	20	0	0	0	55	938
5:55 PM	1	0	0	0	1	0	0	0	0	0	0	27	0	0	0	0	24	0	0	0	53	902

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	276	0	40	0	20	0	0	0	0	0	0	412	0	0	0	0	388	0	0	0	1136
Heavy Trucks	0	0	0			0	0	0			0	0	0			0	0	0			0
Buses																					
Pedestrians		12					8					0					0				20
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-412

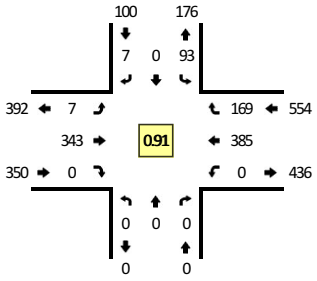
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

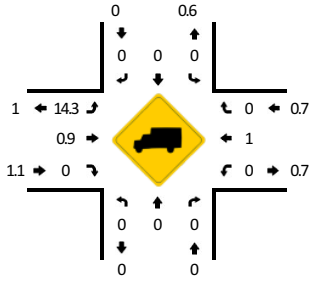
LOCATION: SE Bybee Rd -- SE 20th St/NW 38th Ave
CITY/STATE: Camas, WA

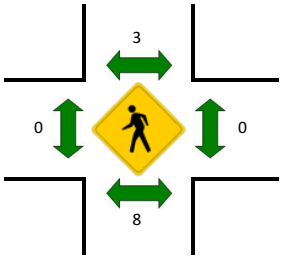
QC JOB #: 17043048
DATE: Thu, May 15 2025

Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

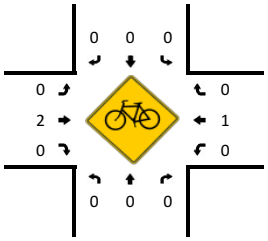


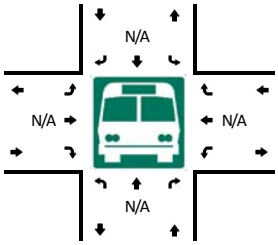




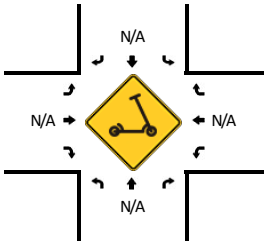












R* = RTOR

5-Min Count Period Beginning At	SE Bybee Rd (Northbound)					SE Bybee Rd (Southbound)					SE 20th St/NW 38th Ave (Eastbound)					SE 20th St/NW 38th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	0	0	0	0	0	2	0	0	0	0	1	23	0	0	0	0	38	18	0	0	82	
4:05 PM	0	0	0	0	0	6	0	0	0	0	1	16	0	0	0	0	45	15	0	0	83	
4:10 PM	0	0	0	0	0	6	0	0	0	0	2	23	0	0	0	0	45	15	0	0	91	
4:15 PM	0	0	0	0	0	10	0	0	0	0	0	20	0	0	0	0	35	12	0	0	77	
4:20 PM	0	0	0	0	0	9	0	0	0	0	1	34	0	0	0	0	31	15	0	0	90	
4:25 PM	0	0	0	0	0	3	0	2	0	0	2	25	0	0	0	0	32	11	0	0	75	
4:30 PM	0	0	0	0	0	1	0	0	0	0	0	37	0	0	0	0	28	10	0	0	76	
4:35 PM	0	0	0	0	0	5	0	0	0	0	0	25	0	0	0	0	40	17	0	0	87	
4:40 PM	0	0	0	0	0	3	0	1	0	0	0	24	0	0	0	0	25	11	0	0	64	
4:45 PM	0	0	0	0	0	12	0	0	0	0	3	30	0	0	0	0	26	13	0	0	84	
4:50 PM	0	0	0	0	0	14	0	0	0	0	0	38	0	0	0	0	27	13	0	0	92	
4:55 PM	0	0	0	0	0	14	0	0	0	0	0	29	0	0	0	0	27	14	0	0	84	985
5:00 PM	0	0	0	0	0	3	0	2	0	0	1	27	0	0	0	0	36	16	0	0	85	988
5:05 PM	0	0	0	0	0	6	0	0	0	0	0	28	0	0	0	0	44	18	0	0	96	1001
5:10 PM	0	0	0	0	0	13	0	2	0	0	0	26	0	0	0	0	34	19	0	0	94	1004
5:15 PM	0	0	0	0	0	4	0	0	0	0	1	25	0	0	0	0	30	11	0	0	71	998
5:20 PM	0	0	0	0	0	14	0	1	0	0	1	32	0	0	0	0	26	9	0	0	83	991
5:25 PM	0	0	0	0	0	6	0	0	0	0	1	32	0	0	0	0	26	12	0	0	77	993
5:30 PM	0	0	0	0	0	13	0	0	0	0	0	27	0	0	0	0	24	16	0	0	80	997
5:35 PM	0	0	0	0	0	8	0	2	0	0	0	23	0	0	0	0	23	10	0	0	66	976
5:40 PM	0	0	0	0	0	8	0	0	0	0	0	27	0	0	0	0	18	5	0	0	58	970
5:45 PM	0	0	0	0	0	9	0	0	0	0	0	30	0	0	0	0	25	8	0	0	72	958
5:50 PM	0	0	0	0	0	6	0	1	0	0	0	30	0	0	0	0	14	7	0	0	58	924
5:55 PM	0	0	0	0	0	6	0	0	0	0	0	21	0	0	0	0	21	5	0	0	53	893

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	88	0	16	0	0	4	324	0	0	0	0	456	212	0	0	1100
Heavy Trucks	0	0	0			0	0	0			0	0	0			0	0	0			0
Buses																					
Pedestrians		8					4					0					0				12
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 5/22/2025 4:30 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

Appendix D: Existing Conditions Analysis Worksheets

Intersection Level Of Service Report
Intersection 1: NW Fisher Creek Dr/ NW 38th Ave

Control Type:	Signalized	Delay (sec / veh):	12.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.473

Intersection Setup

Name	NW Fisher Creek Dr			NW Fisher Creek Dr			SE 20th St			NW 38th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Fisher Creek Dr			NW Fisher Creek Dr			SE 20th St			NW 38th Ave		
Base Volume Input [veh/h]	11	0	1	0	0	0	0	278	169	12	275	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	4.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	11	0	1	0	0	0	0	278	169	12	275	0
Peak Hour Factor	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	0	0	0	0	0	0	87	53	4	86	0
Total Analysis Volume [veh/h]	14	0	1	0	0	0	0	348	211	15	344	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	20	30	0	20	30	0	25	45	0	25	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	3.5	3.5	0.0	3.5	3.5	0.0	2.5	1.6	0.0	2.5	1.7	0.0
Walk [s]	9	9	0	0	8	0	0	7	0	0	9	0
Pedestrian Clearance [s]	13	13	0	0	12	0	0	10	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.5	4.5	0.0	4.5	4.5	0.0	3.5	3.6	0.0	3.5	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	14	9	0	9	9	0	9	14	0	9	14	0
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	8	0	5	8	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	42	42	42	42	42	42	42	42
L, Total Lost Time per Cycle [s]	6.50	6.50	4.50	6.50	5.60	5.60	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.50	0.00	4.50	0.00	3.60	0.00	3.70
g_i, Effective Green Time [s]	7	1	9	0	20	16	22	17
g / C, Green / Cycle	0.17	0.02	0.22	0.00	0.48	0.38	0.53	0.40
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.00	0.00	0.00	0.32	0.01	0.19
s, saturation flow rate [veh/h]	1708	1615	1699	1900	1185	1725	1048	1840
c, Capacity [veh/h]	558	30	551	0	695	660	566	736
d1, Uniform Delay [s]	14.29	20.06	0.00	0.00	0.00	11.73	6.40	9.22
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	0.45	0.00	0.00	0.00	3.11	0.02	0.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.03	0.00	0.00	0.00	0.85	0.03	0.47
d, Delay for Lane Group [s/veh]	14.30	20.52	0.00	0.00	0.00	14.84	6.41	9.68
Lane Group LOS	B	C	A	A	A	B	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.10	0.01	0.00	0.00	0.00	3.71	0.03	1.62
50th-Percentile Queue Length [ft/ln]	2.49	0.31	0.00	0.00	0.00	92.65	0.86	40.41
95th-Percentile Queue Length [veh/ln]	0.18	0.02	0.00	0.00	0.00	6.67	0.06	2.91
95th-Percentile Queue Length [ft/ln]	4.48	0.56	0.00	0.00	0.00	166.78	1.54	72.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.30	20.52	20.52	0.00	0.00	0.00	0.00	14.84	14.84	6.41	9.68	9.68
Movement LOS	B	C	C	A	A	A	A	B	B	A	A	A
d_A, Approach Delay [s/veh]	14.72			0.00			14.84			9.55		
Approach LOS	B			A			B			A		
d_I, Intersection Delay [s/veh]	12.80											
Intersection LOS	B											
Intersection V/C	0.473											

Emissions

Vehicle Miles Traveled [mph]	0.57	0.04	0.00	0.00	0.00	27.29	0.36	8.17
Stops [stops/h]	8.63	1.08	0.00	0.00	0.00	321.27	2.97	140.12
Fuel consumption [US gal/h]	0.10	0.01	0.00	0.00	0.00	5.82	0.06	2.35
CO [g/h]	6.97	0.71	0.00	0.00	0.00	406.94	4.30	164.05
NOx [g/h]	1.36	0.14	0.00	0.00	0.00	79.18	0.84	31.92
VOC [g/h]	1.61	0.16	0.00	0.00	0.00	94.31	1.00	38.02

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	11.22	9.80	10.50	9.80
l_p,int, Pedestrian LOS Score for Intersectio	1.969	1.889	2.290	2.196
Crosswalk LOS	A	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1445	1445	2167	2167
d_b, Bicycle Delay [s]	1.60	1.60	0.15	0.15
l_b,int, Bicycle LOS Score for Intersection	1.584	1.560	1.410	1.080
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: NW Parker Street/ NW 38th Avenue

Control Type:	Signalized	Delay (sec / veh):	18.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.552

Intersection Setup

Name	NW Parker St			NW Parker St			NW 38th Ave			NW 38th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00	130.00	100.00	100.00	130.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker St			NW Parker St			NW 38th Ave			NW 38th Ave		
Base Volume Input [veh/h]	66	386	76	14	287	122	95	66	35	84	108	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	5.00	9.00	7.00	2.00	3.00	0.00	5.00	8.00	6.00	2.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	76	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	386	0	14	287	122	95	66	35	84	108	34
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	110	0	4	82	35	27	19	10	24	31	10
Total Analysis Volume [veh/h]	75	439	0	16	326	139	108	75	40	95	123	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Overlap	ProtPer	Permiss	Overlap	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	7	5	2	3	3	8	0	7	4	0
Auxiliary Signal Groups			6,7			2,3						
Maximum Green [s]	15	25	15	15	25	15	15	20	0	15	20	0
Amber [s]	3.0	3.6	3.0	3.0	3.6	3.0	3.0	4.0	0.0	3.0	3.6	0.0
All red [s]	2.9	2.1	3.0	2.7	2.0	2.8	2.8	2.0	0.0	3.0	2.4	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	9	0	0	9	0	0	13	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.9	3.7	4.0	3.7	3.6	3.8	3.8	4.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	14	9	9	14	9	9	14	0	9	14	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	55	55	55	55	55	55	55	55	55	55
L, Total Lost Time per Cycle [s]	5.80	5.70	5.70	5.65	5.60	5.60	5.90	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.70	0.00	0.00	3.60	0.00	0.00	4.00	0.00	4.00
g_i, Effective Green Time [s]	26	16	27	26	17	27	17	6	16	7
g / C, Green / Cycle	0.48	0.30	0.49	0.48	0.31	0.49	0.31	0.11	0.30	0.12
(v / s)_i Volume / Saturation Flow Rate	0.06	0.24	0.00	0.01	0.17	0.09	0.07	0.07	0.06	0.09
s, saturation flow rate [veh/h]	1286	1825	1500	1279	1870	1577	1652	1719	1607	1794
c, Capacity [veh/h]	517	543	735	452	590	781	464	188	464	219
d1, Uniform Delay [s]	14.57	17.75	0.00	16.48	15.51	7.63	16.60	23.23	16.22	23.16
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	2.93	0.00	0.03	0.84	0.11	0.25	3.22	0.22	4.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.15	0.81	0.00	0.04	0.55	0.18	0.23	0.61	0.20	0.74
d, Delay for Lane Group [s/veh]	14.70	20.68	0.00	16.51	16.34	7.73	16.86	26.45	16.43	28.05
Lane Group LOS	B	C	A	B	B	A	B	C	B	C
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.39	4.80	0.00	0.08	3.01	0.72	0.86	1.42	0.76	2.07
50th-Percentile Queue Length [ft/ln]	9.79	119.92	0.00	2.00	75.17	17.88	21.43	35.53	18.88	51.79
95th-Percentile Queue Length [veh/ln]	0.71	8.39	0.00	0.14	5.41	1.29	1.54	2.56	1.36	3.73
95th-Percentile Queue Length [ft/ln]	17.63	209.72	0.00	3.60	135.31	32.18	38.57	63.96	33.98	93.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.70	20.68	0.00	16.51	16.34	7.73	16.86	26.45	26.45	16.43	28.05	28.05
Movement LOS	B	C	A	B	B	A	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	19.81			13.86			21.80			23.76		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	18.86											
Intersection LOS	B											
Intersection V/C	0.552											

Emissions

Vehicle Miles Traveled [mph]	2.62	15.36	0.00	0.38	7.71	3.29	6.47	6.89	4.35	7.41
Stops [stops/h]	25.86	316.74	0.00	5.29	198.55	47.22	56.60	93.85	49.85	136.79
Fuel consumption [US gal/h]	0.52	4.82	0.00	0.11	2.87	0.70	1.16	1.79	0.96	2.53
CO [g/h]	36.27	336.59	0.00	7.55	200.74	48.88	80.97	124.98	67.33	177.13
NOx [g/h]	7.06	65.49	0.00	1.47	39.06	9.51	15.75	24.32	13.10	34.46
VOC [g/h]	8.41	78.01	0.00	1.75	46.52	11.33	18.77	28.97	15.60	41.05

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	19.00	19.00	19.00	19.00
l_p,int, Pedestrian LOS Score for Intersectio	2.617	2.530	2.243	2.117
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	917	917	734	734
d_b, Bicycle Delay [s]	7.99	7.99	10.93	10.93
l_b,int, Bicycle LOS Score for Intersection	1.247	2.353	1.928	0.697
Bicycle LOS	A	B	A	A

Sequence

Ring 1	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: NW Parker St/ NW Pacific Rim

Control Type:	All-way stop	Delay (sec / veh):	12.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.374

Intersection Setup

Name	NW Parker St			NW Parker St			NW Pacific Rim			NW Pacific Rim		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	155.00	100.00	100.00	145.00	100.00	100.00	130.00	100.00	100.00	75.00	100.00	75.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker St			NW Parker St			NW Pacific Rim			NW Pacific Rim		
Base Volume Input [veh/h]	44	307	19	10	188	182	150	14	19	46	58	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	4.00	26.00	10.00	3.00	3.00	6.00	0.00	0.00	7.00	3.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	307	19	10	188	182	150	14	19	46	58	13
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	85	5	3	52	51	42	4	5	13	16	4
Total Analysis Volume [veh/h]	49	341	21	11	209	202	167	16	21	51	64	14
Pedestrian Volume [ped/h]	1			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	511	551	556	511	559	624	489	531	590	471	508	526
Degree of Utilization, x	0.10	0.33	0.33	0.02	0.37	0.32	0.34	0.03	0.04	0.11	0.08	0.07

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.32	1.42	1.41	0.07	1.73	1.40	1.50	0.09	0.11	0.36	0.25	0.24
95th-Percentile Queue Length [ft]	7.91	35.61	35.17	1.65	43.18	34.99	37.41	2.32	2.77	9.04	6.21	5.98
Approach Delay [s/veh]	12.12			12.04			12.99			10.64		
Approach LOS	B			B			B			B		
Intersection Delay [s/veh]	12.08											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 4: NW Brady Rd/ NW 20th Ave

Control Type:	Two-way stop	Delay (sec / veh):	15.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.034

Intersection Setup

Name	NW Brady Rd			NW Brady Rd			NW 20th Ave			NW 20th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	NW Brady Rd			NW Brady Rd			NW 20th Ave			NW 20th Ave		
Base Volume Input [veh/h]	2	328	4	3	247	4	10	0	5	6	0	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	25.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	11.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	328	4	3	247	4	10	0	5	6	0	9
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	95	1	1	72	1	3	0	1	2	0	3
Total Analysis Volume [veh/h]	2	381	5	3	287	5	12	0	6	7	0	10
Pedestrian Volume [ped/h]	0			0			3			6		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.01	0.02	0.00	0.02
d_M, Delay for Movement [s/veh]	7.83	0.00	0.00	8.08	0.00	0.00	15.56	15.26	10.17	15.43	15.17	10.94
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.01	0.00	0.00	0.13	0.13	0.13	0.11	0.11	0.11
95th-Percentile Queue Length [ft/ln]	0.12	0.00	0.00	0.19	0.00	0.00	3.28	3.28	3.28	2.75	2.75	2.75
d_A, Approach Delay [s/veh]	0.04			0.08			13.76			12.79		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.70											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 5: NW Brady Rd/ NW 16th Ave

Control Type:	Signalized	Delay (sec / veh):	23.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.718

Intersection Setup

Name	NW Brady Rd			NW Brady Rd			NW 16th Ave			NW 16th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	13.00	13.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	140.00	100.00	100.00	100.00	100.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	2.00			2.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Brady Rd			NW Brady Rd			NW 16th Ave			NW 16th Ave		
Base Volume Input [veh/h]	73	129	72	50	160	49	62	85	72	104	141	126
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	8.00	12.00	14.00	2.00	7.00	5.00	5.00	6.00	3.00	3.00	8.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	129	72	50	160	49	62	85	72	104	141	126
Peak Hour Factor	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900	0.6900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	47	26	18	58	18	22	31	26	38	51	46
Total Analysis Volume [veh/h]	106	187	104	72	232	71	90	123	104	151	204	183
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	20	40	0	20	40	0	20	30	0	20	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.6	0.0	3.0	3.6	0.0	3.0	3.6	0.0
All red [s]	2.7	2.7	0.0	2.6	2.0	0.0	2.3	1.9	0.0	2.6	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	11	0	0	9	0	0	9	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.7	3.7	0.0	3.6	3.6	0.0	3.3	3.5	0.0	3.6	3.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	14	0	9	14	0	9	14	0	9	14	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	63	63	63	63	63	63	63	63
L, Total Lost Time per Cycle [s]	5.70	5.70	5.60	5.60	5.50	5.50	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.70	0.00	3.60	0.00	3.50	0.00	3.60
g_i, Effective Green Time [s]	26	17	26	16	26	15	26	17
g / C, Green / Cycle	0.41	0.26	0.41	0.25	0.41	0.24	0.41	0.27
(v / s)_i Volume / Saturation Flow Rate	0.11	0.22	0.14	0.21	0.13	0.14	0.11	0.23
s, saturation flow rate [veh/h]	1005	1345	525	1418	680	1670	1357	1712
c, Capacity [veh/h]	398	355	414	354	486	404	594	457
d1, Uniform Delay [s]	13.54	21.98	13.18	22.76	13.11	21.14	12.48	22.07
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.35	4.71	0.20	5.97	0.18	1.23	0.22	4.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.82	0.17	0.86	0.19	0.56	0.25	0.85
d, Delay for Lane Group [s/veh]	13.89	26.69	13.38	28.72	13.29	22.37	12.70	26.48
Lane Group LOS	B	C	B	C	B	C	B	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.88	4.13	0.58	4.48	0.75	2.95	1.30	5.69
50th-Percentile Queue Length [ft/ln]	21.95	103.18	14.48	112.06	18.76	73.69	32.61	142.23
95th-Percentile Queue Length [veh/ln]	1.58	7.43	1.04	7.95	1.35	5.31	2.35	9.60
95th-Percentile Queue Length [ft/ln]	39.50	185.72	26.06	198.87	33.77	132.65	58.69	240.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.89	26.69	26.69	13.38	28.72	28.72	13.29	22.37	22.37	12.70	26.48	26.48
Movement LOS	B	C	C	B	C	C	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	23.27			25.78			19.79			22.61		
Approach LOS	C			C			B			C		
d_I, Intersection Delay [s/veh]	22.95											
Intersection LOS	C											
Intersection V/C	0.718											

Emissions

Vehicle Miles Traveled [mph]	4.34	11.91	2.56	10.77	3.41	8.60	3.59	9.19
Stops [stops/h]	49.85	234.35	32.88	254.54	42.62	167.39	74.06	323.07
Fuel consumption [US gal/h]	0.84	3.80	0.54	4.10	0.56	2.06	0.84	3.74
CO [g/h]	58.71	265.43	37.80	286.31	39.17	144.17	58.42	261.30
NOx [g/h]	11.42	51.64	7.36	55.71	7.62	28.05	11.37	50.84
VOC [g/h]	13.61	61.52	8.76	66.35	9.08	33.41	13.54	60.56

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.65	21.65	21.65	21.65
l_p,int, Pedestrian LOS Score for Intersectio	2.314	2.272	2.152	2.174
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1262	1262	946	946
d_b, Bicycle Delay [s]	4.32	4.32	8.80	8.80
l_b,int, Bicycle LOS Score for Intersection	2.215	1.321	1.225	1.590
Bicycle LOS	B	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: NW Brady Rd/NW McIntosh Rd

Control Type:	Two-way stop	Delay (sec / veh):	21.7
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.403

Intersection Setup

Name	NW Brady Rd		NW Brady Rd		NW McIntosh Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	10.00	11.00	11.00	11.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	80.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.02		-0.02		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	NW Brady Rd		NW Brady Rd		NW McIntosh Rd	
Base Volume Input [veh/h]	203	57	18	395	122	23
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	5.00	6.00	2.00	0.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	203	57	18	395	122	23
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	17	5	116	36	7
Total Analysis Volume [veh/h]	239	67	21	465	144	27
Pedestrian Volume [ped/h]	0		0		4	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.00	0.40	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	7.99	0.00	21.71	9.95
Movement LOS	A	A	A	A	C	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.05	0.00	1.89	0.11
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.31	0.00	47.27	2.78
d_A, Approach Delay [s/veh]	0.00		0.35		19.85	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	3.70					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 7: NW Grand Ridge Dr/ NW Brady Rd

Control Type:	Two-way stop	Delay (sec / veh):	17.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.028

Intersection Setup

Name	NW Grand Ridge Dr		NW Brady Rd		NW Brady Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	10.00	10.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	80.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	-0.01		0.03		-0.03	
Crosswalk	No		No		No	

Volumes

Name	NW Grand Ridge Dr		NW Brady Rd		NW Brady Rd	
Base Volume Input [veh/h]	8	41	11	253	509	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	18.00	8.00	1.00	25.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	8	41	11	253	509	8
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	12	3	73	146	2
Total Analysis Volume [veh/h]	9	47	13	291	585	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.09	0.01	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	17.27	12.94	9.02	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.40	0.40	0.04	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	10.00	10.00	1.09	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	13.64		0.39		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.92					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Future Street/ NW 18th Ave

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name			NW 18th Ave		NW 18th Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name			NW 18th Ave		NW 18th Ave	
Base Volume Input [veh/h]	0	0	0	92	161	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	6.00	6.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	92	161	0
Peak Hour Factor	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	29	51	0
Total Analysis Volume [veh/h]	0	0	0	116	204	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.31	9.28	7.61	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.79		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 101: SE Bybee Rd/ SE 20th St

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1,956.135

Intersection Setup

Name	SE Bybee Rd		SE 20th St		SE 20th St	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	2.00		2.00		-2.00	
Crosswalk	Yes		No		No	

Volumes

Name	SE Bybee Rd		SE 20th St		SE 20th St	
Base Volume Input [veh/h]	61	6	4	386	227	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	7.00	17.00	75.00	2.00	2.00	12.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	6	4	386	227	59
Peak Hour Factor	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	2	1	121	71	18
Total Analysis Volume [veh/h]	76	8	5	483	284	74
Pedestrian Volume [ped/h]	2		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1956.13	0.07	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10000.00	10000.00	9.07	0.00	0.00	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh/ln]	12.93	12.93	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	323.27	323.27	0.21	0.21	0.00	0.00
d_A, Approach Delay [s/veh]	10000.00		0.09		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	903.27					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 1: NW Fisher Creek Dr/ NW 38th Ave

Control Type:	Signalized	Delay (sec / veh):	15.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.516

Intersection Setup

Name	NW Fisher Creek Dr			NW Fisher Creek Dr			SE 20th St			NW 38th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Fisher Creek Dr			NW Fisher Creek Dr			SE 20th St			NW 38th Ave		
Base Volume Input [veh/h]	209	0	31	0	0	0	0	431	5	1	345	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	209	0	31	0	0	0	0	431	5	1	345	0
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	0	9	0	0	0	0	118	1	0	95	0
Total Analysis Volume [veh/h]	230	0	34	0	0	0	0	474	5	1	379	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	20	30	0	20	30	0	25	45	0	25	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	3.5	3.5	0.0	3.5	3.5	0.0	2.5	1.6	0.0	2.5	1.7	0.0
Walk [s]	9	9	0	0	8	0	0	7	0	0	9	0
Pedestrian Clearance [s]	13	13	0	0	12	0	0	10	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.5	4.5	0.0	4.5	4.5	0.0	3.5	3.6	0.0	3.5	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	14	9	0	9	9	0	9	14	0	9	14	0
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	8	0	5	8	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	45	45	45	45	45	45	45	45
L, Total Lost Time per Cycle [s]	6.50	6.50	4.50	6.50	5.60	5.60	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.50	0.00	4.50	0.00	3.60	0.00	3.70
g_i, Effective Green Time [s]	13	7	15	0	17	14	19	14
g / C, Green / Cycle	0.30	0.15	0.34	0.00	0.39	0.31	0.43	0.31
(v / s)_i Volume / Saturation Flow Rate	0.13	0.02	0.00	0.00	0.00	0.25	0.00	0.20
s, saturation flow rate [veh/h]	1740	1579	1572	1900	1180	1881	1093	1885
c, Capacity [veh/h]	757	239	676	0	524	581	496	581
d1, Uniform Delay [s]	12.71	16.49	0.00	0.00	0.00	14.35	8.47	13.42
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	0.27	0.00	0.00	0.00	3.02	0.00	1.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.14	0.00	0.00	0.00	0.82	0.00	0.65
d, Delay for Lane Group [s/veh]	12.94	16.76	0.00	0.00	0.00	17.37	8.47	14.66
Lane Group LOS	B	B	A	A	A	B	A	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	1.65	0.29	0.00	0.00	0.00	3.86	0.00	2.69
50th-Percentile Queue Length [ft/ln]	41.20	7.29	0.00	0.00	0.00	96.40	0.10	67.32
95th-Percentile Queue Length [veh/ln]	2.97	0.52	0.00	0.00	0.00	6.94	0.01	4.85
95th-Percentile Queue Length [ft/ln]	74.16	13.12	0.00	0.00	0.00	173.52	0.18	121.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.94	16.76	16.76	0.00	0.00	0.00	0.00	17.37	17.37	8.47	14.66	14.66
Movement LOS	B	B	B	A	A	A	A	B	B	A	B	B
d_A, Approach Delay [s/veh]	13.43			0.00			17.37			14.65		
Approach LOS	B			A			B			B		
d_I, Intersection Delay [s/veh]	15.52											
Intersection LOS	B											
Intersection V/C	0.516											

Emissions

Vehicle Miles Traveled [mph]	9.43	1.39	0.00	0.00	0.00	23.39	0.02	9.00
Stops [stops/h]	132.91	23.51	0.00	0.00	0.00	310.98	0.32	217.16
Fuel consumption [US gal/h]	1.54	0.27	0.00	0.00	0.00	5.59	0.01	3.59
CO [g/h]	107.62	18.79	0.00	0.00	0.00	390.45	0.40	250.71
NOx [g/h]	20.94	3.66	0.00	0.00	0.00	75.97	0.08	48.78
VOC [g/h]	24.94	4.36	0.00	0.00	0.00	90.49	0.09	58.11

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	12.67	11.21	11.93	11.21
l_p,int, Pedestrian LOS Score for Intersectio	1.973	1.894	2.383	2.279
Crosswalk LOS	A	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1344	1344	2016	2016
d_b, Bicycle Delay [s]	2.40	2.40	0.00	0.00
l_b,int, Bicycle LOS Score for Intersection	1.995	1.560	1.278	1.115
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: NW Parker Street/ NW 38th Avenue

Control Type:	Signalized	Delay (sec / veh):	21.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.546

Intersection Setup

Name	NW Parker St			NW Parker St			NW 38th Ave			NW 38th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00	130.00	100.00	100.00	130.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker St			NW Parker St			NW 38th Ave			NW 38th Ave		
Base Volume Input [veh/h]	36	252	60	100	266	117	62	129	35	161	236	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	8.00	1.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	60	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	252	0	100	266	117	62	129	35	161	236	114
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	65	0	26	69	30	16	33	9	41	61	29
Total Analysis Volume [veh/h]	37	260	0	103	274	121	64	133	36	166	243	118
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Overlap	ProtPer	Permiss	Overlap	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	7	5	2	3	3	8	0	7	4	0
Auxiliary Signal Groups			6,7			2,3						
Maximum Green [s]	15	25	15	15	25	15	15	20	0	15	20	0
Amber [s]	3.0	3.6	3.0	3.0	3.6	3.0	3.0	4.0	0.0	3.0	3.6	0.0
All red [s]	2.9	2.1	3.0	2.7	2.0	2.8	2.8	2.0	0.0	3.0	2.4	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	9	0	0	9	0	0	13	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.9	3.7	4.0	3.7	3.6	3.8	3.8	4.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	14	9	9	14	9	9	14	0	9	14	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	61	61	61	61	61	61	61	61	61	61
L, Total Lost Time per Cycle [s]	5.80	5.70	5.70	5.65	5.60	5.60	5.90	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.70	0.00	0.00	3.60	0.00	0.00	4.00	0.00	4.00
g_i, Effective Green Time [s]	24	14	25	24	15	25	26	15	26	16
g / C, Green / Cycle	0.39	0.23	0.40	0.39	0.24	0.41	0.42	0.24	0.42	0.26
(v / s)_i Volume / Saturation Flow Rate	0.03	0.14	0.00	0.07	0.14	0.07	0.05	0.09	0.11	0.20
s, saturation flow rate [veh/h]	1371	1900	1615	1461	1900	1615	1402	1831	1507	1796
c, Capacity [veh/h]	426	431	650	450	461	658	423	449	562	460
d1, Uniform Delay [s]	19.04	21.15	0.00	19.37	20.47	11.61	19.52	19.17	16.66	21.17
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.23
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.09	1.36	0.00	0.26	1.23	0.13	0.16	0.52	0.29	6.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.60	0.00	0.23	0.59	0.18	0.15	0.38	0.30	0.79
d, Delay for Lane Group [s/veh]	19.13	22.51	0.00	19.62	21.70	11.74	19.69	19.70	16.95	27.30
Lane Group LOS	B	C	A	B	C	B	B	B	B	C
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.29	3.17	0.00	0.83	3.28	0.93	0.45	1.83	1.23	4.98
50th-Percentile Queue Length [ft/ln]	7.17	79.37	0.00	20.66	81.90	23.35	11.17	45.72	30.86	124.49
95th-Percentile Queue Length [veh/ln]	0.52	5.71	0.00	1.49	5.90	1.68	0.80	3.29	2.22	8.64
95th-Percentile Queue Length [ft/ln]	12.91	142.87	0.00	37.18	147.42	42.03	20.11	82.30	55.54	215.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.13	22.51	0.00	19.62	21.70	11.74	19.69	19.70	19.70	16.95	27.30	27.30
Movement LOS	B	C	A	B	C	B	B	B	B	B	C	C
d_A, Approach Delay [s/veh]	22.08			18.85			19.69			24.04		
Approach LOS	C			B			B			C		
d_I, Intersection Delay [s/veh]	21.35											
Intersection LOS	C											
Intersection V/C	0.546											

Emissions

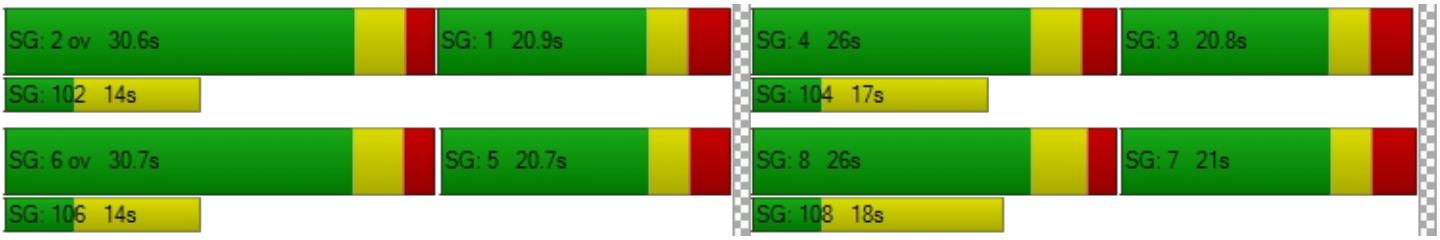
Vehicle Miles Traveled [mph]	1.29	9.10	0.00	2.44	6.48	2.86	3.84	10.13	7.60	16.52
Stops [stops/h]	16.91	187.13	0.00	48.69	193.08	55.05	26.33	107.79	72.75	293.49
Fuel consumption [US gal/h]	0.32	2.94	0.00	0.87	2.91	0.81	0.65	2.10	1.56	5.48
CO [g/h]	22.41	205.85	0.00	60.84	203.37	56.78	45.61	146.74	109.00	383.10
NOx [g/h]	4.36	40.05	0.00	11.84	39.57	11.05	8.87	28.55	21.21	74.54
VOC [g/h]	5.19	47.71	0.00	14.10	47.13	13.16	10.57	34.01	25.26	88.79

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.20	22.20	22.20	22.20
l_p,int, Pedestrian LOS Score for Intersectio	2.622	2.453	2.240	2.397
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	819	819	655	655
d_b, Bicycle Delay [s]	10.66	10.66	13.81	13.81
l_b,int, Bicycle LOS Score for Intersection	0.862	2.381	1.944	1.143
Bicycle LOS	A	B	A	A

Sequence

Ring 1	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: NW Parker St/ NW Pacific Rim

Control Type:	All-way stop	Delay (sec / veh):	12.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.482

Intersection Setup

Name	NW Parker St			NW Parker St			NW Pacific Rim			NW Pacific Rim		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	155.00	100.00	100.00	145.00	100.00	100.00	130.00	100.00	100.00	75.00	100.00	75.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker St			NW Parker St			NW Pacific Rim			NW Pacific Rim		
Base Volume Input [veh/h]	26	277	30	17	265	99	162	44	69	32	23	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	4.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	277	30	17	265	99	162	44	69	32	23	15
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	72	8	4	69	26	42	11	18	8	6	4
Total Analysis Volume [veh/h]	27	289	31	18	276	103	169	46	72	33	24	16
Pedestrian Volume [ped/h]	0			0			0			1		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	517	560	572	532	573	643	507	544	597	490	519	576
Degree of Utilization, x	0.05	0.29	0.28	0.03	0.48	0.16	0.33	0.08	0.12	0.07	0.05	0.03

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.16	1.17	1.14	0.10	2.60	0.57	1.45	0.28	0.41	0.22	0.15	0.09
95th-Percentile Queue Length [ft]	4.12	29.30	28.49	2.62	65.12	14.19	36.29	6.90	10.23	5.40	3.63	2.14
Approach Delay [s/veh]	11.43			13.08			11.83			10.07		
Approach LOS	B			B			B			B		
Intersection Delay [s/veh]	12.04											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 4: NW Brady Rd/ NW 20th Ave

Control Type:	Two-way stop	Delay (sec / veh):	15.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.024

Intersection Setup

Name	NW Brady Rd			NW Brady Rd			NW 20th Ave			NW 20th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	NW Brady Rd			NW Brady Rd			NW 20th Ave			NW 20th Ave		
Base Volume Input [veh/h]	10	303	1	6	303	8	5	0	13	7	0	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	303	1	6	303	8	5	0	13	7	0	7
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	82	0	2	82	2	1	0	4	2	0	2
Total Analysis Volume [veh/h]	11	329	1	7	329	9	5	0	14	8	0	8
Pedestrian Volume [ped/h]	0			0			0			2		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.02	0.02	0.00	0.01
d_M, Delay for Movement [s/veh]	7.95	0.00	0.00	7.93	0.00	0.00	15.64	15.25	10.28	15.88	15.36	10.33
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.02	0.00	0.00	0.11	0.11	0.11	0.11	0.11	0.11
95th-Percentile Queue Length [ft/ln]	0.68	0.00	0.00	0.43	0.00	0.00	2.64	2.64	2.64	2.70	2.70	2.70
d_A, Approach Delay [s/veh]	0.26			0.16			11.69			13.11		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.80											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 5: NW Brady Rd/ NW 16th Ave

Control Type:	Signalized	Delay (sec / veh):	18.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.596

Intersection Setup

Name	NW Brady Rd			NW Brady Rd			NW 16th Ave			NW 16th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	13.00	13.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	140.00	100.00	100.00	100.00	100.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	2.00			2.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Brady Rd			NW Brady Rd			NW 16th Ave			NW 16th Ave		
Base Volume Input [veh/h]	15	183	131	127	171	21	25	93	46	83	55	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	2.00	4.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	183	131	127	171	21	25	93	46	83	55	98
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	50	36	35	47	6	7	26	13	23	15	27
Total Analysis Volume [veh/h]	16	201	144	140	188	23	27	102	51	91	60	108
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	20	40	0	20	40	0	20	30	0	20	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.6	0.0	3.0	3.6	0.0	3.0	3.6	0.0
All red [s]	2.7	2.7	0.0	2.6	2.0	0.0	2.3	1.9	0.0	2.6	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	11	0	0	9	0	0	9	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.7	3.7	0.0	3.6	3.6	0.0	3.3	3.5	0.0	3.6	3.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	14	0	9	14	0	9	14	0	9	14	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	55	55	55	55	55	55	55	55
L, Total Lost Time per Cycle [s]	5.70	5.70	5.60	5.60	5.50	5.50	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.70	0.00	3.60	0.00	3.50	0.00	3.60
g_i, Effective Green Time [s]	26	15	26	19	18	9	18	11
g / C, Green / Cycle	0.46	0.28	0.47	0.34	0.33	0.16	0.33	0.20
(v / s)_i Volume / Saturation Flow Rate	0.02	0.24	0.10	0.14	0.03	0.09	0.06	0.10
s, saturation flow rate [veh/h]	1035	1459	1421	1464	963	1794	1454	1652
c, Capacity [veh/h]	562	404	664	504	531	294	579	338
d1, Uniform Delay [s]	8.35	19.03	8.75	13.94	12.83	21.23	13.27	19.56
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	5.23	0.16	0.55	0.04	1.43	0.13	1.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.85	0.21	0.42	0.05	0.52	0.16	0.50
d, Delay for Lane Group [s/veh]	8.37	24.26	8.90	14.50	12.87	22.66	13.40	20.69
Lane Group LOS	A	C	A	B	B	C	B	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.09	4.22	0.82	1.80	0.21	1.83	0.75	1.90
50th-Percentile Queue Length [ft/ln]	2.15	105.41	20.53	45.03	5.36	45.63	18.81	47.46
95th-Percentile Queue Length [veh/ln]	0.16	7.58	1.48	3.24	0.39	3.29	1.35	3.42
95th-Percentile Queue Length [ft/ln]	3.88	189.60	36.95	81.05	9.64	82.14	33.86	85.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.37	24.26	24.26	8.90	14.50	14.50	12.87	22.66	22.66	13.40	20.69	20.69
Movement LOS	A	C	C	A	B	B	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	23.56			12.26			21.19			18.13		
Approach LOS	C			B			C			B		
d_I, Intersection Delay [s/veh]	18.52											
Intersection LOS	B											
Intersection V/C	0.596											

Emissions

Vehicle Miles Traveled [mph]	0.65	14.12	4.98	7.50	1.02	5.80	2.16	3.99
Stops [stops/h]	5.60	273.90	53.33	117.00	13.92	118.57	48.88	123.33
Fuel consumption [US gal/h]	0.09	4.30	0.84	1.79	0.17	1.42	0.53	1.36
CO [g/h]	6.59	300.68	59.03	125.00	11.89	99.35	37.25	95.05
NOx [g/h]	1.28	58.50	11.48	24.32	2.31	19.33	7.25	18.49
VOC [g/h]	1.53	69.69	13.68	28.97	2.76	23.03	8.63	22.03

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	17.80	17.80	17.80	17.80
l_p,int, Pedestrian LOS Score for Intersectio	2.201	2.181	1.997	2.088
Crosswalk LOS	B	B	A	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1444	1444	1083	1083
d_b, Bicycle Delay [s]	2.15	2.15	5.83	5.83
l_b,int, Bicycle LOS Score for Intersection	2.155	1.281	0.999	1.129
Bicycle LOS	B	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: NW Brady Rd/NW McIntosh Rd

Control Type:	Two-way stop	Delay (sec / veh):	18.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.263

Intersection Setup

Name	NW Brady Rd		NW Brady Rd		NW McIntosh Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	10.00	11.00	11.00	11.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	80.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.02		-0.02		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	NW Brady Rd		NW Brady Rd		NW McIntosh Rd	
Base Volume Input [veh/h]	305	110	13	277	86	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	0.00	1.00	1.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	305	110	13	277	86	15
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	31	4	79	24	4
Total Analysis Volume [veh/h]	347	125	15	315	98	17
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.26	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	8.32	0.00	18.06	10.72
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.04	0.00	1.04	0.08
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.04	0.00	25.95	2.02
d_A, Approach Delay [s/veh]	0.00		0.38		16.97	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	2.26					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 7: NW Grand Ridge Dr/ NW Brady Rd

Control Type:	Two-way stop	Delay (sec / veh):	17.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	NW Grand Ridge Dr		NW Brady Rd		NW Brady Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	10.00	10.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	80.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	-0.01		0.03		-0.03	
Crosswalk	No		No		No	

Volumes

Name	NW Grand Ridge Dr		NW Brady Rd		NW Brady Rd	
Base Volume Input [veh/h]	2	21	34	419	353	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	1.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	21	34	419	353	5
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	6	10	118	99	1
Total Analysis Volume [veh/h]	2	24	38	471	397	6
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.04	0.03	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	17.35	10.71	8.19	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.13	0.13	0.10	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	3.36	3.36	2.52	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.22		0.61		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.64					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Future Street/ NW 18th Ave

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name			NW 18th Ave		NW 18th Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name			NW 18th Ave		NW 18th Ave	
Base Volume Input [veh/h]	0	0	0	147	75	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	3.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	147	75	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.8900	0.8900	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	41	21	0
Total Analysis Volume [veh/h]	0	0	0	165	84	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.87	8.69	7.38	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.28		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 101: SE Bybee Rd/ SE 20th St

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	8,492.890

Intersection Setup

Name	SE Bybee Rd		SE 20th St		SE 20th St	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	2.00		2.00		-2.00	
Crosswalk	Yes		No		No	

Volumes

Name	SE Bybee Rd		SE 20th St		SE 20th St	
Base Volume Input [veh/h]	93	7	7	343	385	169
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	14.00	1.00	1.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	7	7	343	385	169
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	2	2	94	106	46
Total Analysis Volume [veh/h]	102	8	8	377	423	186
Pedestrian Volume [ped/h]	3		0		0	

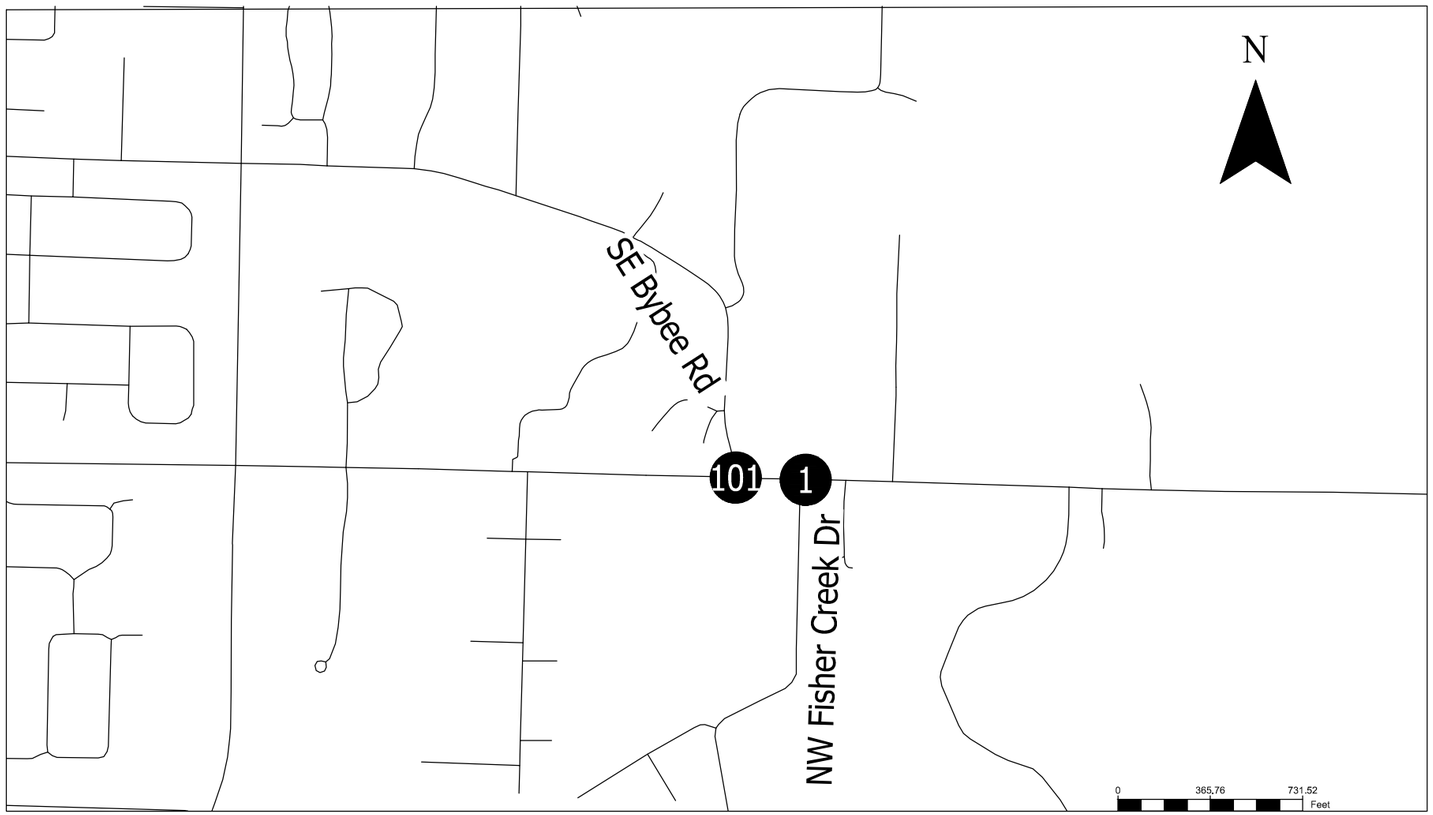
Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

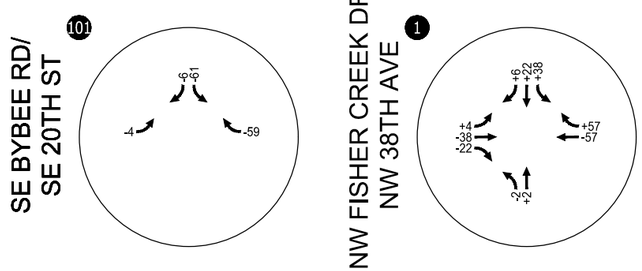
Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	8492.89	0.26	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10000.00	10000.00	8.97	0.00	0.00	0.00
Movement LOS	F	F	A	A	A	A
95th-Percentile Queue Length [veh/ln]	16.28	16.28	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	407.05	407.05	0.33	0.33	0.00	0.00
d_A, Approach Delay [s/veh]	10000.00		0.19		0.00	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	996.44					
Intersection LOS	F					

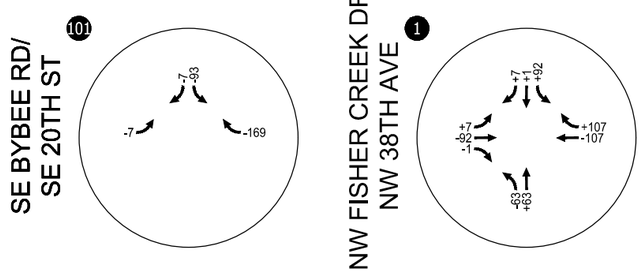
Appendix E: In-Process Data



WEEKDAY AM PEAK HOUR



WEEKDAY PM PEAK HOUR



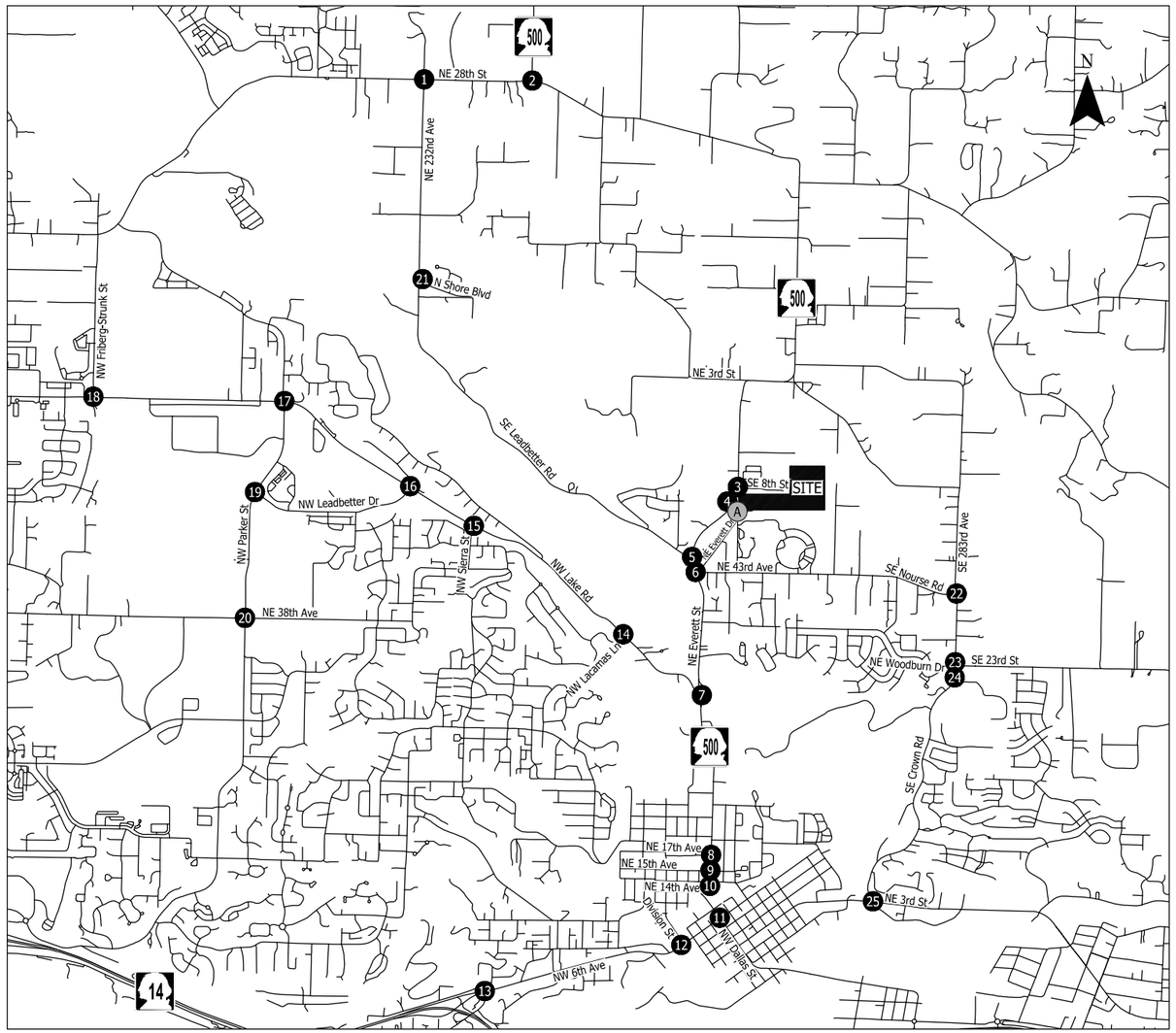
SE Bybee Road/NW Fisher Creek Drive
Trip Reassignment
Camas, Washington

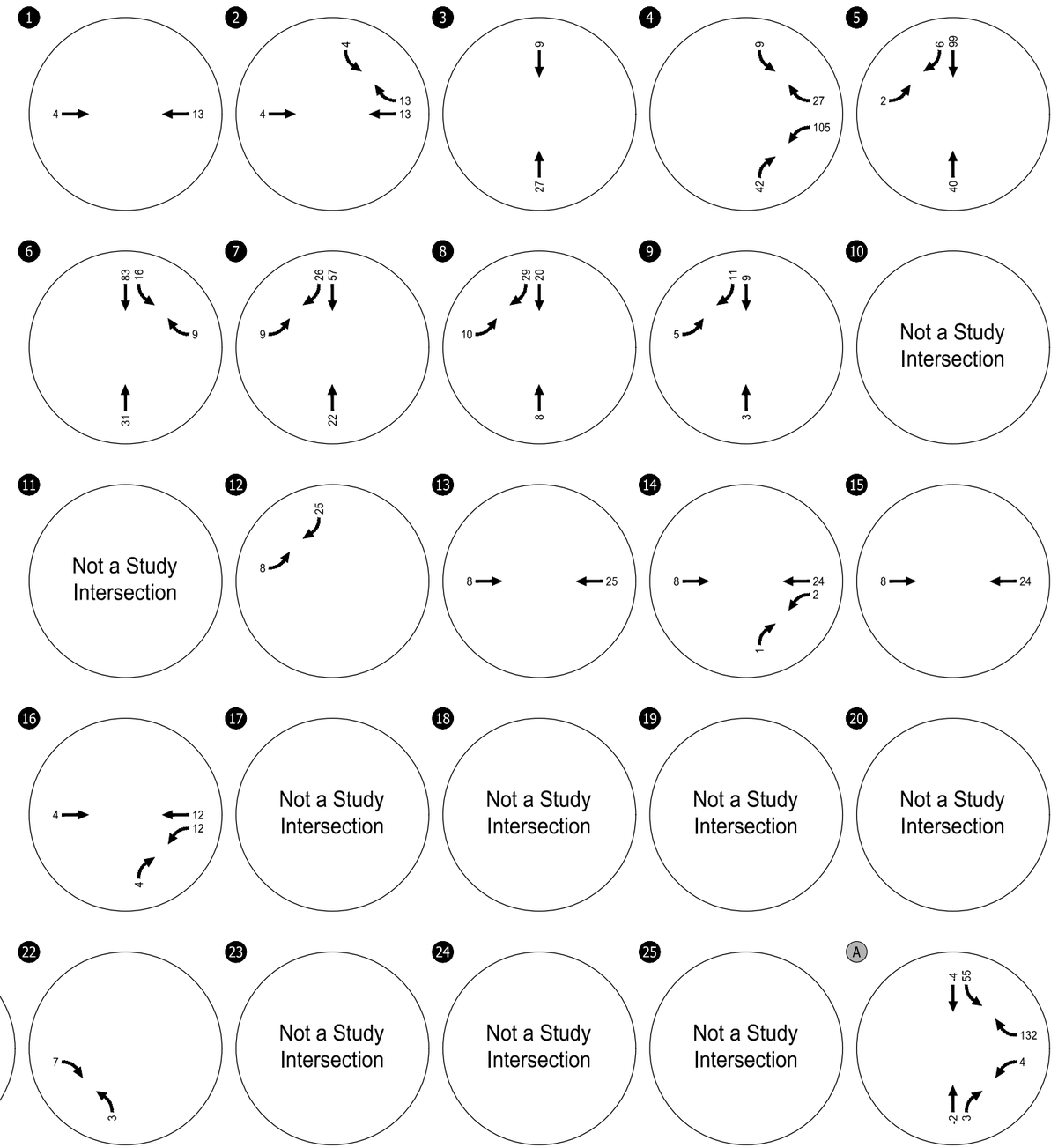
Figure
E1

H:\31\31765 - 12107 NW 18th Ave\report\figs\31765_figureset.dwg Sep 05, 2025 - 11:29am - cdougherty Layout Tab: FigE1 Bybee.Fisher Redesign

0% Build-Out

Camas Woods *October 2024*





Note: Negative volumes reflect pass-by trips

(#) Study Intersections

(A) Site Driveway

Weekday AM Peak Hour
Site-Generated Trip Assignment
Camas, Washington

Figure
12

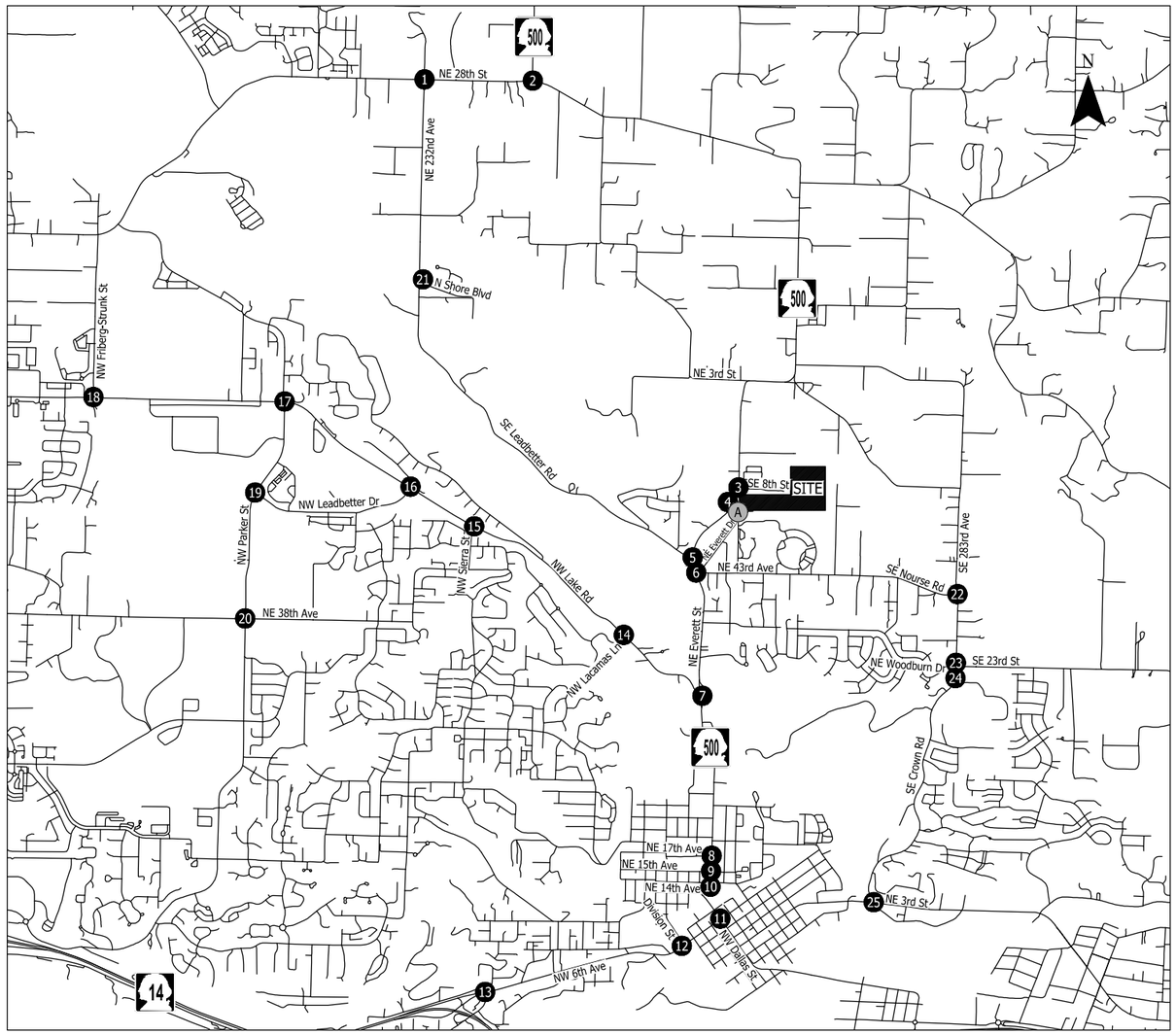
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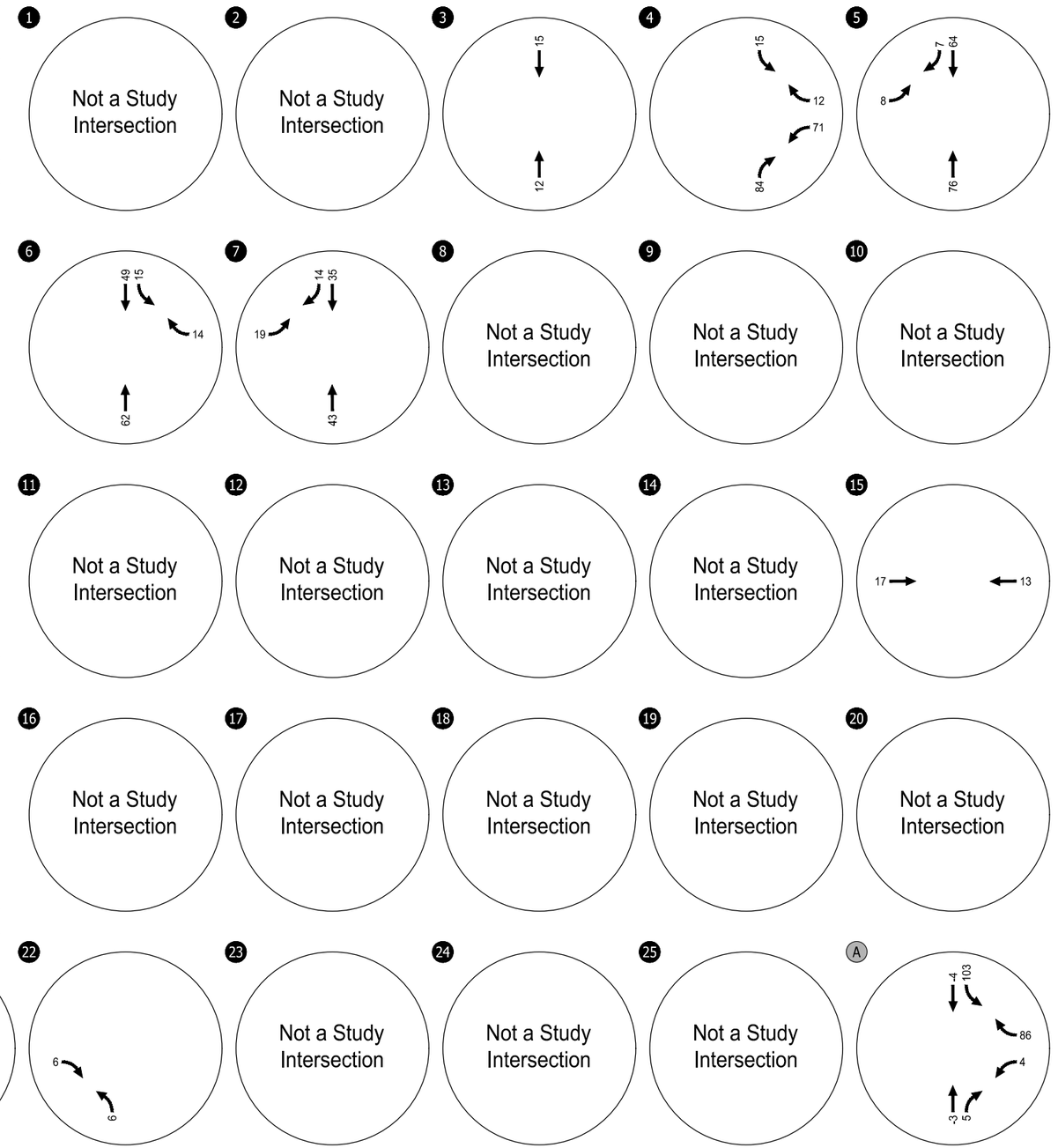
KITTELSON & ASSOCIATES

0% Build-Out

Camas Woods

October 2024





Note: Negative volumes reflact pass-by trips

(#) Study Intersections

(A) Site Driveway

Weekday School PM Peak Hour
Site-Generated Trip Assignment
Camas, Washington

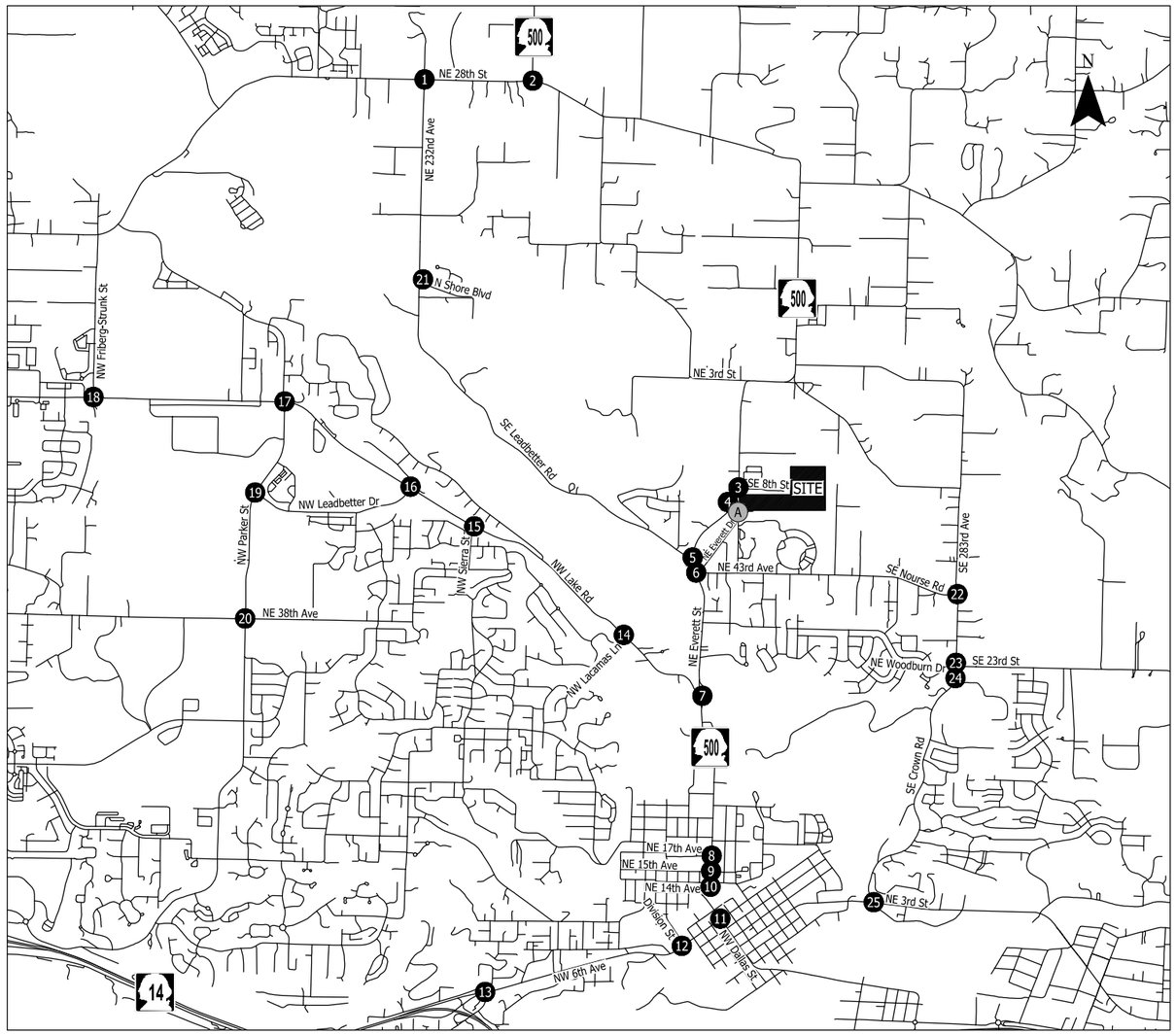
Figure
13

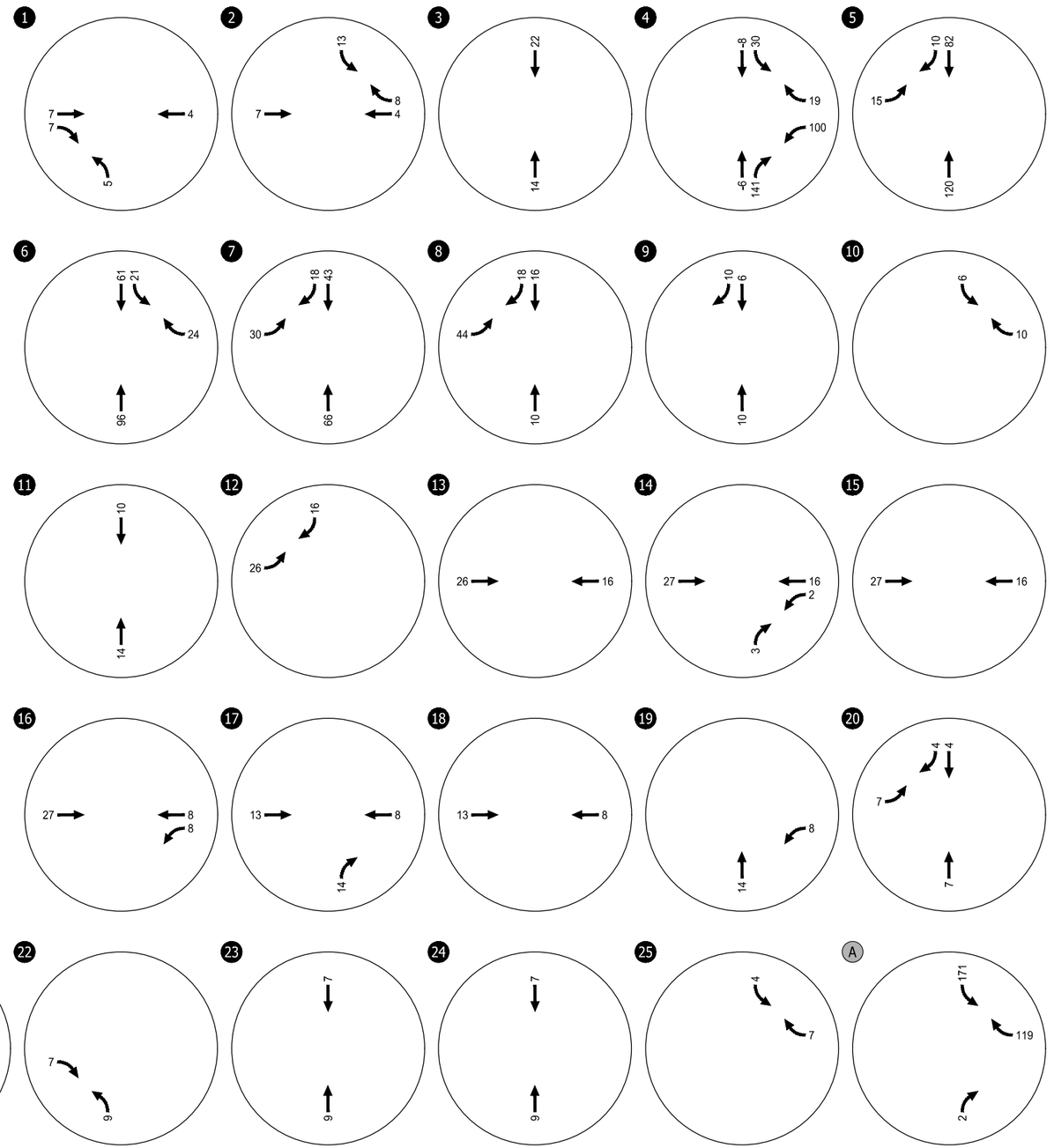
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Camas Woods

0% Build-Out

October 2024





Note: Negative volumes reflact pass-by trips

Study Intersections

A Site Driveway

Weekday PM Peak Hour Site-Generated Trip Assignment Camas, Washington

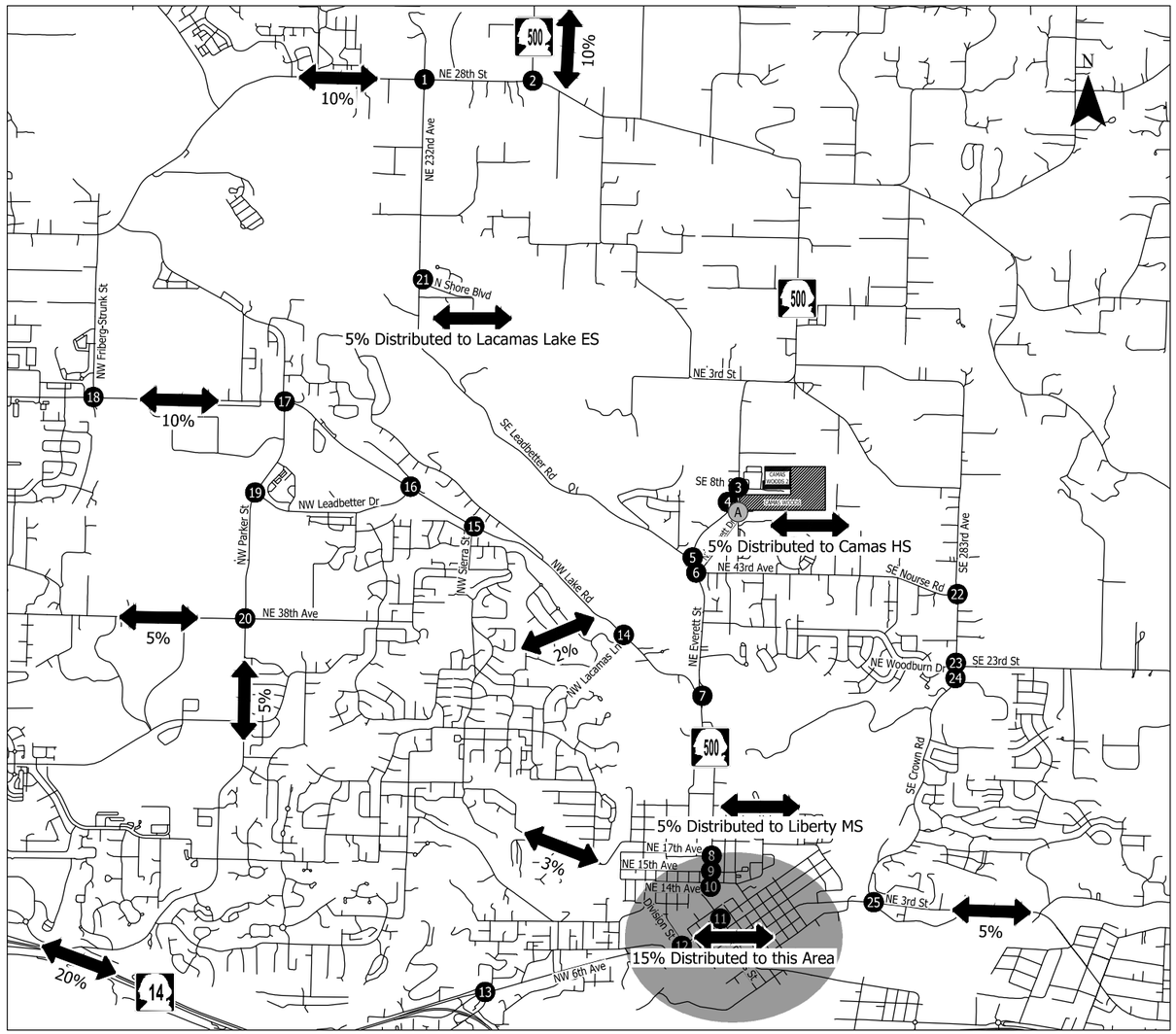
Figure 14

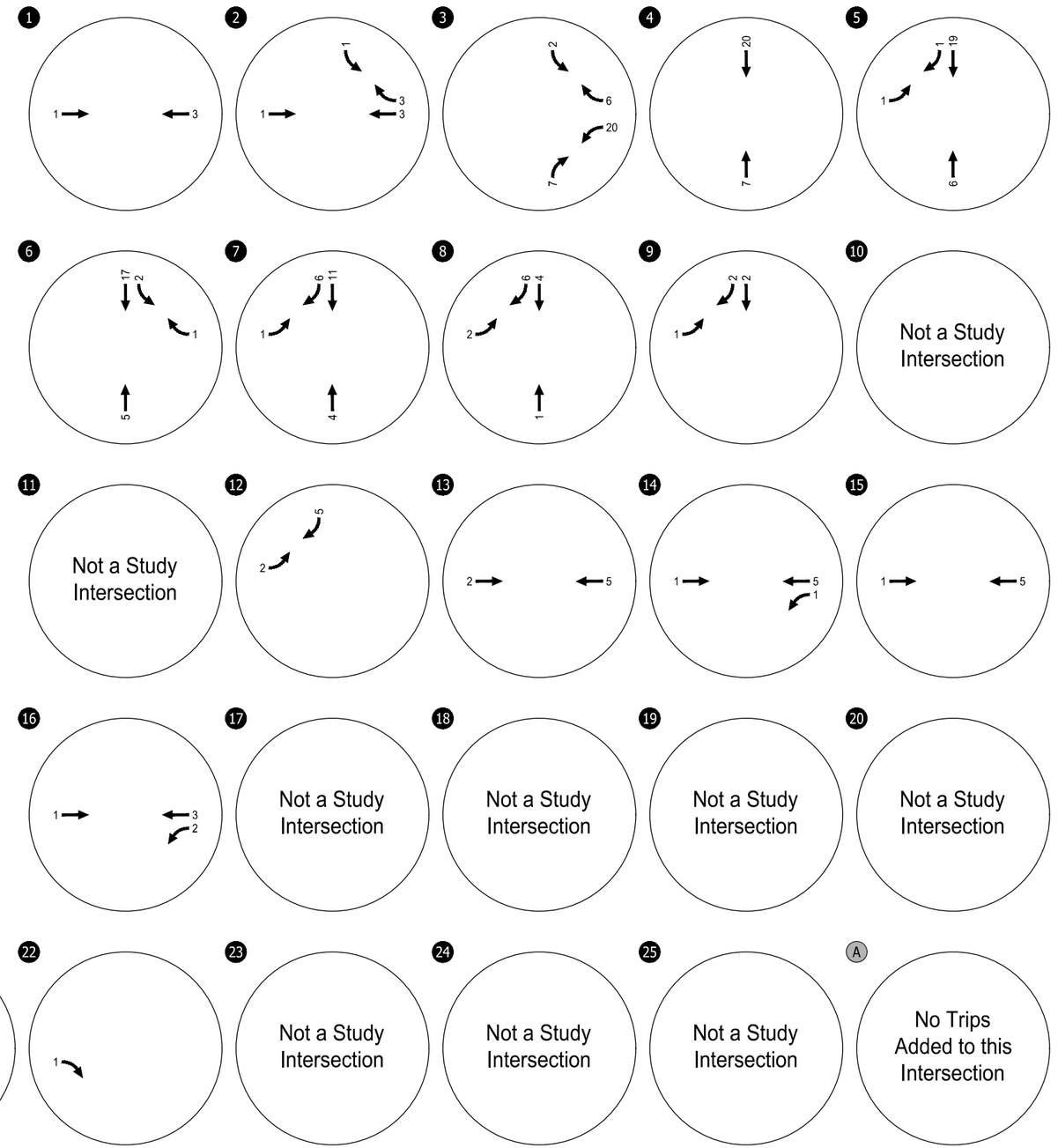
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Camas Woods 2

0% Build-Out

March 2025





Study Intersections

A Site Driveway

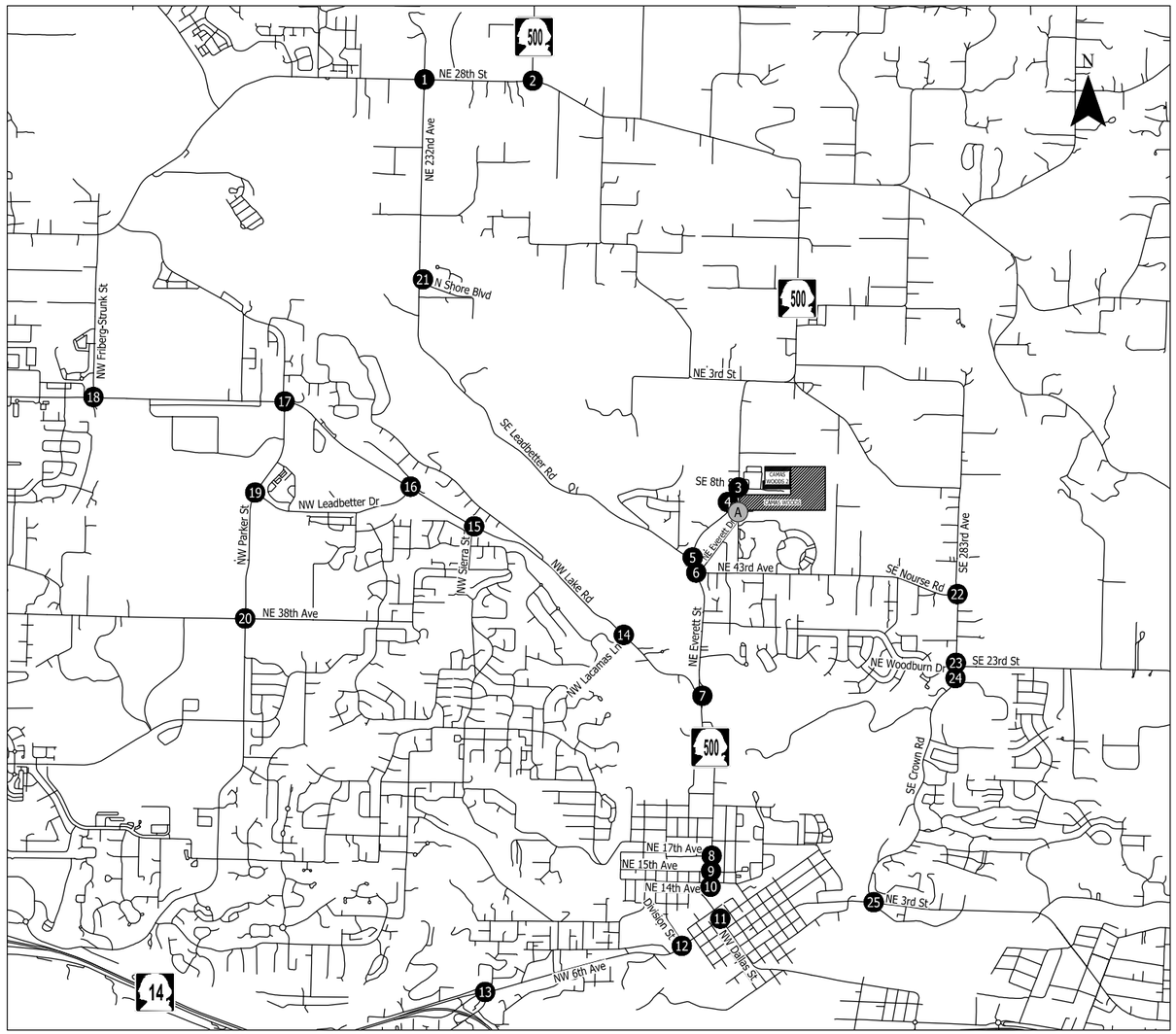
XX% Trip Distribution Percentage

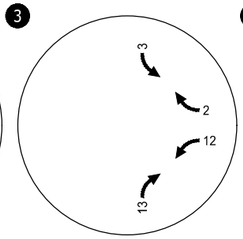
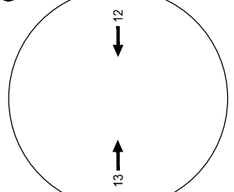
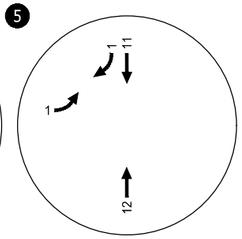
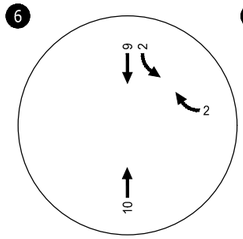
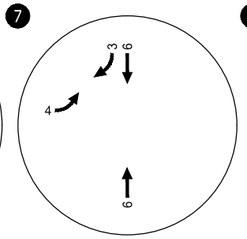
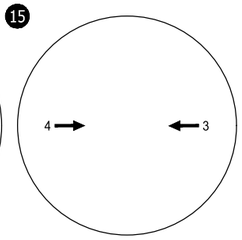
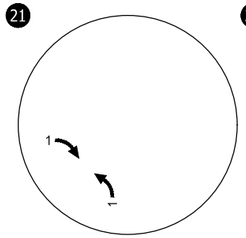
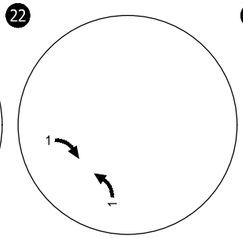
Site-Generated Trip Assignment
Weekday AM Peak Hour
Camas, Washington

Figure 3

0% Build-Out

Camas Woods 2 *March 2025*



1 Not a Study Intersection	2 Not a Study Intersection	3 	4 	5 
6 	7 	8 Not a Study Intersection	9 Not a Study Intersection	10 Not a Study Intersection
11 Not a Study Intersection	12 Not a Study Intersection	13 Not a Study Intersection	14 Not a Study Intersection	15 
16 Not a Study Intersection	17 Not a Study Intersection	18 Not a Study Intersection	19 Not a Study Intersection	20 Not a Study Intersection
21 	22 	23 Not a Study Intersection	24 Not a Study Intersection	25 Not a Study Intersection
				A No Trips Added to this Intersection

Study Intersections

A Site Driveway

XX% Trip Distribution Percentage

Site-Generated Trip Assignment
Weekday School PM Peak Hour
Camas, Washington

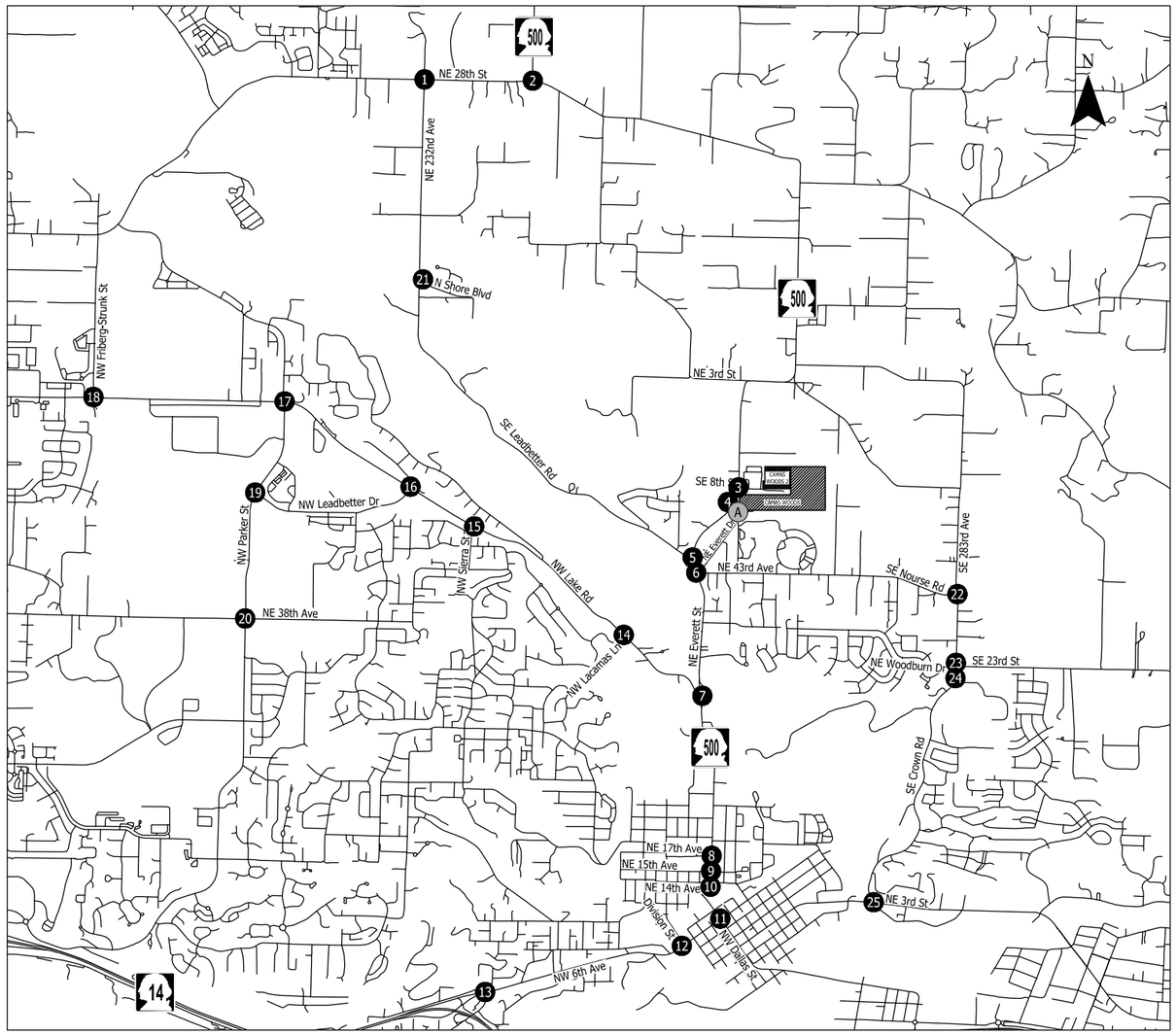
Figure
4

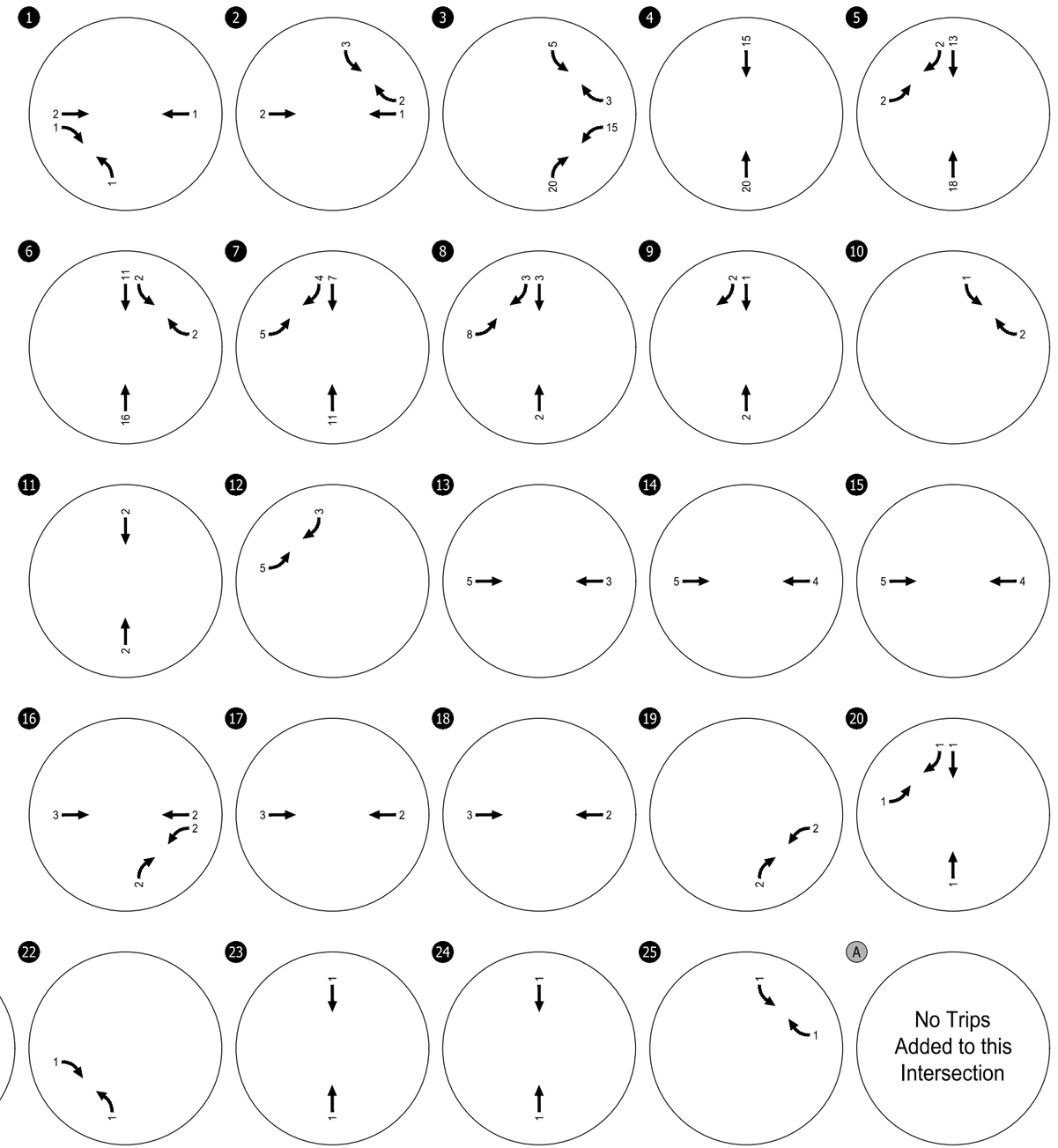
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Camas Woods 2

0% Build-Out

March 2025





- # — Study Intersections
- A — Site Driveway
- XX% — Trip Distribution Percentage

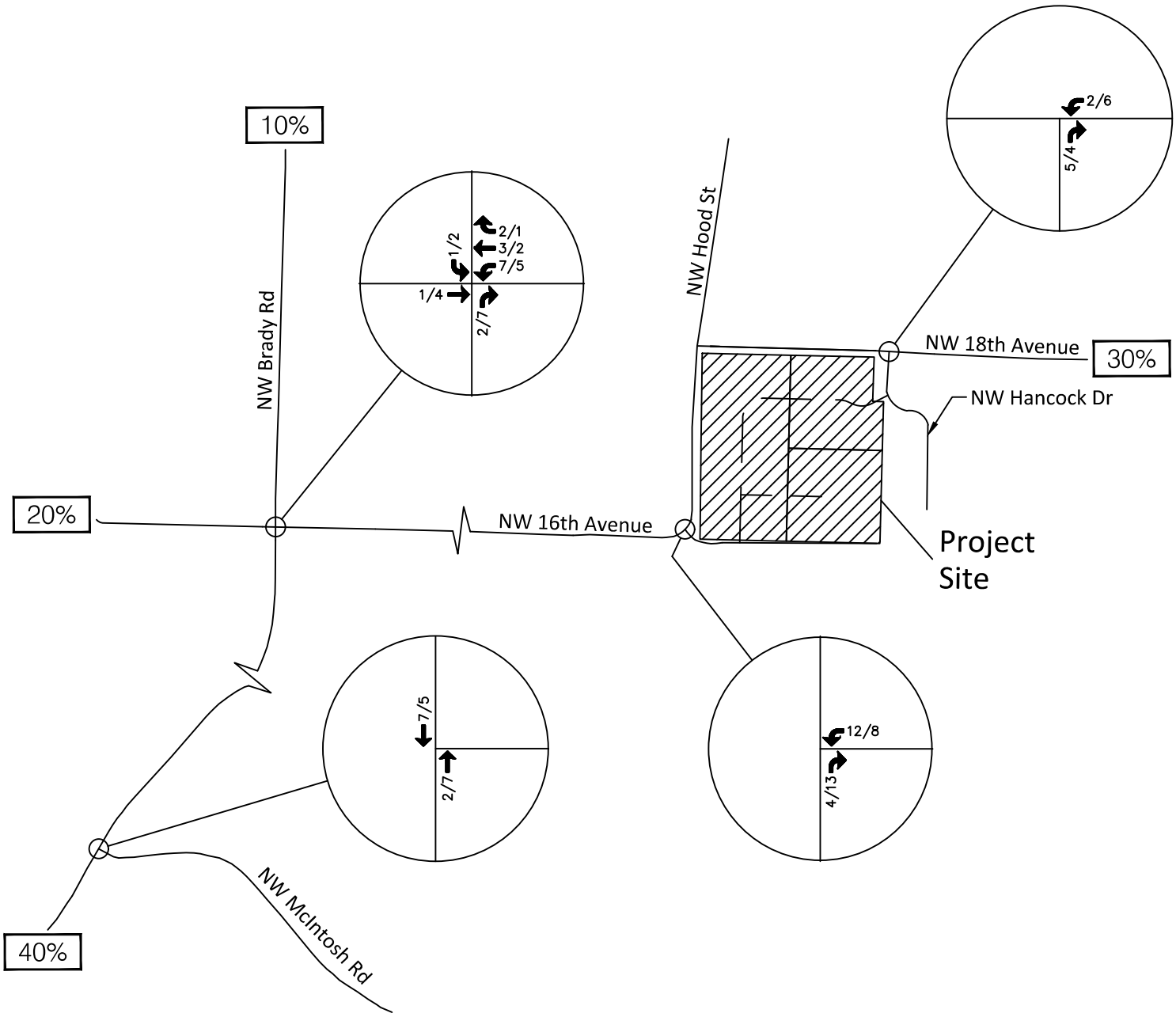
Site-Generated Trip Assignment
Weekday PM Peak Hour
Camas, Washington

Figure 5

H:\30\30088 - Camas Woods\report\figs\30088_figureset_Phase3.dwg Mar 04, 2025 - 9:13am - rdoubleday Layout Tab: Fig5 Phase 3 PM Trips

0% Build-Out

18th Avenue Subdivision TIA
Camas, WA



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

10% Peak Hour Trip Distribution

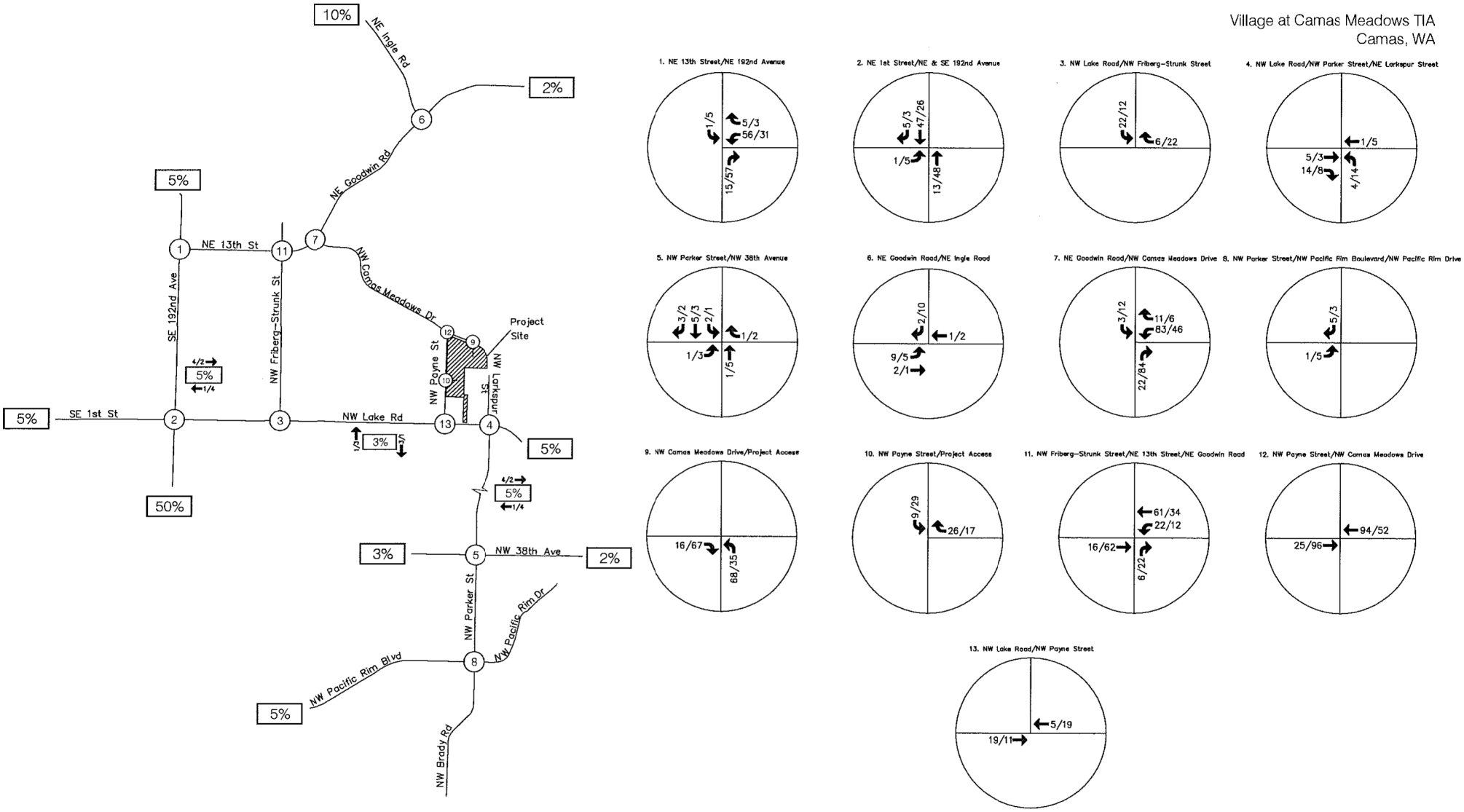
NOT TO SCALE

FIGURE 6
Trip Distribution and Assignment
Traffic Volumes

21048_Figures.Dwg

50% Build-Out

Village at Camas Meadows TIA
Camas, WA



NOT TO SCALE

LEGEND

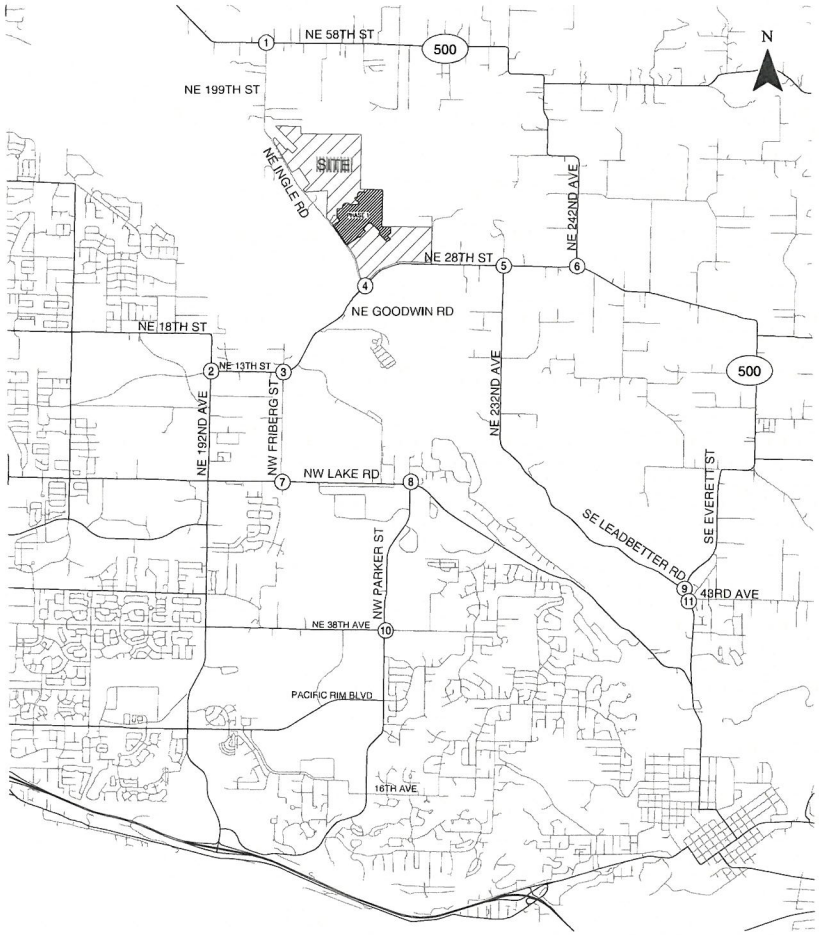
128/200 A.M./P.M. Peak Hour Traffic Volume

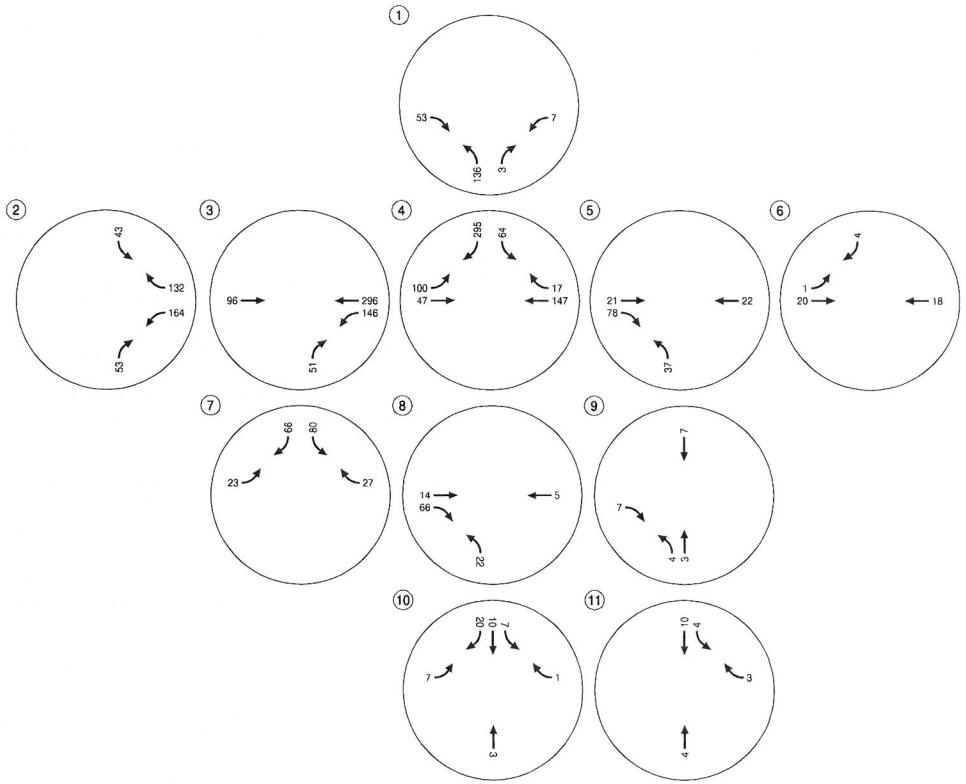
10% A.M. and P.M. Peak Hour Trip Distribution

FIGURE 1
Trip Distribution and Assignment
Traffic Volumes

16025_Figures.Dwg

80% Build-Out



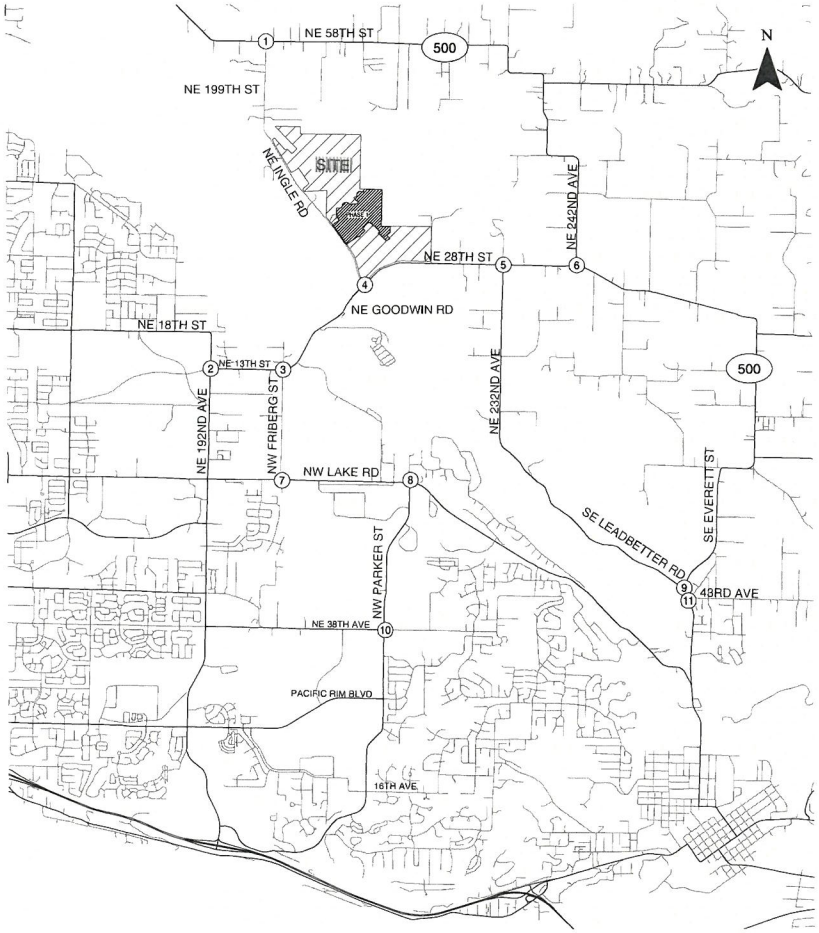


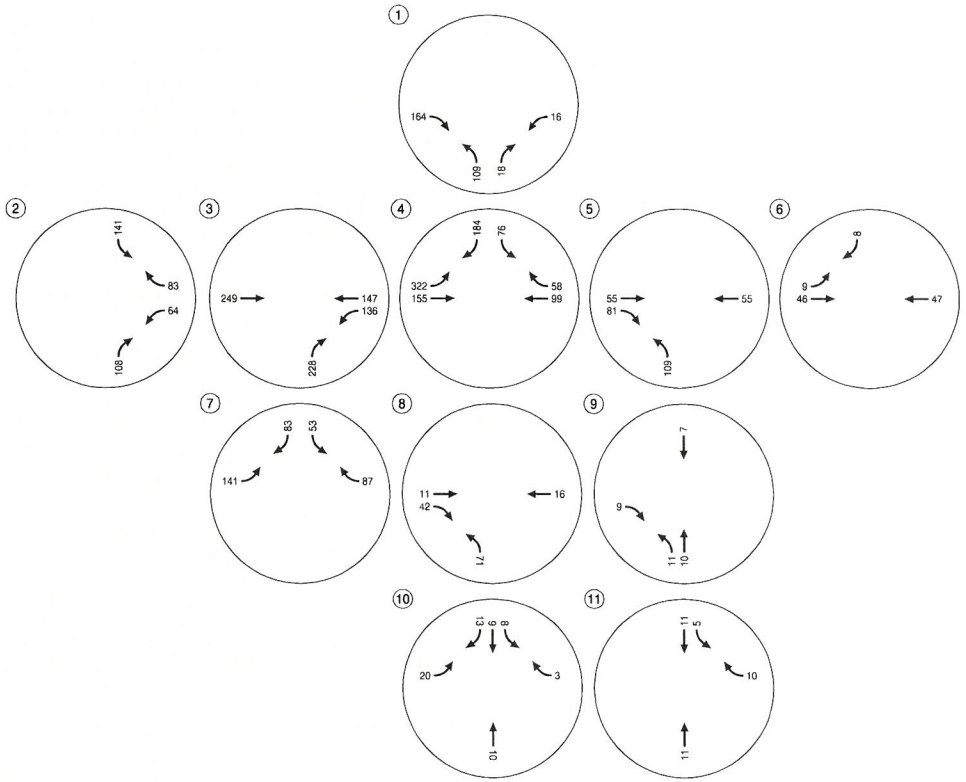
Total Estimated Trip Assignment - Full Build-Out
Weekday AM Peak Hour
Camas, Washington

Figure 9

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING, PLANNING

80% Build-Out





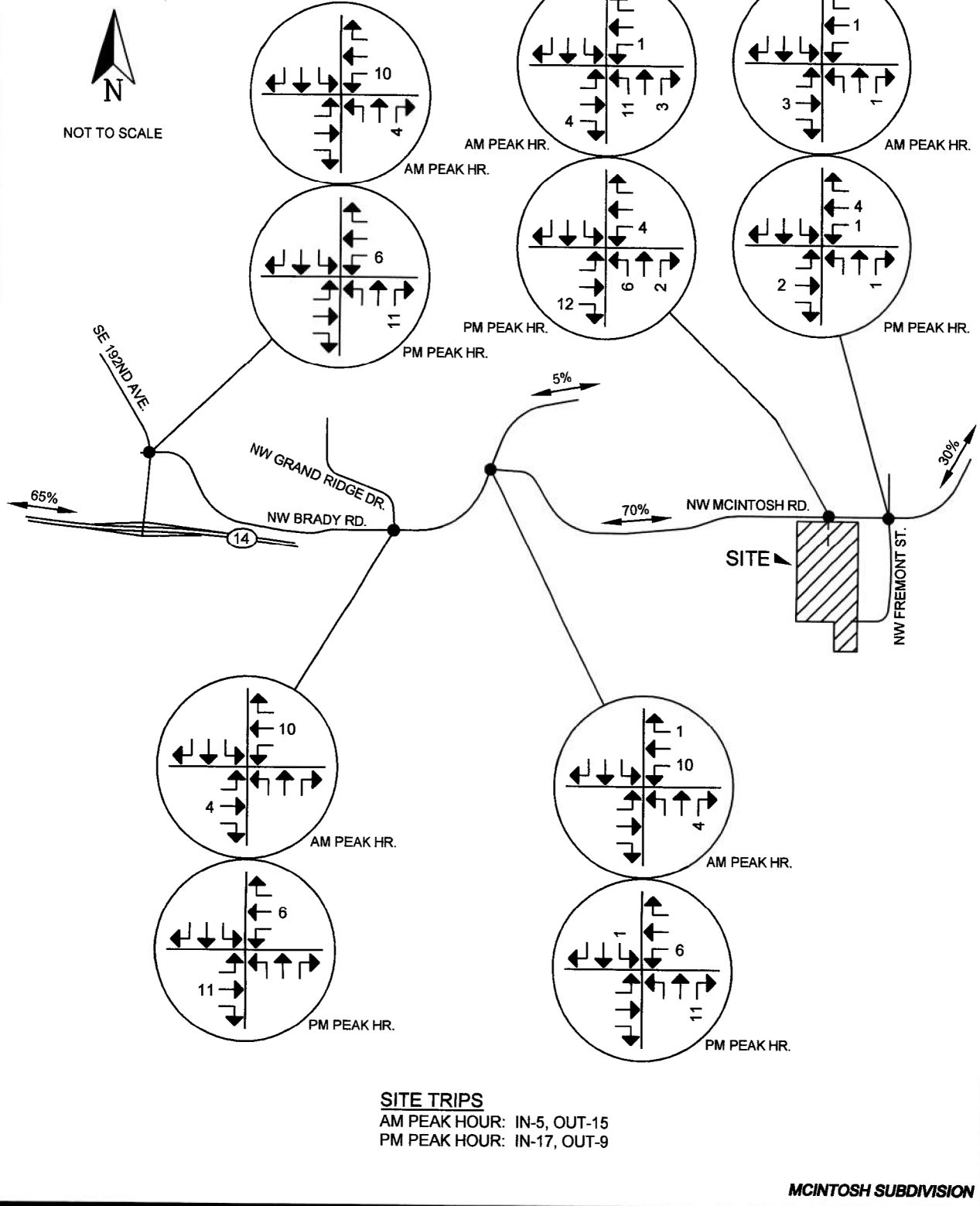
Total Estimated Trip Assignment - Full Build-Out
Weekday PM Peak Hour
Camas, Washington

Figure 10

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

H:\proj\lio\13865 - Green Mountain Master Plan\dwg\figs\13865_traffic study -Nov update.dwg Nov 20, 2014 - 2:29pm klaustson Layout Tab: 10_BxPM

0% Build-Out



SITE TRIPS
AM PEAK HOUR: IN-5, OUT-15
PM PEAK HOUR: IN-17, OUT-9

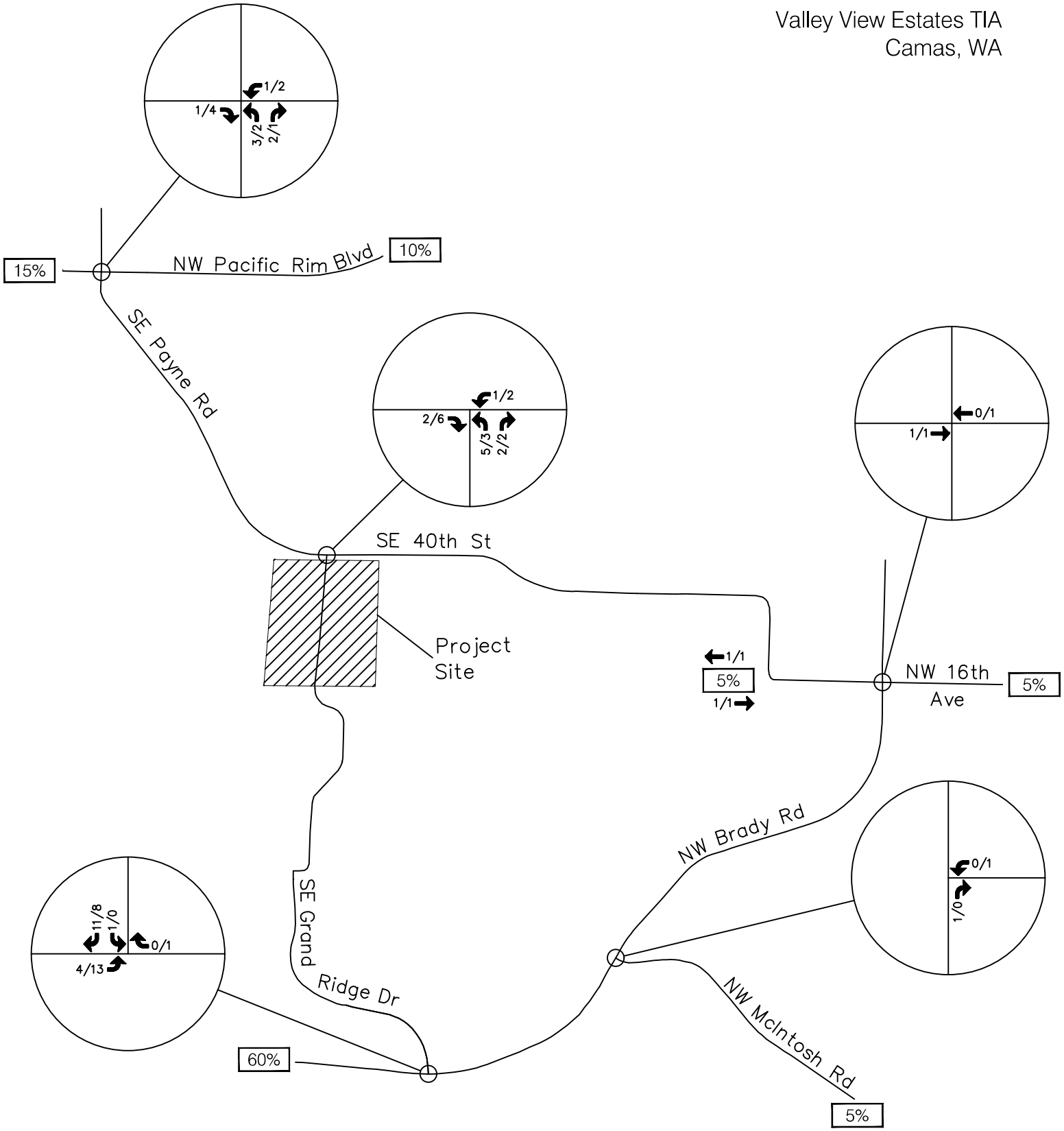
MCINTOSH SUBDIVISION

FIGURE 5
SITE TRAFFIC DISTRIBUTION/ ASSIGNMENT

KELLY ENGINEERING
1805 NE 94th St. No. 19, Vancouver, WA 98665
Phone: 360-433-7530

40% Build-Out

Valley View Estates TIA
Camas, WA



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

10% Peak Hour Trip Distribution

NOT TO SCALE

FIGURE 6
Trip Distribution and Assignment
Traffic Volumes

18006_Figures.Dwg

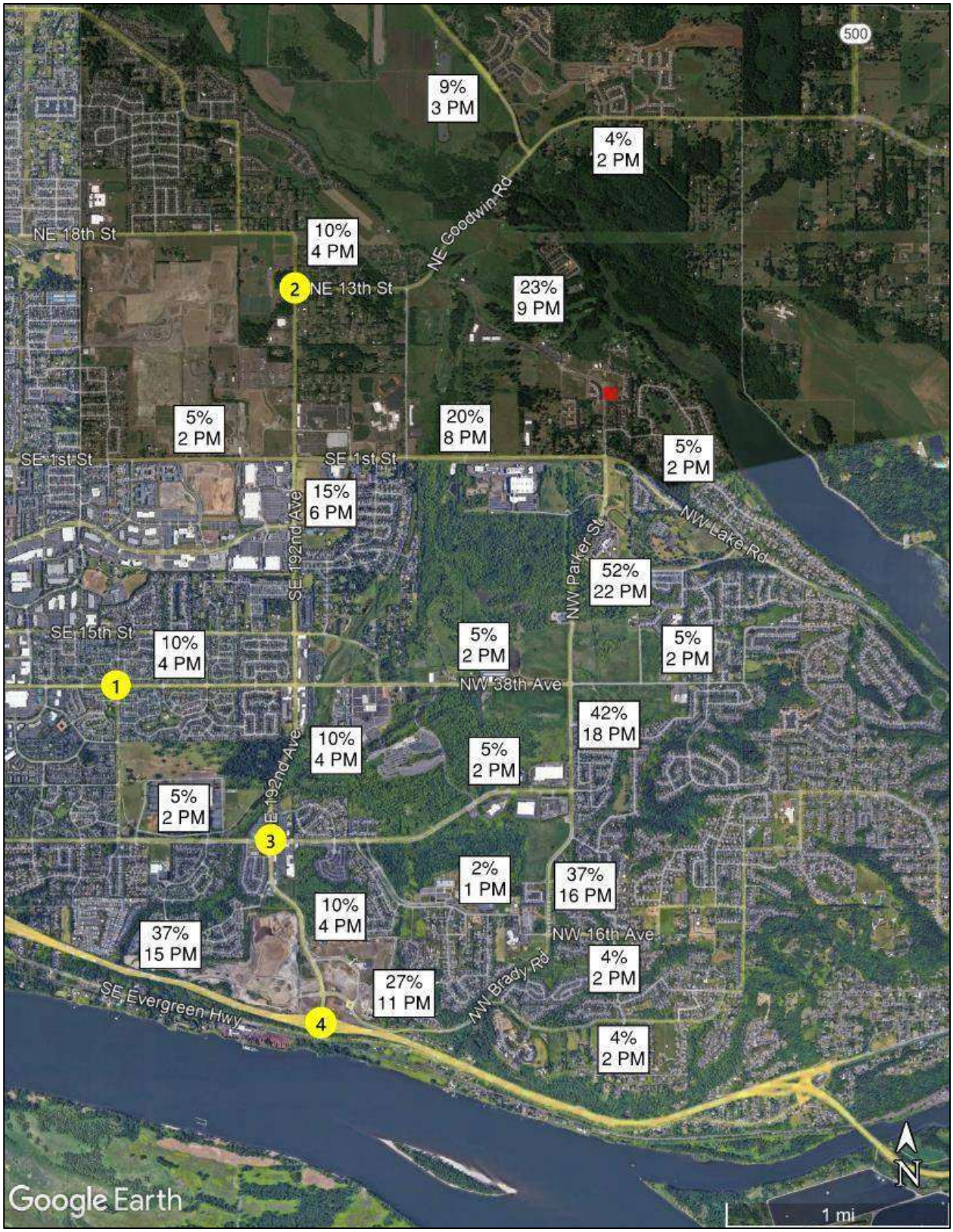
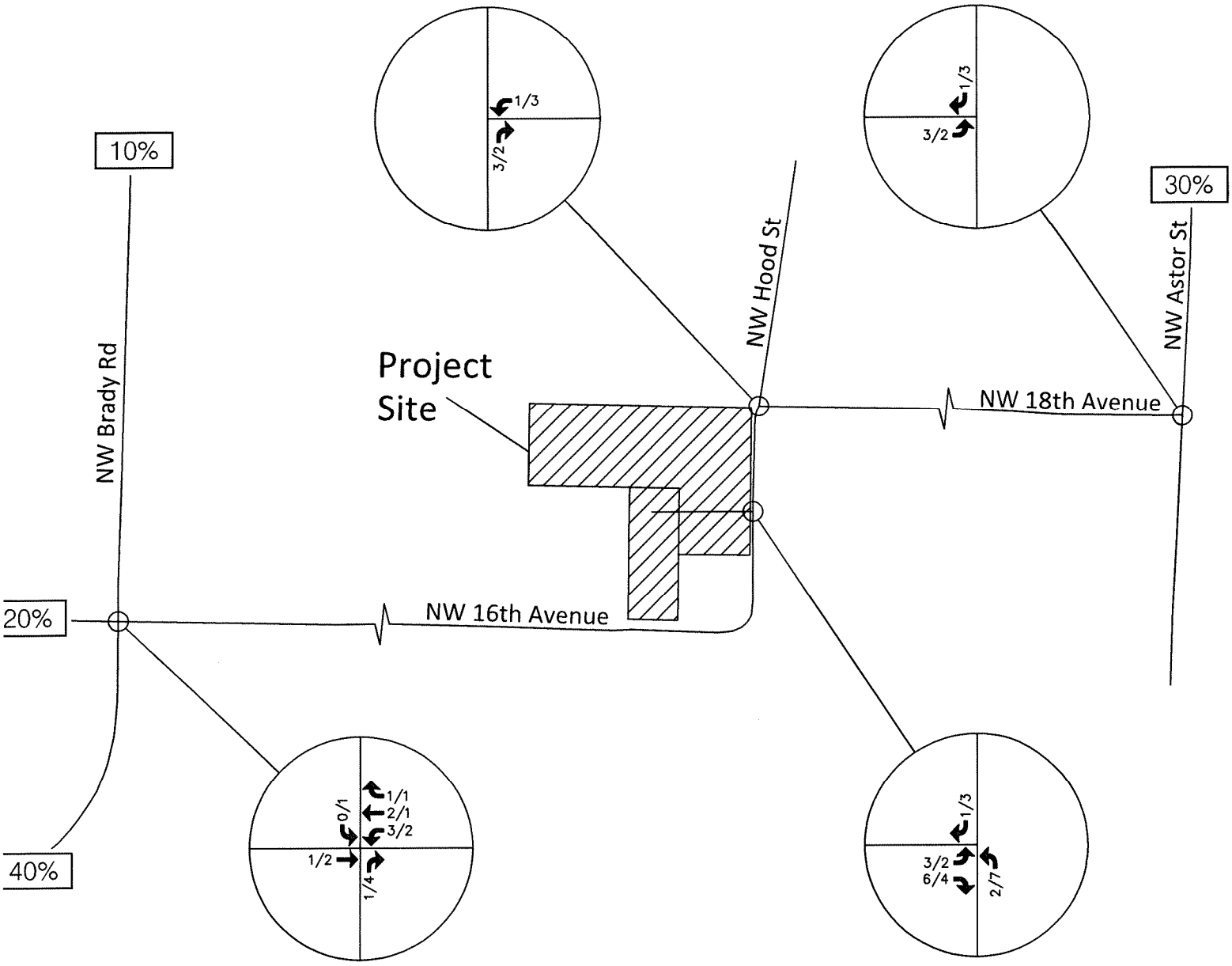


Figure 2: Trip Distribution and Assignment

0% Build-Out

Hood Street Subdivision TIA
Camas, WA



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

10% Peak Hour Trip Distribution

NOT TO SCALE

FIGURE 6
Trip Distribution and Assignment
Traffic Volumes

20033_Figures.Dwg

Appendix F: Year 2030 Background Traffic Conditions Analysis Worksheets

Intersection Level Of Service Report
Intersection 1: NW Fisher Creek Dr/ NW 38th Ave

Control Type:	Signalized	Delay (sec / veh):	14.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.524

Intersection Setup

Name	NW Fisher Creek Dr			NW Fisher Creek Dr			SE 20th St			NW 38th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Fisher Creek Dr			NW Fisher Creek Dr			SE 20th St			NW 38th Ave		
Base Volume Input [veh/h]	9	2	1	38	22	6	4	246	147	12	234	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	4.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	2	1	38	22	6	4	246	147	12	234	57
Peak Hour Factor	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	0	12	7	2	1	77	46	4	73	18
Total Analysis Volume [veh/h]	11	3	1	48	28	8	5	308	184	15	293	71
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	20	30	0	20	30	0	25	45	0	25	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	3.5	3.5	0.0	3.5	3.5	0.0	2.5	1.6	0.0	2.5	1.7	0.0
Walk [s]	9	9	0	0	8	0	0	7	0	0	9	0
Pedestrian Clearance [s]	13	13	0	0	12	0	0	10	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.5	4.5	0.0	4.5	4.5	0.0	3.5	3.6	0.0	3.5	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	14	9	0	9	9	0	9	14	0	9	14	0
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	8	0	5	8	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	41	41	41	41	41	41	41	41
L, Total Lost Time per Cycle [s]	6.50	6.50	4.50	6.50	5.60	5.60	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.50	0.00	4.50	0.00	3.60	0.00	3.70
g_i, Effective Green Time [s]	9	0	11	2	18	14	20	15
g / C, Green / Cycle	0.21	0.01	0.26	0.04	0.44	0.34	0.49	0.35
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.03	0.02	0.00	0.29	0.01	0.20
s, saturation flow rate [veh/h]	1633	1820	1733	1815	1193	1726	1107	1779
c, Capacity [veh/h]	584	10	625	78	624	593	568	629
d1, Uniform Delay [s]	12.94	20.61	13.20	19.44	5.86	12.55	6.81	10.93
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	21.44	0.05	4.17	0.01	3.08	0.02	0.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.38	0.08	0.46	0.01	0.83	0.03	0.58
d, Delay for Lane Group [s/veh]	12.95	42.06	13.25	23.61	5.86	15.63	6.82	11.78
Lane Group LOS	B	D	B	C	A	B	A	B
Critical Lane Group	Yes	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.07	0.10	0.32	0.40	0.01	3.43	0.04	2.04
50th-Percentile Queue Length [ft/ln]	1.82	2.44	8.12	9.96	0.33	85.68	1.03	50.90
95th-Percentile Queue Length [veh/ln]	0.13	0.18	0.58	0.72	0.02	6.17	0.07	3.66
95th-Percentile Queue Length [ft/ln]	3.28	4.39	14.61	17.92	0.60	154.22	1.85	91.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.95	42.06	42.06	13.25	23.61	23.61	5.86	15.63	15.63	6.82	11.78	11.78
Movement LOS	B	D	D	B	C	C	A	B	B	A	B	B
d_A, Approach Delay [s/veh]	20.71			17.69			15.53			11.58		
Approach LOS	C			B			B			B		
d_I, Intersection Delay [s/veh]	14.26											
Intersection LOS	B											
Intersection V/C	0.524											

Emissions

Vehicle Miles Traveled [mph]	0.45	0.16	1.14	0.85	0.24	24.02	0.36	8.64
Stops [stops/h]	6.33	8.46	28.16	34.55	1.16	297.30	3.56	176.61
Fuel consumption [US gal/h]	0.07	0.07	0.29	0.34	0.03	5.35	0.07	2.92
CO [g/h]	5.14	5.18	20.17	24.04	1.82	373.71	4.79	203.90
NOx [g/h]	1.00	1.01	3.93	4.68	0.35	72.71	0.93	39.67
VOC [g/h]	1.19	1.20	4.68	5.57	0.42	86.61	1.11	47.26

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	11.21	9.79	10.48	9.79
l_p,int, Pedestrian LOS Score for Intersectio	1.968	1.936	2.244	2.212
Crosswalk LOS	A	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1446	1446	2169	2169
d_b, Bicycle Delay [s]	1.59	1.59	0.15	0.15
l_b,int, Bicycle LOS Score for Intersection	1.584	1.698	1.308	1.113
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: NW Parker Street/ NW 38th Avenue

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.576

Intersection Setup

Name	NW Parker St			NW Parker St			NW 38th Ave			NW 38th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00	130.00	100.00	100.00	130.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker St			NW Parker St			NW 38th Ave			NW 38th Ave		
Base Volume Input [veh/h]	68	409	76	16	303	136	101	66	35	84	108	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	5.00	9.00	7.00	2.00	3.00	0.00	5.00	8.00	6.00	2.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	76	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	68	409	0	16	303	136	101	66	35	84	108	36
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	116	0	5	86	39	29	19	10	24	31	10
Total Analysis Volume [veh/h]	77	465	0	18	344	155	115	75	40	95	123	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Overlap	ProtPer	Permiss	Overlap	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	7	5	2	3	3	8	0	7	4	0
Auxiliary Signal Groups			6,7			2,3						
Maximum Green [s]	15	25	15	15	25	15	15	20	0	15	20	0
Amber [s]	3.0	3.6	3.0	3.0	3.6	3.0	3.0	4.0	0.0	3.0	3.6	0.0
All red [s]	2.9	2.1	3.0	2.7	2.0	2.8	2.8	2.0	0.0	3.0	2.4	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	9	0	0	9	0	0	13	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.9	3.7	4.0	3.7	3.6	3.8	3.8	4.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	14	9	9	14	9	9	14	0	9	14	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	56	56	56	56	56	56	56	56	56	56
L, Total Lost Time per Cycle [s]	5.80	5.70	5.70	5.65	5.60	5.60	5.90	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.70	0.00	0.00	3.60	0.00	0.00	4.00	0.00	4.00
g_i, Effective Green Time [s]	27	17	28	27	18	28	17	6	17	7
g / C, Green / Cycle	0.49	0.31	0.50	0.49	0.32	0.50	0.30	0.11	0.30	0.12
(v / s)_i Volume / Saturation Flow Rate	0.06	0.25	0.00	0.01	0.18	0.10	0.07	0.07	0.06	0.09
s, saturation flow rate [veh/h]	1257	1825	1500	1256	1870	1577	1647	1719	1602	1791
c, Capacity [veh/h]	509	560	746	442	608	793	457	190	456	220
d1, Uniform Delay [s]	15.03	18.07	0.00	17.10	15.67	7.69	17.20	23.77	16.83	23.76
k, delay calibration	0.11	0.11	0.11	0.11	0.14	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.14	3.24	0.00	0.04	1.11	0.12	0.29	3.06	0.22	4.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.15	0.83	0.00	0.04	0.57	0.20	0.25	0.60	0.21	0.75
d, Delay for Lane Group [s/veh]	15.17	21.32	0.00	17.13	16.77	7.81	17.49	26.83	17.05	28.71
Lane Group LOS	B	C	A	B	B	A	B	C	B	C
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.41	5.29	0.00	0.09	3.31	0.82	0.96	1.46	0.79	2.16
50th-Percentile Queue Length [ft/ln]	10.29	132.33	0.00	2.31	82.67	20.56	23.89	36.43	19.66	54.11
95th-Percentile Queue Length [veh/ln]	0.74	9.07	0.00	0.17	5.95	1.48	1.72	2.62	1.42	3.90
95th-Percentile Queue Length [ft/ln]	18.51	226.66	0.00	4.15	148.81	37.00	43.00	65.57	35.40	97.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.17	21.32	0.00	17.13	16.77	7.81	17.49	26.83	26.83	17.05	28.71	28.71
Movement LOS	B	C	A	B	B	A	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	20.44			14.10			22.16			24.44		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	19.25											
Intersection LOS	B											
Intersection V/C	0.576											

Emissions

Vehicle Miles Traveled [mph]	2.69	16.27	0.00	0.43	8.14	3.67	6.89	6.89	4.35	7.50
Stops [stops/h]	26.45	340.25	0.00	5.93	212.57	52.86	61.42	93.67	50.56	139.12
Fuel consumption [US gal/h]	0.54	5.20	0.00	0.12	3.08	0.78	1.26	1.80	0.98	2.59
CO [g/h]	37.69	363.24	0.00	8.64	215.52	54.79	88.04	125.47	68.65	181.31
NOx [g/h]	7.33	70.67	0.00	1.68	41.93	10.66	17.13	24.41	13.36	35.28
VOC [g/h]	8.74	84.18	0.00	2.00	49.95	12.70	20.40	29.08	15.91	42.02

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	19.73	19.73	19.73	19.73
l_p,int, Pedestrian LOS Score for Intersectio	2.633	2.560	2.258	2.123
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	893	893	714	714
d_b, Bicycle Delay [s]	8.58	8.58	11.57	11.57
l_b,int, Bicycle LOS Score for Intersection	1.293	2.413	1.939	0.701
Bicycle LOS	A	B	A	A

Sequence

Ring 1	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: NW Parker St/ NW Pacific Rim

Control Type:	All-way stop	Delay (sec / veh):	12.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.395

Intersection Setup

Name	NW Parker St			NW Parker St			NW Pacific Rim			NW Pacific Rim		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	155.00	100.00	100.00	145.00	100.00	100.00	130.00	100.00	100.00	75.00	100.00	75.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker St			NW Parker St			NW Pacific Rim			NW Pacific Rim		
Base Volume Input [veh/h]	44	325	19	10	196	190	157	14	19	46	58	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	4.00	26.00	10.00	3.00	3.00	6.00	0.00	0.00	7.00	3.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	325	19	10	196	190	157	14	19	46	58	13
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	90	5	3	54	53	44	4	5	13	16	4
Total Analysis Volume [veh/h]	49	361	21	11	218	211	174	16	21	51	64	14
Pedestrian Volume [ped/h]	1			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	505	544	549	506	552	616	484	524	581	465	500	518
Degree of Utilization, x	0.10	0.35	0.35	0.02	0.40	0.34	0.36	0.03	0.04	0.11	0.08	0.08

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.32	1.57	1.55	0.07	1.88	1.52	1.62	0.09	0.11	0.37	0.25	0.24
95th-Percentile Queue Length [ft]	8.01	39.18	38.71	1.67	46.91	37.99	40.41	2.36	2.81	9.18	6.32	6.09
Approach Delay [s/veh]	12.54			12.45			13.41			10.78		
Approach LOS	B			B			B			B		
Intersection Delay [s/veh]	12.47											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 4: NW Brady Rd/ NW 20th Ave

Control Type:	Two-way stop	Delay (sec / veh):	16.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.036

Intersection Setup

Name	NW Brady Rd			NW Brady Rd			NW 20th Ave			NW 20th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	NW Brady Rd			NW Brady Rd			NW 20th Ave			NW 20th Ave		
Base Volume Input [veh/h]	2	346	4	3	255	4	10	0	5	6	0	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	25.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	11.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	346	4	3	255	4	10	0	5	6	0	9
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	101	1	1	74	1	3	0	1	2	0	3
Total Analysis Volume [veh/h]	2	402	5	3	297	5	12	0	6	7	0	10
Pedestrian Volume [ped/h]	0			0			3			6		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.01	0.02	0.00	0.02
d_M, Delay for Movement [s/veh]	7.85	0.00	0.00	8.14	0.00	0.00	16.09	15.71	10.27	15.95	15.61	11.12
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.01	0.00	0.00	0.14	0.14	0.14	0.11	0.11	0.11
95th-Percentile Queue Length [ft/ln]	0.12	0.00	0.00	0.20	0.00	0.00	3.42	3.42	3.42	2.87	2.87	2.87
d_A, Approach Delay [s/veh]	0.04			0.08			14.15			13.11		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.69											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 5: NW Brady Rd/ NW 16th Ave

Control Type:	Signalized	Delay (sec / veh):	23.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

Intersection Setup

Name	NW Brady Rd			NW Brady Rd			NW 16th Ave			NW 16th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	13.00	13.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	140.00	100.00	100.00	100.00	100.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	2.00			2.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Brady Rd			NW Brady Rd			NW 16th Ave			NW 16th Ave		
Base Volume Input [veh/h]	73	143	75	51	167	49	63	88	72	114	146	129
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	8.00	12.00	14.00	2.00	7.00	5.00	5.00	6.00	3.00	3.00	8.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	143	75	51	167	49	63	88	72	114	146	129
Peak Hour Factor	0.7100	0.7100	0.7100	0.7100	0.7100	0.7100	0.7100	0.7100	0.7100	0.7100	0.7100	0.7100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	50	26	18	59	17	22	31	25	40	51	45
Total Analysis Volume [veh/h]	103	201	106	72	235	69	89	124	101	161	206	182
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	20	40	0	20	40	0	20	30	0	20	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.6	0.0	3.0	3.6	0.0	3.0	3.6	0.0
All red [s]	2.7	2.7	0.0	2.6	2.0	0.0	2.3	1.9	0.0	2.6	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	11	0	0	9	0	0	9	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.7	3.7	0.0	3.6	3.6	0.0	3.3	3.5	0.0	3.6	3.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	14	0	9	14	0	9	14	0	9	14	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	64	64	64	64	64	64	64	64
L, Total Lost Time per Cycle [s]	5.70	5.70	5.60	5.60	5.50	5.50	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.70	0.00	3.60	0.00	3.50	0.00	3.60
g_i, Effective Green Time [s]	26	17	26	16	26	15	26	17
g / C, Green / Cycle	0.41	0.26	0.41	0.25	0.41	0.24	0.41	0.27
(v / s)_i Volume / Saturation Flow Rate	0.10	0.23	0.14	0.21	0.13	0.13	0.12	0.23
s, saturation flow rate [veh/h]	1001	1348	502	1420	666	1673	1366	1713
c, Capacity [veh/h]	397	357	409	359	483	397	598	459
d1, Uniform Delay [s]	13.54	22.35	13.43	22.70	13.17	21.47	12.61	22.13
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.34	6.06	0.20	5.56	0.18	1.27	0.24	4.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.26	0.86	0.18	0.85	0.18	0.57	0.27	0.85
d, Delay for Lane Group [s/veh]	13.89	28.41	13.63	28.27	13.35	22.75	12.84	26.48
Lane Group LOS	B	C	B	C	B	C	B	C
Critical Lane Group	No	Yes	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.85	4.54	0.58	4.47	0.75	2.96	1.41	5.72
50th-Percentile Queue Length [ft/ln]	21.37	113.43	14.55	111.68	18.65	73.96	35.19	143.04
95th-Percentile Queue Length [veh/ln]	1.54	8.03	1.05	7.93	1.34	5.33	2.53	9.64
95th-Percentile Queue Length [ft/ln]	38.47	200.77	26.19	198.34	33.57	133.13	63.34	241.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	13.89	28.41	28.41	13.63	28.27	28.27	13.35	22.75	22.75	12.84	26.48	26.48
Movement LOS	B	C	C	B	C	C	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	24.76			25.46			20.09			22.48		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	23.27											
Intersection LOS	C											
Intersection V/C	0.768											

Emissions

Vehicle Miles Traveled [mph]	4.22	12.57	2.56	10.80	3.37	8.53	3.82	9.21
Stops [stops/h]	48.32	256.49	32.90	252.53	42.18	167.23	79.57	323.42
Fuel consumption [US gal/h]	0.82	4.18	0.54	4.06	0.56	2.07	0.90	3.75
CO [g/h]	56.98	292.37	38.07	283.77	38.82	144.46	62.77	261.85
NOx [g/h]	11.09	56.88	7.41	55.21	7.55	28.11	12.21	50.95
VOC [g/h]	13.21	67.76	8.82	65.77	9.00	33.48	14.55	60.69

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	21.79	21.79	21.79	21.79
l_p,int, Pedestrian LOS Score for Intersectio	2.326	2.276	2.150	2.179
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1256	1256	942	942
d_b, Bicycle Delay [s]	4.41	4.40	8.91	8.91
l_b,int, Bicycle LOS Score for Intersection	2.236	1.322	1.220	1.608
Bicycle LOS	B	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: NW Brady Rd/NW McIntosh Rd

Control Type:	Two-way stop	Delay (sec / veh):	24.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.458

Intersection Setup

Name	NW Brady Rd		NW Brady Rd		NW McIntosh Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	10.00	11.00	11.00	11.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	80.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.02		-0.02		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	NW Brady Rd		NW Brady Rd		NW McIntosh Rd	
Base Volume Input [veh/h]	218	62	18	412	132	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	5.00	6.00	2.00	0.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	218	62	18	412	132	26
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	18	5	121	39	8
Total Analysis Volume [veh/h]	256	73	21	485	155	31
Pedestrian Volume [ped/h]	0		0		4	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.00	0.46	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	8.05	0.00	24.32	10.11
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.05	0.00	2.30	0.13
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.34	0.00	57.60	3.30
d_A, Approach Delay [s/veh]	0.00		0.33		21.95	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	4.16					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 7: NW Grand Ridge Dr/ NW Brady Rd

Control Type:	Two-way stop	Delay (sec / veh):	18.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.034

Intersection Setup

Name	NW Grand Ridge Dr		NW Brady Rd		NW Brady Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	10.00	10.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	80.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	-0.01		0.03		-0.03	
Crosswalk	No		No		No	

Volumes

Name	NW Grand Ridge Dr		NW Brady Rd		NW Brady Rd	
Base Volume Input [veh/h]	9	48	13	271	536	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	18.00	8.00	1.00	25.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	48	13	271	536	8
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	14	4	78	154	2
Total Analysis Volume [veh/h]	10	55	15	311	616	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.11	0.02	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	18.45	13.53	9.14	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.50	0.50	0.05	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	12.46	12.46	1.29	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	14.29		0.42		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.05					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Future Street/ NW 18th Ave

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name			NW 18th Ave		NW 18th Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name			NW 18th Ave		NW 18th Ave	
Base Volume Input [veh/h]	0	0	0	96	166	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	6.00	6.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	96	166	0
Peak Hour Factor	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	30	53	0
Total Analysis Volume [veh/h]	0	0	0	122	210	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.40	9.31	7.62	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.85		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 1: NW Fisher Creek Dr/ NW 38th Ave

Control Type:	Signalized	Delay (sec / veh):	16.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.554

Intersection Setup

Name	NW Fisher Creek Dr			NW Fisher Creek Dr			SE 20th St			NW 38th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Fisher Creek Dr			NW Fisher Creek Dr			SE 20th St			NW 38th Ave		
Base Volume Input [veh/h]	146	63	31	92	1	7	7	350	4	1	246	107
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	146	63	31	92	1	7	7	350	4	1	246	107
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	17	9	25	0	2	2	96	1	0	68	29
Total Analysis Volume [veh/h]	160	69	34	101	1	8	8	385	4	1	270	118
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	20	30	0	20	30	0	25	45	0	25	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	3.5	3.5	0.0	3.5	3.5	0.0	2.5	1.6	0.0	2.5	1.7	0.0
Walk [s]	9	9	0	0	8	0	0	7	0	0	9	0
Pedestrian Clearance [s]	13	13	0	0	12	0	0	10	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.5	4.5	0.0	4.5	4.5	0.0	3.5	3.6	0.0	3.5	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	14	9	0	9	9	0	9	14	0	9	14	0
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	8	0	5	8	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	44	44	44	44	44	44	44	44
L, Total Lost Time per Cycle [s]	6.50	6.50	4.50	6.50	5.60	5.60	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.50	0.00	4.50	0.00	3.60	0.00	3.70
g_i, Effective Green Time [s]	14	4	16	3	18	12	18	12
g / C, Green / Cycle	0.31	0.08	0.36	0.06	0.41	0.28	0.41	0.27
(v / s)_i Volume / Saturation Flow Rate	0.10	0.06	0.06	0.01	0.00	0.21	0.00	0.22
s, saturation flow rate [veh/h]	1666	1795	1630	1604	1810	1882	1171	1789
c, Capacity [veh/h]	764	151	681	98	628	531	538	484
d1, Uniform Delay [s]	11.30	19.48	10.97	19.38	8.54	14.21	8.44	14.87
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	5.39	0.10	0.40	0.01	1.98	0.00	3.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.68	0.15	0.09	0.01	0.73	0.00	0.80
d, Delay for Lane Group [s/veh]	11.43	24.87	11.07	19.78	8.55	16.19	8.44	18.02
Lane Group LOS	B	C	B	B	A	B	A	B
Critical Lane Group	Yes	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.02	1.15	0.62	0.09	0.03	2.93	0.00	3.15
50th-Percentile Queue Length [ft/ln]	25.55	28.72	15.59	2.24	0.80	73.13	0.10	78.84
95th-Percentile Queue Length [veh/ln]	1.84	2.07	1.12	0.16	0.06	5.27	0.01	5.68
95th-Percentile Queue Length [ft/ln]	45.99	51.69	28.07	4.04	1.45	131.63	0.18	141.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.43	24.87	24.87	11.07	19.78	19.78	8.55	16.19	16.19	8.44	18.02	18.02
Movement LOS	B	C	C	B	B	B	A	B	B	A	B	B
d_A, Approach Delay [s/veh]	16.70			11.78			16.04			17.99		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	16.44											
Intersection LOS	B											
Intersection V/C	0.554											

Emissions

Vehicle Miles Traveled [mph]	6.56	4.22	2.39	0.21	0.39	18.99	0.02	9.21
Stops [stops/h]	84.35	94.81	51.49	7.41	2.65	241.46	0.33	260.30
Fuel consumption [US gal/h]	0.99	1.08	0.53	0.07	0.05	4.33	0.01	4.31
CO [g/h]	69.27	75.15	37.22	5.19	3.77	302.97	0.41	301.26
NOx [g/h]	13.48	14.62	7.24	1.01	0.73	58.95	0.08	58.61
VOC [g/h]	16.05	17.42	8.63	1.20	0.87	70.22	0.09	69.82

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	12.19	10.74	11.46	10.74
l_p,int, Pedestrian LOS Score for Intersectio	1.971	1.979	2.281	2.305
Crosswalk LOS	A	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1376	1376	2064	2064
d_b, Bicycle Delay [s]	2.12	2.13	0.02	0.02
l_b,int, Bicycle LOS Score for Intersection	1.994	1.741	1.143	1.129
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: NW Parker Street/ NW 38th Avenue

Control Type:	Signalized	Delay (sec / veh):	21.9
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.562

Intersection Setup

Name	NW Parker St			NW Parker St			NW 38th Ave			NW 38th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00	130.00	100.00	100.00	130.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker St			NW Parker St			NW 38th Ave			NW 38th Ave		
Base Volume Input [veh/h]	36	268	60	105	286	125	70	129	38	161	236	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	8.00	0.00	0.00	1.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	60	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	268	0	105	286	125	70	129	38	161	236	116
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	69	0	27	74	32	18	33	10	41	61	30
Total Analysis Volume [veh/h]	37	276	0	108	295	129	72	133	39	166	243	120
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Overlap	ProtPer	Permiss	Overlap	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	7	5	2	3	3	8	0	7	4	0
Auxiliary Signal Groups			6,7			2,3						
Maximum Green [s]	15	25	15	15	25	15	15	20	0	15	20	0
Amber [s]	3.0	3.6	3.0	3.0	3.6	3.0	3.0	4.0	0.0	3.0	3.6	0.0
All red [s]	2.9	2.1	3.0	2.7	2.0	2.8	2.8	2.0	0.0	3.0	2.4	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	9	0	0	9	0	0	13	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.9	3.7	4.0	3.7	3.6	3.8	3.8	4.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	14	9	9	14	9	9	14	0	9	14	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Cycle Length [s]	63	63	63	63	63	63	63	63	63	63
L, Total Lost Time per Cycle [s]	5.80	5.70	5.70	5.65	5.60	5.60	5.90	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.70	0.00	0.00	3.60	0.00	0.00	4.00	0.00	4.00
g_i, Effective Green Time [s]	25	15	26	25	16	26	26	15	26	16
g / C, Green / Cycle	0.39	0.24	0.41	0.40	0.25	0.41	0.42	0.25	0.42	0.26
(v / s)_i Volume / Saturation Flow Rate	0.03	0.15	0.00	0.07	0.16	0.08	0.05	0.09	0.11	0.20
s, saturation flow rate [veh/h]	1342	1900	1615	1453	1900	1602	1399	1827	1513	1795
c, Capacity [veh/h]	419	450	659	449	480	665	417	451	557	458
d1, Uniform Delay [s]	19.63	21.36	0.00	19.95	20.72	11.65	20.17	19.63	17.23	21.79
k, delay calibration	0.11	0.11	0.11	0.11	0.12	0.11	0.11	0.11	0.11	0.24
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.09	1.36	0.00	0.27	1.42	0.14	0.19	0.53	0.30	6.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.61	0.00	0.24	0.61	0.19	0.17	0.38	0.30	0.79
d, Delay for Lane Group [s/veh]	19.72	22.72	0.00	20.22	22.14	11.79	20.36	20.16	17.53	28.61
Lane Group LOS	B	C	A	C	C	B	C	C	B	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.29	3.45	0.00	0.88	3.64	1.02	0.53	1.92	1.29	5.24
50th-Percentile Queue Length [ft/ln]	7.30	86.31	0.00	22.11	91.11	25.50	13.21	48.08	32.22	131.03
95th-Percentile Queue Length [veh/ln]	0.53	6.21	0.00	1.59	6.56	1.84	0.95	3.46	2.32	9.00
95th-Percentile Queue Length [ft/ln]	13.15	155.37	0.00	39.80	164.01	45.89	23.77	86.55	57.99	224.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.72	22.72	0.00	20.22	22.14	11.79	20.36	20.16	20.16	17.53	28.61	28.61
Movement LOS	B	C	A	C	C	B	C	C	C	B	C	C
d_A, Approach Delay [s/veh]	22.37			19.24			20.22			25.13		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	21.92											
Intersection LOS	C											
Intersection V/C	0.562											

Emissions

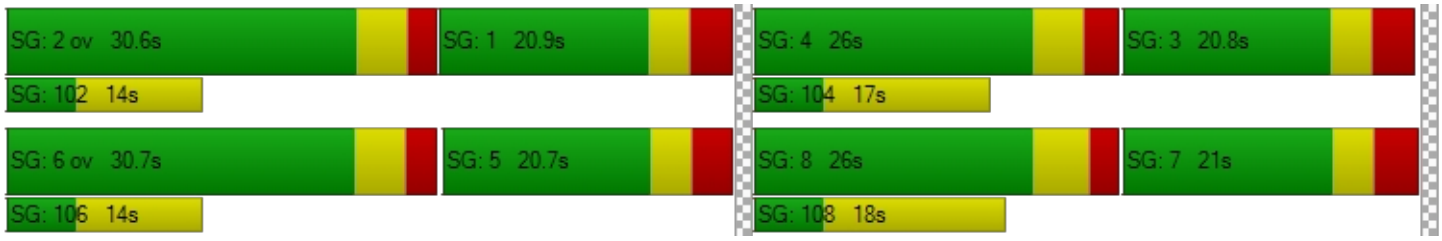
Vehicle Miles Traveled [mph]	1.29	9.66	0.00	2.56	6.98	3.05	4.32	10.31	7.60	16.61
Stops [stops/h]	16.79	198.41	0.00	50.82	209.44	58.61	30.36	110.53	74.06	301.19
Fuel consumption [US gal/h]	0.32	3.14	0.00	0.92	3.17	0.87	0.75	2.16	1.59	5.67
CO [g/h]	22.65	219.25	0.00	64.59	221.61	60.59	52.51	151.05	111.27	396.14
NOx [g/h]	4.41	42.66	0.00	12.57	43.12	11.79	10.22	29.39	21.65	77.07
VOC [g/h]	5.25	50.81	0.00	14.97	51.36	14.04	12.17	35.01	25.79	91.81

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	22.97	22.97	22.97	22.97
l_p,int, Pedestrian LOS Score for Intersectio	2.636	2.481	2.250	2.407
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	798	798	639	639
d_b, Bicycle Delay [s]	11.31	11.31	14.51	14.51
l_b,int, Bicycle LOS Score for Intersection	0.889	2.437	1.962	1.146
Bicycle LOS	A	B	A	A

Sequence

Ring 1	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: NW Parker St/ NW Pacific Rim

Control Type:	All-way stop	Delay (sec / veh):	12.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.517

Intersection Setup

Name	NW Parker St			NW Parker St			NW Pacific Rim			NW Pacific Rim		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	155.00	100.00	100.00	145.00	100.00	100.00	130.00	100.00	100.00	75.00	100.00	75.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker St			NW Parker St			NW Pacific Rim			NW Pacific Rim		
Base Volume Input [veh/h]	26	286	30	17	282	105	169	44	69	32	23	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	4.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	286	30	17	282	105	169	44	69	32	23	15
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	74	8	4	73	27	44	11	18	8	6	4
Total Analysis Volume [veh/h]	27	298	31	18	294	109	176	46	72	33	24	16
Pedestrian Volume [ped/h]	1			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	515	554	565	527	568	636	500	537	587	483	511	567
Degree of Utilization, x	0.05	0.30	0.29	0.03	0.52	0.17	0.35	0.09	0.12	0.07	0.05	0.03

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.17	1.24	1.20	0.11	2.96	0.61	1.57	0.28	0.42	0.22	0.15	0.09
95th-Percentile Queue Length [ft]	4.14	30.89	30.07	2.64	74.03	15.35	39.19	7.00	10.40	5.48	3.69	2.18
Approach Delay [s/veh]	11.66			13.80			12.17			10.18		
Approach LOS	B			B			B			B		
Intersection Delay [s/veh]	12.48											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 4: NW Brady Rd/ NW 20th Ave

Control Type:	Two-way stop	Delay (sec / veh):	16.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.025

Intersection Setup

Name	NW Brady Rd			NW Brady Rd			NW 20th Ave			NW 20th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	NW Brady Rd			NW Brady Rd			NW 20th Ave			NW 20th Ave		
Base Volume Input [veh/h]	10	312	1	6	320	8	5	0	13	7	0	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	312	1	6	320	8	5	0	13	7	0	7
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	85	0	2	87	2	1	0	4	2	0	2
Total Analysis Volume [veh/h]	11	339	1	7	348	9	5	0	14	8	0	8
Pedestrian Volume [ped/h]	0			0			3			6		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.00	0.00	0.02	0.00	0.02	0.02	0.00	0.01
d_M, Delay for Movement [s/veh]	8.01	0.00	0.00	7.97	0.00	0.00	16.22	15.83	10.46	16.52	15.95	10.47
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.02	0.00	0.00	0.11	0.11	0.11	0.11	0.11	0.11
95th-Percentile Queue Length [ft/ln]	0.69	0.00	0.00	0.43	0.00	0.00	2.76	2.76	2.76	2.82	2.82	2.82
d_A, Approach Delay [s/veh]	0.25			0.15			11.97			13.49		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	0.78											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 5: NW Brady Rd/ NW 16th Ave

Control Type:	Signalized	Delay (sec / veh):	19.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.621

Intersection Setup

Name	NW Brady Rd			NW Brady Rd			NW 16th Ave			NW 16th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	13.00	13.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	140.00	100.00	100.00	100.00	100.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	2.00			2.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Brady Rd			NW Brady Rd			NW 16th Ave			NW 16th Ave		
Base Volume Input [veh/h]	15	188	142	131	184	21	26	100	46	90	59	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	2.00	4.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	188	142	131	184	21	26	100	46	90	59	101
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	52	39	36	51	6	7	27	13	25	16	28
Total Analysis Volume [veh/h]	16	207	156	144	202	23	29	110	51	99	65	111
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	20	40	0	20	40	0	20	30	0	20	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.6	0.0	3.0	3.6	0.0	3.0	3.6	0.0
All red [s]	2.7	2.7	0.0	2.6	2.0	0.0	2.3	1.9	0.0	2.6	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	11	0	0	9	0	0	9	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.7	3.7	0.0	3.6	3.6	0.0	3.3	3.5	0.0	3.6	3.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	14	0	9	14	0	9	14	0	9	14	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Cycle Length [s]	57	57	57	57	57	57	57	57
L, Total Lost Time per Cycle [s]	5.70	5.70	5.60	5.60	5.50	5.50	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.70	0.00	3.60	0.00	3.50	0.00	3.60
g_i, Effective Green Time [s]	27	17	27	21	19	9	19	12
g / C, Green / Cycle	0.48	0.29	0.48	0.36	0.33	0.16	0.33	0.20
(v / s)_i Volume / Saturation Flow Rate	0.02	0.25	0.10	0.15	0.03	0.09	0.07	0.11
s, saturation flow rate [veh/h]	1020	1442	1435	1465	938	1785	1450	1656
c, Capacity [veh/h]	557	420	687	527	511	288	559	334
d1, Uniform Delay [s]	8.32	19.29	8.69	13.93	13.49	22.22	14.01	20.49
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	5.44	0.15	0.55	0.05	1.70	0.15	1.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.86	0.21	0.43	0.06	0.56	0.18	0.53
d, Delay for Lane Group [s/veh]	8.34	24.73	8.84	14.48	13.54	23.92	14.16	21.78
Lane Group LOS	A	C	A	B	B	C	B	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.09	4.61	0.86	1.97	0.24	2.03	0.87	2.10
50th-Percentile Queue Length [ft/ln]	2.20	115.17	21.54	49.22	6.08	50.73	21.72	52.50
95th-Percentile Queue Length [veh/ln]	0.16	8.13	1.55	3.54	0.44	3.65	1.56	3.78
95th-Percentile Queue Length [ft/ln]	3.95	203.17	38.78	88.60	10.95	91.32	39.09	94.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.34	24.73	24.73	8.84	14.48	14.48	13.54	23.92	23.92	14.16	21.78	21.78
Movement LOS	A	C	C	A	B	B	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	24.04			12.28			22.33			19.04		
Approach LOS	C			B			C			B		
d_I, Intersection Delay [s/veh]	19.06											
Intersection LOS	B											
Intersection V/C	0.621											

Emissions

Vehicle Miles Traveled [mph]	0.65	14.86	5.12	8.00	1.10	6.10	2.35	4.18
Stops [stops/h]	5.52	289.23	54.11	123.61	15.28	127.41	54.54	131.84
Fuel consumption [US gal/h]	0.09	4.57	0.86	1.90	0.19	1.55	0.60	1.47
CO [g/h]	6.54	319.34	60.18	132.64	13.14	108.12	41.96	103.03
NOx [g/h]	1.27	62.13	11.71	25.81	2.56	21.04	8.16	20.05
VOC [g/h]	1.52	74.01	13.95	30.74	3.04	25.06	9.73	23.88

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	18.72	18.72	18.72	18.72
l_p,int, Pedestrian LOS Score for Intersectio	2.220	2.195	2.004	2.101
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1395	1395	1046	1046
d_b, Bicycle Delay [s]	2.62	2.62	6.52	6.52
l_b,int, Bicycle LOS Score for Intersection	2.185	1.311	1.016	1.156
Bicycle LOS	B	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: NW Brady Rd/NW McIntosh Rd

Control Type:	Two-way stop	Delay (sec / veh):	20.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.307

Intersection Setup

Name	NW Brady Rd		NW Brady Rd		NW McIntosh Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	10.00	11.00	11.00	11.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	80.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.02		-0.02		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	NW Brady Rd		NW Brady Rd		NW McIntosh Rd	
Base Volume Input [veh/h]	320	121	15	295	93	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	0.00	1.00	1.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	320	121	15	295	93	16
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	91	34	4	84	26	5
Total Analysis Volume [veh/h]	364	138	17	335	106	18
Pedestrian Volume [ped/h]	0		0		4	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.00	0.31	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	8.43	0.00	19.95	10.97
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.05	0.00	1.27	0.09
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.22	0.00	31.82	2.23
d_A, Approach Delay [s/veh]	0.00		0.41		18.65	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	2.51					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 7: NW Grand Ridge Dr/ NW Brady Rd

Control Type:	Two-way stop	Delay (sec / veh):	18.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.007

Intersection Setup

Name	NW Grand Ridge Dr		NW Brady Rd		NW Brady Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	10.00	10.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	80.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	-0.01		0.03		-0.03	
Crosswalk	No		No		No	

Volumes

Name	NW Grand Ridge Dr		NW Brady Rd		NW Brady Rd	
Base Volume Input [veh/h]	2	26	42	445	377	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	1.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	26	42	445	377	6
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	7	12	125	106	2
Total Analysis Volume [veh/h]	2	29	47	500	424	7
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.05	0.04	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	18.78	10.98	8.30	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.17	0.17	0.13	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	4.17	4.17	3.22	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.48		0.71		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.74					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Future Street/ NW 18th Ave

Control Type:	Two-way stop	Delay (sec / veh):	0.0
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name			NW 18th Ave		NW 18th Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name			NW 18th Ave		NW 18th Ave	
Base Volume Input [veh/h]	0	0	0	155	79	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	3.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	155	79	0
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	44	22	0
Total Analysis Volume [veh/h]	0	0	0	174	89	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.93	8.69	7.37	0.00	0.00	0.00
Movement LOS	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.31		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.00					
Intersection LOS	A					

Appendix G: Year 2030 Total Traffic Conditions Analysis Worksheets

Intersection Level Of Service Report
Intersection 1: NW Fisher Creek Dr/ NW 38th Ave

Control Type:	Signalized	Delay (sec / veh):	14.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.528

Intersection Setup

Name	NW Fisher Creek Dr			NW Fisher Creek Dr			SE 20th St			NW 38th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Fisher Creek Dr			NW Fisher Creek Dr			SE 20th St			NW 38th Ave		
Base Volume Input [veh/h]	9	2	1	42	22	6	4	249	147	12	243	69
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	0.00	0.00	4.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	2	1	42	22	6	4	249	147	12	243	69
Peak Hour Factor	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000	0.8000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	0	13	7	2	1	78	46	4	76	22
Total Analysis Volume [veh/h]	11	3	1	53	28	8	5	311	184	15	304	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	20	30	0	20	30	0	25	45	0	25	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	3.5	3.5	0.0	3.5	3.5	0.0	2.5	1.6	0.0	2.5	1.7	0.0
Walk [s]	9	9	0	0	8	0	0	7	0	0	9	0
Pedestrian Clearance [s]	13	13	0	0	12	0	0	10	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.5	4.5	0.0	4.5	4.5	0.0	3.5	3.6	0.0	3.5	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	14	9	0	9	9	0	9	14	0	9	14	0
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	8	0	5	8	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Calculated Cycle Length [s]	42	42	42	42	42	42	42	42
L, Total Lost Time per Cycle [s]	6.50	6.50	4.50	6.50	5.60	5.60	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.50	0.00	4.50	0.00	3.60	0.00	3.70
g_i, Effective Green Time [s]	9	0	11	2	19	14	21	15
g / C, Green / Cycle	0.22	0.01	0.26	0.05	0.44	0.34	0.49	0.35
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.03	0.02	0.00	0.29	0.01	0.22
s, saturation flow rate [veh/h]	1628	1820	1734	1815	1172	1727	1103	1771
c, Capacity [veh/h]	585	10	627	85	601	595	563	628
d1, Uniform Delay [s]	12.97	20.79	13.27	19.45	6.02	12.64	6.88	11.20
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	21.58	0.06	3.32	0.01	3.11	0.02	1.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.38	0.08	0.42	0.01	0.83	0.03	0.62
d, Delay for Lane Group [s/veh]	12.98	42.37	13.33	22.77	6.03	15.75	6.90	12.21
Lane Group LOS	B	D	B	C	A	B	A	B
Critical Lane Group	Yes	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.07	0.10	0.36	0.39	0.01	3.49	0.04	2.26
50th-Percentile Queue Length [ft/ln]	1.84	2.45	9.06	9.70	0.34	87.33	1.04	56.60
95th-Percentile Queue Length [veh/ln]	0.13	0.18	0.65	0.70	0.02	6.29	0.08	4.08
95th-Percentile Queue Length [ft/ln]	3.31	4.42	16.30	17.45	0.61	157.20	1.88	101.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.98	42.37	42.37	13.33	22.77	22.77	6.03	15.75	15.75	6.90	12.21	12.21
Movement LOS	B	D	D	B	C	C	A	B	B	A	B	B
d_A, Approach Delay [s/veh]	20.82			17.15			15.65			12.01		
Approach LOS	C			B			B			B		
d_I, Intersection Delay [s/veh]	14.40											
Intersection LOS	B											
Intersection V/C	0.528											

Emissions

Vehicle Miles Traveled [mph]	0.45	0.16	1.25	0.85	0.24	24.17	0.36	9.26
Stops [stops/h]	6.32	8.44	31.16	33.36	1.17	300.46	3.59	194.74
Fuel consumption [US gal/h]	0.07	0.07	0.32	0.33	0.03	5.40	0.07	3.21
CO [g/h]	5.14	5.19	22.35	23.28	1.85	377.74	4.83	224.65
NOx [g/h]	1.00	1.01	4.35	4.53	0.36	73.49	0.94	43.71
VOC [g/h]	1.19	1.20	5.18	5.40	0.43	87.54	1.12	52.07

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	11.37	9.95	10.65	9.95
l_p,int, Pedestrian LOS Score for Intersectio	1.969	1.942	2.250	2.227
Crosswalk LOS	A	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1434	1434	2150	2150
d_b, Bicycle Delay [s]	1.68	1.68	0.12	0.12
l_b,int, Bicycle LOS Score for Intersection	1.584	1.706	1.313	1.156
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: NW Parker Street/ NW 38th Avenue

Control Type:	Signalized	Delay (sec / veh):	19.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.573

Intersection Setup

Name	NW Parker St			NW Parker St			NW 38th Ave			NW 38th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00	130.00	100.00	100.00	130.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker St			NW Parker St			NW 38th Ave			NW 38th Ave		
Base Volume Input [veh/h]	93	418	76	16	306	136	101	66	43	84	108	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	5.00	9.00	7.00	2.00	3.00	0.00	5.00	8.00	6.00	2.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	76	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	93	418	0	16	306	136	101	66	43	84	108	36
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	119	0	5	87	39	29	19	12	24	31	10
Total Analysis Volume [veh/h]	106	475	0	18	348	155	115	75	49	95	123	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Overlap	ProtPer	Permiss	Overlap	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	7	5	2	3	3	8	0	7	4	0
Auxiliary Signal Groups			6,7			2,3						
Maximum Green [s]	15	25	15	15	25	15	15	20	0	15	20	0
Amber [s]	3.0	3.6	3.0	3.0	3.6	3.0	3.0	4.0	0.0	3.0	3.6	0.0
All red [s]	2.9	2.1	3.0	2.7	2.0	2.8	2.8	2.0	0.0	3.0	2.4	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	9	0	0	9	0	0	13	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.9	3.7	4.0	3.7	3.6	3.8	3.8	4.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	14	9	9	14	9	9	14	0	9	14	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Calculated Cycle Length [s]	58	58	58	58	58	58	58	58	58	58
L, Total Lost Time per Cycle [s]	5.80	5.70	5.70	5.65	5.60	5.60	5.90	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.70	0.00	0.00	3.60	0.00	0.00	4.00	0.00	4.00
g_i, Effective Green Time [s]	29	19	30	29	20	30	17	7	17	7
g / C, Green / Cycle	0.50	0.33	0.51	0.51	0.34	0.51	0.30	0.11	0.29	0.12
(v / s)_i Volume / Saturation Flow Rate	0.08	0.26	0.00	0.01	0.19	0.10	0.07	0.07	0.06	0.09
s, saturation flow rate [veh/h]	1249	1825	1500	1227	1870	1577	1641	1706	1586	1791
c, Capacity [veh/h]	523	601	762	446	628	800	440	197	431	220
d1, Uniform Delay [s]	15.50	17.78	0.00	17.46	15.84	7.86	18.27	24.64	18.11	24.76
k, delay calibration	0.11	0.13	0.11	0.11	0.17	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	2.92	0.00	0.04	1.18	0.12	0.31	3.27	0.25	5.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.79	0.00	0.04	0.55	0.19	0.26	0.63	0.22	0.75
d, Delay for Lane Group [s/veh]	15.68	20.71	0.00	17.50	17.02	7.98	18.58	27.91	18.36	29.77
Lane Group LOS	B	C	A	B	B	A	B	C	B	C
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.59	5.48	0.00	0.09	3.48	0.86	1.03	1.65	0.85	2.27
50th-Percentile Queue Length [ft/ln]	14.67	136.89	0.00	2.35	87.04	21.59	25.66	41.31	21.13	56.77
95th-Percentile Queue Length [veh/ln]	1.06	9.31	0.00	0.17	6.27	1.55	1.85	2.97	1.52	4.09
95th-Percentile Queue Length [ft/ln]	26.40	232.84	0.00	4.22	156.67	38.86	46.18	74.35	38.03	102.19

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	15.68	20.71	0.00	17.50	17.02	7.98	18.58	27.91	27.91	18.36	29.77	29.77
Movement LOS	B	C	A	B	B	A	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	19.79			14.35			23.42			25.58		
Approach LOS	B			B			C			C		
d_I, Intersection Delay [s/veh]	19.50											
Intersection LOS	B											
Intersection V/C	0.573											

Emissions

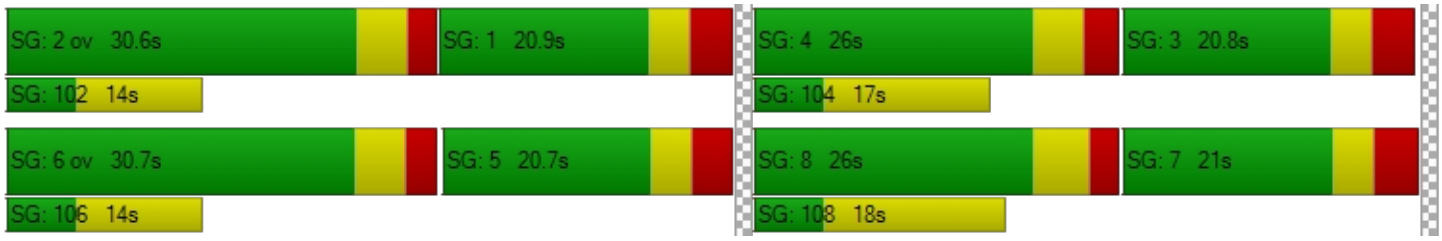
Vehicle Miles Traveled [mph]	3.71	16.62	0.00	0.43	8.23	3.67	6.89	7.43	4.35	7.50
Stops [stops/h]	36.20	337.86	0.00	5.79	214.82	53.29	63.32	101.95	52.14	140.12
Fuel consumption [US gal/h]	0.75	5.18	0.00	0.12	3.14	0.79	1.30	1.97	1.02	2.64
CO [g/h]	52.56	361.81	0.00	8.66	219.14	55.37	91.14	137.85	71.50	184.45
NOx [g/h]	10.23	70.39	0.00	1.68	42.64	10.77	17.73	26.82	13.91	35.89
VOC [g/h]	12.18	83.85	0.00	2.01	50.79	12.83	21.12	31.95	16.57	42.75

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	20.87	20.87	20.87	20.87
l_p,int, Pedestrian LOS Score for Intersectio	2.651	2.567	2.310	2.125
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	857	857	686	686
d_b, Bicycle Delay [s]	9.53	9.53	12.60	12.60
l_b,int, Bicycle LOS Score for Intersection	1.357	2.419	1.954	0.701
Bicycle LOS	A	B	A	A

Sequence

Ring 1	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: NW Parker St/ NW Pacific Rim

Control Type:	All-way stop	Delay (sec / veh):	12.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.423

Intersection Setup

Name	NW Parker St			NW Parker St			NW Pacific Rim			NW Pacific Rim		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	155.00	100.00	100.00	145.00	100.00	100.00	130.00	100.00	100.00	75.00	100.00	75.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker St			NW Parker St			NW Pacific Rim			NW Pacific Rim		
Base Volume Input [veh/h]	49	359	19	10	207	190	157	14	21	46	58	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	5.00	4.00	26.00	10.00	3.00	3.00	6.00	0.00	0.00	7.00	3.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	359	19	10	207	190	157	14	21	46	58	13
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	100	5	3	58	53	44	4	6	13	16	4
Total Analysis Volume [veh/h]	54	399	21	11	230	211	174	16	23	51	64	14
Pedestrian Volume [ped/h]	1			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	502	540	544	499	545	606	477	516	571	458	492	509
Degree of Utilization, x	0.11	0.39	0.39	0.02	0.42	0.35	0.36	0.03	0.04	0.11	0.08	0.08

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.36	1.83	1.81	0.07	2.09	1.55	1.65	0.10	0.13	0.37	0.26	0.25
95th-Percentile Queue Length [ft]	8.99	45.71	45.19	1.69	52.15	38.84	41.29	2.40	3.15	9.34	6.43	6.20
Approach Delay [s/veh]	13.17			12.91			13.61			10.92		
Approach LOS	B			B			B			B		
Intersection Delay [s/veh]	12.92											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 4: NW Brady Rd/ NW 20th Ave

Control Type:	Two-way stop	Delay (sec / veh):	19.0
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.179

Intersection Setup

Name	NW Brady Rd			NW Brady Rd			NW 20th Ave			NW 20th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	NW Brady Rd			NW Brady Rd			NW 20th Ave			NW 20th Ave		
Base Volume Input [veh/h]	12	346	4	3	255	17	49	0	34	6	0	9
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	25.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	11.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	346	4	3	255	17	49	0	34	6	0	9
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600	0.8600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	101	1	1	74	5	14	0	10	2	0	3
Total Analysis Volume [veh/h]	14	402	5	3	297	20	57	0	40	7	0	10
Pedestrian Volume [ped/h]	0			0			3			6		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.05	0.02	0.00	0.02
d_M, Delay for Movement [s/veh]	7.92	0.00	0.00	8.14	0.00	0.00	18.97	18.49	12.55	17.51	16.31	11.17
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.03	0.00	0.00	0.01	0.00	0.00	0.90	0.90	0.90	0.12	0.12	0.12
95th-Percentile Queue Length [ft/ln]	0.85	0.00	0.00	0.20	0.00	0.00	22.41	22.41	22.41	3.10	3.10	3.10
d_A, Approach Delay [s/veh]	0.26			0.08			16.32			13.78		
Approach LOS	A			A			C			B		
d_I, Intersection Delay [s/veh]	2.28											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 5: NW Brady Rd/ NW 16th Ave

Control Type:	Signalized	Delay (sec / veh):	24.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.886

Intersection Setup

Name	NW Brady Rd			NW Brady Rd			NW 16th Ave			NW 16th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	13.00	13.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	140.00	100.00	100.00	100.00	100.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	2.00			2.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Brady Rd			NW Brady Rd			NW 16th Ave			NW 16th Ave		
Base Volume Input [veh/h]	77	153	75	51	196	49	63	88	85	114	146	129
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	8.00	12.00	14.00	2.00	7.00	5.00	5.00	6.00	3.00	3.00	8.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	153	75	51	196	49	63	88	85	114	146	129
Peak Hour Factor	0.7100	0.7100	0.7100	0.7100	0.7100	0.7100	0.7100	0.7100	0.7100	0.7100	0.7100	0.7100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	54	26	18	69	17	22	31	30	40	51	45
Total Analysis Volume [veh/h]	108	215	106	72	276	69	89	124	120	161	206	182
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	20	40	0	20	40	0	20	30	0	20	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.6	0.0	3.0	3.6	0.0	3.0	3.6	0.0
All red [s]	2.7	2.7	0.0	2.6	2.0	0.0	2.3	1.9	0.0	2.6	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	11	0	0	9	0	0	9	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.7	3.7	0.0	3.6	3.6	0.0	3.3	3.5	0.0	3.6	3.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	14	0	9	14	0	9	14	0	9	14	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Calculated Cycle Length [s]	68	68	68	68	68	68	68	68
L, Total Lost Time per Cycle [s]	5.70	5.70	5.60	5.60	5.50	5.50	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.70	0.00	3.60	0.00	3.50	0.00	3.60
g_i, Effective Green Time [s]	29	20	29	19	27	16	27	18
g / C, Green / Cycle	0.43	0.29	0.43	0.28	0.40	0.23	0.40	0.26
(v / s)_i Volume / Saturation Flow Rate	0.11	0.24	0.15	0.24	0.14	0.15	0.12	0.23
s, saturation flow rate [veh/h]	969	1352	492	1426	638	1660	1353	1713
c, Capacity [veh/h]	379	394	393	394	457	386	556	454
d1, Uniform Delay [s]	14.04	22.28	13.47	23.40	14.39	23.38	13.94	23.65
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.41	4.10	0.22	6.24	0.21	1.71	0.28	4.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.81	0.18	0.88	0.19	0.63	0.29	0.85
d, Delay for Lane Group [s/veh]	14.45	26.38	13.69	29.64	14.60	25.09	14.23	28.34
Lane Group LOS	B	C	B	C	B	C	B	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.93	4.74	0.60	5.45	0.82	3.54	1.56	6.18
50th-Percentile Queue Length [ft/ln]	23.34	118.47	15.08	136.27	20.60	88.57	38.90	154.47
95th-Percentile Queue Length [veh/ln]	1.68	8.31	1.09	9.28	1.48	6.38	2.80	10.26
95th-Percentile Queue Length [ft/ln]	42.01	207.72	27.14	231.99	37.09	159.43	70.02	256.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	14.45	26.38	26.38	13.69	29.64	29.64	14.60	25.09	25.09	14.23	28.34	28.34
Movement LOS	B	C	C	B	C	C	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	23.38			26.89			22.29			24.20		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	24.28											
Intersection LOS	C											
Intersection V/C	0.886											

Emissions

Vehicle Miles Traveled [mph]	4.42	13.14	2.56	12.26	3.37	9.25	3.82	9.21
Stops [stops/h]	49.75	252.54	32.14	290.49	43.92	188.81	82.92	329.28
Fuel consumption [US gal/h]	0.86	4.12	0.54	4.73	0.58	2.39	0.96	3.92
CO [g/h]	60.13	288.24	37.74	330.84	40.86	166.79	66.84	273.67
NOx [g/h]	11.70	56.08	7.34	64.37	7.95	32.45	13.00	53.25
VOC [g/h]	13.94	66.80	8.75	76.67	9.47	38.65	15.49	63.42

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	23.67	23.67	23.67	23.67
l_p,int, Pedestrian LOS Score for Intersectio	2.358	2.300	2.165	2.185
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1184	1184	888	888
d_b, Bicycle Delay [s]	5.62	5.62	10.44	10.44
l_b,int, Bicycle LOS Score for Intersection	2.267	1.390	1.251	1.608
Bicycle LOS	B	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: NW Brady Rd/NW McIntosh Rd

Control Type:	Two-way stop	Delay (sec / veh):	28.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.506

Intersection Setup

Name	NW Brady Rd		NW Brady Rd		NW McIntosh Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	10.00	11.00	11.00	11.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	80.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.02		-0.02		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	NW Brady Rd		NW Brady Rd		NW McIntosh Rd	
Base Volume Input [veh/h]	231	62	22	450	132	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	8.00	5.00	6.00	2.00	0.00	4.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	231	62	22	450	132	27
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	18	6	132	39	8
Total Analysis Volume [veh/h]	272	73	26	529	155	32
Pedestrian Volume [ped/h]	0		0		4	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.01	0.51	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	8.11	0.00	28.21	10.23
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.07	0.00	2.69	0.14
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.68	0.00	67.27	3.48
d_A, Approach Delay [s/veh]	0.00		0.38		25.13	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	4.52					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 7: NW Grand Ridge Dr/ NW Brady Rd

Control Type:	Two-way stop	Delay (sec / veh):	19.6
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.036

Intersection Setup

Name	NW Grand Ridge Dr		NW Brady Rd		NW Brady Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	10.00	10.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	80.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	-0.01		0.03		-0.03	
Crosswalk	No		No		No	

Volumes

Name	NW Grand Ridge Dr		NW Brady Rd		NW Brady Rd	
Base Volume Input [veh/h]	9	48	13	284	574	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	18.00	8.00	1.00	25.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	48	13	284	574	8
Peak Hour Factor	0.8700	0.8700	0.8700	0.8700	0.8700	0.8700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	14	4	82	165	2
Total Analysis Volume [veh/h]	10	55	15	326	660	9
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.12	0.02	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	19.62	14.14	9.31	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.53	0.53	0.05	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	13.37	13.37	1.35	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	14.98		0.41		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.04					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Future Street/ NW 18th Ave

Control Type:	Two-way stop	Delay (sec / veh):	10.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.024

Intersection Setup

Name			NW 18th Ave		NW 18th Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name			NW 18th Ave		NW 18th Ave	
Base Volume Input [veh/h]	13	4	1	96	166	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	6.00	6.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	4	1	96	166	4
Peak Hour Factor	0.7900	0.7900	0.7900	0.7900	0.7900	0.7900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	1	0	30	53	1
Total Analysis Volume [veh/h]	16	5	1	122	210	5
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.59	9.48	7.63	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.09	0.09	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	2.33	2.33	0.04	0.04	0.00	0.00
d_A, Approach Delay [s/veh]	10.33		0.06		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.63					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 1: NW Fisher Creek Dr/ NW 38th Ave

Control Type:	Signalized	Delay (sec / veh):	16.6
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.572

Intersection Setup

Name	NW Fisher Creek Dr			NW Fisher Creek Dr			SE 20th St			NW 38th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	125.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00			25.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Fisher Creek Dr			NW Fisher Creek Dr			SE 20th St			NW 38th Ave		
Base Volume Input [veh/h]	146	63	31	106	1	7	7	360	4	1	251	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	146	63	31	106	1	7	7	360	4	1	251	116
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	17	9	29	0	2	2	99	1	0	69	32
Total Analysis Volume [veh/h]	160	69	34	116	1	8	8	396	4	1	276	127
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			1			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	20	30	0	20	30	0	25	45	0	25	45	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	3.5	3.5	0.0	3.5	3.5	0.0	2.5	1.6	0.0	2.5	1.7	0.0
Walk [s]	9	9	0	0	8	0	0	7	0	0	9	0
Pedestrian Clearance [s]	13	13	0	0	12	0	0	10	0	0	13	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	4.5	4.5	0.0	4.5	4.5	0.0	3.5	3.6	0.0	3.5	3.7	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	14	9	0	9	9	0	9	14	0	9	14	0
Lead / Lag	Lag	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	8	0	5	8	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	Yes		No	Yes	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Calculated Cycle Length [s]	45	45	45	45	45	45	45	45
L, Total Lost Time per Cycle [s]	6.50	6.50	4.50	6.50	5.60	5.60	5.70	5.70
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.50	0.00	4.50	0.00	3.60	0.00	3.70
g_i, Effective Green Time [s]	14	4	16	3	18	13	18	12
g / C, Green / Cycle	0.31	0.08	0.36	0.07	0.41	0.29	0.41	0.28
(v / s)_i Volume / Saturation Flow Rate	0.10	0.06	0.07	0.01	0.00	0.21	0.00	0.23
s, saturation flow rate [veh/h]	1662	1795	1632	1604	1810	1882	1157	1786
c, Capacity [veh/h]	759	150	677	106	617	546	530	498
d1, Uniform Delay [s]	11.53	19.94	11.29	19.63	8.67	14.32	8.53	15.04
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.14	5.41	0.12	0.34	0.01	1.92	0.00	3.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.68	0.17	0.08	0.01	0.73	0.00	0.81
d, Delay for Lane Group [s/veh]	11.67	25.35	11.41	19.97	8.68	16.24	8.53	18.26
Lane Group LOS	B	C	B	B	A	B	A	B
Critical Lane Group	Yes	No	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.05	1.18	0.75	0.09	0.03	3.07	0.00	3.37
50th-Percentile Queue Length [ft/ln]	26.35	29.44	18.64	2.27	0.82	76.77	0.10	84.16
95th-Percentile Queue Length [veh/ln]	1.90	2.12	1.34	0.16	0.06	5.53	0.01	6.06
95th-Percentile Queue Length [ft/ln]	47.43	52.99	33.55	4.08	1.48	138.18	0.19	151.48

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.67	25.35	25.35	11.41	19.97	19.97	8.68	16.24	16.24	8.53	18.26	18.26
Movement LOS	B	C	C	B	B	B	A	B	B	A	B	B
d_A, Approach Delay [s/veh]	17.02			12.03			16.09			18.23		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	16.59											
Intersection LOS	B											
Intersection V/C	0.572											

Emissions

Vehicle Miles Traveled [mph]	6.56	4.22	2.74	0.21	0.39	19.53	0.02	9.57
Stops [stops/h]	85.02	94.99	60.15	7.32	2.66	247.70	0.34	271.55
Fuel consumption [US gal/h]	1.00	1.09	0.62	0.07	0.05	4.45	0.01	4.51
CO [g/h]	69.98	75.89	43.59	5.19	3.79	311.40	0.41	315.08
NOx [g/h]	13.61	14.76	8.48	1.01	0.74	60.59	0.08	61.30
VOC [g/h]	16.22	17.59	10.10	1.20	0.88	72.17	0.10	73.02

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	13.0	12.0	13.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	12.67	11.21	11.93	11.21
l_p,int, Pedestrian LOS Score for Intersectio	1.973	1.987	2.291	2.327
Crosswalk LOS	A	A	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1344	1344	2017	2017
d_b, Bicycle Delay [s]	2.40	2.40	0.00	0.00
l_b,int, Bicycle LOS Score for Intersection	1.994	1.766	1.161	1.154
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: NW Parker Street/ NW 38th Avenue

Control Type:	Signalized	Delay (sec / veh):	22.5
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.555

Intersection Setup

Name	NW Parker St			NW Parker St			NW 38th Ave			NW 38th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	11.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	130.00	100.00	100.00	100.00	100.00	100.00	130.00	100.00	100.00	130.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker St			NW Parker St			NW 38th Ave			NW 38th Ave		
Base Volume Input [veh/h]	53	273	60	105	296	125	70	129	67	161	236	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	8.00	1.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	273	60	105	296	125	70	129	67	161	236	116
Peak Hour Factor	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700	0.9700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	70	15	27	76	32	18	33	17	41	61	30
Total Analysis Volume [veh/h]	55	281	62	108	305	129	72	133	69	166	243	120
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Overlap	ProtPer	Permiss	Overlap	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	1	6	7	5	2	3	3	8	0	7	4	0
Auxiliary Signal Groups			6,7			2,3						
Maximum Green [s]	15	25	15	15	25	15	15	20	0	15	20	0
Amber [s]	3.0	3.6	3.0	3.0	3.6	3.0	3.0	4.0	0.0	3.0	3.6	0.0
All red [s]	2.9	2.1	3.0	2.7	2.0	2.8	2.8	2.0	0.0	3.0	2.4	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	9	0	0	9	0	0	13	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.9	3.7	4.0	3.7	3.6	3.8	3.8	4.0	0.0	4.0	4.0	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	14	9	9	14	9	9	14	0	9	14	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	5	5	5	5	5	5	0	5	5	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	L	C
C, Calculated Cycle Length [s]	68	68	68	68	68	68	68	68	68	68
L, Total Lost Time per Cycle [s]	5.80	5.70	5.70	5.65	5.60	5.60	5.90	6.00	6.00	6.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	0.00	3.70	0.00	0.00	3.60	0.00	0.00	4.00	0.00	4.00
g_i, Effective Green Time [s]	27	17	28	27	18	29	29	18	29	18
g / C, Green / Cycle	0.40	0.25	0.41	0.40	0.27	0.42	0.43	0.27	0.42	0.27
(v / s)_i Volume / Saturation Flow Rate	0.04	0.15	0.04	0.08	0.16	0.08	0.05	0.11	0.11	0.20
s, saturation flow rate [veh/h]	1310	1900	1615	1377	1900	1615	1378	1792	1458	1795
c, Capacity [veh/h]	411	483	667	440	508	685	420	477	529	481
d1, Uniform Delay [s]	21.34	22.15	12.16	21.57	21.70	12.23	22.02	20.59	19.08	22.78
k, delay calibration	0.11	0.11	0.11	0.11	0.17	0.11	0.11	0.11	0.11	0.29
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.15	1.11	0.06	0.29	1.77	0.13	0.19	0.60	0.34	6.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.58	0.09	0.25	0.60	0.19	0.17	0.42	0.31	0.75
d, Delay for Lane Group [s/veh]	21.49	23.27	12.22	21.85	23.48	12.36	22.21	21.19	19.42	29.04
Lane Group LOS	C	C	B	C	C	B	C	C	B	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.48	3.75	0.52	0.97	4.13	1.11	0.58	2.47	1.42	5.59
50th-Percentile Queue Length [ft/ln]	12.03	93.82	13.06	24.25	103.28	27.76	14.51	61.72	35.53	139.68
95th-Percentile Queue Length [veh/ln]	0.87	6.76	0.94	1.75	7.44	2.00	1.05	4.44	2.56	9.46
95th-Percentile Queue Length [ft/ln]	21.65	168.88	23.51	43.64	185.90	49.97	26.13	111.09	63.96	236.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	21.49	23.27	12.22	21.85	23.48	12.36	22.21	21.19	21.19	19.42	29.04	29.04
Movement LOS	C	C	B	C	C	B	C	C	C	B	C	C
d_A, Approach Delay [s/veh]	21.30			20.51			21.46			26.02		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	22.51											
Intersection LOS	C											
Intersection V/C	0.555											

Emissions

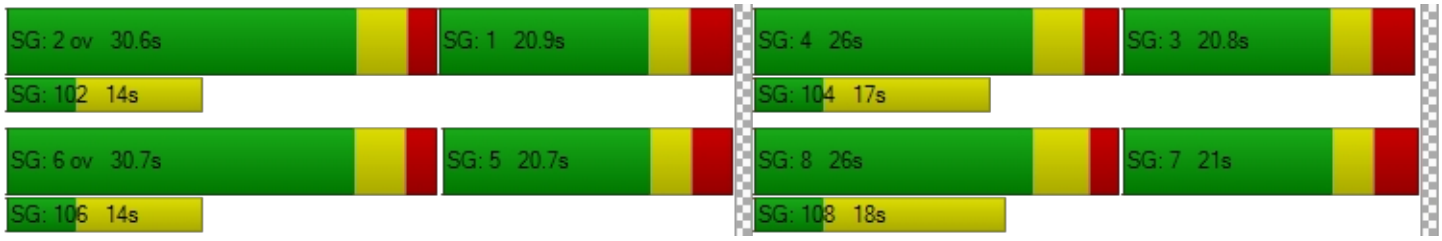
Vehicle Miles Traveled [mph]	1.92	9.83	2.17	2.56	7.22	3.05	4.32	12.11	7.60	16.61
Stops [stops/h]	25.55	199.27	27.74	51.49	219.35	58.96	30.83	131.08	75.47	296.67
Fuel consumption [US gal/h]	0.51	3.20	0.45	0.96	3.38	0.88	0.78	2.59	1.67	5.65
CO [g/h]	35.37	223.96	31.14	67.45	236.41	61.81	54.72	181.22	116.69	395.25
NOx [g/h]	6.88	43.57	6.06	13.12	46.00	12.03	10.65	35.26	22.70	76.90
VOC [g/h]	8.20	51.91	7.22	15.63	54.79	14.32	12.68	42.00	27.04	91.60

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	25.50	25.50	25.50	25.50
l_p,int, Pedestrian LOS Score for Intersectio	2.577	2.490	2.297	2.414
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	737	737	590	590
d_b, Bicycle Delay [s]	13.51	13.51	16.85	16.85
l_b,int, Bicycle LOS Score for Intersection	0.930	2.454	2.012	1.146
Bicycle LOS	A	B	B	A

Sequence

Ring 1	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: NW Parker St/ NW Pacific Rim

Control Type:	All-way stop	Delay (sec / veh):	13.5
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.595

Intersection Setup

Name	NW Parker St			NW Parker St			NW Pacific Rim			NW Pacific Rim		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Entry Pocket Length [ft]	155.00	100.00	100.00	145.00	100.00	100.00	130.00	100.00	100.00	75.00	100.00	75.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	1
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	50.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker St			NW Parker St			NW Pacific Rim			NW Pacific Rim		
Base Volume Input [veh/h]	29	308	30	17	321	105	169	44	74	32	23	15
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	0.00	4.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	308	30	17	321	105	169	44	74	32	23	15
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	80	8	4	84	27	44	11	19	8	6	4
Total Analysis Volume [veh/h]	30	321	31	18	334	109	176	46	77	33	24	16
Pedestrian Volume [ped/h]	1			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	501	541	551	522	561	627	487	522	570	472	500	552
Degree of Utilization, x	0.06	0.33	0.32	0.03	0.60	0.17	0.36	0.09	0.14	0.07	0.05	0.03

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.19	1.40	1.37	0.11	3.88	0.62	1.63	0.29	0.47	0.22	0.15	0.09
95th-Percentile Queue Length [ft]	4.77	35.08	34.19	2.68	97.09	15.62	40.69	7.22	11.63	5.61	3.78	2.24
Approach Delay [s/veh]	12.24			15.79			12.52			10.36		
Approach LOS	B			C			B			B		
Intersection Delay [s/veh]	13.54											
Intersection LOS	B											

Intersection Level Of Service Report
Intersection 4: NW Brady Rd/ NW 20th Ave

Control Type:	Two-way stop	Delay (sec / veh):	20.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.121

Intersection Setup

Name	NW Brady Rd			NW Brady Rd			NW 20th Ave			NW 20th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

Volumes

Name	NW Brady Rd			NW Brady Rd			NW 20th Ave			NW 20th Ave		
Base Volume Input [veh/h]	44	312	1	6	320	52	30	0	33	7	0	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	312	1	6	320	52	30	0	33	7	0	7
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	85	0	2	87	14	8	0	9	2	0	2
Total Analysis Volume [veh/h]	48	339	1	7	348	57	33	0	36	8	0	8
Pedestrian Volume [ped/h]	0			0			3			6		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.00	0.01	0.00	0.00	0.12	0.00	0.05	0.03	0.00	0.01
d_M, Delay for Movement [s/veh]	8.24	0.00	0.00	7.97	0.00	0.00	20.12	19.39	12.29	19.64	18.38	10.59
Movement LOS	A	A	A	A	A	A	C	C	B	C	C	B
95th-Percentile Queue Length [veh/ln]	0.13	0.00	0.00	0.02	0.00	0.00	0.63	0.63	0.63	0.13	0.13	0.13
95th-Percentile Queue Length [ft/ln]	3.24	0.00	0.00	0.43	0.00	0.00	15.64	15.64	15.64	3.36	3.36	3.36
d_A, Approach Delay [s/veh]	1.02			0.14			16.04			15.11		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	2.03											
Intersection LOS	C											

Intersection Level Of Service Report
Intersection 5: NW Brady Rd/ NW 16th Ave

Control Type:	Signalized	Delay (sec / veh):	19.7
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.652

Intersection Setup

Name	NW Brady Rd			NW Brady Rd			NW 16th Ave			NW 16th Ave		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	13.00	13.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0	1	0	0	0	0	0
Entry Pocket Length [ft]	140.00	100.00	100.00	100.00	100.00	100.00	160.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			35.00			25.00			25.00		
Grade [%]	2.00			2.00			0.00			0.00		
Curb Present	Yes			Yes			Yes			Yes		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Brady Rd			NW Brady Rd			NW 16th Ave			NW 16th Ave		
Base Volume Input [veh/h]	29	222	142	131	204	21	26	100	55	90	59	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00	2.00	4.00	2.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	222	142	131	204	21	26	100	55	90	59	101
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	61	39	36	56	6	7	27	15	25	16	28
Total Analysis Volume [veh/h]	32	244	156	144	224	23	29	110	60	99	65	111
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	1			0			1			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Active Pattern	Free Running (No Pattern)
Coordination Type	*Free Running*
Actuation Type	*Fully actuated*
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing (Basic)

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	20	40	0	20	40	0	20	30	0	20	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.6	0.0	3.0	3.6	0.0	3.0	3.6	0.0
All red [s]	2.7	2.7	0.0	2.6	2.0	0.0	2.3	1.9	0.0	2.6	2.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	11	0	0	9	0	0	9	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.7	3.7	0.0	3.6	3.6	0.0	3.3	3.5	0.0	3.6	3.6	0.0
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advanced Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	9	14	0	9	14	0	9	14	0	9	14	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	0	5	10	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	L	C
C, Calculated Cycle Length [s]	60	60	60	60	60	60	60	60
L, Total Lost Time per Cycle [s]	5.70	5.70	5.60	5.60	5.50	5.50	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.70	0.00	3.60	0.00	3.50	0.00	3.60
g_i, Effective Green Time [s]	29	19	30	22	19	9	19	12
g / C, Green / Cycle	0.49	0.31	0.50	0.36	0.32	0.16	0.32	0.20
(v / s)_i Volume / Saturation Flow Rate	0.03	0.28	0.10	0.17	0.03	0.10	0.07	0.11
s, saturation flow rate [veh/h]	1015	1453	1421	1468	925	1773	1443	1656
c, Capacity [veh/h]	556	456	704	536	490	279	529	325
d1, Uniform Delay [s]	8.32	19.45	8.48	14.49	14.45	23.51	15.04	21.64
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.04	5.52	0.14	0.62	0.05	2.14	0.17	1.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.88	0.20	0.46	0.06	0.61	0.19	0.54
d, Delay for Lane Group [s/veh]	8.37	24.97	8.62	15.11	14.50	25.64	15.21	23.04
Lane Group LOS	A	C	A	B	B	C	B	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	0.18	5.27	0.87	2.30	0.26	2.29	0.93	2.23
50th-Percentile Queue Length [ft/ln]	4.50	131.85	21.81	57.48	6.54	57.37	23.34	55.73
95th-Percentile Queue Length [veh/ln]	0.32	9.04	1.57	4.14	0.47	4.13	1.68	4.01
95th-Percentile Queue Length [ft/ln]	8.10	226.01	39.26	103.47	11.77	103.27	42.02	100.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	8.37	24.97	24.97	8.62	15.11	15.11	14.50	25.64	25.64	15.21	23.04	23.04
Movement LOS	A	C	C	A	B	B	B	C	C	B	C	C
d_A, Approach Delay [s/veh]	23.74			12.72			24.02			20.22		
Approach LOS	C			B			C			C		
d_I, Intersection Delay [s/veh]	19.71											
Intersection LOS	B											
Intersection V/C	0.652											

Emissions

Vehicle Miles Traveled [mph]	1.31	16.37	5.12	8.78	1.10	6.44	2.35	4.18
Stops [stops/h]	10.85	317.72	52.56	138.52	15.75	138.26	56.25	134.30
Fuel consumption [US gal/h]	0.19	5.05	0.84	2.14	0.20	1.71	0.63	1.53
CO [g/h]	13.00	352.72	58.92	149.30	13.66	119.34	43.89	106.83
NOx [g/h]	2.53	68.63	11.46	29.05	2.66	23.22	8.54	20.79
VOC [g/h]	3.01	81.75	13.66	34.60	3.17	27.66	10.17	24.76

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	19.89	19.89	19.89	19.89
l_p,int, Pedestrian LOS Score for Intersectio	2.253	2.219	2.022	2.103
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1339	1339	1004	1004
d_b, Bicycle Delay [s]	3.27	3.27	7.41	7.41
l_b,int, Bicycle LOS Score for Intersection	2.272	1.347	1.030	1.156
Bicycle LOS	B	A	A	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: NW Brady Rd/NW McIntosh Rd

Control Type:	Two-way stop	Delay (sec / veh):	22.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.345

Intersection Setup

Name	NW Brady Rd		NW Brady Rd		NW McIntosh Rd	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	10.00	11.00	11.00	11.00
No. of Lanes in Entry Pocket	0	0	1	0	1	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	80.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00		35.00		35.00	
Grade [%]	0.02		-0.02		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	NW Brady Rd		NW Brady Rd		NW McIntosh Rd	
Base Volume Input [veh/h]	363	121	18	321	93	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	0.00	1.00	1.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	363	121	18	321	93	21
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	103	34	5	91	26	6
Total Analysis Volume [veh/h]	413	138	20	365	106	24
Pedestrian Volume [ped/h]	0		0		4	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.00	0.35	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	8.59	0.00	22.80	11.44
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.06	0.00	1.49	0.13
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.50	0.00	37.36	3.21
d_A, Approach Delay [s/veh]	0.00		0.45		20.70	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	2.69					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 7: NW Grand Ridge Dr/ NW Brady Rd

Control Type:	Two-way stop	Delay (sec / veh):	20.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	NW Grand Ridge Dr		NW Brady Rd		NW Brady Rd	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	10.00	10.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	80.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	-0.01		0.03		-0.03	
Crosswalk	No		No		No	

Volumes

Name	NW Grand Ridge Dr		NW Brady Rd		NW Brady Rd	
Base Volume Input [veh/h]	2	26	42	488	403	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	1.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	26	42	488	403	6
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	7	12	137	113	2
Total Analysis Volume [veh/h]	2	29	47	548	453	7
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop		Free		Free	
Flared Lane	No					
Storage Area [veh]	0		0		0	
Two-Stage Gap Acceptance	No					
Number of Storage Spaces in Median	0		0		0	

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.05	0.04	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	20.27	11.22	8.38	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.18	0.18	0.13	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	4.38	4.38	3.31	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.80		0.66		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.70					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 8: Future Street/ NW 18th Ave

Control Type:	Two-way stop	Delay (sec / veh):	10.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

Intersection Setup

Name			NW 18th Ave		NW 18th Ave	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	25.00		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name			NW 18th Ave		NW 18th Ave	
Base Volume Input [veh/h]	9	3	4	155	79	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	2.00	3.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	9	3	4	155	79	14
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	1	44	22	4
Total Analysis Volume [veh/h]	10	3	4	174	89	16
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.13	8.81	7.41	0.00	0.00	0.00
Movement LOS	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.05	0.05	0.01	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.31	1.31	0.17	0.17	0.00	0.00
d_A, Approach Delay [s/veh]	9.83		0.17		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.53					
Intersection LOS	B					

11. Tree Report

Stella Ridge Subdivision
Preliminary Tree Report

Date: September 2025

Prepared For: Allied Development, LLC.
16430 N Scottsdale Road, Suite 210
Scottsdale, AZ 85254

Landowner: Dennis Daley
PO Box 1757
Rancho Sante Fe, CA 92067

Prepared By: Bryce Hanson, Certified Arborist

Site Information: SE ¼ Sec. 5 & NE ¼ Sec. 8, T1N, R3E, W.M.
Camas, WA
Parcel #125193-000, 986055-381, & 125185-000

AKS ENGINEERING & FORESTRY
9600 NE 126th Avenue, Suite 2520
Vancouver, WA 98682
(360) 882-0419

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Technical Appendices

Appendix A: Detailed Tree Inventory Table
Appendix B: Tree Preservation and Removal Plan
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Table 1: Summary of Tree Units **2**

Tree Report

STELLA RIDGE SUBDIVISION
CAMAS, WASHINGTON

Location

The project site is located in the City of Camas, Clark County, Washington (Parcel Serial No. 125193-000, 986055-381, & 125185-000).

General Site Notes

This Tree Plan consists of a written report with tree density calculations, Site Plan, Tree Protection Plan, and Landscape Plan.

This report is for the net developable area (18.44 acres) of the proposed residential subdivision. The existing site is primarily an open field, but there is a forested strip through the center of the site. Category III and IV wetland areas also exist in the center of the site adjacent to and partially overlapping the forested area. The proposed development will result in 158 single-family residential lots with tracts set aside for open spaces, private streets, stormwater facilities, parking, and rights-of-way. Tree protection will be established at the beginning of development and be maintained through the entire length of the development. See Appendix A for additional information regarding the described trees in the detailed tree inventory table. The site consists of 342 on-site trees. Due to the planned site development and high potential for extensive root impacts from site grading, 266 on-site trees are proposed for removal. 76 on-site trees are planned for retention.

On-Site Tree Condition

As discussed above in the previous section, most of the trees on-site are located in the forested strip in the center of the site, with scattered trees on the edges of the property site-wide. The site trees contain a variety of mature native species such as Oregon Ash, Willow, Bigleaf Maple, Sweet Cherry, Red Alder, Crabapple, Hawthorn, Serviceberry, and Douglas-fir. The health and structure of on-site trees range from poor to good based on conditions observed during a site visit on July 31st to August 1st, 2025. Tree removal was recommended based on location, root impact from development activities, condition, and higher likelihood of failure due to windthrow. Review of on-site trees was based on the site being fully developed and impacts to future site improvements. Trees proposed for removal within the delineated critical areas are recommended to be retained for on-site for future use in conjunction with the project critical areas report and mitigation plan.

Off-Site Trees

There are several off-site and property line trees along the boundary of the site. Following the completion of development, it is recommended that these trees be re-evaluated to determine if any trees pose potential hazards to future improvements. Any hazardous trees should be removed with approval from the adjacent property owner. All off-site trees that are proposed for preservation will be protected with tree protection measures as further described in this report and on the Preliminary Tree Preservation Plans (Appendix B). Off-site and line trees proposed to be removed will be coordinated with and approved by the corresponding adjacent landowner during final engineering for this project.

Tree Density Calculations

The gross site area is 24.41 acres with 5.97 acres of open space, for a net site area of 18.44 acres. Per the City of Camas development code, the City requires 20 tree units per acre, or a total of 369 tree units (20*18.44 acres) for this site. Table 1 summarizes the tree units required, removed, retained, and proposed for the entire

site. All trees, both retained and removed, are detailed on the Preliminary Tree Preservation and Removal Plans found in Appendix B and in the Detailed Tree Inventory found in Appendix A. The proposed trees are detailed within the Tree Planting Plan in Appendix C.

	Net Site Area (Acres)	Tree Units Required	Tree Units Existing	Tree Units Removed	Tree Units Retained	Proposed Tree Units	Total Tree Units
Overall	18.44	369	1478	1285	193	176	369

Table 1: Summary of Tree Units

Designing for Tree Preservation

Designing for tree preservation means that trees are considered an important project feature. The goal of tree preservation is to have trees remain safe assets to the site for years to come. Trees that are preserved must be carefully selected to make sure that they will survive the construction impacts, adapt to the new environment, and perform well in the new landscape. An assessment of suitability for preservation evaluates tree health, structure, age, and species factors. The consultant gathers information on the individual trees and makes recommendations as to which trees are suitable for preservation, and how much undisturbed space they will require. The consultant also provides specific guidelines regarding grading, drainage, trenching, protected areas, root pruning, etc.

Tree Characteristics and Their Suitability for Preservation:

Trees vary in their suitability for preservation both based on their inherent characteristics and their future response to construction impacts. Trees that are structurally unstable, in poor health, or are unlikely to survive construction impacts could be a dangerous liability to future neighborhoods. A good tree preservation plan will call for the pre-construction removal of trees likely to die or to become a tree with a higher than acceptable risk of failure after construction. The factors to be evaluated are:

Tree Health-Healthy, vigorous trees are more adaptable than non-vigorous trees to tolerate construction related stresses such as root removal, changes in grade, changes in soil moisture, and soil compaction. These healthy trees are also better able to adapt to the changed site conditions that occur after development.

Tree Structure-Trees with defects such as decayed wood, poor crown structure from past manual "topping" or natural broken tops, and co-dominant trunks with poor attachments are not suitable for preservation in areas where people or property could be injured or damaged. Such defects cannot be treated and may lead to failure.

Species-Although trees require protection to avoid injury, species vary widely in their ability to withstand damage and changes in their environment.

Tree Age-As a tree ages, its capacity to overcome injury, adapt to changes in its site environment, and to resist pests declines. For these reasons, mature and over-mature trees are less adaptable to tolerate construction impacts and remain assets than are young and semi-mature trees. Young vigorous trees are able to generate new tissue and adapt to a new environment better than old trees.

Tree Size/Height-Larger, taller trees are capable of hitting targets a greater distance away from the tree and cause greater damage. Taller trees also provide a larger wind "sail", catching more wind and being more prone

to blowing down in a large storm. Coupling this "sail" effect with the structural weakening of root removal/disturbance can lead to a higher than acceptable windthrow risk.

Tree Location-The best candidates for preservation are single trees that developed as individual specimens, as they typically have uniform canopies and well tapered trunks. Trees that grow in groups do not function well as individuals. They often have tall, poorly shaped trunks, irregularly shaped crowns, and are prone to failure and decline when their neighbors are removed.

The arboricultural consultant weighs each of the above factors and makes recommendations as to which trees are likely to thrive and be a long-term asset to the new development, as well as recommendations to remove those trees that will likely have an unacceptable risk of failure and become a liability in the new development.

Guidelines for the Area Required to Preserve a Tree:
In order to preserve a tree, an area around that tree must be protected to ensure that the tree is not physically damaged and that the roots are protected. A method to calculate this area, utilizes the diameter at breast height (DBH), species, and age. The DBH is multiplied by a factor (the factor is based on the tree age and the species tolerance for disturbance) from 0.5 feet radius to 1.5 feet radius (from the trunk-often 1 foot radius per inch DBH is used for an average), and this area is called the "Optimal Tree Protection Zone". The general guidelines for preservation are that you do not want to disturb more than 1/3 of this area, but that with healthy vigorous trees, up to 50% of the area could be disturbed. In addition to these percentages, excavation should not take place within 10 feet of the base of a tree to avoid the loss of structural roots.

How to Preserve Trees During Construction:
The portion of the "Optimal Tree Protection Zone" that is being protected must be fenced off (with a "substantial" fence). Within this area, no soil disturbance, including stripping is permitted. The natural grade is to be maintained, and no storage or dumping of materials, parking, etc. will be allowed within this zone without the approval of the arboricultural consultant. This tree protection fence should remain in place through the construction of the dwellings.

Excavation Within the "Optimal Tree Protection Zone":
Where there is excavation proposed within an "Optimal Tree Protection Zone" (outside of the protected zone fenced off above), it will be important for the contractor to prune the roots along the excavation lines. These roots should be pruned in the following manner:

- Excavation in the top 24" of the soil in the critical root zone area should begin at the excavation line that is closest to the tree.
- The excavation should be done by hand/shovel or with a backhoe and a man with a shovel, pruning shears and a pruning saw.
- If done by hand all roots 1" or larger should be pruned at the excavation line.
- If done with a backhoe (most likely scenario) then the operator needs to start the cut at the excavation line and carefully "feel" for roots/resistance. When there is resistance, the man with the shovel hand digs around the roots and prunes the roots larger than 1" diameter.
- The backhoe is to remain off of the tree roots to be saved at all times.
- The work will be done under the supervision of the Project Consulting Arborist.

The above system works well and can be done quickly. The key is to avoid pulling on the roots larger than 1" diameter, potentially resulting in damage to roots between the excavation line and the tree.

How Trees Die:

Natural tree death is frequently a slow and complex process generally with a gradual decline involving a number of factors. Most trees die from one of three causes: (1) structural failure, (2) environmental degradation, or (3) pest infestation. Generally, trees die from a combination of factors. Trees weakened by changes in their environment (such as construction impacts) become more susceptible to infestation by disease and insects. Most individual trees survive for only a fraction of the potential lifespan of the species. Soil compaction, changes in grade, mechanical injury, changes in the environment around the tree, and changes in drainage may not kill the tree themselves, but they may weaken the tree to a point that death occurs by another cause. Prevention of stress and the maintenance of health are the key elements of tree longevity.

What is "Tree Topping" and How Does It Damage a Tree?
Tree Topping is a pruning technique to reduce the height by cutting the central leader. This method of pruning is very detrimental to trees and not considered a good practice. Trees are generally topped by unknowledgeable pruners in order to lower the height of the tree and minimize the chance of windthrow by reducing the tree's wind profile. The large stub of a topped tree has a difficult time forming callus over the wound. The terminal location of these cuts, as well as their large diameter, prevents the tree's chemically based natural defense system from doing its job. The stubs are highly vulnerable to both insect invasion and the spores of decay fungi. If decay is already present, topping will speed the spread of the disease. The tree reacts to the topping cut by producing multiple shoots below the cut. These shoots develop from buds near the surface of the topping cut. Unlike normal branches that develop in a socket of overlapping wood tissues, these new shoots are anchored only in the outermost layers of the bole. These new shoots grow quickly, and are prone to breaking, especially during windy conditions. For all of these reasons, trees that have been topped pose a danger to life and safety and are recommended for removal.

Development Impacts Affecting Preserved Trees:
Construction of the site improvements generally consists of cut and fills (grading), construction of retaining walls, trenching for the wet and dry utilities, coring of roads and placement of aggregate and pavement. During this work, adjacent soil areas outside of the grading can be compacted by heavy equipment driving over it. The grading and placement of utility trenches (and subsequent pipe bedding), and retaining walls can also affect the local water table.

Construction of the buildings and landscaping requires foundation placement, pruning of trees near the buildings under construction, and the installation of lawn irrigation systems. During this work, adjacent soil areas outside of the work area can be compacted by equipment driving over it.

Impacts during development may require the removal of additional trees shown to be preserved on the Tree Protection Plan (Appendix B).

Future Condition of Trees on the Site:
The characteristics of the individual tree are a guide to how well that tree will respond to site disturbance. Larger trees have correspondingly larger root zones. Older trees are less resilient to disturbance. Unhealthy trees are less resilient to disturbance than healthy trees.

Development of this site will result in a large area of disturbance. The disturbance to the on-site trees will occur during the site grading. The trees planned for retention are relatively healthy, but proper protection methods should be followed per this document to provide the greatest opportunity for survival following development.

Windthrow Potential

The trees on-site have been evaluated for windthrow based on factors including, but not limited to soil conditions, tree health, tree structure, prevailing wind direction, and past evidence of wind damage. Windthrow is defined as full tree failure in the form of trunk breakage or root ball overturning. It should be understood that proposed retained trees are still susceptible to partial tree failure from wind exposure. Refer to the tree inventory table in Appendix A for specific tree conditions at risk of single part failure and recommendations for risk reduction as well as a windthrow rating. A windthrow rating of A, B or C was assigned to each tree that was evaluated; with A being the least windthrow resistant, B being more windthrow resistant than A, and C being the most windthrow resistant. The trees planned for retention have been selected because of their good taper, overall structure, health, and location to site impacts. Existing wind conditions of the site are relatively high with prevailing winds coming from the south and southwest. The windthrow potential of the site, post construction, should remain similar to the existing site conditions.

Soils

Soils on-site are comprised Odne silt loam (OdB) with slopes ranging from 0 to 5 percent, and Powell silt loam (PoB) with slopes ranging from 0 to 8 percent. PoB soils are described as moderately deep and well-drained soils and OdB are described as deep, poorly drained soils per the USDA Natural Resources Conservation Service's Web Soil Survey. Based on site investigation, the project geotechnical report and the presence of wetlands on-site, the site soils are presumed to not be well drained with an elevated groundwater table. Therefore, root depths are generally shallow and impacts to existing root systems should be closely monitored.

Tree Protection Plan

See the plans found in Appendix B.

Planting Plan

176 street trees are proposed to be planted to meet landscape requirements, which, when added to the 193 tree units being retained, results in 369 tree units and meets the tree density requirement of 369 tree units.

Hazard Assessment

Hazard assessment of on-site trees was not performed for each tree during the initial arborist site assessment. However, general hazards may have been identified and reported in the Tree Inventory Table (Appendix A) as they were encountered during the site visit. Once development activities are complete, a hazard assessment is recommended on retained trees to review previously unseen defects or damages done to retained trees during land clearing and development activities. At that time, additional tree removal may be necessary for hazard abatement. If additional tree removal is necessary, an analysis will be submitted to the city to show that code will be met with any additional tree removal.

Conclusion

The development of the 24.41-acre site (18.44 net acres) proposes to remove 266 on-site trees. Of the existing trees, 76 on-site trees will be retained. 176 street trees will be planted. This tree report is only for the overall site development activities and tree protection measures outlined on the Tree Preservation Plan and for the protection of the existing trees from the overall proposed development. This does not include the construction of building foundations for each lot. This project reserves the right to remove additional trees, as deemed necessary/recommended by the Project Certified Arborist, for hazard abatement purposes. This cannot be evaluated until after construction as previously discussed and noted in the plans. The city will be notified of such removals and will be consulted with if a significant number of trees are recommended for removal post-construction.

Arborist Disclosure Statement

Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees, recommend measures to enhance the health of trees, and attempt to reduce the risk of living near trees. The Client and Jurisdiction may choose to accept or disregard the recommendations of the arborist, or seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like medicine, cannot be guaranteed.

Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees.



BRYCE D. HANSON
CERTIFICATE NUMBER: PN 7554A
EXPIRATION DATE: 06/30/28

Appendix A: Detailed Tree Inventory Table

Detailed Tree Inventory for 12107 Stella Ridge

AKS Job No. 12107 - Evaluation Date: 7/31/25-8/1/25 - Evaluated By: JTG

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
10057	6,11	Crabapple *(Malus spp.)*	3	Codominant at 4ft; epicormic growth; Moderate dieback in crown	B	Direct conflict with site improvements	0
10058	10	Oregon Ash (*Fraxinus latifolia*)	2	Some gaps in canopy	C	Direct conflict with site improvements	0
10059	12	Oregon Ash (*Fraxinus latifolia*)	2	Some gaps in canopy	C	Direct conflict with site improvements	0
10060	6,6,6,6,8,8,8	Western Serviceberry (*Amelanchier alnifolia*)	5	Codominant; Severe dieback in canopy; epicormic growth	A	Direct conflict with site improvements	0
10230	6	Deciduous	0	OFFSITE; Street Tree in planter strip to remain		Preserve	0
10231	4,5	Deciduous	0	OFFSITE; Street Tree in planter strip to remain		Preserve	0
10232	6	Deciduous	0	OFFSITE; Street Tree in planter strip to remain		Preserve	0
10322	30	Vine Maple (*Acer circinatum*)	11	Codominant at 4ft	C	Direct impact from public road construction	0
10347	9	Sweet Cherry (*Prunus avium*)	2	Minor dieback/gaps in canopy; low vigor	B	Direct impact from public road construction	0
11536	26	Oregon Ash (*Fraxinus latifolia*)	9	Severe dieback in canopy; multiple dead leaders	A	Direct impact from public road construction	0
11537	22	Oregon Ash (*Fraxinus latifolia*)	7	Moderate dieback in branches	B	Direct impact from public road construction	0
11538	20	Willow (*Salix spp.*)	6	Codominant at 4ft; Moderate dieback in main stem; major leader dead	B	Direct impact from public road construction	0
11539	8	Oregon Ash (*Fraxinus latifolia*)	2	Asymmetrical (S)	C	Direct impact from public road construction	0
11540	9	Oregon Ash (*Fraxinus latifolia*)	2	Asymmetrical (E); Minor dieback in branches	C	Direct impact from public road construction	0
11548	18	Red Alder (Alnus rubra)	5	Codominant; Moderate dieback in branches; Gaps in canopy	B	Direct conflict with site improvements	0
11549	17	Red Alder (Alnus rubra)	5	Moderate dieback in branches and main stem	B	Direct conflict with site improvements	0
11550	10	Red Alder (Alnus rubra)	2	Moderate dieback in branches, Asymmetrical/Lean (NW)	B	Direct conflict with site improvements	0
11551	5,5,5,8	Hawthorn (*Crataegus spp.*)	3	Codominant at 2ft with Included Bark	B	Direct conflict with site improvements	0
11552	6,6	Hawthorn (*Crataegus spp.*)	2	Codominant; Asymmetrical/Lean (N)	B	Direct conflict with site improvements	0
11553	6,6	Red Alder (Alnus rubra)	2	Low Vigor; Minor dieback in branches	B	Direct conflict with site improvements	0
11554	6,7	Red Alder (Alnus rubra)	2	Low Vigor; Minor dieback in branches	B	Direct conflict with site improvements	0
11555	14	Bigleaf Maple (Acer macrophyllum)	3	Okay	C	Direct conflict with site improvements	0
11556	6	Red Alder (Alnus rubra)	2	Low vigor; Severe dieback in branches; epicormic growth	A	Direct conflict with site improvements	0
11557	10	Red Alder (Alnus rubra)	2	Codominant at 6ft; Major dieback in branches; epicormic growth	C	Direct conflict with site improvements	0
11558	6,7	Red Alder (Alnus rubra)	2	Codominant at 3ft; Major dieback in branches; main stem dead	A	Direct conflict with site improvements	0
11559	9,12	Red Alder (Alnus rubra)	4	Codominant at 4ft; Major dieback in branches; main stem dead	A	Direct conflict with site improvements	0
11560	25	Bigleaf Maple (Acer macrophyllum)	9	Codominant at 8ft	C	Direct conflict with site improvements	0
11561	15	Bigleaf Maple (Acer macrophyllum)	4	Okay	C	Direct conflict with site improvements	0
11562	17	Bigleaf Maple (Acer macrophyllum)	5	Okay	C	Direct conflict with site improvements	0
11567	10	Bigleaf Maple (Acer macrophyllum)	2	Asymmetrical (N); Low vigor	B	Direct conflict with site improvements	0
11568	12	Bigleaf Maple (Acer macrophyllum)	2	Asymmetrical (N); Low vigor	B	Direct conflict with site improvements	0
11569	14	Bigleaf Maple (Acer macrophyllum)	3	Asymmetrical (S); 1 dead leader	B	Direct conflict with site improvements	0
11571	19	Bigleaf Maple (Acer macrophyllum)	6	Asymmetrical (S)	C	Direct conflict with site improvements	0
11572	19	Bigleaf Maple (Acer macrophyllum)	6	Asymmetrical (S)	C	Direct conflict with site improvements	0
11573	8,11,12	Bigleaf Maple (Acer macrophyllum)	5	Codominant; Severe dieback in canopy; Severe sweep in trunk	A	Direct conflict with site improvements	0
11578	12	Red Alder (Alnus rubra)	2	LINE TREE; gaps in canopy; Moderate dieback in branches	B	Direct conflict with site improvements	0
11582	16	Bigleaf Maple (Acer macrophyllum)	4	Asymmetrical (S)	C	Direct conflict with site improvements	0

Detailed Tree Inventory for 12107 Stella Ridge

AKS Job No. 12107 - Evaluation Date: 7/31/25-8/1/25 - Evaluated By: JTG

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
11583	19	Bigleaf Maple (Acer macrophyllum)	6	LINE TREE; Asymmetrical (SW)	C	Direct conflict with site improvements	0
11589	48	Douglas-fir (*Pseudotsuga menziesii*)	20	Some gaps in canopy	C	Direct conflict with site improvements	0
11592	10	Red Alder (Alnus rubra)	0	OFFSITE; Low vigor; Some gaps in canopy	B	Direct impact from site improvements, risk rating	0
11596	48	Bigleaf Maple (Acer macrophyllum)	20	Broken top; cavity at base; epicormic growth	A	Direct conflict with site improvements	0
11606	39	Bigleaf Maple (Acer macrophyllum)	16	Codominant at 30ft with included bark; Severe lean in main stem; other stem dead and broken	A	Direct conflict with site improvements	0
11612	7	Willow (Salix spp.)	2	Damage and decay at base; Severe sweep and lean (W)	A	Direct impact from public road construction	0
11614	21	Bigleaf Maple (Acer macrophyllum)	7	Severely asymmetrical (SW); Crook at 30ft	B	Direct conflict with site improvements	0
11615	14,20,29,33	Bigleaf Maple (Acer macrophyllum)	21	Codominant at 6ft; 14" stem historically broke; bulging at base	C	Direct impact from public road construction	0
11621	35	Douglas-fir (*Pseudotsuga menziesii*)	14	Okay	C	Direct conflict with site improvements	0
11622	9	Willow (Salix spp.)	2	Significant dieback in canopy; epicormic growth	A	Direct impact from public road construction	0
11625	8	Willow (Salix spp.)	2	Codominant at 8ft	C	Direct conflict with site improvements	0
11626	11	Sweet Cherry (Prunus avium)	2	Severe fracture at 8ft; Lean on adjacent tree	A	Direct conflict with site improvements	0
11627	8,12	Sweet Cherry (Prunus avium)	3	Codominant at 5ft; Moderate dieback in canopy	B	Direct conflict with site improvements	0
11630	17	Bigleaf Maple (Acer macrophyllum)	5	Okay	C	Direct impact from public road construction	0
11631	12	Bigleaf Maple (Acer macrophyllum)	2	Corrected Sweep and asymmetrical (W)	C	Direct impact from public road construction	0
11632	15	Bigleaf Maple (Acer macrophyllum)	4	Corrected Sweep and asymmetrical (W)	C	Direct impact from public road construction	0
11638	9,13	Willow (Salix spp.)	4	Codominant at 5ft; Cavity at 4ft; Some dieback in branches	B	Direct conflict with site improvements	0
11639	12, 14	Willow (Salix spp.)	5	12" Stem dead; Severe dieback in canopy	A	Direct conflict with site improvements	0
11663	7,7	Willow (Salix spp.)	2	Severe dieback in canopy with several dead branches	A	Direct conflict with site improvements	0
11664	18	Bigleaf Maple (Acer macrophyllum)	5	Corrected lean (W) with asymmetry	C	Direct conflict with site improvements	0
11675	12	Willow (Salix spp.)	2	Severe decay throughout bole	A	Direct conflict with site improvements	0
11683	13	Willow (Salix spp.)	3	Cavity and decay at base; Moderate dieback in canopy	A	Direct conflict with site improvements	0
11684	13	Willow (Salix spp.)	3	Codominant; main stem failed; Cavity at 10ft; epicormic growth	A	Direct conflict with site improvements	0
11686	11	Crabapple *(Malus spp.)*	2	Conks; 7" Codominant Stem dead	A	Direct conflict with site improvements	0
11687	7,11	Crabapple *(Malus spp.)*	3	Codominant; failed leader	B	Direct conflict with site improvements	0
11689	18	Willow (Salix spp.)	5	Okay	C	Direct impact from public road construction	0
11697	6,6,7,10	Willow (Salix spp.)	4	Dead Stems; Decay in base; Epicormic growth	A	Direct impact from public road construction	0
11704	9,14	Willow (Salix spp.)	5	Growth from down log; Cavity and decay in base	A	Direct impact from public road construction	0
11706	30	Bigleaf Maple (Acer macrophyllum)	11	Bulging at base	C	Direct conflict with site improvements	0
11711	9,10	Willow (Salix spp.)	3	Growth from down log; codominant at 4ft; epicormic growth	A	Direct conflict with site improvements	0
11713	9	Willow (Salix spp.)	2	growth from decaying log; moderate dieback in canopy	A	Direct impact from public road construction	0
11715	13	Oregon Ash (*Fraxinus latifolia*)	3	Asymmetrical (E); Minor dieback in branches	C	Direct conflict with site improvements	0
11716	9,22	Oregon Ash (*Fraxinus latifolia*)	8	Codominant at 3ft; Historically broken leaders	C	Direct conflict with site improvements	0
11717	17	Oregon Ash (*Fraxinus latifolia*)	5	Gaps in canopy; historically broken leaders	B	Direct conflict with site improvements	0
11718	23	Oregon Ash (*Fraxinus latifolia*)	8	Okay	C	Direct conflict with site improvements	0
11719	9, 12,15	Oregon Ash (*Fraxinus latifolia*)	7	Codominant at 4ft; Historically broken top	C	Direct conflict with site improvements	0
11720	23	Oregon Ash (*Fraxinus latifolia*)	8	Codominant at 20ft	C	Direct conflict with site improvements	0
11721	12	Oregon Ash (*Fraxinus latifolia*)	2	Broken at 30ft	A	Direct conflict with site improvements	0
11722	8	Oregon Ash (*Fraxinus latifolia*)	2	Low vigor; Moderate Lean/Asymmetrical (W)	B	Direct conflict with site improvements	0
11723	15	Oregon Ash (*Fraxinus latifolia*)	4	Moderate dieback and gaps in canopy	B	Direct conflict with site improvements	0
11724	22	Oregon Ash (*Fraxinus latifolia*)	7	Large cavity with decay from base to 10'	A	Direct conflict with site improvements	0
11725	6,6,6	Oregon Ash (*Fraxinus latifolia*)	2	Codominant	C	Preserve	2

Detailed Tree Inventory for 12107 Stella Ridge

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Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
11726	8,9	Oregon Ash (*Fraxinus latifolia*)	2	Codominant; Asymmetrical (W); Some dieback in branches	B	Preserve	2
11727	9	Oregon Ash (*Fraxinus latifolia*)	2	Corrected Sweep (E)	C	Preserve	2
11729	8	Oregon Ash (*Fraxinus latifolia*)	2	Low vigor; Gaps and dieback in canopy	B	Preserve	2
11730	10	Oregon Ash (*Fraxinus latifolia*)	2	Minor dieback in tips of branches	C	Preserve	2
11731	10	Oregon Ash (*Fraxinus latifolia*)	2	Minor dieback in tips of branches	C	Preserve	2
11732	12, 15	Oregon Ash (*Fraxinus latifolia*)	6	Codominant	C	Preserve	6
11734	13	Oregon Ash (*Fraxinus latifolia*)	3	Asymmetrical (W)	C	Preserve	3
11735	8	Oregon Ash (*Fraxinus latifolia*)	2	Codominant with dead 4" stem, Severe Asymmetry (W)	A	Preserve	2
11736	18	Oregon Ash (*Fraxinus latifolia*)	5	Asymmetrical (W)	C	Preserve	5
11737	9	Oregon Ash (*Fraxinus latifolia*)	2	Codominant at 20ft; Low vigor; Gaps in canopy	B	Preserve	2
11738	16	Oregon Ash (*Fraxinus latifolia*)	4	Codominant at 20ft; Cavity at base	C	Preserve	4
11739	10	Oregon Ash (*Fraxinus latifolia*)	2	Codominant at 30ft	C	Preserve	2
11740	9	Oregon Ash (*Fraxinus latifolia*)	2	Codominant at 20ft; Minor dieback in tips of branches	C	Preserve	2
11741	9	Oregon Ash (*Fraxinus latifolia*)	2	Asymmetrical (W)	C	Preserve	2
11742	6	Oregon Ash (*Fraxinus latifolia*)	2	Asymmetrical (E)	C	Preserve	2
11743	6	Willow (Salix spp.)	2	Moderate dieback in branches; Severe epicormic growth	B	Preserve	2
11744	6	Oregon Ash (*Fraxinus latifolia*)	2	Low vigor; Severe gaps in canopy	A	Preserve	2
11745	9	Oregon Ash (*Fraxinus latifolia*)	2	Asymmetrical (W)	C	Preserve	2
11746	9	Oregon Ash (*Fraxinus latifolia*)	2	Asymmetrical (W)	C	Preserve	2
11747	8	Oregon Ash (*Fraxinus latifolia*)	2	Codominant with dead stem at 20ft; severe dieback in canopy	A	Preserve	2
11748	11	Oregon Ash (*Fraxinus latifolia*)	2	Minor dieback in tips of branches	C	Preserve	2
11749	9	Oregon Ash (*Fraxinus latifolia*)	2	Codominant at 30ft; 1 dead leader; low vigor	B	Preserve	2
11750	7	Oregon Ash (*Fraxinus latifolia*)	2	Broken at 10ft; Epicormic growth	A	Preserve	2
11751	10	Oregon Ash (*Fraxinus latifolia*)	2	Asymmetrical (W)	C	Preserve	2
11752	6,10	Oregon Ash (*Fraxinus latifolia*)	2	Codominant; 6" Stem Severe dieback and low vigor	B	Preserve	2
11753	6,10	Oregon Ash (*Fraxinus latifolia*)	2	Codominant at 4ft; 6" stem dead; Moderate dieback in canopy	B	Preserve	2
11754	9	Oregon Ash (*Fraxinus latifolia*)	2	Broken at 20ft; epicormic shoots	A	Preserve	2
11755	10	Oregon Ash (*Fraxinus latifolia*)	2	Broken at 20ft	A	Preserve	2
11756	10	Oregon Ash (*Fraxinus latifolia*)	2	Codominant with dead stem at 30ft	B	Preserve	2
11757	6	Oregon Ash (*Fraxinus latifolia*)	2	Broken at 10ft	A	Preserve	2
11758	13	Oregon Ash (*Fraxinus latifolia*)	3	Asymmetrical (W); Gaps in crown; dieback in branches	B	Preserve	3
11759	12	Oregon Ash (*Fraxinus latifolia*)	2	Minor dieback in tips of branches	C	Preserve	2
11760	6,10	Oregon Ash (*Fraxinus latifolia*)	2	Codominant at 4ft; Broken top in main stem	A	Preserve	2
11761	8	Oregon Ash (*Fraxinus latifolia*)	2	Epicormic Growth	C	Preserve	2
11762	16	Oregon Ash (*Fraxinus latifolia*)	4	Asymmetrical (E)	C	Preserve	4
11763	10	Oregon Ash (*Fraxinus latifolia*)	2	Okay	C	Preserve	2
11764	9	Oregon Ash (*Fraxinus latifolia*)	2	Okay	C	Preserve	2
11765	10	Oregon Ash (*Fraxinus latifolia*)	2	Asymmetrical (E)	C	Preserve	2
11767	9	Oregon Ash (*Fraxinus latifolia*)	2	Epicormic Growth	C	Preserve	2
11768	9	Oregon Ash (*Fraxinus latifolia*)	2	Epicormic Growth; Low vigor	B	Preserve	2
11769	8,9,15	Oregon Ash (*Fraxinus latifolia*)	6	Codominant; decay in 8" stem; Epicormic growth	A	Preserve	6
11770	6	Oregon Ash (*Fraxinus latifolia*)	2	Okay	C	Preserve	2
11771	12,12	Oregon Ash (*Fraxinus latifolia*)	5	Codominant with Included Bark	A	Preserve	5
11772	6	Oregon Ash (*Fraxinus latifolia*)	2	Corrected Sweep (E)	C	Preserve	2

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Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
11773	8	Oregon Ash (*Fraxinus latifolia*)	2	Minor dieback in tips of branches	C	Preserve	2
11774	35	Oregon Ash (*Fraxinus latifolia*)	14	Codominant at 8ft	C	Direct conflict with site improvements	0
11775	6	Oregon Ash (*Fraxinus latifolia*)	2	Okay	C	Preserve	2
11776	7	Oregon Ash (*Fraxinus latifolia*)	2	Okay	C	Preserve	2
11777	12,16	Oregon Ash (*Fraxinus latifolia*)	6	Codominant at 4ft	C	Preserve	6
11778	12	Oregon Ash (*Fraxinus latifolia*)	2	Asymmetrical and lean (SW)	B	Preserve	2
11780	7	Willow (Salix spp.)	2	Moderate lean and asymmetry (W)	B	Direct impact from public road construction	0
11782	8,8,10,12	Willow (Salix spp.)	6	Growth from down log; epicormic growth	C	Direct conflict with site improvements	0
11783	8,8,8	Willow (Salix spp.)	3	Growth from down log; epicormic growth	C	Direct impact from public road construction	0
11791	14,24,30	Bigleaf Maple (Acer macrophyllum)	17	Codominant; Cavities in 24" stem; exposed roots	B	Direct impact from public road construction	0
11797	17	Bigleaf Maple (Acer macrophyllum)	5	Asymmetrical (SW)	C	Direct conflict with site improvements	0
11798	14	Bigleaf Maple (Acer macrophyllum)	3	Asymmetrical (NE); Codominant at 10ft	C	Direct conflict with site improvements	0
11802	12	Willow (Salix spp.)	2	Codominant at 10ft; Asymmetrical (W); Epicormic Growth	B	Direct conflict with site improvements	0
11806	10, 15	Bigleaf Maple (Acer macrophyllum)	5	Codominant	C	Direct impact from public road construction	0
11812	9	Oregon Ash (*Fraxinus latifolia*)	2	Asymmetrical (W); Minor dieback in branches	C	Preserve	2
11814	18	Bigleaf Maple (Acer macrophyllum)	5	Okay	C	Direct conflict with site improvements	0
11817	22	Bigleaf Maple (Acer macrophyllum)	7	Okay	C	Direct conflict with site improvements	0
11818	12	Oregon Ash (*Fraxinus latifolia*)	2	Okay	C	Direct conflict with site improvements	0
11819	19	Bigleaf Maple (Acer macrophyllum)	6	Minor cavity at 20ft	C	Direct conflict with site improvements	0
11826	13	Sweet Cherry (Prunus avium)	3	Asymmetrical and lean (W); Moderate dieback in branches	B	Direct conflict with site improvements	0
11828	27	Bigleaf Maple (Acer macrophyllum)	10	Bulges at base; Historically broken top; exposed roots (N)	B	Direct conflict with site improvements	0
11829	22	Oregon Ash (Fraxinus latifolia)	7	Asymmetrical (N)	C	Direct conflict with site improvements	0
11830	24,25	Bigleaf Maple (Acer macrophyllum)	14	Codominant; bulging at base	C	Direct conflict with site improvements	0
11831	29	Bigleaf Maple (Acer macrophyllum)	11	Bulging at base	C	Direct conflict with site improvements	0
11833	23	Bigleaf Maple (Acer macrophyllum)	8	Historically broken top; lean (S)	C	Direct impact from public road construction	0
11834	21	Bigleaf Maple (Acer macrophyllum)	7	Broken at 30ft; Epicormic growth	A	Direct impact from public road construction	0
11835	27	Bigleaf Maple (Acer macrophyllum)	10	Asymmetrical (S)	C	Direct conflict with site improvements	0
11838	17	Bigleaf Maple (Acer macrophyllum)	5	Bulges at base; Codominant at 30ft	C	Direct impact from public road construction	0
11841	10,10	Sweet Cherry (Prunus avium)	3	Codominant with slight Included bark; Moderate dieback in canopy	B	Direct conflict with site improvements	0
11842	13	Oregon Ash (Fraxinus latifolia)	3	Asymmetrical (W)	C	Preserve	3
11843	22	Bigleaf Maple (Acer macrophyllum)	7	Codominant at 6ft with slight included bark; Minor sweep in base	B	Direct impact from public road construction	0
11844	38	Bigleaf Maple (Acer macrophyllum)	15	Okay	C	Direct impact from public road construction	0
11845	9	Willow (Salix spp.)	2	Asymmetrical (S); Moderate dieback in canopy	B	Direct impact from public road construction	0
11847	10	Willow (Salix spp.)	2	Dead codominant stem; decay in base	A	Direct conflict with site improvements	0
11848	8,10,12	Sweet Cherry (Prunus avium)	5	Codominant with included bark; Asymmetrical and lean (S & W)	A	Direct conflict with site improvements	0
11849	10,16	Bigleaf Maple (Acer macrophyllum)	6	Codominant	C	Direct conflict with site improvements	0
11850	9	Bigleaf Maple (Acer macrophyllum)	2	Asymmetrical and lean (W)	C	Direct conflict with site improvements	0
11851	25	Oregon Ash (Fraxinus latifolia)	9	Okay	C	Direct conflict with site improvements	0
11852	10	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (SW)	C	Direct conflict with site improvements	0
11853	11	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (NE); Low vigor	B	Direct conflict with site improvements	0
11854	10	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
11855	10	Oregon Ash (Fraxinus latifolia)	2	Broken at 30ft; Cavities	A	Direct conflict with site improvements	0

Detailed Tree Inventory for 12107 Stella Ridge

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Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
11856	19	Oregon Ash (Fraxinus latifolia)	6	Okay	C	Direct conflict with site improvements	0
11857	12	Oregon Ash (Fraxinus latifolia)	2	Low vigor; Moderate dieback in canopy; epicormic growth	A	Direct conflict with site improvements	0
11858	15	Oregon Ash (Fraxinus latifolia)	4	Historically broken top; Lean and asymmetrical (E)	B	Direct conflict with site improvements	0
11859	15	Oregon Ash (Fraxinus latifolia)	4	Moderate asymmetry and lean (SE); slight dieback in branches	B	Direct conflict with site improvements	0
11860	9	Willow (Salix spp.)	2	Moderate dieback and gaps in canopy	B	Direct impact from public road construction	0
11861	9	Bigleaf Maple (Acer macrophyllum)	2	Corrected Sweep in base	C	Direct impact from public road construction	0
11862	8	Oregon Ash (Fraxinus latifolia)	2	Low vigor; moderate dieback in canopy	B	Preserve	2
11863	7	Oregon Ash (Fraxinus latifolia)	2	Some epicormic growth	C	Preserve	2
11864	7	Oregon Ash (Fraxinus latifolia)	2	Some epicormic growth	C	Preserve	2
11865	6	Oregon Ash (Fraxinus latifolia)	2	Low vigor; Some epicormic growth	B	Preserve	2
11866	7	Oregon Ash (Fraxinus latifolia)	2	Low vigor; Gaps and dieback in canopy	B	Preserve	2
11867	8,9	Oregon Ash (Fraxinus latifolia)	2	Codominant; broken main stem; lean (E)	A	Preserve	2
11868	7	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (E)	A	Preserve	2
11869	9	Oregon Ash (Fraxinus latifolia)	2	Codominant with 2 other dead stems; Asymmetrical and lean (E)	A	Preserve	2
11870	13,14	Oregon Ash (Fraxinus latifolia)	6	Codominant	C	Preserve	6
11871	7	Oregon Ash (Fraxinus latifolia)	2	Broken at 10ft	A	Preserve	2
11872	8	Oregon Ash (Fraxinus latifolia)	2	Some epicormic growth	C	Preserve	2
11873	6	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (W)	B	Preserve	2
11874	11	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Preserve	2
11875	9	Oregon Ash (Fraxinus latifolia)	2	Broken at 20ft	A	Preserve	2
11876	6	Oregon Ash (Fraxinus latifolia)	2	Severe asymmetrical and lean (E)	B	Preserve	2
11877	12	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Preserve	2
11878	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E) ; Moderate dieback in canopy	B	Preserve	2
11879	10	Oregon Ash (Fraxinus latifolia)	2	Broke at 30ft; epicormic growth	A	Direct conflict with site improvements	0
11880	13	Oregon Ash (Fraxinus latifolia)	3	Asymmetrical (E) ; Some dieback in canopy	C	Direct conflict with site improvements	0
11881	6	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (N)	C	Direct conflict with site improvements	0
11882	7	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (NW); low vigor	B	Direct conflict with site improvements	0
11883	17	Oregon Ash (Fraxinus latifolia)	5	Broken top; Codominant; epicormic growth	A	Direct conflict with site improvements	0
11884	13	Oregon Ash (Fraxinus latifolia)	3	Asymmetrical (SW) ; Moderate dieback in canopy	B	Direct conflict with site improvements	0
11885	8	Oregon Ash (Fraxinus latifolia)	2	Broken at 10ft	A	Direct conflict with site improvements	0
11886	6,14	Oregon Ash (Fraxinus latifolia)	4	Codominant at 5ft; epicormic growth	B	Direct conflict with site improvements	0
11887	8	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (S); low vigor	B	Direct conflict with site improvements	0
11888	14	Oregon Ash (Fraxinus latifolia)	3	Lean (W); low vigor	B	Direct conflict with site improvements	0
11889	10	Oregon Ash (Fraxinus latifolia)	2	Broken at 30ft; epicormic growth	A	Direct conflict with site improvements	0
11890	8,10	Oregon Ash (Fraxinus latifolia)	3	Codominant; epicormic growth; dead tops	A	Direct conflict with site improvements	0
11891	8	Oregon Ash (Fraxinus latifolia)	2	Low vigor; epicormic growth; moderate dieback in branches	A	Direct conflict with site improvements	0
11892	8	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (W); Moderate dieback in branches	B	Preserve	2
11893	13	Oregon Ash (Fraxinus latifolia)	3	Okay	C	Preserve	3
11894	11	Oregon Ash (Fraxinus latifolia)	2	Broken top; Epicormic growth	A	Preserve	2
11895	6	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
11896	7	Bigleaf Maple (Acer macrophyllum)	2	Moderate dieback in branches; epicormic growth	B	Preserve	2
11897	30	Oregon Ash (Fraxinus latifolia)	11	Codominant with included bark; cavities at base; epicormic growth	A	Preserve	11

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Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
11898	14	Oregon Ash (Fraxinus latifolia)	3	Minor dieback in tips of branches	C	Preserve	3
11899	20	Oregon Ash (Fraxinus latifolia)	6	Codominant at 5ft; 1 stem broken at 20ft; asymmetrical (E)	A	Direct conflict with site improvements	0
11900	6	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (S); Lean (N); Broken top	A	Direct conflict with site improvements	0
11901	14	Oregon Ash (Fraxinus latifolia)	3	Cavity at base; Moderate dieback in branches	B	Direct conflict with site improvements	0
11902	15	Bigleaf Maple (Acer macrophyllum)	4	Asymmetrical (SE)	C	Direct conflict with site improvements	0
11903	22	Bigleaf Maple (Acer macrophyllum)	7	Asymmetrical (E)	C	Direct conflict with site improvements	0
11904	24	Oregon Ash (Fraxinus latifolia)	8	Codominant at 7ft; 1 broken stem at 30ft	B	Direct conflict with site improvements	0
11905	8,8,10,14	Oregon Ash (Fraxinus latifolia)	7	Codominant at 3ft; 1 broken stem	C	Direct conflict with site improvements	0
11906	11,14,15,17	Oregon Ash (Fraxinus latifolia)	11	Codominant at 3ft; 1 broken stem; epicormic growth	B	Direct conflict with site improvements	0
11907	6	Willow (Salix spp.)	2	Low vigor	B	Direct conflict with site improvements	0
11908	29	Willow (Salix spp.)	11	Codominant at 7ft with included bark and separation	A	Direct impact from public road construction	0
11910	13	Oregon Ash (Fraxinus latifolia)	3	Broken at 30ft	A	Direct impact from public road construction	0
11911	11	Oregon Ash (Fraxinus latifolia)	2	Broken at 20ft	A	Direct impact from public road construction	0
11912	0,11,12,14,15,1	Oregon Ash (Fraxinus latifolia)	13	Codominant; Several major broken leaders	A	Direct impact from public road construction	0
11914	10	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct impact from public road construction	0
11915	19	Oregon Ash (Fraxinus latifolia)	6	Codominant at 30ft; 1 broken stem	C	Direct conflict with site improvements	0
11916	8	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
11917	6,17,17	Oregon Ash (Fraxinus latifolia)	9	17" stem broken at 30ft; epicormic growth	A	Direct conflict with site improvements	0
11918	7	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
11919	26	Oregon Ash (Fraxinus latifolia)	9	Codominant at 6ft; Asymmetrical and lean (NW)	C	Direct conflict with site improvements	0
11921	22	Bigleaf Maple (Acer macrophyllum)	7	Some exposed roots	C	Direct impact from public road construction	0
11922	14	Oregon Ash (Fraxinus latifolia)	3	Lean (W); Severe epicormic growth; codominant at 20ft	B	Direct impact from public road construction	0
11927	7	Red Alder (Alnus rubra)	2	Okay	C	Direct impact from public road construction	0
11933	30	Bigleaf Maple (Acer macrophyllum)	11	Severe cavity and decay in base	A	Direct conflict with site improvements	0
11934	8,14,15	Oregon Ash (Fraxinus latifolia)	7	Codominant with included bark; dead and broken leaders	A	Direct conflict with site improvements	0
11935	8,15	Oregon Ash (Fraxinus latifolia)	5	Codominant	C	Direct impact from public road construction	0
11936	12,23	Oregon Ash (Fraxinus latifolia)	9	Codominant at 4ft; 23" stem codominant at 6ft with included bark; epicormic growth	A	Direct impact from public road construction	0
11937	6	Bigleaf Maple (Acer macrophyllum)	2	Okay	C	Direct impact from public road construction	0
11939	19,25	Oregon Ash (Fraxinus latifolia)	12	Codominant	C	Direct conflict with site improvements	0
11940	7,8	Oregon Ash (Fraxinus latifolia)	2	Codominant; Decay at base; low vigor	A	Direct impact from public road construction	0
11941	13	Oregon Ash (Fraxinus latifolia)	3	Lean (W)	C	Direct impact from public road construction	0
11953	13	Oregon Ash (Fraxinus latifolia)	3	Codominant at 10ft; 1 stem dead	B	Preserve	3
11996	6	Red Alder (Alnus rubra)	2	Codominant with dead 8" stem	A	Direct conflict with site improvements	0
11997	12	Red Alder (Alnus rubra)	2	Codominant with dead 8" stem	A	Direct conflict with site improvements	0
11998	12	Red Alder (Alnus rubra)	2	Severe dieback in main stem	A	Direct conflict with site improvements	0
11999	8	Red Alder (Alnus rubra)	2	Severe dieback in canopy; main stem dead; epicormic growth	A	Direct conflict with site improvements	0
12000	6,8	Red Alder (Alnus rubra)	2	Severe dieback in canopy; severe lean (E)	A	Direct impact from public road construction	0
12001	6,7,9	Red Alder (Alnus rubra)	3	Severe dieback in canopy; very low vigor	A	Direct impact from public road construction	0
12002	9	Red Alder (Alnus rubra)	2	Low vigor; dead codominant stem	A	Direct impact from public road construction	0
12003	6	Red Alder (Alnus rubra)	2	Low vigor; dead codominant stems	A	Direct impact from public road construction	0
12004	9	Red Alder (Alnus rubra)	2	Dead main stem; Epicormic growth	A	Direct impact from public road construction	0
12005	6,8	Red Alder (Alnus rubra)	2	Codominant with dead stem	A	Direct impact from public road construction	0
12006	10	Red Alder (Alnus rubra)	2	Broken top	A	Direct conflict with site improvements	0
12007	7	Red Alder (Alnus rubra)	2	Broken top	A	Direct impact from public road construction	0

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Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
12008	7	Red Alder (Alnus rubra)	2	Low vigor; Severe epicormic growth	A	Direct impact from public road construction	0
12009	31	Douglas-fir (Pseudotsuga menziesii)	12	Broken top; Lean (W); Exposed structural roots (E)	A	Direct impact from public road construction	0
12012	16	Oregon Ash (Fraxinus latifolia)	4	Codominant with dead leaders; decay in base	A	Direct impact from public road construction	0
12014	9,11	Oregon Ash (Fraxinus latifolia)	3	Codominant with included bark; major dead leaders	A	Direct impact from public road construction	0
12016	7	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct impact from public road construction	0
12017	6,8	Oregon Ash (Fraxinus latifolia)	2	Codominant	C	Direct impact from public road construction	0
12018	10	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (NW)	C	Direct impact from public road construction	0
12019	9,11,15	Oregon Ash (Fraxinus latifolia)	7	Codominant with included bark; 11" stem broken at 20'	A	Direct conflict with site improvements	0
12020	7,8,9	Oregon Ash (Fraxinus latifolia)	3	Codominant with dead stems; lean (S)	B	Direct conflict with site improvements	0
12021	8,9	Oregon Ash (Fraxinus latifolia)	2	Codominant	C	Direct impact from public road construction	0
12022	6,8	Oregon Ash (Fraxinus latifolia)	2	Codominant with included bark; epicormic growth	B	Direct impact from public road construction	0
12023	10	Oregon Ash (Fraxinus latifolia)	2	Moderate dieback in branches	B	Direct impact from public road construction	0
12024	9,9	Oregon Ash (Fraxinus latifolia)	3	Codominant with major separation	A	Direct impact from public road construction	0
12025	8,9	Oregon Ash (Fraxinus latifolia)	2	Codominant; Decay at base; low vigor	A	Direct impact from public road construction	0
12026	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (W); Moderate dieback in branches	B	Direct impact from public road construction	0
12027	6,11,13	Oregon Ash (Fraxinus latifolia)	5	Codominant at 4ft with included bark; 6" stem dead	A	Direct conflict with site improvements	0
12028	6,9	Oregon Ash (Fraxinus latifolia)	2	Codominant; decay in base	A	Direct conflict with site improvements	0
12029	8	Oregon Ash (Fraxinus latifolia)	2	Cavity and decay in base; epicormic growth	A	Direct impact from public road construction	0
12030	8,9,12	Oregon Ash (Fraxinus latifolia)	5	Codominant; minor cavity in base; dead 6" stem	A	Direct impact from public road construction	0
12031	6,7,10,11	Oregon Ash (Fraxinus latifolia)	5	6" stem dead; Codominant; Major separation with 7" stem	A	Direct impact from public road construction	0
12032	7,11	Bigleaf Maple (Acer macrophyllum)	3	Codominant; Cavity in base	B	Direct conflict with site improvements	0
12033	7,9,15	Oregon Ash (Fraxinus latifolia)	6	Large cavity and decay in base	A	Direct conflict with site improvements	0
12034	9,10, 11	Oregon Ash (Fraxinus latifolia)	5	Codominant with separation	B	Direct conflict with site improvements	0
12036	10,11,24	Oregon Ash (Fraxinus latifolia)	10	Codominant at 6ft; major cavity with decay in base	A	Direct conflict with site improvements	0
12037	11,13	Oregon Ash (Fraxinus latifolia)	5	Codominant with included bark; 11" stem broken at 30'	A	Direct conflict with site improvements	0
12038	10,12	Oregon Ash (Fraxinus latifolia)	4	Codominant; Cavity and decay in base	A	Direct conflict with site improvements	0
12040	9,10	Oregon Ash (Fraxinus latifolia)	3	Codominant; Cavity and decay in base	A	Direct conflict with site improvements	0
12041	32	Oregon Ash (Fraxinus latifolia)	12	Codominant at 20ft	C	Direct conflict with site improvements	0
12043	8,9	Willow (Salix spp.)	2	Growth from down tree; some dead minor stems	B	Direct conflict with site improvements	0
12044	12	Willow (Salix spp.)	2	Codominant with dead stem	B	Direct conflict with site improvements	0
12049	37	Oregon Ash (Fraxinus latifolia)	15	Codominant at 10ft; Minor dieback in branches	C	Direct impact from public road construction	0
12050	6,8,10,10,11	Willow (Salix spp.)	7	Codominant; decay in base; epicormic growth	A	Direct impact from public road construction	0
12051	10,13,13	Oregon Ash (Fraxinus latifolia)	7	Codominant with included bark; epicormic growth; severe lean (W)	A	Direct conflict with site improvements	0
12054	18	Bigleaf Maple (Acer macrophyllum)	5	Corrected lean (W)	C	Direct conflict with site improvements	0
12055	19	Oregon Ash (Fraxinus latifolia)	6	Dead minor stem at 20ft; epicormic growth	B	Direct conflict with site improvements	0
12056	8, 22	Oregon Ash (Fraxinus latifolia)	8	Codominant; epicormic growth	C	Direct conflict with site improvements	0
12059	22,28	Bigleaf Maple (Acer macrophyllum)	14	Codominant with included bark; major dead stems in canopy	A	Direct conflict with site improvements	0
12060	9	Red Alder (Alnus rubra)	2	Scar at base	B	Direct conflict with site improvements	0
12064	11,23	Oregon Ash (Fraxinus latifolia)	9	Codominant at 4ft	C	Direct conflict with site improvements	0
12065	9,9,30	Willow (Salix spp.)	13	Growth from down tree	C	Direct conflict with site improvements	0
12067	9	Red Alder (Alnus rubra)	2	Asymmetrical (E); several failed leaders	B	Direct impact from public road construction	0
12068	9	Red Alder (Alnus rubra)	2	Asymmetrical (E); Moderate dieback in branches	B	Direct impact from public road construction	0
12069	9	Red Alder (Alnus rubra)	2	Asymmetrical (E); Moderate dieback in branches	B	Direct impact from public road construction	0
12070	7	Red Alder (Alnus rubra)	2	Mechanical damage to base; asymmetrical and lean (NE)	B	Direct impact from public road construction	0

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Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
12071	8,12	Red Alder (Alnus rubra)	3	Codominant with included bark; 8" Stem has severe lean (NE)	A	Direct impact from public road construction	0
12080	10	Willow (Salix spp.)	2	Cavity at base; epicormic growth; Moderate dieback in branches	A	Direct impact from public road construction	0
12081	6,12	Willow (Salix spp.)	0	OFFSITE; Codominant; 6" stem dead	B	Direct impact from public road construction	0
12083	24	Red Alder (Alnus rubra)	8	Severe dieback in main stem; bark loss	A	Direct impact from public road construction	0
12084	23	Red Alder (Alnus rubra)	8	Severe dieback in main stem; epicormic growth	A	Direct impact from public road construction	0
12088	13	Red Alder (Alnus rubra)	0	OFFSITE; okay	C	Direct impact from public road construction	0
12089	7	Red Alder (Alnus rubra)	2	Asymmetrical and Lean (SW)	C	Direct impact from public road construction	0
12092	6	Red Alder (Alnus rubra)	2	Okay	C	Direct impact from public road construction	0
12095	25	Willow (Salix spp.)	9	Main Stem Dead; Severe lean (S)	A	Direct impact from public road construction	0
12096	24	Oregon Ash (Fraxinus latifolia)	8	Okay	C	Direct impact from public road construction	0
12099	8	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (S); several dead minor stems	A	Direct impact from public road construction	0
12100	20	Red Alder (Alnus rubra)	6	Severe dieback in main stem	B	Direct impact from public road construction	0
12102	6,6,6	Willow (Salix spp.)	2	Cluster	C	Direct conflict with site improvements	0
12109	8,15	Oregon Ash (Fraxinus latifolia)	0	OFFSITE; okay	C	Direct impact from public road construction	0
12110	24	Oregon Ash (Fraxinus latifolia)	0	OFFSITE; okay	C	Direct conflict with site improvements	0
12111	8	Oregon Ash (Fraxinus latifolia)	0	OFFSITE; okay	C	Direct conflict with site improvements	0
12112	16	Oregon Ash (Fraxinus latifolia)	0	OFFSITE; okay	C	Direct conflict with site improvements	0
12113	18	Oregon Ash (Fraxinus latifolia)	0	OFFSITE; okay	C	Direct conflict with site improvements	0
12114	6	Willow (Salix spp.)	2	Cluster; dead stems; low vigor	B	Direct impact from public road construction	0
12117	8,16	Oregon Ash (Fraxinus latifolia)	5	Codominant with included bark; cavity with decay at base	A	Direct conflict with site improvements	0
12118	15,17	Oregon Ash (Fraxinus latifolia)	8	Codominant at 6ft with included bark; epicormic growth	B	Direct conflict with site improvements	0
12146	17	Oregon Ash (Fraxinus latifolia)	5	Cavity at base; Old leader dead; epicormic growth	B	Direct conflict with site improvements	0
12147	12	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Direct conflict with site improvements	0
12148	14,19	Oregon Ash (Fraxinus latifolia)	8	Codominant; Cavity at base where old codominant stem failed	B	Direct conflict with site improvements	0
12149	6,23	Oregon Ash (Fraxinus latifolia)	8	Codominant at 10ft	C	Direct conflict with site improvements	0
12150	14,20	Oregon Ash (Fraxinus latifolia)	8	Codominant at 3ft	C	Direct conflict with site improvements	0
12154	10,10	Hawthorn (*Crataegus spp.*)	3	Codominant; lean/asymmetrical (SW)	C	Direct conflict with site improvements	0
12156	14,24	Oregon Ash (Fraxinus latifolia)	10	Codominant	C	Direct conflict with site improvements	0
12157	17	Oregon Ash (Fraxinus latifolia)	5	Codominant at 10ft; Corrected lean	C	Direct conflict with site improvements	0
12158	15	Oregon Ash (Fraxinus latifolia)	4	Okay	C	Direct conflict with site improvements	0
12159	18	Red Alder (Alnus rubra)	5	Corrected sweep in base	C	Direct conflict with site improvements	0
12160	11,15	Oregon Ash (Fraxinus latifolia)	6	Codominant	C	Direct conflict with site improvements	0
12161	12	Oregon Ash (Fraxinus latifolia)	2	Codominant with cluster	B	Direct conflict with site improvements	0
12162	7,11	Oregon Ash (Fraxinus latifolia)	3	Okay	C	Direct conflict with site improvements	0
12163	7	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Direct conflict with site improvements	0
12164	8,11,19	Crabapple (Malus spp.)	8	Codominant; Asymmetrical (W); Some dieback in branches	B	Direct conflict with site improvements	0
12165	7	Red Alder (Alnus rubra)	2	Asymmetrical (E); Severe lean (E)	B	Direct conflict with site improvements	0
12166	12	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
12167	21	Bigleaf Maple (Acer macrophyllum)	7	Codominant at 10ft	C	Direct conflict with site improvements	0
12168	13	Oregon Ash (Fraxinus latifolia)	3	Codominant at 10ft; Severe Sweep in base	B	Direct conflict with site improvements	0
12169	13	Oregon Ash (Fraxinus latifolia)	3	Severe lean (W); Severe dieback in canopy	A	Direct conflict with site improvements	0
12183	9,9	Red Alder (Alnus rubra)	3	Codominant	C	Direct impact from public road construction	0

Detailed Tree Inventory for 12107 Stella Ridge

AKS Job No. 12107 - Evaluation Date: 7/31/25-8/1/25 - Evaluated By: JTG

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
12185	9	Red Alder (Alnus rubra)	2	Okay	C	Direct impact from public road construction	0
12186	9,12	Crabapple (Malus spp.)	4	Okay	C	Direct conflict with site improvements	0
12187	14	Crabapple (Malus spp.)	3	Okay	C	Direct conflict with site improvements	0
12188	14	Crabapple (Malus spp.)	3	Large bore holes at base; Major leader dead	B	Direct conflict with site improvements	0
12195	12	Crabapple (Malus spp.)	2	Minor cavity at base; epicormic growth	B	Direct conflict with site improvements	0
12200	6,6,6,8	Willow (Salix spp.)	3	Cluster; Minor dieback in branches	C	Direct conflict with site improvements	0
12205	,10,13,13,14,1	Bigleaf Maple (Acer macrophyllum)	11	Codominant; Minor stems dead in canopy	B	Direct conflict with site improvements	0
12226	7,7,9,10,14	Willow (Salix spp.)	7	Codominant; growth from dead log; epicormic growth	B	Direct conflict with site improvements	0
12227	9	Willow (Salix spp.)	2	Codominant at 5ft with cluster	C	Direct conflict with site improvements	0
12228	7,9,10	Willow (Salix spp.)	4	Codominant; Decay in base; asymmetrical (W)	A	Direct conflict with site improvements	0
12229	7,9	Willow (Salix spp.)	2	Codominant	C	Direct conflict with site improvements	0
12230	6,6	Willow (Salix spp.)	2	Codominant	C	Direct conflict with site improvements	0
12231	6,6,6,7,7,8,9	Willow (Salix spp.)	6	Codominant; Cavity at base; Moderate dieback in canopy	B	Direct conflict with site improvements	0
12242	11	Willow (Salix spp.)	2	Main stem dead; Epicormic growth	A	Direct conflict with site improvements	0
12244	6,6	Willow (Salix spp.)	2	Moderate dieback in branches	B	Direct conflict with site improvements	0
12246	6,9	Willow (Salix spp.)	2	Dead leaders; asymmetrical (NW)	B	Direct conflict with site improvements	0
12248	6	Willow (Salix spp.)	2	Growth from down log; epicormic growth; Moderate dieback in branches	B	Direct conflict with site improvements	0
13000	14,20	Bigleaf Maple (Acer macrophyllum)	8	Codominant; Lean and asymmetrical (SW); exposed structural roots	A	Direct conflict with site improvements	0

Total # of Existing Trees Inventoried = 355

Net Site Area = 18.44 AC

Total # of Existing Onsite Trees = 342
Total Onsite Existing Tree Units = 1478
Total # of Onsite Trees Retained = 76
Total # of Tree Units Retained = 193

Total # of Existing Trees Removed = 276
Total Existing Tree Units Removed = 1285

Minimum Tree Units Required per City Code = 368.8
*(18.44 acres * 20 trees/acre)*
Minimum # Trees to Replant = 175.8

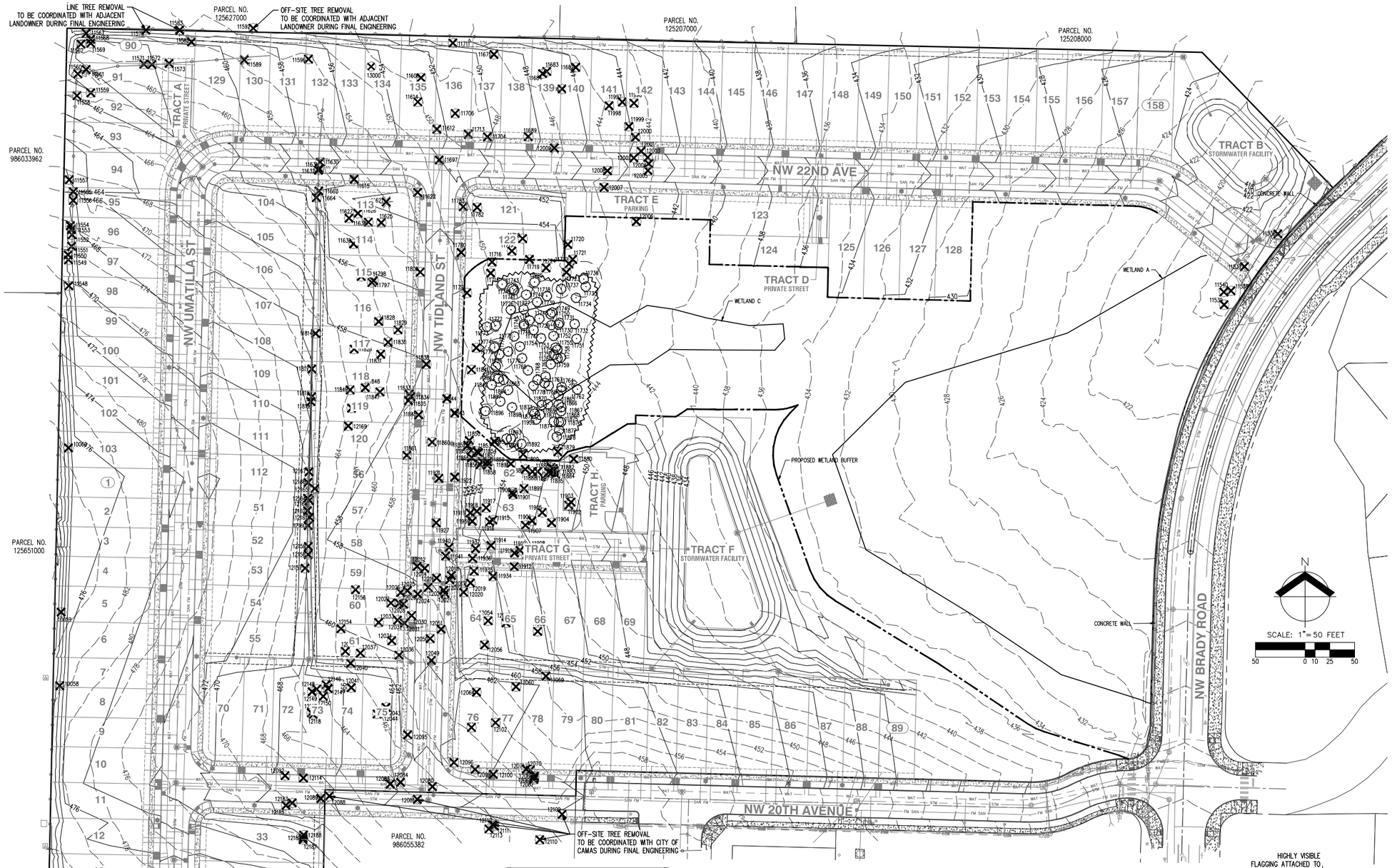
Windthrow Rating
A=Least windthrow resistant
B=Moderate windthrow resistant
C=Most windthrow resistant

Arborist Disclosure Statement:

Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees, recommend measures to enhance the health of trees, and attempt to reduce the risk of living near trees. The Client and Jurisdiction may choose to accept or disregard the recommendations of the arborist, or seek additional advice. Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like medicine, cannot be guaranteed. Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees. Neither this author nor AKS Engineering & Forestry, LLC have assumed any responsibility for liability associated with the trees on or adjacent to this site.

At the completion of construction, all trees should once again be reviewed. Land clearing and removal of adjacent trees can expose previously unseen defects and otherwise healthy trees can be damaged during construction.

Appendix B: Tree Preservation and Removal Plan



SEE SHEET P5.1

LEGEND

- EXISTING GROUND CONTOUR (2 FT) — 148 —
- EXISTING GROUND CONTOUR (10 FT) — 150 —
- FINISHED GRADE CONTOUR (2 FT) — 148 —
- FINISHED GRADE CONTOUR (10 FT) — 150 —
- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE
- TREE REMOVAL
- TREE PROTECTION/CONSTRUCTION FENCE (TREE PROTECTION AREA)
- ASSUMED TREE ROOT ZONE (1-FT RADIUS PER 1-IN OF DBH)

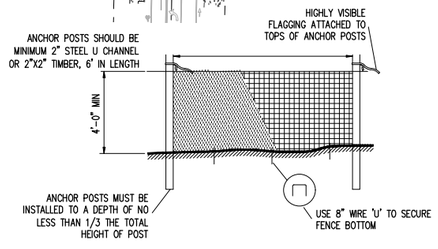
GENERAL NOTES

1. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO DEMOLITION AND SITE GRADING ACTIVITIES. SEE DETAIL ON THIS SHEET.
2. SEE SHEET P5.2–P5.3 FOR TREE INVENTORY.
3. SEE SHEET P5.1 FOR TREE PROTECTION NOTES.
4. SOIL MITIGATION AND ENHANCEMENT MAY BE NECESSARY POST CONSTRUCTION TO ENHANCE COMPACTED SOILS AROUND TREE BASE AND ENCOURAGE TREE HEALTH.
5. THE PROJECT ARBORIST MAY REQUIRE ALTERNATIVE CONSTRUCTION MATERIALS OR METHODS DURING CONSTRUCTION TO PROTECT AND AVOID REMOVAL OF SOME ROOT SYSTEMS.
6. VARIOUS TREES EXHIBIT FORMS OF HEALTH CONCERNS OR STRUCTURAL DEFECTS, AS NOTED IN THE TREE TABLE (SHEET P5.2–P5.3), THAT CURRENTLY PRESENT MINIMAL CONCERNS DUE TO THEIR LOCATION WITHIN THE PRESERVED CRITICAL AREA AND DISTANCE FROM LOTS OR USABLE SPACE; HOWEVER, IT IS RECOMMENDED TO MONITOR THESE TREES OVER TIME AS ADDITIONAL MITIGATION OPTIONS MAY BE WARRANTED IF THE HEALTH AND/OR STRUCTURAL CONDITIONS WORSEN. WE RECOMMEND USING A CERTIFIED ARBORIST FOR FUTURE MONITORING.

TREE DENSITY CALCULATIONS

GROSS AREA:	24.41 AC
OPEN SPACE:	5.97 AC
NET AREA:	18.44 AC
TOTAL TREE UNITS REQUIRED (20/AC):	369
EXISTING TREES RETAINED/(TREE UNITS):	76/(193)
MINIMUM # OF TREES TO PLANT/(TREE UNITS):	176/(176)
PROPOSED # OF TREES TO PLANT:	176

NOTE: SEE LANDSCAPING PLAN FOR PROPOSED TREE PLANTING PLAN



PLASTIC MESH TREE PROTECTION FENCE

NOT TO SCALE

TREE PROTECTION FENCE NOTES

1. BLAZE ORANGE OR BLUE PLASTIC MESH FENCE FOR TREE PROTECTION DEVICE, ONLY.
2. BOUNDARIES OF PROTECTION AREA WILL BE ESTABLISHED IN THE FIELD BY THE ARBORIST PRIOR TO CONSTRUCTION.
3. BOUNDARIES OF PROTECTION AREA SHOULD BE STAKED AND FLAGGED BY THE ARBORIST, OR UNDER THE SUPERVISION OF THE ARBORIST, PRIOR TO INSTALLING DEVICES.
4. AVOID DAMAGE TO CRITICAL ROOT ZONE. DO NOT DAMAGE OR SEVER LARGE ROOTS WHEN INSTALLING POSTS.
5. TREE PROTECTION TO BE INSTALLED PRIOR TO CONSTRUCTION AND REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETED.

BRYCE D. HANSON
CERTIFICATE NUMBER: PN 75544
EXPIRATION DATE: 06/30/28

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ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

PRELIMINARY TREE PRESERVATION & REMOVAL PLAN
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	9/12/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	

P5.0

AKS DRAWING FILE: 12107 P5.0 PRELIMINARY TREE PRESERVATION & REMOVAL PLAN.DWG | LAYOUT: P5.0

TREE PROTECTION NOTES

A. PLACING MATERIALS NEAR TREES – NO PERSON MAY CONDUCT ANY ACTIVITY WITHIN THE PROTECTED AREA OF ANY TREE DESIGNATED TO REMAIN, INCLUDING, BUT NOT LIMITED TO, PARKING EQUIPMENT, PLACING SOLVENTS, STORING BUILDING MATERIALS AND SOIL DEPOSITS, DUMPING CONCRETE WASHOUT, ETC.

B. ATTACHMENTS TO TREES – DURING CONSTRUCTION, NO PERSON SHALL ATTACH ANY OBJECT TO ANY TREE DESIGNATED FOR PROTECTION.

C. PROTECTIVE BARRIER – BEFORE DEVELOPMENT, LAND CLEARING, FILLING OR ANY LAND ALTERATION FOR WHICH A TREE REMOVAL PERMIT IS REQUIRED, THE CONTRACTOR:

C.A. SHALL ERECT AND MAINTAIN READILY VISIBLE PROTECTIVE TREE FENCING ALONG THE OUTER EDGE AND COMPLETELY SURROUNDING THE PROTECTED AREA OF ALL PROTECTED TREES OR GROUP OF TREES. FENCES SHALL BE CONSTRUCTED PER THE DETAIL ON THIS SHEET.

C.B. MAY BE REQUIRED TO COVER WITH MULCH TO A DEPTH OF AT LEAST SIX (6) INCHES OR WITH PLYWOOD OR SIMILAR MATERIAL IN THE AREAS ADJOINING THE CRITICAL ROOT ZONE OF A TREE IN ORDER TO PROTECT ROOTS FROM DAMAGE CAUSED BY HEAVY EQUIPMENT.

C.C. SHALL PROHIBIT EXCAVATION OR COMPACTING OF EARTH OR OTHER POTENTIALLY DAMAGING ACTIVITIES WITHIN THE BARRIERS.

C.D. MAY BE REQUIRED TO MINIMIZE ROOT DAMAGE BY EXCAVATING A TWO (2) FOOT DEEP TRENCH, AT EDGE OF CRITICAL ROOT ZONE, TO CLEANLY SEVER THE ROOTS OF TREES TO BE RETAINED. ROOTS ONE (1) INCH DIAMETER OR GREATER SHALL BE CLEANLY CUT WITH A SAW OR PRUNERS.

C.E. MAY BE REQUIRED TO HAVE CORRECTIVE PRUNING PERFORMED ON PROTECTED TREES IN ORDER TO AVOID DAMAGE FROM MACHINERY OR BUILDING ACTIVITY. MAY BE REQUIRED TO MAINTAIN TREES THROUGHOUT THE CONSTRUCTION PERIOD BY WATERING AND FERTILIZING.

C.F. SHALL MAINTAIN THE PROTECTIVE BARRIERS IN PLACE UNTIL THE PROJECT ARBORIST AUTHORIZES THEIR REMOVAL OR A FINAL CERTIFICATE OF OCCUPANCY IS ISSUED, WHICHEVER OCCURS FIRST.

C.G. SHALL ENSURE THAT ANY LANDSCAPING DONE IN THE PROTECTED ZONE SUBSEQUENT TO THE REMOVAL OF THE BARRIERS SHALL BE ACCOMPLISHED WITH LIGHT MACHINERY OR HAND LABOR.

D. GRADE

D.A. THE GRADE SHALL NOT BE ELEVATED OR REDUCED WITHIN THE CRITICAL ROOT ZONE OF TREES TO BE PRESERVED WITHOUT THE PROJECT ARBORISTS'S AUTHORIZATION. THE PROJECT ARBORIST MAY ALLOW COVERAGE OF UP TO ONE HALF OF THE AREA OF THE TREE'S CRITICAL ROOT ZONE WITH LIGHT SOILS (NO CLAY) TO THE MINIMUM DEPTH NECESSARY TO CARRY OUT GRADING OR LANDSCAPING PLANS, IF IT WILL NOT IMPERIL THE SURVIVAL OF THE TREE. AERATION DEVICES MAY BE REQUIRED TO ENSURE THE TREE'S SURVIVAL.

D.B. IF THE GRADE ADJACENT TO A PRESERVED TREE IS RAISED SUCH THAT IT COULD SLOUGH OR ERODE INTO THE TREES CRITICAL ROOT ZONE, IT SHALL BE PERMANENTLY STABILIZED TO PREVENT SUFFOCATION OF THE ROOTS.

D.C. THE APPLICANT SHALL NOT INSTALL AN IMPERVIOUS SURFACE WITHIN THE CRITICAL ROOT ZONE OF ANY TREE TO BE RETAINED WITHOUT THE AUTHORIZATION OF THE PROJECT ARBORIST. THE PROJECT ARBORIST MAY REQUIRE SPECIFIC CONSTRUCTION METHODS AND/OR USE OF AERATION DEVICES TO ENSURE THE TREE'S SURVIVAL AND TO MINIMIZE THE POTENTIAL FOR ROOT INDUCED DAMAGE TO THE IMPERVIOUS SURFACE.

D.D. TO THE GREATEST EXTENT PRACTICAL, UTILITY TRENCHES SHALL BE LOCATED OUTSIDE OF THE CRITICAL ROOT ZONE OF TREES TO BE RETAINED. THE PROJECT ARBORIST MAY REQUIRE THAT UTILITIES BE TUNNELED UNDER THE ROOTS OF TREES TO BE RETAINED IF THE PROJECT ARBORIST DETERMINES THAT TRENCHING WOULD SIGNIFICANTLY REDUCE THE CHANCES OF THE TREE'S SURVIVAL.

D.E. TREE AND OTHER VEGETATION TO BE RETAINED SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION. CLEARING OPERATIONS SHALL BE CONDUCTED SO AS TO EXPOSE THE SMALLEST PRACTICAL AREA OF SOIL TO EROSION FOR THE LEAST POSSIBLE TIME. TO CONTROL EROSION, SHRUBS, GROUND COVER, AND STUMPS SHALL BE MAINTAINED ON THE INDIVIDUAL LOTS, WHERE FEASIBLE. WHERE NOT FEASIBLE, APPROPRIATE EROSION CONTROL MEASURES PRACTICES SHALL BE IMPLEMENTED PURSUANT TO CITY OF CAMAS CODE OF ORDINANCES CHAPTERS 14.02 AND 14.06.

E. DIRECTIONAL FELLING OF TREES SHALL BE USED TO AVOID DAMAGE TO TREES DESIGNATED FOR RETENTION.

F. ADDITIONAL REQUIREMENTS – THE PROJECT ARBORIST MAY REQUIRE ADDITIONAL TREE PROTECTION MEASURES WHICH ARE CONSISTENT WITH ACCEPTED URBAN FORESTRY PRACTICES.

G. ENCROACHMENT INTO THE ROOT PROTECTION ZONE IS ALLOWED WITH PROJECT ARBORIST APPROVAL AS DESCRIBED IN THE FOLLOWING NOTES:

G.A. EXCAVATION IN THE TOP 24 INCHES OF THE SOIL IN THE CRITICAL ROOT ZONE AREA SHOULD BEGIN AT THE EXCAVATION LINE THAT IS CLOSEST TO THE TREE.

G.B. THE EXCAVATION SHOULD BE DONE BY HAND/SHOVEL OR WITH A BACKHOE AND A MAN WITH A SHOVEL, PRUNING SHEARS, AND A PRUNING SAW.

G.C. IF DONE BY HAND, ALL ROOTS 1 INCH OR LARGER SHOULD BE PRUNED AT THE EXCAVATION LINE.

G.D. IF DONE WITH BACKHOE (MOST LIKELY SCENARIO), THEN THE OPERATOR SHALL START THE CUT AT THE EXCAVATION LINE AND CAREFULLY "FEEL" FOR ROOT/RESISTANCE. WHEN THERE IS RESISTANCE, THE MAN WITH THE SHOVEL HAND DIGS AROUND THE ROOTS AND PRUNES THE ROOTS LARGER THAN 1 INCH DIAMETER.

G.E. THE BACKHOE IS TO REMAIN OFF OF THE TREE ROOTS TO BE PRESERVED AT ALL TIMES.

G.F. ALL ROOTS SHALL BE CUT CLEANLY WITH PRUNING SHEARS OR A PRUNING SAW.

G.G. PROJECT ARBORIST MUST BE ONSITE DURING ANY WORK WITHIN THE TREE ROOT PROTECTION ZONE.

G.H. THE COMMUNITY DEVELOPMENT DIRECTOR MUST BE CONTACTED 24 HOURS PRIOR TO WORKING WITHIN THE TREE ROOT PROTECTION ZONE.

H. TREE PROTECTION ZONE IS DEFINED AS ALL AREAS BOUND AND PROTECTING THE OPTIMAL TREE PROTECTION ZONE.

I. TIMELINE FOR CLEARING, GRADING, AND INSTALLATION OF TREE PROTECTION MEASURES: WORK WILL BEGIN IMMEDIATELY FOLLOWING FINAL APPROVAL BY THE CITY. TREE PROTECTION MEASURES WILL BE DONE DURING CLEARING AND ANY GRADING WILL FOLLOW.

J. PRUNING/TREE REMOVAL NOTES: THE WORK TO BE COMPLETED UNDER THIS PROJECT SHALL CONSIST OF TREE REMOVAL AND TREE TRIMMING AS LISTED.

J.A. THE CONTRACTOR SHALL PROVIDE ADEQUATE CREW OF MEN, EQUIPMENT AND MATERIALS TO SAFELY AND EFFICIENTLY COMPLETE THE ASSIGNED WORK. EACH SUCH CREW SHALL INCLUDE AN INDIVIDUAL WHO SHALL BE DESIGNATED AS THE CREW SUPERVISOR AND WHO SHALL BE RESPONSIBLE FOR THE CREW'S ACTIVITIES AND WHO SHALL RECEIVE INSTRUCTION FROM THE OWNER OR THE OWNER'S REPRESENTATIVE AND DIRECT THE CREW TO ACCOMPLISH SUCH WORK.

J.B. WHENEVER A TREE, WHICH IS NOT SCHEDULED TO BE REMOVED, MUST BE TRIMMED OR PRUNED, THE CONTRACTOR SHALL INSURE THAT SUCH TRIMMING AND PRUNING IS CARRIED OUT UNDER THE DIRECT SUPERVISION OF A LICENSED ARBORIST. ALL PRUNING AND TRIMMING SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS OF ANSI A 300 "STANDARD PRACTICES FOR TREE, SHRUB AND OTHER WOODY PLANT MAINTENANCE".

J.C. THE CONTRACTOR SHALL BE REQUIRED TO CUT TREES TO A HEIGHT OF APPROXIMATELY 12". THE STUMPS AND ROOTS SHALL BE GROUND DOWN A MINIMUM OF TWELVE (12) INCHES BELOW NORMAL GROUND LEVEL.

J.D. THE CONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH THE LATEST GOVERNMENTAL SAFETY REGULATIONS. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ANSI Z133.1 "PRUNING, TRIMMING, REPAIRING, MAINTAINING AND REMOVING TREES AND CUTTING BRUSH–SAFETY REQUIREMENTS" WITH SPECIAL EMPHASIS GIVEN TO THE REQUIREMENT THAT ONLY QUALIFIED LINE–CLEARANCE TREE TRIMMERS BE ASSIGNED TO WORK WHERE A POTENTIAL ELECTRICAL HAZARD EXISTS.

J.E. THE CONTRACTOR SHALL MAKE ALL THE NECESSARY ARRANGEMENTS WITH ANY UTILITY THAT MUST BE PROTECTED OR RELOCATED IN ORDER TO ACCOMPLISH THE WORK. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF THE OPERATING CONDITION OF ALL ACTIVE UTILITIES WITHIN THE AREA OF CONSTRUCTION AND THEY SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO EXISTING UTILITIES.

J.F. ANY MATERIAL RESULTING FROM THE TRIMMING OR REMOVAL OF ANY TREES SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR.

J.G. HAZARDOUS TREES–REPORTING – ANY PERSON ENGAGED IN TRIMMING OR PRUNING WHO BECOMES AWARE OF A TREE OF DOUBTFUL STRENGTH, THAT COULD BE DANGEROUS TO PERSONS AND PROPERTY, SHALL REPORT SUCH TREE(S) TO THE OWNER OR THE OWNERS REPRESENTATIVE. SUCH TREES SHALL INCLUDE THOSE THAT ARE OVER MATURE, DISEASED, OR SHOWING SIGNS OF DECAY OR OTHER STRUCTURAL WEAKNESS.

J.H. DAMAGES–ANY DAMAGE CAUSED BY THE CONTRACTOR, INCLUDING, BUT NOT LIMITED TO, BROKEN SIDEWALK, CURB, RUTTED LAWN, BROKEN WATER SHUT–OFFS, WIRE DAMAGE, BUILDING DAMAGE, STREET DAMAGE, ETC., WILL BE REPAIRED OR REPLACED IN A TIMELY MANNER, TO THE OWNER'S SATISFACTION, AND ALL COSTS PAID BY THE CONTRACTOR.

J.I. ANY BRUSH CLEARING REQUIRED WITHIN THE TREE PROTECTION ZONE SHALL BE ACCOMPLISHED WITH HAND OPERATED EQUIPMENT.

J.J. TREES TO BE REMOVED SHALL BE FELLED SO AS TO FALL AWAY FROM TREE ROOT PROTECTION ZONES AND TO AVOID PULLING AND BREAKING OF ROOTS TO REMAIN.

J.K. ALL DOWNED BRUSH AND TREES SHALL BE REMOVED FROM THE TREE PROTECTION ZONE EITHER BY HAND OR WITH EQUIPMENT SITTING OUTSIDE THE TREE ROOT PROTECTION ZONE. EXTRACTION SHALL OCCUR BY LIFTING THE MATERIAL OUT, NOT BY SKIDDING IT ACROSS THE GROUND.

J.L. IF TEMPORARY HAUL OR ACCESS ROADS MUST PASS OVER THE ROOT AREA OF TREES TO BE RETAINED A ROADBED OF 6 INCHES OF MULCH OR GRAVEL SHALL BE CREATED TO PROTECT THE SOIL. THE ROADBED MATERIAL SHALL BE REPLENISHED AS NECESSARY TO MAINTAIN A 6–INCH DEPTH.

J.M. PRUNING. TREES SHALL BE PRUNED PRIOR TO THE START OF CONSTRUCTION. TREES SHALL BE CROWN CLEANED TO REMOVE THE DEADWOOD 2 INCHES IN DIAMETER AND OVER. TREES SHALL BE CROWN THINNED BY 10–20%. CROWNS MAY BE RAISED BY REMOVING BOTTOM BRANCHES AS NECESSARY UP TO 14 FEET HIGH TO GIVE CLEARANCE FOR ANY CONSTRUCTION TRAFFIC, ACTIVITIES, ETC. ALL WORK TO BE DONE IN ACCORDANCE WITH ANSI A300 PRUNING STANDARDS. REMOVE ANY LIMBS OF DOUBTFUL STRENGTH THAT COULD BE DANGEROUS TO PERSONS AND PROPERTY.

LEGEND

- EXISTING GROUND CONTOUR (2 FT) — — 148 — —
- EXISTING GROUND CONTOUR (10 FT) — — 150 — —
- FINISHED GRADE CONTOUR (2 FT) ——— 148 ———
- FINISHED GRADE CONTOUR (10 FT) ——— 150 ———
- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE
- TREE REMOVAL
- TREE PROTECTION/CONSTRUCTION FENCE (TREE PROTECTION AREA)
- ASSUMED TREE ROOT ZONE (1–FT RADIUS PER 1–IN OF DBH)

GENERAL NOTES

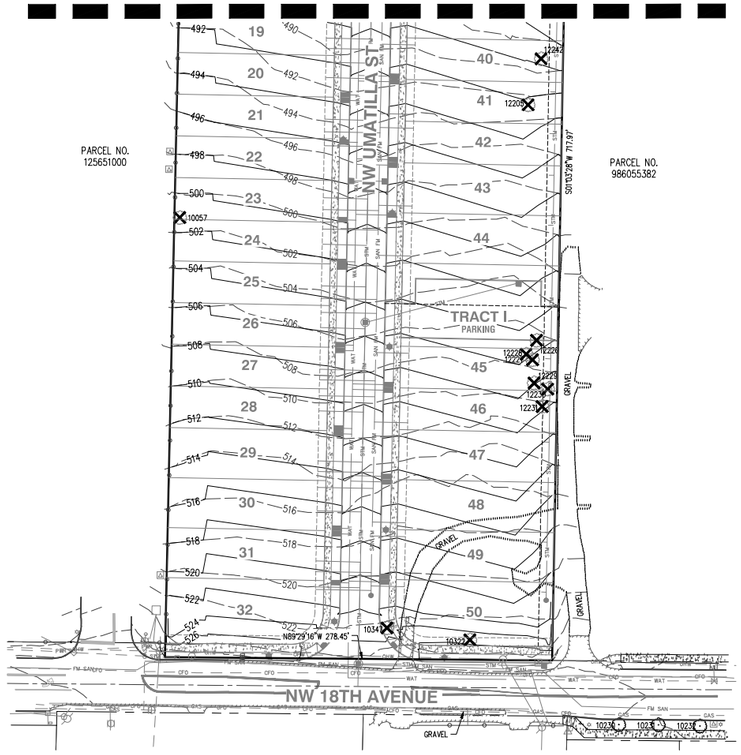
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PROPOSED # OF TREES TO PLANT:	176

NOTE: SEE LANDSCAPING PLAN FOR PROPOSED TREE PLANTING PLAN

SEE SHEET P5.0





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PRELIMINARY TREE PRESERVATION & REMOVAL PLAN
STELLA RIDGE SUBDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	9/12/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	

P5.1



BRYCE D. HANSON
CERTIFICATE NUMBER: PN 7554A
EXPIRATION DATE: 08/30/28

608

Detailed Tree Inventory for 12107 Stella Ridge

AKS Job No. 12107 - Evaluation Date: 7/31/25-8/1/25 - Evaluated By: JTG

Tree #	DBH (in.)	Tree Species Common Name (Scientific name)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
10057	6,11	Crabapple (Malus spp.)	3	Codominant at 4ft; epicormic growth; Moderate dieback in crown	B	Direct conflict with site improvements	0
10058	10	Oregon Ash (Fraxinus latifolia)	2	Some gaps in canopy	C	Direct conflict with site improvements	0
10059	12	Oregon Ash (Fraxinus latifolia)	2	Some gaps in canopy	C	Direct conflict with site improvements	0
10060	6,6,6,6,8,8,8	Western Serviceberry (Amelanchier alnifolia)	5	Codominant; Severe dieback in canopy; epicormic growth	A	Direct conflict with site improvements	0
10230	6	Deciduous	0	OFFSITE; Street Tree in planter strip to remain		Preserve	0
10231	4,5	Deciduous	0	OFFSITE; Street Tree in planter strip to remain		Preserve	0
10232	6	Deciduous	0	OFFSITE; Street Tree in planter strip to remain		Preserve	0
10322	30	Vine Maple (Acer circinatum)	11	Codominant at 4ft	C	Direct impact from public road construction	0
10347	9	Sweet Cherry (Prunus avium)	2	Minor dieback/gaps in canopy; low vigor	B	Direct impact from public road construction	0
11536	26	Oregon Ash (Fraxinus latifolia)	9	Severe dieback in canopy; multiple dead leaders	A	Direct impact from public road construction	0
11537	22	Oregon Ash (Fraxinus latifolia)	7	Moderate dieback in branches	B	Direct impact from public road construction	0
11538	20	Willow (Salix spp.)	6	Codominant at 4ft; Moderate dieback in main stem; major leader dead	B	Direct impact from public road construction	0
11539	8	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (S)	C	Direct impact from public road construction	0
11540	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E); Minor dieback in branches	C	Direct impact from public road construction	0
11548	18	Red Alder (Alnus rubra)	5	Codominant; Moderate dieback in branches; Gaps in canopy	B	Direct conflict with site improvements	0
11549	17	Red Alder (Alnus rubra)	5	Moderate dieback in branches and main stem	B	Direct conflict with site improvements	0
11550	10	Red Alder (Alnus rubra)	2	Moderate dieback in branches, Asymmetrical/Lean (NW)	B	Direct conflict with site improvements	0
11551	5,5,5,8	Hawthorn (Crataegus spp.)	3	Codominant at 2ft with Included Bark	B	Direct conflict with site improvements	0
11552	6,6	Hawthorn (Crataegus spp.)	2	Codominant; Asymmetrical/Lean (N)	B	Direct conflict with site improvements	0
11553	6,6	Red Alder (Alnus rubra)	2	Low Vigor; Minor dieback in branches	B	Direct conflict with site improvements	0
11554	6,7	Red Alder (Alnus rubra)	2	Low Vigor; Minor dieback in branches	B	Direct conflict with site improvements	0
11555	14	Bigleaf Maple (Acer macrophyllum)	3	Okay	C	Direct conflict with site improvements	0
11556	6	Red Alder (Alnus rubra)	2	Low vigor; Severe dieback in branches; epicormic growth	A	Direct conflict with site improvements	0
11557	10	Red Alder (Alnus rubra)	2	Codominant at 6ft; Major dieback in branches; epicormic growth	C	Direct conflict with site improvements	0
11558	6,7	Red Alder (Alnus rubra)	2	Codominant at 3ft; Major dieback in branches; main stem dead	A	Direct conflict with site improvements	0
11559	9,12	Red Alder (Alnus rubra)	4	Codominant at 4ft; Major dieback in branches; main stem dead	A	Direct conflict with site improvements	0
11560	25	Bigleaf Maple (Acer macrophyllum)	9	Codominant at 8ft	C	Direct conflict with site improvements	0
11561	15	Bigleaf Maple (Acer macrophyllum)	4	Okay	C	Direct conflict with site improvements	0
11562	17	Bigleaf Maple (Acer macrophyllum)	5	Okay	C	Direct conflict with site improvements	0
11567	10	Bigleaf Maple (Acer macrophyllum)	2	Asymmetrical (N); Low vigor	B	Direct conflict with site improvements	0
11568	12	Bigleaf Maple (Acer macrophyllum)	2	Asymmetrical (N); Low vigor	B	Direct conflict with site improvements	0
11569	14	Bigleaf Maple (Acer macrophyllum)	3	Asymmetrical (S); 1 dead leader	B	Direct conflict with site improvements	0
11571	19	Bigleaf Maple (Acer macrophyllum)	6	Asymmetrical (S)	C	Direct conflict with site improvements	0
11572	19	Bigleaf Maple (Acer macrophyllum)	6	Asymmetrical (S)	C	Direct conflict with site improvements	0
11573	8,11,12	Bigleaf Maple (Acer macrophyllum)	5	Codominant; Severe dieback in canopy; Severe sweep in trunk	A	Direct conflict with site improvements	0
11578	12	Red Alder (Alnus rubra)	2	LINE TREE; gaps in canopy; Moderate dieback in branches	B	Direct conflict with site improvements	0
11582	16	Bigleaf Maple (Acer macrophyllum)	4	Asymmetrical (S)	C	Direct conflict with site improvements	0
11583	19	Bigleaf Maple (Acer macrophyllum)	6	LINE TREE; Asymmetrical (SW)	C	Direct conflict with site improvements	0
11589	48	Douglas-fir (Pseudotsuga menziesii)	20	Some gaps in canopy	C	Direct conflict with site improvements	0
11592	10	Red Alder (Alnus rubra)	0	OFFSITE; Low vigor; Some gaps in canopy	B	Direct impact from site improvements, risk rating	0
11596	48	Bigleaf Maple (Acer macrophyllum)	20	Broken top; cavity at base; epicormic growth	A	Direct conflict with site improvements	0
11606	39	Bigleaf Maple (Acer macrophyllum)	16	Codominant at 30ft with included bark; Severe lean in main stem; other stem dead and broken	A	Direct conflict with site improvements	0
11612	7	Willow (Salix spp.)	2	Damage and decay at base; Severe sweep and lean (W)	A	Direct impact from public road construction	0
11614	21	Bigleaf Maple (Acer macrophyllum)	7	Severely asymmetrical (SW); Crook at 30ft	B	Direct conflict with site improvements	0
11615	14,20,29,33	Bigleaf Maple (Acer macrophyllum)	21	Codominant at 6ft; 14" stem historically broke; bulging at base	C	Direct impact from public road construction	0
11621	35	Douglas-fir (Pseudotsuga menziesii)	14	Okay	C	Direct conflict with site improvements	0
11622	9	Willow (Salix spp.)	2	Significant dieback in canopy; epicormic growth	A	Direct impact from public road construction	0
11625	8	Willow (Salix spp.)	2	Codominant at 8ft	C	Direct conflict with site improvements	0
11626	11	Sweet Cherry (Prunus avium)	2	Severe fracture at 8ft; Lean on adjacent tree	A	Direct conflict with site improvements	0
11627	8,12	Sweet Cherry (Prunus avium)	3	Codominant at 5ft; Moderate dieback in canopy	B	Direct conflict with site improvements	0
11630	17	Bigleaf Maple (Acer macrophyllum)	5	Okay	C	Direct impact from public road construction	0
11631	12	Bigleaf Maple (Acer macrophyllum)	2	Corrected Sweep and asymmetrical (W)	C	Direct impact from public road construction	0
11632	15	Bigleaf Maple (Acer macrophyllum)	4	Corrected Sweep and asymmetrical (W)	C	Direct impact from public road construction	0
11638	9,13	Willow (Salix spp.)	4	Codominant at 5ft; Cavity at 4ft; Some dieback in branches	B	Direct conflict with site improvements	0
11639	12, 14	Willow (Salix spp.)	5	12" Stem dead; Severe dieback in canopy	A	Direct conflict with site improvements	0
11663	7,7	Willow (Salix spp.)	2	Severe dieback in canopy with several dead branches	A	Direct conflict with site improvements	0
11664	18	Bigleaf Maple (Acer macrophyllum)	5	Corrected lean (W) with asymmetry	C	Direct conflict with site improvements	0
11675	12	Willow (Salix spp.)	2	Severe decay throughout bole	A	Direct conflict with site improvements	0
11683	13	Willow (Salix spp.)	3	Cavity and decay at base; Moderate dieback in canopy	A	Direct conflict with site improvements	0
11684	13	Willow (Salix spp.)	3	Codominant; main stem failed; Cavity at 10ft; epicormic growth	A	Direct conflict with site improvements	0
11686	11	Crabapple (Malus spp.)	2	Conks; 7" Codominant Stem dead	A	Direct conflict with site improvements	0
11687	7,11	Crabapple (Malus spp.)	3	Codominant; failed leader	B	Direct conflict with site improvements	0
11689	18	Willow (Salix spp.)	5	Okay	C	Direct impact from public road construction	0
11697	6,6,7,10	Willow (Salix spp.)	4	Dead Stems; Decay in base; Epicormic growth	A	Direct impact from public road construction	0
11704	9,14	Willow (Salix spp.)	5	Growth from down log; Cavity and decay in base	A	Direct impact from public road construction	0
11706	30	Bigleaf Maple (Acer macrophyllum)	11	Bulging at base	C	Direct conflict with site improvements	0
11711	9,10	Willow (Salix spp.)	3	Growth from down log; codominant at 4ft; epicormic growth	A	Direct conflict with site improvements	0
11713	9	Willow (Salix spp.)	2	growth from decaying log; moderate dieback in canopy	A	Direct impact from public road construction	0
11715	13	Oregon Ash (Fraxinus latifolia)	3	Asymmetrical (E); Minor dieback in branches	C	Direct conflict with site improvements	0
11716	9,22	Oregon Ash (Fraxinus latifolia)	8	Codominant at 3ft; Historically broken leaders	C	Direct conflict with site improvements	0
11717	17	Oregon Ash (Fraxinus latifolia)	5	Gaps in canopy; historically broken leaders	B	Direct conflict with site improvements	0
11718	23	Oregon Ash (Fraxinus latifolia)	8	Okay	C	Direct conflict with site improvements	0
11719	9, 12,15	Oregon Ash (Fraxinus latifolia)	7	Codominant at 4ft; Historically broken top	C	Direct conflict with site improvements	0
11720	23	Oregon Ash (Fraxinus latifolia)	8	Codominant at 20ft	C	Direct conflict with site improvements	0
11721	12	Oregon Ash (Fraxinus latifolia)	2	Broken at 30ft	A	Direct conflict with site improvements	0
11722	8	Oregon Ash (Fraxinus latifolia)	2	Low vigor; Moderate Lean/Asymmetrical (W)	B	Direct conflict with site improvements	0
11723	15	Oregon Ash (Fraxinus latifolia)	4	Moderate dieback and gaps in canopy	B	Direct conflict with site improvements	0
11724	22	Oregon Ash (Fraxinus latifolia)	7	Large cavity with decay from base to 10'	A	Direct conflict with site improvements	0
11725	6,6,6	Oregon Ash (Fraxinus latifolia)	2	Codominant	C	Preserve	2
11726	8,9	Oregon Ash (Fraxinus latifolia)	2	Codominant; Asymmetrical (W); Some dieback in branches	B	Preserve	2
11727	9	Oregon Ash (Fraxinus latifolia)	2	Corrected Sweep (E)	C	Preserve	2
11729	8	Oregon Ash (Fraxinus latifolia)	2	Low vigor; Gaps and dieback in canopy	B	Preserve	2
11730	10	Oregon Ash (Fraxinus latifolia)	2	Minor dieback in tips of branches	C	Preserve	2
11731	10	Oregon Ash (Fraxinus latifolia)	2	Minor dieback in tips of branches	C	Preserve	2
11732	12, 15	Oregon Ash (Fraxinus latifolia)	6	Codominant	C	Preserve	6
11734	13	Oregon Ash (Fraxinus latifolia)	3	Asymmetrical (W)	C	Preserve	3
11735	8	Oregon Ash (Fraxinus latifolia)	2	Codominant with dead 4" stem; Severe Asymmetry (W)	A	Preserve	2
11736	18	Oregon Ash (Fraxinus latifolia)	5	Asymmetrical (W)	C	Preserve	5
11737	9	Oregon Ash (Fraxinus latifolia)	2	Codominant at 20ft; Low vigor; Gaps in canopy	B	Preserve	2
11738	16	Oregon Ash (Fraxinus latifolia)	4	Codominant at 20ft; Cavity at base	C	Preserve	4
11739	10	Oregon Ash (Fraxinus latifolia)	2	Codominant at 30ft	C	Preserve	2
11740	9	Oregon Ash (Fraxinus latifolia)	2	Codominant at 20ft; Minor dieback in tips of branches	C	Preserve	2
11741	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (W)	C	Preserve	2

Detailed Tree Inventory for 12107 Stella Ridge

AKS Job No. 12107 - Evaluation Date: 7/31/25-8/1/25 - Evaluated By: JTG

11742	6	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Preserve	2
11743	6	Willow (Salix spp.)	2	Moderate dieback in branches; Severe epicormic growth	B	Preserve	2
11744	6	Oregon Ash (Fraxinus latifolia)	2	Low vigor; Severe gaps in canopy	A	Preserve	2
11745	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (W)	C	Preserve	2
11746	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (W)	C	Preserve	2
11747	8	Oregon Ash (Fraxinus latifolia)	2	Codominant with dead stem at 20ft; severe dieback in canopy	A	Preserve	2
11748	11	Oregon Ash (Fraxinus latifolia)	2	Minor dieback in tips of branches	C	Preserve	2
11749	9	Oregon Ash (Fraxinus latifolia)	2	Codominant at 30ft; 1 dead leader; low vigor	B	Preserve	2
11750	7	Oregon Ash (Fraxinus latifolia)	2	Broken at 10ft; Epicormic growth	A	Preserve	2
11751	10	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (W)	C	Preserve	2
11752	6,10	Oregon Ash (Fraxinus latifolia)	2	Codominant; 6" Stem Severe dieback and low vigor	B	Preserve	2
11753	6,10	Oregon Ash (Fraxinus latifolia)	2	Codominant at 4ft; 6" stem dead; Moderate dieback in canopy	B	Preserve	2
11754	9	Oregon Ash (Fraxinus latifolia)	2	Broken at 20ft; epicormic shoots	A	Preserve	2
11755	10	Oregon Ash (Fraxinus latifolia)	2	Broken at 20ft	A	Preserve	2
11756	10	Oregon Ash (Fraxinus latifolia)	2	Codominant with dead stem at 30ft	B	Preserve	2
11757	6	Oregon Ash (Fraxinus latifolia)	2	Broken at 10ft	A	Preserve	2
11758	13	Oregon Ash (Fraxinus latifolia)	3	Asymmetrical (W); Gaps in crown; dieback in branches	B	Preserve	3
11759	12	Oregon Ash (Fraxinus latifolia)	2	Minor dieback in tips of branches	C	Preserve	2
11760	6,10	Oregon Ash (Fraxinus latifolia)	2	Codominant at 4ft; Broken top in main stem	A	Preserve	2
11761	8	Oregon Ash (Fraxinus latifolia)	2	Epicormic Growth	C	Preserve	2
11762	16	Oregon Ash (Fraxinus latifolia)	4	Asymmetrical (E)	C	Preserve	4
11763	10	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Preserve	2
11764	9	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Preserve	2
11765	10	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Preserve	2
11767	9	Oregon Ash (Fraxinus latifolia)	2	Epicormic Growth	C	Preserve	2
11768	9	Oregon Ash (Fraxinus latifolia)	2	Epicormic Growth; Low vigor	B	Preserve	2
11769	8,9,15	Oregon Ash (Fraxinus latifolia)	6	Codominant; decay in 8" stem; Epicormic growth	A	Preserve	6
11770	6	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Preserve	2
11771	12,12	Oregon Ash (Fraxinus latifolia)	5	Codominant with Included Bark	A	Preserve	5
11772	6	Oregon Ash (Fraxinus latifolia)	2	Corrected Sweep (E)	C	Preserve	2
11773	8	Oregon Ash (Fraxinus latifolia)	2	Minor dieback in tips of branches	C	Preserve	2
11774	35	Oregon Ash (Fraxinus latifolia)	14	Codominant at 8ft	C	Direct conflict with site improvements	0
11775	6	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Preserve	2
11776	7	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Preserve	2
11777	12,16	Oregon Ash (Fraxinus latifolia)	6	Codominant at 4ft	C	Preserve	6
11778	12	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (SW)	B	Preserve	2
11780	7	Willow (Salix spp.)	2	Moderate lean and asymmetry (W)	B	Direct impact from public road construction	0
11782	8,8,10,12	Willow (Salix spp.)	6	Growth from down log; epicormic growth	C	Direct conflict with site improvements	0
11783	8,8,8	Willow (Salix spp.)	3	Growth from down log; epicormic growth	C	Direct impact from public road construction	0
11791	14,24,30	Bigleaf Maple (Acer macrophyllum)	17	Codominant; Cavities in 24" stem; exposed roots	B	Direct impact from public road construction	0
11797	17	Bigleaf Maple (Acer macrophyllum)	5	Asymmetrical (SW)	C	Direct conflict with site improvements	0
11798	14	Bigleaf Maple (Acer macrophyllum)	3	Asymmetrical (NE); Codominant at 10ft	C	Direct conflict with site improvements	0
11802	12	Willow (Salix spp.)	2	Codominant at 10ft; Asymmetrical (W); Epicormic Growth	B	Direct conflict with site improvements	0
11806	10, 15	Bigleaf Maple (Acer macrophyllum)	5	Codominant	C	Direct impact from public road construction	0
11812	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (W); Minor dieback in branches	C	Preserve	2
11814	18	Bigleaf Maple (Acer macrophyllum)	5	Okay	C	Direct conflict with site improvements	0
11817	22	Bigleaf Maple (Acer macrophyllum)	7	Okay	C	Direct conflict with site improvements	0
11818	12	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
11819	19	Bigleaf Maple (Acer macrophyllum)	6	Minor cavity at 20ft	C	Direct conflict with site improvements	0
11826	13	Sweet Cherry (Prunus avium)	3	Asymmetrical and lean (W); Moderate dieback in branches	B	Direct conflict with site improvements	0
11828	27	Bigleaf Maple (Acer macrophyllum)	10	Bulges at base; Historically broken top; exposed roots (N)	B	Direct conflict with site improvements	0
11829	22	Oregon Ash (Fraxinus latifolia)	7	Asymmetrical (N)	C	Direct conflict with site improvements	0
11830	24,25	Bigleaf Maple (Acer macrophyllum)	14	Codominant; bulging at base	C	Direct conflict with site improvements	0
11831	29	Bigleaf Maple (Acer macrophyllum)	11	Bulging at base	C	Direct conflict with site improvements	0
11833	23	Bigleaf Maple (Acer macrophyllum)	8	Historically broken top; lean (S)	C	Direct impact from public road construction	0
11834	21	Bigleaf Maple (Acer macrophyllum)	7	Broken at 30ft; Epicormic growth	A	Direct impact from public road construction	0
11835	27	Bigleaf Maple (Acer macrophyllum)	10	Asymmetrical (S)	C	Direct conflict with site improvements	0
11838	17	Bigleaf Maple (Acer macrophyllum)	5	Bulges at base; Codominant at 30ft	C	Direct impact from public road construction	0
11841	10,10	Sweet Cherry (Prunus avium)	3	Codominant with slight included bark; Moderate dieback in canopy	B	Direct conflict with site improvements	0
11842	13	Oregon Ash (Fraxinus latifolia)	3	Asymmetrical (W)	C	Preserve	3
11843	22	Bigleaf Maple (Acer macrophyllum)	7	Codominant at 6ft with slight included bark; Minor sweep in base	B	Direct impact from public road construction	0
11844	38	Bigleaf Maple (Acer macrophyllum)	15	Okay	C	Direct impact from public road construction	0
11845	9	Willow (Salix spp.)	2	Asymmetrical (S); Moderate dieback in canopy	B	Direct impact from public road construction	0
11847	10	Willow (Salix spp.)	2	Dead codominant stem; decay in base	A	Direct conflict with site improvements	0
11848	8,10,12	Sweet Cherry (Prunus avium)	5	Codominant with included bark; Asymmetrical and lean (S & W)	A	Direct conflict with site improvements	0
11849	10,16	Bigleaf Maple (Acer macrophyllum)	6	Codominant	C	Direct conflict with site improvements	0
11850	9	Bigleaf Maple (Acer macrophyllum)	2	Asymmetrical and lean (W)	C	Direct conflict with site improvements	0
11851	25	Oregon Ash (Fraxinus latifolia)	9	Okay	C	Direct conflict with site improvements	0
11852	10	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (SW)	C	Direct conflict with site improvements	0
11853	11	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (NE); Low vigor	B	Direct conflict with site improvements	0
11854	10	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
11855	10	Oregon Ash (Fraxinus latifolia)	2	Broken at 30ft; Cavities	A	Direct conflict with site improvements	0
11856	19	Oregon Ash (Fraxinus latifolia)	6	Okay	C	Direct conflict with site improvements	0
11857	12	Oregon Ash (Fraxinus latifolia)	2	Low vigor; Moderate dieback in canopy; epicormic growth	A	Direct conflict with site improvements	0
11858	15	Oregon Ash (Fraxinus latifolia)	4	Historically broken top; Lean and asymmetrical (E)	B	Direct conflict with site improvements	0
11859	15	Oregon Ash (Fraxinus latifolia)	4	Moderate asymmetry and lean (SE); slight dieback in branches	B	Direct conflict with site improvements	0
11860	9	Willow (Salix spp.)	2	Moderate dieback and gaps in canopy	B	Direct impact from public road construction	0
11861	9	Bigleaf Maple (Acer macrophyllum)	2	Corrected Sweep in base	C	Direct impact from public road construction	0
11862	8	Oregon Ash (Fraxinus latifolia)	2	Low vigor; moderate dieback in canopy	B	Preserve	2
11863	7	Oregon Ash (Fraxinus latifolia)	2	Some epicormic growth	C	Preserve	2
11864	7	Oregon Ash (Fraxinus latifolia)	2	Some epicormic growth	C	Preserve	2
11865	6	Oregon Ash (Fraxinus latifolia)	2	Low vigor; Some epicormic growth	B	Preserve	2
11866	7	Oregon Ash (Fraxinus latifolia)	2	Low vigor; Gaps and dieback in canopy	B	Preserve	2
11867	8,9	Oregon Ash (Fraxinus latifolia)	2	Codominant; broken main stem; lean (E)	A	Preserve	2
11868	7	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (E)	A	Preserve	2
11869	9	Oregon Ash (Fraxinus latifolia)	2	Codominant with 2 other dead stems; Asymmetrical and lean (E)	A	Preserve	2
11870	13,14	Oregon Ash (Fraxinus latifolia)	6	Codominant	C	Preserve	6
11871	7	Oregon Ash (Fraxinus latifolia)	2	Broken at 10ft	A	Preserve	2
11872	8	Oregon Ash (Fraxinus latifolia)	2	Some epicormic growth	C	Preserve	2
11873	6	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (W)	B	Preserve	2
11874	11	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Preserve	2
11875	9	Oregon Ash (Fraxinus latifolia)	2	Broken at 20ft	A	Preserve	2
11876	6	Oregon Ash (Fraxinus latifolia)	2	Severe asymmetrical and lean (E)	B	Preserve	2
11877	12	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Preserve	2
11878	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E) ; Moderate dieback in canopy	B	Preserve	2

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PRELIMINARY TREE PRESERVATION & REMOVAL PLAN
STELLA RIDGE SUBDIVISION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

PRELIMINARY
NOT FOR
CONSTRUCTION

JOB NUMBER:	12107
DATE:	9/12/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	

BRYCE D. HANSON
CERTIFICATE NUMBER: PH 75044
EXPIRATION DATE: 06/30/28

AKS DRAWING FILE: 12107 P5.0 PRELIMINARY TREE PRESERVATION & REMOVAL PLANING | LAYOUT: P5.2

Detailed Tree Inventory for 12107 Stella Ridge

AKS Job No. 12107 - Evaluation Date: 7/31/25-8/1/25 - Evaluated By: JTG

11879	10	Oregon Ash (Fraxinus latifolia)	2	Broke at 30ft; epicormic growth	A	Direct conflict with site improvements	0
11880	13	Oregon Ash (Fraxinus latifolia)	3	Asymmetrical (E) ; Some dieback in canopy	C	Direct conflict with site improvements	0
11881	6	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (N)	C	Direct conflict with site improvements	0
11882	7	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (NW); low vigor	B	Direct conflict with site improvements	0
11883	17	Oregon Ash (Fraxinus latifolia)	5	Broken top; Codominant; epicormic growth	A	Direct conflict with site improvements	0
11884	13	Oregon Ash (Fraxinus latifolia)	3	Asymmetrical (SW) ; Moderate dieback in canopy	B	Direct conflict with site improvements	0
11885	8	Oregon Ash (Fraxinus latifolia)	2	Broken at 10ft	A	Direct conflict with site improvements	0
11886	6,14	Oregon Ash (Fraxinus latifolia)	4	Codominant at 5ft; epicormic growth	B	Direct conflict with site improvements	0
11887	8	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (S); low vigor	B	Direct conflict with site improvements	0
11888	14	Oregon Ash (Fraxinus latifolia)	3	Lean (W); low vigor	B	Direct conflict with site improvements	0
11889	10	Oregon Ash (Fraxinus latifolia)	2	Broken at 30ft; epicormic growth	A	Direct conflict with site improvements	0
11890	8,10	Oregon Ash (Fraxinus latifolia)	3	Codominant; epicormic growth; dead tops	A	Direct conflict with site improvements	0
11891	8	Oregon Ash (Fraxinus latifolia)	2	Low vigor; epicormic growth; moderate dieback in branches	A	Direct conflict with site improvements	0
11892	8	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (W); Moderate dieback in branches	B	Preserve	2
11893	13	Oregon Ash (Fraxinus latifolia)	3	Okay	C	Preserve	3
11894	11	Oregon Ash (Fraxinus latifolia)	2	Broken top; Epicormic growth	A	Preserve	2
11895	6	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
11896	7	Bigleaf Maple (Acer macrophyllum)	2	Moderate dieback in branches; epicormic growth	B	Preserve	2
11897	30	Oregon Ash (Fraxinus latifolia)	11	Codominant with included bark; cavities at base; epicormic growth	A	Preserve	11
11898	14	Oregon Ash (Fraxinus latifolia)	3	Minor dieback in tips of branches	C	Preserve	3
11899	20	Oregon Ash (Fraxinus latifolia)	6	Codominant at 5ft; 1 stem broken at 20ft; asymmetrical (E)	A	Direct conflict with site improvements	0
11900	6	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (S); Lean (N); Broken top	A	Direct conflict with site improvements	0
11901	14	Oregon Ash (Fraxinus latifolia)	3	Cavity at base; Moderate dieback in branches	B	Direct conflict with site improvements	0
11902	15	Bigleaf Maple (Acer macrophyllum)	4	Asymmetrical (SE)	C	Direct conflict with site improvements	0
11903	22	Bigleaf Maple (Acer macrophyllum)	7	Asymmetrical (E)	C	Direct conflict with site improvements	0
11904	24	Oregon Ash (Fraxinus latifolia)	8	Codominant at 7ft; 1 broken stem at 30ft	B	Direct conflict with site improvements	0
11905	8,8,10,14	Oregon Ash (Fraxinus latifolia)	7	Codominant at 3ft; 1 broken stem	C	Direct conflict with site improvements	0
11906	11,14,13,17	Oregon Ash (Fraxinus latifolia)	11	Codominant at 3ft; 1 broken stem; epicormic growth	B	Direct conflict with site improvements	0
11907	6	Willow (Salix spp.)	2	Low vigor	B	Direct conflict with site improvements	0
11908	29	Willow (Salix spp.)	11	Codominant at 7ft with included bark and separation	A	Direct impact from public road construction	0
11910	13	Oregon Ash (Fraxinus latifolia)	3	Broken at 30ft	A	Direct impact from public road construction	0
11911	11	Oregon Ash (Fraxinus latifolia)	2	Broken at 20ft	A	Direct impact from public road construction	0
11912	10,11,12,14,15,17	Oregon Ash (Fraxinus latifolia)	13	Codominant; Several major broken leaders	A	Direct impact from public road construction	0
11914	10	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct impact from public road construction	0
11915	19	Oregon Ash (Fraxinus latifolia)	6	Codominant at 30ft; 1 broken stem	C	Direct conflict with site improvements	0
11916	8	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
11917	6,17,17	Oregon Ash (Fraxinus latifolia)	9	17" stem broken at 30ft; epicormic growth	A	Direct conflict with site improvements	0
11918	7	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
11919	26	Oregon Ash (Fraxinus latifolia)	9	Codominant at 6ft; Asymmetrical and lean (NW)	C	Direct conflict with site improvements	0
11921	22	Bigleaf Maple (Acer macrophyllum)	7	Some exposed roots	C	Direct impact from public road construction	0
11922	14	Oregon Ash (Fraxinus latifolia)	3	Lean (W); Severe epicormic growth; codominant at 20ft	B	Direct impact from public road construction	0
11927	7	Red Alder (Alnus rubra)	2	Okay	C	Direct impact from public road construction	0
11933	30	Bigleaf Maple (Acer macrophyllum)	11	Severe cavity and decay in base	A	Direct conflict with site improvements	0
11934	8,14,15	Oregon Ash (Fraxinus latifolia)	7	Codominant with included bark; dead and broken leaders	A	Direct conflict with site improvements	0
11935	8,15	Oregon Ash (Fraxinus latifolia)	5	Codominant	C	Direct impact from public road construction	0
11936	12,23	Oregon Ash (Fraxinus latifolia)	9	Codominant at 4ft; 23" stem codominant at 6ft with included bark; epicormic growth	A	Direct impact from public road construction	0
11937	6	Bigleaf Maple (Acer macrophyllum)	2	Okay	C	Direct impact from public road construction	0
11939	19,25	Oregon Ash (Fraxinus latifolia)	12	Codominant	C	Direct conflict with site improvements	0
11940	7,8	Oregon Ash (Fraxinus latifolia)	2	Codominant; Decay at base; low vigor	A	Direct impact from public road construction	0
11941	13	Oregon Ash (Fraxinus latifolia)	3	Lean (W)	C	Direct impact from public road construction	0
11953	13	Oregon Ash (Fraxinus latifolia)	3	Codominant at 10ft; 1 stem dead	B	Preserve	3
11996	6	Red Alder (Alnus rubra)	2	Codominant with dead 8" stem	A	Direct conflict with site improvements	0
11997	12	Red Alder (Alnus rubra)	2	Codominant with dead 8" stem	A	Direct conflict with site improvements	0
11998	12	Red Alder (Alnus rubra)	2	Severe dieback in main stem	A	Direct conflict with site improvements	0
11999	8	Red Alder (Alnus rubra)	2	Severe dieback in canopy; main stem dead; epicormic growth	A	Direct conflict with site improvements	0
12000	6,8	Red Alder (Alnus rubra)	2	Severe dieback in canopy; severe lean (E)	A	Direct impact from public road construction	0
12001	6,7,9	Red Alder (Alnus rubra)	3	Severe dieback in canopy; very low vigor	A	Direct impact from public road construction	0
12002	9	Red Alder (Alnus rubra)	2	Low vigor; dead codominant stem	A	Direct impact from public road construction	0
12003	6	Red Alder (Alnus rubra)	2	Low vigor; dead codominant stems	A	Direct impact from public road construction	0
12004	9	Red Alder (Alnus rubra)	2	Dead main stem; Epicormic growth	A	Direct impact from public road construction	0
12005	6,8	Red Alder (Alnus rubra)	2	Codominant with dead stem	A	Direct impact from public road construction	0
12006	10	Red Alder (Alnus rubra)	2	Broken top	A	Direct conflict with site improvements	0
12007	7	Red Alder (Alnus rubra)	2	Broken top	A	Direct impact from public road construction	0
12008	7	Red Alder (Alnus rubra)	2	Low vigor; Severe epicormic growth	A	Direct impact from public road construction	0
12009	31	Douglas-fir (Pseudotsuga menziesii)	12	Broken top; Lean (W); Exposed structural roots (E)	A	Direct impact from public road construction	0
12012	16	Oregon Ash (Fraxinus latifolia)	4	Codominant with dead leaders; decay in base	A	Direct impact from public road construction	0
12014	9,11	Oregon Ash (Fraxinus latifolia)	3	Codominant with included bark; major dead leaders	A	Direct impact from public road construction	0
12016	7	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct impact from public road construction	0
12017	6,8	Oregon Ash (Fraxinus latifolia)	2	Codominant	C	Direct impact from public road construction	0
12018	10	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (NW)	C	Direct impact from public road construction	0
12019	9,11,15	Oregon Ash (Fraxinus latifolia)	7	Codominant with included bark; 11" stem broken at 20'	A	Direct conflict with site improvements	0
12020	7,8,9	Oregon Ash (Fraxinus latifolia)	3	Codominant with dead stems; lean (S)	B	Direct conflict with site improvements	0
12021	8,9	Oregon Ash (Fraxinus latifolia)	2	Codominant	C	Direct impact from public road construction	0
12022	6,8	Oregon Ash (Fraxinus latifolia)	2	Codominant with included bark; epicormic growth	B	Direct impact from public road construction	0
12023	10	Oregon Ash (Fraxinus latifolia)	2	Moderate dieback in branches	B	Direct impact from public road construction	0
12024	9,9	Oregon Ash (Fraxinus latifolia)	3	Codominant with major separation	A	Direct impact from public road construction	0
12025	8,9	Oregon Ash (Fraxinus latifolia)	2	Codominant; Decay at base; low vigor	A	Direct impact from public road construction	0
12026	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (W); Moderate dieback in branches	B	Direct impact from public road construction	0
12027	6,11,13	Oregon Ash (Fraxinus latifolia)	5	Codominant at 4ft with included bark; 6" stem dead	A	Direct conflict with site improvements	0
12028	6,9	Oregon Ash (Fraxinus latifolia)	2	Codominant; decay in base	A	Direct conflict with site improvements	0
12029	8	Oregon Ash (Fraxinus latifolia)	2	Cavity and decay in base; epicormic growth	A	Direct impact from public road construction	0
12030	8,9,12	Oregon Ash (Fraxinus latifolia)	5	Codominant; minor cavity in base; dead 6" stem	A	Direct impact from public road construction	0
12031	6,7,10,11	Oregon Ash (Fraxinus latifolia)	5	6" stem dead; Codominant; Major separation with 7" stem	A	Direct impact from public road construction	0
12032	7,11	Bigleaf Maple (Acer macrophyllum)	3	Codominant; Cavity in base	B	Direct conflict with site improvements	0
12033	7,9,15	Oregon Ash (Fraxinus latifolia)	6	Large cavity and decay in base	A	Direct conflict with site improvements	0
12034	9,10, 11	Oregon Ash (Fraxinus latifolia)	5	Codominant with separation	B	Direct conflict with site improvements	0
12036	10,11,24	Oregon Ash (Fraxinus latifolia)	10	Codominant at 6ft; major cavity with decay in base	A	Direct conflict with site improvements	0
12037	11,13	Oregon Ash (Fraxinus latifolia)	5	Codominant with included bark; 11" stem broken at 30'	A	Direct conflict with site improvements	0
12038	10,12	Oregon Ash (Fraxinus latifolia)	4	Codominant; Cavity and decay in base	A	Direct conflict with site improvements	0
12040	9,10	Oregon Ash (Fraxinus latifolia)	3	Codominant; Cavity and decay in base	A	Direct conflict with site improvements	0
12041	32	Oregon Ash (Fraxinus latifolia)	12	Codominant at 20ft	C	Direct conflict with site improvements	0
12043	8,9	Willow (Salix spp.)	2	Growth from down tree; some dead minor stems	B	Direct conflict with site improvements	0
12044	12	Willow (Salix spp.)	2	Codominant with dead stem	B	Direct conflict with site improvements	0
12049	37	Oregon Ash (Fraxinus latifolia)	15	Codominant at 10ft; Minor dieback in branches	C	Direct impact from public road construction	0
12050	6,8,10,10,11	Willow (Salix spp.)	7	Codominant; decay in base; epicormic growth	A	Direct impact from public road construction	0
12051	10,13,13	Oregon Ash (Fraxinus latifolia)	7	Codominant with included bark; epicormic growth; severe lean (W)	A	Direct conflict with site improvements	0

Detailed Tree Inventory for 12107 Stella Ridge

AKS Job No. 12107 - Evaluation Date: 7/31/25-8/1/25 - Evaluated By: JTG

12054	18	Bigleaf Maple (Acer macrophyllum)	5	Corrected lean (W)	C	Direct conflict with site improvements	0
12055	19	Oregon Ash (Fraxinus latifolia)	6	Dead minor stem at 20ft; epicormic growth	B	Direct conflict with site improvements	0
12056	8, 22	Oregon Ash (Fraxinus latifolia)	8	Codominant; epicormic growth	C	Direct conflict with site improvements	0
12059	22,28	Bigleaf Maple (Acer macrophyllum)	14	Codominant with included bark; major dead stems in canopy	A	Direct conflict with site improvements	0
12060	9	Red Alder (Alnus rubra)	2	Scar at base	B	Direct conflict with site improvements	0
12064	11,23	Oregon Ash (Fraxinus latifolia)	9	Codominant at 4ft	C	Direct conflict with site improvements	0
12065	9,9,30	Willow (Salix spp.)	13	Growth from down tree	C	Direct conflict with site improvements	0
12067	9	Red Alder (Alnus rubra)	2	Asymmetrical (E); several failed leaders	B	Direct impact from public road construction	0
12068	9	Red Alder (Alnus rubra)	2	Asymmetrical (E); Moderate dieback in branches	B	Direct impact from public road construction	0
12069	9	Red Alder (Alnus rubra)	2	Asymmetrical (E); Moderate dieback in branches	B	Direct impact from public road construction	0
12070	7	Red Alder (Alnus rubra)	2	Mechanical damage to base; asymmetrical and lean (NE)	B	Direct impact from public road construction	0
12071	8,12	Red Alder (Alnus rubra)	3	Codominant with included bark; 8" Stem has severe lean (NE)	A	Direct impact from public road construction	0
12080	10	Willow (Salix spp.)	2	Cavity at base; epicormic growth; Moderate dieback in branches	A	Direct impact from public road construction	0
12081	6,12	Willow (Salix spp.)	0	OFFSITE; Codominant; 6" stem dead	B	Direct impact from public road construction	0
12083	24	Red Alder (Alnus rubra)	8	Severe dieback in main stem; bark loss	A	Direct impact from public road construction	0
12084	23	Red Alder (Alnus rubra)	8	Severe dieback in main stem; epicormic growth	A	Direct impact from public road construction	0
12088	13	Red Alder (Alnus rubra)	0	OFFSITE; okay	C	Direct impact from public road construction	0
12089	7	Red Alder (Alnus rubra)	2	Asymmetrical and Lean (SW)	C	Direct impact from public road construction	0
12092	6	Red Alder (Alnus rubra)	2	Okay	C	Direct impact from public road construction	0
12095	25	Willow (Salix spp.)	9	Main Stem Dead; Severe lean (S)	A	Direct impact from public road construction	0
12096	24	Oregon Ash (Fraxinus latifolia)	8	Okay	C	Direct impact from public road construction	0
12099	8	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (S); several dead minor stems	A	Direct impact from public road construction	0
12100	20	Red Alder (Alnus rubra)	6	Severe dieback in main stem	B	Direct impact from public road construction	0
12102	6,6,6	Willow (Salix spp.)	2	Cluster	C	Direct conflict with site improvements	0
12109	8,15	Oregon Ash (Fraxinus latifolia)	0	OFFSITE; okay	C	Direct impact from public road construction	0
12110	24	Oregon Ash (Fraxinus latifolia)	0	OFFSITE; okay	C	Direct conflict with site improvements	0
12111	8	Oregon Ash (Fraxinus latifolia)	0	OFFSITE; okay	C	Direct conflict with site improvements	0
12112	16	Oregon Ash (Fraxinus latifolia)	0	OFFSITE; okay	C	Direct conflict with site improvements	0
12113	18	Oregon Ash (Fraxinus latifolia)	0	OFFSITE; okay	C	Direct conflict with site improvements	0
12114	6	Willow (Salix spp.)	2	Cluster; dead stems; low vigor	B	Direct impact from public road construction	0
12117	8,16	Oregon Ash (Fraxinus latifolia)	5	Codominant with included bark; cavity with decay at base	A	Direct conflict with site improvements	0
12118	15,17	Oregon Ash (Fraxinus latifolia)	8	Codominant at 6ft with included bark; epicormic growth	B	Direct conflict with site improvements	0
12146	17	Oregon Ash (Fraxinus latifolia)	5	Cavity at base; Old leader dead; epicormic growth	B	Direct conflict with site improvements	0
12147	12	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Direct conflict with site improvements	0
12148	14,19	Oregon Ash (Fraxinus latifolia)	8	Codominant; Cavity at base where old codominant stem failed	B	Direct conflict with site improvements	0
12149	6,23	Oregon Ash (Fraxinus latifolia)	8	Codominant at 10ft	C	Direct conflict with site improvements	0
12150	14,20	Oregon Ash (Fraxinus latifolia)	8	Codominant at 3ft	C	Direct conflict with site improvements	0
12154	10,10	Hawthorn (Crataegus spp.)	3	Codominant; lean/asymmetrical (SW)	C	Direct conflict with site improvements	0
12156	14,24	Oregon Ash (Fraxinus latifolia)	10	Codominant	C	Direct conflict with site improvements	0
12157	17	Oregon Ash (Fraxinus latifolia)	5	Codominant at 10ft; Corrected lean	C	Direct conflict with site improvements	0
12158	15	Oregon Ash (Fraxinus latifolia)	4	Okay	C	Direct conflict with site improvements	0
12159	18	Red Alder (Alnus rubra)	5	Corrected sweep in base	C	Direct conflict with site improvements	0
12160	11,15	Oregon Ash (Fraxinus latifolia)	6	Codominant	C	Direct conflict with site improvements	0
12161	12	Oregon Ash (Fraxinus latifolia)	2	Codominant with cluster	B	Direct conflict with site improvements	0
12162	7,11	Oregon Ash (Fraxinus latifolia)	3	Okay	C	Direct conflict with site improvements	0
12163	7	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Direct conflict with site improvements	0
12164	8,11,19	Crabapple (Malus spp.)	8	Codominant; Asymmetrical (W); Some dieback in branches	B	Direct conflict with site improvements	0
12165	7	Red Alder (Alnus rubra)	2	Asymmetrical (E); Severe lean (E)	B	Direct conflict with site improvements	0
12166	12	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
12167	21	Bigleaf Maple (Acer macrophyllum)	7	Codominant at 10ft	C	Direct conflict with site improvements	0
12168	13	Oregon Ash (Fraxinus latifolia)	3	Codominant at 10ft; Severe Sweep in base	B	Direct conflict with site improvements	0
12169	13	Oregon Ash (Fraxinus latifolia)	3	Severe lean (W); Severe dieback in canopy	A	Direct conflict with site improvements	0
12183	9,9	Red Alder (Alnus rubra)	3	Codominant	C	Direct impact from public road construction	0
12185	9	Red Alder (Alnus rubra)	2	Okay	C	Direct impact from public road construction	0
12186	9,12	Crabapple (Malus spp.)	4	Okay	C	Direct conflict with site improvements	0
12187	14	Crabapple (Malus spp.)	3	Okay	C	Direct conflict with site improvements	0
12188	14	Crabapple (Malus spp.)	3	Large bore holes at base; Major leader dead	B	Direct conflict with site improvements	0
12195	12	Crabapple (Malus spp.)	2	Minor cavity at base; epicormic growth	B	Direct conflict with site improvements	0
12200	6,6,6,8	Willow (Salix spp.)	3	Cluster; Minor dieback in branches	C	Direct conflict with site improvements	0
12205	6,10,13,13,14,15	Bigleaf Maple (Acer macrophyllum)	11	Codominant; Minor stems dead in canopy	B	Direct conflict with site improvements	0
12226	7,7,9,10,14	Willow (Salix spp.)	7	Codominant; growth from dead log; epicormic growth	B	Direct conflict with site improvements	0
12227	9	Willow (Salix spp.)	2	Codominant at 5ft with cluster	C	Direct conflict with site improvements	0
12228	7,9,10	Willow (Salix spp.)	4	Codominant; Decay in base; asymmetrical (W)	A	Direct conflict with site improvements	0
12229	7,9	Willow (Salix spp.)	2	Codominant	C	Direct conflict with site improvements	0
12230	6,6	Willow (Salix spp.)	2	Codominant	C	Direct conflict with site improvements	0
12231	6,6,6,7,7,8,9	Willow (Salix spp.)	6	Codominant; Cavity at base; Moderate dieback in canopy	B	Direct conflict with site improvements	0
12242	11	Willow (Salix spp.)	2	Main stem dead; Epicormic growth	A	Direct conflict with site improvements	0
12244	6,6	Willow (Salix spp.)	2	Moderate dieback in branches	B	Direct conflict with site improvements	0
12246	6,9	Willow (Salix spp.)	2	Dead leaders; asymmetrical (NW)	B	Direct conflict with site improvements	0
12248	6	Willow (Salix spp.)	2	Growth from down log; epicormic growth; Moderate dieback in branches	B	Direct conflict with site improvements	0
13000	14,20	Bigleaf Maple (Acer macrophyllum)	8	Codominant; Lean and asymmetrical (SW); exposed structural roots	A	Direct conflict with site improvements	0

Total # of Existing Trees Inventoried = 355

Net Site Area = 18.44 AC

Total # of Existing Onsite Trees = 342
Total Onsite Existing Tree Units = 1478
Total # of Onsite Trees Retained = 76
Total # of Tree Units Retained = 193
Minimum Tree Units Required per City Code = 368.8
*(18.44 acres * 20 trees/acre)*
Minimum # Trees to Replant = 175.8

Total # of Existing Trees Removed = 276
Total Existing Tree Units Removed = 1285

Windthrow Rating

A=Least windthrow resistant

B=Moderate windthrow resistant

C=Most windthrow resistant

Arborist Disclosure Statement:

Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees, recommend measures to enhance the health of trees, and attempt to reduce the risk of living near trees. The Client and Jurisdiction may choose to accept or disregard the recommendations of the arborist, or seek additional advice. Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like medicine, cannot be guaranteed. Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees. Neither this author nor AKS Engineering & Forestry, LLC have assumed any responsibility for liability associated with the trees on or adjacent to this site.

At the completion of construction, all trees should once again be reviewed. Land clearing and removal of adjacent trees can expose previously unseen defects and otherwise healthy trees can be damaged during construction.

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ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

PRELIMINARY TREE PRESERVATION & REMOVAL PLAN
STELLA RIDGE SUBDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	9/12/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	

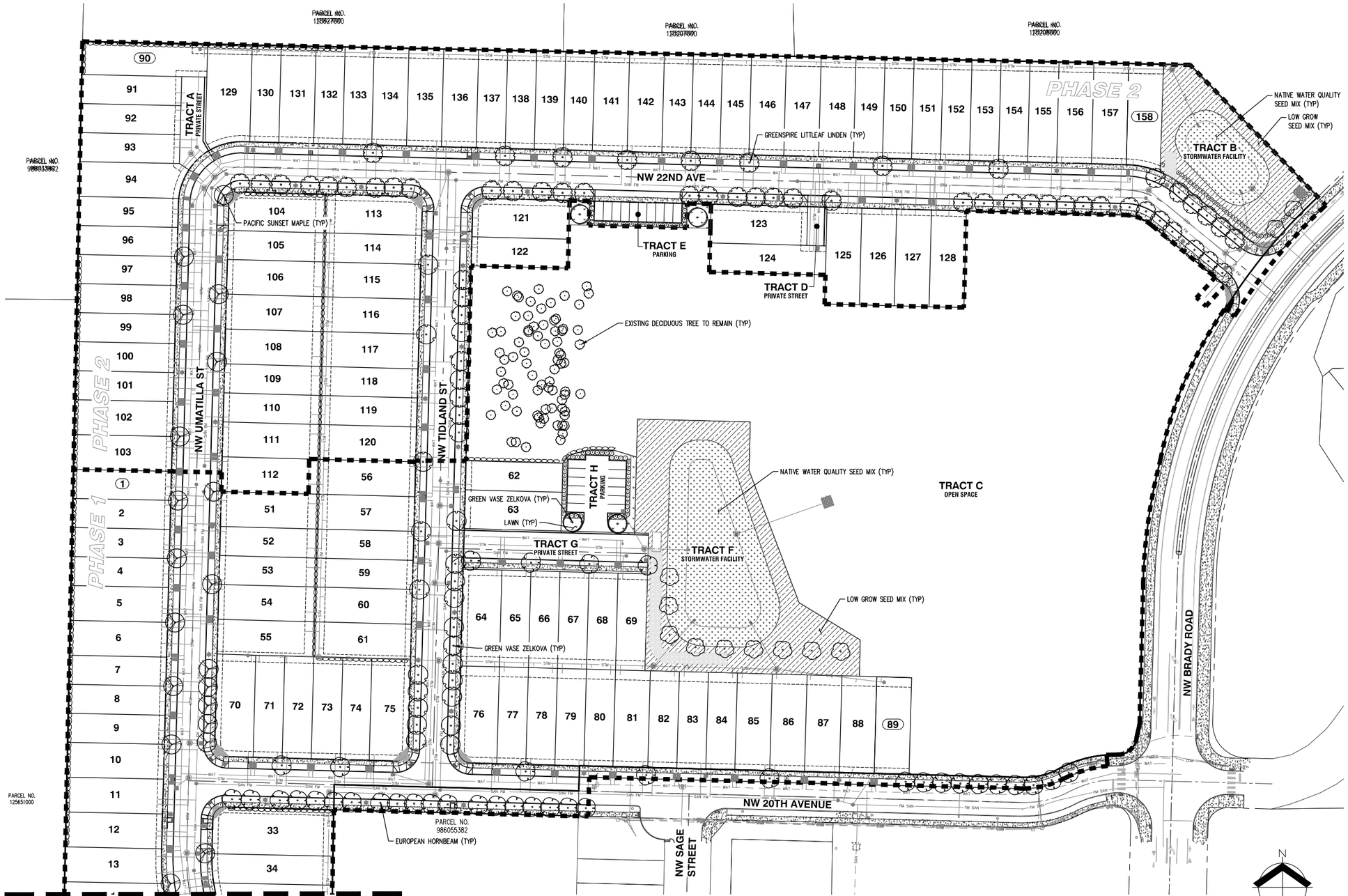


BRYCE D. HANSON
CERTIFICATE NUMBER: PN 7554A
EXPIRATION DATE: 06/30/26

P5.3

AKS DRAWING FILE: 12107 P5.0 PRELIMINARY TREE PRESERVATION & REMOVAL PLAN.DWG | LAYOUT: P5.3

Appendix C: Tree Planting Plan



GENERAL NOTE

REFER TO SHEET P9.1 FOR PLANT SCHEDULE AND LANDSCAPE NOTES.

TREE DENSITY CALCULATIONS

GROSS AREA:	24.41 AC
OPEN SPACE:	5.97 AC
NET AREA:	18.44 AC
TOTAL TREE UNITS REQUIRED (20/AC):	369
EXISTING TREES RETAINED/(TREE UNITS):	76/(193)
MINIMUM # OF TREES TO PLANT/(TREE UNITS):	176/(176)
PROPOSED # OF TREES TO PLANT:	176

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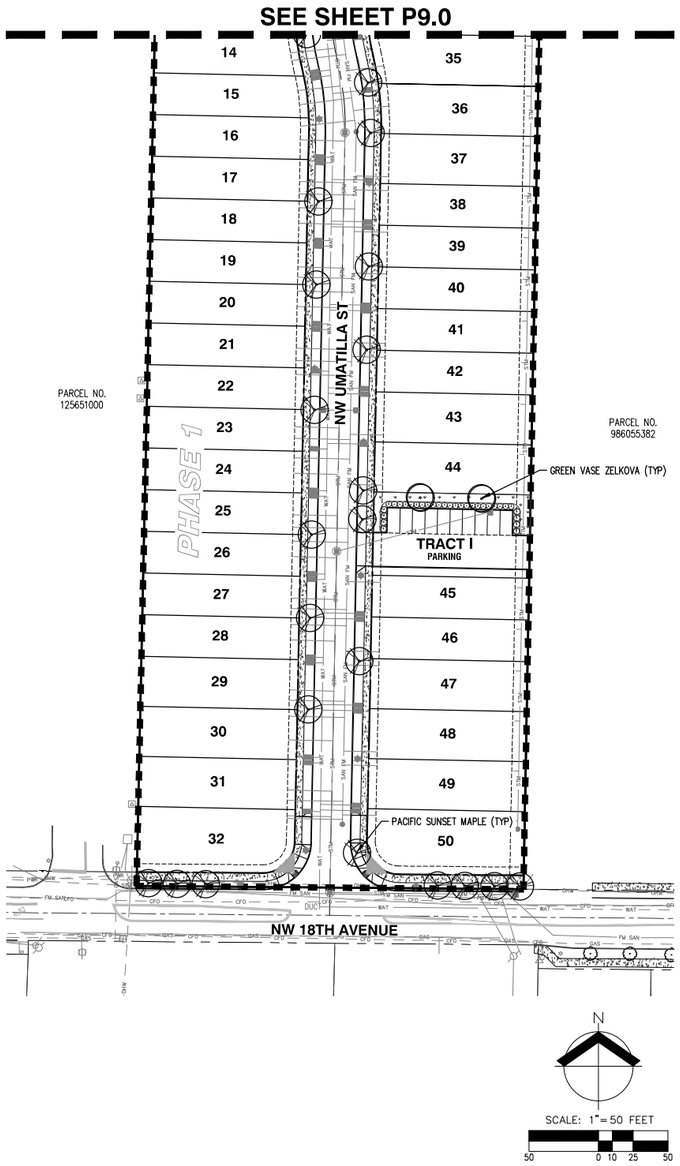
PRELIMINARY LANDSCAPE PLAN
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

STATE OF WASHINGTON
TIMOTHY E. BALL
2009
REGISTERED LANDSCAPE ARCHITECT
EXP. 10/24/2026
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	9/12/2025
DESIGNED BY:	TEB
DRAWN BY:	TEB
CHECKED BY:	

P9.0

AKS DRAWING FILE: 12107 P9.0 PRELIMINARY LANDSCAPE PLAN.DWG | LAYOUT: P9.0



PRELIMINARY PLANT SCHEDULE

SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
TREES					
	11	RHAMNUS PURSHIANA	CASCARA	2" CAL. B&B	AS SHOWN
	6	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE JAPANESE ZELKOVA	2" CAL. B&B	AS SHOWN
STREET TREES					
	41	ACER TRUNCATUM X PLATANOIDES 'WARRENRED'	PACIFIC SUNSET MAPLE	2" CAL. B&B	AS SHOWN
	38	CARPINUS BETULUS	EUROPEAN HORNBEAM	2" CAL. B&B	AS SHOWN
	50	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LINDEN	2" CAL. B&B	AS SHOWN
	30	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE JAPANESE ZELKOVA	2" CAL. B&B	AS SHOWN

SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
SHRUBS					
⊙	120	MAHONIA AQUIFOLIUM	OREGON GRAPE	3 GAL. CONT.	48" o.c.
⊙	41	VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	3 GAL. CONT.	60" o.c.

GROUND COVERS		DESCRIPTION
	34,535 SF±	STORMWATER "LOW GROW" SEED MIX. DWARF TALL FESCUE 40%; DWARF PERENNIAL RYE "BARCLAY" 30%; RED FESCUE 25%, COLONIAL BENTGRASS 5% APPLY AT A RATE OF 2.5 LBS. PER 1,000 SF OR AS RECOMMENDED BY SUPPLIER.
	24,950 SF±	NATIVE WATER QUALITY SEED MIX – SUNMARK SEEDS (OR APPROVED EQUAL). BLUE WILDRYE 46%; NATIVE RED FESCUE 38%; TUFTED HAIRGRASS 12%; NORTHWESTERN MANNAGRASS 2%; AMERICAN SLOUGHGRASS 2% APPLY AT A RATE OF 1 LB. PER 1,000 SF OR AS RECOMMENDED BY SUPPLIER.
	34,535 SF±	LAWN – NORTHWEST SUPREME LAWN SEED MIX – SUNMARK SEEDS (OR APPROVED EQUAL). DASHER 3 PERENNIAL RYEGRASS 35%; CUTTER II PERENNIAL RYEGRASS 35%; GARNET CREEPING RED FESCUE 15%; WINDWARD CHEWINGS FESCUE 15% APPLY AT A RATE OF 8 LBS. PER 1,000 SF OR AS RECOMMENDED BY SUPPLIER.

PRELIMINARY LANDSCAPE NOTES

1. LANDSCAPE PLAN IS PRELIMINARY AND INTENDED TO SHOW DESIGN INTENT ONLY. REVISIONS OR SUBSTITUTIONS, INCLUDING CHANGES TO PLANT LOCATION, QUANTITIES, TYPES, AND SIZES MAY BE NECESSARY PRIOR TO FINAL APPROVAL BASED ON PLANT AVAILABILITY, SITE CONDITIONS, UTILITY CONFLICTS, ETC. ALL SUBSTITUTIONS SHALL CONFORM TO CITY OF CAMAS LANDSCAPE DESIGN STANDARDS. STREET TREES WILL BE UPDATED TO AVOID FUTURE DRIVEWAY DROPS.
2. ALL PLANTS AND PLANTINGS SHALL CONFORM TO CITY OF CAMAS DESIGN STANDARDS AND TO AMERICAN NURSERY STANDARDS ANSI Z60.1. PLANT IN ACCORDANCE WITH ACCEPTED BEST-PRACTICE INDUSTRY STANDARDS SUCH AS THOSE ADOPTED BY THE WASHINGTON ASSOCIATION OF LANDSCAPE PROFESSIONALS (WALP).
3. CENTER TREES IN PLANTER STRIPS AND LANDSCAPE PLANTING BEDS WHERE POSSIBLE. KEEP OTHER TREE TRUNKS 3' O.C. MINIMUM FROM CURBS, SIDEWALKS, AND OTHER PAVING OR CENTERED IN PLANTING ISLAND. KEEP SHRUBS AND GROUNDCOVER A MINIMUM OF 24" O.C. FROM PAVING AND 3' O.C. FROM TREES. ADJUST PLANTINGS AS NECESSARY ON SITE TO AVOID CONFLICT WITH UTILITIES, HYDRANTS, DRIVE WAYS, LIGHT POLES, METERS, ETC..
4. HATCHED AREAS ARE MEANT TO CONVEY GENERAL PLANT LOCATION. PLANT COVERAGE, SPACING, AND LAYOUT SHALL BE CONSISTENT WITH THE SPACING LISTED IN THE PLANT LEGEND FOR FULL COVERAGE.
5. MULCH: APPLY 3" DEEP WELL-AGED MEDIUM GRIND OR SHREDDED DARK HEMLOCK BARK MULCH UNDER AND AROUND ALL TREES AND SHRUBS IN PLANTER STRIP AREAS NOT INCLUDED AS STORMWATER FACILITIES OR LAWN. WHERE TREES ARE IN LAWN AREAS, A MINIMUM 3' DIAMETER MULCH RING SHALL BE USED AROUND THE TREE TO PROTECT THE TRUNK FROM MOWER DAMAGE. CARE SHALL BE TAKEN TO AVOID COVERING FOLIAGE OR ROOT CROWNS OF PLANTS. PLANTS SHALL BE PLANTED AT A DEPTH TO ACCOMMODATE BARK MULCH APPLICATION.
6. IRRIGATION FOR HEALTHY PLANT ESTABLISHMENT AND SURVIVAL IS RECOMMENDED AND SHALL BE 'DESIGN-BUILD' BY LANDSCAPE CONTRACTOR.

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ENGINEERING · SURVEYING · NATURAL RESOURCES
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PRELIMINARY LANDSCAPE PLAN
STELLA RIDGE SUBDIVISION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

STATE OF WASHINGTON
TIMOTHY E. BAYS
LICENSED LANDSCAPE ARCHITECT
PRELIMINARY NOT FOR CONSTRUCTION
EXP. 12/24/2026

JOB NUMBER:	12107
DATE:	9/12/2025
DESIGNED BY:	TEB
DRAWN BY:	TEB
CHECKED BY:	

P9.1

AKS DRAWING FILE: 12107 P9.0 PRELIMINARY LANDSCAPE PLANTING | LAYOUT: P9.1

5. Preliminary Stormwater Technical Information Report (TIR)

Stella Ridge Subdivision (PA25-1049)

Preliminary Stormwater Technical Information Report (TIR)

Date: September 2025

Submitted To:
City of Camas
Community Development Department
616 NE 4th Avenue
Camas, WA 98607

Applicant:
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AKS Job Number: 12107

AKS ENGINEERING & FORESTRY

www.aks-eng.com

Certificate of the Engineer

Camas Meadows Subdivision
Camas, Washington
Preliminary Technical Information Report

This Technical Information Report (TIR) and the data contained herein were prepared by the undersigned, whose seal, as a Professional Engineer licensed to practice as such, is affixed below. All information required by Camas Municipal Code (CMC) Chapter 14.02 is included in the proposed stormwater plan, and the proposed facilities are feasible.



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References

2024 Stormwater Management Manual for Western Washington, (Ecology Publication No. 24-10-013, July 2024) – “SWMMWW”

Preliminary Stormwater Technical Information Report (TIR)

STELLA RIDGE SUBDIVISION
CAMAS, WASHINGTON

Section A – Project Overview

This report analyzes the effects the proposed development will have on the existing stormwater conveyance system; documents the criteria, methodology, and informational sources used to design the proposed stormwater system; and presents the results from the preliminary hydraulic analysis. Any changes to the proposed site and its effects on the hydraulic analysis, associated models and facility designs will be outlined and provided in the final technical information report.

Section A.1 – Site Location

The Stella Ridge Subdivision project site is addressed at 4511 NW 18th Avenue, Camas, WA 98607 and is a total of 24.41 acres in size. The site is composed of Clark County Parcel Numbers 125193000, 986055381, and 125185000 within the southwest quarter of Section 04, Township 1 North, Range 3 East, Willamette Meridian. The parcels are zoned Multifamily Residential (MF-18) and are currently vacant with no existing structures on-site. The site will be accessed from the South via NW 18th Avenue, to the northeast from NW Brady Road and to the southeast through a proposed extension of NW 20th Avenue.

Section A.2 – Site Topography and Critical Areas

The site slopes generally to the northeast, with slopes ranging from 5 – 10 percent. The site is mostly covered in field grass and brush, with a dense stand of trees located centrally on parcel 986055381. Wetlands were delineated on site by AKS Engineering & Forestry during a site visit in May 2025. Three wetlands were identified, and are subsequently referred to as Wetland A, B, and C respectively. Wetlands A and B were rated as Category IV wetlands with a habitat score of 3, and Wetland C was rated as a Category IV wetland with a habitat score of 4. The site is not within a City of Camas-mapped Critical Aquifer Recharge Area (CARA) and does not contain any critical species or habitat area, steep slopes or landslide areas, streams, shoreline area, or any other environmental constraints.

Section A.3 – Existing On-Site Stormwater System

With existing conditions, stormwater disperses or sheet flows, collecting in on-site wetlands and ultimately flowing off-site into an inlet owned by the City of Camas. This area drain was constructed as part of the Brady Road Improvements Project (Camas Project Number S-587) and conveys stormwater across NW Brady Road, further to the northeast and ultimately discharging back into an existing ditch following the natural drainage pattern of the Lacamas Creek Watershed. An existing stormwater outfall from an adjacent property exists on site. However, no significant offsite drainage is expected to influence stormwater design, and site design will not impact the existing outfall.

Section A.4 – Site Parameters That Influence Stormwater Design

As previously discussed, the existing site conditions generally drain toward the northeast of the site. The selected placement of the stormwater facilities and their respective outlets are designed to maintain the existing natural drainage path. These facilities and these locations are discussed in further detail subsequently in this report and can be found in proposed development plans, attached in Appendix C. Per the project geotechnical report completed by Columbia West Engineering, Inc (Columbia West) dated May 28, 2025, the native soil meets the classification criteria of WWHM Soil Group 4, and is not suitable for the design of infiltration facilities. Per Columbia West's recommendation, infiltration is not feasible on site

and was the primary factor in determining water quality and quantity BMPs to be used on site. Further information on the native soil conditions is discussed subsequently in this report and within the project geotechnical report, attached in Appendix H.

Section A.5 –Adjacent Property Drainage

Adjacent properties do not or minimally drain to the project site, and any off-site runoff has been determined as nominal for purposes of the preliminary stormwater model. Parcel 125651-000 to the east is developed and has on-site stormwater infrastructure. Parcel 986055382 to the south is heavily forested as it slopes towards the project site and is not expected to contribute off-site drainage. NW 18th Avenue includes stormwater infrastructure; therefore, stormwater does not drain on-site from the street frontage.

An existing section, NW 20th Avenue, fronts along the southwest boundary of the site. When this section of road was constructed, catch basins were installed on the north and south sides of the road to capture runoff from within the right-of-way. The stormwater runoff collected within this extent of NW 20th Avenue is subsequently treated and detained by structures owned and maintained by the adjacent Parker Village Subdivision HOA, located directly to the south. The mitigated flow is then conveyed back north across NW 20th Avenue and discharged onto the project site. As this stormwater is already mitigated before entering the site, it is not expected to influence stormwater design on the proposed project. See basins plans attached in Appendix D, and proposed development plans in Appendix C for more information.

Section A.6 – Adjacent Site Areas

The proposed development is bounded to the west by an existing business park development. Adjacent properties to the north and northwest are undeveloped, zoned Business Park (BP) and Light Industrial/Business Park (LI/BP). To the east, the site fronts NW Brady Road. To the South, the site fronts NW 20th Avenue, NW 18th Avenue, and abuts existing City of Camas property.

Section A.7 – General Project Stormwater Description

Proposed improvements for the development include 158 single-family lots, public and private streets, 3 parking tracts, utilities, and associated site improvements. As previously discussed, the current drainage on site is encompassed within one existing basin, ultimately discharging at the northeast corner of the site. This pattern will be maintained with the proposed site improvements, and the site is modeled as two threshold discharge areas (TDA), flowing to one point of compliance (POC).

This TDA is divided into 2 basins, referred to as Basins 1S and 2S respectively. These subbasins are depicted in the Post Developed Basin plans, attached in Appendix D. Both subbasins contain proposed stormwater quality and quantity facilities to manage their respective runoff, and while these two subbasins discharge in two different locations, their mitigated flows ultimately combine upstream of their final discharge offsite at the designated POC.

All runoff from pollution generating surfaces (PGS) and runoff from non-pollution generating surfaces (NPGS) that has a chance to mix with runoff from PGS will be conveyed to water quality treatment vaults prior to discharge into detention facilities. All water quality and quantity facilities were sized using Western Washington Hydrology Model (WWHM) and reports from these respective models are included Appendix F. The stormwater system is designed per the Stormwater Management Manual for Western Washington (SWMMWW). See the development plans (Appendix C), Stormwater Basin Plans (Appendix D), and WWHM Analysis (Appendix F) for location, size, and analysis.

Section B – Minimum Requirements

Section B.1 – Determination of Applicable Minimum Requirements

Proposed land disturbances shall include grading and excavation of unsuitable soils for the construction of lots, streets, sidewalks, parking, and associated utilities. Due to the amount of proposed hard surfaces (greater than 5,000 square feet), the project is required to meet Minimum Requirements 1 through 9 per Figure I-3.1 of the 2024 SWMMWW, attached for reference in Appendix B.

The following tables summarize each stormwater basin within the project area. See the Stormwater Basin Plans for basin locations (Appendix D).

Table B-1: Proposed Hard Surface and Landscaping

Basin	Existing Hard Surfaces (acres)	New Hard Surfaces (acres)	Replaced Hard Surfaces (acres)	Native Vegetation Replaced w/ Landscape (acres)	Total Land Disturbed (acres)
1S	0.000	11.097	0.000	3.162	14.067
2S	0.000	3.402	0.000	1.063	4.465

Note: Areas listed are in acres. Assumes 400-square-foot driveways and the maximum 65% lot coverage per lot.

Tables B-2 and B-3 show the mitigated site basins, differentiating between pollution- and non-pollution-generating surfaces. It is important to note that any non-pollution-generating areas directly mixing or having the opportunity to mix with stormwater runoff from pollution-generating surface areas are classified as pollution-generating.

Table B-2: Pollution-Generating Surfaces

Basin	Hard Surfaces (acres)	Pervious Surfaces (acres)	Total Surface Area (acres)
1S	7.314	0.876	8.190
2S	1.893	0.159	2.052

Note: Areas listed are in acres. Assumes 400-square-foot driveways and the maximum 65% lot coverage per lot.

Table B-3: Non-Pollution-Generating Surfaces

Basin	Hard Surfaces (acres)	Pervious Surfaces (acres)	Total Surface Area (acres)
1S	3.782	2.286	6.069
2S	1.510	0.904	2.414

Note: Areas listed are in acres. Assumes 400-square-foot driveways and the maximum 65% lot coverage per lot.

Each developed basin's effective hard surfaces and their applicability for meeting Minimum Requirements 6 through 8 are summarized in Table B-4 below.

Table B-4: Effective Hard Surfaces

Basin	Hard Surface Area (acres)	MR #6 Required (Y/N)	MR #7 Required (Y/N)	MR #8 Required (Y/N)
1S	10.905	Y	Y	Y
2S	3.402	Y	Y	Y

Note: Areas listed are in acres. Assumes 400-square-foot driveways and the maximum 65% lot coverage per lot.

Section C – Soils Evaluation

A geotechnical investigation was completed on the project site by Columbia West Engineering, Inc. The project geotechnical report, dated May 2025, summarizes findings and results of the field work and subsequent testing performed with the site investigation. On-site, 12 test pits (TPs) were excavated between 5.5 and 15 feet below ground surface (BGS). Additionally, per The City of Camas requirements, infiltration testing was performed in 3 test pits. Results from these tests and their application to the stormwater system design are explained subsequently in this report and in the project geotechnical report, attached in Appendix H.

Section C.1 –Soil Suitability for Low Impact Development BMPs

Per the recommendations of the geotechnical engineer, the Stella Ridge Subdivision project is not suitable for stormwater infiltration. Therefore, infiltration BMPs were not viable for flow control, runoff treatment, or low impact development (LID) considerations. More information on results of infiltration testing performed on site are included in *Section C.4* below.

Additionally, all disturbed areas will meet post-construction soil quality and quantity requirements per best management practice (BMP) T5.13.

Section C.2 – Water Table Information

Per the project geotechnical report, groundwater seepage was encountered in several test pits between 5.5 and 8 feet BGS during the site exploration. It is anticipated that no stormwater facilities will be affected by groundwater presence. However, perched groundwater may be present on-site during the wetter months and periods of heavy rain, and dewatering during excavation may be required.

Section C.3 – Soil Parameters

Per Natural Resources Conservation Service (NRCS) Soil Survey of Clark County, Washington, on-site soils consist of the following:

- OdB (Odne silt loam, 0 to 5 percent slopes), 4.3 percent of the site (Type D soil / WWHM Soil Group 4).
- PoB (Powell silt loam, 0 to 8 percent slopes), 95.7 percent of the site (Type D soil / WWHM Soil Group 4).

In general, Powell and Odne silt loam exhibit low permeability, and the NCRS soils map is consistent with the near surface soils that were observed on site and documented in the geotechnical report. The NCRS soils map is included in Appendix A.

Section C.4 –Infiltration Rate Testing

The project geotechnical report dated May 2025, attached in Appendix H, details the infiltration testing operations conducted on site. Infiltration tests were completed in 3 of the 12 TPs excavated across the

site, TP-5, TP-8, and TP-11. In all TPs, tests were conducted at 2 feet BGS, and the infiltration rates were determined to be negligible. Because of this, the site has been classified as WWHM soil group 4, and design on infiltration facilities on site was determined to be infeasible.

Section C.5 – Complex Soil Conditions

A geotechnical report has been prepared and is included with this report (see Appendix H). Existing soil conditions are summarized, and recommendations are presented in relation to site design considerations. All stormwater facility design is predicated upon the findings and subsequent recommendations presented in this report.

Gravel, cobbles, and boulders were encountered in several test pits on the western extent of the site at depths between 5.5 and 7 feet BGS. The project geotechnical report interpreted this as a transition between the clay later and underlying basalt bedrock.

Section D –Source Control

Volume IV of the 2024 SWMMWW contains the following applicable source control BMPs for residential development. The source control BMPs and applicable notes to control stormwater runoff impacted by these activities will be included in the Erosion Control Plans and Details and in the Stormwater Pollution Prevention Plan (SWPPP). The project SWPPP will be submitted prior to commencement of any construction activities on the project site.

Section E –On-Site Stormwater Management BMPs

The project is required to adhere to meet Minimum Requirement #5. Figure I-3.3 of the SWMMWW is used to determine the applicable requirements and is attached in Appendix B. Due to the in-situ considerations discussed previously, the project will not achieve the LID Performance Standard. As such, the project is then required to utilize List #2, located in SWMMWW Table I-3.2, to evaluate the feasibility of listed BMPs. All LID BMPs per List #2 are infeasible for the hard surface areas of the project due to soil and site constraints. Full Dispersion (BMP T5.30), Downspout Dispersion Systems (BMP T5.10B), and Sheet Flow Dispersion (BMP T5.12) are not feasible, as site layout constraints do not allow for an appropriate flow path. Along with this, Full Infiltration (BMP T5.10A), Bioretention (BMP T7.30), Perforated Stub-outs (BMP T5.10C), and Permeable Pavements (BMP T5.15) are infeasible, as infiltration rates on-site have been determined as negligible. However, all disturbed areas to remain as pervious surface will meet post-construction soil quality and quantity requirements per BMP T5.13. See BMP Flow Chart, attached in Appendix E.

Section F –Runoff Treatment Analysis and Design

Surface water from pollution-generating surfaces will be treated utilizing Washington Department of Ecology (ECY)-approved manufactured treatment devices. As required per MR #6, at least 91% of the post-developed pollution generating runoff volume, as predicted by a continuous runoff model, will be treated. The project site is located within the Lacamas Lake watershed. Lacamas Lake is listed as a category 5-303d waterbody for total phosphorus. The project basin ultimately drains to and discharges into Lacamas lake, above Round Lake Dam, and therefore will require phosphorus treatment. All preliminary water quality flow rate sizing was done utilizing ECY approved media approved for phosphorus treatment.

All stormwater treatment structures will be located upstream of proposed detention facilities as shown in the proposed development plans, attached in Appendix C. Any non-pollution-generating runoff that has an opportunity to mix with pollution-generating runoff will be considered pollution-generating and conveyed through the treatment devices. Per City of Camas requirements, stormwater treatment structures will not be located within the right-of-way, but within the privately owned and maintained stormwater tracts and easements proposed on site.

As discussed previously, the project site contains two post-developed basins. Both the proposed basins will contain a central water quality vault structure, directly upstream of respective detention facilities. These two vaults will be used to treat the majority of all runoff pollution-generating runoff, with the exception of runoff generated by a section of private driveways fronting along NW 20th Avenue.

Both Basins 1S and 2S contain non-pollution generating areas that will bypass the proposed treatment vaults. These are on-lot landscape and roof areas that will be captured and conveyed through rear yard storm lines, avoiding any potential mixture with pollutant-laden runoff, and discharge directly into detention facilities. A water quality basin plan delineating these areas has been prepared and attached in Appendix D. All stormwater quality facilities for the site have been designed in compliance with the 2024 SWMMWW. The approximate location and size of the proposed runoff treatment facilities are shown on the development plans located in Appendix D.

Table F-1 below summarizes the offline water quality treatment provided with each preliminary structure. All offline water quality treatment flow rates were calculated using the 2012 Western Washington Hydrology Model (WWHM), the approved continuous runoff model. A complete WWHM analysis, including water quality flow rates, is attached in Appendix F.

Table F-1: Water Quality Flow Rate

Proposed Structure	Basin (Tract)	New Pollutant-Generating Impervious Surface (acres) (WWHM)	New Pollutant-Generating Pervious Surface (acres) (WWHM)	Required Water Quality Flow Rate (cubic feet per second)	Provided Water Quality Flow Rate (cubic feet per second)	Contech StormFilter Cartridges
8-foot-by-20-foot Peak Diversion StormFilter	1S (TR F)	8.190	0	1.164	1.701	(34)-27”
6-foot-by-12-foot Peak Diversion StormFilter	2S (TR B)	2.052	0	0.4262	0.4350	(13)-18”

Section G –Flow Control Analysis and Design

The development is required to adhere to MR #7, and all stormwater discharges from the project site are required to meet the flow control performance standard. As such, all mitigated stormwater discharges are designed to meet or exceed this standard, by matching pre-developed discharge rates from 50 percent of the 2-year peak flow up to the full 50-year peak flow.

As previously stated, the project site consists of two main basins with a single TDA and POC. Both developed basins contain a proposed stormwater detention pond facility (BMP D.1), designed to capture and mitigate discharge of runoff generated with the post-developed conditions of the site as proposed in

the project plans. These facilities were designed using the approved continuous runoff model, WWHM, per the requirement of the 2024 SWMMWW. A complete WWHM analysis detailing the proposed facility design and their performance in successfully meeting MR #7 is attached in Appendix F.

The stormwater detention pond facilities are proposed to be located within stormwater tracts and are to be privately owned and maintained. For proposed locations of these Tracts and the associated facilities, see development plans attached in Appendix C.

Section H –Wetland Protection

The development is required to meet MR #8. As aforementioned, wetlands are present on-site, and Basin 1S will discharge mitigated flows via a flow spreader directly downstream of the proposed detention facility. However, per Figure I-3.5 of the 2024 SWMWW and associated wetland ratings and habitat scores, the TDA is only required to meet the basic protection requirements:

1. General Wetland Protection (I-C.2)
2. Wetland Protection from Pollutants (I-C.3)

All elements of the site and stormwater design adhere to these requirements, as the wetland areas proposed to be protected on-site are located within a designated open space tract, and impacts to the wetland and its buffers were reduced to the maximum extent practical with the given site constraints. In addition to this, all discharge upstream of the on-site wetlands will be treated mitigated as required by MR's #6-8. All stormwater facilities and site design were completed in accordance with the 2024 SWMMWW and mitigate impacts to existing on-site wetlands as a result of runoff generated with the proposed improvements. Figure I-3.5 has been attached in Appendix B for reference.

Section I –Other Permits

A Construction Stormwater General Permit from the Washington State Department of Ecology (ECY) will be obtained prior to construction of this project. The General Permit will encompass all phases of construction.

No additional permits relating to the design of the stormwater system are anticipated.

Section J – Conveyance System Analysis and Design

The proposed system design will include public conveyance pipe and structures located within the right-of-way and private conveyance pipe and structures located within a lot of private stormwater easements. The contributing area of the site is less than 40 acres in size and the final proposed conveyance systems will be designed for the 10-year, 24-hour peak storm event as required by the 2024 SWMMWW. A complete analysis of the conveyance system will be completed with the final technical information report.

Section K – Off-Site Analysis

Prior to discharge off-site, the proposed project will mitigate all stormwater and potential downstream impacts as required by MRs #1-9 of the 2024 SWMMWW. During construction, all applicable BMPs will be installed as feasible to prevent excessive sedimentation and stream bank erosion and prevent discharge of sediment-laden runoff to City facilities, adjacent properties, or water of the State. All site stormwater design is centric to the principle of reducing impacts to downstream properties and groundwater sources.

The ultimate discharge location for the project is in the northeast corner of the site and includes an energy dissipating flow.

If site stormwater systems are constructed and maintained properly by the final technical information report and SWPPP, no downstream water quality impacts are anticipated as a result of this development.

Section L –Conditions of Approval

Any applicable conditions of approval as associated with the project's stormwater design will be addressed with the final technical information report.

Section M – Special Reports and Studies

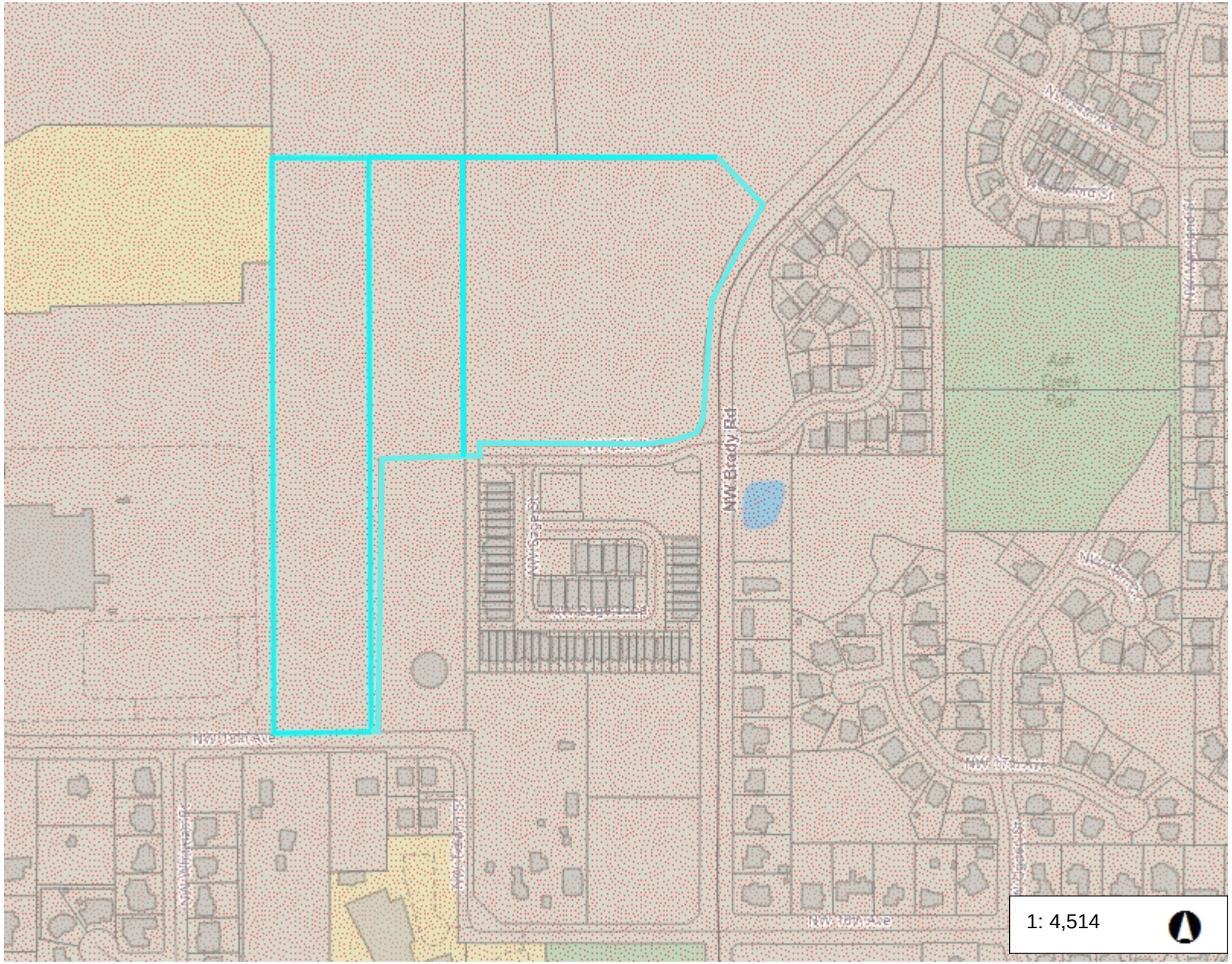
A geotechnical report by Columbia West Engineer, Inc, dated May 28, 2025, is included in Appendix H.

Section N – Maintenance and Operations

A maintenance and operations manual will be completed per the 2024 SWMMWW and will be included with the final technical information report.

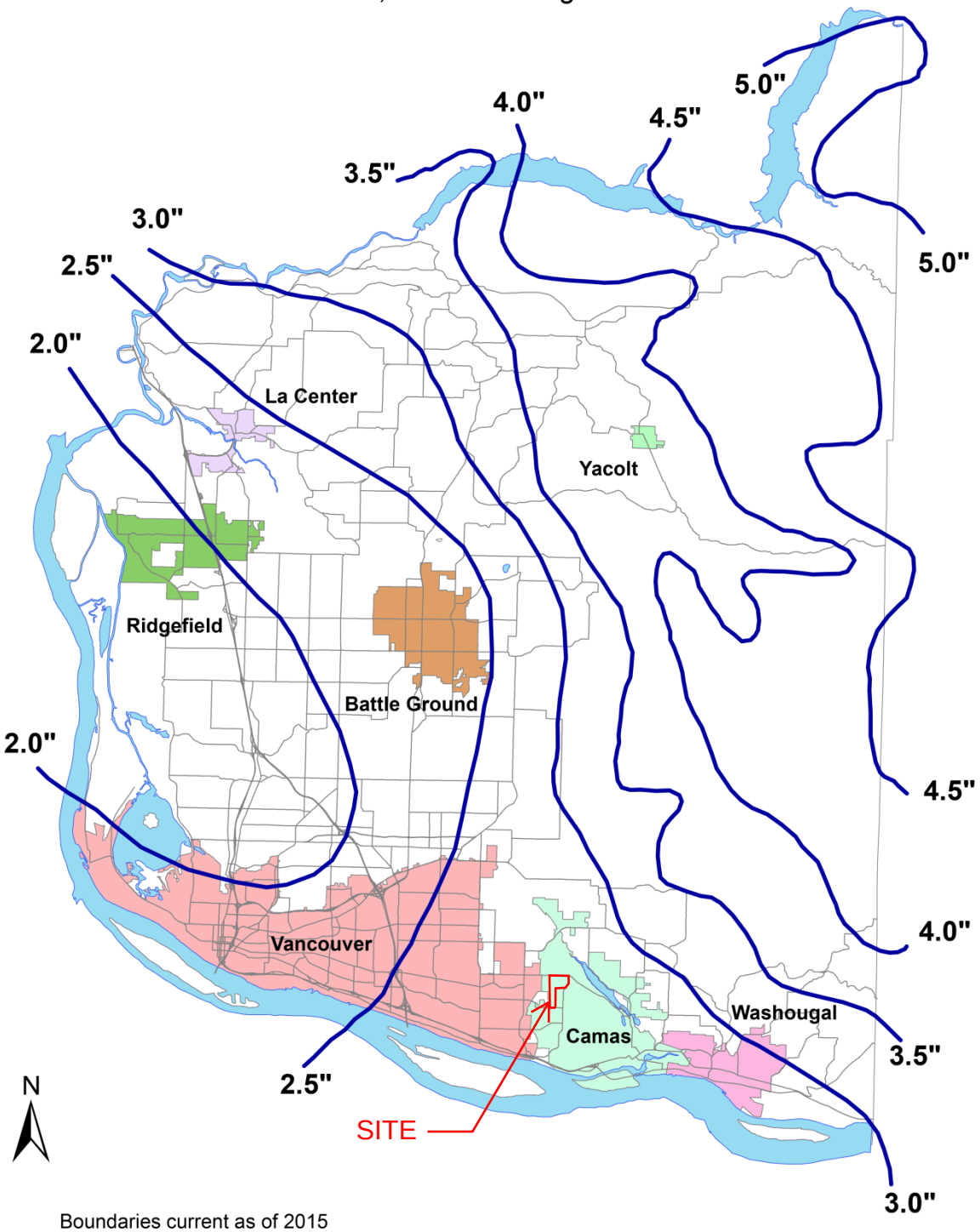
Appendix A: Map Submittals

CARA MAP


NW Brady Rd
NW Terrace
NW Terrace
NW Terrace

Isopluvial Map for Clark County

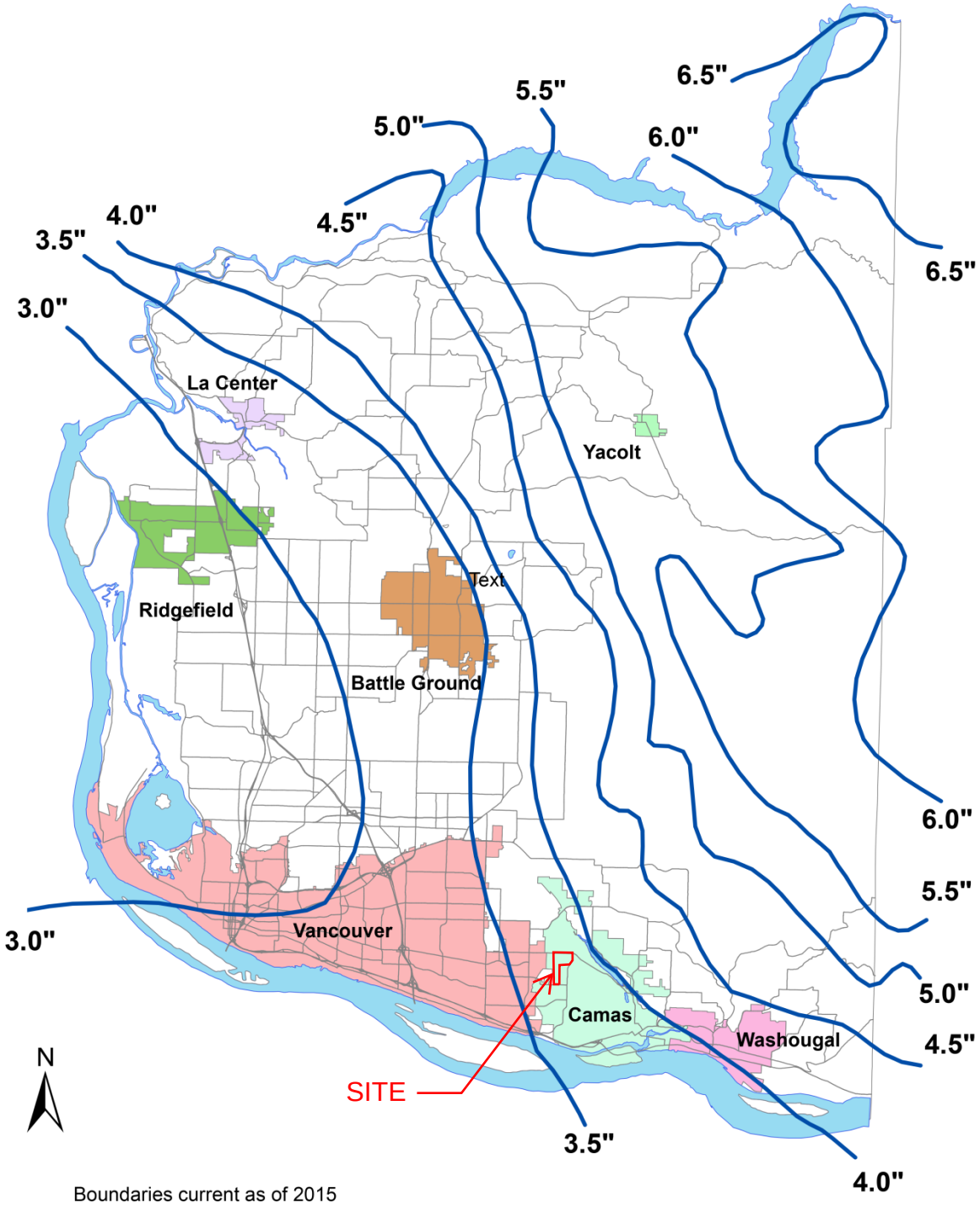
2-Year, 24-Hour Design Storm



Boundaries current as of 2015

Isopluvial Map for Clark County

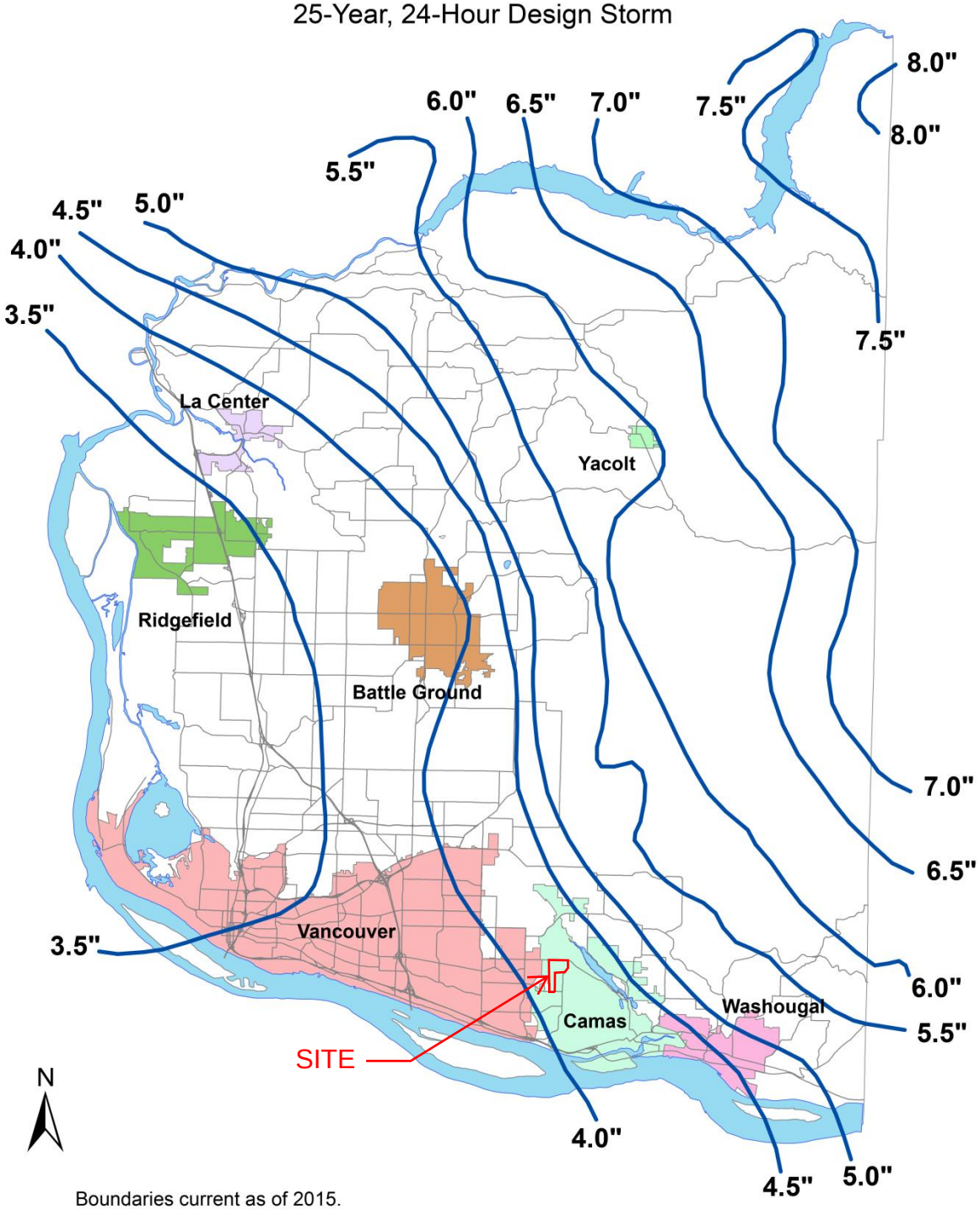
10-Year, 24-Hour Design Storm



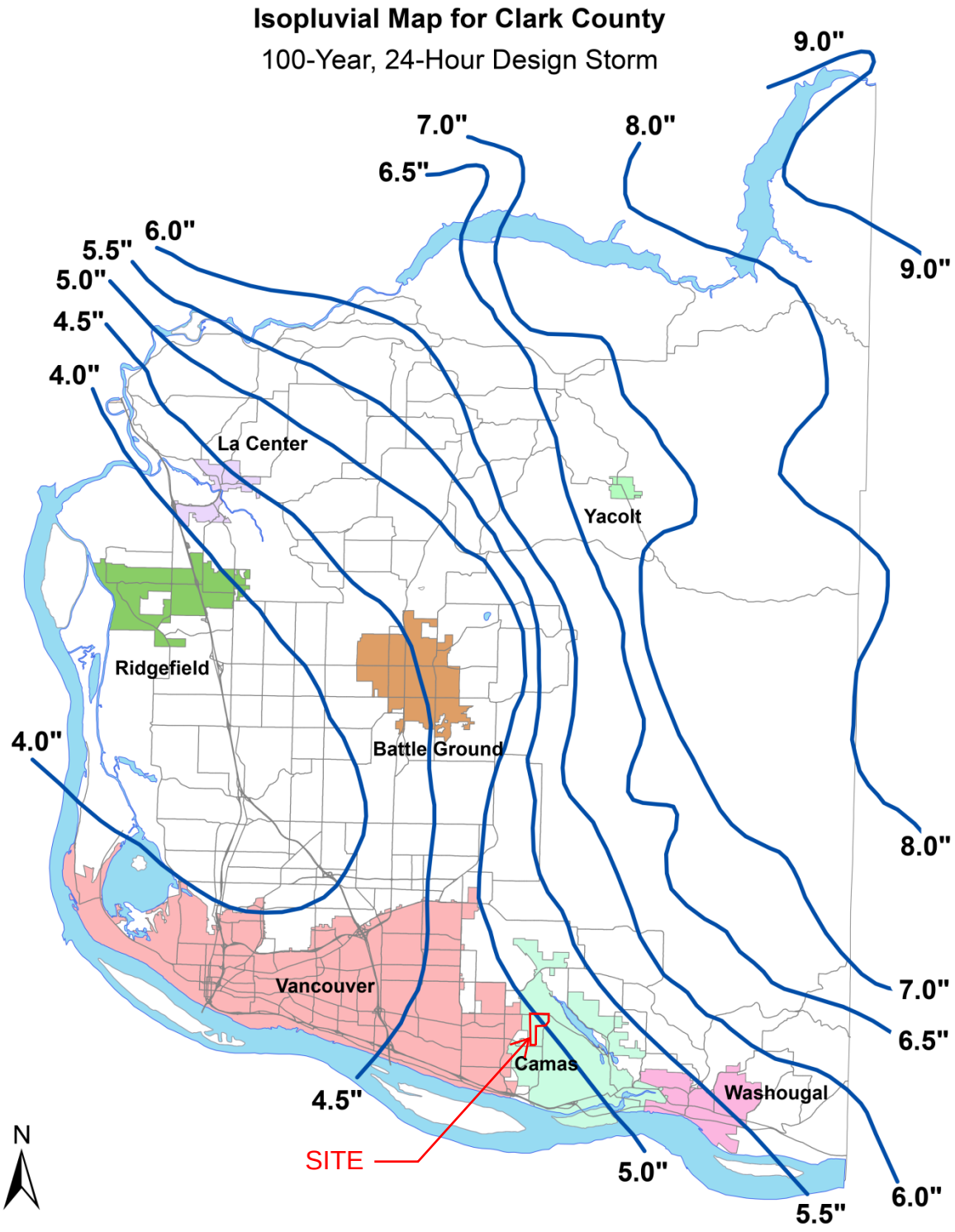
Boundaries current as of 2015

Isopluvial Map for Clark County

25-Year, 24-Hour Design Storm



Boundaries current as of 2015.



Boundaries current as of 2015.

United States Department of Agriculture

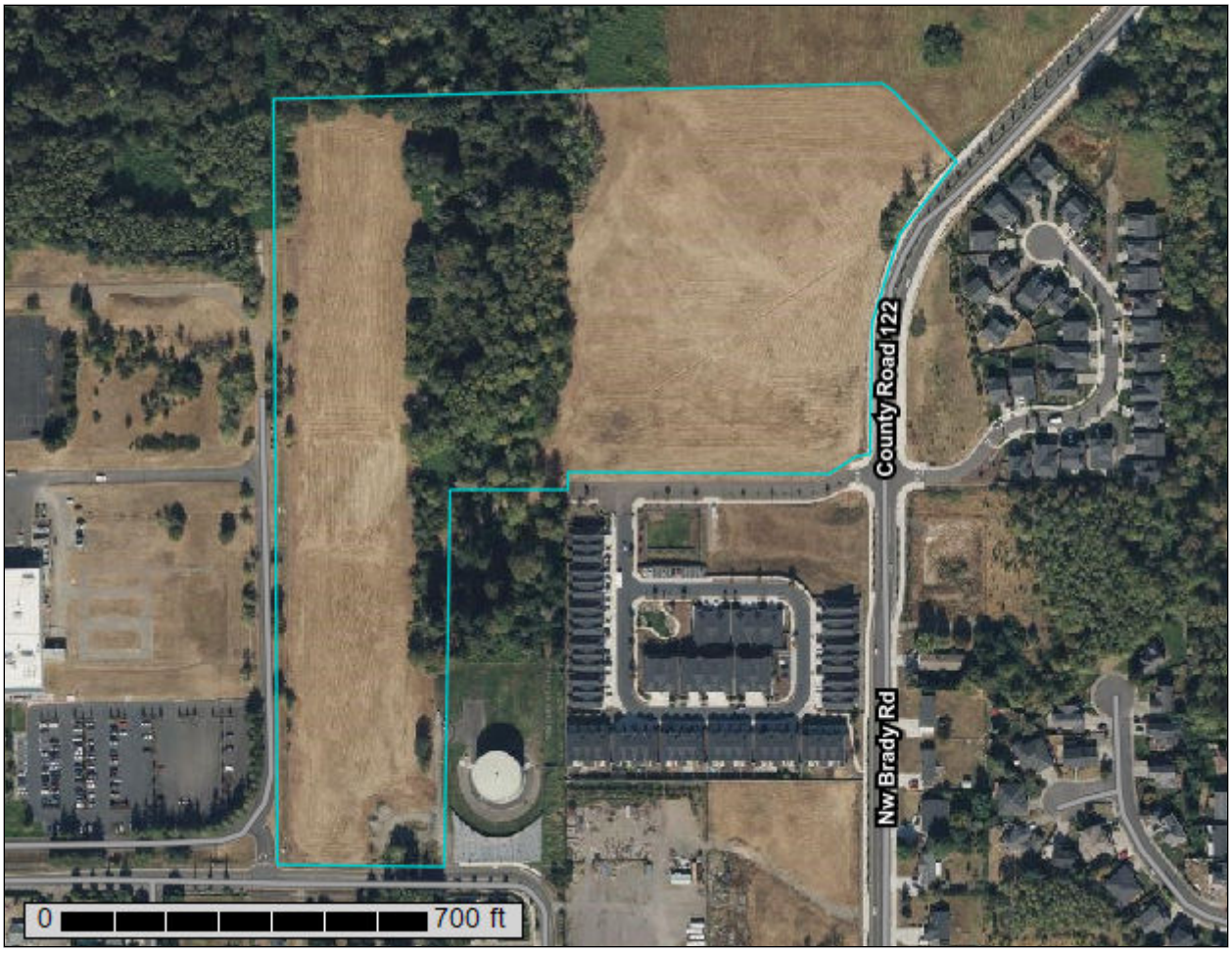
NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Clark County, Washington

Stella Ridge (12107)



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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OdB—Odne silt loam, 0 to 5 percent slopes..... 10
PoB—Powell silt loam, 0 to 8 percent slopes.....10
References.....12

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:3,070 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Clark County, Washington
Survey Area Data: Version 22, Aug 26, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 26, 2022—Oct 11, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
OdB	Odne silt loam, 0 to 5 percent slopes	1.1	4.3%
PoB	Powell silt loam, 0 to 8 percent slopes	24.4	95.7%
Totals for Area of Interest		**25.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Clark County, Washington

OdB—Odne silt loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2dyr
Elevation: 100 to 500 feet
Mean annual precipitation: 40 to 60 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 170 to 210 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Odne and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Odne

Setting

Landform: Drainageways, terraces
Parent material: Alluvium

Typical profile

H1 - 0 to 5 inches: ashy silt loam
H2 - 5 to 33 inches: silt loam
H3 - 33 to 60 inches: loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: D
Ecological site: F002XB007WA - Portland Basin Wet Forest
Forage suitability group: Wet Soils (G002XV102WA)
Other vegetative classification: Wet Soils (G002XV102WA)
Hydric soil rating: Yes

PoB—Powell silt loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2dz9

Elevation: 300 to 600 feet
Mean annual precipitation: 50 to 60 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 170 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition

Powell and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Powell

Setting

Landform: Terraces
Parent material: Alluvium

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 17 inches: silt loam
H3 - 17 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: 17 to 36 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.9 inches)

Interpretive groups

Land capability classification (irrigated): 6s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F002XB004WA - Portland Basin Forest
Forage suitability group: Seasonally Wet Soils (G002XV202WA)
Other vegetative classification: Seasonally Wet Soils (G002XV202WA)
Hydric soil rating: No

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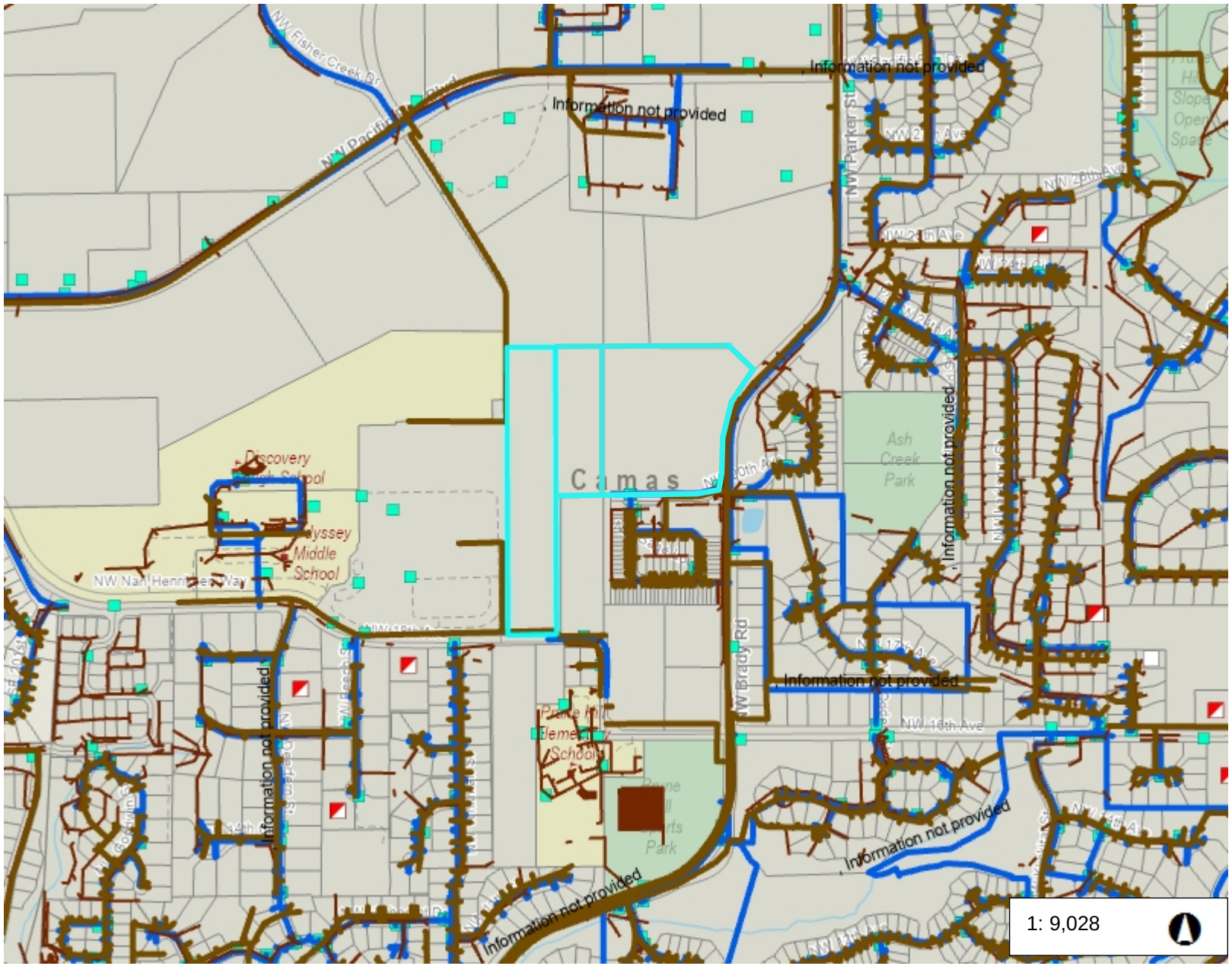
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12107 Water, Sewer, Storm Lines





Legend

- Sanitary Sewer
- Storm Sewer - includes cities (
- Water Line
- Water Valves and Hydrants
- Septic System
  - No Associated Documents
  - Apps. and As-Builts
  - online RME Documents
  - Both Available
- Taxlots

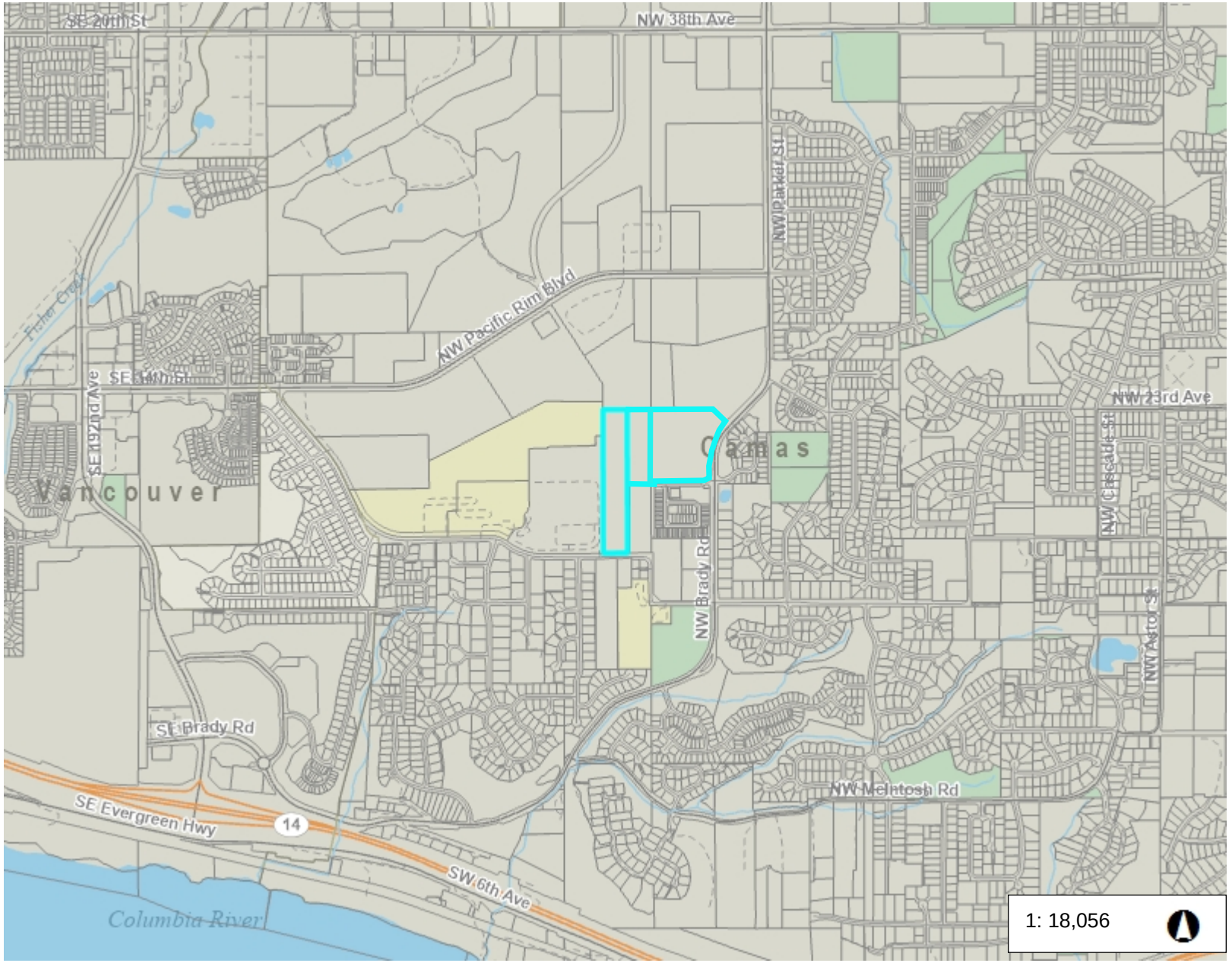
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1,504.7 0 752.33 1,504.7 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information. Taxlot (i.e., parcel) boundaries cannot be used to determine the location of property lines on the ground.

12107 Vicinity Map





Legend

- Taxlots

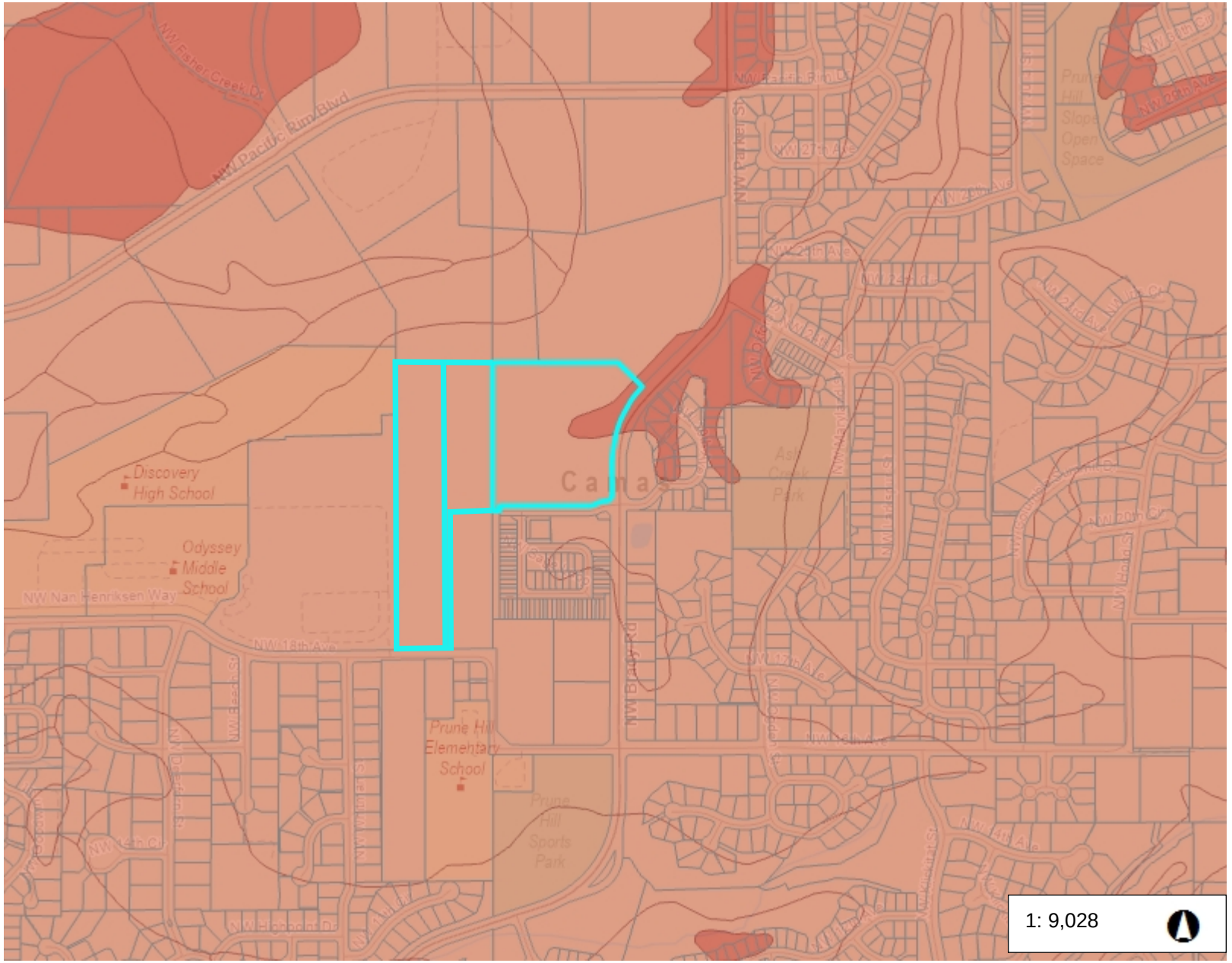
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3,009.3 0 1,504.67 3,009.3 Feet

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Clark County, WA. GIS - http://gis.clark.wa.gov

This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information. Taxlot (i.e., parcel) boundaries cannot be used to determine the location of property lines on the ground.

12107 WWHM Soil Group





Legend

- Taxlots
- WWHM Soil Group
  - 1 - Excessively drained soils
  - 2 - Well drained soils
  - 3 - Moderately drained soils
  - 4 - Poorly drained soils
  - 5 - Wetland soils
  - Unknown

Notes:

649

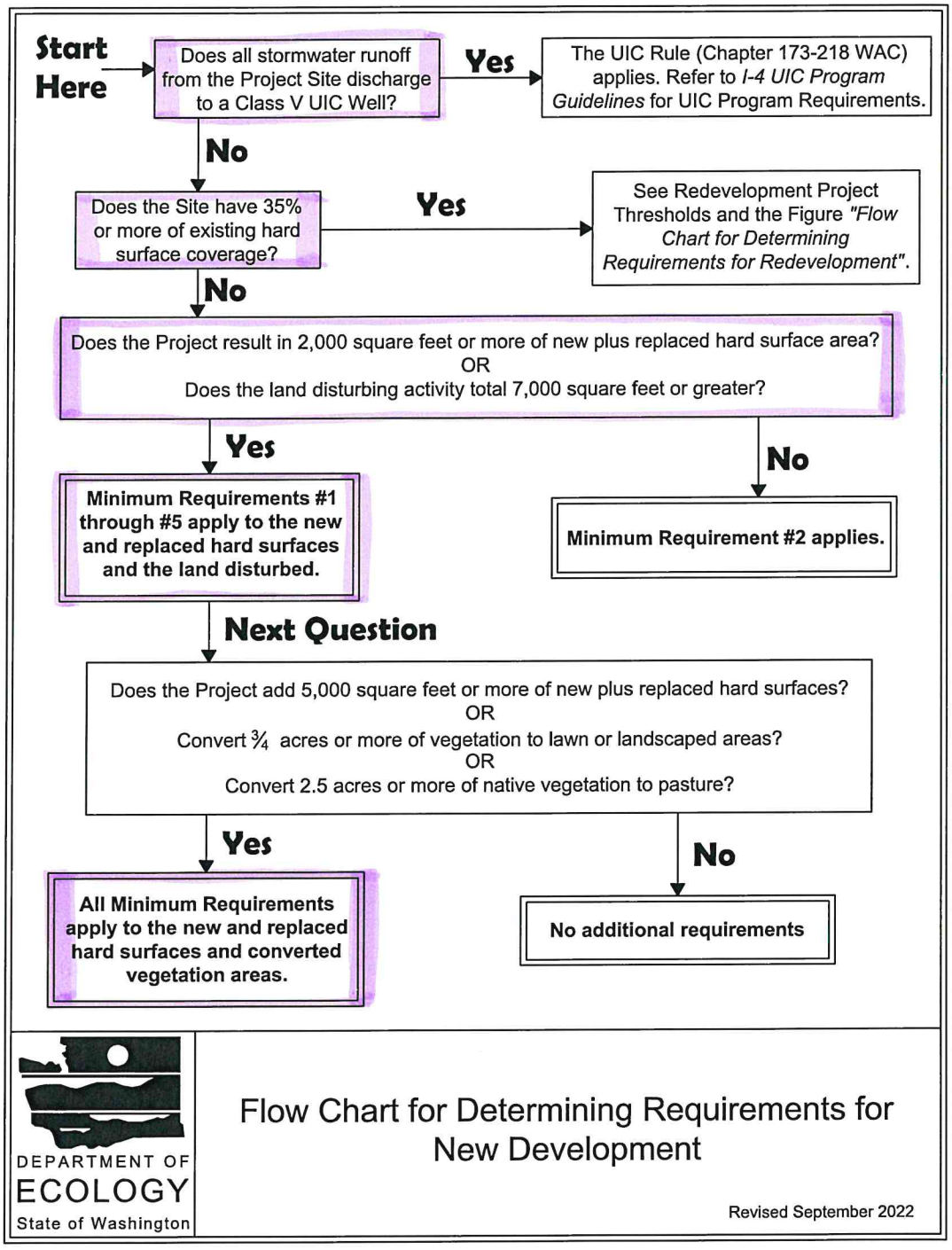
1,504.7 0 752.33 1,504.7 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

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Appendix B: New Development Flow Chart

Figure I-3.1: Flow Chart for Determining Requirements for New Development



Note that if a MR1-9 project spans multiple parcels (and/or rights-of-way), and one (or more) of those parcels is 5 acres or larger and outside the UGA, then the only compliance option available for the project is the LID Performance Standard and BMP T5.13: Post-Construction Soil Quality and Depth, since that is the only option for MR1-9 projects on a parcel 5 acres or larger and outside the UGA.

Projects that Trigger Only Minimum Requirements #1 - #5

Projects that are not Flow Control exempt that trigger only Minimum Requirements #1 through #5 (per the Project Thresholds in I-3.3 Applicability of the Minimum Requirements) shall either:

- Use the LID BMPs from List #1 for all surfaces within each type of surface in List #1;

  or

- Use any Flow Control BMP(s) desired to achieve the LID Performance Standard, and apply BMP T5.13: Post-Construction Soil Quality and Depth (if feasible).

Projects that Trigger Minimum Requirements #1 - #9

Projects that are not Flow Control exempt that trigger Minimum Requirements #1 through #9 (per the Project Thresholds in I-3.3 Applicability of the Minimum Requirements) have the compliance options shown in Table I-3.1: Minimum Requirement #5 Compliance Options for Projects Triggering Minimum Requirements #1 - #9.

Table I-3.1: Minimum Requirement #5 Compliance Options for Projects Triggering Minimum Requirements #1 - #9

Project Location and Parcel Size	Minimum Requirement #5 Compliance Options
Projects inside the UGA, on any size parcel	• Use the LID BMPs from List #2 for all surfaces within each type of surface in List #2; or • Use any Flow Control BMPs desired to achieve the LID Performance Standard, and apply BMP T5.13: Post-Construction Soil Quality and Depth (if feasible).
Projects outside the UGA, on a parcel smaller than 5 acres	
Projects outside the UGA, on a parcel 5 acres or larger	Use any Flow Control BMPs desired to achieve the LID Performance Standard, and apply BMP T5.13: Post-Construction Soil Quality and Depth (if feasible).
Note: This text refers to the Urban Growth Area (UGA) as designated under the Growth Management Act (GMA) (Chapter 36.70A RCW) of the State of Washington. If the project is located in a county that is not subject to planning under the GMA, the city limits shall be used instead.	

Flow Control Exempt Projects

Projects qualifying as Flow Control exempt in accordance with the TDA Exemption in I-3.4.7 MR7: Flow Control shall either:

- Use the LID BMPs from List #3 for all surfaces within each type of surface in List #3;

  or

- Use any Flow Control BMP(s) desired to achieve the LID Performance Standard, and apply BMP T5.13: Post-Construction Soil Quality and Depth (if feasible).

If the project has multiple TDAs, all TDAs must be Flow Control exempt per the TDA Exemption in I-3.4.7 MR7: Flow Control for the project to use the options listed here.



The text in this box originates from one or more of the following Permits:
Appendix 1 of the Phase I / Phase II Municipal Stormwater Permits
Construction Stormwater General Permit

Figure III-1.1: Runoff Treatment BMP Selection Flow Chart

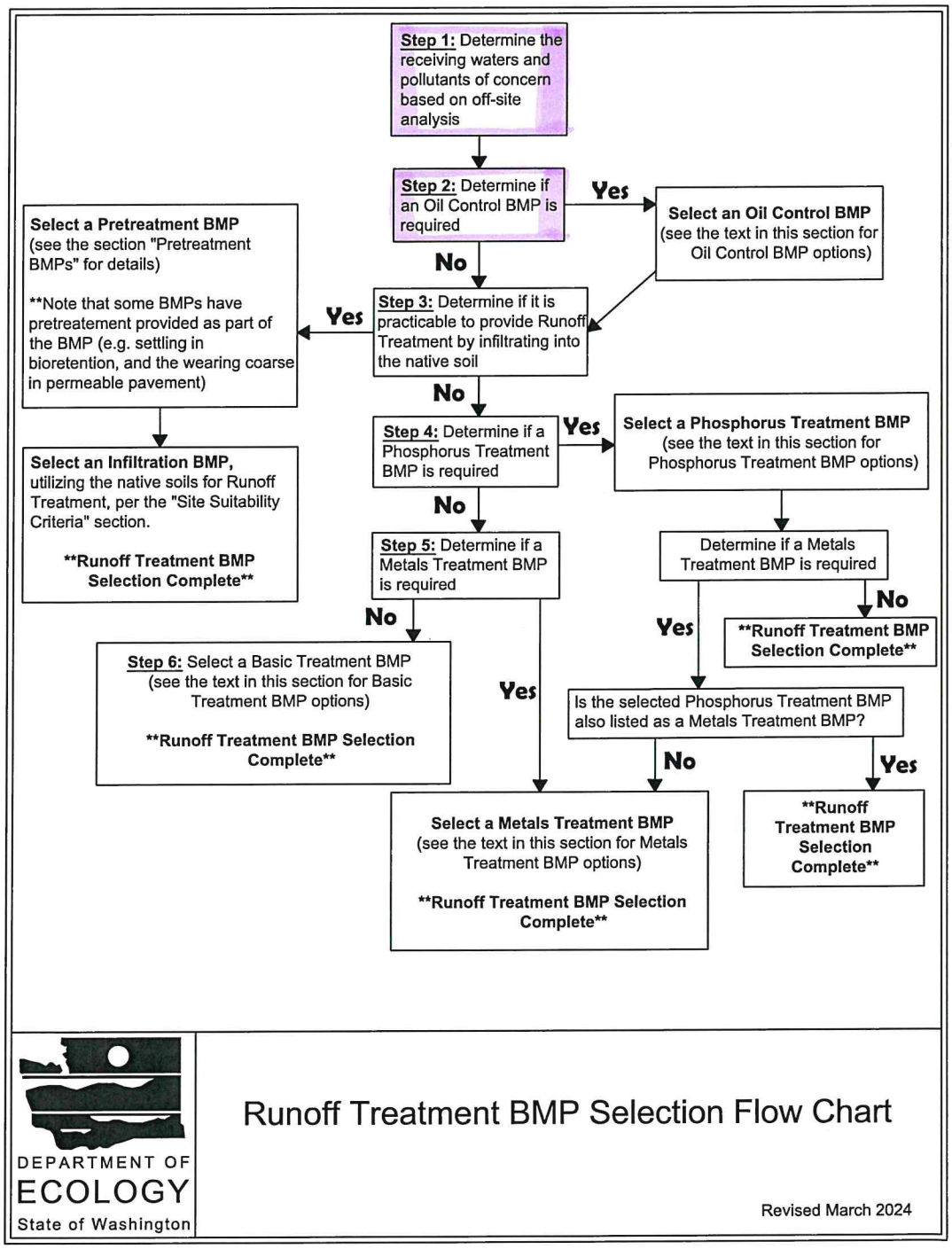


Table III-1.3: Screening Runoff Treatment BMP Types Based on Soil Type

Soil Type	Infiltration/Bioretention	Wet Pond*	Biofiltration* (Swale or Filter Strip)
Coarse Sand or Cobbles	X	X	X
Sand	✓	X	X
Loamy Sand	✓	X	✓
Sandy Loam	✓	X	✓
Loam	X	X	✓
Silt Loam	X	X	✓
Sandy Clay Loam	X	✓	✓
Silty Clay Loam	X	✓	✓
Sandy Clay	X	✓	✓
Silty Clay	X	✓	X
Clay	X	✓	X

Notes:

✓ Indicates that the BMP type is generally appropriate for this soil type.

X Indicates that the BMP type is generally not appropriate for this soil type.

* Coarser soils may be used for these BMPs if a liner is installed to prevent infiltration, or if the soils are amended to reduce the infiltration rate.

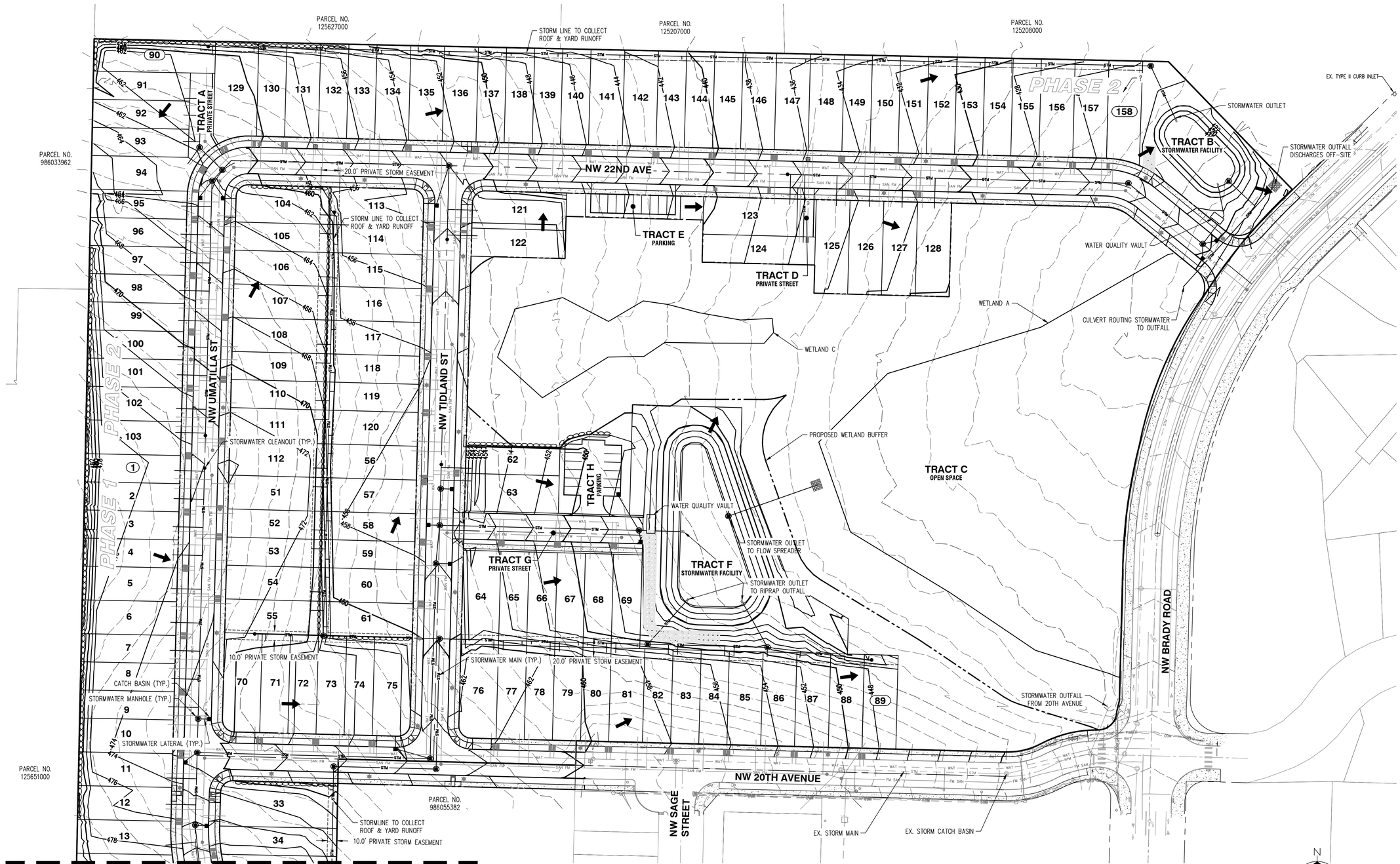
Note: Sand filtration is not listed because its feasibility is not dependent on soil type.

III-1.3 Choosing Your Flow Control BMPs

Use this section to determine the type of Flow Control BMPs most appropriate for the project.

Flow Control BMPs might apply to the project (or a TDA within the project) if directed by I-3.3 Applicability of the Minimum Requirements, I-3.4.5 MR5: On-Site Stormwater Management, I-3.4.7 MR7: Flow Control, and/or I-3.4.8 MR8: Wetlands Protection. Note that some Flow Control

Appendix C: Development Plans



SEE SHEET P7.1

LEGEND

- EXISTING GROUND CONTOUR (2 FT)
- EXISTING GROUND CONTOUR (10 FT) — 350
- FINISHED GRADE CONTOUR (2 FT)
- FINISHED GRADE CONTOUR (10 FT) — 350

GENERAL NOTES

1. STORMWATER TREATMENT AND RETENTION FACILITIES FOR THIS DEVELOPMENT ARE TO BE OWNED AND MAINTAINED BY THE HOA.
2. THE SITE IS NOT WITHIN OR ADJACENT TO A 100-YEAR FLOODPLAIN OR SHORELINE MANAGEMENT AREA.
3. THERE ARE EXISTING ON-SITE STORMWATER FACILITIES.
4. STORMWATER INFRASTRUCTURE EXISTS IN NW 20TH AVENUE & NW BRADY ROAD. STORMWATER FROM THESE STREETS DOES NOT CONTRIBUTE TO ON-SITE FLOWS.
5. NO WELLS, AGRICULTURAL DRAIN TILES, POTENTIAL SLOPE INSTABILITY, STRUCTURES, UTILITIES, SEPTIC TANKS, OR DRAIN FIELDS EXIST ONSITE.
6. NO FLOODPLAIN, FLOODWAYS, OR SHORELINE EXIST ONSITE.
7. WETLANDS EXIST ON THE SITE.
8. EXISTING DRAINAGE FLOW ROUTES ARE GENERALLY NORTHEAST FOR THE THRESHOLD DISCHARGE AREA (TDA). EXISTING STORMWATER FROM THE SITE DISCHARGES THROUGH NW BRADY ROAD TO THE NORTHEAST.
9. PROPOSED DRAINAGE FLOW ROUTES TO FOLLOW EXISTING FLOW ROUTES TO THE NORTHEAST AFTER BEING DISCHARGED FROM STORMWATER FACILITIES.
10. RUNOFF FROM ROOF AREAS FOR LOTS 47-75, 92-135, 139-156 DRAIN TO A STORMWATER LATERAL.

N

SCALE: 1"=50 FEET
50 0 10 25 50

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PRELIMINARY STORMWATER PLAN
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

JOSEPH C. SCHMITT — STATE OF WASHINGTON — 22614 — REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	9/12/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	NTL

P7.0

AKS DRAWING FILE: 12107 P7.0 PRELIMINARY STORMWATER PLANDWG | LAYOUT: P7.0

LEGEND

EXISTING GROUND CONTOUR (2 FT)

EXISTING GROUND CONTOUR (10 FT) — 350 —

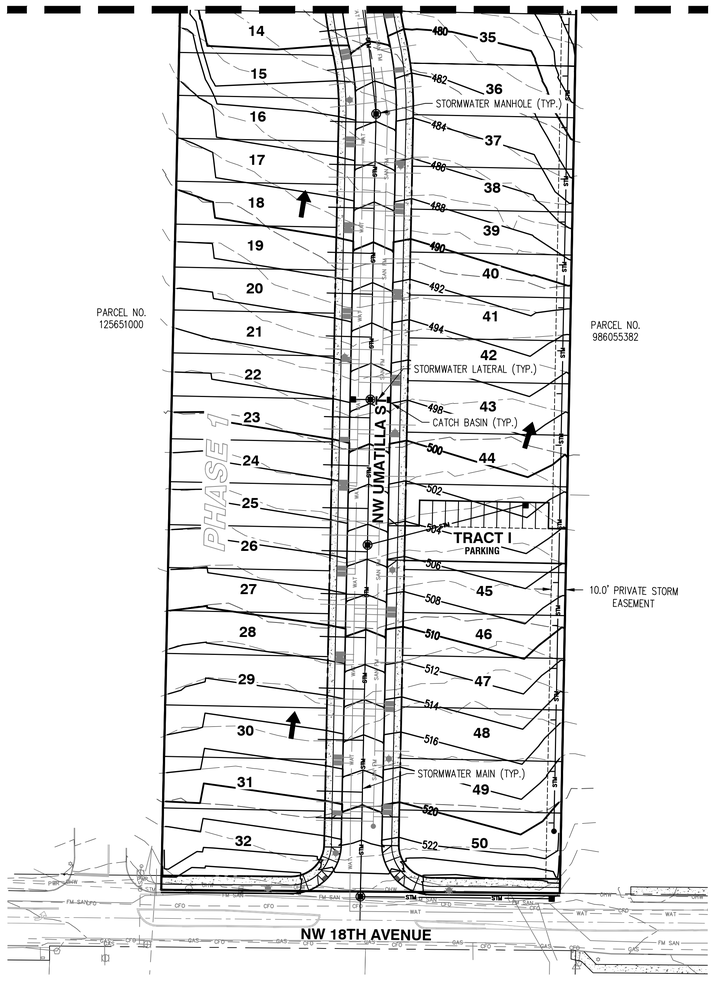
FINISHED GRADE CONTOUR (2 FT)

FINISHED GRADE CONTOUR (10 FT) — 350 —

GENERAL NOTES

1. STORMWATER TREATMENT AND RETENTION FACILITIES FOR THIS DEVELOPMENT ARE TO BE OWNED AND MAINTAINED BY THE HOA.
2. THE SITE IS NOT WITHIN OR ADJACENT TO A 100-YEAR FLOODPLAIN OR SHORELINE MANAGEMENT AREA.
3. THERE ARE EXISTING ON-SITE STORMWATER FACILITIES.
4. STORMWATER INFRASTRUCTURE EXISTS IN NW 20TH AVENUE & NW BRADY ROAD. STORMWATER FROM THESE STREETS DOES NOT CONTRIBUTE TO ON-SITE FLOWS.
5. NO WELLS, AGRICULTURAL DRAIN TILES, POTENTIAL SLOPE INSTABILITY, STRUCTURES, UTILITIES, SEPTIC TANKS, OR DRAIN FIELDS EXIST ONSITE.
6. NO FLOODPLAIN, FLOODWAYS, OR SHORELINE EXIST ONSITE.
7. WETLANDS EXIST ON THE SITE.
8. EXISTING DRAINAGE FLOW ROUTES ARE GENERALLY NORTHEAST FOR THE THRESHOLD DISCHARGE AREA (TDA). EXISTING STORMWATER FROM THE SITE DISCHARGES THROUGH NW BRADY ROAD TO THE NORTHEAST.
9. PROPOSED DRAINAGE FLOW ROUTES TO FOLLOW EXISTING FLOW ROUTES TO THE NORTHEAST AFTER BEING DISCHARGED FROM STORMWATER FACILITIES.
10. RUNOFF FROM ROOF AREAS FOR LOTS 47-75, 92-135, 139-156 DRAIN TO A STORMWATER LATERAL.

SEE SHEET P7.0





SCALE: 1"=50 FEET

50 0 10 25 50

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PRELIMINARY STORMWATER PLAN
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

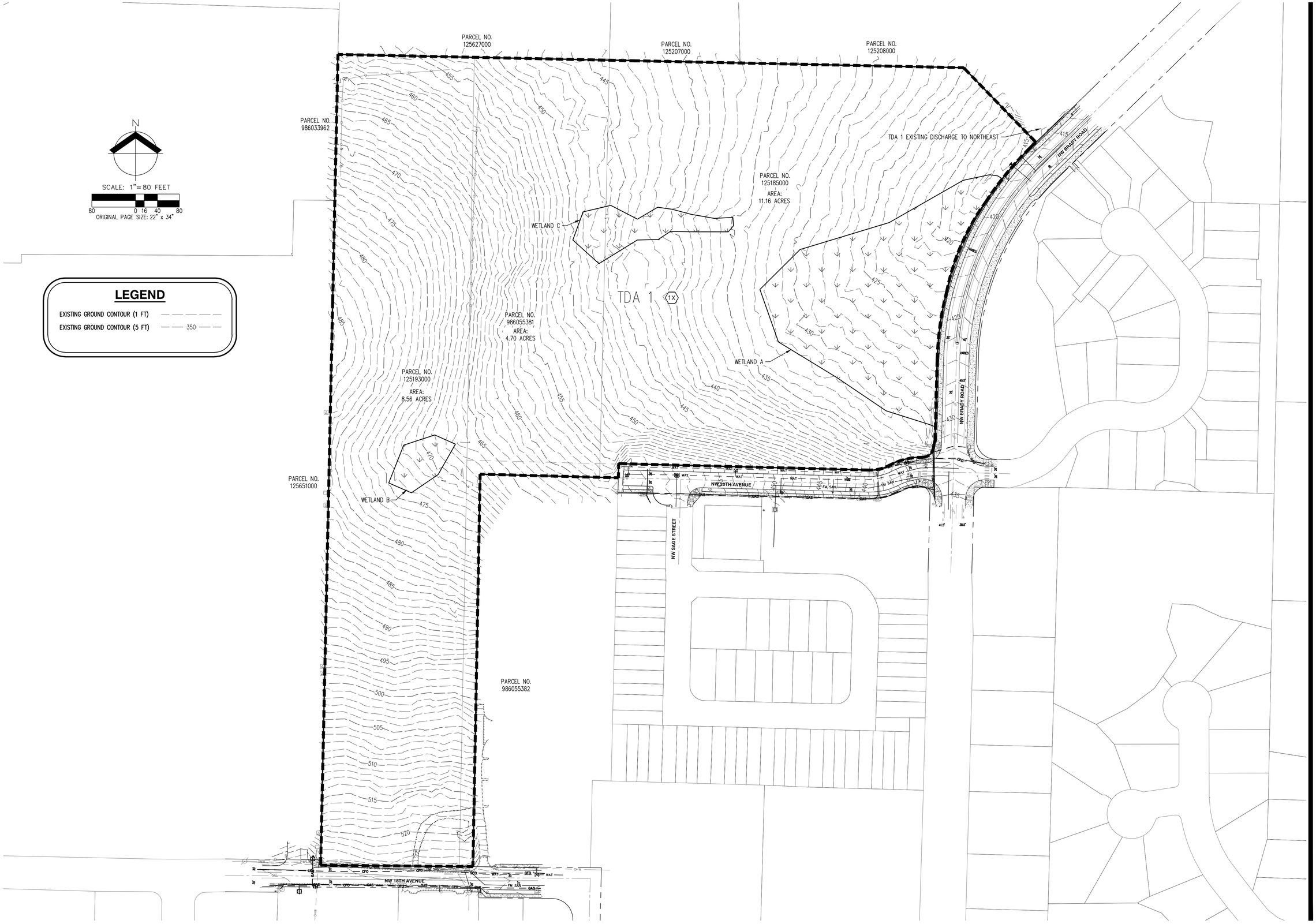
JOHN T. LAMBERT — STATE OF WASHINGTON — 22614 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	9/12/2025
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P7.1

AKS DRAWING FILE: 12107 P7.0 PRELIMINARY STORMWATER PLANDWG | LAYOUT: P7.1

Appendix D: Stormwater Basin Plans



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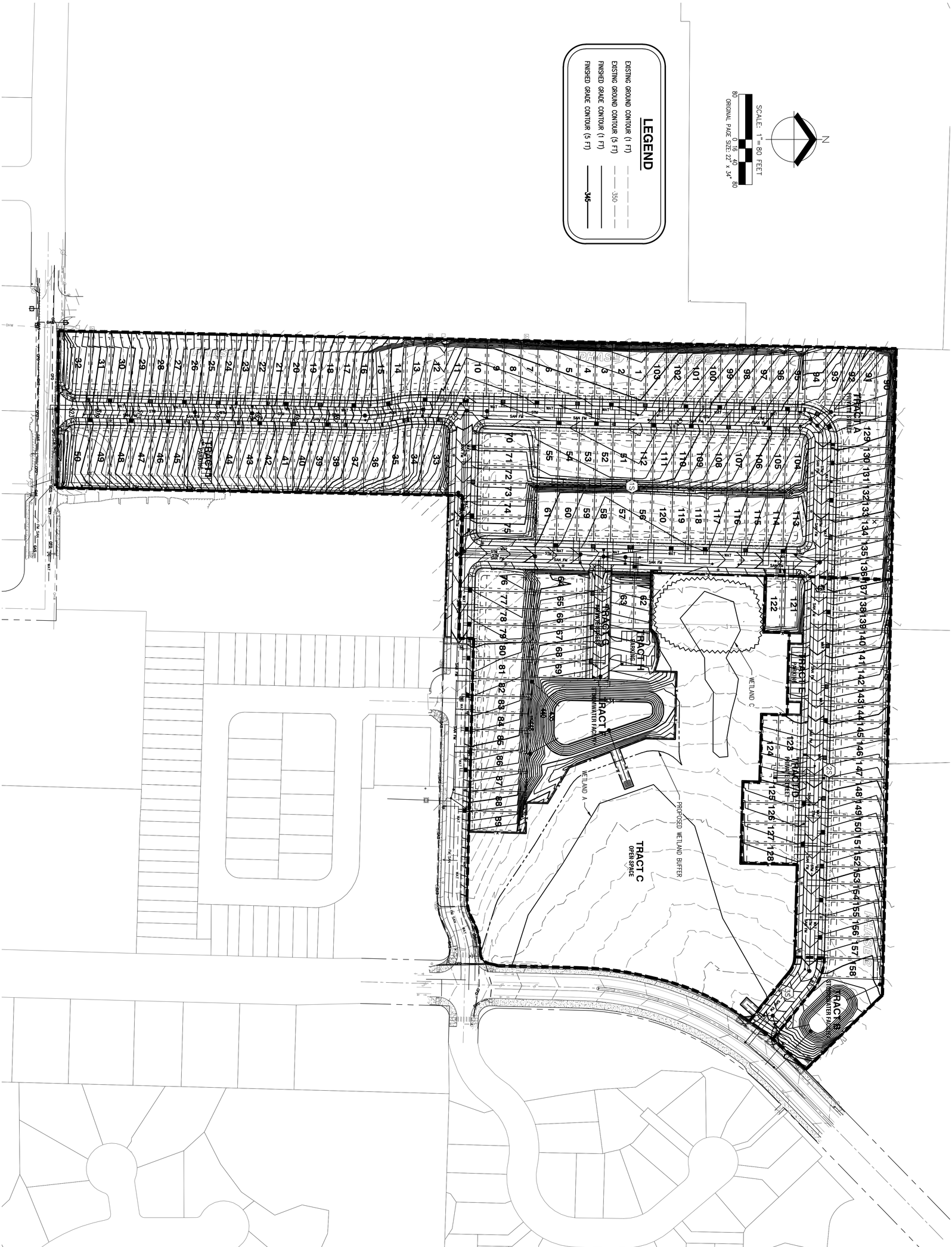
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PRE DEVELOPED BASIN MAP
STELLA RIDGE SUBDIVISION
CAMAS, WASHINGTON

JOB NUMBER:	12107
DATE:	9/12/2025
DESIGNED BY:	NTL
DRAWN BY:	NTL
CHECKED BY:	JMM

EX A

AKS DRAWING FILE: 12107 PREDEV BASNLDWG | LAYOUT: PREDEV



POST DEVELOPED BASIN MAP
STELLA RIDGE SUBDIVISION

CAMAS, WASHINGTON

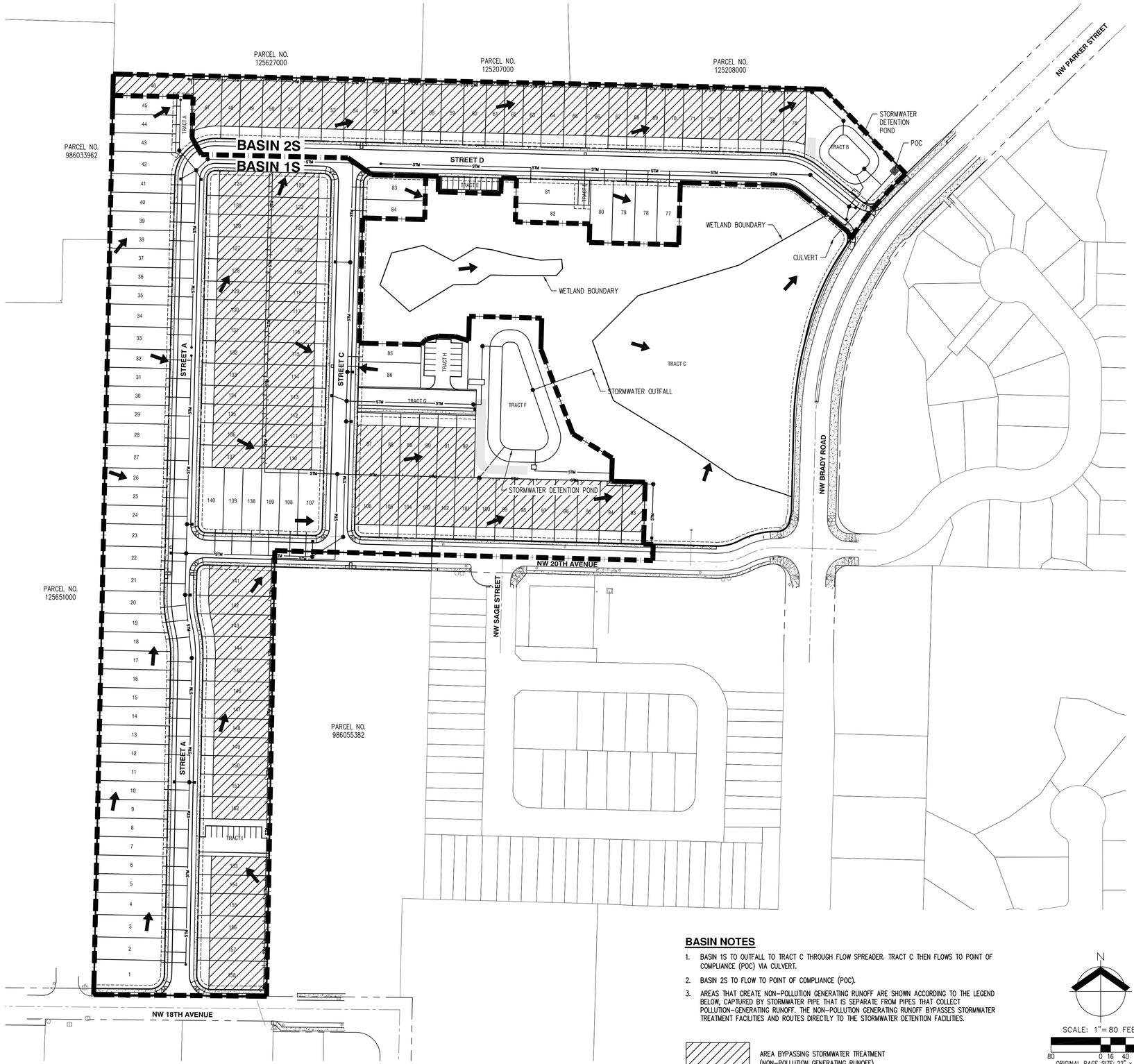
EX B

JOB NUMBER:	12107
DATE:	9/12/2025
DESIGNED BY:	NTL
DRAWN BY:	NTL
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Exhibit 9 SUB25-1009



BASIN NOTES

1. BASIN 1S TO OUTFALL TO TRACT C THROUGH FLOW SPREADER. TRACT C THEN FLOWS TO POINT OF COMPLIANCE (POC) VIA CULVERT.
2. BASIN 2S TO FLOW TO POINT OF COMPLIANCE (POC).
3. AREAS THAT CREATE NON-POLLUTION GENERATING RUNOFF ARE SHOWN ACCORDING TO THE LEGEND BELOW, CAPTURED BY STORMWATER PIPE THAT IS SEPARATE FROM PIPES THAT COLLECT POLLUTION-GENERATING RUNOFF. THE NON-POLLUTION GENERATING RUNOFF BYPASSES STORMWATER TREATMENT FACILITIES AND ROUTES DIRECTLY TO THE STORMWATER DETENTION FACILITIES.

AREA BYPASSING STORMWATER TREATMENT (NON-POLLUTION GENERATING RUNOFF)

N

SCALE: 1" = 80 FEET

80 0 16 40 80

ORIGINAL PAGE SIZE: 22" x 34"

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WATER QUALITY BASIN PLAN
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	8/27/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	NTL

EX C

AKS DRAWING FILE: 12107 WATER QUALITY BASIN MAP.DWG | LAYOUT: ST-3

Appendix E: BMP Flow Chart

Stella Ridge

Table I-3.2: The List Approach for MR5 Compliance

List #1 (For MR #1 - #5 Projects That Are Not Flow Control Exempt)	List #2 (For MR #1 - #9 Projects That Are Not Flow Control Exempt)	List #3 (For Flow Control Exempt Projects)
Surface Type: Lawn and Landscaped Areas		
BMP T5.13: Post-Construction Soil Quality and Depth	BMP T5.13: Post-Construction Soil Quality and Depth	BMP T5.13: Post-Construction Soil Quality and Depth
Surface Type: Roofs		
1. BMP T5.30: Full Dispersion or BMP T5.10A: Downspout Full Infiltration	1. BMP T5.30: Full Dispersion or BMP T5.10A: Downspout Full Infiltration	1. BMP T5.10A: Downspout Full Infiltration
2. BMP T5.14: Rain Gardens or BMP T7.30: Bioretention	2. BMP T7.30: Bioretention	2. BMP T5.10B: Downspout Dispersion Systems
3. BMP T5.10B: Downspout Dispersion Systems	3. BMP T5.10B: Downspout Dispersion Systems	3. BMP T5.10C: Perforated Stub-out Connections
4. BMP T5.10C: Perforated Stub-out Connections	4. BMP T5.10C: Perforated Stub-out Connections	
Surface Type: Other Hard Surfaces		
1. BMP T5.30: Full Dispersion	1. BMP T5.30: Full Dispersion	BMP T5.12: Sheet Flow Dispersion or BMP T5.11: Concentrated Flow Dispersion
2. BMP T5.15: Permeable Pavement or BMP T5.14: Rain Gardens or BMP T7.30: Bioretention	2. BMP T5.15: Permeable Pavement	
3. BMP T5.12: Sheet Flow Dispersion or BMP T5.11: Concentrated Flow Dispersion	3. BMP T7.30: Bioretention	
	4. BMP T5.12: Sheet Flow Dispersion or BMP T5.11: Concentrated Flow Dispersion	

Appendix F: WWHM Analysis

WWHM4

PROJECT REPORT

General Model Information

WWHM2012 Project Name: 20250822 WQ Check

Site Name:	12107 Stella Ridge
Site Address:	4511 NW 18th Ave
City:	Camas
Report Date:	9/5/2025
Gage:	Lacamas
Data Start:	1948/10/01
Data End:	2008/09/30
Timestep:	15 Minute
Precip Scale:	1.300
Version Date:	2025/05/13

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

Landuse Basin Data

Predeveloped Land Use

Basin (MINUS TRACT D)

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Forest, Flat	18.533
Pervious Total	18.533

Impervious Land Use	acre
Impervious Total	0
Basin Total	18.533

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

POC 1	POC 1	

Mitigated Land Use

Basin 1S (TRACT G)

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
ROADS FLAT	3.468
ROOF TOPS FLAT	3.322
DRIVEWAYS FLAT	1.102
PARKING FLAT	0.298
Impervious Total	8.19
Basin Total	8.19

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 1	POC 1	

Basin 2S (TRACT C)

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
ROADS FLAT	1.054
ROOF TOPS FLAT	0.591
DRIVEWAYS FLAT	0.349
PARKING FLAT	0.058
Impervious Total	2.052
Basin Total	2.052

Element Flow Componants:

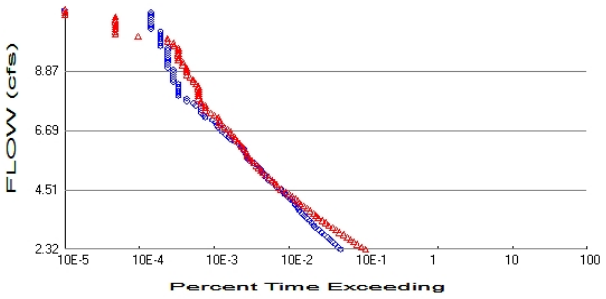
Surface	Interflow	Groundwater
Componant Flows To:		
POC 1	POC 1	

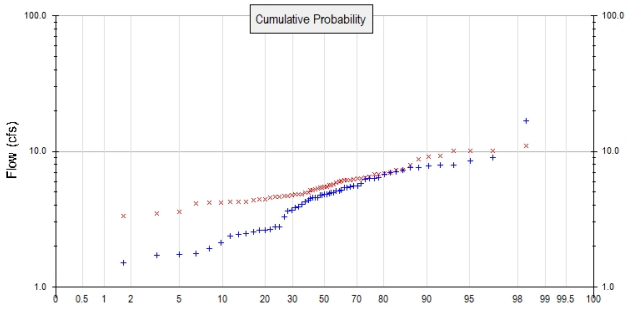
Routing Elements
Predeveloped Routing

Mitigated Routing

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 18.533
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0
Total Impervious Area: 10.242

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	4.649714
5 year	7.279152
10 year	8.713901
25 year	10.17764
50 year	11.049077
100 year	11.76638

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	5.515508
5 year	7.070974
10 year	8.117924
25 year	9.465552
50 year	10.48976
100 year	11.532867

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	**Predeveloped**	**Mitigated**
1949	3.631	8.748
1950	4.761	4.600
1951	6.289	4.833
1952	3.686	5.135
1953	4.973	4.726
1954	6.931	6.724
1955	3.859	4.981
1956	7.567	5.905
1957	5.755	5.504
1958	4.269	6.513

1959	2.482	4.589
1960	2.451	4.540
1961	6.815	4.972
1962	4.573	4.414
1963	5.081	5.438
1964	4.849	4.374
1965	4.348	4.198
1966	5.556	4.834
1967	4.841	5.238
1968	6.330	10.141
1969	5.158	9.065
1970	16.860	10.902
1971	2.667	5.364
1972	4.534	7.289
1973	4.516	6.108
1974	7.111	4.849
1975	3.875	4.096
1976	5.570	4.231
1977	0.152	3.311
1978	7.939	6.044
1979	5.374	7.255
1980	3.286	4.211
1981	7.547	5.737
1982	5.080	6.146
1983	8.450	6.420
1984	2.757	3.469
1985	2.125	4.442
1986	2.625	6.839
1987	4.581	4.189
1988	1.769	5.349
1989	1.922	6.969
1990	1.744	6.214
1991	4.945	5.600
1992	5.440	5.152
1993	6.395	6.291
1994	4.889	5.423
1995	4.056	5.602
1996	7.758	7.871
1997	8.984	9.278
1998	7.263	10.118
1999	5.428	4.244
2000	2.628	3.563
2001	1.515	3.119
2002	7.927	6.288
2003	6.232	4.663
2004	1.710	5.968
2005	2.557	6.791
2006	4.783	6.112
2007	2.368	4.705
2008	2.779	10.144

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	16.8600	10.9021
2	8.9842	10.1439
3	8.4503	10.1412
4	7.9393	10.1178

5	7.9274	9.2781
6	7.7579	9.0647
7	7.5671	8.7479
8	7.5475	7.8709
9	7.2632	7.2888
10	7.1108	7.2549
11	6.9308	6.9690
12	6.8145	6.8391
13	6.3945	6.7909
14	6.3301	6.7242
15	6.2886	6.5134
16	6.2322	6.4201
17	5.7551	6.2908
18	5.5697	6.2880
19	5.5562	6.2135
20	5.4401	6.1460
21	5.4280	6.1117
22	5.3736	6.1082
23	5.1580	6.0437
24	5.0810	5.9684
25	5.0796	5.9048
26	4.9733	5.7371
27	4.9450	5.6018
28	4.8889	5.6004
29	4.8492	5.5044
30	4.8414	5.4378
31	4.7828	5.4227
32	4.7606	5.3639
33	4.5811	5.3494
34	4.5726	5.2378
35	4.5340	5.1517
36	4.5155	5.1352
37	4.3476	4.9810
38	4.2692	4.9721
39	4.0565	4.8493
40	3.8749	4.8335
41	3.8588	4.8327
42	3.6864	4.7260
43	3.6308	4.7046
44	3.2862	4.6627
45	2.7786	4.5996
46	2.7570	4.5889
47	2.6665	4.5397
48	2.6284	4.4420
49	2.6252	4.4143
50	2.5567	4.3741
51	2.4819	4.2442
52	2.4514	4.2309
53	2.3678	4.2113
54	2.1252	4.1981
55	1.9220	4.1892
56	1.7689	4.0960
57	1.7435	3.5627
58	1.7104	3.4692
59	1.5147	3.3105
60	0.1517	3.1187

Duration Flows

The Duration Matching Failed

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
2.3249	1043	2243	215	Fail
2.4130	960	1975	205	Fail
2.5011	894	1738	194	Fail
2.5892	811	1568	193	Fail
2.6774	746	1412	189	Fail
2.7655	693	1276	184	Fail
2.8536	631	1148	181	Fail
2.9417	582	1008	173	Fail
3.0298	536	908	169	Fail
3.1180	484	816	168	Fail
3.2061	456	721	158	Fail
3.2942	425	654	153	Fail
3.3823	402	590	146	Fail
3.4705	367	525	143	Fail
3.5586	336	486	144	Fail
3.6467	314	454	144	Fail
3.7348	298	407	136	Fail
3.8230	280	368	131	Fail
3.9111	265	334	126	Fail
3.9992	253	303	119	Fail
4.0873	238	281	118	Fail
4.1754	221	258	116	Fail
4.2636	201	233	115	Fail
4.3517	186	214	115	Fail
4.4398	175	194	110	Fail
4.5279	167	168	100	Pass
4.6161	145	152	104	Fail
4.7042	139	144	103	Pass
4.7923	126	134	106	Pass
4.8804	113	125	110	Pass
4.9686	104	115	110	Pass
5.0567	101	103	101	Pass
5.1448	95	94	98	Pass
5.2329	90	90	100	Pass
5.3211	85	84	98	Pass
5.4092	80	77	96	Pass
5.4973	71	71	100	Pass
5.5854	62	67	108	Pass
5.6735	59	63	106	Pass
5.7617	57	59	103	Pass
5.8498	56	58	103	Pass
5.9379	53	56	105	Pass
6.0260	52	53	101	Pass
6.1142	48	50	104	Pass
6.2023	45	47	104	Pass
6.2904	39	43	110	Pass
6.3785	35	41	117	Fail
6.4667	33	39	118	Fail
6.5548	30	36	120	Fail
6.6429	27	35	129	Fail
6.7310	27	32	118	Fail
6.8192	24	29	120	Fail
6.9073	23	26	113	Fail
6.9954	22	25	113	Fail

7.0835	20	25	125	Fail
7.1716	16	24	150	Fail
7.2598	15	21	140	Fail
7.3479	14	19	135	Fail
7.4360	14	16	114	Fail
7.5241	14	16	114	Fail
7.6123	12	16	133	Fail
7.7004	11	14	127	Fail
7.7885	9	14	155	Fail
7.8766	9	13	144	Fail
7.9648	7	13	185	Fail
8.0529	7	13	185	Fail
8.1410	7	13	185	Fail
8.2291	7	13	185	Fail
8.3173	7	13	185	Fail
8.4054	7	12	171	Fail
8.4935	6	11	183	Fail
8.5816	6	11	183	Fail
8.6697	6	10	166	Fail
8.7579	6	9	150	Fail
8.8460	6	9	150	Fail
8.9341	6	9	150	Fail
9.0222	5	9	180	Fail
9.1104	5	8	160	Fail
9.1985	5	8	160	Fail
9.2866	5	7	140	Fail
9.3747	5	7	140	Fail
9.4629	5	7	140	Fail
9.5510	5	7	140	Fail
9.6391	5	7	140	Fail
9.7272	5	7	140	Fail
9.8153	4	6	150	Fail
9.9035	4	6	150	Fail
9.9916	4	5	125	Fail
10.0797	4	5	125	Fail
10.1678	4	2	50	Pass
10.2560	4	1	25	Pass
10.3441	4	1	25	Pass
10.4322	3	1	33	Pass
10.5203	3	1	33	Pass
10.6085	3	1	33	Pass
10.6966	3	1	33	Pass
10.7847	3	1	33	Pass
10.8728	3	1	33	Pass
10.9610	3	0	0	Pass
11.0491	3	0	0	Pass

The development has an increase in flow durations from 1/2 Predeveloped 2 year flow to the 2 year flow or more than a 10% increase from the 2 year to the 50 year flow.
The development has an increase in flow durations for more than 50% of the flows for the range of the duration analysis.

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	1.164 acre-feet
On-line facility target flow:	1.7013 cfs.
Adjusted for 15 min:	1.7013 cfs.
Off-line facility target flow:	0.9599 cfs.
Adjusted for 15 min:	0.9599 cfs.

POC 2

POC #2 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 3

POC #3 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 4

POC #4 was not reported because POC must exist in both scenarios and both scenarios must have been run.

POC 5

POC #5 was not reported because POC must exist in both scenarios and both scenarios must have been run.

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

No PERLND changes have been made.

IMPLND Changes

No IMPLND changes have been made.

Appendix

Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   20250822 WQ Check.wdm
MESSU       25   Pre20250822 WQ Check.MES
            27   Pre20250822 WQ Check.L61
            28   Pre20250822 WQ Check.L62
            30   POC20250822 WQ Check1.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      28
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title---------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Basin (MINUS TRACT D)       MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                       in  out           ***
   28     SG4, Forest, Flat       1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   28         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags **************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   28         0    0    4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO
```

```
  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
   28         0    0    0    0    0    0    0    0    0    0    0
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
   28             0         6      0.04       400      0.05         0      0.96
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
   28             0         0         3         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   28           0.2       0.4      0.35         2       0.4       0.7
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS      IFWS       LZS      AGWS      GWVS
   28             0         0         0         0       2.5         1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************* Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
  END IWAT-STATE1
```

```
END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin (MINUS TRACT D)***
PERLND  28                     18.533     COPY   501     12
PERLND  28                     18.533     COPY   501     13

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                  ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
            FG FG FG FG  possible  exit  *** possible  exit      possible  exit
             *  *  *  *    *  *  *  *  *      *  *  *  *  *        ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><--------><--------> ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                     ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><--->
```

```
WDM      1 EVAP     ENGL    0.8             PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8             IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    501 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       12
PERLND     PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   12

  MASS-LINK       13
PERLND     PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   13


END MASS-LINK

END RUN
```

Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   20250822 WQ Check.wdm
MESSU       25   Mit20250822 WQ Check.MES
            27   Mit20250822 WQ Check.L61
            28   Mit20250822 WQ Check.L62
            30   POC20250822 WQ Check1.dat
END FILES

OPN SEQUENCE
    INGRP              INDELT 00:15
      IMPLND       1
      IMPLND       4
      IMPLND       5
      IMPLND      11
      COPY       501
      DISPLY       1
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title----------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Basin  1S (TRACT G)         MAX                    1    2   30    9
  END DISPLY-INFO1
END DISPLY
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                          in  out           ***
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags **************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
  END PRINT-INFO
```

```
  PWAT-PARM1
    <PLS >  PWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
  END PWAT-PARM1

  PWAT-PARM2
    <PLS >      PWATER input info: Part 2         ***
    # -  # ***FOREST      LZSN    INFILT      LSUR     SLSUR     KVARY     AGWRC
  END PWAT-PARM2

  PWAT-PARM3
    <PLS >      PWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                              ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS       IFWS       LZS       AGWS      GWVS
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                     in  out           ***
    1      ROADS/FLAT             1    1    1   27    0
    4      ROOF TOPS/FLAT         1    1    1   27    0
    5      DRIVEWAYS/FLAT         1    1    1   27    0
   11      PARKING/FLAT           1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
    4         0    0    1    0    0    0
    5         0    0    1    0    0    0
   11         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
    <ILS > ******** Print-flags ******** PIVL  PYR
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
    1         0    0    4    0    0    4    1    9
    4         0    0    4    0    0    0    1    9
    5         0    0    4    0    0    0    1    9
   11         0    0    4    0    0    0    1    9
  END PRINT-INFO

  IWAT-PARM1
    <PLS >  IWATER variable monthly parameter value flags  ***
    # -  # CSNO RTOP  VRS  VNN RTLI     ***
    1         0    0    0    0    0
    4         0    0    0    0    0
    5         0    0    0    0    0
   11         0    0    0    0    0
  END IWAT-PARM1

  IWAT-PARM2
    <PLS >      IWATER input info: Part 2         ***
    # -  # ***  LSUR     SLSUR      NSUR     RETSC
    1            400      0.01       0.1       0.1
```

```
    4            400      0.01       0.1       0.1
    5            400      0.01       0.1       0.1
   11            400      0.01       0.1       0.1
  END IWAT-PARM2

  IWAT-PARM3
    <PLS >      IWATER input info: Part 3         ***
    # -  # ***PETMAX    PETMIN
    1              0         0
    4              0         0
    5              0         0
   11              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
    1              0         0
    4              0         0
    5              0         0
   11              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK   ***
<Name>   #                  <-factor->     <Name>   #   Tbl#   ***
Basin  1S (TRACT G)***
IMPLND   1                       3.468     COPY   501     15
IMPLND   4                       3.322     COPY   501     15
IMPLND   5                       1.102     COPY   501     15
IMPLND  11                       0.298     COPY   501     15
Basin  2S (TRACT C)***
IMPLND   1                       1.054     COPY   501     15
IMPLND   4                       0.591     COPY   501     15
IMPLND   5                       0.349     COPY   501     15
IMPLND  11                       0.058     COPY   501     15

******Routing******
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1



<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<------------------><---> User T-series  Engl Metr LKFG           ***
                                       in  out                              ***
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
  END PRINT-INFO
```

```
  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                    ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
           FG FG FG FG  possible  exit  *** possible  exit      possible  exit
            *  *  *  *    *  *  *  *  *       *  *  *  *  *         ***
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN     DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                       ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.3            PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.3            IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY     1 OUTPUT MEAN   1 1     48.4      WDM    701 FLOW     ENGL      REPL
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    801 FLOW     ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>   <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>            <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK       15
IMPLND     IWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK   15


END MASS-LINK

END RUN
```

Predeveloped HSPF Message File

Mitigated HSPF Message File

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Appendix G: Geotechnical Reports

Report of Geotechnical Engineering Services

NW 18th Avenue Subdivision

Camas, Washington

May 28, 2025

Geotechnical ■ Environmental ■ Special Inspections

Columbia West

Engineering, Inc



Geotechnical ▪ Environmental ▪ Special Inspections
Columbia West Engineering, Inc

Vancouver, Washington • Phone: 360-823-2900
Portland, Oregon • Phone: 971-384-1666
www.columbia-west.com

May 28, 2025

Allied Development
16430 North Scottsdale Road, Suite 210
Scottsdale, AZ 85254

Attention: Joe Deaser

Re: Report of Geotechnical Engineering Services
NW 18th Avenue Subdivision
4511 NW 18th Avenue
Camas, Washington
CWE Project: AlliedDev-1-01-1

Columbia West Engineering, Inc. (Columbia West) is pleased to present this report of geotechnical engineering services for the NW 18th Avenue Subdivision project located in Camas, Washington. Our services were conducted in accordance with our proposal dated March 27, 2025.

We appreciate the opportunity to work on the project. Please contact us if you have any questions regarding this report.

Sincerely,

Greg L. Williamson, PE
Senior Geotechnical Engineer

Daniel E. Lehto, PE, GE
Principal Engineer

DANIEL E. LEHTO
STATE OF WASHINGTON
44702
REGISTERED
PROFESSIONAL ENGINEER

Signed 05/28/2025

Expires 06/05/2025

GLW:DEL:kat
Attachments
Document ID: AlliedDev-1-01-1-052825-geor.docx

EXECUTIVE SUMMARY

This executive summary presents the primary geotechnical considerations associated with the proposed NW 18th Avenue Subdivision project located in Camas, Washington. Our conclusions and recommendations are based on the subsurface information presented in the report and proposed development information provided by the design and construction team. Detailed discussion of the geotechnical considerations summarized here is presented in respective sections of the report.

- Proposed residential structures may be supported by conventional spread footings bearing on firm, native soil or engineered structural fill.

- The near-surface native soil is sensitive to disturbance when at a moisture content that is above optimum. As discussed in the report, the subgrade should be protected from disturbance and damage by construction traffic.

- Moisture conditioning will be required to use the on-site soil as structural fill. Accordingly, extended dry weather will be required to adequately condition and place the soil as structural fill. Adequately compacting the on-site soil during the rainy season or during prolonged periods of rainfall will be difficult, if not impossible.

- Gravel, cobbles, and boulders were encountered in portions of the site that caused excavator refusal in four locations (test pits TP-8 through TP-10 and TP-12) at depths between 5.5 and 7 feet BGS. The site is underlain by the Basaltic Andesite of Prune Hill geologic formation and the soil encountered resembled residual soil that formed over this material. If deep excavations or utilities are planned, additional exploration may be warranted in specific locations to determine if conventional excavation equipment will be adequate to complete site construction.

- Groundwater seepage was encountered in a few of our test pits at depths between 5.5 and 8 feet BGS. Dewatering may be required for deeper utilities, particularly in areas of cut and during the wet season. Drainage mat construction may be required where fill material needs to be placed over wet soil or areas of shallow groundwater seepage.

- Based on the results of our subsurface explorations and infiltration testing results, infiltration is not a feasible option for stormwater management.

- Based on the results of infiltration testing, the near-surface native soil meets the classification criteria for WWHM Soil Group 4.

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ABBREVIATIONS AND ACRONYMS

AC	asphalt concrete
AOS	apparent opening size
ASCE	American Society of Civil Engineers
ASTM	ASTM International
BGS	below ground surface
g	gravitational acceleration (32.2 feet/second^2)
H:V	horizontal to vertical
in/hr	inch(es) per hour
km	kilometer(s)
MCE	maximum considered earthquake
NAVD 88	North American Vertical Datum of 1988
OSHA	Occupational Safety and Health Administration
pcf	pounds per cubic foot
pci	pounds per cubic inch
psf	pounds per square foot
PVC	polyvinyl chloride
ReMi	refraction microtremor
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
WSS	Washington Standard Specifications for Road, Bridge, and Municipal Construction (2024)
WWHM	Western Washington Hydrology Model

REPORT OF GEOTECHNICAL ENGINEERING SERVICES
NW 18TH AVENUE SUBDIVISION
CAMAS, WASHINGTON

1.0 INTRODUCTION

Columbia West is pleased to submit this report of geotechnical engineering services for the NW 18th Avenue Subdivision project located in Camas, Washington. The 24.41-acre site is located northwest of the intersection of NW Brady Road and NW 20th Avenue. The site is shown relative to surrounding physical features on Figure 1. The existing conditions and exploration locations are shown on Figure 2. Abbreviations and acronyms used herein are defined immediately following the Table of Contents.

2.0 PROJECT UNDERSTANDING

Based on our correspondence and review of a preliminary site plan, we understand the proposed development includes construction of a residential subdivision with 155 single-family residential lots, AC-paved public roadways and private streets, underground utilities, and stormwater management facilities. Adjacent to NW Brady Road, approximately 6.5 acres of the site are proposed as open space. We assume that future residential structures will be of wood-framed construction with relatively light foundation loads. Based on site topography, cuts and fills are expected to be up to several feet each. We should be contacted to revise our recommendations if the assumptions stated above are incorrect.

3.0 PURPOSE AND SCOPE

The purpose of our services was to provide geotechnical engineering recommendations for use in design and construction of the proposed residential structures. Specifically, we completed the following tasks:

- Reviewed information available in Columbia West's files from previous geological and geotechnical studies conducted at and in the vicinity of the site.
- Coordinated and managed the field exploration program, which included coordinating site access and scheduling subcontractors and Columbia West field staff.
- Excavated 12 test pits to depths between 5.5 and 15 feet BGS.
- Conducted infiltration testing in three of the test pits in accordance with City of Camas requirements.
- Maintained continuous logs of the explorations and collected soil samples at representative intervals for laboratory testing.
- Completed a laboratory testing program using select soil samples collected from the explorations, which included the following:
  - Twelve moisture content determinations in general accordance with ASTM D2216
  - Six particle-size analyses in general accordance with ASTM D1140
  - Three Atterberg limits tests in general accordance with ASTM D4318
- Prepared this geotechnical report that includes the following:
  - Summary of soil and groundwater conditions at the site
  - Assessment of seismic hazards
  - Exploration logs and laboratory testing results

- Recommendations for shallow spread footings, including foundation settlement potential
- Recommendations for floor slab subgrade preparation
- Recommendations for retaining walls, including lateral earth pressures, backfill, compaction, and drainage
- Recommendations for site preparation, including grading and drainage, stripping depths, fill type for imported material, compaction criteria, trench excavation and backfill, use of on-site soil, and wet/dry weather earthwork
- Recommendations for managing groundwater conditions that may affect the performance of structures and site improvements
- Infiltration testing results and WWHM soil group classifications
- Recommendations for AC pavement construction
- Code-based seismic design parameters in accordance with ASCE 7-16

4.0 SITE CONDITIONS

4.1 GEOLOGY

The site lies within the Willamette Valley/Puget Sound Lowland, a wide physiographic depression flanked by the mountainous Coast Range on the west and the Cascade Range on the east. Inclined or uplifted structural zones within the Willamette Valley/Puget Sound Lowland constitute highland areas, and depressed structural zones form sediment-filled basins. The site is located in the east portion of the Portland/Vancouver Basin, an open, somewhat elliptical, northwest-trending syncline approximately 60 miles wide.

The near-surface geology is expected to consist of Pleistocene-aged Basaltic Andesite of Prune Hill (Qbph; Evarts and O'Connor 2008). The unit is part of the Boring Volcanic Field, a series of volcanic vents that form several buttes or cone-shaped hills in the basin. The formation is exposed south of the site in the recently reclaimed Fisher Pit Quarry.

The Web Soil Survey identifies the surface soil primarily as Powell silt loam with a small swath mapped as Odne silt loam in the proposed open space area (USDA 2025). Powell and Odne series soils are generally fine-grained clays and silts with low permeability, moderate to high water capacity, and low shear strength. They are generally moisture sensitive, somewhat compressible, and described as having low to moderate shrink-swell potential. The erosion hazard is slight primarily based on slope grade. Odne soils are typically found in wetland areas and are mapped as "hydric" according to Clark County Maps Online (Clark County 2025).

4.2 SURFACE CONDITIONS

The 24.41-acre site is generally bounded by industrial development to the west, undeveloped acreage to the north, NW Brady Road to the east, and NW 18th Avenue to the south. The site consists of vacant, undeveloped land that is forested through the central area and vegetated with grass to the east and west. Along the southern site boundary, remnant asphalt, debris, and small piles of gravel are present adjacent to NW 18th Avenue. Review of historical aerial photographs indicates that the remnant materials may be associated with residential and agricultural structures that were present on the site between the 1970s and 1990s. The site slopes gently down from west to east with elevations ranging from approximately 520 to 420 feet (NAVD 88).

4.3 SUBSURFACE CONDITIONS

Subsurface conditions were explored by excavating 12 test pits (TP-1 through TP-12) to depths between 5.5 and 15 feet BGS. The exploration locations are shown on Figure 2. A description of the field exploration program and the exploration logs are presented in Appendix A. A description of the laboratory testing program and the testing results are presented in Appendix B. A summary of the subsurface conditions is presented below.

4.3.1 Tilled Zone/Topsoil and Root Zone

All of the test pits were explored through grass vegetation with 14 to 18 inches of tilled zone/topsoil and a 3- to 4-inch-thick root zone. The tilled zone/topsoil generally consists of sandy clay with trace organics.

4.3.2 Clay

Underlying the tilled zone/topsoil layer in all test pits, clay extends to depths between 5.5 and 15 feet BGS. The clay contains varying proportions of sand and is medium stiff in consistency. In test pits TP-6, TP-8 through TP-10, and TP-12, the clay contains gravel, cobbles, and boulders at depths below 4 to 10 feet BGS. We interpret the gravel to indicate the transition between the near-surface residual clay and underlying basaltic andesite bedrock. In test pits TP-8 through TP-10 and TP-12, refusal of the excavator was observed on boulders or basalt. The moisture content of the clay ranged from 20 to 31 percent at the time of exploration. Atterberg limits testing indicates that the clay exhibits low to high plasticity.

4.3.3 Basalt

Underlying the clay in test pits TP-8 through TP-10 and TP-12, refusal of the excavator was observed on boulders or basalt at depths between 5.5 and 7 feet BGS. The boulders and basalt appear to represent the Pleistocene-aged Basaltic Andesite of Prune Hill (Evarts and O'Connor 2008). Where encountered, boulders were up to 36 inches in diameter.

4.3.4 Groundwater

Groundwater seepage was observed in test pits TP-1, TP-3, and TP-8 at depths between 5.5 and 8 feet BGS. Based on our knowledge of the surrounding area, groundwater levels are subject to seasonal variation and may rise during extended periods of increased precipitation or flooding. Perched groundwater may also be present in localized areas at shallow depths, as indicated.

4.4 INFILTRATION TESTING

Infiltration testing was completed in three of the test pits to assist in the evaluation of stormwater infiltration facilities for the project. The infiltration testing was conducted using the single-ring, failing head test method in general accordance with the *Clark County Stormwater Manual* (Clark County 2021). Table 1 summarizes our infiltration testing results and fines content determinations. The exploration logs and laboratory testing results are presented in Appendices A and B, respectively. Based on the infiltration testing results and presence of shallow groundwater seepage and near-surface rock, infiltration is not considered to be a feasible option for stormwater management.

Table 1. Infiltration Testing Results

Location	Depth (feet BGS)	Soil Description	Fines Content[1] (percent)	Unfactored Saturated Hydraulic Conductivity (in/hr)
TP-5	2	CLAY (CL)	86	Negligible
TP-8	2	CLAY (CL)	86	Negligible
TP-11	2	CLAY (CL)	87	Negligible

1. Percent passing U.S. Standard No. 200 sieve

4.4.1 WWHM Soil Group Classification

As shown in Table 1, infiltration rates were negligible in the tested locations. Based on review of Table 7-2 of the USDA hydrologic soil group criteria (USDA 2009), Appendix 2-A of the 2021 *Clark County Stormwater Manual,* and the Clark County Western Washington Hydrology Model (WWHM) Soil Groupings Memorandum (Otak 2010), the near-surface native soil meets the classification criteria for WWHM Soil Group 4.

4.5 SEISMIC HAZARDS

4.5.1 Liquefaction

Liquefaction is caused by a rapid increase in pore water pressure that reduces the effective stress between soil particles. Granular soil, which relies on interparticle friction for strength, is susceptible to liquefaction and undergoes a loss of strength until the excess pore pressures dissipate. In general, loose, saturated sand soil with low silt and clay content is the most susceptible to liquefaction. Silty soil with low plasticity is moderately susceptible to liquefaction under relatively higher levels of ground shaking. As previously summarized, native subsurface conditions generally consist of clay underlain by basaltic andesite bedrock. Accordingly, liquefaction is not a geotechnical design consideration.

4.5.2 Lateral Spreading

Lateral spreading is a liquefaction-related seismic hazard and occurs on gently sloping or flat sites underlain by liquefiable sediment adjacent to an open face, such as a riverbank. Liquefied soil adjacent to an open face can flow toward the open face, resulting in lateral ground displacement. Since liquefaction is not considered a hazard at the site, lateral spreading is also not a geotechnical design consideration.

4.5.3 Fault Rupture

Based on USGS interactive fault mapping, the nearest mapped fault to the site is the Lacamas Lake fault, which is located approximately 3.3 km northeast of the site (USGS 2025). As such, fault rupture is not considered a hazard at the site.

5.0 DESIGN

5.1 FOUNDATION SUPPORT

5.1.1 General

Based on the results of our explorations and analysis, the proposed residential structures can be supported by spread footings bearing on firm, native soil or engineered structural fill.

Foundations should not be supported by unsuitable fill, soft soil, deleterious material, or disturbed soil. Although not observed in our test pits, undocumented fill may be present near NW 18th Avenue where previous residential and agricultural structures are shown on historical aerial photographs. If encountered during foundation excavation, these materials should be removed and replaced with structural fill. If footing subgrade soil is above its optimum moisture content at the time of subgrade preparation, we recommend placing a sufficient amount of crushed rock (typically 2 to 4 inches) to protect it from foot traffic. The crushed rock should consist of imported granular material as described in Section 6.4 (Materials).

5.1.2 Bearing Capacity

Continuous perimeter wall and isolated spread footings should have minimum widths of 18 and 24 inches, respectively. The bases of exterior footings should be at least 18 inches below the lowest adjacent exterior grade. The bases of interior footings should bear at least 12 inches below the base of the floor.

Footings bearing on subgrade prepared as recommended above should be sized based on an allowable bearing pressure of 1,500 psf. As the allowable bearing pressure is a net bearing pressure, the weight of the footing and associated backfill may be ignored when calculating footing sizes. The recommended allowable bearing pressure applies to the total of dead plus long-term live loads and may be increased by 50 percent for transient lateral forces such as seismic or wind.

5.1.3 Settlement

Foundations designed in accordance with this report are expected to experience post-construction settlement of less than 1 inch. Differential post-construction settlement between comparably loaded footing elements is not expected to exceed 0.5 inch over a distance of 50 feet.

5.1.4 Resistance to Sliding

Lateral loads on building and retaining wall footings can be resisted by passive earth pressure on the sides of structures and by friction on the bases of footings. Our analysis indicates that the available passive earth pressure for footings confined by the on-site soil or planned structural fill is 250 pcf, modeled as an equivalent fluid pressure. Adjacent floor slabs, pavement, or the upper 12-inch depth of unpaved areas should not be considered when calculating passive resistance. An allowable coefficient of friction equal to 0.35 can be used for footings supported on native soil. If a minimum of 6 inches of gravel are placed at the base of a footing, the coefficient of friction can be increased to 0.4.

5.1.5 Subgrade Observation and Preparation

All footing subgrade should be evaluated by a representative of Columbia West to confirm suitable bearing conditions. Observations should also confirm that loose or soft material, organic material, unsuitable fill, prior topsoil zones, and softened subgrade (if present) have been removed. Localized deepening of footing excavations may be required to penetrate any deleterious or soft material, particularly during wet weather conditions. Footing excavations should be backfilled with compacted crushed aggregate.

5.2 FLOOR SLABS

Floor slabs can be supported on firm, competent, native soil or engineered structural fill prepared as described in this report. Floor slabs with maximum floor loads of 150 psf may be designed assuming a modulus of subgrade reaction, k, of 125 pci.

To provide a capillary break, slabs should be underlain by at least 6 inches of compacted crushed aggregate that contains less than 5 percent fines by dry weight. Geotextile may be used below the crushed aggregate layer to increase subgrade support. Recommendations for floor slab aggregate base and subgrade geotextile are discussed in Section 6.4 (Materials).

All slab subgrade should be evaluated by a member of our geotechnical staff to confirm suitable bearing conditions. Observations should also confirm that loose or soft material, organic material, unsuitable fill, prior topsoil zones, and softened subgrade have been removed and replaced with structural fill. In addition, contaminated base rock for the slabs should be removed and replaced prior to pouring the slab.

5.3 SEISMIC DESIGN CRITERIA

Seismic design for the proposed residential structures is prescribed by ASCE 7-16. Based on the results of subsurface exploration and our experience running ReMi arrays on nearby sites, an appropriate site class for the site is Site Class D. Seismic design parameters for Site Class D are presented in Table 2.

Table 2. Seismic Design Parameters in Accordance with ASCE 7-16[1]

Parameter	Short Period (T_s)	1-Second Period (T_1)
MCE spectral response acceleration, S	S_s = 0.836 g	S_1 = 0.359 g
Site class	D	
Site coefficient, F	F_a = 1.17	F_v = 1.94
Adjusted spectral response acceleration, S_M	S_{MS} = 0.97 g	S_{M1} = 0.70 g
Design spectral response acceleration, S_D	S_{DS} = 0.65 g	S_{D1} = 0.46 g

1. The structural engineer should evaluate ASCE 7-16 code requirements and exceptions to determine if these parameters are valid for design.

Columbia West recommends the project structural engineer evaluate the requirements and exceptions presented in ASCE 7-16 to determine if the parameters for Site Class D provided in Table 2 can be used for design or if a site-specific seismic hazard evaluation is required (not anticipated for typical residential structures).

5.4 RETAINING STRUCTURES

Lateral earth pressures should be considered in design of retaining walls and below-grade structures. Hydrostatic pressure and additional surcharge loading should also be considered. Retaining wall foundation construction and bearing capacity should adhere to the specifications in Section 5.1 (Foundation Support).

Permanent retaining walls that are not restrained from rotation should be designed for active earth pressures using an equivalent fluid pressure of 35 pcf. Walls that are restrained from rotation should be designed for an at-rest equivalent fluid pressure of 55 pcf. The recommended earth pressures assume a maximum wall height of 10 feet with well-drained, level backfill. These values also assume that adequate drainage is provided behind retaining walls to prevent hydrostatic pressure from developing. Lateral earth pressures induced by surcharge loads may be estimated using the criteria presented on Figure 3.

Seismic forces may be calculated by superimposing a uniform lateral force of $9H^2$ pounds per lineal foot of wall, where H is the total wall height in feet. The force should be applied as a uniformly distributed load with the resultant located at 0.6H from the base of the wall.

5.4.1 Wall Drainage and Backfill

A minimum 6-inch-diameter, perforated collector pipe should be placed at the bases of retaining walls. The pipe should be embedded in a minimum 2-foot-wide zone of angular drain rock that is wrapped in a drainage geotextile fabric and extends up the back of the wall to within 1 foot of finished grade. The drain rock and geotextile drainage fabric should meet the specifications in Section 7.6 (Materials). Perforated collector pipes should discharge at an appropriate location away from the base of the wall. Discharge pipes should not be tied directly into stormwater drainage systems, unless measures are taken to prevent backflow into the drainage system of the wall.

Backfill placed behind walls and extending a horizontal distance of ½H, where H is the height of the retaining wall, should consist of select granular material placed and compacted as described in Section 6.4.1 (Structural Fill).

Settlement of up to 1 percent of the wall height commonly occurs immediately adjacent to the wall as the wall rotates and develops active lateral earth pressures. Consequently, we recommend that construction of flatwork adjacent to retaining walls be delayed at least four weeks after placement of wall backfill, unless survey data indicates that settlement is complete prior to that time.

5.5 PAVEMENT

We understand that public roadways for the subdivision will be constructed in accordance with jurisdictional standards. For dry weather construction, pavement surface sections should bear on competent subgrade consisting of firm, native soil or engineered structural fill. Wet weather construction may require an increased thickness of aggregate base as discussed in Section 6.2 (Construction Traffic and Staging).

In general, AC paving is not recommended during cold weather (temperatures less than 40 degrees Fahrenheit). Compacting under these conditions can result in low compaction and premature pavement distress. Each AC mix design has a recommended compaction temperature range that is specific for the particular AC binder used. In colder temperatures, it is more difficult to maintain the temperature of the AC mix, as it can lose heat while stored in the delivery truck, as it is placed, and in the time between placement and compaction. In Washington, the AC surface temperature during paving should be at least 40 degrees Fahrenheit for lift thicknesses greater

than 2.5 inches and at least 50 degrees Fahrenheit for lift thicknesses between 2 and 2.5 inches. If AC paving must take place during cold weather construction as defined in this section, the contractor and design team should discuss options for minimizing risk to pavement serviceability.

5.6 DRAINAGE

At a minimum, site drainage should include surface water collection and conveyance to properly designed stormwater management structures and facilities. In general, drainage design should conform to City of Camas regulations. Finished site grading should be conducted with positive drainage away from structures at a minimum 2 percent slope for a distance of at least 10 feet. Depressions or shallow areas that may retain ponding water should be avoided.

Recommendations for foundation drains and subdrains are presented in the following sections. Drain rock and geotextile drainage fabric should meet the requirements in Section 6.4 (Materials). Drains should be closely monitored after construction to assess their effectiveness. If additional surface or shallow subsurface seepage becomes evident, the drainage provisions may require modification or additional drains. We should be consulted to provide appropriate recommendations.

5.6.1 Foundation Drains

Roof drains are recommended for all structures. Perimeter building foundation drains should be considered for shallow foundations constructed below existing site grades but are not necessary for the functionality of the buildings.

Foundation and roof drains, where installed, should consist of separate systems that gravity flow away from foundations to an approved discharge location. Perimeter foundation drains should consist of 4-inch-diameter, perforated PVC pipe surrounded by a minimum 2-foot-wide zone of clean, washed drain rock wrapped with geotextile drainage fabric. The wrapped drain rock zone should extend up the sides of embedded walls to within 12 inches of proposed finished grade. Foundation drains should be constructed with a minimum slope of 0.5 percent. The invert elevation of the drainpipe should be at least 18 inches below the elevation of the floor slab.

5.6.2 Subdrains

Subdrains should be considered if portions of the site are cut below surrounding grades. Shallow groundwater or seepage should be conveyed via a drainage channel or perforated pipe into an approved discharge. Recommendations for design and installation of perforated drainage pipe may be performed on a case-by-case basis by Columbia West during construction. Failure to provide adequate surface and subsurface drainage may result in soil slumping or unanticipated settlement of structures exceeding tolerable limits.

5.6.3 Drainage Mat

Site construction in some areas may occur at or near the groundwater table or in areas of existing preferential pathways for surface and subsurface water flow, particularly if work is conducted during wet weather conditions. A drainage mat is typically required in areas that require structural fill placed on top of a natural drainage swale or known seep or spring area. Dewatering may be necessary, and a drainage mat may be required to achieve sufficient elevation for fill placement. A typical drainage mat is shown on Figure 4. Columbia West should determine drainage mat

location, extent, and thickness when subsurface conditions are exposed. Drainage mats may need to be constructed in conjunction with subdrains to convey captured water to an approved discharge location.

5.7 PERMANENT SLOPES

Fill slopes should consist of structural fill material as discussed in Section 6.4.1 (Structural Fill). Fill placed on existing grades steeper than 5H:1V should be horizontally benched at least 10 feet into the slope. Fill slopes greater than 6 feet in height should be vertically keyed into existing subsurface soil. Drainage implementations, including subdrains or perforated drainpipe trenches, may also be necessary in proximity to cut and fill slopes if seeps or springs are encountered. Drainage design may be performed on a case-by-case basis. The extent, depth, and location of drainage may be determined in the field by Columbia West during construction when soil conditions are exposed. Failure to provide adequate drainage may result in soil sloughing, settlement, or erosion.

Final cut or fill slopes at the site should not exceed 2H:1V or 10 feet in height without individual slope stability analysis. The values above assume a minimum horizontal setback for loads of 10 feet from the top of the cut or fill slope face or overall slope height divided by three (H/3), whichever is greater.

Concentrated drainage or water flow over the face of slopes should be prohibited, and adequate protection against erosion is required. Fill slopes should be overbuilt, compacted, and trimmed at least 2 feet horizontally to provide adequate compaction of the outer slope face. Proper cut and fill slope construction is critical to overall project stability and should be observed and documented by Columbia West.

6.0 CONSTRUCTION

6.1 SITE PREPARATION

Vegetation, organic material, remnant pavement, unsuitable fill, and deleterious material should be cleared from areas identified for structures and grading. Vegetation, root zones, organic material, and debris should be removed from the site. Stripped topsoil should also be removed or used only as landscape fill in non-structural areas with slopes less than 25 percent. The post-construction maximum depth of landscape fill placed or spread at any location onsite should not exceed 1 foot. Actual stripping depths should be determined based on visual observations made during construction when soil conditions are exposed.

6.1.1 Subgrade Evaluation

Upon completion of stripping and prior to the placement of structural fill, exposed subgrade soil should be evaluated by proof rolling with a fully loaded dump truck or similar heavy, rubber-tired construction equipment. When the subgrade is too wet for proof rolling or inaccessible to a loaded dump truck, a foundation probe may be used to identify areas of soft, loose, or unsuitable soil. Subgrade evaluation should be performed by Columbia West. If soft or yielding subgrade areas are identified during evaluation, we recommend the subgrade be over excavated and backfilled with compacted imported granular fill.

6.1.2 Test Pit Locations

Test pits excavated during our explorations were backfilled loosely with on-site soil. These excavations should be located and properly backfilled with structural fill during site improvement construction. Trees, stumps, and associated roots should also be removed from structural areas, individually and carefully. Resulting cavities and excavation areas should be backfilled with engineered structural fill.

6.2 CONSTRUCTION TRAFFIC AND STAGING

Near-surface, clay soil will be easily disturbed during construction. If not carefully executed, site preparation, excavation, and grading can create extensive soft areas, resulting in significant repair costs. Earthwork planning should include considerations for minimizing subgrade disturbance, particularly during wet weather conditions.

If construction occurs during wet weather conditions or if the moisture content of the surficial soil is more than a few percentage points above optimum, site stripping and cutting may need to be accomplished using track-mounted equipment. Under these conditions, granular access pads and staging areas will also be necessary to provide a firm support base and sustain construction equipment.

Based on our experience, between 12 and 18 inches of imported granular material are generally required in staging areas and between 18 and 24 inches in areas supporting construction traffic. In areas of heavy construction traffic, geotextile separation fabric may be placed between the subgrade soil and imported granular material to increase subgrade support and minimize fines migration into the aggregate base layer.

Project stakeholders should understand that wet weather construction is risky and costly. Proper construction methods and techniques are critical to overall project integrity and should be observed and documented by Columbia West.

6.3 EXCAVATION

Conventional earthmoving equipment in proper working condition should be capable of making necessary site excavations to the depths of our test pit explorations. Gravel, cobbles, and boulders representing weathered basaltic andesite were encountered in the west portion of the site at depths as shallow as 4 feet BGS. In these locations, refusal of the excavator was observed as shallow as 5.5 feet BGS. Difficult excavation conditions should be anticipated in areas underlain by shallow bedrock. If utility or grading design requires excavations beyond the depths explored during our test pit explorations, a location-specific exploration is recommended to determine if specialized equipment or blasting of intact bedrock may be required.

Temporary excavation sidewalls should maintain a vertical cut to a depth of approximately 4 feet BGS in near-surface clay, provided groundwater seepage is not present in the sidewalls. In sandy soil, excavations will likely slough and cave, even at shallow depths. Open-cut excavation techniques may be used to excavate trenches between 4 and 8 feet deep, provided the walls of the excavation are cut at a maximum slope of 1.5H:1V and groundwater seepage does not occur. Excavation side slopes should be reduced to a stable inclination if excessive sloughing or raveling occurs.

Groundwater seepage was observed in our test pits at depths between 5.5 and 8 feet BGS. Recommendations as described in Section 6.3.1 (Construction Dewatering) should be considered where subsurface construction activities intersect the shallow groundwater table.

Shoring may be required if open-cut excavations are not feasible. As a wide variety of shoring and dewatering systems are available, we recommend that the contractor be responsible for selecting the appropriate shoring and dewatering systems. If box shoring is used, the contractor should understand it is a safety feature used to protect workers and does not prevent caving. If excavations are left open, caving of the sidewalls may occur. The presence of caved material will limit the ability to properly backfill and compact trenches. The contractor should be prepared to fill voids between the box shoring and the sidewalls of the trenches with sand or gravel before caving occurs.

All excavations should be made in accordance with applicable OSHA requirements and regulations of the state, county, and local jurisdiction. While this report describes certain approaches to excavation and dewatering, the contract documents should specify that the contractor is responsible for selecting the excavation and dewatering methods, monitoring the excavations for safety, and providing shoring (as required) to protect personnel and adjacent structural elements.

6.3.1 Construction Dewatering

The contractor should be responsible for temporary drainage of surface water, perched water, and groundwater, if encountered. Dewatering should be performed to the extent necessary to prevent standing water and/or erosion of the exposed site soil. During rough and finished grading of building pad areas, the contractor should keep all footing excavations and slab subgrade soil free of standing water.

The contractor's proposed dewatering plan should be capable of maintaining groundwater levels at least 2 feet below the bases of proposed trench excavations. Without adequate trench dewatering, running soil, caving, and sloughing will increase backfill volumes and may result in damage to adjacent structures or utilities. Significant pumping and dewatering may be required to temporarily reduce the groundwater elevation to the recommended depth. Dewatering via a sump within excavation zones may be insufficient to control groundwater and provide excavation side slope stability. Dewatering may be more feasibly conducted by installing a system of temporary well points and pumps around proposed excavation areas or utility trenches.

If groundwater is present at the bases of utility excavations, we recommend placing 18 to 24 inches of stabilization material at the bases of the excavation. Subgrade geotextile placed directly over trench subgrade soil may reduce the required thickness of the stabilization material. The actual thickness of stabilization material should be determined at the time of construction based on observed field conditions. Trench stabilization material should be placed in one lift and compacted until well keyed. Stabilization material and geotextile fabric should meet the requirements in Section 6.4 (Materials).

We note that these recommendations are for guidance only. Dewatering of excavations is the sole responsibility of the contractor, as the contractor is in the best position to select these systems based on their means and methods.

6.4 MATERIALS

6.4.1 Structural Fill

6.4.1.1 General

Areas proposed for fill placement should be appropriately prepared as described in Section 6.1 (Site Preparation). Engineered fill placement should be observed by Columbia West. Compaction of engineered structural fill should be verified by nuclear gauge field compaction testing performed in accordance with ASTM D6938. Field compaction testing should be performed for each vertical foot of engineered fill placed.

Various materials may be acceptable for use as structural fill. Structural fill should be free of organic material or other unsuitable material and meet the specifications provided in the following sections. Representative samples of proposed engineered structural fill should be submitted for laboratory testing and approval by Columbia West prior to placement.

6.4.1.2 On-Site Soil

The on-site clay will be suitable for use as structural fill if adequately dried and moisture conditioned to achieve recommended compaction specifications. Native clay soil with a plasticity index greater than 25 should be evaluated at the time of construction and approved by Columbia West prior to use as structural fill. We note that clay meeting this criteria was observed in test pit TP-1 at a depth of 5 feet BGS. The high plasticity clay will likely require blending with non-plastic or low plasticity soil prior to use as structural fill.

Laboratory testing indicates that the moisture content of the native soil was above optimum at the time of exploration. Moisture conditioning will likely be necessary to dry the soil prior to applying compaction effort. In addition, near-surface clay soil will be moisture sensitive and difficult, if not impossible, to compact during wet weather conditions. Therefore, structural fill placement using on-site soil should be performed during dry summer months if possible.

If excavated or blasted bedrock is proposed for use as engineered fill, individual fragment size should not exceed 6 inches. Larger fragments should either be removed or crushed into acceptable sizes. Rock fragments should be well dispersed within the fill to prevent nesting. Crushing and mixing processes should be observed by Columbia West.

On-site soil used as structural fill should be placed in loose lifts not exceeding 8 inches in thickness and compacted using standard conventional compaction equipment. The soil moisture content should be within a few percentage points of optimum conditions. The soil should be compacted to at least 95 percent of maximum dry density, as determined by ASTM D698. Compacted on-site fill soil should be covered shortly after placement.

The on-site soil will likely expand during excavation and transport and consolidate during compaction. Development of site-specific expansion and consolidation factors is beyond the scope of this study. We can provide site-specific factors upon request.

6.4.1.3 Imported Granular Material

Imported granular material should consist of pit- or quarry-run rock, crushed rock, or crushed gravel and sand. The imported granular material should also be durable, angular, and fairly well graded between coarse and fine material; should have less than 5 percent fines by dry weight; and should have at least two mechanically fractured faces. Imported granular material should be placed in loose lifts not exceeding 12 inches in thickness and compacted to at least 95 percent of maximum dry density as determined by ASTM D1557. During wet weather conditions or where wet subgrade conditions are present, the initial loose lift of granular fill should be approximately 18 inches thick and should be compacted with a smooth-drum roller operating in static mode.

6.4.1.4 Trench Backfill

Trench backfill placed below, adjacent to, and up to at least 12 inches above utility lines (i.e., the pipe zone) should consist of well-graded granular material meeting WSS 9-03.12(3) – Gravel Backfill for Pipe Zone Bedding. Pipe zone backfill should be compacted to at least 90 percent of maximum dry density as determined by ASTM D1557 or as required by the local jurisdictional agency or pipe manufacturer.

Within structural areas (below pavement and building pads), trench backfill above the pipe zone should consist of WSS 9-03.19 – Bank Run Gravel for Trench Backfill or WSS 9 03.14(2) – Select Borrow with a maximum particle size of 2½ inches. Trench backfill material within 18 inches of the top of utility pipes should be hand compacted (i.e., no heavy compaction equipment). Remaining trench backfill should be compacted to at least 95 percent of maximum dry density as determined by ASTM D1557 or as required by the local jurisdictional agency or pipe manufacturer.

Outside of structural areas, trench backfill placed above the pipe zone should be compacted to at least 90 percent of maximum dry density as determined by ASTM D1557 or as required by the local jurisdictional agency or pipe manufacturer.

6.4.1.5 Stabilization Material

Stabilization material used to create haul roads for construction traffic or at the base of unstable trench subgrade should consist of pit- or quarry-run rock or crushed rock. The material should have a maximum particle size of 6 inches and less than 5 percent by dry weight passing the U.S. Standard No. 4 sieve, should have at least two mechanically fractured faces, and should be free of organic material and other deleterious material. Material meeting the specifications in WSS 9-27.3(6) – Stone is generally acceptable for use. Stabilization material should be placed in lifts between 12 and 18 inches thick and compacted to a firm condition with a smooth-drum roller without using vibratory action.

6.4.1.6 Drain Rock

Drain rock should consist of angular, granular material with a maximum particle size of 2 inches and less than 2 percent fines by dry weight. Drain rock should be free of roots, organic material, and other unsuitable material and should have at least two mechanically fractured faces. Drain rock should be compacted to a firm, unyielding condition. Drain rock should be completely wrapped in a geotextile drainage fabric meeting the requirements presented below.

6.4.1.7 Retaining Wall Backfill

Backfill placed behind retaining walls and extending a horizontal distance of ½H, where H is the height of the retaining wall, should consist of imported granular material as described above and should have less than 7 percent fines by dry weight. We recommend the wall backfill be separated from general fill, native soil, and/or topsoil using a geotextile fabric that meets the specifications provided below for drainage geotextiles.

The wall backfill should be compacted to a minimum of 95 percent of maximum dry density as determined by ASTM D1557. However, backfill located within a horizontal distance of 3 feet from a retaining wall should only be compacted to approximately 90 percent of maximum dry density as determined by ASTM D1557. Backfill placed within 3 feet of the wall should be compacted in lifts less than 6 inches thick using hand-operated tamping equipment (such as a jumping jack or vibratory plate compactor). If flatwork (sidewalks or pavement) will be placed atop the wall backfill, we recommend that the upper 2 feet of material be compacted to 95 percent of maximum dry density as determined by ASTM D1557.

6.4.1.8 Retaining Wall Leveling Pad

Imported granular material placed at the bases of retaining wall footings should consist of select granular material. The granular material should be ¾- to 1-inch-minus aggregate size and should have at least two mechanically fractured faces. The leveling pad material should be placed in a 6- to 12-inch-thick lift and compacted to not less than 95 percent of maximum dry density as determined by ASTM D1557.

6.4.1.9 Floor Slab Aggregate Base

Aggregate base for building floor slabs should consist of 1¼-inch-minus crushed aggregate meeting WSS 9-03.9(3) – Crushed Surfacing. Slab aggregate base should be compacted to at least 95 percent of maximum dry density as determined by ASTM D1557.

6.4.2 Geotextile Fabric

6.4.2.1 Subgrade Geotextile

Subgrade geotextile should meet the specifications in WSS 9-33.2(1), Table 3, Geotextile for Separation or Soil Stabilization. The geotextile should be installed in accordance with the manufacturer's recommendations. A minimum initial aggregate base lift of 6 inches is required over geotextiles. All stabilization material should be underlain by a subgrade geotextile.

6.4.2.2 Drainage Geotextile

Subgrade geotextile should meet the specifications in WSS 9-33.2(1), Table 2, Geotextile for Underground Drainage Filtration Properties. The AOS should be between U.S. Standard No. 70 and No. 100 sieves. The water permittivity should be greater than 1.5/sec. The geotextile should be installed in accordance with the manufacturer's recommendations. A minimum initial aggregate base lift of 6 inches is required over geotextiles.

6.5 EROSION CONTROL

Soil at this site is susceptible to erosion by wind and water; therefore, erosion control measures should be carefully planned and installed before construction begins. Surface water runoff should be collected and directed away from sloped areas to prevent water from running down the slope

face. Measures that can be employed to reduce erosion include the use of silt fences, hay bales, buffer zones of natural growth, sedimentation ponds, and granular haul roads. All erosion control methods should be in accordance with local jurisdiction standards.

7.0 OBSERVATION OF CONSTRUCTION

Satisfactory pavement, earthwork, and foundation performance depends to a large degree on the quality of construction. Sufficient observation of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. Columbia West should be retained to observe subgrade preparation, fill placement, foundation excavations, drainage system installation, and pavement placement and to review laboratory compaction and field moisture-density information.

Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations. Recognition of changed conditions requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated.

8.0 LIMITATIONS

We have prepared this report for use by the addressee and members of the design and construction team for the proposed project. This report is subject to the limitations expressed in Appendix C.

♦ ♦ ♦

We appreciate the opportunity to be of service to you. Please call if you have questions concerning this report or if we can provide additional services.

Sincerely,

Greg L. Williamson, PE
Senior Geotechnical Engineer

Daniel E. Lehto, PE, GE
Principal Engineer

REFERENCES

ASCE 2016. *Minimum Design Loads and Associated Criteria for Buildings and Other Structures.* ASCE Standard ASCE/SEI 7-16.

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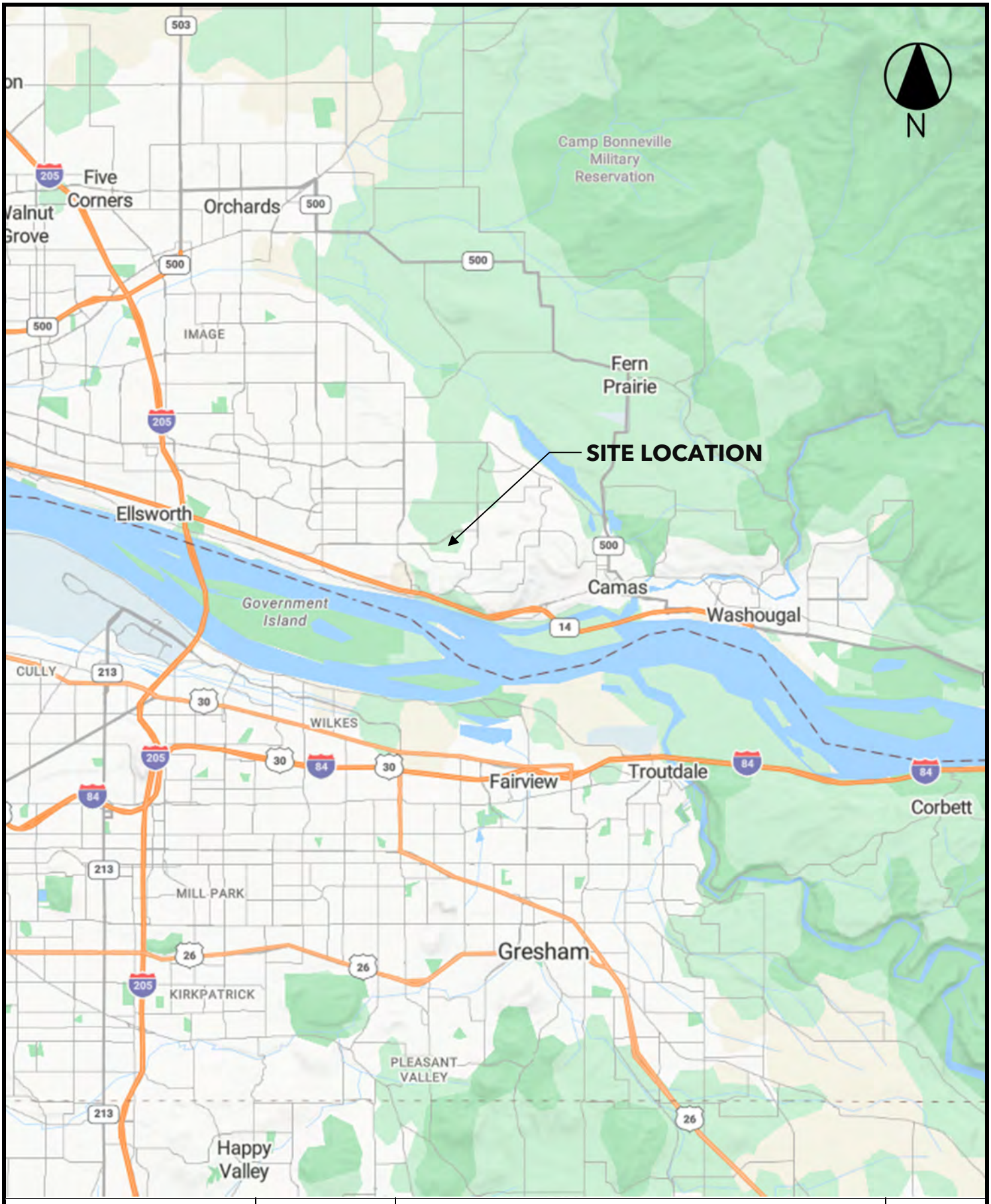
USDA 2009. "Chapter 7, Hydrologic Soil Groups," *National Engineering Handbook*, *Part 630 Hydrology,* National Resources Conservation Services, January 2009.

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FIGURES



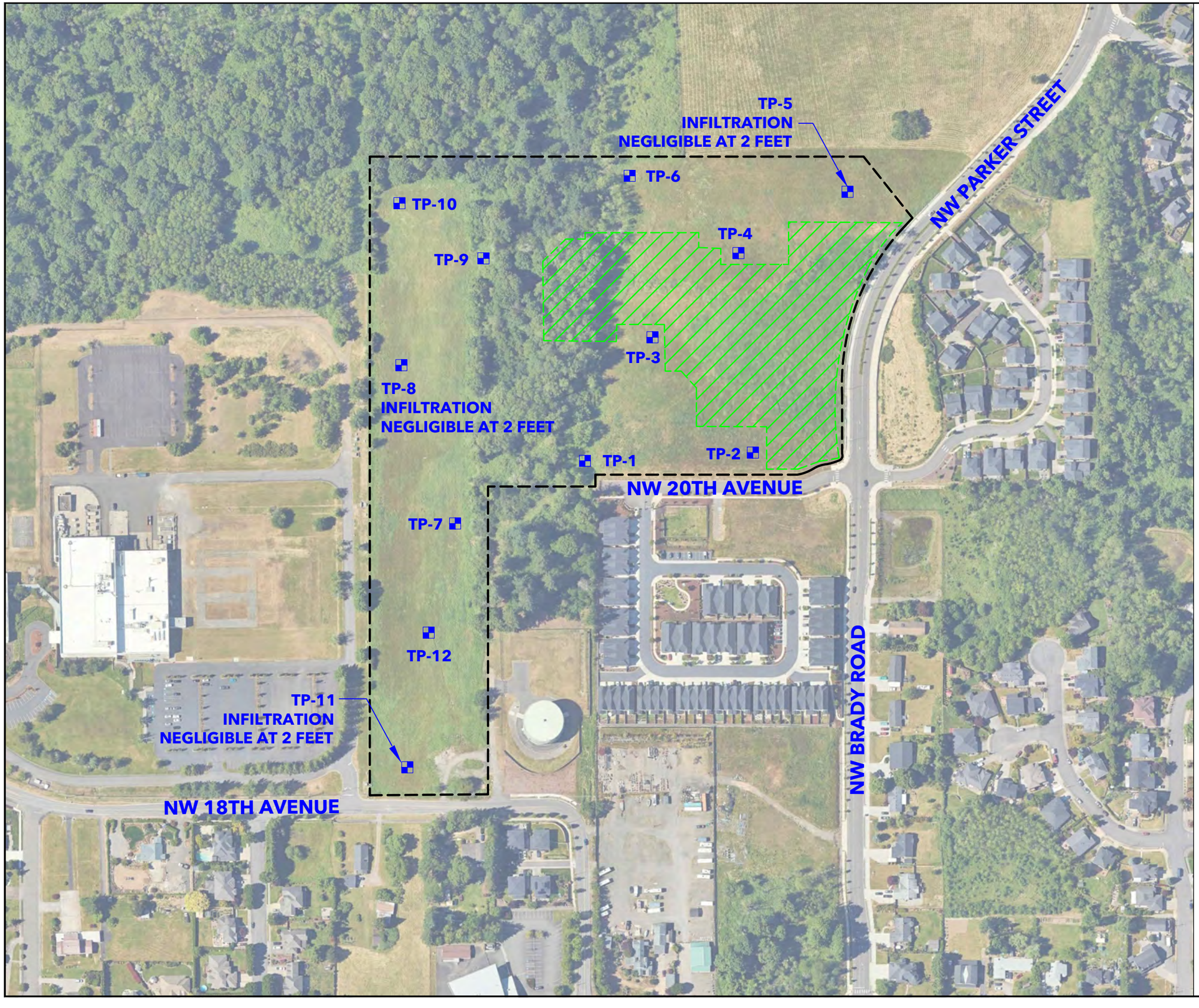
Geotechnical ▪ Environmental ▪ Special Inspections
Columbia West Engineering, Inc

PROJECT NO.:
ALLIEDDEV-1-01-1

MAY 2025

VICINITY MAP
NW 18TH AVENUE SUBDIVISION
CAMAS, WASHINGTON

FIGURE
1



LEGEND

- SITE BOUNDARY
- TEST PIT
- PROPOSED OPEN SPACE

N

0 100 200 300 400

NOTES:
1. AERIAL PHOTO SOURCED FROM GOOGLE EARTH.
2. EXPLORATION LOCATIONS ARE APPROXIMATE AND NOT SURVEYED.
3. REFER TO REPORT TEXT FOR EXPLORATION DESCRIPTIONS.

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NW 18TH AVENUE SUBDIVISION
CAMAS, WASHINGTON
4511 NW 18TH AVENUE

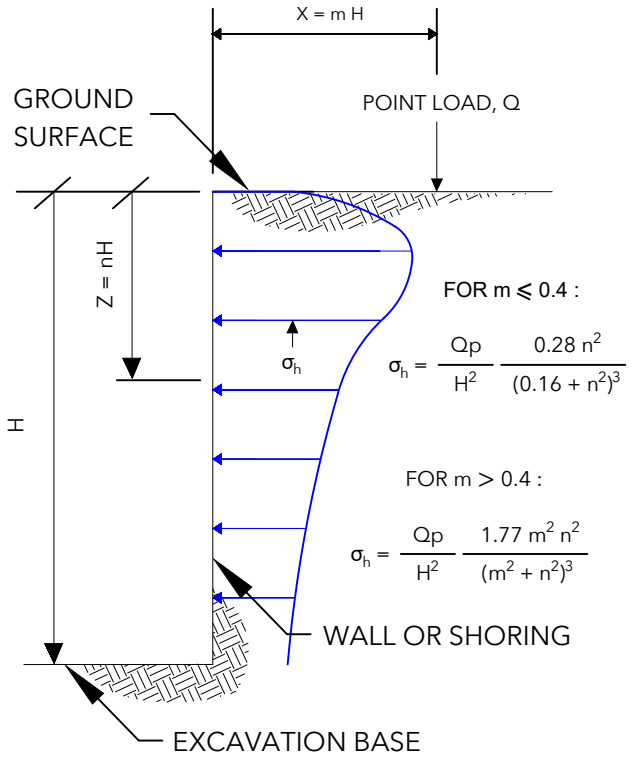
SITE PLAN

PROJECT NO:
ALLIEDDEV-1-01-1

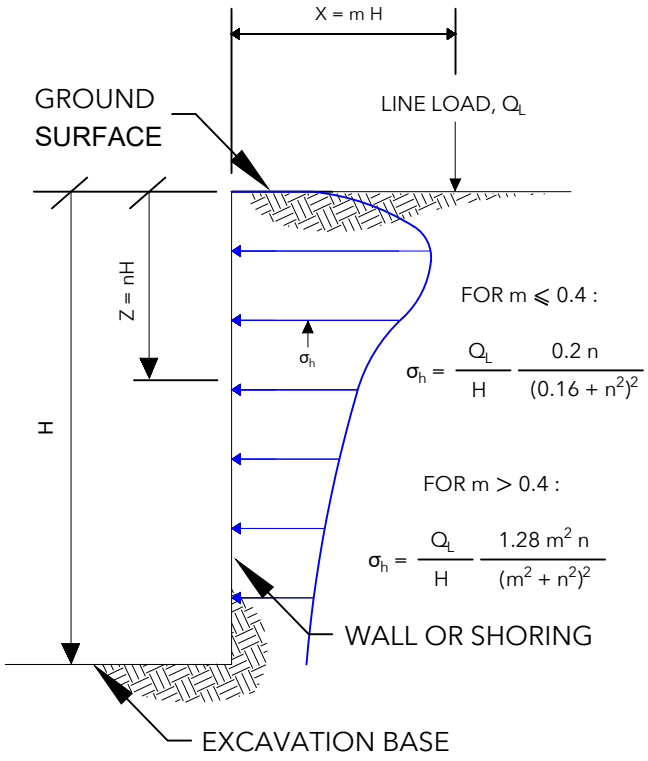
MAY 2025

FIGURE
2

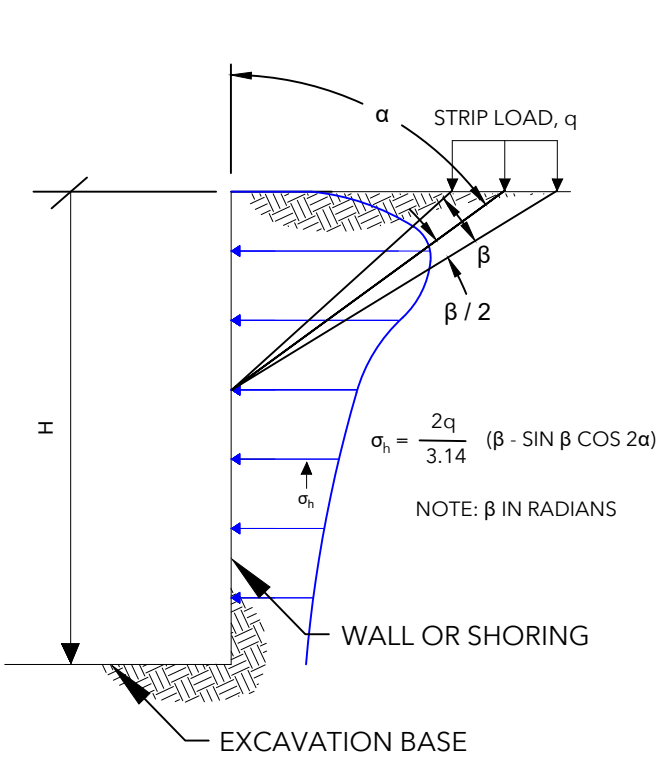
VERTICAL POINT LOAD



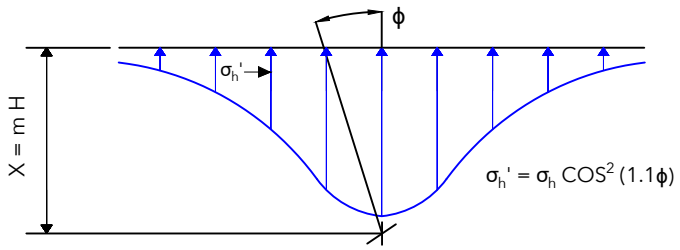
LINE LOAD PARALLEL TO WALL



STRIP LOAD PARALLEL TO WALL

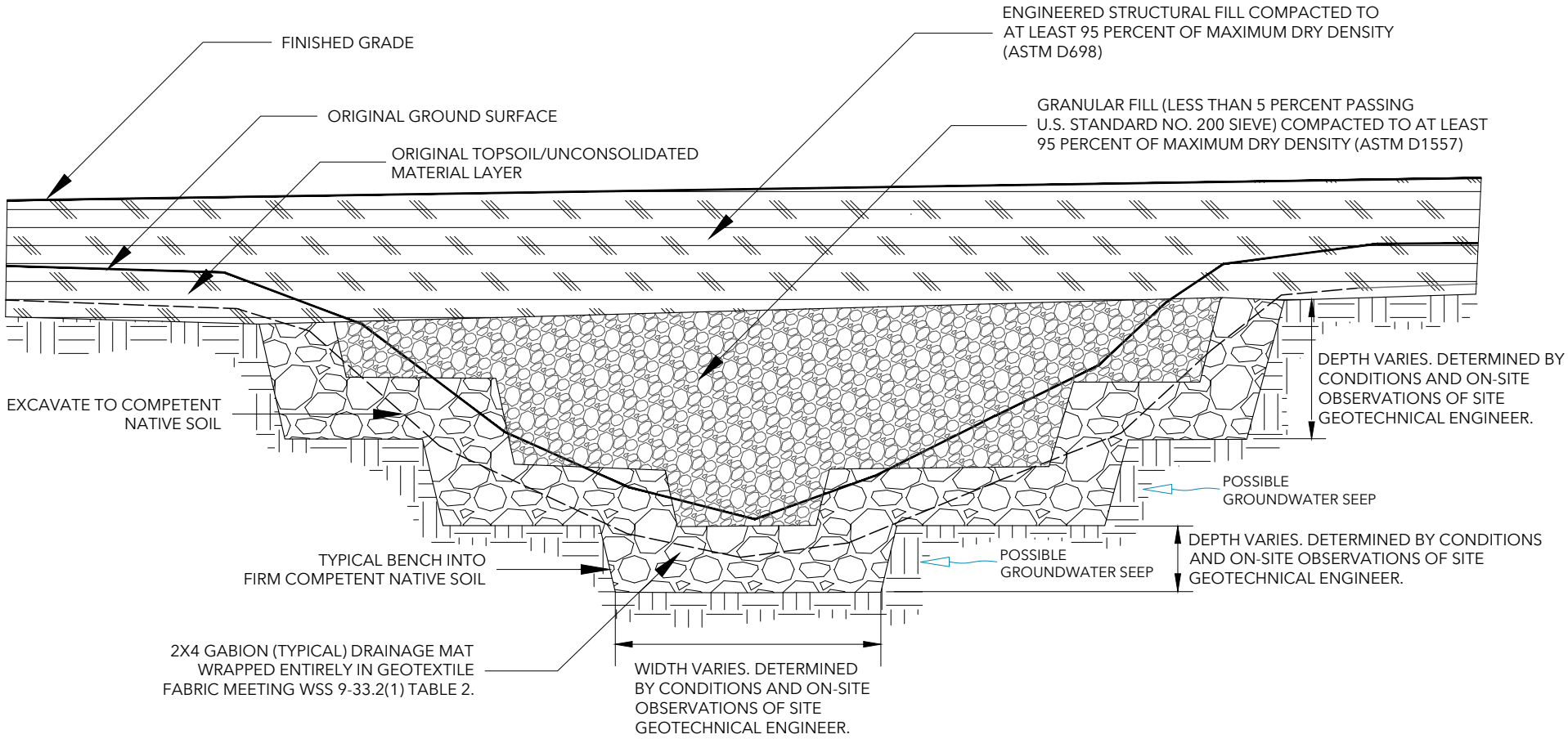


VERTICAL POINT LOAD HORIZONTAL PRESSURE DISTRIBUTION



NOTES:

1. FIGURE SHOULD BE USED JOINTLY WITH RECOMMENDATIONS PRESENTED IN THE REPORT TEXT.
2. LATERAL EARTH PRESSURES ASSUME RIGID WALLS WITH BACKFILL MATERIALS HAVING A POISSON'S RATIO OF 0.5.
3. TOTAL LATERAL EARTH PRESSURES RESULTING FROM COMBINED LOADS MAY BE CALCULATED USING SUPERPOSITION.
4. DRAWING IS NOT TO SCALE.



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TYPICAL DRAINAGE MAT CROSS SECTION

NOTES:
1. DRAWING IS NOT TO SCALE.
2. DRAWING REPRESENTS TYPICAL DRAINAGE MAT SECTION AND MAY NOT BE SITE-SPECIFIC.

FIGURE
725

APPENDIX A

APPENDIX A
FIELD EXPLORATIONS

GENERAL

We explored subsurface conditions at the site by excavating 12 test pits (TP-1 through TP-12) to depths between 5.5 and 15 feet BGS. Excavation services were provided by L&S Contractors of Yacolt, Washington, on April 29, 2025, using a track-mounted excavator. The explorations were logged on a full-time basis by Columbia West personnel. The exploration logs are presented in this appendix.

The exploration locations are shown on Figure 2. The exploration locations were determined in the field by pacing or measuring from existing site features. This information should be considered accurate only to the degree implied by the methods used.

SOIL SAMPLING

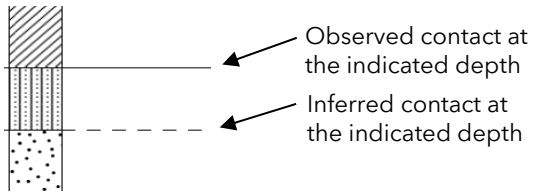
Representative disturbed samples of soil observed in the test pit explorations were collected from the test pit walls and base using the excavator bucket. Sampling methods and intervals are shown on the exploration logs.

SOIL CLASSIFICATION

The soil samples were classified in the field in accordance with the "Exploration Legend" and "Soil Classification System," which are presented in this appendix. The exploration logs indicate the depths at which the soil characteristics change, although the change could be gradual. If the change occurred between sample locations, the depth was interpreted. Classifications are shown on the exploration logs.

EXPLORATION LEGEND

SAMPLER TYPE	DESCRIPTION
SPT	Sample collected from the indicated depth in general accordance with ASTM D1586, *Standard Test Method Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils,* using an SPT sampler and 140-pound hammer
SH	Sample collected from the indicated depth in general accordance with ASTM D1587, *Standard Practice for Thin-Walled Tube Sampling of Fine-Grained Soils for Geotechnical Purposes,* using a thin-walled Shelby tube, or in general accordance with ASTM D6519, *Standard Practice for Sampling of Soil Using the Hydraulically Operated Stationary Piston Sampler,* using a thin-walled tube
D&M	Sample collected from the indicated depth in general accordance with ASTM D3550, *Standard Practice for Thick Wall, Ring-Lined, Split Barrel, Drive Sampling of Soils,* using a Dames & Moore sampler and 140-pound hammer or pushed
CSS	Sample collected from the indicated depth in general accordance with ASTM D3550, *Standard Practice for Thick Wall, Ring-Lined, Split Barrel, Drive Sampling of Soils,* using a 3-inch-outside diameter California split-spoon sampler and 140-pound hammer
DP	Sample collected from the indicated depth in general accordance with ASTM D6282, *Standard Guide for Direct Push Soil Sampling for Environmental Site Characterizations,* using a direct-push soil sampler
GRAB	Grab sample collected from the indicated depth
CORE	Pavement or rock core interval at the indicated depth



GEOTECHNICAL ABBREVIATIONS			
ATT	Atterberg limits	PP	Pocket penetrometer
CBR	California bearing ratio	P200	Percent passing No. 200 sieve
CON	Consolidation test	RES	Resilient modulus
DD	Dry density	SIEV	Sieve analysis
DS	Direct shear	TS	Torvane shear
HYD	Hydrometer	tsf	Tons per square foot
MC	Moisture content	UC	Unconfined compressive strength
MD	Moisture-density relationship	UU	Unconsolidated undrained triaxial test
NP	Non-plastic	VS	Vane shear
OC	Organic content	WD	Wet density
ENVIRONMENTAL ABBREVIATIONS			
CA	Sample submitted for chemical analysis	ND	Not detected
		NS	No sheen
PID	Photoionization detector headspace analysis	SS	Slight sheen
		MS	Moderate sheen
ppm	Parts per million	HS	Heavy sheen

SOIL CLASSIFICATION SYSTEM

PARTICLE-SIZE CLASSIFICATION

COMPONENT	ASTM / USCS		AASHTO	
	Size Range	Sieve Size Range	Size Range	Sieve Size Range
Boulders	Greater than 300 mm	Greater than 12 inches	--	--
Cobbles	75 mm to 300 mm	3 inches to 12 inches	Greater than 75 mm	Greater than 3 inches
Gravel	75 mm to 4.75 mm	3 inches to No. 4 sieve	75 mm to 2.00 mm	3 inches to No. 10 sieve
Coarse	75 mm to 19.0 mm	3 inches to 3/4-inch sieve	--	--
Fine	19.0 mm to 4.75 mm	3/4-inch to No. 4 sieve	--	--
Sand	4.75 mm to 0.075 mm	No. 4 to No. 200 sieve	2.00 mm to 0.075 mm	No. 10 to No. 200 sieve
Coarse	4.75 mm to 2.00 mm	No. 4 to No. 10 sieve	2.00 mm to 0.425 mm	No. 10 to No. 40 sieve
Medium	2.00 mm to 0.425 mm	No. 10 to No. 40 sieve	--	--
Fine	0.425 mm to 0.075 mm	No. 40 to No. 200 sieve	0.425 mm to 0.075 mm	No. 40 to No. 200 sieve
Fines (Silt and Clay)	Less than 0.075 mm	Passing No. 200 sieve	Less than 0.075 mm	Passing No. 200 sieve

CONSISTENCY FOR COHESIVE SOIL

CONSISTENCY	SPT N-VALUE (blows per foot)	D&M N-VALUE (blows per foot)	POCKET PENETROMETER (unconfined compressive strength [tsf])
Very soft	0 to 2	0 to 3	Less than 0.25
Soft	2 to 4	3 to 6	0.25 to 0.5
Medium stiff	4 to 8	6 to 12	0.5 to 1.0
Stiff	8 to 15	12 to 25	1.0 to 2.0
Very stiff	15 to 30	25 to 65	2.0 to 4.0
Hard	Greater than 30	Greater than 30	Greater than 4.0

RELATIVE DENSITY FOR GRANULAR SOIL

RELATIVE DENSITY	SPT N-VALUE (blows per foot)	D&M N-VALUE (blows per foot)
Very loose	0 to 4	0 to 11
Loose	4 to 10	11 to 26
Medium dense	10 to 30	26 to 74
Dense	30 to 50	74 to 120
Very dense	Greater than 50	Greater than 120

MOISTURE DESIGNATIONS

TERM	FIELD IDENTIFICATION
Dry	Very low moisture, dry to touch
Moist	Damp, color appears darkened, without visible moisture, cohesive soil will clump, sand will bulk
Wet	Visible free water, usually saturated

ADDITIONAL CONSTITUENTS

Percent	SILT AND CLAY IN		Percent	SAND AND GRAVEL IN		Percent	SECONDARY MATERIAL
	Fine-Grained Soil	Coarse-Grained Soil		Fine-Grained Soil	Coarse-Grained Soil		Organics and Man-Made Debris
< 5	trace	trace	< 5	trace	trace	< 4	trace
5 – 12	minor	with	5 – 15	minor	minor	4 – 12	some
> 12	some	silty/clayey	15 – 30	with	with		
			> 30	sandy/gravelly	with		

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TEST PIT NUMBER: TP-1

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 8:15 AM
LOGGED BY S. Chandra
TIME COMPLETED 8:43 AM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (LL-PL-PI)	FINES (%)	REMARKS
					Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (14-inch-thick tilled zone, 3-inch-thick root zone). 1.2					
					Medium stiff, brown with orange mottled CLAY, minor sand, moist, high plasticity, sand is fine.					
5	Grab	TP1.1					31	62-25-37	89	
			CH							
					Brown with orange-gray mottles, wet at 8 feet.					
10	Grab	TP1.2					29			
					14.0					
					Exploration completed at 14 feet.					
15										

GROUNDWATER: Slow seepage at 8 feet

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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TEST PIT NUMBER: TP-2

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 8:50 AM
LOGGED BY S. Chandra
TIME COMPLETED 9:27 AM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
	Grab	TP2.1			Medium stiff, dark brown sandy CLAY, trace organics and gravel, moist, medium plasticity (18-inch-thick tilled zone, 3-inch-thick root zone). 1.5			
	Grab	TP2.2	CL		Medium stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity, sand is fine. 14.0		27	
5								
10								
					Exploration completed at 14 feet.			
15								

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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TEST PIT NUMBER: TP-3

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 9:30 AM
LOGGED BY S. Chandra
TIME COMPLETED 9:55 AM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	FINES (%)	REMARKS
					Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone). 1.5				
			CL		Medium stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity, sand is fine.				
	Grab	TP3.1					29		
5									
	Grab	TP3.2			Wet at 7 feet.		29	90	
10					14.0				
					Exploration completed at 14 feet.				
15									

GROUNDWATER: Moderate seepage at 7 feet
CAVING: Not observed

BoreDM Template: Test Pit Template - New

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TEST PIT NUMBER: TP-4

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 9:58 AM
LOGGED BY S. Chandra
TIME COMPLETED 10:18 AM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
	Grab	TP4.1			Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone). 1.5			
5	Grab	TP4.2	CL		Medium stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity, sand is fine. 14.0			
10					Exploration completed at 14 feet.			
15								

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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Columbia West Engineering, Inc

TEST PIT NUMBER: TP-5

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 10:21 AM
LOGGED BY S. Chandra
TIME COMPLETED 11:30 AM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	FINES (%)	REMARKS
					Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone). 1.5				
	SH	TP5.1	CL		Medium stiff, brown with orange mottled CLAY, minor sand, moist, low to medium plasticity, sand is fine.	2.5	24	86	Infiltration test at 2 feet.
5	Grab	TP5.2							
10					14.0				
					Exploration completed at 14 feet.				
15									

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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Columbia West Engineering, Inc

TEST PIT NUMBER: TP-6

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 10:52 AM
LOGGED BY S. Chandra
TIME COMPLETED 11:15 AM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
					Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone). 1.5	1.0		
	Grab	TP6.1	CL		Medium stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity, sand is fine.		27	
5	Grab	TP6.2						
10					With cobbles, cobbles are subrounded and up to 12 inches in diameter at 10 feet.			Very stiff, difficult excavation at 10 feet.
15					15.0 Exploration completed at 15 feet.			

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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Columbia West Engineering, Inc

TEST PIT NUMBER: TP-7

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 11:40 AM
LOGGED BY S. Chandra
TIME COMPLETED 12:05 PM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
					Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone). 1.5			
	Grab	TP7.1	CL		Medium stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity, sand is fine.		28	
	Grab	TP7.2						
5								
10	Grab	TP7.3			14.0			
					Exploration completed at 14 feet.			
15								

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

Geotechnical ▪ Environmental ▪ Special Inspections
Columbia West Engineering, Inc

TEST PIT NUMBER: TP-8

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 12:07 PM
LOGGED BY S. Chandra
TIME COMPLETED 12:24 PM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (LL-PL-PI)	FINES (%)	REMARKS
					Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone).					
					1.5					
	SH	TP8.1	CL		Medium stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity.		20	32-20-12	86	Infiltration test at 2 feet.
5	Grab	TP8.2			With cobbles and boulders, cobbles are subrounded and up to 12 inches in diameter, boulders are subrounded and up to 36 inches in diameter at 4 feet. Wet at 5.5 feet.					
					5.5					
					Exploration terminated at 5.5 feet due to refusal on boulders.					
10										
15										

GROUNDWATER: Perched at 5.5 feet
CAVING: Not observed

BoreDM Template: Test Pit Template - New

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Columbia West Engineering, Inc

TEST PIT NUMBER: TP-9

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 12:26 PM
LOGGED BY S. Chandra
TIME COMPLETED 12:40 PM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	FINES (%)	REMARKS
					Medium stiff, brown sandy CLAY, trace organics, moist, low plasticity (14 inches of topsoil, 4-inch-thick root zone). 1.2				
					Medium stiff to stiff, brown with orange mottled CLAY with sand, moist, medium plasticity, sand is fine.				
	Grab	TP9.1	CL			3	24	82	
5	Grab	TP9.1			With cobbles and boulders, cobbles are subrounded and up to 12 inches in diameter, boulders are subrounded and up to 24 inches in diameter at 4 feet. 5.5				
					Exploration terminated at 5.5 feet due to refusal on basalt.				
10									
15									

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

Geotechnical ▪ Environmental ▪ Special Inspections
Columbia West Engineering, Inc

TEST PIT NUMBER: TP-10

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 12:46 PM
LOGGED BY S. Chandra
TIME COMPLETED 1:05 PM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
	Grab	TP10.1			Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone). 1.5			
					Medium stiff to stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity.			
	Grab	TP10.2	CL				29	
5					With gravel, cobbles, and boulders, gravel is rounded, cobbles are rounded and up to 12 inches in diameter, boulders are rounded and up to 24 inches in diameter at 6 feet. 7.0			
					Exploration terminated at 7 feet due to refusal on basalt.			
10								
15								

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

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TEST PIT NUMBER: TP-11

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 1:10 PM
LOGGED BY S. Chandra
TIME COMPLETED 1:58 PM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (LL-PL-PI)	FINES (%)	REMARKS
	Grab	TP11.1			Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone). 1.5					
	SH	TP11.2	CL		Medium stiff to stiff, brown with orange mottled CLAY, minor sand, moist, low plasticity.		26	31-23-8	87	Infiltration test at 2 feet.
	Grab	TP11.3								
5										
	Grab	TP11.4								
10					Very stiff at 10 feet. 12.0					
					Exploration completed at 12 feet.					
15										

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

Geotechnical ▪ Environmental ▪ Special Inspections
Columbia West Engineering, Inc

TEST PIT NUMBER: TP-12

PROJECT NAME NW 18th Avenue Subdivision
CLIENT Allied Development
PROJECT NO. AlliedDev-1-01-1
PROJECT CITY, STATE Camas, Washington
CONTRACTOR L&S Contractors
DATE COMPLETED 04/29/2025
EQUIPMENT CAT 307E2
TIME STARTED 2:00 PM
LOGGED BY S. Chandra
TIME COMPLETED 2:15 PM

DEPTH (ft)	SAMPLE TYPE	SAMPLE ID	USCS	GRAPHIC LOG	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
					Medium stiff, dark brown sandy CLAY, trace organics, moist, medium plasticity (18-inch-thick tilled zone, 4-inch-thick root zone). 1.5			
5	Grab	TP12.1	CL		Medium stiff to stiff, brown with orange mottled CLAY, minor sand, moist, medium plasticity, sand is fine.			
					With cobbles and boulders, cobbles are rounded and up to 12 inches in diameter, boulders are rounded and up to 24 inches in diameter at 5.5 feet. 5.5			
					Exploration terminated at 5.5 feet due to refusal.			
10								
15								

GROUNDWATER: Not observed

CAVING: Not observed

BoreDM Template: Test Pit Template - New

APPENDIX B

APPENDIX B
LABORATORY TESTING

GENERAL

Laboratory testing was conducted on select soil samples to confirm field classifications and determine the index engineering properties. The laboratory classifications are shown on the exploration logs if those classifications differed from the field classifications. The locations of the tested samples are shown on the exploration logs. Descriptions of the tests are presented below, and results of the testing are presented in this appendix.

MOISTURE CONTENT

The natural moisture content of select soil samples was determined in general accordance with ASTM D 2216. The natural moisture content is a ratio of the weight of the water to dry soil in a test sample and is expressed as a percentage.

PARTICLE-SIZE ANALYSIS

Particle-size analysis was completed on select soil samples in general accordance with ASTM D1140 (P200). This test is a quantitative determination of the percent passing the U.S. Standard No. 200 sieve by dry weight.

ATTERBERG LIMITS TESTING

Atterberg limits (plastic and liquid limits) testing was performed on select soil samples in general accordance with ASTM D4318. The plastic limit is defined as the moisture content where the soil becomes brittle. The liquid limit is defined as the moisture content where the soil begins to act similar to a liquid. The plasticity index is the difference between the liquid and plastic limits.

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MOISTURE CONTENT, PERCENT PASSING NO. 200 SIEVE BY WASHING

PROJECT	CLIENT	PROJECT NO.	
NW 18th Avenue Subdivision 4511 NW 18th Avenue Camas, Washington	Allied Development 16430 N Scottsdale Road, Suite 210 Scottsdale, AZ 85254	AlliedDev-1-01-1	
		ISSUE DATE: 05/21/25	PAGE: 1 of 1
		DATE SAMPLED: 04/29/25	SAMPLED BY: S. Chandra

LABORATORY TEST DATA

TEST PROCEDURE: ASTM D2216 - Method A, ASTM D1140

LAB ID	CONTAINER MASS (g)	MOIST MASS + CONTAINER (g)	DRY MASS + CONTAINER (g)	AFTER WASH DRY MASS + CONTAINER (g)	FIELD ID	SAMPLE DEPTH (ft)	PERCENT MOISTURE CONTENT	PERCENT PASSING NO. 200 SIEVE
S25-1005	579.10	842.98	781.03	600.63	TP1.1	5	31%	89%
S25-1006	86.86	273.12	230.87	-	TP1.2	12	29%	-
S25-1007	86.63	265.27	227.54	-	TP2.2	3	27%	-
S25-1008	86.51	283.20	239.17	-	TP3.1	4	29%	-
S25-1009	541.75	852.67	782.05	565.74	TP3.2	7	29%	90%
S25-1010	561.52	863.57	805.51	595.62	TP5.1	2	24%	86%
S25-1011	87.29	313.81	265.73	-	TP6.1	3	27%	-
S25-1012	87.75	297.67	251.72	-	TP7.1	2	28%	-
S25-1013	574.83	854.33	807.67	608.39	TP8.1	2	20%	86%
S25-1014	547.98	822.00	769.65	588.87	TP9.1	3	24%	82%
S25-1015	87.15	377.78	311.97	-	TP10.2	4	29%	-
S25-1016	550.38	884.13	816.10	585.65	TP11.2	2	26%	87%

NOTES:

DATE TESTED: 05/15/25
TESTED BY: M. Scherette

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ATTERBERG LIMITS REPORT

PROJECT	CLIENT	PROJECT NO.	
NW 18th Avenue Subdivision 4511 NW 18th Avenue Camas, Washington	Allied Development 16430 N Scottsdale Road, Suite 210 Scottsdale, AZ 85254	AlliedDev-1-01-1	
		ISSUE DATE: 05/21/25	PAGE: 1 of 1
		LAB ID: S25-1005	FIELD ID: TP1.1
		DATE SAMPLED: 04/29/25	SAMPLED BY: S. Chandra

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
CLAY	Test Pit TP-1 depth = 5 feet	no data provided

LABORATORY TEST DATA

LABORATORY EQUIPMENT: Liquid Limit Machine, Hand Rolled

TEST PROCEDURE: ASTM D4318 - Method A

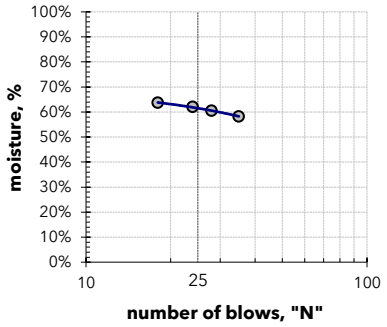
ATTERBERG LIMITS

liquid limit =	62
plastic limit =	25
plasticity index =	37

LIQUID LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	32.15	32.13	31.74	33.38
dry soil + pan weight, g =	27.84	27.76	27.50	28.48
pan weight, g =	20.43	20.54	20.67	20.78
N (blows) =	35	28	24	18
moisture, % =	58.2 %	60.5 %	62.1 %	63.6 %

LIQUID LIMIT



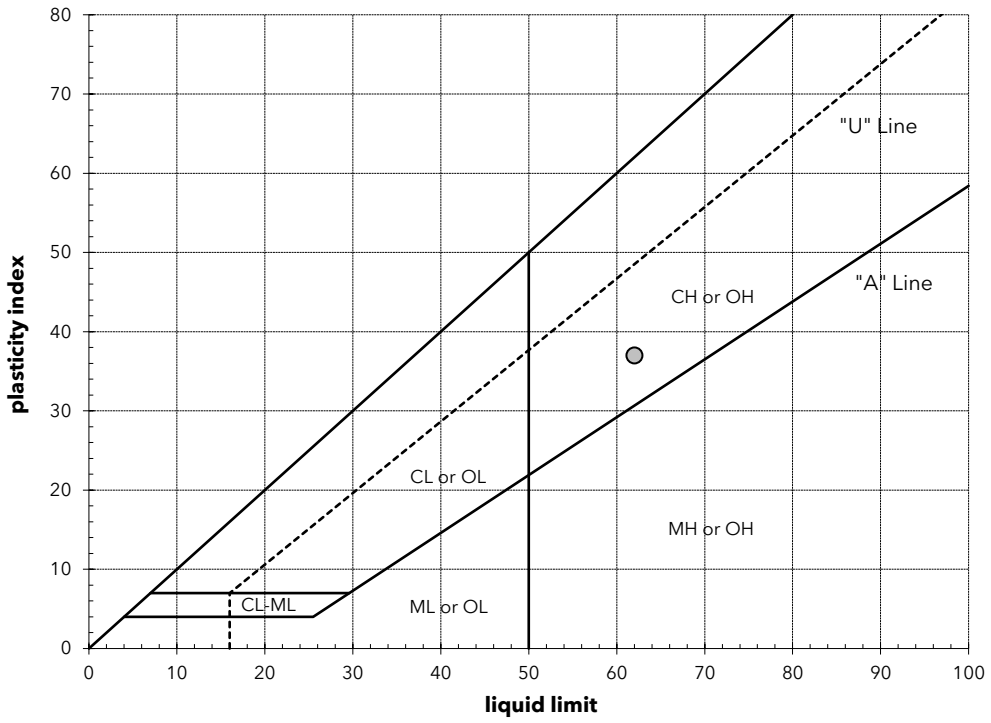
SHRINKAGE

shrinkage limit =	n/a
shrinkage ratio =	n/a

PLASTIC LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	27.63	27.61		
dry soil + pan weight, g =	26.28	26.16		
pan weight, g =	20.93	20.42		
moisture, % =	25.2 %	25.3 %		

PLASTICITY CHART



ADDITIONAL DATA

% gravel =	n/a
% sand =	n/a
% silt and clay =	n/a
% silt =	n/a
% clay =	n/a
moisture content =	31%

DATE TESTED	TESTED BY
05/19/25	M. Scherette

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CWE-S14-021524

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ATTERBERG LIMITS REPORT

PROJECT	CLIENT	PROJECT NO.	
NW 18th Avenue Subdivision 4511 NW 18th Avenue Camas, Washington	Allied Development 16430 N Scottsdale Road, Suite 210 Scottsdale, AZ 85254	AlliedDev-1-01-1	
		ISSUE DATE: 05/21/25	PAGE: 1 of 1
		LAB ID: S25-1013	FIELD ID: TP8.1
		DATE SAMPLED: 04/29/25	SAMPLED BY: S. Chandra

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
CLAY	Test Pit TP-8 depth = 2 feet	no data provided

LABORATORY TEST DATA

LABORATORY EQUIPMENT: Liquid Limit Machine, Hand Rolled

TEST PROCEDURE: ASTM D4318 - Method A

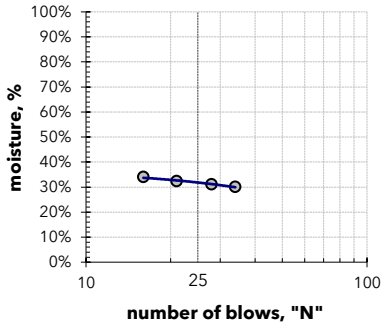
ATTERBERG LIMITS

liquid limit =	32
plastic limit =	20
plasticity index =	12

LIQUID LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	31.49	31.41	33.51	30.55
dry soil + pan weight, g =	29.02	28.81	30.44	28.13
pan weight, g =	20.82	20.43	20.96	21.01
N (blows) =	34	28	21	16
moisture, % =	30.1 %	31.0 %	32.4 %	34.0 %

LIQUID LIMIT



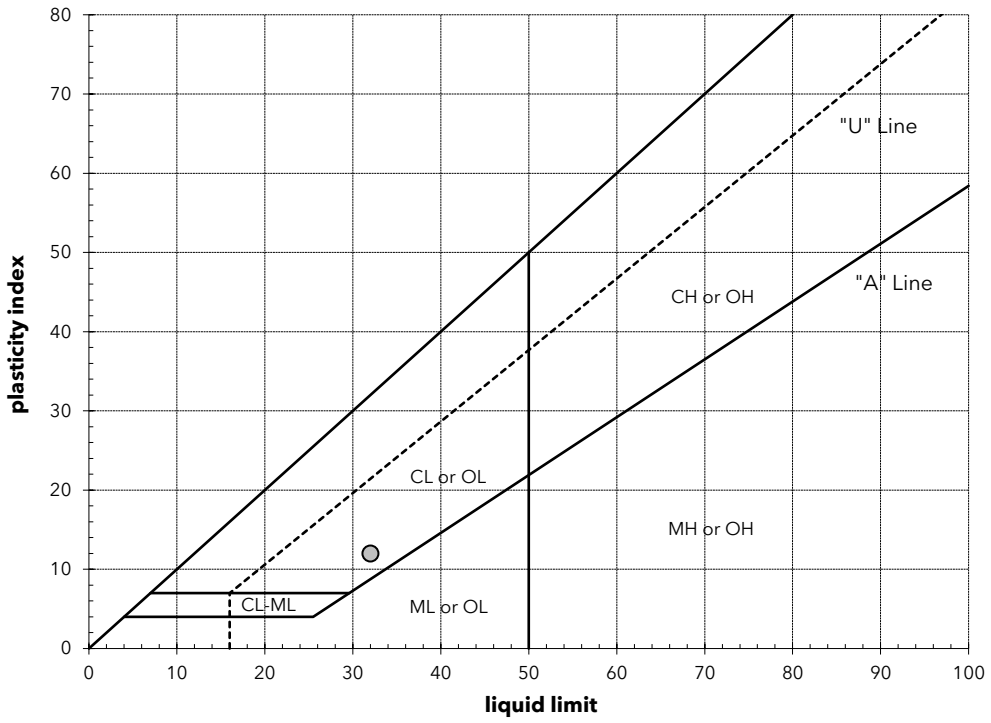
SHRINKAGE

shrinkage limit =	n/a
shrinkage ratio =	n/a

PLASTIC LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	27.24	27.78		
dry soil + pan weight, g =	26.17	26.65		
pan weight, g =	20.87	21.02		
moisture, % =	20.2 %	20.1 %		

PLASTICITY CHART



ADDITIONAL DATA

% gravel =	n/a
% sand =	n/a
% silt and clay =	n/a
% silt =	n/a
% clay =	n/a
moisture content =	20%

DATE TESTED	TESTED BY
05/16/25	G. Hausmann

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ATTERBERG LIMITS REPORT

PROJECT	CLIENT	PROJECT NO.	
NW 18th Avenue Subdivision 4511 NW 18th Avenue Camas, Washington	Allied Development 16430 N Scottsdale Road, Suite 210 Scottsdale, AZ 85254	AlliedDev-1-01-1	
		ISSUE DATE: 05/21/25	PAGE: 1 of 1
		LAB ID: S25-1016	FIELD ID: TP11.2
		DATE SAMPLED: 04/29/25	SAMPLED BY: S. Chandra

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
CLAY	Test Pit TP-11 depth = 2 feet	no data provided

LABORATORY TEST DATA

LABORATORY EQUIPMENT: Liquid Limit Machine, Hand Rolled

TEST PROCEDURE: ASTM D4318 - Method A

ATTERBERG LIMITS

liquid limit =	31
plastic limit =	23
plasticity index =	8

LIQUID LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	30.63	35.01	31.06	32.49
dry soil + pan weight, g =	28.33	31.77	28.70	29.56
pan weight, g =	20.43	20.81	21.02	20.96
N (blows) =	33	26	22	15
moisture, % =	29.1 %	29.6 %	30.7 %	34.1 %

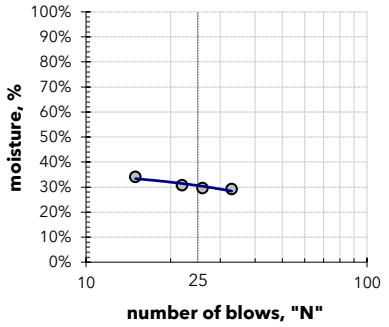
SHRINKAGE

shrinkage limit =	n/a
shrinkage ratio =	n/a

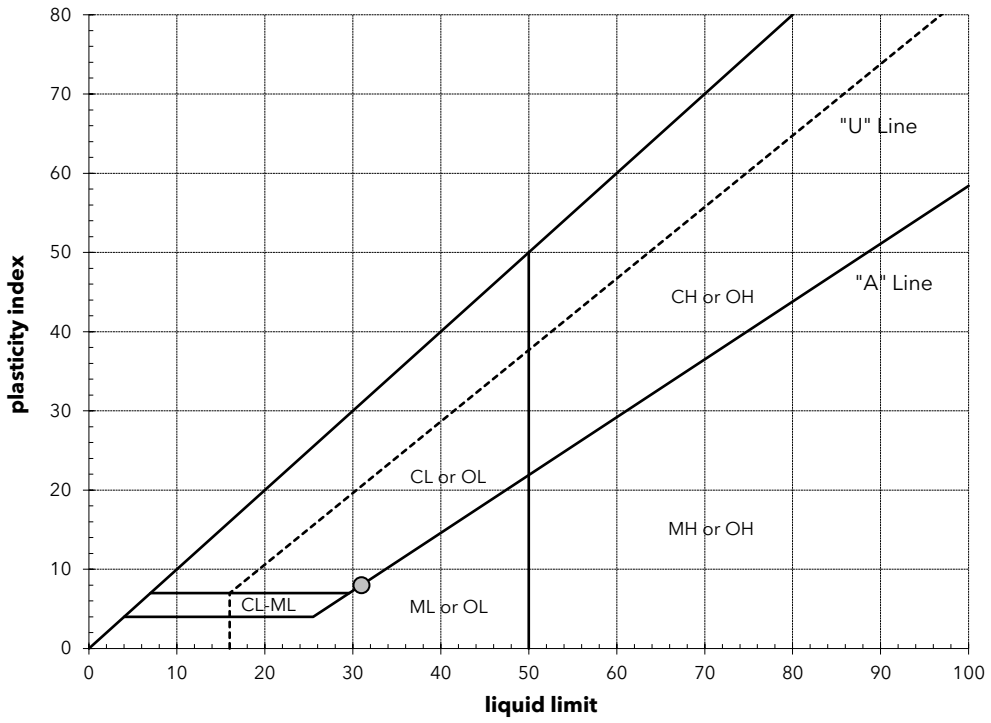
PLASTIC LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	28.99	29.48		
dry soil + pan weight, g =	27.46	27.90		
pan weight, g =	20.87	21.02		
moisture, % =	23.2 %	23.0 %		

LIQUID LIMIT



PLASTICITY CHART



ADDITIONAL DATA

% gravel =	n/a
% sand =	n/a
% silt and clay =	n/a
% silt =	n/a
% clay =	n/a
moisture content =	26%

DATE TESTED	TESTED BY
05/19/25	G. Hausmann

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APPENDIX C

APPENDIX C
REPORT LIMITATIONS AND IMPORTANT INFORMATION

Report Purpose, Use, and Standard of Care

This report has been prepared in accordance with standard fundamental principles and practices of geotechnical engineering and/or environmental consulting, and in a manner consistent with the level of care and skill typical of currently practicing local engineers and consultants. This report has been prepared to meet the specific needs of specific individuals for the indicated site. It may not be adequate for use by other consultants, contractors, or engineers, or if change in project ownership has occurred. It should not be used for any other reason than its stated purpose without prior consultation with Columbia West Engineering, Inc. (Columbia West). It is a unique report and not applicable for any other site or project. If site conditions are altered, or if modifications to the project description or proposed plans are made after the date of this report, it may not be valid. Columbia West cannot accept responsibility for use of this report by other individuals for unauthorized purposes, or if problems occur resulting from changes in site conditions for which Columbia West was not aware or informed.

Report Conclusions and Preliminary Nature

This geotechnical or environmental report should be considered preliminary and summary in nature. The recommendations contained herein have been established by engineering interpretations of subsurface soils based upon conditions observed during site exploration. The exploration and associated laboratory analysis of collected representative samples identifies soil conditions at specific discreet locations. It is assumed that these conditions are indicative of actual conditions throughout the subject property. However, soil conditions may differ between tested locations at different seasonal times of the year, either by natural causes or human activity. Distinction between soil types may be more abrupt or gradual than indicated on the soil logs. This report is not intended to stand alone without understanding of concomitant instructions, correspondence, communication, or potential supplemental reports that may have been provided to the client.

Because this report is based upon observations obtained at the time of exploration, its adequacy may be compromised with time. This is particularly relevant in the case of natural disasters, earthquakes, floods, or other significant events. Report conclusions or interpretations may also be subject to revision if significant development or other manmade impacts occur within or in proximity to the subject property. Groundwater conditions, if presented in this report, reflect observed conditions at the time of investigation. These conditions may change annually, seasonally or as a result of adjacent development.

Additional Investigation and Construction Observation

Columbia West should be consulted prior to construction to assess whether additional investigation above and beyond that presented in this report is necessary. Even slight variations in soil or site conditions may produce impacts to the performance of structural facilities if not adequately addressed. This underscores the importance of diligent construction observation and testing to verify soil conditions do not differ materially or significantly from the interpreted conditions utilized for preparation of this report.

Therefore, this report contains several recommendations for field observation and testing by Columbia West personnel during construction activities. Actual subsurface conditions are more readily observed and discerned during the earthwork phase of construction when soils are exposed. Columbia West cannot accept responsibility for deviations from recommendations described in this report or future performance of structural facilities if another consultant is retained during the construction phase or Columbia West is not engaged to provide construction observation to the full extent recommended.

Collected Samples

Uncontaminated samples of soil or rock collected in connection with this report will be retained for thirty days. Retention of such samples beyond thirty days will occur only at client's request and in return for payment of storage charges incurred. All contaminated or environmentally impacted materials or samples are the sole property of the client. Client maintains responsibility for proper disposal.

Report Contents

This geotechnical or environmental report should not be copied or duplicated unless in full, and even then only under prior written consent by Columbia West, as indicated in further detail in the following text section entitled Report Ownership. The recommendations, interpretations, and suggestions presented in this report are only understandable in context of reference to the whole report. Under no circumstances should the soil boring or test pit excavation logs, monitor well logs, or laboratory analytical reports be separated from the remainder of the report. The logs or reports should not be redrawn or summarized by other entities for inclusion in architectural or civil drawings, or other relevant applications.

Report Limitations for Contractors

Geotechnical or environmental reports, unless otherwise specifically noted, are not prepared for the purpose of developing cost estimates or bids by contractors. The extent of exploration or investigation conducted as part of this report is usually less than that necessary for contractor's needs. Contractors should be advised of these report limitations, particularly as they relate to development of cost estimates. Contractors may gain valuable information from this report, but should rely upon their own interpretations as to how subsurface conditions may affect cost, feasibility, accessibility and other components of the project work. If believed necessary or relevant, contractors should conduct additional exploratory investigation to obtain satisfactory data for the purposes of developing adequate cost estimates. Clients or developers cannot insulate themselves from attendant liability by disclaiming accuracy for subsurface ground conditions without advising contractors appropriately and providing the best information possible to limit potential for cost overruns, construction problems, or misunderstandings.

Report Ownership

Columbia West retains the ownership and copyright property rights to this entire report and its contents, which may include, but may not be limited to, figures, text, logs, electronic media, drawings, laboratory reports, and appendices. This report was prepared solely for the client, and other relevant approved users or parties, and its distribution must be contingent upon prior express written consent by Columbia West. Furthermore, client or approved users may not use, lend, sell, copy, or distribute this document without express written consent by Columbia West.

Client does not own nor have rights to electronic media files that constitute this report, and under no circumstances should said electronic files be distributed or copied. Electronic media is susceptible to unauthorized manipulation or modification, and may not be reliable.

Consultant Responsibility

Geotechnical and environmental engineering and consulting is much less exact than other scientific or engineering disciplines, and relies heavily upon experience, judgment, interpretation, and opinion often based upon media (soils) that are variable, anisotropic, and non-homogenous. This often results in unrealistic expectations, unwarranted claims, and uninformed disputes against a geotechnical or environmental consultant. To reduce potential for these problems and assist relevant parties in better understanding of risk, liability, and responsibility, geotechnical and environmental reports often provide definitive statements or clauses defining and outlining consultant responsibility. The client is encouraged to read these statements carefully and request additional information from Columbia West if necessary.

8. SEPA Checklist

Community Development
616 NE Fourth Avenue • Camas, WA 98607
(360) 817-1568
http://www.cityofcamas.us

SEPA ENVIRONMENTAL CHECKLIST

UPDATED 2016

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background

1. Name of proposed project, if applicable:
Stella Ridge

2. Name of applicant:
Allied Development, LLC

3. Address and phone number of applicant and contact person:

Applicant:
Allied Development, LLC
Attn: Joseph Deaser
16430 N Scottsdale Road, Suite 103
Scottsdale, AZ 85254
josephd@allieddev.com
(602) 932-9590

Contact:
AKS Engineering & Forestry
Attn: Michael Andreotti
9600 NE 126th Avenue, Suite 2520
Vancouver, WA 98682
andreottim@aks-eng.com
(360) 882-0419

4. Date checklist prepared:
August 2025

5. Agency requesting checklist:
City of Camas

6. Proposed timing or schedule (including phasing, if applicable):
The project is anticipated to begin construction as soon as all permits are obtained. This project is proposed to be constructed in up to two phases. The phases have been numbered in the Preliminary Plans for reference and are not for intended construction sequencing. Depending on market conditions and potential timing of required improvements, it may be necessary for the Applicant to combine phases, or construct phases out of the sequence shown on the plans.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.
There are no current plans for future additions, expansions, or further activity related to or connected with this proposal.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.
- Geotechnical Report (Columbia West)
- Preliminary Stormwater Technical Information Report (AKS Engineering & Forestry (AKS))
- Transportation Impact Study (Kittleson & Associates)
- This SEPA Checklist (AKS Engineering & Forestry (AKS))
- Archaeological Pre-Determination (Applied Archaeological Research, Inc. (AAR))
- Critical Areas Reports and Wetland Buffer and Oak Mitigation Plan (AKS)

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.
None known.

10. List any government approvals or permits that will be needed for your proposal, if known.

- Type III Preliminary Subdivision Approval
- Final Engineering Approval
- Grading Permit
- Erosion Control Plan Approval
- Final Plat Approval
- SEPA Determination
- Critical Area Permit Approval
- NPDES Permit

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The Applicant plans to subdivide three parcels into 158 single-family residential lots. Tracts for stormwater facilities, parking, private streets, and open space for critical area and tree protection will also be created with this project.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The site is addressed as 4511 NW 18th Avenue, Camas, WA 98607

Tax Lots: 125193-000, 986055-381, and 125185-000 in the SE ¼, S5, T1N, R3E, NE ¼, S8, T1N, R3E, and SW ¼, S4, T1N, R3E.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site:

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other____

b. What is the steepest slope on the site (approximate percent slope)?

According to Clark County Geographic Information Systems (GIS), no parts of the site have slopes greater than 15 percent.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

According to the Geotechnical Engineering Study, the subject site contains Powell silt loam and Odne silt loam. These are generally soils that are not suitable for agriculture and the site is not being used for agricultural purposes.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

There are no known surface indicators or a history of unstable soils on site or in the vicinity of the site.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Site grading will occur to construct lots, roads, and utility improvements. The Applicant proposes to remove all surface vegetation and stockpile topsoil within the disturbed area to perform the necessary site grading. The disturbed area totals ±18.66 acres with ±21,400 cubic yards of cut and ±59,000 cubic yards of fill. Fill material will come from on-site sources or approved off-site sources if necessary. Excess material needing to be hauled off-site will be taken to an approved location.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Yes, erosion is possible during construction in the form of silt transfer and dust blowoff. Stormwater and Erosion Control Plans will be prepared and implemented by the Applicant for the site improvement, which will meet or exceed the requirements imposed by the City of Camas Municipal Code (CMC) and the Washington State Department of Ecology (ECY).

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Up to ±147.3 acres, ±58.6 percent, of the site area may be covered with impervious surfaces. This includes homes, driveways, streets and sidewalks, and parking areas.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Stormwater and Erosion Control Plans will be prepared and implemented in accordance with CMC and ECY standards.

2. Air

i. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Construction equipment and vehicles will generate dust and particulate emissions during the construction period. Resident, visitor, delivery, mail delivery, and waste management vehicles will generate particulate emissions in the long term. Other potential emission sources include small power tools including, but not limited to, small gas-powered equipment used for site and landscape maintenance. The quantities of those emissions are unknown.

a. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

Off-site sources of emissions or odor near the project site are exhaust emissions from vehicles traveling along the adjacent streets, and the surrounding properties. These sources are not anticipated to impact this project. There are no other known sources or emissions or odors that will impact the site.

b. Proposed measures to reduce or control emissions or other impacts to air, if any:

If necessary, water will be utilized for dust control as needed during the construction of the proposed site improvements. Emissions control measures for vehicles and equipment are regulated under CMC, ECY, and U.S. Environmental Protection Agency (EPA) standards. It is anticipated that all vehicles and equipment will comply with these regulations.

3. Water

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

AKS natural resources biologist prepared a Critical Areas Assessment and Preliminary Mitigation Plan for the site. The report was completed in August 2025. The report identifies three wetlands on-site, Wetlands A, B, and C. Wetland A is a Category III, seasonally saturated PEM wetland with an 80-foot high intensity land use water quality buffer, located in the eastern portion of the site. Wetland B is a Category IV, isolated seasonally saturated PEM wetland with a 50-foot high intensity land use water quality buffer, located in the western portion of the site. Wetland C is a Category III, isolated seasonally saturated PFO/PEM wetland with an 80-foot high intensity land use water quality buffer, location in the center of the site.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Yes. Work will occur over, in or adjacent to the described waters. The project will require fill in a small portion of Wetland A for road improvements, and fill in all of Wetland B for roadway improvements. There will also be minor buffer impacts for road, lot, and stormwater facility improvements. Mitigation will be provided as described in the Critical Areas Assessment and Preliminary Mitigation Plan.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

This project will ±350 cubic yards of fill win a small portion of Wetland A and all of Wetland B.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No surface water withdrawals or diversions are required with this project.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No, the project is not within a 100-year flood plain.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No, this project does not involve any discharge of waste materials to surface waters.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

There are no existing wells on-site and this project will not involve withdrawing groundwater for drinking or other purposes.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . .; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No waste material will be discharged into the ground from septic tanks or other sources with this project.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

The stormwater generated by the proposed site improvements will be collected on-site and conveyed to two stormwater facilities for mechanical treatment and detention. The stormwater facilities will be privately owned and maintained by the homeowners' association (HOA). The stormwater improvements are designed to follow the pre-developed drainage pattern, flowing to the ultimate discharge point in the northeast corner of the site to be released via outfall and energy dissipator at approved rates. All proposed stormwater improvements are designed per City of Camas standards and the Washington State Department of Ecology (ECY) 2024 Stormwater Management Manual for Western Washington (SWMMWW).

2) Could waste materials enter ground or surface waters? If so, generally describe.

No waste materials are proposed to enter ground or surface waters as part of this application. Fuels, such as diesel or gasoline, could potentially spill on the site during the construction of the project. Without adequate erosion control or stormwater mitigation, waste materials could possibly enter ground or surface waters. However, the proposed stormwater treatment and erosion control measures will minimize the potential for waste materials to be conveyed to ground or surface waters.

d. Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

The proposed project will not alter or affect the drainage patterns in the vicinity of the site.

e. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

The project will meet or exceed the CMC and ECY erosion control and stormwater standards. The stormwater generated by the proposed impervious surfaces will be collected, treated, and discharged at rates allowed per the City. Any spills will be immediately responded to, and appropriate remediation measures will be taken.

4. Plants

a. Check the types of vegetation found on the site:

_X_ deciduous tree: alder, maple, aspen, other
_X_ evergreen tree: fir, cedar, pine, other
_X_ shrubs
_X_ grass
____ pasture
____ crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____ water plants: water lily, eelgrass, milfoil, other
____ other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

All existing vegetation, including trees, shrubs, and grass, within the disturbed area will be removed. Vegetation within the open space tracts will be retained.

c. List threatened and endangered species known to be on or near the site.

According to the Washington State Department of Natural Resources Online Data Explorer, there are no known threatened or endangered plant species on the project site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

The proposed development will include one large open space tract that will retain existing native landscape and critical areas. As part of the critical areas mitigation plan, invasive species will be removed from the wetland buffer area and new native plants will be installed. The development will also include street trees and other required site landscaping. Native and naturalized plants will be used for proposed landscaping on site. Additionally, future homeowners will landscape their individual lots.

e. List all noxious weeds and invasive species known to be on or near the site.

Himalayan Blackberry is found on and near the site.

5. Animals

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Animals that are known to be on or near the site are rabbits, squirrels, rodents, hawks, songbirds, and crows.

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

b. List any threatened and endangered species known to be on or near the site.

According to the Washington State Department of Fish and Wildlife PHS, there are no mapped threatened or endangered species known to be on or near the site.

c. Is the site part of a migration route? If so, explain.

The site is located within what is commonly referred to as the Pacific Flyway. This Flyway is the general migratory route for various species of ducks, geese, and other migratory waterfowl. Neotropical birds, such as Robins, may seasonally utilize or be near the site.

d. Proposed measures to preserve or enhance wildlife, if any:

There are on-site critical areas that will be protected to the greatest extent practicable to provide habitat for wildlife. Mitigation for wetland and wetland buffer impacts are included in the Critical Areas Assessment and Preliminary Mitigation Plan. Landscaping will be installed in the development's developed area and will provide potential for additional habitat.

e. List any invasive animal species known to be on or near the site.

No invasive animal species are known to be on or near the site.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Electricity and potentially natural gas will be used for the completed project, which will include standard residential uses such as heating or cooling, lighting, and other appliances.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No, it is not anticipated that the project will affect adjacent properties potential use of solar energy.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

All construction on-site will be designed to comply with the Washington State Energy Code and the adopted version of the International Building Code and City of Camas Municipal Code as applicable to this project.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

Heavy equipment and a variety of materials will be used to construct the project. Other environmental hazards are limited to standard risks associated with construction and occupancy of the development.

1) Describe any known or possible contamination at the site from present or past uses.

There is no known contamination on the site from present or past uses.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

There are no known existing hazardous chemicals/conditions that might affect the project.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

Typical construction materials such as gas, diesel, oil, etc. may be stored or used on the site during the project's development.

4) Describe special emergency services that might be required.

Emergency services are expected to be typical of a residential subdivision, and no special emergency services are anticipated with this project. The project area is within City of Camas jurisdiction and is currently served by fire, police, and EMS providers.

5) Proposed measures to reduce or control environmental health hazards, if any:

All contractors will be expected to comply with all applicable local, state, and federal regulations related to the project's construction and operations. It is anticipated that all construction will be inspected according to the applicable requirements and standards.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

There are existing traffic noises from local streets, as well as noise from the surrounding existing residential and light industrial developments. It is not anticipated that these noises will affect the project.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Construction on the site will create short-term construction noise. Construction activities will not occur after 7 p.m. or before 7 a.m. as required by CMC. Visitors, residents, mail delivery, deliveries, and solid waste and recycling vehicles will create some noise in the long term. Other long-term noise sources include typical residential noises, such as small power tools, including, but not limited to, gas-powered equipment used for site and landscape maintenance.

3) Proposed measures to reduce or control noise impacts, if any:

Construction on the site will take place during normal construction hours as allowed by the City of Camas (CMC 9.32.050(A)).

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The site is currently vacant. The properties to the north are also vacant. The properties to the west of the site in use light industrial building and a Camas School District property. Properties to the south across NW 18th Avenue and NW 20th Avenue and to the west across NW Brady Road are in use as single family residences. The parcel east of the site and north of NW 18th Avenue is a City of Camas water tower. It is not anticipated that the project development will affect the current land uses or the adjacent properties.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

No, the project site has not been used as working farmlands or working forest lands in recent history.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

No, the project will not affect or be affected by surrounding working farms or forest land.

c. Describe any structures on the site.

There are no existing structures on-site.

d. Will any structures be demolished? If so, what?

There are no structures on-site; therefore, no structures will be demolished.

e. What is the current zoning classification of the site?

The project site is zoned Multifamily Residential-18 (MF-18).

f. What is the current comprehensive plan designation of the site?

The current comprehensive plan designation for the site is MFH.

g. If applicable, what is the current shoreline master program designation of the site?

The site is not within a shoreline designation area.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

AKS natural resources biologist prepared a Critical Areas Assessment and Preliminary Mitigation Plan for the site. The report was completed in August 2025. The report identifies three wetlands on-site, Wetlands A, B, and C. Wetland A is a Category III, seasonally saturated PEM wetland with an 80-foot high intensity land use water quality buffer, located in the eastern portion of the site. Wetland B is a Category IV, isolated seasonally saturated PEM wetland with a 50-foot high intensity land use water quality buffer, located in the western portion of the site. Wetland C is a Category III, isolated seasonally saturated PFO/PEM wetland with an 80-foot high intensity land use water quality buffer, location in the center of the site.

i. Approximately how many people would reside or work in the completed project?

The Applicant proposes to subdivide three parcels into 158 single-family lots. Assuming ±2.7 people per residence, ±427 people will reside in this project once it is completed.

j. Approximately how many people would the completed project displace?

The site is currently vacant and zero people reside on-site; therefore, this project will not displace any people.

k. Proposed measures to avoid or reduce displacement impacts, if any:

No displacement impacts will occur.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The project will meet the applicable Washington State and CMC requirements. The project will also obtain approval through the City of Camas Type III Subdivision Review, and Preliminary and Final Engineering review processes.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

The project will meet the applicable Washington State and CMC requirements. The project will also obtain approval through the City of Camas Type III Subdivision Review, and Preliminary and Final Engineering review processes.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

The proposed development is for the creation of 158 single family residential lots. The proposed units will be middle-income units.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

No housing units will be removed with this project.

c. Proposed measures to reduce or control housing impacts, if any:

No housing impacts will occur with this project.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

No buildings are proposed with this application; therefore, the height of the buildings is unknown, however, the homes will not exceed the 50-foot maximum height allowed in the MF-18 zoning district.

b. What views in the immediate vicinity would be altered or obstructed?

Views across the site will be altered with the full build-out of the project. The single-family homes will be visible from adjacent properties.

c. Proposed measures to reduce or control aesthetic impacts, if any:

The proposed development will meet the applicable zoning and building requirements of City of Camas. The project will also obtain approval through the City of Camas Type III Subdivision Review, Preliminary and Final Engineering review, and building permit review processes.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Typical residential lighting (vehicle headlights and residential home lighting); and street lights will light the area in the nighttime hours.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

The installation of illuminated materials for the project will be done in such a way as to minimize dispersion off site and do not constitute a safety hazard.

c. What existing off-site sources of light or glare may affect your proposal?

There are no known existing off-site sources of light or glare that will affect the project.

d. Proposed measures to reduce or control light and glare impacts, if any:

Lighting for the proposed development will comply with the City of Camas lighting standards for glare reduction, light levels, and fixture types.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

The following designated and informal recreational opportunities

- Ash Creek Park is ±0.30 miles to the east.
- Prune Hill Sports Park is ±0.20 miles to the southeast.
- Prune Hill Slope Open Space is ±0.50 miles to the northeast.

b. Would the proposed project displace any existing recreational uses? If so, describe.

No existing recreational uses are being displaced with this project.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

No impacts are proposed; however, the development will include one large open space tract for tree and critical area protection. The development will also pay the required Park Impact Fees.

13. Historic and cultural preservation

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.

According to the Archaeological Predeterminations completed by AAR, dated September 11, 2025, there are no structures on-site that are over 45 years old.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

According to the Archaeological Predeterminations completed by AAR no artifacts or evidence for archaeological resources were found on-site. AAR recommends that no further archaeological work is needed.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Per the Archaeological predetermination, AAR completed records review, including records on file with DAHP and in the AAR library, and historical map review. A field search was also completed including pedestrian transects of no more than 20 meters apart and 20 test pits were dug on-site.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

In the event that archaeological materials, Indian cairns, or human remains are encountered during the development of the properties, all construction activities will stop in the vicinity of the finds. The Applicant will then immediately notify the planning official and the Washington State DAHP. Procedures outlined under Washington Administrative Code (WAC) 24-28-020 will be followed and work will not resume until mitigation measures have been agreed upon.

14. Transportation

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

The subject site is served by NW 18th Avenue, NW 20th Avenue, and NW Brady Road. NW 20th Avenue will be extended into the site and three public roads and three private roads will also be constructed with this project with connection to NW 18th Avenue and NW Brady Road. The planned road network has been designed to provide pedestrian and vehicular circulation.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

The subject site is note served by public transit. The nearest transit stop is about ±1.40 miles west of the site near the intersection of NE 192nd Avenue and SE 41st Drive.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

Each single-family lot will be provided with a minimum of two parking spaces (one driveway space and one garage space) along with 32 additional stalls located in common tracts throughout the development. No parking spaces exist on site; therefore, no parking spaces will be eliminated.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

The proposed development will construct three new public roads and three new private roads. The planned road network will provide access to the lots within the subdivision. NW 20th Avenue will be extended into the site and be improved with a 52-foot-wide right-of-way width, 28-foot-wide paved width, and 5-foot-wide sidewalk and 7-foot-wide planter strip on both sides of the road. All other public roads within the site will be constructed with a 52-foot-wide right-of-way width, 28-foot-wide paved width, and 5-foot-wide sidewalk and 7-foot-wide planter strip on both sides of the road. One of the private roads will be constructed as a 26-foot-wide tract with 26-foot-paved surface, one of the private roads will be constructed as a 20-foot-wide tract with a 20-foot paved surface, and one of the private roads will be constructed as a 42-foot-wide tract, with a 28-foot-wide paved surface, and 5-foot-wide planter strip and 5-foot-wide sidewalk on one side of the road.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

The proposed project will not use and does not occur in the immediate vicinity of water, rail, or air transportation.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

The Applicant's Transportation Engineering Consultant, Kittelson & Associates, prepared a Transportation Impact Study (TIS). Trip generation was calculated for the 158-lot subdivision using the *ITE Trip Generation Manual 11th Edition.* The TIS states the project will generate 1,537 Average Daily Trips (ADT) with 113 a.m. peak hour trips and 153 p.m. peak hour trips. It is unknown how many of those trips will be truck trips.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

The proposed development will not interfere, affect, or be affected by the movement of agricultural and forest products.

h. Proposed measures to reduce or control transportation impacts, if any:

Proportionate share fees will be paid for City of Vancouver proportionate share intersections impacted by the project. Transportation impact fees will also be paid.

15. Public Services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

Yes, the addition of 158 residential units will result in an increased need for public services.

b. Proposed measures to reduce or control direct impacts on public services, if any.

The project will pay system development charges, impact fees, property taxes, and other municipally imposed taxes and fees.

16. Utilities

a. **Circle utilities currently available at the site:**
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other:

b. **Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.**

Water – City of Camas
Sanitary Sewer – City of Camas
Electricity – Clark Public Utilities
Refuse – Waste Connections
Communication – Comcast, Lumen
Natural Gas – Northwest Natural

The proposed project will extend water into the site from NW 18th Avenue, NW 20th Avenue, and NW Brady Road and loop the water through the development to provide service to the lots. Sanitary sewer force mains are planned throughout the site, and each lot will have its own STEF tank with a lateral to the force main. The planned force mains will connect to the existing force mains in NW Brady Road and NW 20th Avenue. Power and communication lines will also be extended into the project within public utility easements. Natural gas is available at the site, but it has not been determined if it will be used for the project at this time.

Signature

Under the penalty of perjury, the above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: 

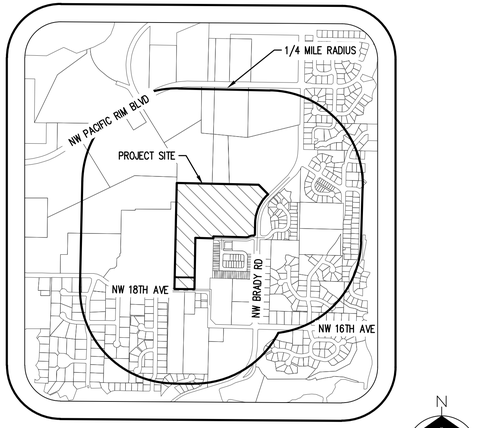
Name of signee: Michael Andreotti

Position and Agency/Organization: Land Use Planner / AKS Engineering & Forestry

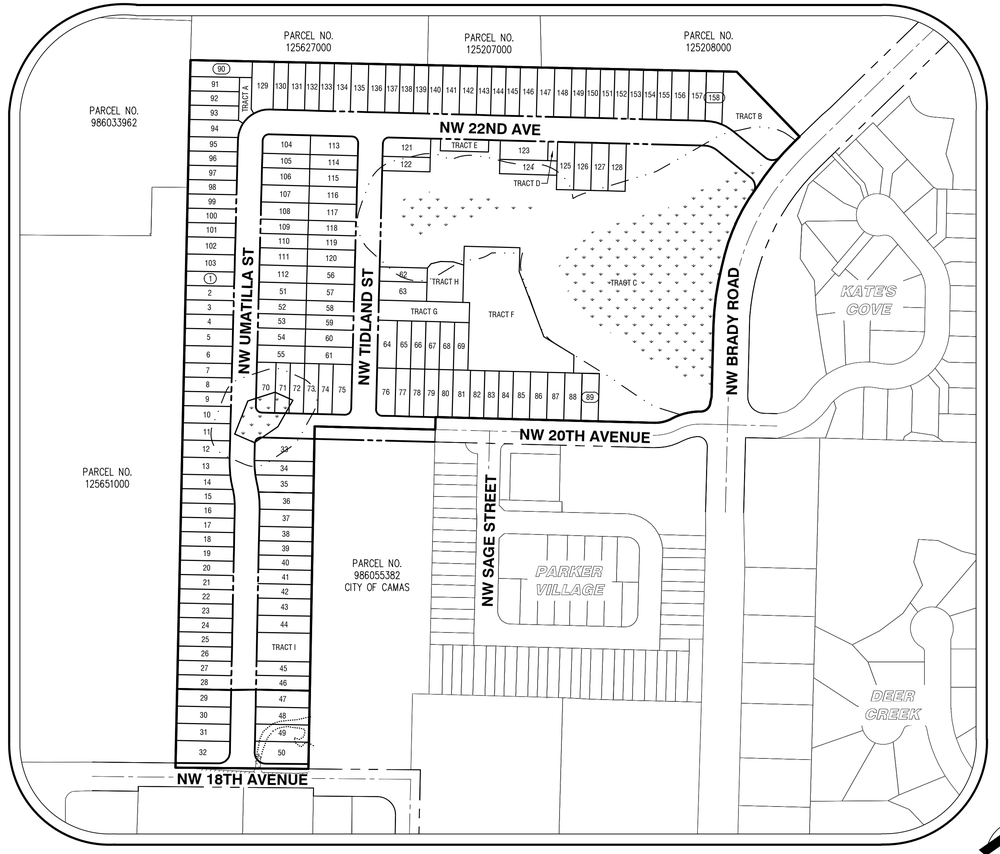
Date Submitted: September 2025

STELLA RIDGE SUBDIVISION

PRELIMINARY ENGINEERING/SUBDIVISION PLANS



VICINITY MAP
N.T.S.



SITE MAP
N.T.S.

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P10.0	PRELIMINARY STREET LIGHTING PLAN
P10.1	PRELIMINARY STREET LIGHTING PLAN

LEGEND

	EXISTING	PROPOSED		EXISTING	PROPOSED
DECIDUOUS TREE			STORM DRAIN CLEAN OUT		
CONIFEROUS TREE			STORM DRAIN CATCH BASIN		
			STORM DRAIN AREA DRAIN		
FIRE HYDRANT			STORM DRAIN MANHOLE		
WATER BLOWOFF			GAS METER		
WATER METER			GAS VALVE		
WATER VALVE			GUY WIRE ANCHOR		
DOUBLE CHECK VALVE			UTILITY POLE		
AIR RELEASE VALVE			POWER VAULT	P	P
SANITARY SEWER CLEAN OUT			POWER JUNCTION BOX		
SANITARY SEWER MANHOLE			POWER PEDESTAL		
SIGN			COMMUNICATIONS VAULT	C	C
STREET LIGHT			COMMUNICATIONS JUNCTION BOX		
MAILBOX	MB	MB	COMMUNICATIONS RISER		

	EXISTING	PROPOSED
RIGHT-OF-WAY LINE		
BOUNDARY LINE		
PROPERTY LINE		
CENTERLINE		
DITCH		
CURB		
EDGE OF PAVEMENT		
GUTTER		
EASEMENT		
FENCE LINE		
GRAVEL EDGE		
POWER LINE	PWR	PWR
OVERHEAD WIRE	OHW	OHW
COMMUNICATIONS LINE	COM	COM
FIBER OPTIC LINE	OFO	OFO
GAS LINE	GAS	GAS
STORM DRAIN LINE	STM	STM
SANITARY SEWER LINE	SAN	SAN
WATER LINE	WAT	WAT
RECLAIMED WATER LINE	NPWAT	NPWAT

APPLICANT
ALLIED DEVELOPMENT, LLC
CONTACT: JOSEPH DEASER
16430 N SCOTTSDALE RD, STE 210
SCOTTSDALE, AZ 85254
PH: (602) 932-9590
EMAIL: JOSEPHD@ALLIEDDEV.COM

OWNER
OWNER OF PARCELS 125193-000, 986055-381, & 125185-000.
DALEY DENNIS
PO BOX 757
RANCHO SANTA FE, CA 92067

PROJECT PURPOSE
PHASED SUBDIVISION WITH 158 SINGLE-FAMILY RESIDENTIAL LOTS WITH ASSOCIATED ROAD AND SITE IMPROVEMENTS.

SITE AREA
24.41 AC (1,063,300 SF)

CONTACT/ENGINEERING/PLANNING/ ARBORIST/SURVEYING/LANDSCAPE ARCHITECT/NATURAL RESOURCES
AKS ENGINEERING & FORESTRY, LLC.
CONTACT: MICHAEL ANDREOTTI
9600 NE 126TH AVENUE, SUITE 2520
VANCOUVER, WA 98682
PH: 360-882-0419
FAX: 360-882-0426
E-MAIL: ANDREOTTIM@AKS-ENG.COM

GEOTECHNICAL ENGINEER
COLUMBIA WEST ENGINEERING, INC.
CONTACT: DANIEL E. LEHTO, PE, GE
11917 NE 95TH STREET
VANCOUVER, WA 98682
PH: 360-823-2900

PROPERTY DESCRIPTION
LOCATED IN THE SOUTHEAST 1/4 OF SECTION 5, THE NORTHEAST 1/4 OF SECTION 8, AND SOUTHWEST 1/4 OF SECTION 4, TOWNSHIP 1 NORTH, RANGE 3 EAST, WILLAMETTE MERIDIAN, CLARK COUNTY, WASHINGTON. PROPERTY SERIAL NO.'S 125193-000, 986055-381, & 125185-000.

VERTICAL DATUM
CLARK COUNTY VERTICAL DATUM NGVD29(47); ELEVATIONS ARE BASED ON CLARK COUNTY BENCHMARK "LACAMAS-50". LOCATED TO THE NE OF THE INTERSECTION OF NW 16TH AVE & NW BRADY RD; ELEVATION = 521.19 FEET (NAVD29(47)).

EXISTING LAND USE
UNDEVELOPED PROPERTY ZONED MULTIFAMILY RESIDENTIAL (MF-18)

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ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

COVER SHEET
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

JOB NUMBER:	12107
DATE:	10/23/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	NTL

P1.0

AKS DRAWING FILE: 12107 P1.0 COVER SHEETDWG | LAYOUT: P1.0

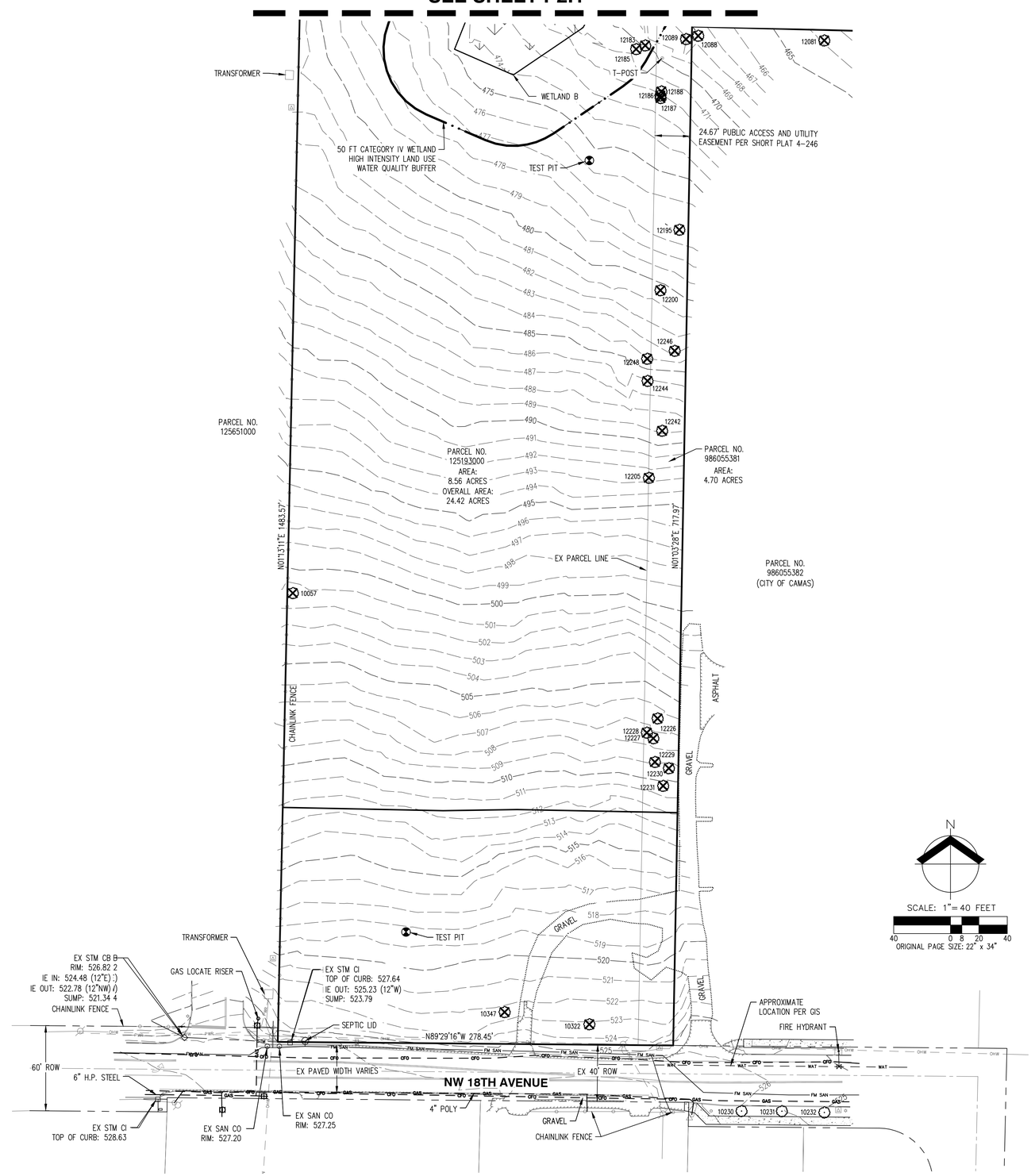
EXISTING LAND USE NOTES:

1. UTILITIES SHOWN ARE BASED ON:
   * PUBLIC UNDERGROUND UTILITY LOCATE MARKINGS AS PROVIDED BY OTHERS, PROVIDED PER UTILITY LOCATE TICKET NUMBERS 25180613, 25180614, 25180615,
   25180616, 25180617, 25180618, 25180619, 25180620, 25180621, AND 25180622.
   * THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND LOCATES REPRESENT THE ONLY UTILITIES IN THE AREA. CONTRACTORS ARE RESPONSIBLE FOR VERIFYING ALL EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION.
2. FIELD WORK WAS CONDUCTED MAY 8 – JUNE 12, 2025.
3. BASIS OF BEARINGS / HORIZONTAL DATUM: COORDINATES ARE BASED ON WASHINGTON PLANE COORDINATE SYSTEM, SOUTH ZONE. NAD83 (2011) EPOCH 2010.000 DERIVED FROM GPS TIES FROM THE WASHINGTON STATE REFERENCE NETWORK (WSRN). DISTANCES SHOWN ARE GROUND DISTANCES.
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5. CONTOUR INTERVAL IS 1.00 FOOT.
6. THIS IS NOT A PROPERTY BOUNDARY SURVEY TO BE RECORDED WITH THE COUNTY SURVEYOR. BOUNDARIES MAY BE PRELIMINARY AND SHOULD BE CONFIRMED WITH THE STAMPING SURVEYOR PRIOR TO RELYING ON FOR DETAILED DESIGN OR CONSTRUCTION.
7. TREES WITH DIAMETER OF 6" AND GREATER ARE SHOWN. TREE DIAMETERS WERE DETERMINED BY VISUAL INSPECTION. TREE INFORMATION IS SUBJECT TO ARBORIST INSPECTION. SEE SHEETS P5.0 TO P5.3 FOR INFORMATION ON TREE PRESERVATION AND REMOVAL.
8. WETLAND BOUNDARIES SHOWN WERE DELINEATED BY AKS ENGINEERING & FORESTRY, LLC. ON MAY 15, 2025 AND WERE PROFESSIONALLY SURVEYED BY AKS ON JUNE 9–12, 2025.
9. THE SITE CONSISTS OF PARCELS 125193-000, 986055-381, & 125185-000.
10. TOTAL SITE AREA IS 24.41 ACRES (1,063,300 SQUARE FEET).
11. CONTOURS SHOWN ARE AT 1 FOOT INTERVALS.
12. NO WATERCOURSES ARE IDENTIFIED ON SITE.
13. THERE IS NOT AN ORDINARY HIGH WATER MARK ON SITE.
14. THERE ARE NO FLOODPLAINS, FLOOD FRINGE, OR FLOODWAYS ON SITE.
15. THE SITE DOES NOT CONTAIN SHORELINES OF THE STATE.
16. WETLAND AND WETLAND BUFFERS ARE SHOWN ON SHEETS P2.1 AND P2.2.
17. NO UNSTABLE SLOPES OR LANDSLIDE HAZARD AREAS EXIST ON SITE.
18. NO PRIORITY HABITAT AND SPECIES AREAS EXIST ON SITE.
19. NO SIGNIFICANT HISTORIC SITES OR RESOURCES WERE IDENTIFIED ON SITE.
20. NO STRUCTURES EXIST ON SITE.
21. ALL EXISTING EASEMENTS ARE SHOWN ON SHEETS P2.0 THROUGH P2.2.
22. CENTERLINE AND RIGHT-OF-WAY RADIUS ARE SHOWN ON THE PLANS.
23. NW 18TH AVENUE, NW 20TH AVENUE, AND NW BRADY ROAD ARE PUBLIC WITH ASPHALT SURFACING.
24. THE NEAREST EXISTING DRIVEWAYS ARE LOCATED 5 FEET EAST OF THE SITE ON THE NORTH SIDE OF NW 18TH AVENUE.
25. NO PEDESTRIAN OR BICYCLE FACILITIES EXIST WITHIN 100 FEET OF THE SITE.
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LEGEND

EXISTING GROUND CONTOUR (1 FT) —— 524 ——

EXISTING GROUND CONTOUR (5 FT) —— 525 ——



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ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

EXISTING CONDITIONS PLAN
STELLA RIDGE SUBDIVISION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

JAMES D. NAGY — STATE OF WASHINGTON — 16330 — REGISTERED PROFESSIONAL LAND SURVEYOR
PRELIMINARY — NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	10/23/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	NTL

P2.0

AKS DRAWING FILE: 12107 P2.0 EXISTING CONDITIONS PLANLDWG | LAYOUT: P2.0

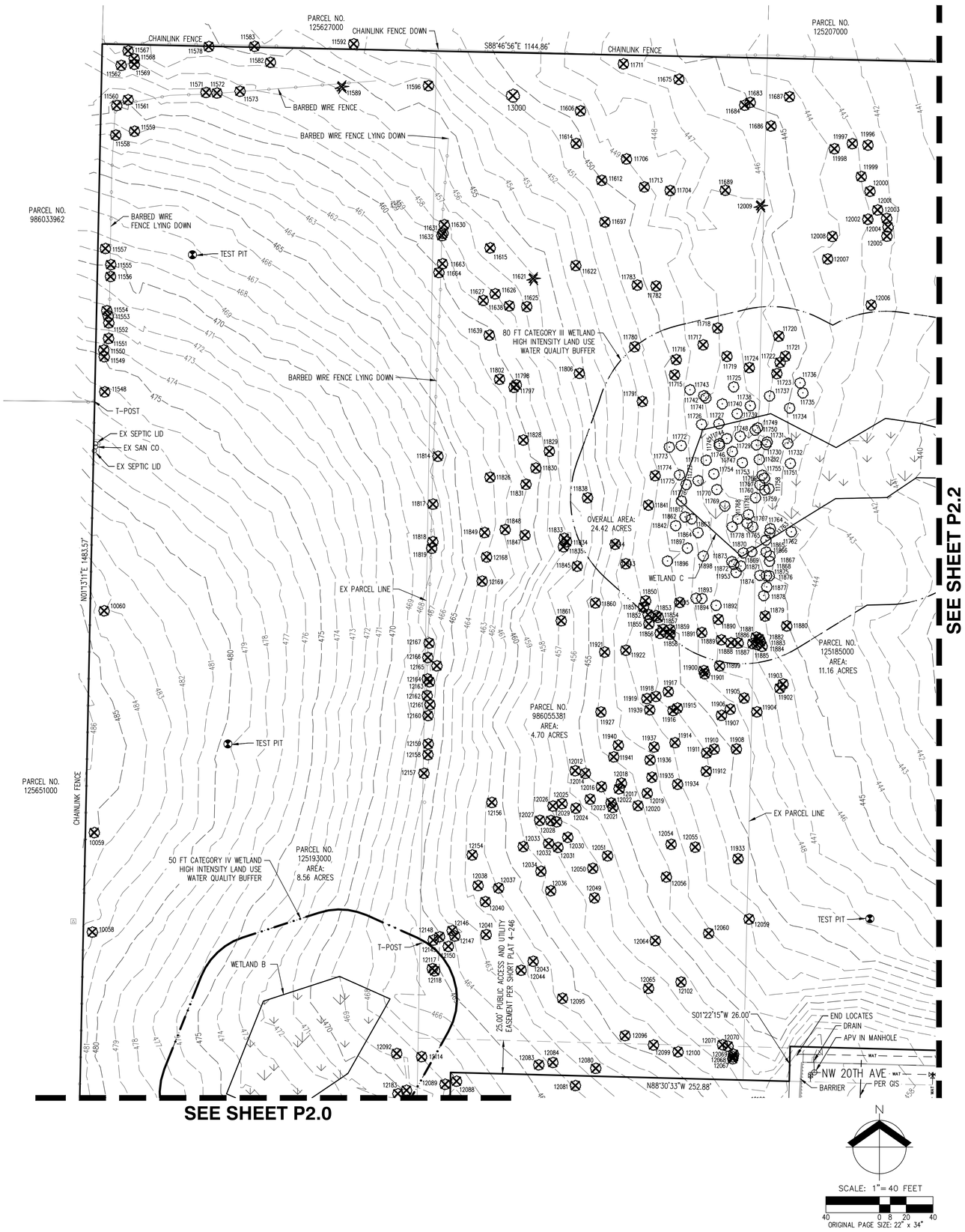
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N

SCALE: 1" = 40 FEET

40 0 8 20 40

ORIGINAL PAGE SIZE: 22" x 34"

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EXISTING CONDITIONS PLAN
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

JAMES O. HANNAH — STATE OF WASHINGTON — 22520 — REGISTERED PROFESSIONAL LAND SURVEYOR

PRELIMINARY NOT FOR CONSTRUCTION

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DESIGNED BY:	NTL
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CHECKED BY:	NTL

P2.1

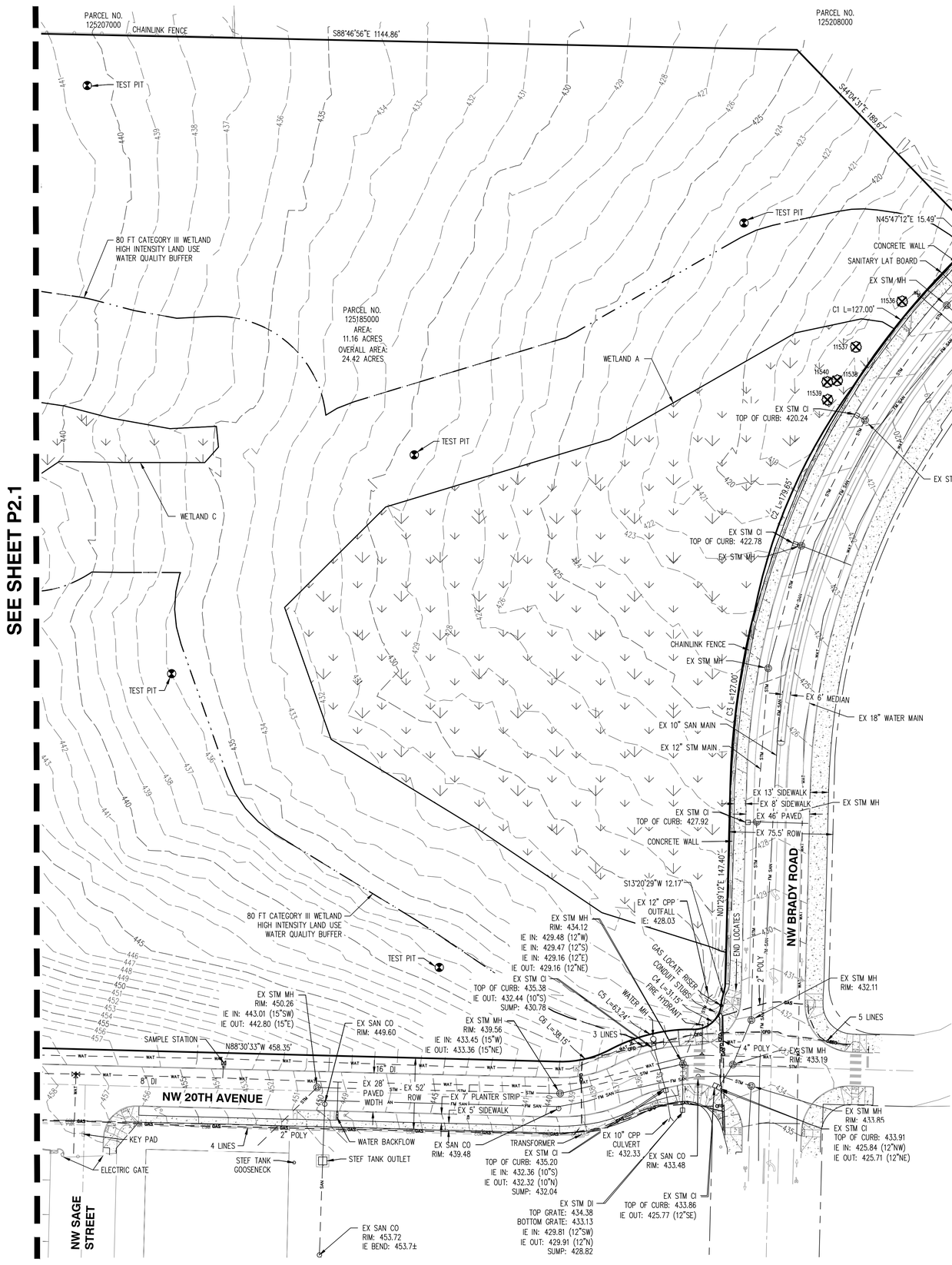
AKS DRAWING FILE: 12107 P2.0 EXISTING CONDITIONS PLAN.DWG | LAYOUT: P2.1

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TREE TABLE		
TREE NUMBER	TYPE	DBH (IN.)
11536	DECIDUOUS	26
11537	DECIDUOUS	29
11538	DECIDUOUS	26
11539	DECIDUOUS	8
11540	DECIDUOUS	9

CURVE TABLE				
CURVE	RADIUS	DELTA	LENGTH	CHORD
C1	560.00'	12°59'36"	127.00'	S39°17'23"W 126.72'
C2	411.97'	24°59'07"	179.65'	S23°38'12"W 178.23'
C3	560.00'	12°59'36"	127.00'	S7°59'00"W 126.72'
C4	20.00'	89°14'32"	31.15'	S46°05'04"W 28.10'
C5	126.00'	28°45'23"	63.24'	S76°19'38"W 62.58'
C6	74.00'	29°32'30"	38.15'	S76°43'12"W 37.73'



LEGEND

EXISTING GROUND CONTOUR (1 FT) — 524 —

EXISTING GROUND CONTOUR (5 FT) — 525 —

N

SCALE: 1" = 40 FEET

40 0 8 20 40

ORIGINAL PAGE SIZE: 22" x 34"

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EXISTING CONDITIONS PLAN
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

JAMES O. HANNAH — STATE OF WASHINGTON — 22824 — REGISTERED PROFESSIONAL LAND SURVEYOR

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
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DESIGNED BY:	NTL
DRAWN BY:	JCS
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P2.2

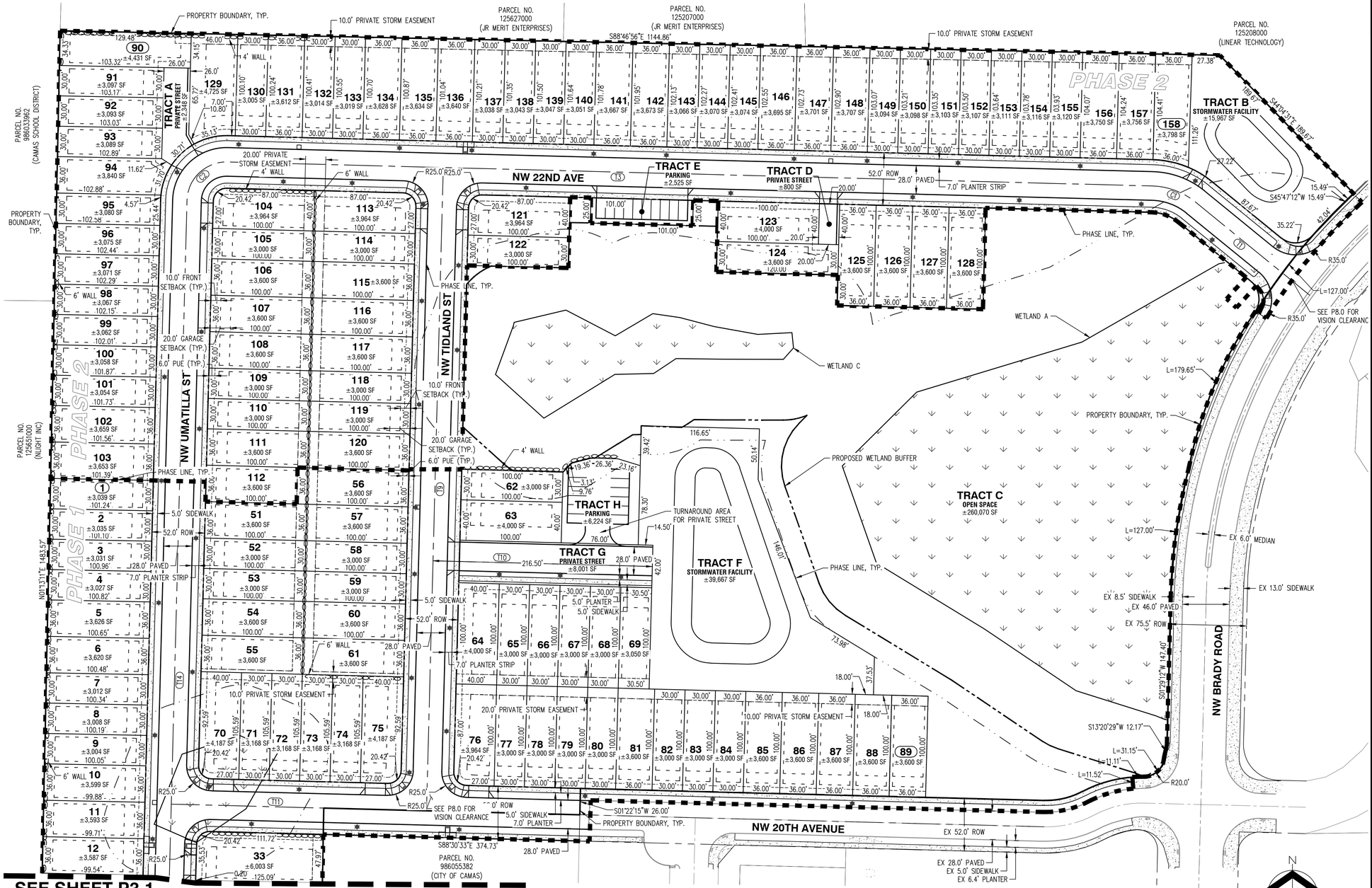
AKS DRAWING FILE: 12107 P2.0 EXISTING CONDITIONS PLANDWG LAYOUT: P2.2

PROPOSED LAND USE NOTES

1. TOTAL SITE AREA IS 24.41 ACRES (1,063,300 SQUARE FEET).
2. WETLAND AND WETLAND BUFFER AREAS ARE SHOWN ON SHEETS P3.0 AND P3.1.
3. NO PLANNED ENHANCEMENT AREAS ARE PROPOSED. WETLANDS AND CRITICAL AREAS SHALL BE DONE OFF-SITE.
4. PEDESTRIAN FACILITIES ARE SHOWN ON THE PLANS. NO TRANSIT FACILITIES ARE PROPOSED.
5. NO BICYCLE FACILITIES BEYOND THOSE LOCATED IN THE RIGHT-OF-WAY ARE PROPOSED.
6. NW 22ND AVE, NW UMATILLA ST, AND NW TIDLAND ST ARE PUBLIC WITH ASPHALT SURFACING. STREET CROSS SECTIONS ARE SHOWN ON SHEET P8.0 AND P8.1.
7. NO ROADS ON OR WITHIN 500 FEET OF THE SITE PROPOSED TO PROVIDE SITE ACCESS ARE IN EXCESS OF 15% GRADE.
8. ALL CORNER LOT DRIVEWAYS ARE SHOWN ON THE PLAN. ALL OTHER DRIVEWAYS MEET SIGHT DISTANCE STANDARDS.
9. SIGHT DISTANCE TRIANGLES ARE SHOWN ON SHEETS P9.0 AND P9.1.
10. ALL PROPOSED EASEMENTS ARE SHOWN ON THE PLANS.
11. SEE SHEETS P9.0 TO P9.1 FOR LANDSCAPE PLANS.
12. OFF-STREET PARKING IS SHOWN ON THE PLANS. NO LOADING AREAS ARE REQUIRED.
13. FINAL WALL DESIGNS TO BE PROVIDED WITH FINAL ENGINEERING.

CENTERLINE TANGENT TABLE		
LINE #	LENGTH	DIRECTION
T1	145.86	N50° 46' 33.13"W
T3	913.00	N88° 30' 33.46"W
T8	564.34	S1° 08' 19.41"W
T9	635.59	S1° 29' 26.54"W
T10	216.50	S88° 30' 33.46"E
T11	861.70	S88° 30' 33.46"E
T14	671.12	S1° 29' 26.54"W

CENTERLINE CURVE TABLE			
CURVE #	ARC LENGTH	DELTA	RADIUS
C1	46.10	37°44'00"	70.00
C2	61.26	90°00'00"	39.00
C3	51.93	14°52'35"	200.00
C4	50.70	14°31'28"	200.00



APPLICANT/CONTACT

ALLIED DEVELOPMENT, LLC
CONTACT: JOSEPH DEASER
16430 N SCOTTSDALE RD, STE 210
SCOTTSDALE, AZ 85254
PH: (602) 932-9590
EMAIL: JOSEPHD@ALLIEDDEV.COM

OWNER

DALEY DENNIS
PO BOX 757
RANCHO SANTA FE, CA 92067

PROJECT PURPOSE

PHASED SUBDIVISION WITH 156 SINGLE-FAMILY RESIDENTIAL LOTS WITH ASSOCIATED ROAD AND SITE IMPROVEMENTS.

SITE AREA

24.41 AC (1,063,300 SF)

EXISTING LAND USE

UNDEVELOPED PROPERTY ZONED MULTIFAMILY RESIDENTIAL (MF-18)

CONTACT/ENGINEERING/PLANNING/ ARBORIST/SURVEYING/LANDSCAPE ARCHITECT/NATURAL RESOURCES

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GEOTECHNICAL ENGINEER

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CONTACT: DANIEL E. LEHTO, PE, GE
11917 NE 95TH STREET
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PH: 360-823-2900

PROPERTY DESCRIPTION

LOCATED IN THE SOUTHEAST 1/4 OF SECTION 5, THE NORTHEAST 1/4 OF SECTION 8, AND SOUTHWEST 1/4 OF SECTION 4, TOWNSHIP 1 NORTH, RANGE 3 EAST, WILLAMETTE MERIDIAN, CLARK COUNTY, WASHINGTON. PROPERTY SERIAL NO.'S 125193-000, 986055-381, & 125185-000.

VERTICAL DATUM

CLARK COUNTY VERTICAL DATUM NGVD29(47); ELEVATIONS ARE BASED ON CLARK COUNTY BENCHMARK "LACAMAS-50". LOCATED TO THE NE OF THE INTERSECTION OF NW 16TH AVE & NW BRADY RD; ELEVATION = 521.19 FEET (NAVD29(47)).

LOT STATISTICS

SINGLE FAMILY DETACHED: 158
TOTAL LOTS: 158

SITE STATISTICS

PARCEL ZONE:	MULTI-FAMILY (MF-18)
GROSS AREA:	±24.41 AC (±1,063,300 SF)
OPEN SPACE:	±5.97 AC (±260,070 SF)
NET AREA:	±18.44 AC (±803,247 SF)
TOTAL ROW DEDICATION:	±3.99 AC (±173,800 SF)
PROPOSED AVERAGE LOT AREA:	±3,495 SF

RESIDENTIAL PARKING STATISTICS

REQUIRED PARKING:	32 SPACES (158 LOTS/5 LOTS/SPACE)
TRACT E:	10 SPACES
TRACT H:	12 SPACES
TRACT I:	10 SPACES
TOTAL PROPOSED	32 SPACES

TRACT	PURPOSE	AREA
TRACT A	PRIVATE STREET	2,348 SF
TRACT B	STORMWATER FACILITY	15,967 SF
TRACT C	OPEN SPACE	260,070 SF
TRACT D	PRIVATE STREET	800 SF
TRACT E	PARKING	2,525 SF
TRACT F	STORMWATER FACILITY	39,667 SF
TRACT G	PRIVATE STREET	8,001 SF
TRACT H	PARKING	6,772 SF
TRACT I	PARKING	6,224 SF
TOTAL		*342,374 SF

*HOA TO OWN ALL TRACTS.

DEVELOPMENT STANDARDS (MF-18)

MINIMUM FRONT YARD SETBACK:	10 FEET
GARAGE SETBACK:	20 FEET
MINIMUM SIDE YARD:	3* FEET
MINIMUM STREET SIDE YARD:	15 FEET
MINIMUM REAR YARD:	10 FEET

* THE NON-ATTACHED SIDE OF A DWELLING UNIT SHALL BE THREE FEET, OTHERWISE A ZERO-LOT LINE IS ASSUMED.

DENSITY CALCULATIONS (MF-18)

MAXIMUM DENSITY (18 DU/AC X 18.44 AC):	332 UNITS
MINIMUM DENSITY (6 DU/AC X 18.44 AC):	111 UNITS
PROPOSED DESNITY (DU/AC):	158 UNITS
REQUIRED MINIMUM LOT AREA:	2,100 SF
REQUIRED MINIMUM LOT WIDTH:	26 FT
REQUIRED MINIMUM LOT DEPTH:	60 FT

THE PURPOSE OF THIS PRELIMINARY PLAT IS TO SHOW THE PROPOSED LOT DIMENSIONS AND AREAS FOR PLANNING PURPOSES. THIS IS NOT AN OFFICIAL PLAT AND IS NOT TO BE USED FOR SURVEY PURPOSES.

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PRELIMINARY SUBDIVISION PLAT AND PHASING PLAN
STELLA RIDGE SUBDIVISION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

JOHN C. LEHTO — STATE OF WASHINGTON — 12614 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	10/23/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	NTL

P3.0

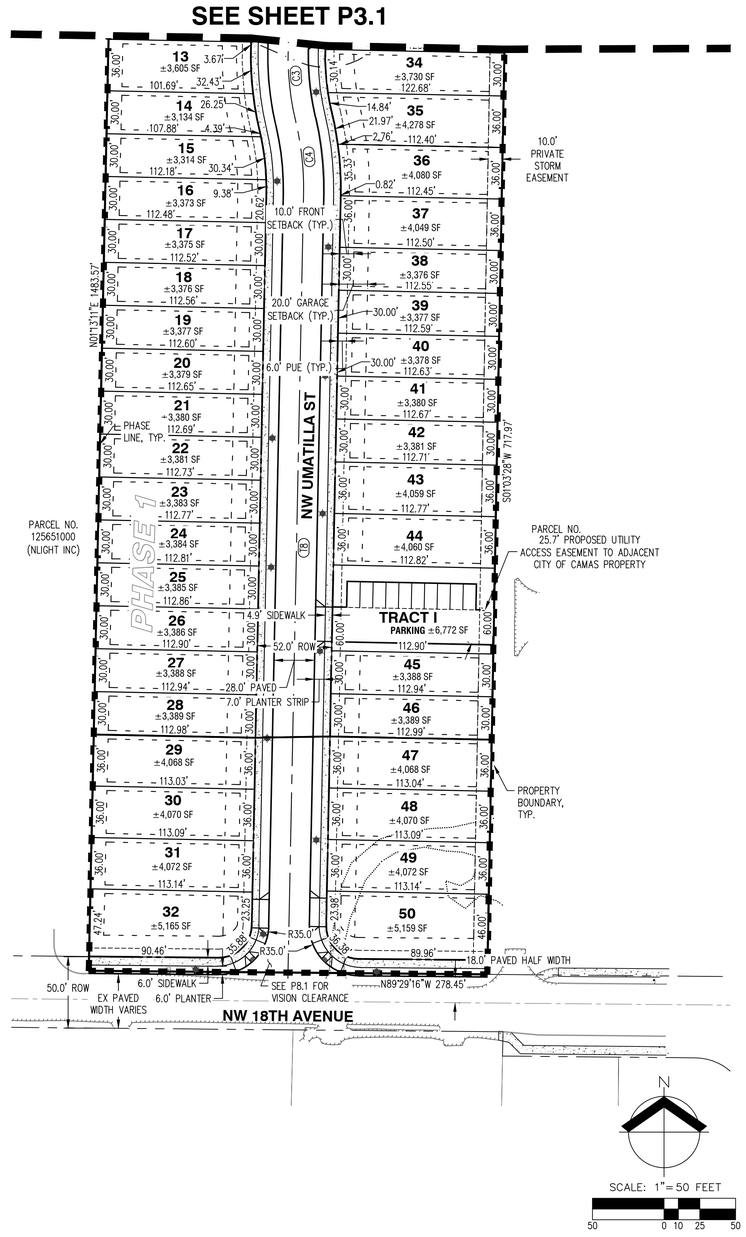
AKS DRAWING FILE: 12107 P3.0 PRELIMINARY SUBDIVISION PLAT.DWG | LAYOUT: P3.0

PROPOSED LAND USE NOTES

1. TOTAL SITE AREA IS 24.41 ACRES (1,063,300 SQUARE FEET).
2. WETLAND AND WETLAND BUFFER AREAS ARE SHOWN ON SHEETS P3.0 AND P3.1.
3. NO PLANNED ENHANCEMENT AREAS ARE PROPOSED. WETLANDS AND CRITICAL AREAS SHALL BE DONE OFF-SITE.
4. PEDESTRIAN FACILITIES ARE SHOWN ON THE PLANS. NO TRANSIT FACILITIES ARE PROPOSED.
5. NO BICYCLE FACILITIES BEYOND THOSE LOCATED IN THE RIGHT-OF-WAY ARE PROPOSED.
6. NW 22ND AVE, NW UMATILLA ST, AND NW TIDLAND ST ARE PUBLIC WITH ASPHALT SURFACING. STREET CROSS SECTIONS ARE SHOWN ON SHEET P8.0 AND P8.1.
7. NO ROADS ON OR WITHIN 500 FEET OF THE SITE PROPOSED TO PROVIDE SITE ACCESS ARE IN EXCESS OF 15% GRADE.
8. ALL CORNER LOT DRIVEWAYS ARE SHOWN ON THE PLAN. ALL OTHER DRIVEWAYS MEET SIGHT DISTANCE STANDARDS.
9. SIGHT DISTANCE TRIANGLES ARE SHOWN ON SHEETS P9.0 AND P9.1.
10. ALL PROPOSED EASEMENTS ARE SHOWN ON THE PLANS.
11. SEE SHEETS P9.0 TO P9.1 FOR LANDSCAPE PLANS.
12. OFF-STREET PARKING IS SHOWN ON THE PLANS. NO LOADING AREAS ARE REQUIRED.
13. FINAL WALL DESIGNS TO BE PROVIDED WITH FINAL ENGINEERING.

CENTERLINE TANGENT TABLE		
LINE #	LENGTH	DIRECTION
T1	145.86	N50° 46' 33.13"W
T3	913.00	N88° 30' 33.46"W
T8	564.34	S1° 08' 19.41"W
T9	635.59	S1° 29' 26.54"W
T10	216.50	S88° 30' 33.46"E
T11	861.70	S88° 30' 33.46"E
T14	671.12	S1° 29' 26.54"W

CENTERLINE CURVE TABLE			
CURVE #	ARC LENGTH	DELTA	RADIUS
C1	46.10	37°44'00"	70.00
C2	61.26	90°00'00"	39.00
C3	51.93	14°52'35"	200.00
C4	50.70	14°31'28"	200.00



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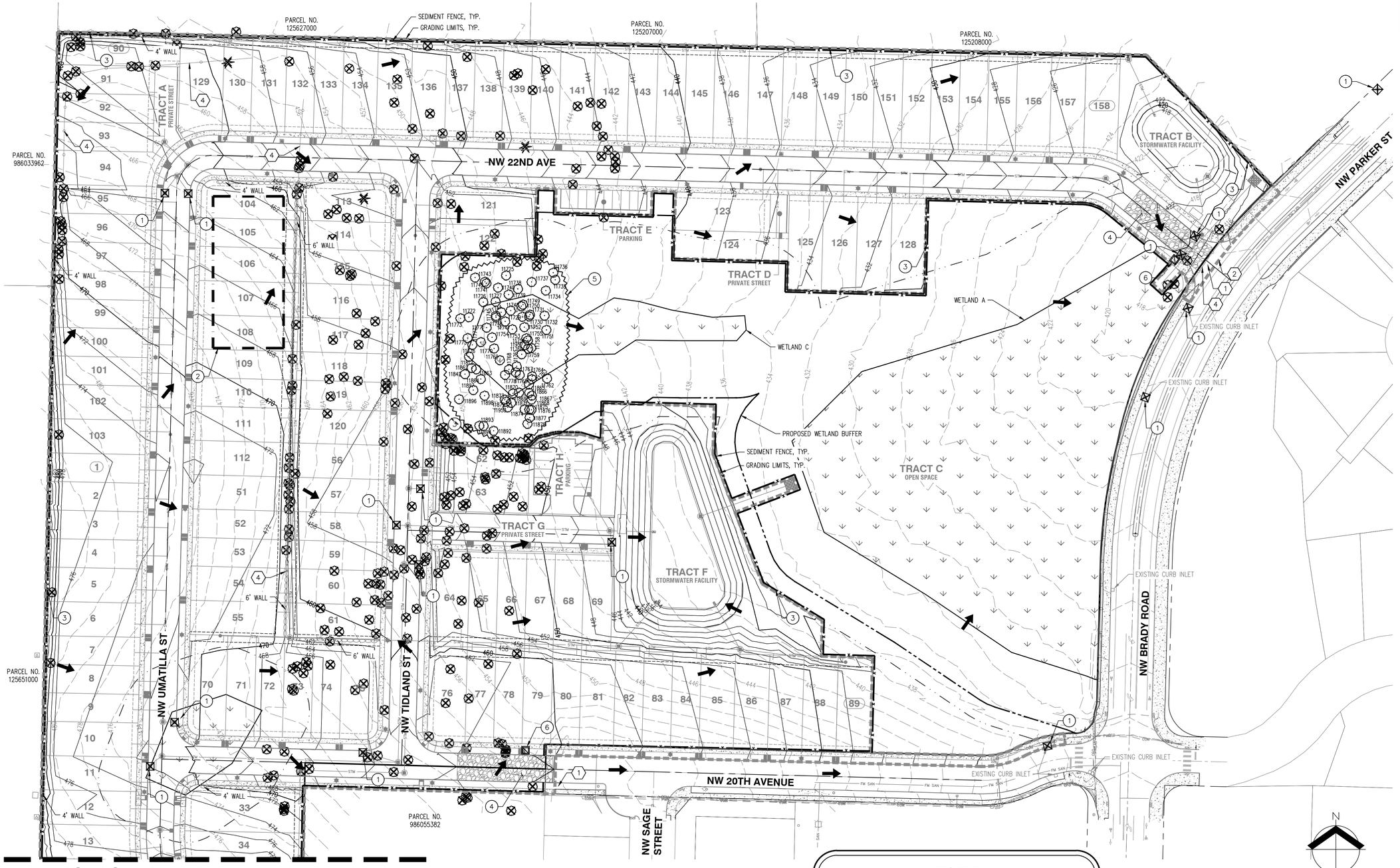
PRELIMINARY SUBDIVISION PLAT AND PHASING PLAN
STELLA RIDGE SUBIDIVSION
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CAMAS, WASHINGTON



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DRAWN BY:	JCS
CHECKED BY:	NTL

P3.1

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SEE SHEET P4.1

GENERAL NOTES

1. SEE THE PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN P5.0–P5.3 FOR TREE PROTECTION AND CONSTRUCTION FENCE LOCATIONS AND TREE ROOT PROTECTION ZONE RADII.
2. ADDITIONAL EROSION CONTROL MEASURES WILL BE INCLUDED DURING FINAL ENGINEERING TO ACCOUNT FOR GRADING ON STEEP SLOPES AND CONSTRUCTION PHASING.
3. APPROXIMATE ALIGNMENT AND HEIGHT OF RETAINING WALLS SHOWN. LOCATIONS WILL BE DETERMINED WITH FINAL ENGINEERING IF NECESSARY.
4. BOTH EXISTING GRADE AND FINISHED GRADE CONTOUR INTERVALS ARE AT 2' AND 10'. SEE LEGEND FOR MORE INFORMATION.
5. FINAL WALL DESIGNS TO BE PROVIDED WITH FINAL ENGINEERING.

EROSION CONTROL KEYED NOTES

1. INSTALL INLET PROTECTION (TYP).
2. POTENTIAL STOCKPILE AREA.
3. INSTALL SEDIMENT FENCE (TYP).
4. CONSTRUCTION ENTRANCE.
5. INSTALL TREE PROTECTION FENCE (TYP).
6. INSTALL CONCRETE WASHOUT.

DEMOLITION KEYED NOTES

1. SAWCUT & REMOVE ALL DAMAGED CURB AND SIDEWALK.
2. REMOVE EXISTING CURB.
3. REMOVE EXISTING DRIVEWAY.
4. REMOVE EXISTING FENCE.
5. REMOVE EXISTING STRIPING.

PRELIMINARY GRADING QUANTITIES

CUT: 21,400 C.Y.
FILL: 59,000 C.Y.

ASSUMPTIONS:
BASED ON 16" STRIPPINGS DEPTH OVER SITE
UTILITY TRENCHING NOT INCLUDED

VOLUMES ARE FOR THE PRELIMINARY DEVELOPMENT PLAN.

RETAIN STRIPPINGS ON SITE AND REDISTRIBUTE (6" DEPTH AVG.) OVER DISTURBED BUILDABLE LOT AREAS AFTER ALL GRADING ACTIVITIES ARE COMPLETED. ADDITIONAL STRIPPINGS MAY BE PLACED IN LANDSCAPE TRACT AREAS WHERE NO STRUCTURES WILL BE PLACED TO ACHIEVE FINISHED GRADE.

CUT AND FILL QUANTITIES SHOWN ARE BASED OFF OF GENERAL SITE GRADING ESTABLISHED FROM THE STRIPPED EXISITNG GRADE TO THE PROPOSED GRADE. THESE VOLUMES DO NOT INCLUDE APPROXIMATE OVER EXCAVATION FOR ROADWAY SUBGRADE. THESE VOLUMES DO NOT TAKE INTO ACCOUNT ANY UNKNOWN UNSUITABLE SOIL DEPOSITS OR OVER EXCAVATION OF NON-ORGANIC MATERIALS FOUND ONSITE.

LEGEND

- EXISTING GROUND CONTOUR (2 FT) — 348
- EXISTING GROUND CONTOUR (10 FT) — 350
- FINISHED GRADE CONTOUR (2 FT) — 348
- FINISHED GRADE CONTOUR (10 FT) — 350
- SEDIMENT FENCE (TO BE INSTALLED PRIOR TO GRADING)
- CURB INLET PROTECTION (TYP) PER COMBINATION DETAIL
- CONCRETE WASHOUT AREA
- DRAINAGE FLOW DIRECTION
- GRAVEL CONSTRUCTION ENTRANCE
- DISTURBED LIMITS
- TREE PROTECTION/CONSTRUCTION FENCE
- TREE REMOVAL

N

SCALE: 1"=50 FEET
50 0 10 25 50

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PRELIMINARY GRADING, DEMOLITION, & ESC PLAN
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

JOHN M. TILLEY — STATE OF WASHINGTON — 22014 — REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
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DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	NTL

P4.0

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GENERAL NOTES

1. SEE THE PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN P5.0–P5.3 FOR TREE PROTECTION AND CONSTRUCTION FENCE LOCATIONS AND TREE ROOT PROTECTION ZONE RADII.
2. ADDITIONAL EROSION CONTROL MEASURES WILL BE INCLUDED DURING FINAL ENGINEERING TO ACCOUNT FOR GRADING ON STEEP SLOPES AND CONSTRUCTION PHASING.
3. APPROXIMATE ALIGNMENT AND HEIGHT OF RETAINING WALLS SHOWN. LOCATIONS WILL BE DETERMINED WITH FINAL ENGINEERING IF NECESSARY.
4. BOTH EXISTING GRADE AND FINISHED GRADE CONTOUR INTERVALS ARE AT 2' AND 10'. SEE LEGEND FOR MORE INFORMATION.
5. FINAL WALL DESIGNS TO BE PROVIDED WITH FINAL ENGINEERING.

(i) EROSION CONTROL KEYED NOTES

1. INSTALL INLET PROTECTION (TYP).
2. POTENTIAL STOCKPILE AREA.
3. INSTALL SEDIMENT FENCE (TYP).
4. CONSTRUCTION ENTRANCE.
5. INSTALL TREE PROTECTION FENCE (TYP).
6. INSTALL CONCRETE WASHOUT.

(i) DEMOLITION KEYED NOTES

1. SAWCUT & REMOVE ALL DAMAGED CURB AND SIDEWALK.
2. REMOVE EXISTING CURB.
3. REMOVE EXISTING DRIVEWAY.
4. REMOVE EXISTING FENCE.
5. REMOVE EXISTING STRIPING.

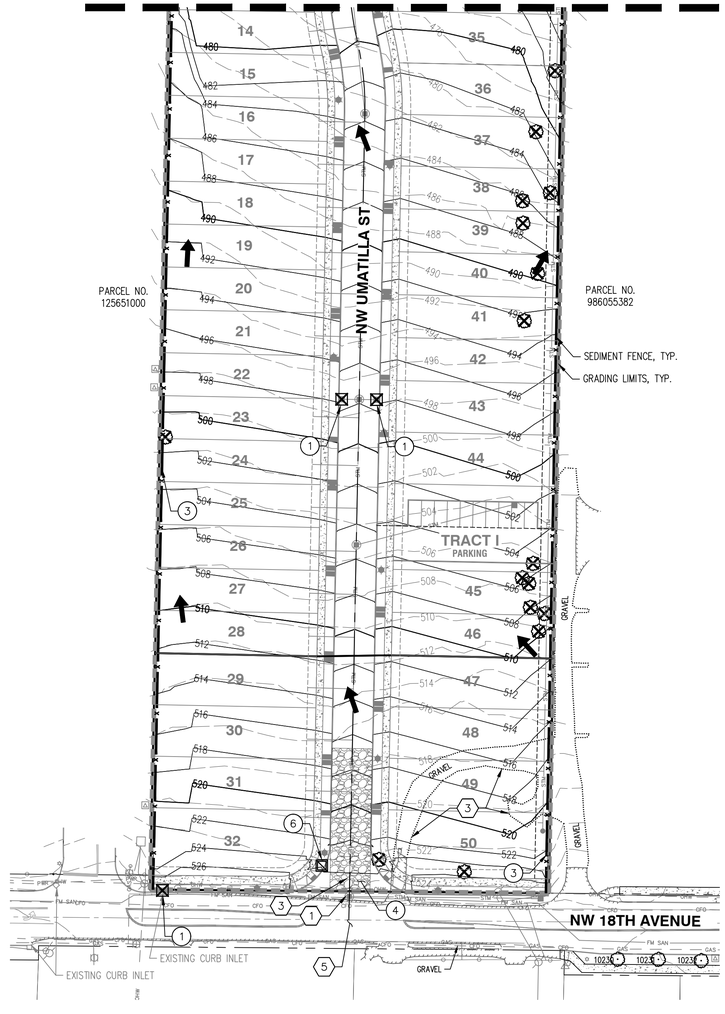
PRELIMINARY GRADING QUANTITIES

CUT: 42,500 C.Y.
FILL: 42,500 C.Y.

LEGEND

- EXISTING GROUND CONTOUR (2 FT) — 348
- EXISTING GROUND CONTOUR (10 FT) — 350
- FINISHED GRADE CONTOUR (2 FT) — 348
- FINISHED GRADE CONTOUR (10 FT) — 350
- SEDIMENT FENCE (TO BE INSTALLED PRIOR TO GRADING)
- CURB INLET PROTECTION (TYP) PER COMBINATION DETAIL
- CONCRETE WASHOUT AREA
- DRAINAGE FLOW DIRECTION
- GRAVEL CONSTRUCTION ENTRANCE
- DISTURBED LIMITS
- TREE PROTECTION/CONSTRUCTION FENCE
- TREE REMOVAL

SEE SHEET P4.0



N

SCALE: 1"= 50 FEET

50 0 10 25 50

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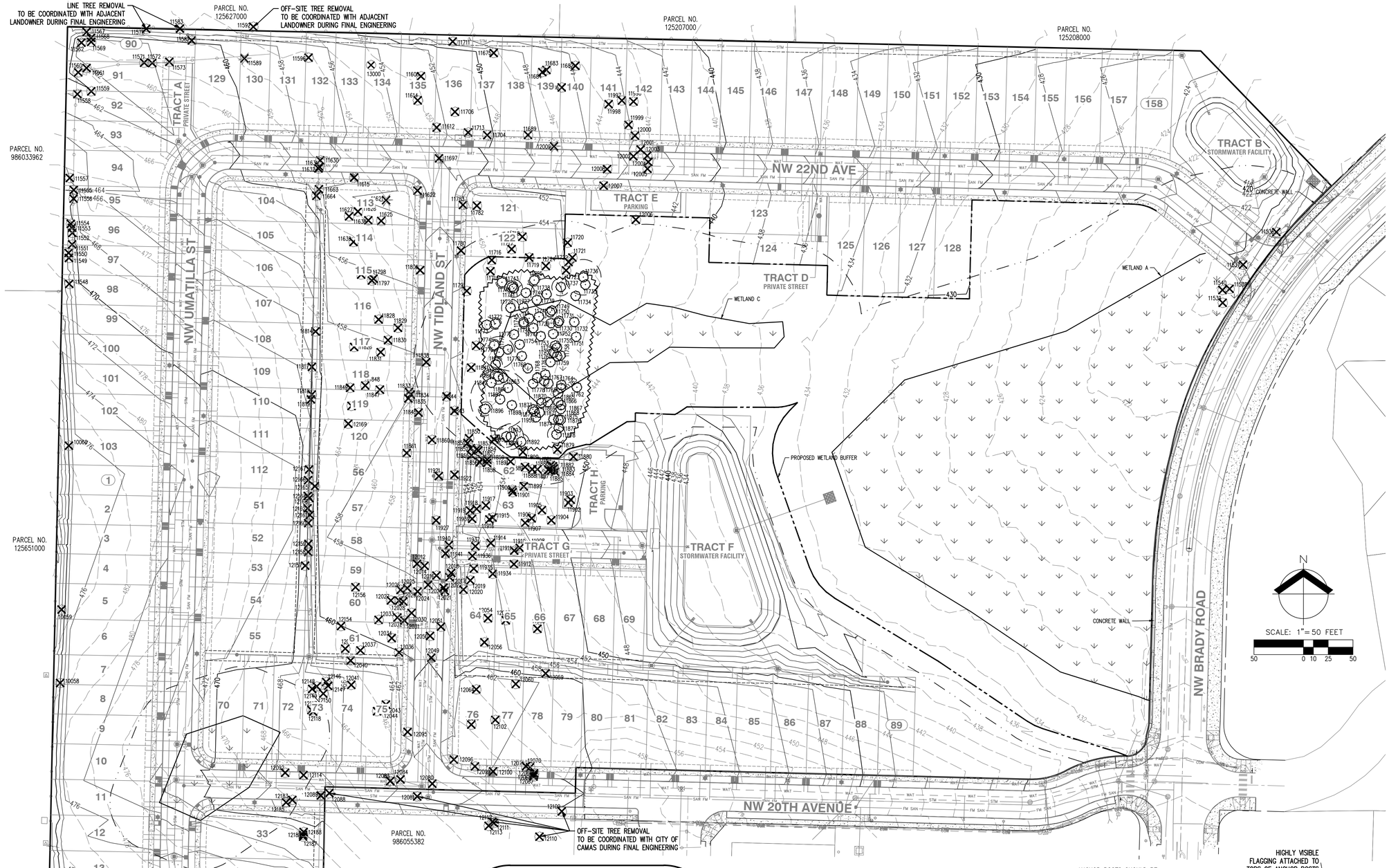
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PRELIMINARY GRADING, DEMOLITION, & ESC PLAN
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

JOHN T. NELSON — STATE OF WASHINGTON — 23614 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY NOT FOR CONSTRUCTION

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LEGEND

- EXISTING GROUND CONTOUR (2 FT) — 148 —
- EXISTING GROUND CONTOUR (10 FT) — 150 —
- FINISHED GRADE CONTOUR (2 FT) — 148 —
- FINISHED GRADE CONTOUR (10 FT) — 150 —
- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE
- TREE REMOVAL
- TREE PROTECTION/CONSTRUCTION FENCE (TREE PROTECTION AREA)
- ASSUMED TREE ROOT ZONE (1-FT RADIUS PER 1-IN OF DBH)

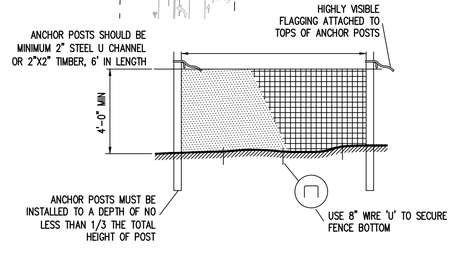
GENERAL NOTES

1. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO DEMOLITION AND SITE GRADING ACTIVITIES. SEE DETAIL ON THIS SHEET.
2. SEE SHEET P5.2–P5.3 FOR TREE INVENTORY.
3. SEE SHEET P5.1 FOR TREE PROTECTION NOTES.
4. SOIL MITIGATION AND ENHANCEMENT MAY BE NECESSARY POST CONSTRUCTION TO ENHANCE COMPACTED SOILS AROUND TREE BASE AND ENCOURAGE TREE HEALTH.
5. THE PROJECT ARBORIST MAY REQUIRE ALTERNATIVE CONSTRUCTION MATERIALS OR METHODS DURING CONSTRUCTION TO PROTECT AND AVOID REMOVAL OF SOME ROOT SYSTEMS.
6. VARIOUS TREES EXHIBIT FORMS OF HEALTH CONCERNS OR STRUCTURAL DEFECTS, AS NOTED IN THE TREE TABLE (SHEET P5.2–P5.3), THAT CURRENTLY PRESENT MINIMAL CONCERNS DUE TO THEIR LOCATION WITHIN THE PRESERVED CRITICAL AREA AND DISTANCE FROM LOTS OR USABLE SPACE; HOWEVER, IT IS RECOMMENDED TO MONITOR THESE TREES OVER TIME AS ADDITIONAL MITIGATION OPTIONS MAY BE WARRANTED IF THE HEALTH AND/OR STRUCTURAL CONDITIONS WORSEN. WE RECOMMEND USING A CERTIFIED ARBORIST FOR FUTURE MONITORING.

TREE DENSITY CALCULATIONS

GROSS AREA:	24.41 AC
OPEN SPACE:	5.97 AC
NET AREA:	18.44 AC
TOTAL TREE UNITS REQUIRED (20/AC):	369
EXISTING TREES RETAINED/(TREE UNITS):	76/(193)
MINIMUM # OF TREES TO PLANT/(TREE UNITS):	176/(176)
PROPOSED # OF TREES TO PLANT:	176

NOTE: SEE LANDSCAPING PLAN FOR PROPOSED TREE PLANTING PLAN



PLASTIC MESH TREE PROTECTION FENCE

NOT TO SCALE

TREE PROTECTION FENCE NOTES

1. BLAZE ORANGE OR BLUE PLASTIC MESH FENCE FOR TREE PROTECTION DEVICE, ONLY.
2. BOUNDARIES OF PROTECTION AREA WILL BE ESTABLISHED IN THE FIELD BY THE ARBORIST PRIOR TO CONSTRUCTION.
3. BOUNDARIES OF PROTECTION AREA SHOULD BE STAKED AND FLAGGED BY THE ARBORIST, OR UNDER THE SUPERVISION OF THE ARBORIST, PRIOR TO INSTALLING DEVICES.
4. AVOID DAMAGE TO CRITICAL ROOT ZONE. DO NOT DAMAGE OR SEVER LARGE ROOTS WHEN INSTALLING POSTS.
5. TREE PROTECTION TO BE INSTALLED PRIOR TO CONSTRUCTION AND REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETED.

CERTIFIED ARBORIST PRELIMINARY NOT FOR CONSTRUCTION ISA

BRYCE D. HANSON
CERTIFICATE NUMBER: PN 7554A
EXPIRATION DATE: 06/30/28

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PRELIMINARY TREE PRESERVATION & REMOVAL PLAN
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

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TREE PROTECTION NOTES

A. PLACING MATERIALS NEAR TREES – NO PERSON MAY CONDUCT ANY ACTIVITY WITHIN THE PROTECTED AREA OF ANY TREE DESIGNATED TO REMAIN, INCLUDING, BUT NOT LIMITED TO, PARKING EQUIPMENT, PLACING SOLVENTS, STORING BUILDING MATERIALS AND SOIL DEPOSITS, DUMPING CONCRETE WASHOUT, ETC.

B. ATTACHMENTS TO TREES – DURING CONSTRUCTION, NO PERSON SHALL ATTACH ANY OBJECT TO ANY TREE DESIGNATED FOR PROTECTION.

C. PROTECTIVE BARRIER – BEFORE DEVELOPMENT, LAND CLEARING, FILLING OR ANY LAND ALTERATION FOR WHICH A TREE REMOVAL PERMIT IS REQUIRED, THE CONTRACTOR:

C.A. SHALL ERECT AND MAINTAIN READILY VISIBLE PROTECTIVE TREE FENCING ALONG THE OUTER EDGE AND COMPLETELY SURROUNDING THE PROTECTED AREA OF ALL PROTECTED TREES OR GROUP OF TREES. FENCES SHALL BE CONSTRUCTED PER THE DETAIL ON THIS SHEET.

C.B. MAY BE REQUIRED TO COVER WITH MULCH TO A DEPTH OF AT LEAST SIX (6) INCHES OR WITH PLYWOOD OR SIMILAR MATERIAL IN THE AREAS ADJOINING THE CRITICAL ROOT ZONE OF A TREE IN ORDER TO PROTECT ROOTS FROM DAMAGE CAUSED BY HEAVY EQUIPMENT.

C.C. SHALL PROHIBIT EXCAVATION OR COMPACTING OF EARTH OR OTHER POTENTIALLY DAMAGING ACTIVITIES WITHIN THE BARRIERS.

C.D. MAY BE REQUIRED TO MINIMIZE ROOT DAMAGE BY EXCAVATING A TWO (2) FOOT DEEP TRENCH, AT EDGE OF CRITICAL ROOT ZONE, TO CLEANLY SEVER THE ROOTS OF TREES TO BE RETAINED. ROOTS ONE (1) INCH DIAMETER OR GREATER SHALL BE CLEANLY CUT WITH A SAW OR PRUNERS.

C.E. MAY BE REQUIRED TO HAVE CORRECTIVE PRUNING PERFORMED ON PROTECTED TREES IN ORDER TO AVOID DAMAGE FROM MACHINERY OR BUILDING ACTIVITY. MAY BE REQUIRED TO MAINTAIN TREES THROUGHOUT THE CONSTRUCTION PERIOD BY WATERING AND FERTILIZING.

C.F. SHALL MAINTAIN THE PROTECTIVE BARRIERS IN PLACE UNTIL THE PROJECT ARBORIST AUTHORIZES THEIR REMOVAL OR A FINAL CERTIFICATE OF OCCUPANCY IS ISSUED, WHICHEVER OCCURS FIRST.

C.G. SHALL ENSURE THAT ANY LANDSCAPING DONE IN THE PROTECTED ZONE SUBSEQUENT TO THE REMOVAL OF THE BARRIERS SHALL BE ACCOMPLISHED WITH LIGHT MACHINERY OR HAND LABOR.

D. GRADE

D.A. THE GRADE SHALL NOT BE ELEVATED OR REDUCED WITHIN THE CRITICAL ROOT ZONE OF TREES TO BE PRESERVED WITHOUT THE PROJECT ARBORIST'S AUTHORIZATION. THE PROJECT ARBORIST MAY ALLOW COVERAGE OF UP TO ONE HALF OF THE AREA OF THE TREE'S CRITICAL ROOT ZONE WITH LIGHT SOILS (NO CLAY) TO THE MINIMUM DEPTH NECESSARY TO CARRY OUT GRADING OR LANDSCAPING PLANS, IF IT WILL NOT IMPERIL THE SURVIVAL OF THE TREE. AERATION DEVICES MAY BE REQUIRED TO ENSURE THE TREE'S SURVIVAL.

D.B. IF THE GRADE ADJACENT TO A PRESERVED TREE IS RAISED SUCH THAT IT COULD SLOUGH OR ERODE INTO THE TREES CRITICAL ROOT ZONE, IT SHALL BE PERMANENTLY STABILIZED TO PREVENT SUFFOCATION OF THE ROOTS.

D.C. THE APPLICANT SHALL NOT INSTALL AN IMPERVIOUS SURFACE WITHIN THE CRITICAL ROOT ZONE OF ANY TREE TO BE RETAINED WITHOUT THE AUTHORIZATION OF THE PROJECT ARBORIST. THE PROJECT ARBORIST MAY REQUIRE SPECIFIC CONSTRUCTION METHODS AND/OR USE OF AERATION DEVICES TO ENSURE THE TREE'S SURVIVAL AND TO MINIMIZE THE POTENTIAL FOR ROOT INDUCED DAMAGE TO THE IMPERVIOUS SURFACE.

D.D. TO THE GREATEST EXTENT PRACTICAL, UTILITY TRENCHES SHALL BE LOCATED OUTSIDE OF THE CRITICAL ROOT ZONE OF TREES TO BE RETAINED. THE PROJECT ARBORIST MAY REQUIRE THAT UTILITIES BE TUNNELED UNDER THE ROOTS OF TREES TO BE RETAINED IF THE PROJECT ARBORIST DETERMINES THAT TRENCHING WOULD SIGNIFICANTLY REDUCE THE CHANCES OF THE TREE'S SURVIVAL.

D.E. TREE AND OTHER VEGETATION TO BE RETAINED SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION. CLEARING OPERATIONS SHALL BE CONDUCTED SO AS TO EXPOSE THE SMALLEST PRACTICAL AREA OF SOIL TO EROSION FOR THE LEAST POSSIBLE TIME. TO CONTROL EROSION, SHRUBS, GROUND COVER, AND STUMPS SHALL BE MAINTAINED ON THE INDIVIDUAL LOTS, WHERE FEASIBLE. WHERE NOT FEASIBLE, APPROPRIATE EROSION CONTROL MEASURES PRACTICES SHALL BE IMPLEMENTED PURSUANT TO CITY OF CAMAS CODE OF ORDINANCES CHAPTERS 14.02 AND 14.06.

E. DIRECTIONAL FELLING OF TREES SHALL BE USED TO AVOID DAMAGE TO TREES DESIGNATED FOR RETENTION.

F. ADDITIONAL REQUIREMENTS – THE PROJECT ARBORIST MAY REQUIRE ADDITIONAL TREE PROTECTION MEASURES WHICH ARE CONSISTENT WITH ACCEPTED URBAN FORESTRY PRACTICES.

G. ENCROACHMENT INTO THE ROOT PROTECTION ZONE IS ALLOWED WITH PROJECT ARBORIST APPROVAL AS DESCRIBED IN THE FOLLOWING NOTES:

G.A. EXCAVATION IN THE TOP 24 INCHES OF THE SOIL IN THE CRITICAL ROOT ZONE AREA SHOULD BEGIN AT THE EXCAVATION LINE THAT IS CLOSEST TO THE TREE.

G.B. THE EXCAVATION SHOULD BE DONE BY HAND/SHOVEL OR WITH A BACKHOE AND A MAN WITH A SHOVEL, PRUNING SHEARS, AND A PRUNING SAW.

G.C. IF DONE BY HAND, ALL ROOTS 1 INCH OR LARGER SHOULD BE PRUNED AT THE EXCAVATION LINE.

G.D. IF DONE WITH BACKHOE (MOST LIKELY SCENARIO), THEN THE OPERATOR SHALL START THE CUT AT THE EXCAVATION LINE AND CAREFULLY "FEEL" FOR ROOT/RESISTANCE. WHEN THERE IS RESISTANCE, THE MAN WITH THE SHOVEL HAND DIGS AROUND THE ROOTS AND PRUNES THE ROOTS LARGER THAN 1 INCH DIAMETER.

G.E. THE BACKHOE IS TO REMAIN OFF OF THE TREE ROOTS TO BE PRESERVED AT ALL TIMES.

G.F. ALL ROOTS SHALL BE CUT CLEANLY WITH PRUNING SHEARS OR A PRUNING SAW.

G.G. PROJECT ARBORIST MUST BE ONSITE DURING ANY WORK WITHIN THE TREE ROOT PROTECTION ZONE.

G.H. THE COMMUNITY DEVELOPMENT DIRECTOR MUST BE CONTACTED 24 HOURS PRIOR TO WORKING WITHIN THE TREE ROOT PROTECTION ZONE.

H. TREE PROTECTION ZONE IS DEFINED AS ALL AREAS BOUND AND PROTECTING THE OPTIMAL TREE PROTECTION ZONE.

I. TIMELINE FOR CLEARING, GRADING, AND INSTALLATION OF TREE PROTECTION MEASURES: WORK WILL BEGIN IMMEDIATELY FOLLOWING FINAL APPROVAL BY THE CITY. TREE PROTECTION MEASURES WILL BE DONE DURING CLEARING AND ANY GRADING WILL FOLLOW.

J. PRUNING/TREE REMOVAL NOTES: THE WORK TO BE COMPLETED UNDER THIS PROJECT SHALL CONSIST OF TREE REMOVAL AND TREE TRIMMING AS LISTED.

J.A. THE CONTRACTOR SHALL PROVIDE ADEQUATE CREW OF MEN, EQUIPMENT AND MATERIALS TO SAFELY AND EFFICIENTLY COMPLETE THE ASSIGNED WORK. EACH SUCH CREW SHALL INCLUDE AN INDIVIDUAL WHO SHALL BE DESIGNATED AS THE CREW SUPERVISOR AND WHO SHALL BE RESPONSIBLE FOR THE CREW'S ACTIVITIES AND WHO SHALL RECEIVE INSTRUCTION FROM THE OWNER OR THE OWNER'S REPRESENTATIVE AND DIRECT THE CREW TO ACCOMPLISH SUCH WORK.

J.B. WHENEVER A TREE, WHICH IS NOT SCHEDULED TO BE REMOVED, MUST BE TRIMMED OR PRUNED, THE CONTRACTOR SHALL INSURE THAT SUCH TRIMMING AND PRUNING IS CARRIED OUT UNDER THE DIRECT SUPERVISION OF A LICENSED ARBORIST. ALL PRUNING AND TRIMMING SHALL BE PERFORMED IN ACCORDANCE WITH THE PROVISIONS OF ANSI A 300 "STANDARD PRACTICES FOR TREE, SHRUB AND OTHER WOODY PLANT MAINTENANCE".

J.C. THE CONTRACTOR SHALL BE REQUIRED TO CUT TREES TO A HEIGHT OF APPROXIMATELY 12". THE STUMPS AND ROOTS SHALL BE GROUND DOWN A MINIMUM OF TWELVE (12) INCHES BELOW NORMAL GROUND LEVEL.

J.D. THE CONTRACTOR SHALL PERFORM ALL WORK IN ACCORDANCE WITH THE LATEST GOVERNMENTAL SAFETY REGULATIONS. ALL WORK SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ANSI Z133.1 "PRUNING, TRIMMING, REPAIRING, MAINTAINING AND REMOVING TREES AND CUTTING BRUSH–SAFETY REQUIREMENTS" WITH SPECIAL EMPHASIS GIVEN TO THE REQUIREMENT THAT ONLY QUALIFIED LINE–CLEARANCE TREE TRIMMERS BE ASSIGNED TO WORK WHERE A POTENTIAL ELECTRICAL HAZARD EXISTS.

J.E. THE CONTRACTOR SHALL MAKE ALL THE NECESSARY ARRANGEMENTS WITH ANY UTILITY THAT MUST BE PROTECTED OR RELOCATED IN ORDER TO ACCOMPLISH THE WORK. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE PROTECTION OF THE OPERATING CONDITION OF ALL ACTIVE UTILITIES WITHIN THE AREA OF CONSTRUCTION AND THEY SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO EXISTING UTILITIES.

J.F. ANY MATERIAL RESULTING FROM THE TRIMMING OR REMOVAL OF ANY TREES SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR.

J.G. HAZARDOUS TREES–REPORTING – ANY PERSON ENGAGED IN TRIMMING OR PRUNING WHO BECOMES AWARE OF A TREE OF DOUBTFUL STRENGTH, THAT COULD BE DANGEROUS TO PERSONS AND PROPERTY, SHALL REPORT SUCH TREE(S) TO THE OWNER OR THE OWNERS REPRESENTATIVE. SUCH TREES SHALL INCLUDE THOSE THAT ARE OVER MATURE, DISEASED, OR SHOWING SIGNS OF DECAY OR OTHER STRUCTURAL WEAKNESS.

J.H. DAMAGES–ANY DAMAGE CAUSED BY THE CONTRACTOR, INCLUDING, BUT NOT LIMITED TO, BROKEN SIDEWALK, CURB, RUTTED LAWN, BROKEN WATER SHUT–OFFS, WIRE DAMAGE, BUILDING DAMAGE, STREET DAMAGE, ETC., WILL BE REPAIRED OR REPLACED IN A TIMELY MANNER, TO THE OWNER'S SATISFACTION, AND ALL COSTS PAID BY THE CONTRACTOR.

J.I. ANY BRUSH CLEARING REQUIRED WITHIN THE TREE PROTECTION ZONE SHALL BE ACCOMPLISHED WITH HAND OPERATED EQUIPMENT.

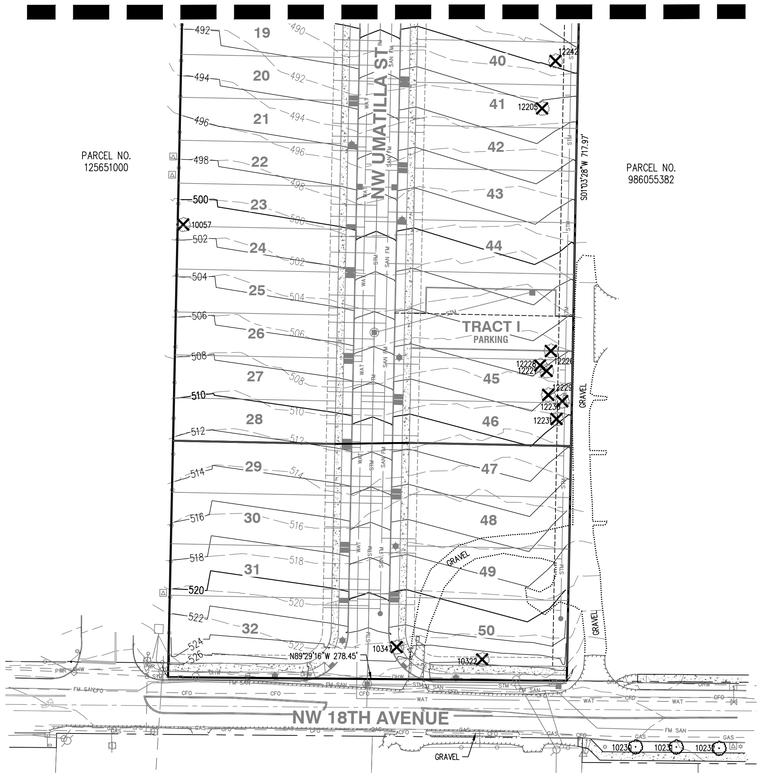
J.J. TREES TO BE REMOVED SHALL BE FELLED SO AS TO FALL AWAY FROM TREE ROOT PROTECTION ZONES AND TO AVOID PULLING AND BREAKING OF ROOTS TO REMAIN.

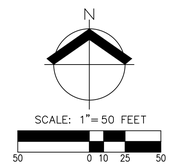
J.K. ALL DOWNED BRUSH AND TREES SHALL BE REMOVED FROM THE TREE PROTECTION ZONE EITHER BY HAND OR WITH EQUIPMENT SITTING OUTSIDE THE TREE ROOT PROTECTION ZONE. EXTRACTION SHALL OCCUR BY LIFTING THE MATERIAL OUT, NOT BY SKIDDING IT ACROSS THE GROUND.

J.L. IF TEMPORARY HAUL OR ACCESS ROADS MUST PASS OVER THE ROOT AREA OF TREES TO BE RETAINED A ROADBED OF 6 INCHES OF MULCH OR GRAVEL SHALL BE CREATED TO PROTECT THE SOIL. THE ROADBED MATERIAL SHALL BE REPLENISHED AS NECESSARY TO MAINTAIN A 6–INCH DEPTH.

J.M. PRUNING. TREES SHALL BE PRUNED PRIOR TO THE START OF CONSTRUCTION. TREES SHALL BE CROWN CLEANED TO REMOVE THE DEADWOOD 2 INCHES IN DIAMETER AND OVER. TREES SHALL BE CROWN THINNED BY 10–20%. CROWNS MAY BE RAISED BY REMOVING BOTTOM BRANCHES AS NECESSARY UP TO 14 FEET HIGH TO GIVE CLEARANCE FOR ANY CONSTRUCTION TRAFFIC, ACTIVITIES, ETC. ALL WORK TO BE DONE IN ACCORDANCE WITH ANSI A300 PRUNING STANDARDS. REMOVE ANY LIMBS OF DOUBTFUL STRENGTH THAT COULD BE DANGEROUS TO PERSONS AND PROPERTY.

SEE SHEET P5.0





LEGEND

- EXISTING GROUND CONTOUR (2 FT) — 148 —
- EXISTING GROUND CONTOUR (10 FT) — 150 —
- FINISHED GRADE CONTOUR (2 FT) — 148 —
- FINISHED GRADE CONTOUR (10 FT) — 150 —
- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE
- TREE REMOVAL
- TREE PROTECTION/CONSTRUCTION FENCE (TREE PROTECTION AREA)
- ASSUMED TREE ROOT ZONE (1–FT RADIUS PER 1–IN OF DBH)

GENERAL NOTES

1. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO DEMOLITION AND SITE GRADING ACTIVITIES. SEE DETAIL ON THIS SHEET.
2. SEE SHEET P5.2–P5.3 FOR TREE INVENTORY.
3. SEE SHEET P5.1 FOR TREE PROTECTION NOTES.
4. SOIL MITIGATION AND ENHANCEMENT MAY BE NECESSARY POST CONSTRUCTION TO ENHANCE COMPACTED SOILS AROUND TREE BASE AND ENCOURAGE TREE HEALTH.
5. THE PROJECT ARBORIST MAY REQUIRE ALTERNATIVE CONSTRUCTION MATERIALS OR METHODS DURING CONSTRUCTION TO PROTECT AND AVOID REMOVAL OF SOME ROOT SYSTEMS.
6. VARIOUS TREES EXHIBIT FORMS OF HEALTH CONCERNS OR STRUCTURAL DEFECTS, AS NOTED IN THE TREE TABLE (SHEET P5.2–P5.3), THAT CURRENTLY PRESENT MINIMAL CONCERNS DUE TO THEIR LOCATION WITHIN THE PRESERVED CRITICAL AREA AND DISTANCE FROM LOTS OR USABLE SPACE; HOWEVER, IT IS RECOMMENDED TO MONITOR THESE TREES OVER TIME AS ADDITIONAL MITIGATION OPTIONS MAY BE WARRANTED IF THE HEALTH AND/OR STRUCTURAL CONDITIONS WORSEN. WE RECOMMEND USING A CERTIFIED ARBORIST FOR FUTURE MONITORING.

TREE DENSITY CALCULATIONS

GROSS AREA:	24.41 AC
OPEN SPACE:	5.97 AC
NET AREA:	18.44 AC
TOTAL TREE UNITS REQUIRED (20/AC):	369
EXISTING TREES RETAINED/(TREE UNITS):	76/(193)
MINIMUM # OF TREES TO PLANT/(TREE UNITS):	176/(176)
PROPOSED # OF TREES TO PLANT:	176

NOTE: SEE LANDSCAPING PLAN FOR PROPOSED TREE PLANTING PLAN

CERTIFIED ARBORIST PRELIMINARY NOT FOR CONSTRUCTION ISA

BRYCE D. HANSON
CERTIFICATE NUMBER: PN 7504A
EXPIRATION DATE: 06/30/28

AKS ENGINEERING & FORESTRY, LLC
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VANCOUVER, WA 98682
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ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

PRELIMINARY TREE PRESERVATION & REMOVAL PLAN

STELLA RIDGE SUBIDIVSION

ALLIED DEVELOPMENT, LLC

CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	10/23/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	NTL

P5.1

AKS DRAWING FILE: 12107 P5.0 PRELIMINARY TREE PRESERVATION & REMOVAL PLANLOWG | LAYOUT: P5.1

Detailed Tree Inventory for 12107 Stella Ridge

AKS Job No. 12107 - Evaluation Date: 7/31/25-8/1/25 - Evaluated By: JTG

Tree #	DBH (in.)	Tree Species Common Name (Scientific name)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
10057	6,11	Crabapple (Malus spp.)	3	Codominant at 4ft; epicormic growth; Moderate dieback in crown	B	Direct conflict with site improvements	0
10058	10	Oregon Ash (Fraxinus latifolia)	2	Some gaps in canopy	C	Direct conflict with site improvements	0
10059	12	Oregon Ash (Fraxinus latifolia)	2	Some gaps in canopy	C	Direct conflict with site improvements	0
10060	6,6,6,6,8,8,8	Western Serviceberry (Amelanchier alnifolia)	5	Codominant; Severe dieback in canopy; epicormic growth	A	Direct conflict with site improvements	0
10230	6	Deciduous	0	OFFSITE; Street Tree in planter strip to remain		Preserve	0
10231	4,5	Deciduous	0	OFFSITE; Street Tree in planter strip to remain		Preserve	0
10232	6	Deciduous	0	OFFSITE; Street Tree in planter strip to remain		Preserve	0
10322	30	Vine Maple (Acer circinatum)	11	Codominant at 4ft	C	Direct impact from public road construction	0
10347	9	Sweet Cherry (Prunus avium)	2	Minor dieback/gaps in canopy; low vigor	B	Direct impact from public road construction	0
11536	26	Oregon Ash (Fraxinus latifolia)	9	Severe dieback in canopy; multiple dead leaders	A	Direct impact from public road construction	0
11537	22	Oregon Ash (Fraxinus latifolia)	7	Moderate dieback in branches	B	Direct impact from public road construction	0
11538	20	Willow (Salix spp.)	6	Codominant at 4ft; Moderate dieback in main stem; major leader dead	B	Direct impact from public road construction	0
11539	8	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (S)	C	Direct impact from public road construction	0
11540	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E); Minor dieback in branches	C	Direct impact from public road construction	0
11548	18	Red Alder (Alnus rubra)	5	Codominant; Moderate dieback in branches; Gaps in canopy	B	Direct conflict with site improvements	0
11549	17	Red Alder (Alnus rubra)	5	Moderate dieback in branches and main stem	B	Direct conflict with site improvements	0
11550	10	Red Alder (Alnus rubra)	2	Moderate dieback in branches, Asymmetrical/Lean (NW)	B	Direct conflict with site improvements	0
11551	5,5,5,8	Hawthorn (Crataegus spp.)	3	Codominant at 2ft with Included Bark	B	Direct conflict with site improvements	0
11552	6,6	Hawthorn (Crataegus spp.)	2	Codominant; Asymmetrical/Lean (N)	B	Direct conflict with site improvements	0
11553	6,6	Red Alder (Alnus rubra)	2	Low Vigor; Minor dieback in branches	B	Direct conflict with site improvements	0
11554	6,7	Red Alder (Alnus rubra)	2	Low Vigor; Minor dieback in branches	B	Direct conflict with site improvements	0
11555	14	Bigleaf Maple (Acer macrophyllum)	3	Okay	C	Direct conflict with site improvements	0
11556	6	Red Alder (Alnus rubra)	2	Low vigor; Severe dieback in branches; epicormic growth	A	Direct conflict with site improvements	0
11557	10	Red Alder (Alnus rubra)	2	Codominant at 6ft; Major dieback in branches; epicormic growth	C	Direct conflict with site improvements	0
11558	6,7	Red Alder (Alnus rubra)	2	Codominant at 3ft; Major dieback in branches; main stem dead	A	Direct conflict with site improvements	0
11559	9,12	Red Alder (Alnus rubra)	4	Codominant at 4ft; Major dieback in branches; main stem dead	A	Direct conflict with site improvements	0
11560	25	Bigleaf Maple (Acer macrophyllum)	9	Codominant at 8ft	C	Direct conflict with site improvements	0
11561	15	Bigleaf Maple (Acer macrophyllum)	4	Okay	C	Direct conflict with site improvements	0
11562	17	Bigleaf Maple (Acer macrophyllum)	5	Okay	C	Direct conflict with site improvements	0
11567	10	Bigleaf Maple (Acer macrophyllum)	2	Asymmetrical (N); Low vigor	B	Direct conflict with site improvements	0
11568	12	Bigleaf Maple (Acer macrophyllum)	2	Asymmetrical (N); Low vigor	B	Direct conflict with site improvements	0
11569	14	Bigleaf Maple (Acer macrophyllum)	3	Asymmetrical (S); 1 dead leader	B	Direct conflict with site improvements	0
11571	19	Bigleaf Maple (Acer macrophyllum)	6	Asymmetrical (S)	C	Direct conflict with site improvements	0
11572	19	Bigleaf Maple (Acer macrophyllum)	6	Asymmetrical (S)	C	Direct conflict with site improvements	0
11573	8,11,12	Bigleaf Maple (Acer macrophyllum)	5	Codominant; Severe dieback in canopy; Severe sweep in trunk	A	Direct conflict with site improvements	0
11578	12	Red Alder (Alnus rubra)	2	LINE TREE; gaps in canopy; Moderate dieback in branches	B	Direct conflict with site improvements	0
11582	16	Bigleaf Maple (Acer macrophyllum)	4	Asymmetrical (S)	C	Direct conflict with site improvements	0
11583	19	Bigleaf Maple (Acer macrophyllum)	6	LINE TREE; Asymmetrical (SW)	C	Direct conflict with site improvements	0
11589	48	Douglas-fir (Pseudotsuga menziesii)	20	Some gaps in canopy	C	Direct conflict with site improvements	0
11592	10	Red Alder (Alnus rubra)	0	OFFSITE; Low vigor; Some gaps in canopy	B	Direct impact from site improvements, risk rating	0
11596	48	Bigleaf Maple (Acer macrophyllum)	20	Broken top; cavity at base; epicormic growth	A	Direct conflict with site improvements	0
11606	39	Bigleaf Maple (Acer macrophyllum)	16	Codominant at 30ft with included bark; Severe lean in main stem; other stem dead and broken	A	Direct conflict with site improvements	0
11612	7	Willow (Salix spp.)	2	Damage and decay at base; Severe sweep and lean (W)	A	Direct impact from public road construction	0
11614	21	Bigleaf Maple (Acer macrophyllum)	7	Severely asymmetrical (SW); Crook at 30ft	B	Direct conflict with site improvements	0
11615	14,20,29,33	Bigleaf Maple (Acer macrophyllum)	21	Codominant at 6ft; 14" stem historically broke; bulging at base	C	Direct impact from public road construction	0
11621	35	Douglas-fir (Pseudotsuga menziesii)	14	Okay	C	Direct conflict with site improvements	0
11622	9	Willow (Salix spp.)	2	Significant dieback in canopy; epicormic growth	A	Direct impact from public road construction	0
11625	8	Willow (Salix spp.)	2	Codominant at 8ft	C	Direct conflict with site improvements	0
11626	11	Sweet Cherry (Prunus avium)	2	Severe fracture at 8ft; Lean on adjacent tree	A	Direct conflict with site improvements	0
11627	8,12	Sweet Cherry (Prunus avium)	3	Codominant at 5ft; Moderate dieback in canopy	B	Direct conflict with site improvements	0
11630	17	Bigleaf Maple (Acer macrophyllum)	5	Okay	C	Direct impact from public road construction	0
11631	12	Bigleaf Maple (Acer macrophyllum)	2	Corrected Sweep and asymmetrical (W)	C	Direct impact from public road construction	0
11632	15	Bigleaf Maple (Acer macrophyllum)	4	Corrected Sweep and asymmetrical (W)	C	Direct impact from public road construction	0
11638	9,13	Willow (Salix spp.)	4	Codominant at 5ft; Cavity at 4ft; Some dieback in branches	B	Direct conflict with site improvements	0
11639	12, 14	Willow (Salix spp.)	5	12" Stem dead; Severe dieback in canopy	A	Direct conflict with site improvements	0
11663	7,7	Willow (Salix spp.)	2	Severe dieback in canopy with several dead branches	A	Direct conflict with site improvements	0
11664	18	Bigleaf Maple (Acer macrophyllum)	5	Corrected lean (W) with asymmetry	C	Direct conflict with site improvements	0
11675	12	Willow (Salix spp.)	2	Severe decay throughout bole	A	Direct conflict with site improvements	0
11683	13	Willow (Salix spp.)	3	Cavity and decay at base; Moderate dieback in canopy	A	Direct conflict with site improvements	0
11684	13	Willow (Salix spp.)	3	Codominant; main stem failed; Cavity at 10ft; epicormic growth	A	Direct conflict with site improvements	0
11686	11	Crabapple (Malus spp.)	2	Conks; 7" Codominant Stem dead	A	Direct conflict with site improvements	0
11687	7,11	Crabapple (Malus spp.)	3	Codominant; failed leader	B	Direct conflict with site improvements	0
11689	18	Willow (Salix spp.)	5	Okay	C	Direct impact from public road construction	0
11697	6,6,7,10	Willow (Salix spp.)	4	Dead Stems; Decay in base; Epicormic growth	A	Direct impact from public road construction	0
11704	9,14	Willow (Salix spp.)	5	Growth from down log; Cavity and decay in base	A	Direct impact from public road construction	0
11706	30	Bigleaf Maple (Acer macrophyllum)	11	Bulging at base	C	Direct conflict with site improvements	0
11711	9,10	Willow (Salix spp.)	3	Growth from down log; codominant at 4ft; epicormic growth	A	Direct conflict with site improvements	0
11713	9	Willow (Salix spp.)	2	growth from decaying log; moderate dieback in canopy	A	Direct impact from public road construction	0
11715	13	Oregon Ash (Fraxinus latifolia)	3	Asymmetrical (E); Minor dieback in branches	C	Direct conflict with site improvements	0
11716	9,22	Oregon Ash (Fraxinus latifolia)	8	Codominant at 3ft; Historically broken leaders	C	Direct conflict with site improvements	0
11717	17	Oregon Ash (Fraxinus latifolia)	5	Gaps in canopy; historically broken leaders	B	Direct conflict with site improvements	0
11718	23	Oregon Ash (Fraxinus latifolia)	8	Okay	C	Direct conflict with site improvements	0
11719	9, 12,15	Oregon Ash (Fraxinus latifolia)	7	Codominant at 4ft; Historically broken top	C	Direct conflict with site improvements	0
11720	23	Oregon Ash (Fraxinus latifolia)	8	Codominant at 20ft	C	Direct conflict with site improvements	0
11721	12	Oregon Ash (Fraxinus latifolia)	2	Broken at 30ft	A	Direct conflict with site improvements	0
11722	8	Oregon Ash (Fraxinus latifolia)	2	Low vigor; Moderate Lean/Asymmetrical (W)	B	Direct conflict with site improvements	0
11723	15	Oregon Ash (Fraxinus latifolia)	4	Moderate dieback and gaps in canopy	B	Direct conflict with site improvements	0
11724	22	Oregon Ash (Fraxinus latifolia)	7	Large cavity with decay from base to 10'	A	Direct conflict with site improvements	0
11725	6,6,6	Oregon Ash (Fraxinus latifolia)	2	Codominant	C	Preserve	2
11726	8,9	Oregon Ash (Fraxinus latifolia)	2	Codominant; Asymmetrical (W); Some dieback in branches	B	Preserve	2
11727	9	Oregon Ash (Fraxinus latifolia)	2	Corrected Sweep (E)	C	Preserve	2
11729	8	Oregon Ash (Fraxinus latifolia)	2	Low vigor; Gaps and dieback in canopy	B	Preserve	2
11730	10	Oregon Ash (Fraxinus latifolia)	2	Minor dieback in tips of branches	C	Preserve	2
11731	10	Oregon Ash (Fraxinus latifolia)	2	Minor dieback in tips of branches	C	Preserve	2
11732	12, 15	Oregon Ash (Fraxinus latifolia)	6	Codominant	C	Preserve	6
11734	13	Oregon Ash (Fraxinus latifolia)	3	Asymmetrical (W)	C	Preserve	3
11735	8	Oregon Ash (Fraxinus latifolia)	2	Codominant with dead 4" stem, Severe Asymmetry (W)	A	Preserve	2
11736	18	Oregon Ash (Fraxinus latifolia)	5	Asymmetrical (W)	C	Preserve	5
11737	9	Oregon Ash (Fraxinus latifolia)	2	Codominant at 20ft; Low vigor; Gaps in canopy	B	Preserve	2
11738	16	Oregon Ash (Fraxinus latifolia)	4	Codominant at 20ft; Cavity at base	C	Preserve	4
11739	10	Oregon Ash (Fraxinus latifolia)	2	Codominant at 30ft	C	Preserve	2
11740	9	Oregon Ash (Fraxinus latifolia)	2	Codominant at 20ft; Minor dieback in tips of branches	C	Preserve	2
11741	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (W)	C	Preserve	2

Detailed Tree Inventory for 12107 Stella Ridge

AKS Job No. 12107 - Evaluation Date: 7/31/25-8/1/25 - Evaluated By: JTG

11742	6	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Preserve	2
11743	6	Willow (Salix spp.)	2	Moderate dieback in branches; Severe epicormic growth	B	Preserve	2
11744	6	Oregon Ash (Fraxinus latifolia)	2	Low vigor; Severe gaps in canopy	A	Preserve	2
11745	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (W)	C	Preserve	2
11746	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (W)	C	Preserve	2
11747	8	Oregon Ash (Fraxinus latifolia)	2	Codominant with dead stem at 20ft; severe dieback in canopy	A	Preserve	2
11748	11	Oregon Ash (Fraxinus latifolia)	2	Minor dieback in tips of branches	C	Preserve	2
11749	9	Oregon Ash (Fraxinus latifolia)	2	Codominant at 30ft; 1 dead leader; low vigor	B	Preserve	2
11750	7	Oregon Ash (Fraxinus latifolia)	2	Broken at 10ft; Epicormic growth	A	Preserve	2
11751	10	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (W)	C	Preserve	2
11752	6,10	Oregon Ash (Fraxinus latifolia)	2	Codominant; 6" Stem Severe dieback and low vigor	B	Preserve	2
11753	6,10	Oregon Ash (Fraxinus latifolia)	2	Codominant at 4ft; 6" stem dead; Moderate dieback in canopy	B	Preserve	2
11754	9	Oregon Ash (Fraxinus latifolia)	2	Broken at 20ft; epicormic shoots	A	Preserve	2
11755	10	Oregon Ash (Fraxinus latifolia)	2	Broken at 20ft	A	Preserve	2
11756	10	Oregon Ash (Fraxinus latifolia)	2	Codominant with dead stem at 30ft	B	Preserve	2
11757	6	Oregon Ash (Fraxinus latifolia)	2	Broken at 10ft	A	Preserve	2
11758	13	Oregon Ash (Fraxinus latifolia)	3	Asymmetrical (W); Gaps in crown; dieback in branches	B	Preserve	3
11759	12	Oregon Ash (Fraxinus latifolia)	2	Minor dieback in tips of branches	C	Preserve	2
11760	6,10	Oregon Ash (Fraxinus latifolia)	2	Codominant at 4ft; Broken top in main stem	A	Preserve	2
11761	8	Oregon Ash (Fraxinus latifolia)	2	Epicormic Growth	C	Preserve	2
11762	16	Oregon Ash (Fraxinus latifolia)	4	Asymmetrical (E)	C	Preserve	4
11763	10	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Preserve	2
11764	9	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Preserve	2
11765	10	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Preserve	2
11767	9	Oregon Ash (Fraxinus latifolia)	2	Epicormic Growth	C	Preserve	2
11768	9	Oregon Ash (Fraxinus latifolia)	2	Epicormic Growth; Low vigor	B	Preserve	2
11769	8,9,15	Oregon Ash (Fraxinus latifolia)	6	Codominant; decay in 8" stem; Epicormic growth	A	Preserve	6
11770	6	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Preserve	2
11771	12,12	Oregon Ash (Fraxinus latifolia)	5	Codominant with Included Bark	A	Preserve	5
11772	6	Oregon Ash (Fraxinus latifolia)	2	Corrected Sweep (E)	C	Preserve	2
11773	8	Oregon Ash (Fraxinus latifolia)	2	Minor dieback in tips of branches	C	Preserve	2
11774	35	Oregon Ash (Fraxinus latifolia)	14	Codominant at 8ft	C	Direct conflict with site improvements	0
11775	6	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Preserve	2
11776	7	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Preserve	2
11777	12,16	Oregon Ash (Fraxinus latifolia)	6	Codominant at 4ft	C	Preserve	6
11778	12	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (SW)	B	Preserve	2
11780	7	Willow (Salix spp.)	2	Moderate lean and asymmetry (W)	B	Direct impact from public road construction	0
11782	8,8,10,12	Willow (Salix spp.)	6	Growth from down log; epicormic growth	C	Direct conflict with site improvements	0
11783	8,8,8	Willow (Salix spp.)	3	Growth from down log; epicormic growth	C	Direct impact from public road construction	0
11791	14,24,30	Bigleaf Maple (Acer macrophyllum)	17	Codominant; Cavities in 24" stem; exposed roots	B	Direct impact from public road construction	0
11797	17	Bigleaf Maple (Acer macrophyllum)	5	Asymmetrical (SW)	C	Direct conflict with site improvements	0
11798	14	Bigleaf Maple (Acer macrophyllum)	3	Asymmetrical (NE); Codominant at 10ft	C	Direct conflict with site improvements	0
11802	12	Willow (Salix spp.)	2	Codominant at 10ft; Asymmetrical (W); Epicormic Growth	B	Direct conflict with site improvements	0
11806	10, 15	Bigleaf Maple (Acer macrophyllum)	5	Codominant	C	Direct impact from public road construction	0
11812	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (W); Minor dieback in branches	C	Preserve	2
11814	18	Bigleaf Maple (Acer macrophyllum)	5	Okay	C	Direct conflict with site improvements	0
11817	22	Bigleaf Maple (Acer macrophyllum)	7	Okay	C	Direct conflict with site improvements	0
11818	12	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
11819	19	Bigleaf Maple (Acer macrophyllum)	6	Minor cavity at 20ft	C	Direct conflict with site improvements	0
11826	13	Sweet Cherry (Prunus avium)	3	Asymmetrical and lean (W); Moderate dieback in branches	B	Direct conflict with site improvements	0
11828	27	Bigleaf Maple (Acer macrophyllum)	10	Bulges at base; Historically broken top; exposed roots (N)	B	Direct conflict with site improvements	0
11829	22	Oregon Ash (Fraxinus latifolia)	7	Asymmetrical (N)	C	Direct conflict with site improvements	0
11830	24,25	Bigleaf Maple (Acer macrophyllum)	14	Codominant; bulging at base	C	Direct conflict with site improvements	0
11831	29	Bigleaf Maple (Acer macrophyllum)	11	Bulging at base	C	Direct conflict with site improvements	0
11833	23	Bigleaf Maple (Acer macrophyllum)	8	Historically broken top; lean (S)	C	Direct impact from public road construction	0
11834	21	Bigleaf Maple (Acer macrophyllum)	7	Broken at 30ft; Epicormic growth	A	Direct impact from public road construction	0
11835	27	Bigleaf Maple (Acer macrophyllum)	10	Asymmetrical (S)	C	Direct conflict with site improvements	0
11838	17	Bigleaf Maple (Acer macrophyllum)	5	Bulges at base; Codominant at 30ft	C	Direct impact from public road construction	0
11841	10,10	Sweet Cherry (Prunus avium)	3	Codominant with slight Included bark; Moderate dieback in canopy	B	Direct conflict with site improvements	0
11842	13	Oregon Ash (Fraxinus latifolia)	3	Asymmetrical (W)	C	Preserve	3
11843	22	Bigleaf Maple (Acer macrophyllum)	7	Codominant at 6ft with slight included bark; Minor sweep in base	B	Direct impact from public road construction	0
11844	38	Bigleaf Maple (Acer macrophyllum)	15	Okay	C	Direct impact from public road construction	0
11845	9	Willow (Salix spp.)	2	Asymmetrical (S); Moderate dieback in canopy	B	Direct impact from public road construction	0
11847	10	Willow (Salix spp.)	2	Dead codominant stem; decay in base	A	Direct conflict with site improvements	0
11848	8,10,12	Sweet Cherry (Prunus avium)	5	Codominant with included bark; Asymmetrical and lean (S & W)	A	Direct conflict with site improvements	0
11849	10,16	Bigleaf Maple (Acer macrophyllum)	6	Codominant	C	Direct conflict with site improvements	0
11850	9	Bigleaf Maple (Acer macrophyllum)	2	Asymmetrical and lean (W)	C	Direct conflict with site improvements	0
11851	25	Oregon Ash (Fraxinus latifolia)	9	Okay	C	Direct conflict with site improvements	0
11852	10	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (SW)	C	Direct conflict with site improvements	0
11853	11	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (NE); Low vigor	B	Direct conflict with site improvements	0
11854	10	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
11855	10	Oregon Ash (Fraxinus latifolia)	2	Broken at 30ft; Cavities	A	Direct conflict with site improvements	0
11856	19	Oregon Ash (Fraxinus latifolia)	6	Okay	C	Direct conflict with site improvements	0
11857	12	Oregon Ash (Fraxinus latifolia)	2	Low vigor; Moderate dieback in canopy; epicormic growth	A	Direct conflict with site improvements	0
11858	15	Oregon Ash (Fraxinus latifolia)	4	Historically broken top; Lean and asymmetrical (E)	B	Direct conflict with site improvements	0
11859	15	Oregon Ash (Fraxinus latifolia)	4	Moderate asymmetry and lean (SE); slight dieback in branches	B	Direct conflict with site improvements	0
11860	9	Willow (Salix spp.)	2	Moderate dieback and gaps in canopy	B	Direct impact from public road construction	0
11861	9	Bigleaf Maple (Acer macrophyllum)	2	Corrected Sweep in base	C	Direct impact from public road construction	0
11862	8	Oregon Ash (Fraxinus latifolia)	2	Low vigor; moderate dieback in canopy	B	Preserve	2
11863	7	Oregon Ash (Fraxinus latifolia)	2	Some epicormic growth	C	Preserve	2
11864	7	Oregon Ash (Fraxinus latifolia)	2	Some epicormic growth	C	Preserve	2
11865	6	Oregon Ash (Fraxinus latifolia)	2	Low vigor; Some epicormic growth	B	Preserve	2
11866	7	Oregon Ash (Fraxinus latifolia)	2	Low vigor; Gaps and dieback in canopy	B	Preserve	2
11867	8,9	Oregon Ash (Fraxinus latifolia)	2	Codominant; broken main stem; lean (E)	A	Preserve	2
11868	7	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (E)	A	Preserve	2
11869	9	Oregon Ash (Fraxinus latifolia)	2	Codominant with 2 other dead stems; Asymmetrical and lean (E)	A	Preserve	2
11870	13,14	Oregon Ash (Fraxinus latifolia)	6	Codominant	C	Preserve	6
11871	7	Oregon Ash (Fraxinus latifolia)	2	Broken at 10ft	A	Preserve	2
11872	8	Oregon Ash (Fraxinus latifolia)	2	Some epicormic growth	C	Preserve	2
11873	6	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (W)	B	Preserve	2
11874	11	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Preserve	2
11875	9	Oregon Ash (Fraxinus latifolia)	2	Broken at 20ft	A	Preserve	2
11876	6	Oregon Ash (Fraxinus latifolia)	2	Severe asymmetrical and lean (E)	B	Preserve	2
11877	12	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Preserve	2
11878	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E) ; Moderate dieback in canopy	B	Preserve	2

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PRELIMINARY TREE PRESERVATION & REMOVAL PLAN
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

CERTIFIED ARBORIST PN-7564A ISA

BRYCE D. HANSON
CERTIFICATE NUMBER: PN 7564A
EXPIRATION DATE: 06/30/28

JOB NUMBER:	12107
DATE:	10/23/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	NTL

P5.2

AKS DRAWING FILE: 12107 P5.0 PRELIMINARY TREE PRESERVATION & REMOVAL PLAN.DWG | LAYOUT: P5.2

Detailed Tree Inventory for 12107 Stella Ridge

AKS Job No. 12107 - Evaluation Date: 7/31/25-8/1/25 - Evaluated By: JTG

11879	10	Oregon Ash (Fraxinus latifolia)	2	Broke at 30ft; epicormic growth	A	Direct conflict with site improvements	0
11880	13	Oregon Ash (Fraxinus latifolia)	3	Asymmetrical (E) ; Some dieback in canopy	C	Direct conflict with site improvements	0
11881	6	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (N)	C	Direct conflict with site improvements	0
11882	7	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (NW); low vigor	B	Direct conflict with site improvements	0
11883	17	Oregon Ash (Fraxinus latifolia)	5	Broken top; Codominant; epicormic growth	A	Direct conflict with site improvements	0
11884	13	Oregon Ash (Fraxinus latifolia)	3	Asymmetrical (SW) ; Moderate dieback in canopy	B	Direct conflict with site improvements	0
11885	8	Oregon Ash (Fraxinus latifolia)	2	Broken at 10ft	A	Direct conflict with site improvements	0
11886	6,14	Oregon Ash (Fraxinus latifolia)	4	Codominant at 5ft; epicormic growth	B	Direct conflict with site improvements	0
11887	8	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (S); low vigor	B	Direct conflict with site improvements	0
11888	14	Oregon Ash (Fraxinus latifolia)	3	Lean (W); low vigor	B	Direct conflict with site improvements	0
11889	10	Oregon Ash (Fraxinus latifolia)	2	Broken at 30ft; epicormic growth	A	Direct conflict with site improvements	0
11890	8,10	Oregon Ash (Fraxinus latifolia)	3	Codominant; epicormic growth; dead tops	A	Direct conflict with site improvements	0
11891	8	Oregon Ash (Fraxinus latifolia)	2	Low vigor; epicormic growth; moderate dieback in branches	A	Direct conflict with site improvements	0
11892	8	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (W); Moderate dieback in branches	B	Preserve	2
11893	13	Oregon Ash (Fraxinus latifolia)	3	Okay	C	Preserve	3
11894	11	Oregon Ash (Fraxinus latifolia)	2	Broken top; Epicormic growth	A	Preserve	2
11895	6	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
11896	7	Bigleaf Maple (Acer macrophyllum)	2	Moderate dieback in branches; epicormic growth	B	Preserve	2
11897	30	Oregon Ash (Fraxinus latifolia)	11	Codominant with included bark; cavities at base; epicormic growth	A	Preserve	11
11898	14	Oregon Ash (Fraxinus latifolia)	3	Minor dieback in tips of branches	C	Preserve	3
11899	20	Oregon Ash (Fraxinus latifolia)	6	Codominant at 5ft; 1 stem broken at 20ft; asymmetrical (E)	A	Direct conflict with site improvements	0
11900	6	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (S); Lean (N); Broken top	A	Direct conflict with site improvements	0
11901	14	Oregon Ash (Fraxinus latifolia)	3	Cavity at base; Moderate dieback in branches	B	Direct conflict with site improvements	0
11902	15	Bigleaf Maple (Acer macrophyllum)	4	Asymmetrical (SE)	C	Direct conflict with site improvements	0
11903	22	Bigleaf Maple (Acer macrophyllum)	7	Asymmetrical (E)	C	Direct conflict with site improvements	0
11904	24	Oregon Ash (Fraxinus latifolia)	8	Codominant at 7ft; 1 broken stem at 30ft	B	Direct conflict with site improvements	0
11905	8,8,10,14	Oregon Ash (Fraxinus latifolia)	7	Codominant at 3ft; 1 broken stem	C	Direct conflict with site improvements	0
11906	11,14,15,17	Oregon Ash (Fraxinus latifolia)	11	Codominant at 3ft; 1 broken stem; epicormic growth	B	Direct conflict with site improvements	0
11907	6	Willow (Salix spp.)	2	Low vigor	B	Direct conflict with site improvements	0
11908	29	Willow (Salix spp.)	11	Codominant at 7ft with included bark and separation	A	Direct impact from public road construction	0
11910	13	Oregon Ash (Fraxinus latifolia)	3	Broken at 30ft	A	Direct impact from public road construction	0
11911	11	Oregon Ash (Fraxinus latifolia)	2	Broken at 20ft	A	Direct impact from public road construction	0
11912	10,11,12,14,15,17	Oregon Ash (Fraxinus latifolia)	13	Codominant; Several major broken leaders	A	Direct impact from public road construction	0
11914	10	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct impact from public road construction	0
11915	19	Oregon Ash (Fraxinus latifolia)	6	Codominant at 30ft; 1 broken stem	C	Direct conflict with site improvements	0
11916	8	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
11917	6,17,17	Oregon Ash (Fraxinus latifolia)	9	17" stem broken at 30ft; epicormic growth	A	Direct conflict with site improvements	0
11918	7	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
11919	26	Oregon Ash (Fraxinus latifolia)	9	Codominant at 6ft; Asymmetrical and lean (NW)	C	Direct conflict with site improvements	0
11921	22	Bigleaf Maple (Acer macrophyllum)	7	Some exposed roots	C	Direct impact from public road construction	0
11922	14	Oregon Ash (Fraxinus latifolia)	3	Lean (W); Severe epicormic growth; codominant at 20ft	B	Direct impact from public road construction	0
11927	7	Red Alder (Alnus rubra)	2	Okay	C	Direct impact from public road construction	0
11933	30	Bigleaf Maple (Acer macrophyllum)	11	Severe cavity and decay in base	A	Direct conflict with site improvements	0
11934	8,14,15	Oregon Ash (Fraxinus latifolia)	7	Codominant with included bark; dead and broken leaders	A	Direct conflict with site improvements	0
11935	8,15	Oregon Ash (Fraxinus latifolia)	5	Codominant	C	Direct impact from public road construction	0
11936	12,23	Oregon Ash (Fraxinus latifolia)	9	Codominant at 4ft; 23" stem codominant at 6ft with included bark; epicormic growth	A	Direct impact from public road construction	0
11937	6	Bigleaf Maple (Acer macrophyllum)	2	Okay	C	Direct impact from public road construction	0
11939	19,25	Oregon Ash (Fraxinus latifolia)	12	Codominant	C	Direct conflict with site improvements	0
11940	7,8	Oregon Ash (Fraxinus latifolia)	2	Codominant; Decay at base; low vigor	A	Direct impact from public road construction	0
11941	13	Oregon Ash (Fraxinus latifolia)	3	Lean (W)	C	Direct impact from public road construction	0
11953	13	Oregon Ash (Fraxinus latifolia)	3	Codominant at 10ft; 1 stem dead	B	Preserve	3
11996	6	Red Alder (Alnus rubra)	2	Codominant with dead 8" stem	A	Direct conflict with site improvements	0
11997	12	Red Alder (Alnus rubra)	2	Codominant with dead 8" stem	A	Direct conflict with site improvements	0
11998	12	Red Alder (Alnus rubra)	2	Severe dieback in main stem	A	Direct conflict with site improvements	0
11999	8	Red Alder (Alnus rubra)	2	Severe dieback in canopy; main stem dead; epicormic growth	A	Direct conflict with site improvements	0
12000	6,8	Red Alder (Alnus rubra)	2	Severe dieback in canopy; severe lean (E)	A	Direct impact from public road construction	0
12001	6,7,9	Red Alder (Alnus rubra)	3	Severe dieback in canopy; very low vigor	A	Direct impact from public road construction	0
12002	9	Red Alder (Alnus rubra)	2	Low vigor; dead codominant stem	A	Direct impact from public road construction	0
12003	6	Red Alder (Alnus rubra)	2	Low vigor; dead codominant stems	A	Direct impact from public road construction	0
12004	9	Red Alder (Alnus rubra)	2	Dead main stem; Epicormic growth	A	Direct impact from public road construction	0
12005	6,8	Red Alder (Alnus rubra)	2	Codominant with dead stem	A	Direct impact from public road construction	0
12006	10	Red Alder (Alnus rubra)	2	Broken top	A	Direct conflict with site improvements	0
12007	7	Red Alder (Alnus rubra)	2	Broken top	A	Direct impact from public road construction	0
12008	7	Red Alder (Alnus rubra)	2	Low vigor; Severe epicormic growth	A	Direct impact from public road construction	0
12009	31	Douglas-fir (Pseudotsuga menziesii)	12	Broken top; Lean (W); Exposed structural roots (E)	A	Direct impact from public road construction	0
12012	16	Oregon Ash (Fraxinus latifolia)	4	Codominant with dead leaders; decay in base	A	Direct impact from public road construction	0
12014	9,11	Oregon Ash (Fraxinus latifolia)	3	Codominant with included bark; major dead leaders	A	Direct impact from public road construction	0
12016	7	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct impact from public road construction	0
12017	6,8	Oregon Ash (Fraxinus latifolia)	2	Codominant	C	Direct impact from public road construction	0
12018	10	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (NW)	C	Direct impact from public road construction	0
12019	9,11,15	Oregon Ash (Fraxinus latifolia)	7	Codominant with included bark; 11" stem broken at 20'	A	Direct conflict with site improvements	0
12020	7,8,9	Oregon Ash (Fraxinus latifolia)	3	Codominant with dead stems; lean (S)	B	Direct conflict with site improvements	0
12021	8,9	Oregon Ash (Fraxinus latifolia)	2	Codominant	C	Direct impact from public road construction	0
12022	6,8	Oregon Ash (Fraxinus latifolia)	2	Codominant with included bark; epicormic growth	B	Direct impact from public road construction	0
12023	10	Oregon Ash (Fraxinus latifolia)	2	Moderate dieback in branches	B	Direct impact from public road construction	0
12024	9,9	Oregon Ash (Fraxinus latifolia)	3	Codominant with major separation	A	Direct impact from public road construction	0
12025	8,9	Oregon Ash (Fraxinus latifolia)	2	Codominant; Decay at base; low vigor	A	Direct impact from public road construction	0
12026	9	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (W); Moderate dieback in branches	B	Direct impact from public road construction	0
12027	6,11,13	Oregon Ash (Fraxinus latifolia)	5	Codominant at 4ft with included bark; 6" stem dead	A	Direct conflict with site improvements	0
12028	6,9	Oregon Ash (Fraxinus latifolia)	2	Codominant; decay in base	A	Direct conflict with site improvements	0
12029	8	Oregon Ash (Fraxinus latifolia)	2	Cavity and decay in base; epicormic growth	A	Direct impact from public road construction	0
12030	8,9,12	Oregon Ash (Fraxinus latifolia)	5	Codominant; minor cavity in base; dead 6" stem	A	Direct impact from public road construction	0
12031	6,7,10,11	Oregon Ash (Fraxinus latifolia)	5	6" stem dead; Codominant; Major separation with 7" stem	A	Direct impact from public road construction	0
12032	7,11	Bigleaf Maple (Acer macrophyllum)	3	Codominant; Cavity in base	B	Direct conflict with site improvements	0
12033	7,9,15	Oregon Ash (Fraxinus latifolia)	6	Large cavity and decay in base	A	Direct conflict with site improvements	0
12034	9,10, 11	Oregon Ash (Fraxinus latifolia)	5	Codominant with separation	B	Direct conflict with site improvements	0
12036	10,11,24	Oregon Ash (Fraxinus latifolia)	10	Codominant at 6ft; major cavity with decay in base	A	Direct conflict with site improvements	0
12037	11,13	Oregon Ash (Fraxinus latifolia)	5	Codominant with included bark; 11" stem broken at 30'	A	Direct conflict with site improvements	0
12038	10,12	Oregon Ash (Fraxinus latifolia)	4	Codominant; Cavity and decay in base	A	Direct conflict with site improvements	0
12040	9,10	Oregon Ash (Fraxinus latifolia)	3	Codominant; Cavity and decay in base	A	Direct conflict with site improvements	0
12041	32	Oregon Ash (Fraxinus latifolia)	12	Codominant at 20ft	C	Direct conflict with site improvements	0
12043	8,9	Willow (Salix spp.)	2	Growth from down tree; some dead minor stems	B	Direct conflict with site improvements	0
12044	12	Willow (Salix spp.)	2	Codominant with dead stem	B	Direct conflict with site improvements	0
12049	37	Oregon Ash (Fraxinus latifolia)	15	Codominant at 10ft; Minor dieback in branches	C	Direct impact from public road construction	0
12050	6,8,10,10,11	Willow (Salix spp.)	7	Codominant; decay in base; epicormic growth	A	Direct impact from public road construction	0
12051	10,13,13	Oregon Ash (Fraxinus latifolia)	7	Codominant with included bark; epicormic growth; severe lean (W)	A	Direct conflict with site improvements	0

Detailed Tree Inventory for 12107 Stella Ridge

AKS Job No. 12107 - Evaluation Date: 7/31/25-8/1/25 - Evaluated By: JTG

12054	18	Bigleaf Maple (Acer macrophyllum)	5	Corrected lean (W)	C	Direct conflict with site improvements	0
12055	19	Oregon Ash (Fraxinus latifolia)	6	Dead minor stem at 20ft; epicormic growth	B	Direct conflict with site improvements	0
12056	8, 22	Oregon Ash (Fraxinus latifolia)	8	Codominant; epicormic growth	C	Direct conflict with site improvements	0
12059	22,28	Bigleaf Maple (Acer macrophyllum)	14	Codominant with included bark; major dead stems in canopy	A	Direct conflict with site improvements	0
12060	9	Red Alder (Alnus rubra)	2	Scar at base	B	Direct conflict with site improvements	0
12064	11,23	Oregon Ash (Fraxinus latifolia)	9	Codominant at 4ft	C	Direct conflict with site improvements	0
12065	9,9,30	Willow (Salix spp.)	13	Growth from down tree	C	Direct conflict with site improvements	0
12067	9	Red Alder (Alnus rubra)	2	Asymmetrical (E); several failed leaders	B	Direct impact from public road construction	0
12068	9	Red Alder (Alnus rubra)	2	Asymmetrical (E); Moderate dieback in branches	B	Direct impact from public road construction	0
12069	9	Red Alder (Alnus rubra)	2	Asymmetrical (E); Moderate dieback in branches	B	Direct impact from public road construction	0
12070	7	Red Alder (Alnus rubra)	2	Mechanical damage to base; asymmetrical and lean (NE)	B	Direct impact from public road construction	0
12071	8,12	Red Alder (Alnus rubra)	3	Codominant with included bark; 8" Stem has severe lean (NE)	A	Direct impact from public road construction	0
12080	10	Willow (Salix spp.)	2	Cavity at base; epicormic growth; Moderate dieback in branches	A	Direct impact from public road construction	0
12081	6,12	Willow (Salix spp.)	0	OFFSITE; Codominant; 6" stem dead	B	Direct impact from public road construction	0
12083	24	Red Alder (Alnus rubra)	8	Severe dieback in main stem; bark loss	A	Direct impact from public road construction	0
12084	23	Red Alder (Alnus rubra)	8	Severe dieback in main stem; epicormic growth	A	Direct impact from public road construction	0
12088	13	Red Alder (Alnus rubra)	0	OFFSITE; okay	C	Direct impact from public road construction	0
12089	7	Red Alder (Alnus rubra)	2	Asymmetrical and Lean (SW)	C	Direct impact from public road construction	0
12092	6	Red Alder (Alnus rubra)	2	Okay	C	Direct impact from public road construction	0
12095	25	Willow (Salix spp.)	9	Main Stem Dead; Severe lean (S)	A	Direct impact from public road construction	0
12096	24	Oregon Ash (Fraxinus latifolia)	8	Okay	C	Direct impact from public road construction	0
12099	8	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical and lean (S); several dead minor stems	A	Direct impact from public road construction	0
12100	20	Red Alder (Alnus rubra)	6	Severe dieback in main stem	B	Direct impact from public road construction	0
12102	6,6,6	Willow (Salix spp.)	2	Cluster	C	Direct conflict with site improvements	0
12109	8,15	Oregon Ash (Fraxinus latifolia)	0	OFFSITE; okay	C	Direct impact from public road construction	0
12110	24	Oregon Ash (Fraxinus latifolia)	0	OFFSITE; okay	C	Direct conflict with site improvements	0
12111	8	Oregon Ash (Fraxinus latifolia)	0	OFFSITE; okay	C	Direct conflict with site improvements	0
12112	16	Oregon Ash (Fraxinus latifolia)	0	OFFSITE; okay	C	Direct conflict with site improvements	0
12113	18	Oregon Ash (Fraxinus latifolia)	0	OFFSITE; okay	C	Direct conflict with site improvements	0
12114	6	Willow (Salix spp.)	2	Cluster; dead stems; low vigor	B	Direct impact from public road construction	0
12117	8,16	Oregon Ash (Fraxinus latifolia)	5	Codominant with included bark; cavity with decay at base	A	Direct conflict with site improvements	0
12118	15,17	Oregon Ash (Fraxinus latifolia)	8	Codominant at 6ft with included bark; epicormic growth	B	Direct conflict with site improvements	0
12146	17	Oregon Ash (Fraxinus latifolia)	5	Cavity at base; Old leader dead; epicormic growth	B	Direct conflict with site improvements	0
12147	12	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Direct conflict with site improvements	0
12148	14,19	Oregon Ash (Fraxinus latifolia)	8	Codominant; Cavity at base where old codominant stem failed	B	Direct conflict with site improvements	0
12149	6,23	Oregon Ash (Fraxinus latifolia)	8	Codominant at 10ft	C	Direct conflict with site improvements	0
12150	14,20	Oregon Ash (Fraxinus latifolia)	8	Codominant at 3ft	C	Direct conflict with site improvements	0
12154	10,10	Hawthorn (Crataegus spp.)	3	Codominant; lean/asymmetrical (SW)	C	Direct conflict with site improvements	0
12156	14,24	Oregon Ash (Fraxinus latifolia)	10	Codominant	C	Direct conflict with site improvements	0
12157	17	Oregon Ash (Fraxinus latifolia)	5	Codominant at 10ft; Corrected lean	C	Direct conflict with site improvements	0
12158	15	Oregon Ash (Fraxinus latifolia)	4	Okay	C	Direct conflict with site improvements	0
12159	18	Red Alder (Alnus rubra)	5	Corrected sweep in base	C	Direct conflict with site improvements	0
12160	11,15	Oregon Ash (Fraxinus latifolia)	6	Codominant	C	Direct conflict with site improvements	0
12161	12	Oregon Ash (Fraxinus latifolia)	2	Codominant with cluster	B	Direct conflict with site improvements	0
12162	7,11	Oregon Ash (Fraxinus latifolia)	3	Okay	C	Direct conflict with site improvements	0
12163	7	Oregon Ash (Fraxinus latifolia)	2	Asymmetrical (E)	C	Direct conflict with site improvements	0
12164	8,11,19	Crabapple (Malus spp.)	8	Codominant; Asymmetrical (W); Some dieback in branches	B	Direct conflict with site improvements	0
12165	7	Red Alder (Alnus rubra)	2	Asymmetrical (E); Severe lean (E)	B	Direct conflict with site improvements	0
12166	12	Oregon Ash (Fraxinus latifolia)	2	Okay	C	Direct conflict with site improvements	0
12167	21	Bigleaf Maple (Acer macrophyllum)	7	Codominant at 10ft	C	Direct conflict with site improvements	0
12168	13	Oregon Ash (Fraxinus latifolia)	3	Codominant at 10ft; Severe Sweep in base	B	Direct conflict with site improvements	0
12169	13	Oregon Ash (Fraxinus latifolia)	3	Severe lean (W); Severe dieback in canopy	A	Direct conflict with site improvements	0
12183	9,9	Red Alder (Alnus rubra)	3	Codominant	C	Direct impact from public road construction	0
12185	9	Red Alder (Alnus rubra)	2	Okay	C	Direct impact from public road construction	0
12186	9,12	Crabapple (Malus spp.)	4	Okay	C	Direct conflict with site improvements	0
12187	14	Crabapple (Malus spp.)	3	Okay	C	Direct conflict with site improvements	0
12188	14	Crabapple (Malus spp.)	3	Large bore holes at base; Major leader dead	B	Direct conflict with site improvements	0
12195	12	Crabapple (Malus spp.)	2	Minor cavity at base; epicormic growth	B	Direct conflict with site improvements	0
12200	6,6,6,8	Willow (Salix spp.)	3	Cluster; Minor dieback in branches	C	Direct conflict with site improvements	0
12205	6,10,13,13,14,15	Bigleaf Maple (Acer macrophyllum)	11	Codominant; Minor stems dead in canopy	B	Direct conflict with site improvements	0
12226	7,7,9,10,14	Willow (Salix spp.)	7	Codominant; growth from dead log; epicormic growth	B	Direct conflict with site improvements	0
12227	9	Willow (Salix spp.)	2	Codominant at 5ft with cluster	C	Direct conflict with site improvements	0
12228	7,9,10	Willow (Salix spp.)	4	Codominant; Decay in base; asymmetrical (W)	A	Direct conflict with site improvements	0
12229	7,9	Willow (Salix spp.)	2	Codominant	C	Direct conflict with site improvements	0
12230	6,6	Willow (Salix spp.)	2	Codominant	C	Direct conflict with site improvements	0
12231	6,6,6,7,7,8,9	Willow (Salix spp.)	6	Codominant; Cavity at base; Moderate dieback in canopy	B	Direct conflict with site improvements	0
12242	11	Willow (Salix spp.)	2	Main stem dead; Epicormic growth	A	Direct conflict with site improvements	0
12244	6,6	Willow (Salix spp.)	2	Moderate dieback in branches	B	Direct conflict with site improvements	0
12246	6,9	Willow (Salix spp.)	2	Dead leaders; asymmetrical (NW)	B	Direct conflict with site improvements	0
12248	6	Willow (Salix spp.)	2	Growth from down log; epicormic growth; Moderate dieback in branches	B	Direct conflict with site improvements	0
13000	14,20	Bigleaf Maple (Acer macrophyllum)	8	Codominant; Lean and asymmetrical (SW); exposed structural roots	A	Direct conflict with site improvements	0

Total # of Existing Trees Inventoried = 355

Net Site Area = 18.44 AC

Total # of Existing Onsite Trees = 342

Total Onsite Existing Tree Units = 1478

Total # of Onsite Trees Retained = 76

Total # of Tree Units Retained = 193

Minimum Tree Units Required per City Code = 368.8

*(18.44 acres * 20 trees/acre)*

Minimum # Trees to Replant = 175.8

Total # of Existing Trees Removed = 276

Total Existing Tree Units Removed = 1285

Windthrow Rating

A=Least windthrow resistant

B=Moderate windthrow resistant

C=Most windthrow resistant

Arborist Disclosure Statement:

Arborists are tree specialists who use their education, knowledge, training, and experience to examine trees, recommend measures to enhance the health of trees, and attempt to reduce the risk of living near trees. The Client and Jurisdiction may choose to accept or disregard the recommendations of the arborist, or seek additional advice. Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like medicine, cannot be guaranteed. Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees. Neither this author nor AKS Engineering & Forestry, LLC have assumed any responsibility for liability associated with the trees on or adjacent to this site.

At the completion of construction, all trees should once again be reviewed. Land clearing and removal of adjacent trees can expose previously unseen defects and otherwise healthy trees can be damaged during construction.

CERTIFIED ARBORIST PNW-7554A ISA

BRYCE D. HANSON
CERTIFICATE NUMBER: PN 7554A
EXPIRATION DATE: 06/30/28

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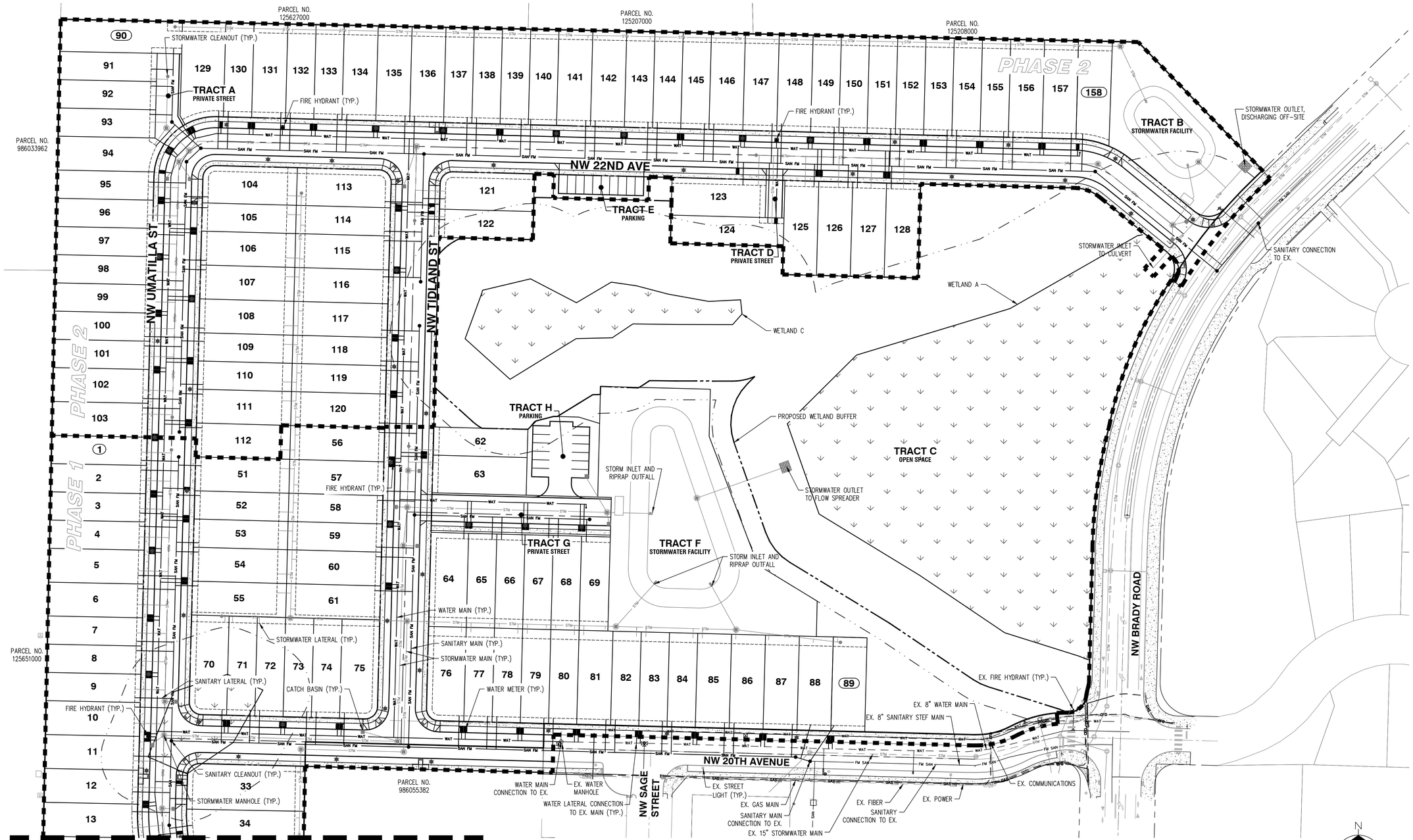
PRELIMINARY TREE PRESERVATION & REMOVAL PLAN
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	10/23/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	NTL

P5.3

AKS DRAWING FILE: 12107 P5.0 PRELIMINARY TREE PRESERVATION & REMOVAL PLAN.DWG | LAYOUT: P5.3



GENERAL NOTES

1. ALL LOTS TO RECEIVE INDIVDUAL SERVICE CONNECTIONS.
2. SANITARY MAINLINE TO CONNECT TO EXISTING PUBLIC SANITARY LINE ON NW 20TH AVENUE AND NW BRADY ROAD. WATER MAINLINE TO CONNECT TO EXISTING PUBLIC WATER LINE ON NW 20TH AVENUE.
3. SANITARY AND WATER DESIGNED AT THE TIME OF FINAL ENGINEERING.
4. ALL LOTS TO BE SERVED BY INDIVIDUAL LOT SANITARY STEP TANKS, 1500 GALLONS EACH, INSTALLED AT DEVELOPMENT BY HOMEBUILDER.
5. SEE SHEET P7.0 AND P7.1 FOR PRELIMINARY STORMWATER PLAN.
6. NO SEPTIC SYSTEMS ARE PROPOSED ON SITE.
7. RESIDENTIAL FIRE SPRINKLERS REQUIRED IN ALL UNITS.
8. DIAMETER OF PROPOSED DIP WATER MAIN IS 8 INCHES & LATERALS ARE 1 INCH.
9. DIAMETER OF PROPOSED PVC SANITARY MAIN IS 8 INCHES & LATERALS ARE 4 INCHES.
10. DIAMETER OF PROPOSED PVC STORM MAIN IS 12 INCHES & LATERALS ARE 6 INCHES.

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PRELIMINARY COMPOSITE UTILITY PLAN

STELLA RIDGE SUBIDIVSION

ALLIED DEVELOPMENT, LLC

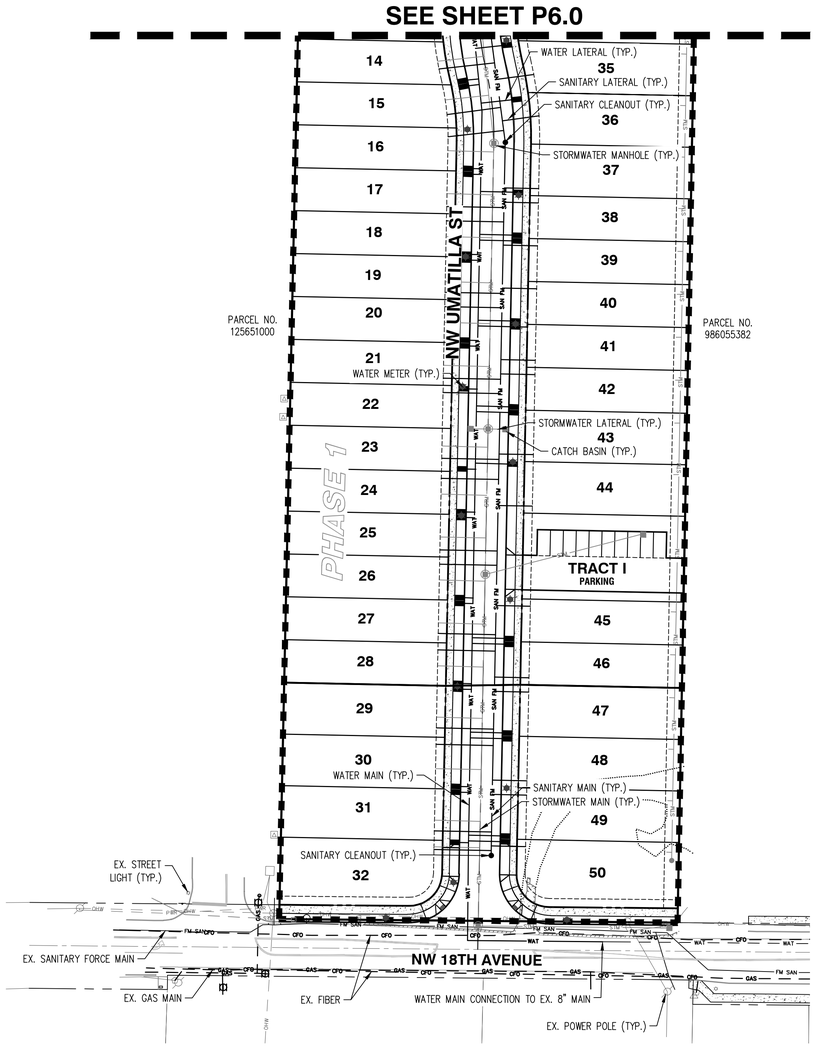
CAMAS, WASHINGTON

JOHN M. NEMEC — STATE OF WASHINGTON — 24897 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	10/23/2025
DESIGNED BY:	NTL
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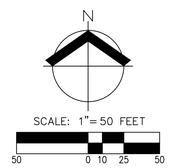
P6.0

AKS DRAWING FILE: 12107 P6.0 PRELIMINARY COMPOSITE UTILITY PLAN.DWG | LAYOUT: P6.0



GENERAL NOTES

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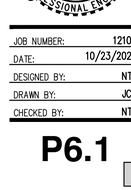
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PRELIMINARY COMPOSITE UTILITY PLAN

STELLA RIDGE SUBIDIVSION

ALLIED DEVELOPMENT, LLC

CAMAS, WASHINGTON



JOB NUMBER:	12107
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P6.1

AKS DRAWING FILE: 12107 P6.0 PRELIMINARY COMPOSITE UTILITY PLAN.DWG | LAYOUT: P6.1

PARCEL NO. 125627000

PARCEL NO. 125207000

PARCEL NO. 125208000

PARCEL NO. 986033962

PARCEL NO. 125651000

PARCEL NO. 986055382

STORM LINE TO COLLECT ROOF & YARD RUNOFF

TRACT A
PRIVATE STREET

20.0' PRIVATE STORM EASEMENT

NW 22ND AVE

PHASE 2

PHASE 1

NW UMATILLA ST

NW TIDLAND ST

TRACT E
PARKING

TRACT D
PRIVATE STREET

TRACT H
PARKING

TRACT G
PRIVATE STREET

TRACT F
STORMWATER FACILITY

TRACT B
STORMWATER FACILITY

TRACT C
OPEN SPACE

EX. TYPE II CURB INLET

STORMWATER OUTLET

STORMWATER OUTFALL
DISCHARGES OFF-SITE

WATER QUALITY VAULT

WETLAND A

CULVERT ROUTING STORMWATER
TO OUTFALL

WETLAND C

PROPOSED WETLAND BUFFER

STORMWATER OUTLET
TO FLOW SPREADER

STORMWATER OUTLET
TO RIPRAP OUTFALL

STORMWATER CLEANOUT (TYP.)

CATCH BASIN (TYP.)

STORMWATER MANHOLE (TYP.)

STORMWATER LATERAL (TYP.)

STORMWATER MAIN (TYP.)

10.0' PRIVATE STORM EASEMENT

20.0' PRIVATE STORM EASEMENT

STORMLINE TO COLLECT
ROOF & YARD RUNOFF

10.0' PRIVATE STORM EASEMENT

NW BRADY ROAD

NW 20TH AVENUE

NW SAGE STREET

STORMWATER OUTFALL
FROM 20TH AVENUE

EX. STORM MAIN

EX. STORM CATCH BASIN

SEE SHEET P7.1

LEGEND

- EXISTING GROUND CONTOUR (2 FT)
- EXISTING GROUND CONTOUR (10 FT) — 350
- FINISHED GRADE CONTOUR (2 FT)
- FINISHED GRADE CONTOUR (10 FT) — 350

GENERAL NOTES

1. STORMWATER TREATMENT AND RETENTION FACILITIES FOR THIS DEVELOPMENT ARE TO BE OWNED AND MAINTAINED BY THE HOA.
2. THE SITE IS NOT WITHIN OR ADJACENT TO A 100-YEAR FLOODPLAIN OR SHORELINE MANAGEMENT AREA.
3. THERE ARE EXISTING ON-SITE STORMWATER FACILITIES.
4. STORMWATER INFRASTRUCTURE EXISTS IN NW 20TH AVENUE & NW BRADY ROAD. STORMWATER FROM THESE STREETS DOES NOT CONTRIBUTE TO ON-SITE FLOWS.
5. NO WELLS, AGRICULTURAL DRAIN TILES, POTENTIAL SLOPE INSTABILITY, STRUCTURES, UTILITIES, SEPTIC TANKS, OR DRAIN FIELDS EXIST ONSITE.
6. NO FLOODPLAIN, FLOODWAYS, OR SHORELINE EXIST ONSITE.
7. WETLANDS EXIST ON THE SITE.
8. EXISTING DRAINAGE FLOW ROUTES ARE GENERALLY NORTHEAST FOR THE THRESHOLD DISCHARGE AREA (TDA). EXISTING STORMWATER FROM THE SITE DISCHARGES THROUGH NW BRADY ROAD TO THE NORTHEAST.
9. PROPOSED DRAINAGE FLOW ROUTES TO FOLLOW EXISTING FLOW ROUTES TO THE NORTHEAST AFTER BEING DISCHARGED FROM STORMWATER FACILITIES.
10. RUNOFF FROM ROOF AREAS FOR LOTS 47-75, 92-135, 139-156 DRAIN TO A STORMWATER LATERAL.

N

SCALE: 1"=50 FEET

50 0 10 25 50

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PRELIMINARY STORMWATER PLAN
STELLA RIDGE SUBDIVISION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

JOSEPH C. SIMMONS — STATE OF WASHINGTON — 22614 — REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

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CHECKED BY:	NTL

P7.0

AKS DRAWING FILE: 12107 P7.0 PRELIMINARY STORMWATER PLANDWG | LAYOUT: P7.0

LEGEND

EXISTING GROUND CONTOUR (2 FT)

EXISTING GROUND CONTOUR (10 FT) — 350 —

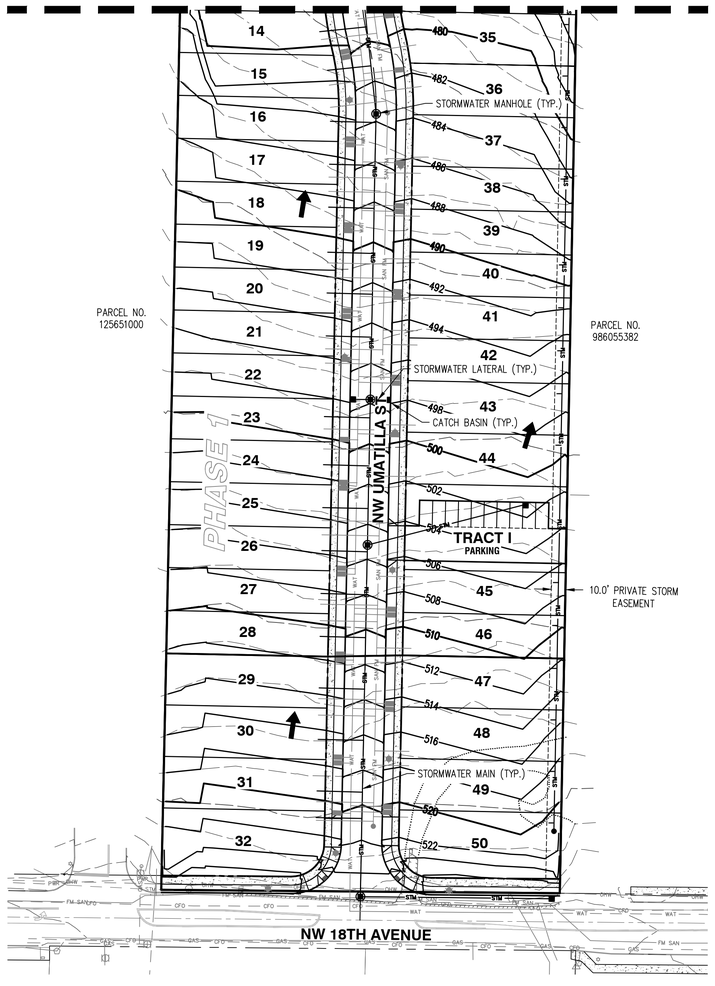
FINISHED GRADE CONTOUR (2 FT)

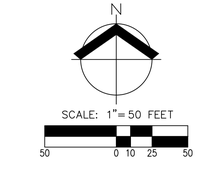
FINISHED GRADE CONTOUR (10 FT) — 350 —

GENERAL NOTES

1. STORMWATER TREATMENT AND RETENTION FACILITIES FOR THIS DEVELOPMENT ARE TO BE OWNED AND MAINTAINED BY THE HOA.
2. THE SITE IS NOT WITHIN OR ADJACENT TO A 100-YEAR FLOODPLAIN OR SHORELINE MANAGEMENT AREA.
3. THERE ARE EXISTING ON-SITE STORMWATER FACILITIES.
4. STORMWATER INFRASTRUCTURE EXISTS IN NW 20TH AVENUE & NW BRADY ROAD. STORMWATER FROM THESE STREETS DOES NOT CONTRIBUTE TO ON-SITE FLOWS.
5. NO WELLS, AGRICULTURAL DRAIN TILES, POTENTIAL SLOPE INSTABILITY, STRUCTURES, UTILITIES, SEPTIC TANKS, OR DRAIN FIELDS EXIST ONSITE.
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10. RUNOFF FROM ROOF AREAS FOR LOTS 47-75, 92-135, 139-156 DRAIN TO A STORMWATER LATERAL.

SEE SHEET P7.0





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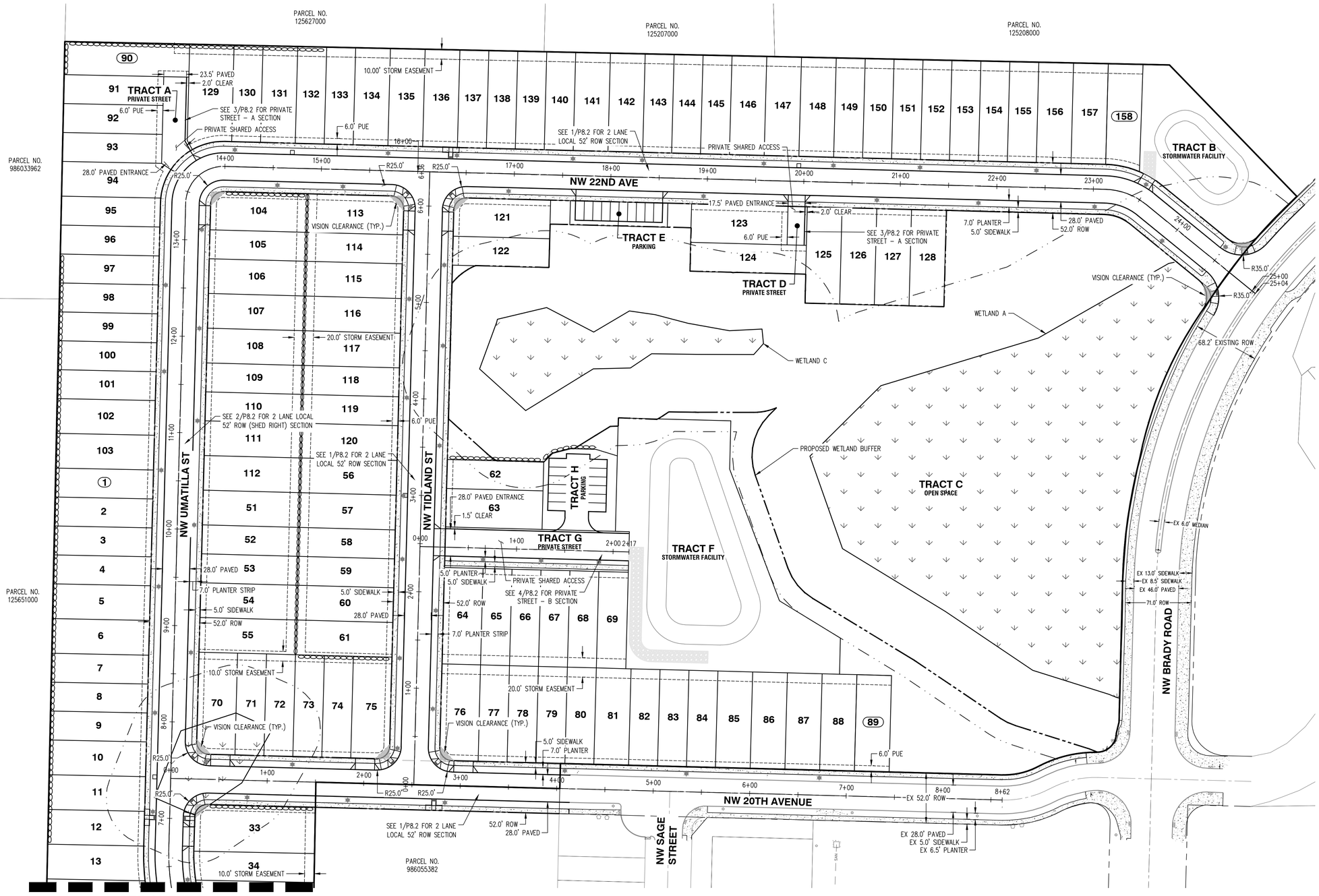
PRELIMINARY STORMWATER PLAN
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON



JOB NUMBER:	12107
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P7.1

AKS DRAWING FILE: 12107 P7.0 PRELIMINARY STORMWATER PLANDWG | LAYOUT: P7.1



GENERAL NOTES

1. THE PROPOSED DEVELOPMENT WILL ACCESS OFF NW 18TH AVENUE, NW 20TH AVENUE, & NW BRADY ROAD. NW BRADY AVE IS CLASSIFIED AS A 2-LANE URBAN MINOR ARTERIAL. NW 20TH AVENUE IS CLASSIFIED AS AN EXISTING 2-LANE NON-ARTERIAL ROAD WITH CURB & GUTTER ON BOTH SIDES. NW BRADY ROAD IS CLASSIFIED AS AN EXISTING 2-LANE MINOR ARTERIAL.
2. FRONTAGE IMPROVEMENTS WILL INCLUDE:
   FULL HALF-WIDTH FRONTAGE IMPROVEMENTS FOR NW 18TH AVENUE.
   SIDEWALK CONSTRUCTION FOR THE EXISTING PORTION OF NW 20TH AVENUE.
   INTERSECTION IMPROVEMENT FOR NW BRADY RD.

SCALE: 1"= 50 FEET
50 0 10 25 50
ORIGINAL PAGE SIZE: 22" x 34"

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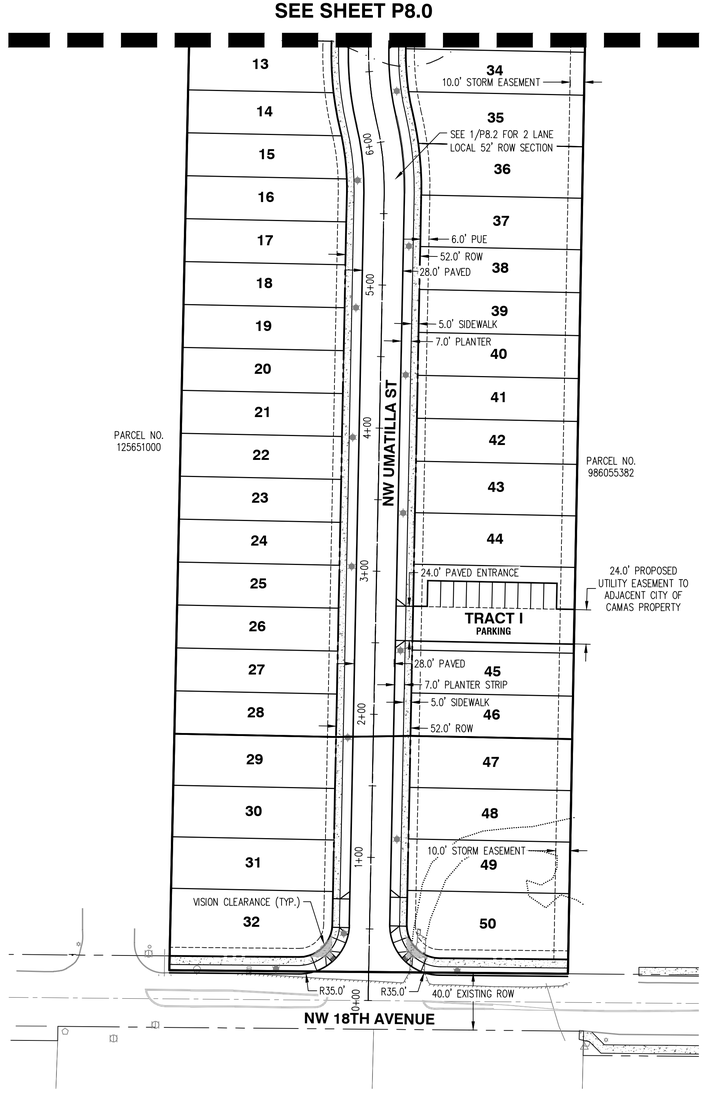
PRELIMINARY STREET PLAN
STELLA RIDGE SUBIDVISION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

JOHN M. TAYLOR — STATE OF WASHINGTON — 22614 — REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

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P8.0

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   INTERSECTION IMPROVEMENT FOR NW BRADY RD.

N

SCALE: 1" = 50 FEET

50 0 10 25 50

ORIGINAL PAGE SIZE: 22" x 34"

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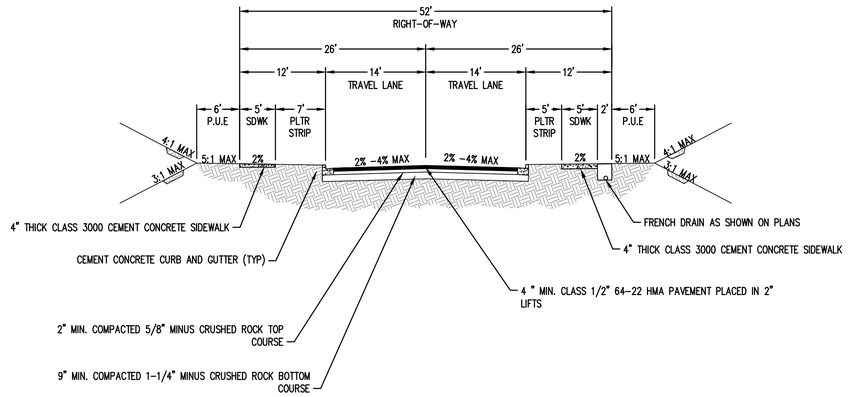
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STATE OF WASHINGTON
PRELIMINARY NOT FOR CONSTRUCTION
22614
REGISTERED PROFESSIONAL ENGINEER

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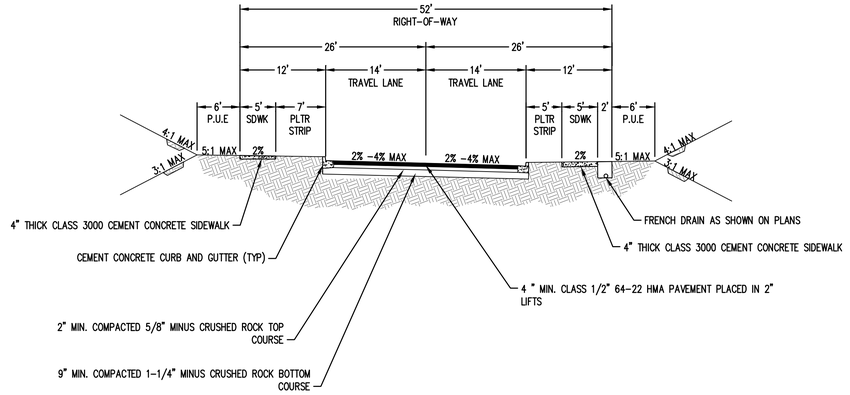


NOTES:
1. STREET SECTION DEPTHS SHOWN ARE ABSOLUTE MINIMUMS.
2. CROSS-SLOPE APPLIES TO CROWN OR SHED STREETS.
3. PARKING ONLY ALLOWED ON ONE SIDE OF THE STREET.

1 2 LANE LOCAL 52' ROW

WHITMAN ST – STA 0+00.00 TO STA 7+41.50
NW TIDLAND ST
NW 21ST AVE
NW 20TH AVE

Scale: 1" = 10'

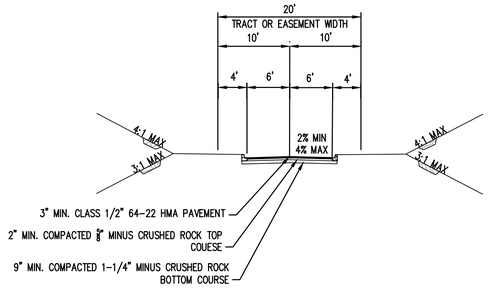


NOTES:
1. STREET SECTION DEPTHS SHOWN ARE ABSOLUTE MINIMUMS.
2. CROSS-SLOPE APPLIES TO CROWN OR SHED STREETS.
3. PARKING ONLY ALLOWED ON ONE SIDE OF THE STREET.

2 2 LANE LOCAL 52' ROW (SHED RIGHT)

WHITMAN ST – STA 7+41.50 TO STA 13+88.72

Scale: 1" = 10'

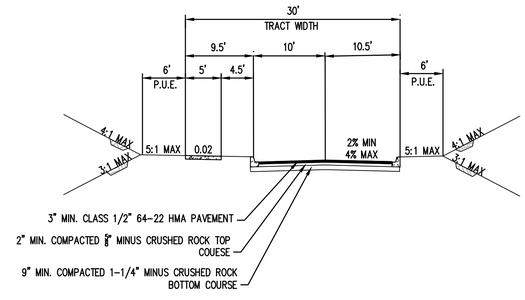


NOTES:
1. STREET SECTION DEPTHS SHOWN ARE ABSOLUTE MINIMUMS.
2. CROSS-SLOPE APPLIES TO CROWN OR SHED STREETS.
3. ACCESS TO FOUR OR LESS DWELLING UNITS.
4. TRACT WIDTH AND PAVEMENT WIDTH MAY BE INCREASED FOR FIRE AND/OR GARBAGE/RECYCLING ACCOMMODATIONS WHEN THIS IS THE SOLE ACCESS TO ONE OR MORE LOTS.

3 PRIVATE STREET - A

TRACT A
TRACT D

Scale: 1" = 5'



NOTES:
1. STREET SECTION DEPTHS SHOWN ARE ABSOLUTE MINIMUMS.
2. CROSS-SLOPE APPLIES TO CROWN OR SHED STREETS.
3. ACCESS TO FIVE OR MORE DWELLING UNITS, LESS THAN OR EQUAL TO 100' IN LENGTH.

4 PRIVATE STREET - B

TRACT G

Scale: 1" = 10'

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JOSEPH M. TOVAR
STATE OF WASHINGTON
PRELIMINARY
NOT FOR CONSTRUCTION
JMT 12614
REGISTERED PROFESSIONAL ENGINEER

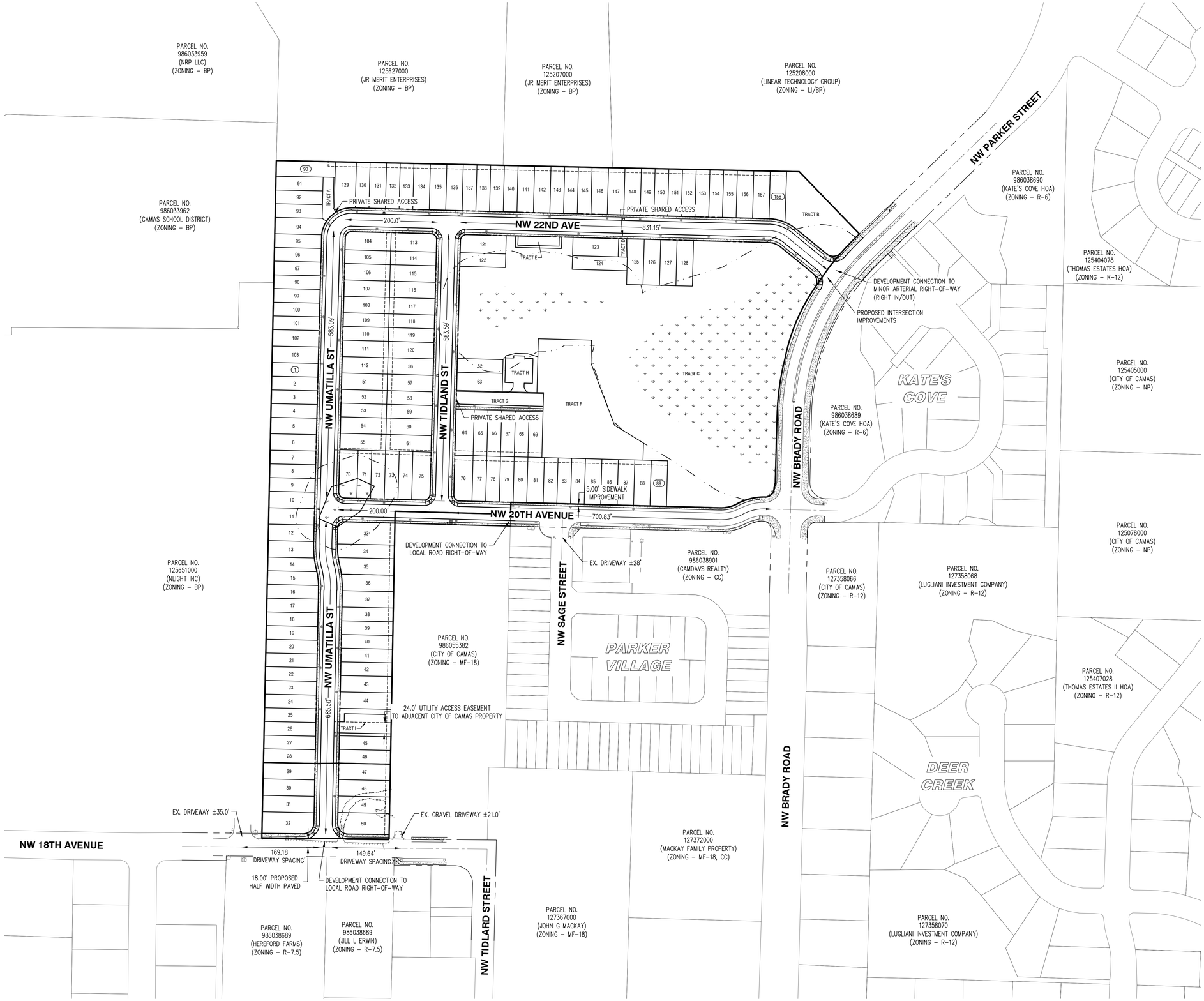
JOB NUMBER:	12107
DATE:	10/23/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	NTL

P8.2

AKS DRAWING FILE: 12107 P8.0 PRELIMINARY STREET PLANDWG | LAYOUT: P8.2

GENERAL NOTES

1. SEE SHEET P8.0 TO P8.2 FOR PROPOSED ROADWAY DIMENSIONS AND TURNING RADII.



N

SCALE: 1"=100 FEET

100 0 20 50 100

ORIGINAL PAGE SIZE: 22" x 34"

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9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
360.882.0419
WWW.AKS-ENG.COM

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PRELIMINARY CIRCULATION PLAN
STELLA RIDGE SUBDIVISION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

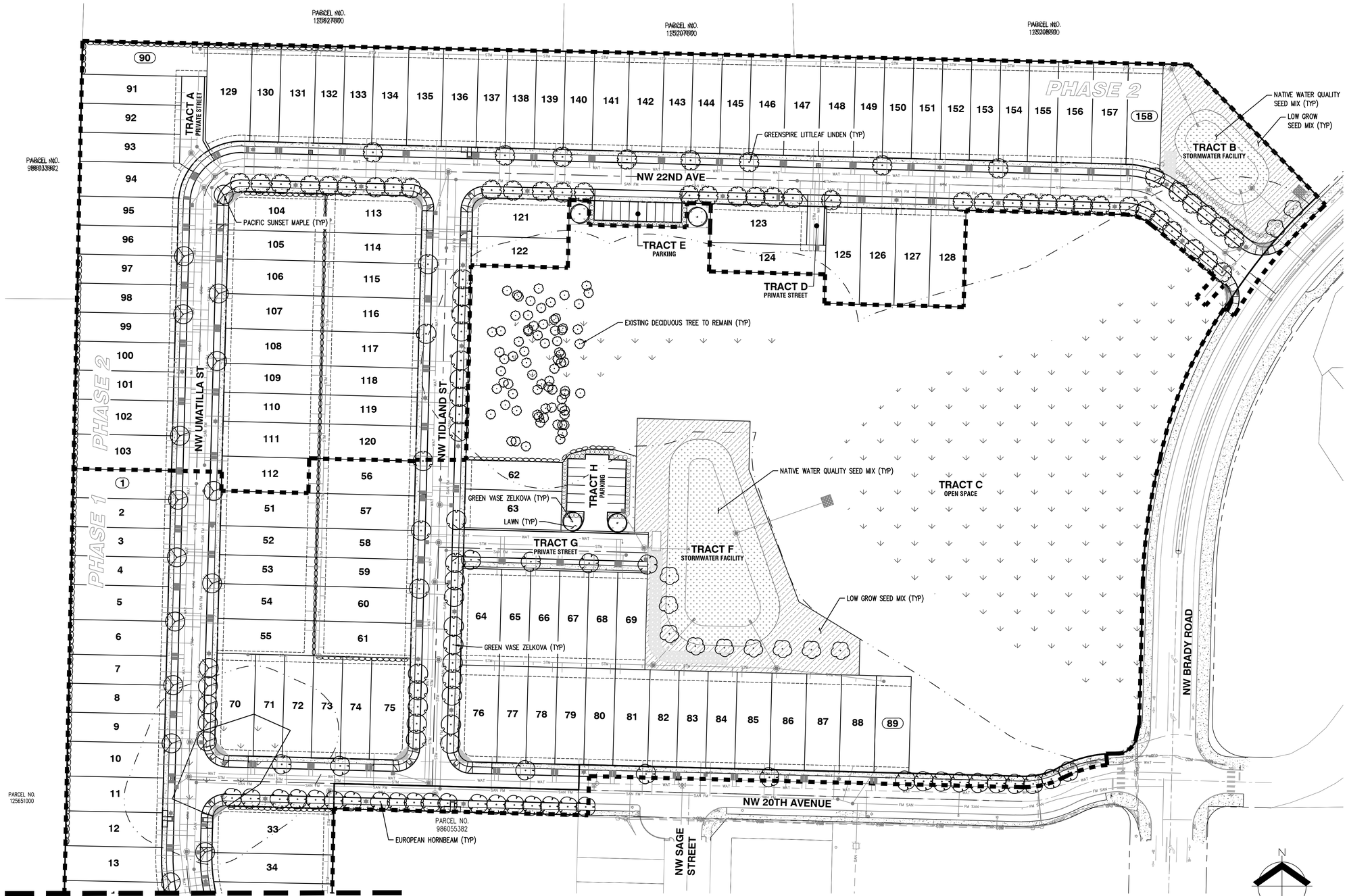
JOHN T. MACKAY — STATE OF WASHINGTON — 24014 — REGISTERED PROFESSIONAL ENGINEER

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	10/23/2025
DESIGNED BY:	NTL
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P8.3

AKS DRAWING FILE: 12107 P8.3 PRELIMINARY CIRC PLANDWG | LAYOUT: P8.3



N

SCALE: 1"=50 FEET
50 0 10 25 50

GENERAL NOTE

REFER TO SHEET P9.1 FOR PLANT SCHEDULE AND LANDSCAPE NOTES.

TREE DENSITY CALCULATIONS

GROSS AREA:	24.41 AC
OPEN SPACE:	5.97 AC
NET AREA:	18.44 AC
TOTAL TREE UNITS REQUIRED (20/AC):	369
EXISTING TREES RETAINED/(TREE UNITS):	76/(193)
MINIMUM # OF TREES TO PLANT/(TREE UNITS):	176/(176)
PROPOSED # OF TREES TO PLANT:	176

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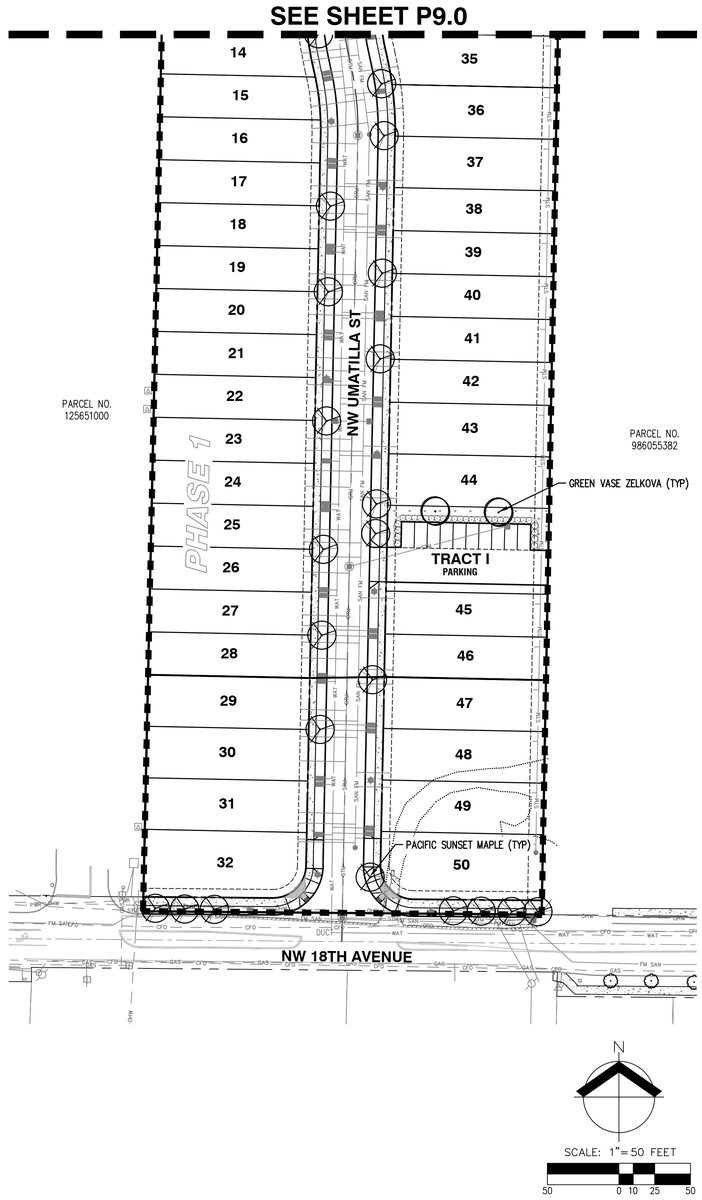
PRELIMINARY LANDSCAPE PLAN
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

STATE OF WASHINGTON
TIMOTHY E. BA
PRELIMINARY
NOT FOR CONSTRUCTION
EXP. 12/21/2026
LICENSED LANDSCAPE ARCHITECT

JOB NUMBER:	12107
DATE:	10/23/2025
DESIGNED BY:	TEB
DRAWN BY:	TEB
CHECKED BY:	NTL

P9.0

AKS DRAWING FILE: 12107 P9.0 PRELIMINARY LANDSCAPE PLANTING [LAYOUT: P9.0



PRELIMINARY PLANT SCHEDULE

SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
TREES					
	11	RHAMNUS PURSHIANA	CASCARA	2" CAL. B&B	AS SHOWN
	6	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE JAPANESE ZELKOVA	2" CAL. B&B	AS SHOWN
STREET TREES					
	41	ACER TRUNCATUM X PLATANOIDES 'WARRENRED'	PACIFIC SUNSET MAPLE	2" CAL. B&B	AS SHOWN
	38	CARPINUS BETULUS	EUROPEAN HORNBEAM	2" CAL. B&B	AS SHOWN
	50	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LINDEN	2" CAL. B&B	AS SHOWN
	30	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE JAPANESE ZELKOVA	2" CAL. B&B	AS SHOWN
SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
SHRUBS					
	120	MAHONIA AQUIFOLIUM	OREGON GRAPE	3 GAL. CONT.	48" o.c.
	41	VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	3 GAL. CONT.	60" o.c.

GROUND COVERS		DESCRIPTION
	34,535 SF±	STORMWATER "LOW GROW" SEED MIX. DWARF TALL FESCUE 40%; DWARF PERENNIAL RYE "BARCLAY" 30%; RED FESCUE 25%, COLONIAL BENTGRASS 5% APPLY AT A RATE OF 2.5 LBS. PER 1,000 SF OR AS RECOMMENDED BY SUPPLIER.
	24,950 SF±	NATIVE WATER QUALITY SEED MIX – SUNMARK SEEDS (OR APPROVED EQUAL). BLUE WILDRYE 46%; NATIVE RED FESCUE 38%; TUFTED HAIRGRASS 12%; NORTHWESTERN MANNAGRASS 2%; AMERICAN SLOUGHGRASS 2% APPLY AT A RATE OF 1 LB. PER 1,000 SF OR AS RECOMMENDED BY SUPPLIER.
	34,535 SF±	LAWN – NORTHWEST SUPREME LAWN SEED MIX – SUNMARK SEEDS (OR APPROVED EQUAL). DASHER 3 PERENNIAL RYEGRASS 35%; CUTTER II PERENNIAL RYEGRASS 35%; GARNET CREEPING RED FESCUE 15%; WINDWARD CHEWINGS FESCUE 15% APPLY AT A RATE OF 8 LBS. PER 1,000 SF OR AS RECOMMENDED BY SUPPLIER.

PRELIMINARY LANDSCAPE NOTES

1. LANDSCAPE PLAN IS PRELIMINARY AND INTENDED TO SHOW DESIGN INTENT ONLY. REVISIONS OR SUBSTITUTIONS, INCLUDING CHANGES TO PLANT LOCATION, QUANTITIES, TYPES, AND SIZES MAY BE NECESSARY PRIOR TO FINAL APPROVAL BASED ON PLANT AVAILABILITY, SITE CONDITIONS, UTILITY CONFLICTS, ETC. ALL SUBSTITUTIONS SHALL CONFORM TO CITY OF CAMAS LANDSCAPE DESIGN STANDARDS. STREET TREES WILL BE UPDATED TO AVOID FUTURE DRIVEWAY DROPS.
2. ALL PLANTS AND PLANTINGS SHALL CONFORM TO CITY OF CAMAS DESIGN STANDARDS AND TO AMERICAN NURSERY STANDARDS ANSI Z60.1. PLANT IN ACCORDANCE WITH ACCEPTED BEST-PRACTICE INDUSTRY STANDARDS SUCH AS THOSE ADOPTED BY THE WASHINGTON ASSOCIATION OF LANDSCAPE PROFESSIONALS (WALP).
3. CENTER TREES IN PLANTER STRIPS AND LANDSCAPE PLANTING BEDS WHERE POSSIBLE. KEEP OTHER TREE TRUNKS 3' O.C. MINIMUM FROM CURBS, SIDEWALKS, AND OTHER PAVING OR CENTERED IN PLANTING ISLAND. KEEP SHRUBS AND GROUNDCOVER A MINIMUM OF 24" O.C. FROM PAVING AND 3' O.C. FROM TREES. ADJUST PLANTINGS AS NECESSARY ON SITE TO AVOID CONFLICT WITH UTILITIES, HYDRANTS, DRIVE WAYS, LIGHT POLES, METERS, ETC..
4. HATCHED AREAS ARE MEANT TO CONVEY GENERAL PLANT LOCATION. PLANT COVERAGE, SPACING, AND LAYOUT SHALL BE CONSISTENT WITH THE SPACING LISTED IN THE PLANT LEGEND FOR FULL COVERAGE.
5. MULCH: APPLY 3" DEEP WELL-AGED MEDIUM GRIND OR SHREDDED DARK HEMLOCK BARK MULCH UNDER AND AROUND ALL TREES AND SHRUBS IN PLANTER STRIP AREAS NOT INCLUDED AS STORMWATER FACILITIES OR LAWN. WHERE TREES ARE IN LAWN AREAS, A MINIMUM 3' DIAMETER MULCH RING SHALL BE USED AROUND THE TREE TO PROTECT THE TRUNK FROM MOWER DAMAGE. CARE SHALL BE TAKEN TO AVOID COVERING FOLIAGE OR ROOT CROWNS OF PLANTS. PLANTS SHALL BE PLANTED AT A DEPTH TO ACCOMMODATE BARK MULCH APPLICATION.
6. IRRIGATION FOR HEALTHY PLANT ESTABLISHMENT AND SURVIVAL IS RECOMMENDED AND SHALL BE 'DESIGN-BUILD' BY LANDSCAPE CONTRACTOR.

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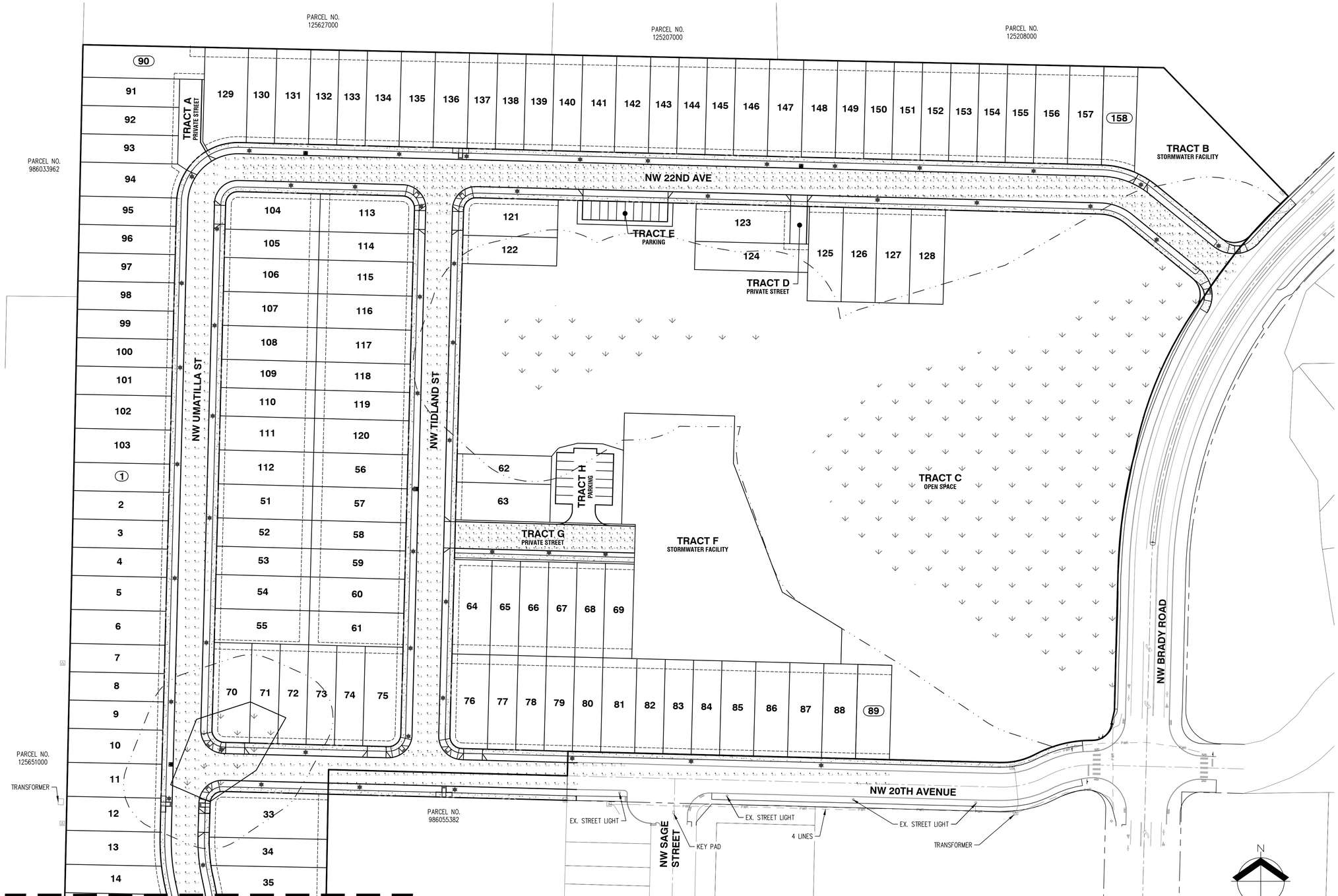
PRELIMINARY LANDSCAPE PLAN
STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

STATE OF WASHINGTON
TIMOTHY E. BARNES
10/23/2025
PRELIMINARY
NOT FOR CONSTRUCTION
REGISTERED LANDSCAPE ARCHITECT
EXP. 12/21/2025

JOB NUMBER:	12107
DATE:	10/23/2025
DESIGNED BY:	TEB
DRAWN BY:	TEB
CHECKED BY:	NTL

P9.1

AKS DRAWING FILE: 12107 P3.0 PRELIMINARY LANDSCAPE PLANING | LAYOUT: P9.1



SEE SHEET P10.1

GENERAL NOTE:

1. LIGHTING ANALYSIS PERFORMED WITH AGI SOFTWARE.
2. NW 18TH AVENUE, NW 20TH AVENUE, NW UMATILLA ST, AND NW 22ND AVE ARE CLASSIFIED AS LOCAL ROADS. NW BRADY RD IS CLASSIFIED AS A MINOR ARTERIAL.

LUMINAIRE SCHEDULE

SYMBOL	QUANTITY	STYLE	LUMINAIRE TYPE	POLE TYPE	POLE HEIGHT
✸	68	PROPOSED	LIGHT EFFICIENT DESIGN FLEXCOLOR LED MODEL# LED-8087M345D-G4 (4200 LUMENS, 4000K COLOR)	PLP DECORATIVE POLE PLP MODEL# DOM-DB-FL-14.5-BL-CI	14.5' HT.

ROADWAY LIGHT LEVEL SUMMARY – CITY OF CAMAS

ROADWAY CLASSIFICATION	UNITS	AVERAGE	MAX	MIN	AVG / MIN	MAX / MIN
NEIGHBORHOOD (RESIDENTIAL)	Fc	0.57	1.8	0.1	3.04	8.83

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VANCOUVER, WA 98682
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PRELIMINARY STREET LIGHTING PLAN

STELLA RIDGE SUBIDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

JOHN C. TAYLOR — STATE OF WASHINGTON — 24004 — REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	10/23/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
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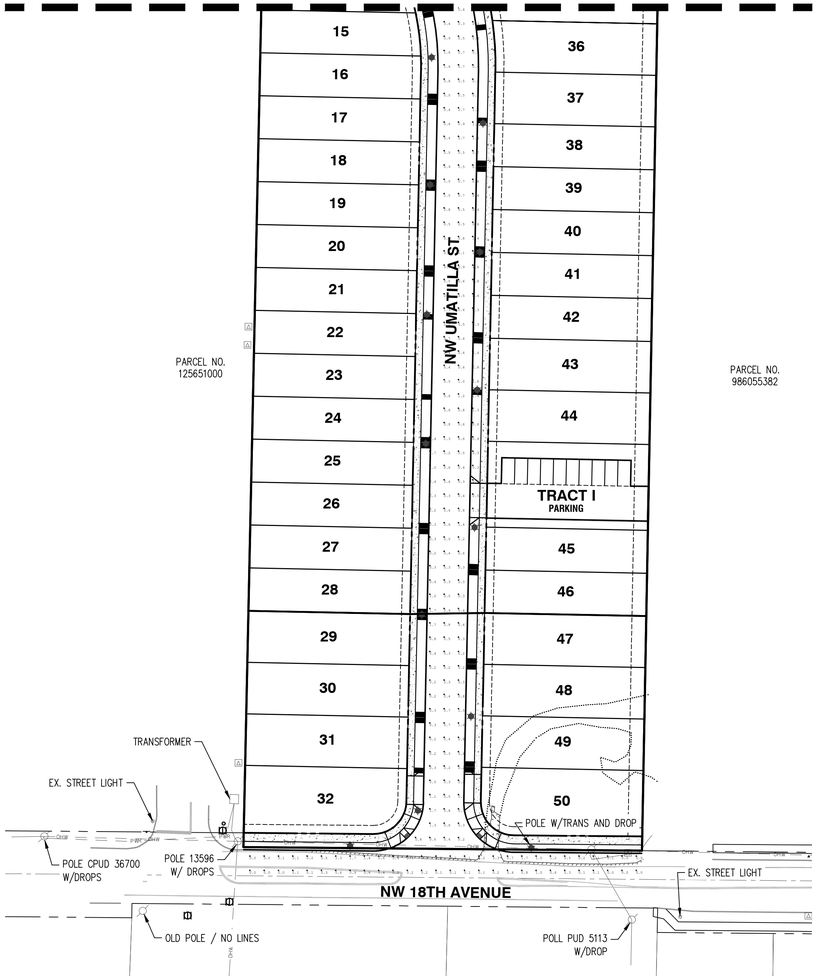
P10.0

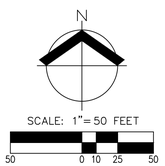
AKS DRAWING FILE: 12107 P10.0 PRELIMINARY STREET LIGHTING PLAN.DWG | LAYOUT: P10.0

LUMINAIRE SCHEDULE					
SYMBOL	QUANTITY	STYLE	LUMINAIRE	POLE	
			TYPE	TYPE	HEIGHT
✹	68	PROPOSED	LIGHT EFFICIENT DESIGN FLEXCOLOR LED MODEL# LED-8087M345D-G4 (4200 LUMENS, 4000K COLOR)	PLP DECORATIVE POLE PLP MODEL# DOM-DB-FL-14.5-BL-CI	14.5' HT.

ROADWAY LIGHT LEVEL SUMMARY – CITY OF CAMAS						
ROADWAY CLASSIFICATION	UNITS	AVERAGE	MAX	MIN	AVG / MIN	MAX / MIN
NEIGHBORHOOD (RESIDENTIAL)	Fc	0.57	1.8	0.1	3.04	8.83

SEE SHEET P10.0





GENERAL NOTE:

1. LIGHTING ANALYSIS PERFORMED WITH AGI SOFTWARE.
2. NW 18TH AVENUE, NW 20TH AVENUE, NW UMATILLA ST, AND NW 22ND AVE ARE CLASSIFIED AS LOCAL ROADS. NW BRADY RD IS CLASSIFIED AS A MINOR ARTERIAL.

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PRELIMINARY STREET LIGHTING PLAN

STELLA RIDGE SUBDIVSION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON



JOB NUMBER:	12107
DATE:	10/23/2025
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	NTL

P10.1

AKS DRAWING FILE: 12107 P10.0 PRELIMINARY STREET LIGHTING PLAN.DWG | LAYOUT: P10.1

PROPOSED DEVELOPMENT

Stella Ridge

24.41 Acres
158 Lot Subdivision

FOR MORE INFORMATION: Madeline Coulter, City of Camas (360) 817-1568

PUBLIC HEARING REQUIRED:
April 30,2026, at 4:00 p.m.

PERMITS: Type III Subdivision, SEPA



APPLICANT: Allied Development, LLC
CONTACT NO: (602) 932-9590

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

October 2, 2025

AKS Engineering & Forestry, LLC
Attn: Michael Andreotti
9600 NE 126th Ave Suite 2520
Vancouver, WA 98682
Sent via email andreottim@aks-eng.com

RE: Stella Ridge Subdivision (SUB25-1009) Application Completeness Review

Dear Michael Andreotti,

Thank you for your application submittal for the Stella Ridge Subdivision. There are items that need to be addressed with your application. The purpose of this letter is to inform you that the above application submitted on 9/12/2025 has been deemed incomplete in accordance with Camas Municipal Code (CMC) Section 18.55.130. You have 180 days from the date of application to submit the missing information pursuant to CMC 18.55.130.C. If the below requested information is submitted, staff will again verify whether the application is complete.

Items necessary for completeness:

- Proof of development Sign per CMC 18.55.110.H
- CMC 17.11.030.6.n: Description, location and size of existing and proposed utilities, storm drainage facilities and roads to service the lots.
    - Sizes of existing and proposed utilities; water main, sewer main, and storm mains have not been shown.
    - Sizes of proposed services/laterals; water, sewer, and storm have not been shown.
- CMC 17.11.030.6.o: Location of all existing fire hydrants within five hundred feet of the proposal.
    - Existing fire hydrants are not called out on the preliminary utility plans.
        - There is an existing hydrant approximately 180-ft east of proposed Lot 89 on NW 20th Avenue.

Application Review Comments (not required for a complete application, however, must be addressed)

- CMC 17.11.030.12: The TIS/A was prepared using the 11th Edition ITE manual. The 12th Edition ITE manual was issued in August 2025.
    - All TIS/A are to be prepared using the 12th Edition ITE manual.
- CMC 17.11.030.14: An engineering estimate of costs for site improvements, both public and private.
    - An engineer's estimate was not submitted with application.
    - Required by code but not considering a TC item. It is required with the Civil Construction Application.

- Narrative states that the applicant has named the proposed streets according to the COC Street Naming Manual (2010).
    - Street names are assigned by the Building Official and are to be approved prior to engineering plan approval.

If you have any questions, please contact me at mcoulter@cityofcamas.us

Respectfully,

Madeline Coulter

Madeline Coulter, AICP
Planner

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

October 22, 2025

AKS Engineering & Forestry, LLC
Attn: Michael Andreotti
9600 NE 126th Ave Suite 2520
Vancouver, WA 98682
Sent via email andreottim@aks-eng.com

RE: Stella Ridge Subdivision (SUB25-1009) Application Completeness Review

Dear Michael Andreotti,

Thank you for your application submittal for the Stella Ridge Subdivision. There are items that need to be addressed with your application. The purpose of this letter is to inform you that the above application submitted on 9/12/2025, and resubmitted on 10/6/2025, has been deemed incomplete in accordance with Camas Municipal Code (CMC) Section 18.55.130. You have 180 days from the date of application to submit the missing information pursuant to CMC 18.55.130.C. If the below requested information is submitted, staff will again verify whether the application is complete.

Items necessary for completeness:

- CMC 17.11.030.6.n: Description, location and size of existing and proposed utilities, storm drainage facilities and roads to service the lots.
    - Sizes of existing utilities in NW Brady Road are not labeled.

Application Review Comments (not required for a complete application, however, must be addressed)

- CMC 17.11.030.12: The TIS/A submitted with the application and dated September 8, 2025, was prepared using the 11th Edition ITE manual.
    - The 12th Edition ITE manual was issued in August 2025.
    - The applicant will be conditioned to provide a Memo to the September 8, 2025, TIS addressing any changes based on the 12th Edition ITE manual.

If you have any questions, please contact me at mcoulter@cityofcamas.us

Respectfully,

Madeline Coulter

Madeline Coulter, AICP
Planner

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

November 5, 2025

AKS Engineering & Forestry, LLC
Attn: Michael Andreotti
9600 NE 126th Ave Suite 2520
Vancouver, WA 98682
sent via email andreottim@aks-eng.com

RE: Stella Ridge Subdivision (SUB25-1009) Application Completeness Review

Dear Michael Andreotti,

The purpose of this letter is to inform you that the above application submitted on 9/12/2025, and resubmitted on 10/6/2025 and 10/23/25, has been deemed complete in accordance with Camas Municipal Code (CMC) Section 18.55.130. Staff will begin reviewing the application and contact you should we have questions/comments.

Application Review Comments (not required for a complete application, however, must be addressed)

- CMC 17.11.030.12: The TIS/A submitted with the application and dated September 8, 2025, was prepared using the 11th Edition ITE manual.
  - The 12th Edition ITE manual was issued in August 2025.
  - The applicant will be conditioned to provide a Memo to the September 8, 2025, TIS addressing any changes based on the 12th Edition ITE manual.
- Based on the lot widths varying from 30-feet to 37-feet, which limits the location for placement of STEP/STEF tanks, the development will be conditioned to provide one or more community STEP/STEF tanks that are to be owned and maintained by the HOA.

If you have any questions, please email me: mcoulter@cityofcamas.us

Respectfully,

Madeline Coulter

Madeline Coulter, AICP
Planner

In re: Stella Ridge Subdivision

) NO. SUB25-1009
)
) AFFIDAVIT OF MAILING
)
)
)
)
)
Respondent.)

STATE OF WASHINGTON)
) ss.
CLARK COUNTY)

I, Carey Certo, on oath says:

I, Carey Certo, on December 18, 2025, I directed a true and correct copy of the Notice of Application be served upon the parties herein, in the above-entitled action, by depositing with the U.S. Post Office, Camas, Washington, a postage-prepaid envelope containing same addressed as follows: See attached list.

Carey Certo
SIGNATURE

SUBSCRIBED and SWORN to before me this 18th day of December, 2025.

Aireanna Baldwin
Notary Public
State of Washington
My Appointment Expires 10/1/2028
Commission Number 183848

Aireanna Baldwin
Notary Public in and for the State of Washington, residing at Clark County
My appointment expires: 10/1/2028

HANCOCK CHAD E & HANCOCK LAUREL R
1668 NW WHITMAN ST
CAMAS, WA 98607

CROWN POINTE HOMEOWNERS ASSOCIATION
1708 NW WHITMAN ST
CAMAS, WA 98607

DALEY DENNIS W ETAL
PO BOX 757
RANCHO SANTA FE, CA 92067

DALEY DENNIS W ETAL
PO BOX 757
RANCHO SANTA FE, CA 92067

JR MERIT ENTERPRISES LLC
4505 NE 68TH DR
VANCOUVER, WA 98661

LINEAR TECHNOLOGY CORP
1 ANALOG WAY
WILMINGTON, MA 01887

HEREFORD FARMS LLC
26 MEADOHAWK LN
LAS VEGAS, NV 89135

CAMAS SCHOOL DISTRICT #117
841 NE 22ND AVE
CAMAS, WA 98607

JR MERIT ENTERPRISES LLC
4505 NE 68TH DR
VANCOUVER, WA 98661

ERWIN JILL L
PO BOX 771
CAMAS, WA 98607

NLIGHT INC
5408 NE 88TH ST BLDG E
VANCOUVER, WA 98665

FERDASZEWSKI RACHEL A &
FERDASZEWSKI JOSHUA K
1747 NW TIDLAND ST
CAMAS, WA 98607

CITY OF CAMAS
616 NE 4TH AVE
CAMAS, WA 98607

LUGLIANI INVESTMENT COMPANY LLC
16701 SE MCGILLIVRAY BLVD 160
VANCOUVER, WA 98684

MACKAY JOHN G
4345 NW 16TH AVE
CAMAS, WA 98607

NRP LLC
4600 NW PACIFIC RIM BLVD
CAMAS, WA 98604

CAMAS SCHOOL DISTRICT #117
841 NE 22ND AVE
CAMAS, WA 98607

BROWNING JUSTIN C & KOVARIK DAVID K
1737 NW TIDLAND ST
CAMAS, WA 98607

BAGAL MAHESH & BAGAL MAHESHWARI
1727 NW TIDLAND ST
CAMAS, WA 98607

KIM KYUNG J & KIM JESSICA J TRUSTEES
THE KIM FAMILY TRUST 03/12/2021
CAMAS, WA 98607

SIRRAH HOMEONWERS ASSOCIATION
PO BOX 905
CAMAS, WA 98607

BITRA RATNA K & BITRA VIJAY
4072 NW 20TH AVE
CAMAS, WA 98607

LEIF BAYLEY ELIZABETH & LEIF KYLE MICHAEL
4014 NW 20TH AVE
CAMAS, WA 98607

HPA BORROWER 2018-1 MS LLC
120 S RIVERSIDE PLZ STE 2000
CHICAGO, IL 60606

ARABI NEGAR NEMATIAN
4010 NW 20TH AVE
CAMAS, WA 98607

DUGGAL KUNAL & DEWAN UPASNA
4007 NW 20TH AVE
CAMAS, WA 98607

BEALE LINDA
4011 NW 20TH AVE
CAMAS, WA 98607

THEEDA SANDEEP & ADDAGATLA NISHITHA
4015 NW 20TH AVE
CAMAS, WA 98607

MADUGULA ROHINI K & MADUGULA KOMAL
4019 NW 20TH AVE
CAMAS, WA 98607

DESHPANDE SACHIN G &
DESHPANDE MONIKA S
4021 NW 20TH AVE
CAMAS, WA 98607

SMITH RICHARD J & VARTANIAN KERI B TRUSTEES
4023 NW 20TH AVE
CAMAS, WA 98607

ZHANG JIHONG
PO BOX 56212
PORTLAND, OR 97238

CHANG WENDY
4071 NW 20TH AVE
CAMAS, WA 98607

NELSON JEFFREY
4075 NW 20TH AVE
CAMAS, WA 98607

KATES COVE HOMEOWNERS ASSOCIATION
16420 SE MCGILLIVRAY BLVD NO 103
VANCOUVER, WA 98683

KATES CLOSE LLC
16420 SE MCGILLIVRAY BLVD
#103-197
VANCOUVER, WA 98683

KATES COVE HOMEOWNERS ASSOCIATION
16420 SE MCGILLIVRAY BLVD NO 103
VANCOUVER, WA 98683

KATES COVE HOMEOWNERS ASSOCIATION
16420 SE MCGILLIVRAY BLVD NO 103
VANCOUVER, WA 98683

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VANCOUVER, WA 98683

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16420 SE MCGILLIVRAY BLVD NO 103
VANCOUVER, WA 98683

CITY OF CAMAS
616 NE 4TH AVE
CAMAS, WA 98607

BARRON HATFIELD FAMILY LLLP
5511 NW 234th ST
RIDGEFIELD, WA 98642

BARRON HATFIELD FAMILY LLLP
5511 NW 234th ST
RIDGEFIELD, WA 98642

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5511 NW 234th ST
RIDGEFIELD, WA 98642

BARRON HATFIELD FAMILY LLLP
5511 NW 234th ST
RIDGEFIELD, WA 98642

BYUN JI-HYUN TRUSTEE
PO BOX 2684
VANCOUVER, WA 98668

MORIARTY TERRA
3255 NW VALLEY ST
CAMAS, WA 98607

NOVIK NATALIIA & NOVIK OLEKSII
1843 NW SAGE ST
CAMAS, WA 98607

KAHN BARBARA
1837 NW SAGE ST
CAMAS, WA 98607

JOHNSTONE MARY HELEN
1831 NW SAGE ST
CAMAS, WA 98607

CHIA CHU-TIEN & CHIA YI-JEN TRUSTEES
8420 SE 17TH CIR
VANCOUVER, WA 98664

CHOU YOM C & YANG WON-HUEI
2435 SUDDABY
TUSTIN, CA 92782

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CAMAS, WA 98607

PARRISH HARRY A TRUSTEE
HARRY PARRISH 2021 REV LIV TRUST
CAMAS, WA 98607

TAVADE NAVEEN
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ALONZO DAVID L
16420 SE MCGILLIVRAY BLVD STE 103
PMB 437
VANCOUVER, WA 98683

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WERRY JORJAN INGRAM TRUSTEE
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RANCHO SANTA FE, CA 92067

CITY OF CAMAS
430 NE EVERETT ST
CAMAS, WA 98607

CITY OF CAMAS
430 NE EVERETT ST
CAMAS, WA 98607

NOTICE OF APPLICATION
Stella Ridge Subdivision

(File no. SUB25-1009)

Consolidated Files: State Environmental Policy Act, Critical Areas Review and Archaeological Review

NOTICE IS HEREBY GIVEN that an application for the "Stella Ridge Subdivision", a 158-lot subdivision was received on September 12, 2025, resubmitted on October 6, 2025, and October 23, 2025, and was deemed technically complete on November 5, 2025. A public hearing is required for the development proposal and will be scheduled at a later date. A separate public hearing notice will be mailed to all property owners within 300-feet of the subject development and published in the Post Record.

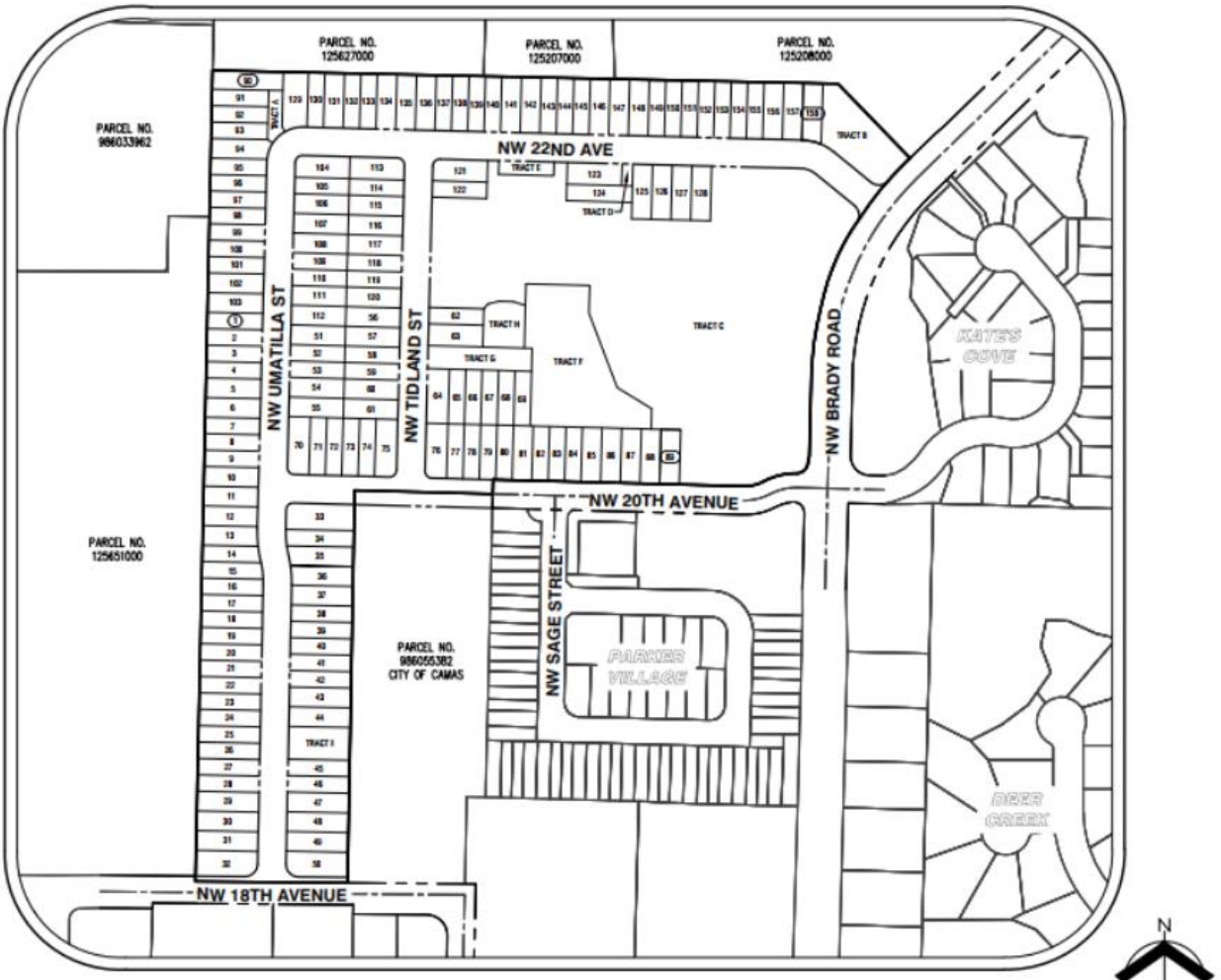
Location: The +/-24.41-acre site is zoned Multifamily Residential-18 (MF-18) in the City of Camas. The site is located at 4511 NW 18th Ave in the SE ¼ of Section 05 Township 1 North, Range 3 East of the Willamette Meridian, Camas, WA. Parcel Numbers: 125193000, 986055381 and 125185000.

Application Materials: The application included the following: project narrative, SEPA checklist, preliminary development plans, tree report, preliminary stormwater report, critical areas report, preliminary geotechnical report, archeological pre-determination report, mailing labels, title report and traffic study. Application materials are available for review from the Community Development Department during regular business hours Monday – Friday 8am-5pm.

Questions/Comments: For questions related to this application, please contact Madeline Coulter, Planner, at (360) 817-1568 or by email at communitydevelopment@cityofcamas.us.

Published in the Post Record on December 18, 2025 Legal Publication #1054290
Posted at Camas City Hall, Camas Library, City of Camas website at: http://www.cityofcamas.us
Mailed to property owners within 300-feet on December 17, 2025

Preliminary Plat for Stella Ridge Subdivision (SUB25-1009)



SITE MAP

N.T.S.

NOTICE OF APPLICATION
Stella Ridge Subdivision

(File no. SUB25-1009)

Consolidated Files: State Environmental Policy Act, Critical Areas Review and Archaeological Review

NOTICE IS HEREBY GIVEN that an application for the "Stella Ridge Subdivision", a 158-lot subdivision was received on September 12, 2025, resubmitted on October 6, 2025, and October 23, 2025, and was deemed technically complete on November 5, 2025. A public hearing is required for the development proposal and will be scheduled at a later date. A separate public hearing notice will be mailed to all property owners within 300-feet of the subject development and published in the Post Record.

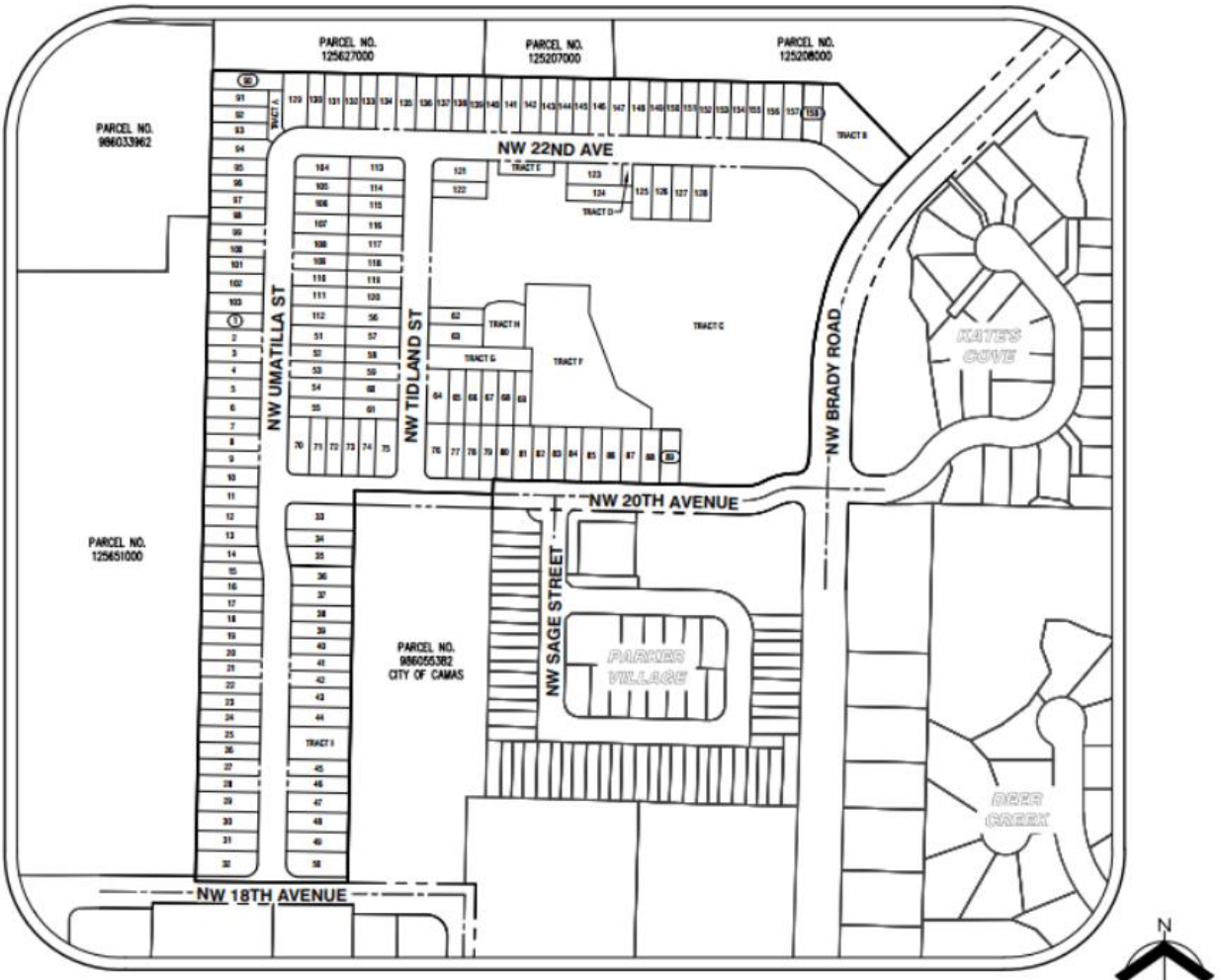
Location: The +/-24.41-acre site is zoned Multifamily Residential-18 (MF-18) in the City of Camas. The site is located at 4511 NW 18th Ave in the SE ¼ of Section 05 Township 1 North, Range 3 East of the Willamette Meridian, Camas, WA. Parcel Numbers: 125193000, 986055381 and 125185000.

Application Materials: The application included the following: project narrative, SEPA checklist, preliminary development plans, tree report, preliminary stormwater report, critical areas report, preliminary geotechnical report, archeological pre-determination report, mailing labels, title report and traffic study. Application materials are available for review from the Community Development Department during regular business hours Monday – Friday 8am-5pm.

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Preliminary Plat for Stella Ridge Subdivision (SUB25-1009)



SITE MAP

N.T.S.

In re: Stella Ridge Subdivision

) NO. SUB25-1009
)
) AFFIDAVIT OF MAILING
)
)
)
)
)
Respondent.)

STATE OF WASHINGTON)
) ss.
CLARK COUNTY)

I, Carey Certo, on oath says:

I, Carey Certo, on February 19, 2026, I directed a true and correct copy of the SEPA MDNS be served upon the parties herein, in the above-entitled action, by depositing with the U.S. Post Office, Camas, Washington, a postage-prepaid envelope containing same addressed as follows: See attached list.

Carey Certo
SIGNATURE

SUBSCRIBED and SWORN to before me this 26th day of February, 2026.

Aireanna Baldwin
Notary Public
State of Washington
My Appointment Expires 10/1/2028
Commission Number 183848

Aireanna Baldwin
Notary Public in and for the State of Washington, residing at Clark County
My appointment expires: 10/1/28

HANCOCK CHAD E & HANCOCK LAUREL R
1668 NW WHITMAN ST
CAMAS, WA 98607

CROWN POINTE HOMEOWNERS ASSOCIATION
1708 NW WHITMAN ST
CAMAS, WA 98607

DALEY DENNIS W ETAL
PO BOX 757
RANCHO SANTA FE, CA 92067

DALEY DENNIS W ETAL
PO BOX 757
RANCHO SANTA FE, CA 92067

JR MERIT ENTERPRISES LLC
4505 NE 68TH DR
VANCOUVER, WA 98661

LINEAR TECHNOLOGY CORP
1 ANALOG WAY
WILMINGTON, MA 01887

HEREFORD FARMS LLC
26 MEADOHAWK LN
LAS VEGAS, NV 89135

CAMAS SCHOOL DISTRICT #117
841 NE 22ND AVE
CAMAS, WA 98607

JR MERIT ENTERPRISES LLC
4505 NE 68TH DR
VANCOUVER, WA 98661

ERWIN JILL L
PO BOX 771
CAMAS, WA 98607

NLIGHT INC
5408 NE 88TH ST BLDG E
VANCOUVER, WA 98665

FERDASZEWSKI RACHEL A & FERDASZEWSKI JOSHUA K
1747 NW TIDLAND ST
CAMAS, WA 98607

CITY OF CAMAS
616 NE 4TH AVE
CAMAS, WA 98607

LUGLIANI INVESTMENT COMPANY LLC
16701 SE MCGILLIVRAY BLVD 160
VANCOUVER, WA 98684

MACKAY JOHN G
4345 NW 16TH AVE
CAMAS, WA 98607

NRP LLC
4600 NW PACIFIC RIM BLVD
CAMAS, WA 98604

CAMAS SCHOOL DISTRICT #117
841 NE 22ND AVE
CAMAS, WA 98607

BROWNING JUSTIN C & KOVARIK DAVID K
1737 NW TIDLAND ST
CAMAS, WA 98607

BAGAL MAHESH & BAGAL MAHESHWARI
1727 NW TIDLAND ST
CAMAS, WA 98607

KIM KYUNG J & KIM JESSICA J TRUSTEES
THE KIM FAMILY TRUST 03/12/2021
CAMAS, WA 98607

SIRRAH HOMEONWERS ASSOCIATION
PO BOX 905
CAMAS, WA 98607

BITRA RATNA K & BITRA VIJAY
4072 NW 20TH AVE
CAMAS, WA 98607

LEIF BAYLEY ELIZABETH & LEIF KYLE MICHAEL
4014 NW 20TH AVE
CAMAS, WA 98607

HPA BORROWER 2018-1 MS LLC
120 S RIVERSIDE PLZ STE 2000
CHICAGO, IL 60606

ARABI NEGAR NEMATIAN
4010 NW 20TH AVE
CAMAS, WA 98607

DUGGAL KUNAL & DEWAN UPASNA
4007 NW 20TH AVE
CAMAS, WA 98607

BEALE LINDA
4011 NW 20TH AVE
CAMAS, WA 98607

THEEDA SANDEEP & ADDAGATLA NISHITHA
4015 NW 20TH AVE
CAMAS, WA 98607

MADUGULA ROHINI K & MADUGULA KOMAL
4019 NW 20TH AVE
CAMAS, WA 98607

DESHPANDE SACHIN G & DESHPANDE MONIKA S
4021 NW 20TH AVE
CAMAS, WA 98607

SMITH RICHARD J & VARTANIAN KERI B TRUSTEES
4023 NW 20TH AVE
CAMAS, WA 98607

ZHANG JIHONG
PO BOX 56212
PORTLAND, OR 97238

CHANG WENDY
4071 NW 20TH AVE
CAMAS, WA 98607

NELSON JEFFREY
4075 NW 20TH AVE
CAMAS, WA 98607

KATES COVE HOMEOWNERS ASSOCIATION
16420 SE MCGILLIVRAY BLVD NO 103
VANCOUVER, WA 98683

KATES CLOSE LLC
16420 SE MCGILLIVRAY BLVD
#103-197
VANCOUVER, WA 98683

KATES COVE HOMEOWNERS ASSOCIATION
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16420 SE MCGILLIVRAY BLVD NO 103
VANCOUVER, WA 98683

CITY OF CAMAS
616 NE 4TH AVE
CAMAS, WA 98607

BARRON HATFIELD FAMILY LLLP
5511 NW 234th ST
RIDGEFIELD, WA 98642

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BYUN JI-HYUN TRUSTEE
PO BOX 2684
VANCOUVER, WA 98668

MORIARTY TERRA
3255 NW VALLEY ST
CAMAS, WA 98607

NOVIK NATALIIA & NOVIK OLEKSII
1843 NW SAGE ST
CAMAS, WA 98607

KAHN BARBARA
1837 NW SAGE ST
CAMAS, WA 98607

JOHNSTONE MARY HELEN
1831 NW SAGE ST
CAMAS, WA 98607

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State Environmental Policy Act
Mitigated Determination of Non-Significance

CASE NO: SUB25-1009 Stella Ridge Subdivision

APPLICANT: AKS Engineering
Attn: Michael Andreotti
9600 NE 126th Ave Suite 2520
Vancouver, WA 98682

REQUEST: The applicant proposes to subdivide the subject lot into a 158-lot subdivision.

Location: 4511 NW 18th Ave Camas, WA 98607
Tax Parcels 125193000, 986055381 and 125185000

Legal Description: The project is located in the SE ¼ of Section 05 Township 1 North, Range 3 East of the Willamette Meridian, Camas, WA.

SEPA Determination: Mitigated Determination of Non-Significance (MDNS)

Comment Deadline: **March 5, 2026, at 5:00 p.m.**

As lead agency under the State Environmental Policy Act (SEPA) Rules [Chapter 197-11, Washington Administrative Code (WAC)], the City of Camas must determine if there are possible significant adverse environmental impacts associated with this proposal. The options include the following:

- DS = Determination of Significance (The impacts cannot be mitigated through conditions of approval and, therefore, requiring the preparation of an Environmental Impact Statement (EIS).
- MDNS = Mitigated Determination of Non-Significance (The impacts can be addressed through conditions of approval), or;
- DNS = Determination of Non-Significance (The impacts can be addressed by applying the Camas Municipal Code).

Published in the Post Record on February 19, 2026 Legal Publication #1081010
Mailed to property owners within 300-feet on February 18, 2026
Posted on bulletin boards at Camas City Hall, Camas Library and the City of Camas website at: http://www.cityofcamas.us

Determination:

Mitigated Determination of Non-Significance (MDNS). The City of Camas, as lead agency for review of this proposal, has determined that this proposal does not have a probable significant adverse impact on the environment. An Environmental Impact Statement (EIS) is not required under RCW 43.21C.030(2)(e). This decision was made after review of a completed environmental checklist, and other information on file with the City of Camas.

The City of Camas has identified impacts by the proposed project that does require mitigation. In addition to the requirement that the development must comply with all City of Camas zoning and development regulations, the following conditions of approval apply:

- ***If there are known soil/ground water contaminants present on-site, additional information (including, but not limited to: temporary erosion and sediment control plans; stormwater pollution prevention plan; list of known contaminants with concentrations and depths found; a site map depicting the sample location(s); and additional studies/reports regarding contaminant(s)) are required to be submitted prior to engineering plan approval.***

- ***Additionally, if the site discharges to segments of waterbodies listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, high pH, or phosphorous, or to waterbodies covered by a TMDL may need to meet additional sampling and record keeping requirements. See condition S8 of the Department of Ecology Construction Stormwater General Permit for a description of these requirements.***

Date of Publication & Comment Period:

Publication date of this MDNS is **February 19, 2026**, and is issued under WAC 197-11-350. The lead agency will not act on this proposal until the close of the 14-day comment period which ends on **March 5, 2026**. Comments may be sent by email to communitydevelopment@cityofcamas.us or regular mail to:

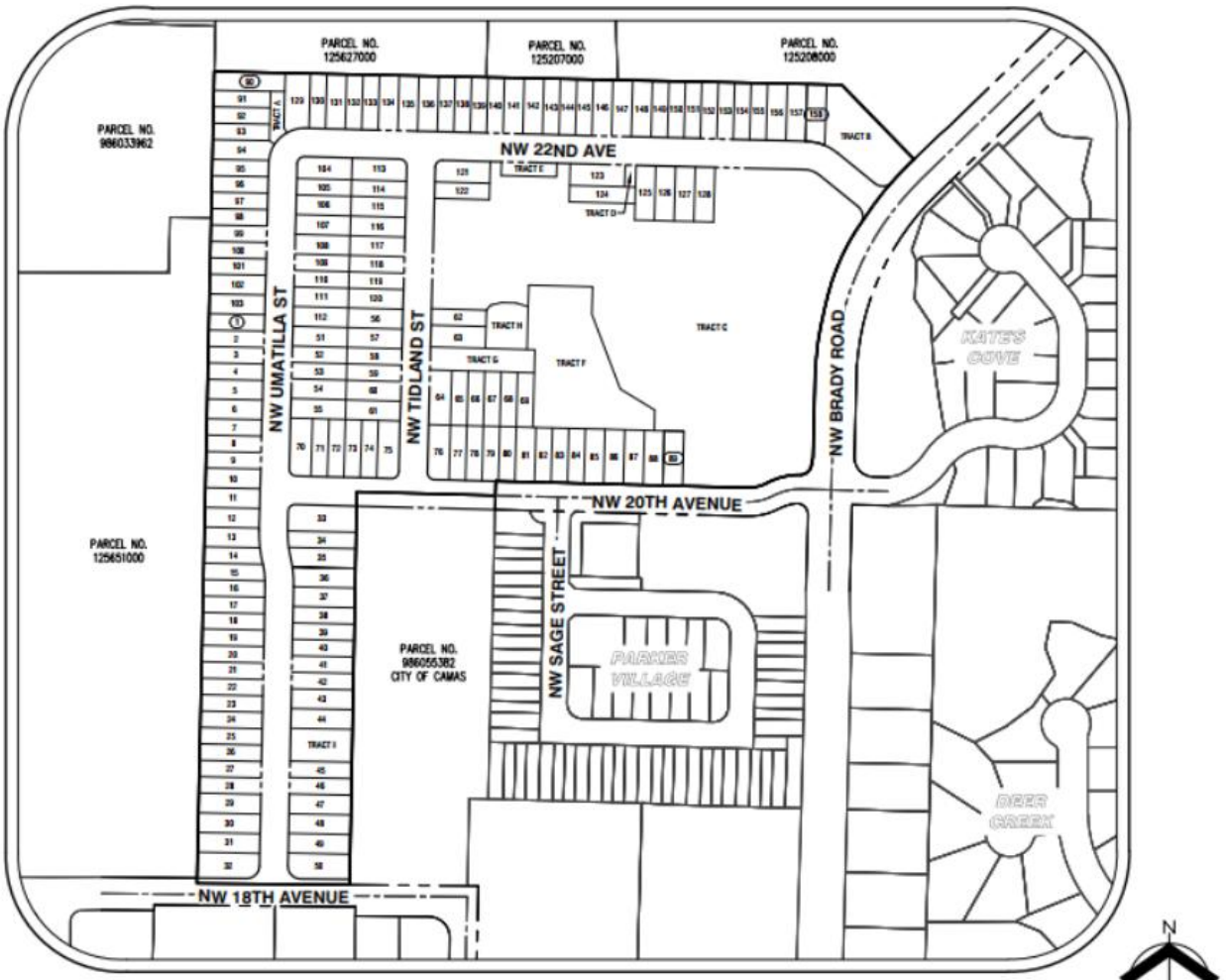
City of Camas SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607

Responsible Official: Robert Maul (360) 817-1568

Robert Maul, Planning Manager and Responsible Official

February 19, 2026
Date of publication

Preliminary Plat for Stella Ridge Subdivision (SUB25-1009)



SITE MAP

N.T.S.

State Environmental Policy Act
Mitigated Determination of Non-Significance

CASE NO: SUB25-1009 Stella Ridge Subdivision

APPLICANT: AKS Engineering
Attn: Michael Andreotti
9600 NE 126th Ave Suite 2520
Vancouver, WA 98682

REQUEST: The applicant proposes to subdivide the subject lot into a 158-lot subdivision.

Location: 4511 NW 18th Ave Camas, WA 98607
Tax Parcels 125193000, 986055381 and 125185000

Legal Description: The project is located in the SE ¼ of Section 05 Township 1 North, Range 3 East of the Willamette Meridian, Camas, WA.

SEPA Determination: Mitigated Determination of Non-Significance (MDNS)

Comment Deadline: **March 5, 2026, at 5:00 p.m.**

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Determination:

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The City of Camas has identified impacts by the proposed project that does require mitigation. In addition to the requirement that the development must comply with all City of Camas zoning and development regulations, the following conditions of approval apply:

- ***If there are known soil/ground water contaminants present on-site, additional information (including, but not limited to: temporary erosion and sediment control plans; stormwater pollution prevention plan; list of known contaminants with concentrations and depths found; a site map depicting the sample location(s); and additional studies/reports regarding contaminant(s)) are required to be submitted prior to engineering plan approval.***

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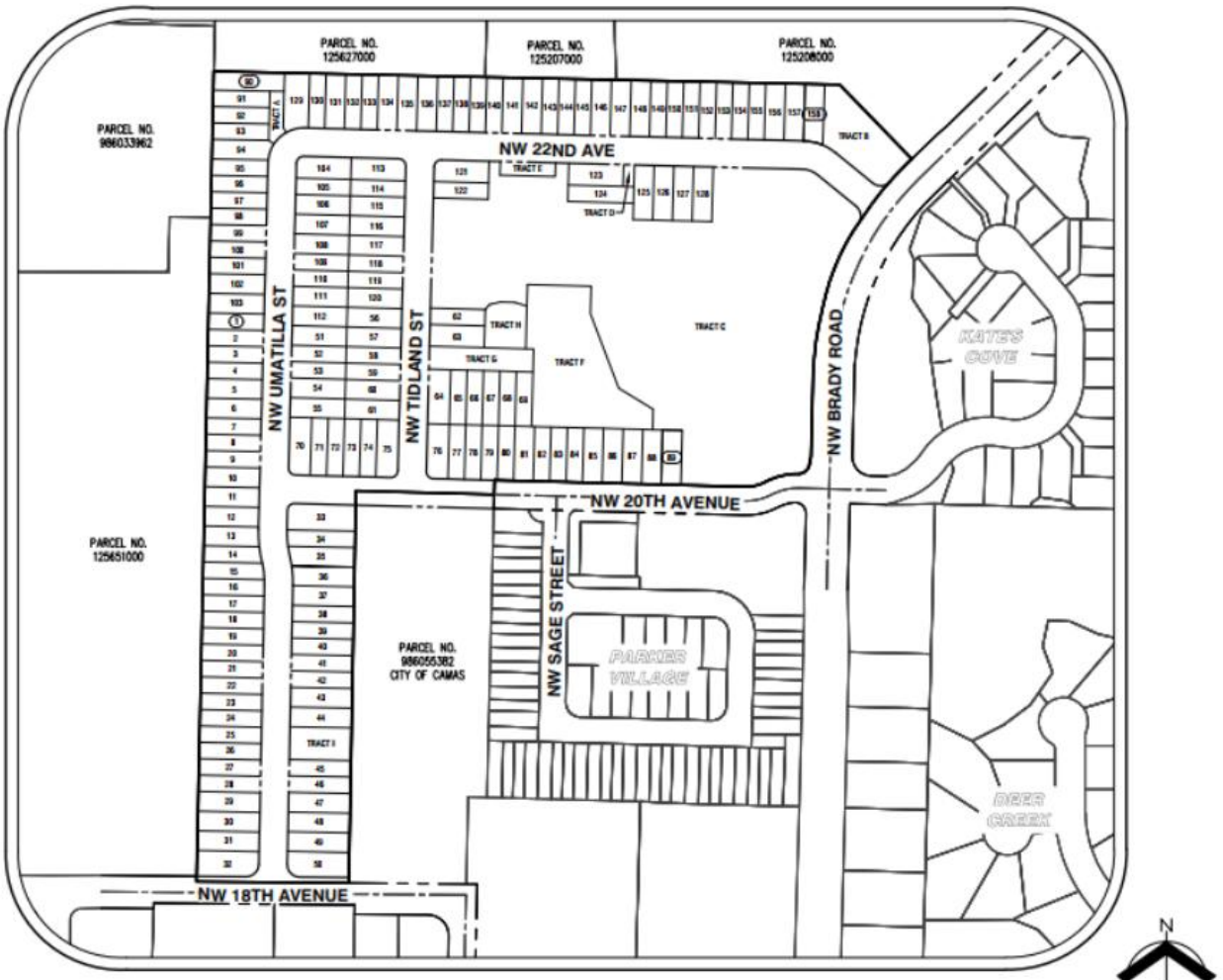
City of Camas SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607

Responsible Official: Robert Maul (360) 817-1568

Robert Maul, Planning Manager and Responsible Official

February 19, 2026
Date of publication

Preliminary Plat for Stella Ridge Subdivision (SUB25-1009)



SITE MAP

N.T.S.

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

Date Published: February 19, 2026

To Whom It May Concern:

Please find enclosed a Mitigated Determination of Non-Significance (MDNS) for **Stella Ridge Subdivision (SUB-1009)** that was issued pursuant to the State Environmental Policy Act (SEPA) Rules, Chapter 197-11, Washington Administrative Code. The enclosed review comments reflect evaluation of the environmental checklist by the lead agency as required by WAC 197-11-330(1)(a)(i).

The following materials were submitted with the initial application:

- Pre-Application Notes
- SEPA Checklist
- Critical Areas Report
- Site Plans
- Preliminary Stormwater Plan & Technical Information Report
- Narrative
- Mailing Labels
- Geotechnical Report
- Title Report
- Transportation Impact Study
- Tree Survey
- Archeological Pre-Determination Report

All application materials are available for review upon request from the Community Development Department. *Archaeological information is exempt from public disclosure, consistent with RCW 42.56.300.

Written comments may be submitted on this determination within fourteen (14) days of its issuance, after which the DNS will be reconsidered in light of the comments received.

Please address all correspondence to:
City of Camas, SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607
communitydevelopment@cityofcamas.us

Distribution:

Applicant
C-Tran
Camas School District
Camas Building Official, Brian Smith
Camas Communications Director, Bryan Rachal
Camas Engineering Department Managers and Staff
Camas Fire Department, Randy Miller
Camas Finance Director, Cathy Huber Nickerson
Camas Community Development Director, Alan Peters
Camas Mayor and City Council Members
Camas Parks and Recreation Director, Chris Witkowski
Camas Planning Manager and Staff
Camas Police Chief, Tina Jones
Camas Public Works Director, Scott Collin
Camas Public Library, Connie Urquhart
Camas-Washougal Post Record
Chinook Indian Nation
Cultural Resource Program, Cowlitz Indian Tribe
Cultural Resource Program, Yakama Indian Nation
Clark County Department of Environmental Services
Clark County Department of Transportation
Clark County Natural Resources Council
Clark Public Utilities
Department of Ecology
Department of Fish and Wildlife, Region 5
Department of Natural Resources, SEPA Center
Southwest Clean Air Agency
US Army Corps of Engineers
Vancouver - Clark Parks & Recreation
Washington Office of Archaeology & Historic Preservation
Washington State Department of Transportation
Washington State Parks and Recreation Commission, Environmental Program
Property Owners within 300 feet *(mailed the SEPA Determination & map)*

State Environmental Policy Act
Mitigated Determination of Non-Significance

CASE NO: SUB25-1009 Stella Ridge Subdivision

APPLICANT: AKS Engineering
Attn: Michael Andreotti
9600 NE 126th Ave Suite 2520
Vancouver, WA 98682

REQUEST: The applicant proposes to subdivide the subject lot into a 158-lot subdivision.

Location: 4511 NW 18th Ave Camas, WA 98607
Tax Parcels 125193000, 986055381 and 125185000

Legal Description: The project is located in the SE ¼ of Section 05 Township 1 North, Range 3 East of the Willamette Meridian, Camas, WA.

SEPA Determination: Mitigated Determination of Non-Significance (MDNS)

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Determination:

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The City of Camas has identified impacts by the proposed project that does require mitigation. In addition to the requirement that the development must comply with all City of Camas zoning and development regulations, the following conditions of approval apply:

- ***If there are known soil/ground water contaminants present on-site, additional information (including, but not limited to: temporary erosion and sediment control plans; stormwater pollution prevention plan; list of known contaminants with concentrations and depths found; a site map depicting the sample location(s); and additional studies/reports regarding contaminant(s)) are required to be submitted prior to engineering plan approval.***

- ***Additionally, if the site discharges to segments of waterbodies listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, high pH, or phosphorous, or to waterbodies covered by a TMDL may need to meet additional sampling and record keeping requirements. See condition S8 of the Department of Ecology Construction Stormwater General Permit for a description of these requirements.***

Date of Publication & Comment Period:

Publication date of this MDNS is **February 19, 2026**, and is issued under WAC 197-11-350. The lead agency will not act on this proposal until the close of the 14-day comment period which ends on **March 5, 2026**. Comments may be sent by email to communitydevelopment@cityofcamas.us or regular mail to:

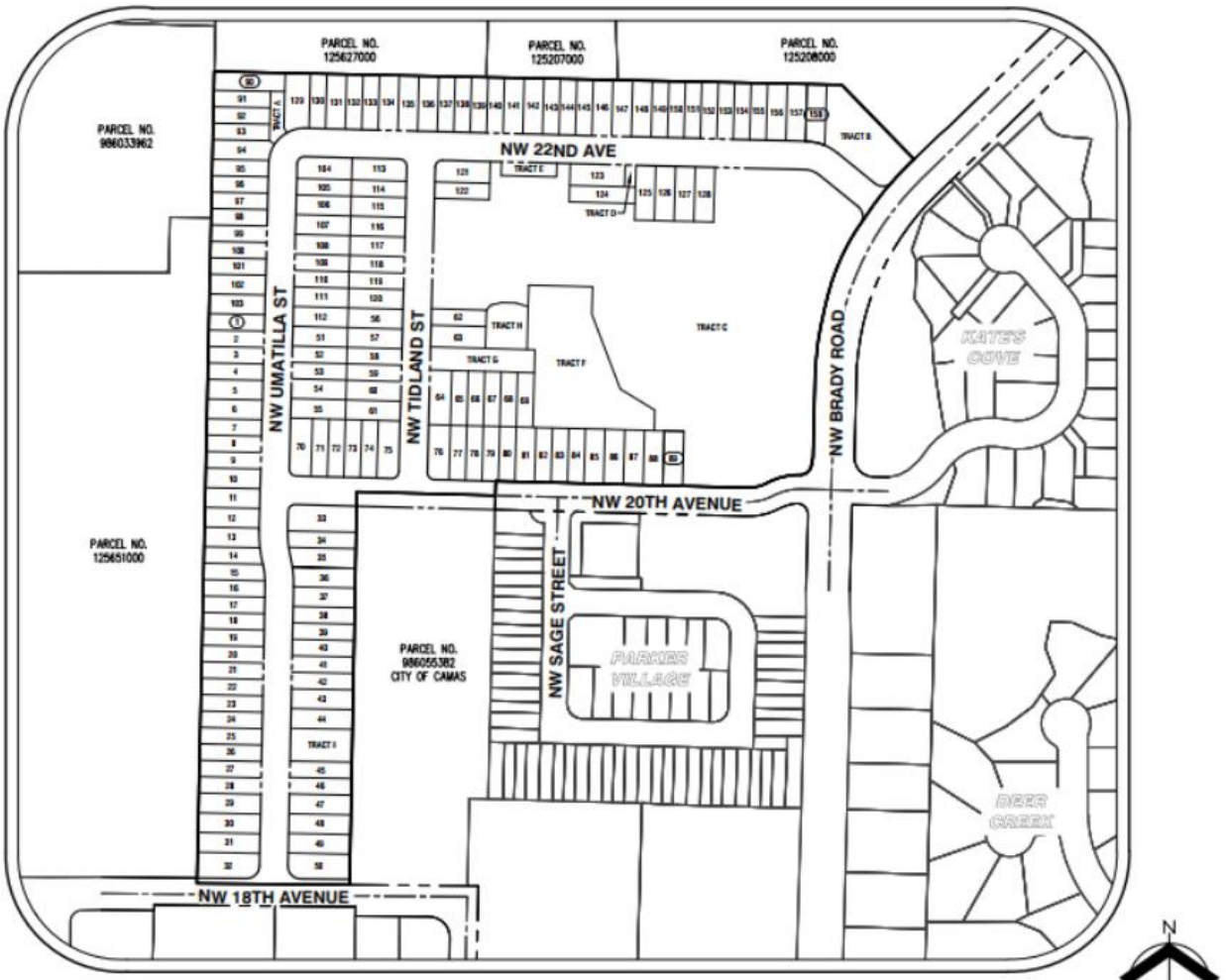
City of Camas SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607

Responsible Official: Robert Maul (360) 817-1568

Robert Maul, Planning Manager and Responsible Official

February 19, 2026
Date of publication

Preliminary Plat for Stella Ridge Subdivision (SUB25-1009)



SITE MAP

N.T.S.

Community Development
616 NE Fourth Avenue • Camas, WA 98607
(360) 817-1568
http://www.cityofcamas.us

SEPA ENVIRONMENTAL CHECKLIST

UPDATED 2016

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background

1. Name of proposed project, if applicable:
Stella Ridge

2. Name of applicant:
Allied Development, LLC

3. Address and phone number of applicant and contact person:

Applicant:
Allied Development, LLC
Attn: Joseph Deaser
16430 N Scottsdale Road, Suite 103
Scottsdale, AZ 85254
josephd@allieddev.com
(602) 932-9590

Contact:
AKS Engineering & Forestry
Attn: Michael Andreotti
9600 NE 126th Avenue, Suite 2520
Vancouver, WA 98682
andreottim@aks-eng.com
(360) 882-0419

4. Date checklist prepared:
August 2025

5. Agency requesting checklist:
City of Camas

6. Proposed timing or schedule (including phasing, if applicable):
The project is anticipated to begin construction as soon as all permits are obtained. This project is proposed to be constructed in up to two phases. The phases have been numbered in the Preliminary Plans for reference and are not for intended construction sequencing. Depending on market conditions and potential timing of required improvements, it may be necessary for the Applicant to combine phases, or construct phases out of the sequence shown on the plans.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.
There are no current plans for future additions, expansions, or further activity related to or connected with this proposal.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.
- Geotechnical Report (Columbia West)
- Preliminary Stormwater Technical Information Report (AKS Engineering & Forestry (AKS))
- Transportation Impact Study (Kittleson & Associates)
- This SEPA Checklist (AKS Engineering & Forestry (AKS))
- Archaeological Pre-Determination (Applied Archaeological Research, Inc. (AAR))
- Critical Areas Reports and Wetland Buffer and Oak Mitigation Plan (AKS)
- Phase I Environmental Site Assessments (ESAs), (Columbia West)
- Phase II ESA, (Columbia West)

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.
None known.

10. List any government approvals or permits that will be needed for your proposal, if known.

- Type III Preliminary Subdivision Approval
- Final Engineering Approval
- Grading Permit
- Erosion Control Plan Approval
- Final Plat Approval
- SEPA Determination
- Critical Area Permit Approval
- NPDES Permit
- Possible approval from the Washington Department of Ecology for vapor mitigation systems that may be installed beneath future residences located in and/or near an area of known soil gas contamination (see Section 7.a.)

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

The Applicant plans to subdivide three parcels into 158 single-family residential lots. Tracts for stormwater facilities, parking, private streets, and open space for critical area and tree protection will also be created with this project.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The site is addressed as 4511 NW 18th Avenue, Camas, WA 98607

Tax Lots: 125193-000, 986055-381, and 125185-000 in the SE ¼, S5, T1N, R3E, NE ¼, S8, T1N, R3E, and SW ¼, S4, T1N, R3E.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site:

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other____

b. What is the steepest slope on the site (approximate percent slope)?

According to Clark County Geographic Information Systems (GIS), no parts of the site have slopes greater than 15 percent.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

According to the Geotechnical Engineering Study, the subject site contains Powell silt loam and Odne silt loam. These are generally soils that are not suitable for agriculture and the site is not being used for agricultural purposes.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

There are no known surface indicators or a history of unstable soils on site or in the vicinity of the site.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Site grading will occur to construct lots, roads, and utility improvements. The Applicant proposes to remove all surface vegetation and stockpile topsoil within the disturbed area to perform the necessary site grading. The disturbed area totals ±18.66 acres with ±21,400 cubic yards of cut and ±59,000 cubic yards of fill. Fill material will come from on-site sources or approved off-site sources if necessary. Excess material needing to be hauled off-site will be taken to an approved location.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Yes, erosion is possible during construction in the form of silt transfer and dust blowoff. Stormwater and Erosion Control Plans will be prepared and implemented by the Applicant for the site improvement, which will meet or exceed the requirements imposed by the City of Camas Municipal Code (CMC) and the Washington State Department of Ecology (ECY).

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Up to ±147.3 acres, ±58.6 percent, of the site area may be covered with impervious surfaces. This includes homes, driveways, streets and sidewalks, and parking areas.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Stormwater and Erosion Control Plans will be prepared and implemented in accordance with CMC and ECY standards.

2. Air

i. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Construction equipment and vehicles will generate dust and particulate emissions during the construction period. Resident, visitor, delivery, mail delivery, and waste management vehicles will generate particulate emissions in the long term. Other potential emission sources include small power tools including, but not limited to, small gas-powered equipment used for site and landscape maintenance. The quantities of those emissions are unknown.

a. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

Off-site sources of emissions or odor near the project site are exhaust emissions from vehicles traveling along the adjacent streets, and the surrounding properties. These sources are not anticipated to impact this project. There are no other known sources or emissions or odors that will impact the site.

b. Proposed measures to reduce or control emissions or other impacts to air, if any:

If necessary, water will be utilized for dust control as needed during the construction of the proposed site improvements. Emissions control measures for vehicles and equipment are regulated under CMC, ECY, and U.S. Environmental Protection Agency (EPA) standards. It is anticipated that all vehicles and equipment will comply with these regulations.

3. Water

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

AKS natural resources biologist prepared a Critical Areas Assessment and Preliminary Mitigation Plan for the site. The report was completed in August 2025. The report identifies three wetlands on-site, Wetlands A, B, and C. Wetland A is a Category III, seasonally saturated PEM wetland with an 80-foot high intensity land use water quality buffer, located in the eastern portion of the site. Wetland B is a Category IV, isolated seasonally saturated PEM wetland with a 50-foot high intensity land use water quality buffer, located in the western portion of the site. Wetland C is a Category III, isolated seasonally saturated PFO/PEM wetland with an 80-foot high intensity land use water quality buffer, location in the center of the site.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Yes. Work will occur over, in or adjacent to the described waters. The project will require fill in a small portion of Wetland A for road improvements, and fill in all of Wetland B for roadway improvements. There will also be minor buffer impacts for road, lot, and stormwater facility improvements. Mitigation will be provided as described in the Critical Areas Assessment and Preliminary Mitigation Plan.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

This project will ±350 cubic yards of fill win a small portion of Wetland A and all of Wetland B.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No surface water withdrawals or diversions are required with this project.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No, the project is not within a 100-year flood plain.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No, this project does not involve any discharge of waste materials to surface waters.

b. Ground Water:

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

There are no existing wells on-site and this project will not involve withdrawing groundwater for drinking or other purposes.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . .; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

No waste material will be discharged into the ground from septic tanks or other sources with this project.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

The stormwater generated by the proposed site improvements will be collected on-site and conveyed to two stormwater facilities for mechanical treatment and detention. The stormwater facilities will be privately owned and maintained by the homeowners' association (HOA). The stormwater improvements are designed to follow the pre-developed drainage pattern, flowing to the ultimate discharge point in the northeast corner of the site to be released via outfall and energy dissipator at approved rates. All proposed stormwater improvements are designed per City of Camas standards and the Washington State Department of Ecology (ECY) 2024 Stormwater Management Manual for Western Washington (SWMMWW).

2) Could waste materials enter ground or surface waters? If so, generally describe.

No waste materials are proposed to enter ground or surface waters as part of this application. Fuels, such as diesel or gasoline, could potentially spill on the site during the construction of the project. Without adequate erosion control or stormwater mitigation, waste materials could possibly enter ground or surface waters. However, the proposed stormwater treatment and erosion control measures will minimize the potential for waste materials to be conveyed to ground or surface waters.

d. Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

The proposed project will not alter or affect the drainage patterns in the vicinity of the site.

e. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

The project will meet or exceed the CMC and ECY erosion control and stormwater standards. The stormwater generated by the proposed impervious surfaces will be collected, treated, and discharged at rates allowed per the City. Any spills will be immediately responded to, and appropriate remediation measures will be taken.

4. Plants

a. Check the types of vegetation found on the site:

_X_ deciduous tree: alder, maple, aspen, other
_X_ evergreen tree: fir, cedar, pine, other
_X_ shrubs
_X_ grass
____ pasture
____ crop or grain
____ Orchards, vineyards or other permanent crops.
____ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other

____water plants: water lily, eelgrass, milfoil, other
____other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

All existing vegetation, including trees, shrubs, and grass, within the disturbed area will be removed. Vegetation within the open space tracts will be retained.

c. List threatened and endangered species known to be on or near the site.

According to the Washington State Department of Natural Resources Online Data Explorer, there are no known threatened or endangered plant species on the project site.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

The proposed development will include one large open space tract that will retain existing native landscape and critical areas. As part of the critical areas mitigation plan, invasive species will be removed from the wetland buffer area and new native plants will be installed. The development will also include street trees and other required site landscaping. Native and naturalized plants will be used for proposed landscaping on site. Additionally, future homeowners will landscape their individual lots.

e. List all noxious weeds and invasive species known to be on or near the site.

Himalayan Blackberry is found on and near the site.

5. Animals

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Animals that are known to be on or near the site are rabbits, squirrels, rodents, hawks, songbirds, and crows.

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

b. List any threatened and endangered species known to be on or near the site.

According to the Washington State Department of Fish and Wildlife PHS, there are no mapped threatened or endangered species known to be on or near the site.

c. Is the site part of a migration route? If so, explain.

The site is located within what is commonly referred to as the Pacific Flyway. This Flyway is the general migratory route for various species of ducks, geese, and other migratory waterfowl. Neotropical birds, such as Robins, may seasonally utilize or be near the site.

d. Proposed measures to preserve or enhance wildlife, if any:

There are on-site critical areas that will be protected to the greatest extent practicable to provide habitat for wildlife. Mitigation for wetland and wetland buffer impacts are included in the Critical Areas Assessment and Preliminary Mitigation Plan. Landscaping will be installed in the development's developed area and will provide potential for additional habitat.

e. List any invasive animal species known to be on or near the site.

No invasive animal species are known to be on or near the site.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Electricity and potentially natural gas will be used for the completed project, which will include standard residential uses such as heating or cooling, lighting, and other appliances.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No, it is not anticipated that the project will affect adjacent properties potential use of solar energy.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

All construction on-site will be designed to comply with the Washington State Energy Code and the adopted version of the International Building Code and City of Camas Municipal Code as applicable to this project.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

Heavy equipment and a variety of materials will be used to construct the project along with other standard risks associated with construction and occupancy of the development.

In addition to the standard risks noted above; Phase I and Phase II Environmental Site Assessments were completed by Columbia West. In a portion of the site, total petroleum hydrocarbons (TPH) were detected at concentrations greater than Washington Department of Ecology (Ecology) Model Toxics Control Act (MTCA) screening levels in one of five soil gas samples collected from the site.

1) Describe any known or possible contamination at the site from present or past uses.

Phase I and Phase II Environmental Site Assessments were completed by Columbia West and soil gas contamination was discovered on-site. Additional soil testing will be completed to delineate the full soil gas area. Once the soil gas area is fully delineated and all soil testing is completed, the Applicant will work with the appropriate jurisdictions to mitigate the soil gas contamination. Contaminated soil was not encountered on-site during environmental investigations. Groundwater within the soil gas area is not known to be contaminated and has been tested in accordance with ECY and MTCA standards.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

Soil gas contamination was discovered onsite during the site environmental studies. Soil testing will be completed to delineate the full soil gas area. Once the soil gas area is fully delineated and all soil testing is completed, the soil gas area will then be mitigated in accordance with local and state requirements If necessary, future residences in the area where soil gas was found will be constructed with appropriate vapor mitigation systems. The vapor mitigation systems will be installed beneath the structures to prevent soil gas vapor from entering structures. The Applicant does not anticipate any further impacts to the project development or design after the soil gas area is mitigated.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

Typical construction materials such as gas, diesel, oil, etc. may be stored or used on the site during the project's development.

4) Describe special emergency services that might be required.

Emergency services are expected to be typical of a residential subdivision, and no special emergency services are anticipated with this project. The project area is within City of Camas jurisdiction and is currently served by fire, police, and EMS providers.

5) Proposed measures to reduce or control environmental health hazards, if any:

All contractors will be expected to comply with all applicable local, state, and federal regulations related to the project's construction and operations. It is anticipated that all construction will be inspected according to the applicable requirements and standards.

If future residences are constructed in the area where TPH was detected in soil gas at concentrations greater than MTCA screening levels, and the source of the TPH in soil gas cannot be removed, appropriate vapor mitigation systems will be installed beneath the structures to prevent soil gas with elevated concentrations of TPH from entering the structures.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

There are existing traffic noises from local streets, as well as noise from the surrounding existing residential and light industrial developments. It is not anticipated that these noises will affect the project.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Construction on the site will create short-term construction noise. Construction activities will not occur after 7 p.m. or before 7 a.m. as required by CMC. Visitors, residents, mail delivery, deliveries, and solid waste and recycling vehicles will create some noise in the long term. Other long-term noise sources include typical residential noises, such as small power tools, including, but not limited to, gas-powered equipment used for site and landscape maintenance.

3) Proposed measures to reduce or control noise impacts, if any:

Construction on the site will take place during normal construction hours as allowed by the City of Camas (CMC 9.32.050(A)).

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The site is currently vacant. The properties to the north are also vacant. The properties to the west of the site in use light industrial building and a Camas School District property. Properties to the south across NW 18th Avenue and NW 20th Avenue and to the west across NW Brady Road are in use as single family residences. The parcel east of the site and north of NW 18th Avenue is a City of Camas water tower. It is not anticipated that the project development will affect the current land uses or the adjacent properties.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

No, the project site has not been used as working farmlands or working forest lands in recent history.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

No, the project will not affect or be affected by surrounding working farms or forest land.

c. Describe any structures on the site.

There are no existing structures on-site.

d. Will any structures be demolished? If so, what?

There are no structures on-site; therefore, no structures will be demolished.

e. What is the current zoning classification of the site?

The project site is zoned Multifamily Residential-18 (MF-18).

f. What is the current comprehensive plan designation of the site?

The current comprehensive plan designation for the site is MFH.

g. If applicable, what is the current shoreline master program designation of the site?

The site is not within a shoreline designation area.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

AKS natural resources biologist prepared a Critical Areas Assessment and Preliminary Mitigation Plan for the site. The report was completed in August 2025. The report identifies three wetlands on-site, Wetlands A, B, and C. Wetland A is a Category III, seasonally saturated PEM wetland with an 80-foot high intensity land use water quality buffer, located in the eastern portion of the site. Wetland B is a Category IV, isolated seasonally saturated PEM wetland with a 50-foot high intensity land use water quality buffer, located in the western portion of the site. Wetland C is a Category III, isolated seasonally saturated PFO/PEM wetland with an 80-foot high intensity land use water quality buffer, location in the center of the site.

i. Approximately how many people would reside or work in the completed project?

The Applicant proposes to subdivide three parcels into 158 single-family lots. Assuming ±2.7 people per residence, ±427 people will reside in this project once it is completed.

j. Approximately how many people would the completed project displace?

The site is currently vacant and zero people reside on-site; therefore, this project will not displace any people.

k. Proposed measures to avoid or reduce displacement impacts, if any:

No displacement impacts will occur.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The project will meet the applicable Washington State and CMC requirements. The project will also obtain approval through the City of Camas Type III Subdivision Review, and Preliminary and Final Engineering review processes.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

The project will meet the applicable Washington State and CMC requirements. The project will also obtain approval through the City of Camas Type III Subdivision Review, and Preliminary and Final Engineering review processes.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

The proposed development is for the creation of 158 single family residential lots. The proposed units will be middle-income units.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

No housing units will be removed with this project.

c. Proposed measures to reduce or control housing impacts, if any:

No housing impacts will occur with this project.

10. Aesthetics

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

No buildings are proposed with this application; therefore, the height of the buildings is unknown, however, the homes will not exceed the 50-foot maximum height allowed in the MF-18 zoning district.

b. What views in the immediate vicinity would be altered or obstructed?

Views across the site will be altered with the full build-out of the project. The single-family homes will be visible from adjacent properties.

c. Proposed measures to reduce or control aesthetic impacts, if any:

The proposed development will meet the applicable zoning and building requirements of City of Camas. The project will also obtain approval through the City of Camas Type III Subdivision Review, Preliminary and Final Engineering review, and building permit review processes.

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Typical residential lighting (vehicle headlights and residential home lighting); and street lights will light the area in the nighttime hours.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

The installation of illuminated materials for the project will be done in such a way as to minimize dispersion off site and do not constitute a safety hazard.

c. What existing off-site sources of light or glare may affect your proposal?

There are no known existing off-site sources of light or glare that will affect the project.

d. Proposed measures to reduce or control light and glare impacts, if any:

Lighting for the proposed development will comply with the City of Camas lighting standards for glare reduction, light levels, and fixture types.

12. Recreation

a. What designated and informal recreational opportunities are in the immediate vicinity?

The following designated and informal recreational opportunities

- Ash Creek Park is ±0.30 miles to the east.
- Prune Hill Sports Park is ±0.20 miles to the southeast.
- Prune Hill Slope Open Space is ±0.50 miles to the northeast.

b. Would the proposed project displace any existing recreational uses? If so, describe.

No existing recreational uses are being displaced with this project.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

No impacts are proposed; however, the development will include one large open space tract for tree and critical area protection. The development will also pay the required Park Impact Fees.

13. Historic and cultural preservation

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.

According to the Archaeological Predeterminations completed by AAR, dated September 11, 2025, there are no structures on-site that are over 45 years old.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

According to the Archaeological Predeterminations completed by AAR no artifacts or evidence for archaeological resources were found on-site. AAR recommends that no further archaeological work is needed.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Per the Archaeological predetermination, AAR completed records review, including records on file with DAHP and in the AAR library, and historical map review. A field search was also completed including pedestrian transects of no more than 20 meters apart and 20 test pits were dug on-site.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

In the event that archaeological materials, Indian cairns, or human remains are encountered during the development of the properties, all construction activities will stop in the vicinity of the finds. The Applicant will then immediately notify the planning official and the Washington State DAHP. Procedures outlined under Washington Administrative Code (WAC) 24-28-020 will be followed and work will not resume until mitigation measures have been agreed upon.

14. Transportation

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

The subject site is served by NW 18th Avenue, NW 20th Avenue, and NW Brady Road. NW 20th Avenue will be extended into the site and three public roads and three private roads will also be constructed with this project with connection to NW 18th Avenue and NW Brady Road. The planned road network has been designed to provide pedestrian and vehicular circulation.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

The subject site is note served by public transit. The nearest transit stop is about ±1.40 miles west of the site near the intersection of NE 192nd Avenue and SE 41st Drive.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

Each single-family lot will be provided with a minimum of two parking spaces (one driveway space and one garage space) along with 32 additional stalls located in common tracts throughout the development. No parking spaces exist on site; therefore, no parking spaces will be eliminated.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

The proposed development will construct three new public roads and three new private roads. The planned road network will provide access to the lots within the subdivision. NW 20th Avenue will be extended into the site and be improved with a 52-foot-wide right-of-way width, 28-foot-wide paved width, and 5-foot-wide sidewalk and 7-foot-wide planter strip on both sides of the road. All other public roads within the site will be constructed with a 52-foot-wide right-of-way width, 28-foot-wide paved width, and 5-foot-wide sidewalk and 7-foot-wide planter strip on both sides of the road. One of the private roads will be constructed as a 26-foot-wide tract with 26-foot-paved surface, one of the private roads will be constructed as a 20-foot-wide tract with a 20-foot paved surface, and one of the private roads will be constructed as a 42-foot-wide tract, with a 28-foot-wide paved surface, and 5-foot-wide planter strip and 5-foot-wide sidewalk on one side of the road.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

The proposed project will not use and does not occur in the immediate vicinity of water, rail, or air transportation.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

The Applicant's Transportation Engineering Consultant, Kittelson & Associates, prepared a Transportation Impact Study (TIS). Trip generation was calculated for the 158-lot subdivision using the *ITE Trip Generation Manual 11th Edition.* The TIS states the project will generate 1,537 Average Daily Trips (ADT) with 113 a.m. peak hour trips and 153 p.m. peak hour trips. It is unknown how many of those trips will be truck trips.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

The proposed development will not interfere, affect, or be affected by the movement of agricultural and forest products.

h. Proposed measures to reduce or control transportation impacts, if any:

Proportionate share fees will be paid for City of Vancouver proportionate share intersections impacted by the project. Transportation impact fees will also be paid.

15. Public Services

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

Yes, the addition of 158 residential units will result in an increased need for public services.

b. Proposed measures to reduce or control direct impacts on public services, if any.

The project will pay system development charges, impact fees, property taxes, and other municipally imposed taxes and fees.

16. Utilities

a. Circle utilities currently available at the site:
electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other:

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Water – City of Camas
Sanitary Sewer – City of Camas
Electricity – Clark Public Utilities
Refuse – Waste Connections
Communication – Comcast, Lumen
Natural Gas – Northwest Natural

The proposed project will extend water into the site from NW 18th Avenue, NW 20th Avenue, and NW Brady Road and loop the water through the development to provide service to the lots. Sanitary sewer force mains are planned throughout the site, and each lot will have its own STEF tank with a lateral to the force main. The planned force mains will connect to the existing force mains in NW Brady Road and NW 20th Avenue. Power and communication lines will also be extended into the project within public utility easements. Natural gas is available at the site, but it has not been determined if it will be used for the project at this time.

Signature

Under the penalty of perjury, the above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: 

Name of signee: Michael Andreotti

Position and Agency/Organization: Land Use Planner / AKS Engineering & Forestry

Date Submitted: January 2026

In re: Stella Ridge Subdivision

) NO. SUB25-1009
)
) AFFIDAVIT OF MAILING
)
)
)
)
)
Respondent.)

STATE OF WASHINGTON)
) ss.
CLARK COUNTY)

I, Carey Certo, on oath says:

I, Carey Certo, on March 25, 2026, I directed a true and correct copy of the Notice of Application & Public Hearing be served upon the parties herein, in the above-entitled action, by depositing with the U.S. Post Office, Camas, Washington, a postage-prepaid envelope containing same addressed as follows: See attached list.

Carey Certo
SIGNATURE

SUBSCRIBED and SWORN to before me this 26th day of March, 2026.

Aireanna Baldwin
Notary Public
State of Washington
My Appointment Expires 10/1/2028
Commission Number 183848

Aireanna Baldwin
Notary Public in and for the State of Washington, residing at Clark County
My appointment expires: 10/1/2028

HANCOCK CHAD E & HANCOCK LAUREL R
1668 NW WHITMAN ST
CAMAS, WA 98607

CROWN POINTE HOMEOWNERS ASSOCIATION
1708 NW WHITMAN ST
CAMAS, WA 98607

DALEY DENNIS W ETAL
PO BOX 757
RANCHO SANTA FE, CA 92067

DALEY DENNIS W ETAL
PO BOX 757
RANCHO SANTA FE, CA 92067

JR MERIT ENTERPRISES LLC
4505 NE 68TH DR
VANCOUVER, WA 98661

LINEAR TECHNOLOGY CORP
1 ANALOG WAY
WILMINGTON, MA 01887

HEREFORD FARMS LLC
26 MEADOHAWK LN
LAS VEGAS, NV 89135

CAMAS SCHOOL DISTRICT #117
841 NE 22ND AVE
CAMAS, WA 98607

JR MERIT ENTERPRISES LLC
4505 NE 68TH DR
VANCOUVER, WA 98661

ERWIN JILL L
PO BOX 771
CAMAS, WA 98607

NLIGHT INC
5408 NE 88TH ST BLDG E
VANCOUVER, WA 98665

FERDASZEWSKI RACHEL A &
FERDASZEWSKI JOSHUA K
1747 NW TIDLAND ST
CAMAS, WA 98607

CITY OF CAMAS
616 NE 4TH AVE
CAMAS, WA 98607

LUGLIANI INVESTMENT COMPANY LLC
16701 SE MCGILLIVRAY BLVD 160
VANCOUVER, WA 98684

MACKAY JOHN G
4345 NW 16TH AVE
CAMAS, WA 98607

NRP LLC
4600 NW PACIFIC RIM BLVD
CAMAS, WA 98604

CAMAS SCHOOL DISTRICT #117
841 NE 22ND AVE
CAMAS, WA 98607

BROWNING JUSTIN C & KOVARIK DAVID K
1737 NW TIDLAND ST
CAMAS, WA 98607

BAGAL MAHESH & BAGAL MAHESHWARI
1727 NW TIDLAND ST
CAMAS, WA 98607

KIM KYUNG J & KIM JESSICA J TRUSTEES
THE KIM FAMILY TRUST 03/12/2021
CAMAS, WA 98607

SIRRAH HOMEONWERS ASSOCIATION
PO BOX 905
CAMAS, WA 98607

BITRA RATNA K & BITRA VIJAY
4072 NW 20TH AVE
CAMAS, WA 98607

LEIF BAYLEY ELIZABETH & LEIF KYLE MICHAEL
4014 NW 20TH AVE
CAMAS, WA 98607

HPA BORROWER 2018-1 MS LLC
120 S RIVERSIDE PLZ STE 2000
CHICAGO, IL 60606

ARABI NEGAR NEMATIAN
4010 NW 20TH AVE
CAMAS, WA 98607

DUGGAL KUNAL & DEWAN UPASNA
4007 NW 20TH AVE
CAMAS, WA 98607

BEALE LINDA
4011 NW 20TH AVE
CAMAS, WA 98607

THEEDA SANDEEP & ADDAGATLA NISHITHA
4015 NW 20TH AVE
CAMAS, WA 98607

MADUGULA ROHINI K & MADUGULA KOMAL
4019 NW 20TH AVE
CAMAS, WA 98607

DESHPANDE SACHIN G &
DESHPANDE MONIKA S
4021 NW 20TH AVE
CAMAS, WA 98607

SMITH RICHARD J & VARTANIAN KERI B TRUSTEES
4023 NW 20TH AVE
CAMAS, WA 98607

ZHANG JIHONG
PO BOX 56212
PORTLAND, OR 97238

CHANG WENDY
4071 NW 20TH AVE
CAMAS, WA 98607

NELSON JEFFREY
4075 NW 20TH AVE
CAMAS, WA 98607

KATES COVE HOMEOWNERS ASSOCIATION
16420 SE MCGILLIVRAY BLVD NO 103
VANCOUVER, WA 98683

KATES CLOSE LLC
16420 SE MCGILLIVRAY BLVD
#103-197
VANCOUVER, WA 98683

KATES COVE HOMEOWNERS ASSOCIATION
16420 SE MCGILLIVRAY BLVD NO 103
VANCOUVER, WA 98683

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16420 SE MCGILLIVRAY BLVD NO 103
VANCOUVER, WA 98683

CITY OF CAMAS
616 NE 4TH AVE
CAMAS, WA 98607

BARRON HATFIELD FAMILY LLLP
5511 NW 234th ST
RIDGEFIELD, WA 98642

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5511 NW 234th ST
RIDGEFIELD, WA 98642

BYUN JI-HYUN TRUSTEE
PO BOX 2684
VANCOUVER, WA 98668

MORIARTY TERRA
3255 NW VALLEY ST
CAMAS, WA 98607

NOVIK NATALIIA & NOVIK OLEKSII
1843 NW SAGE ST
CAMAS, WA 98607

KAHN BARBARA
1837 NW SAGE ST
CAMAS, WA 98607

JOHNSTONE MARY HELEN
1831 NW SAGE ST
CAMAS, WA 98607

CHIA CHU-TIEN & CHIA YI-JEN TRUSTEES
8420 SE 17TH CIR
VANCOUVER, WA 98664

CHOU YOM C & YANG WON-HUEI
2435 SUDDABY
TUSTIN, CA 92782

SHOJAEI MEHRDAD
4233 NW SAGE LOOP
CAMAS, WA 98607

PARRISH HARRY A TRUSTEE
HARRY PARRISH 2021 REV LIV TRUST
CAMAS, WA 98607

TAVADE NAVEEN
4305 NW SAGE LP
CAMAS, WA 98607

ALONZO DAVID L
16420 SE MCGILLIVRAY BLVD STE 103
PMB 437
VANCOUVER, WA 98683

SINGH HINDPREET & SINGH GURJIT
2239 NW OXFORD ST
CAMAS, WA 98607

GABRIO WILLIAM G & GABRIO JANET I
4320 NW SAGE LOOP
CAMAS, WA 98607

BECK JACK G & BECK LOUANN M
4318 NW SAGE LP
CAMAS, WA 98607

PK CONSULTING INC
4314 NW SAGE LP
CAMAS, WA 98607

LOUMAN ELIZABETH & LOUMAN
JACK A TRUSTEES
4312 NW SAGE LP
CAMAS, WA 98607

WERRY JORJAN INGRAM TRUSTEE
4310 NW SAGE LP
CAMAS, WA 98607

CAMDAVS REALTY LLC
2219 NW SIERRA WAY
CAMAS, WA 98607

PARKER VILLAGE HOA
800 NE TENNEY RD #110-348
VANCOUVER, WA 98685

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800 NE TENNEY RD #110-348
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800 NE TENNEY RD #110-348
VANCOUVER, WA 98685

YE YING TRUSTEE
1004 NE 112TH AVE
VANCOUVER, WA 98684

WRIGHT MARC & WRIGHT SPRING
4217 NW SAGE LOOP
CAMAS, WA 98607

DALEY DENNIS W ETAL
PO BOX 757
RANCHO SANTA FE, CA 92067

CITY OF CAMAS
430 NE EVERETT ST
CAMAS, WA 98607

CITY OF CAMAS
430 NE EVERETT ST
CAMAS, WA 98607

Notice of Application and Public Hearing
Stella Ridge Subdivision
(File No. SUB25-1009)

NOTICE IS HEREBY GIVEN that an application for the "Stella Ridge Subdivision" a 158-lot subdivision was received on September 12, 2025, and deemed technically complete on November 5, 2025.

LOCATION: The +/-24.41-acre site is zoned Multifamily Residential-18 (MF-18) in the City of Camas. The site is located at 4511 NW 18th Ave in the SE ¼ of Section 05 Township 1 North, Range 3 East of the Willamette Meridian, Camas, WA. Parcel Numbers: 125193000, 986055381 and 125185000.

SCHEDULED PUBLIC HEARING: A virtual and in-person public hearing will be held before the city's hearings examiner on **April 30, 2026 at 4 pm**. Instructions and a link to participate will be available on the agenda page of the city's website at least seven days prior to the meeting. The agenda is located at the following link: www.cityofcamas.us/yourgovernment/minuteagendavideo

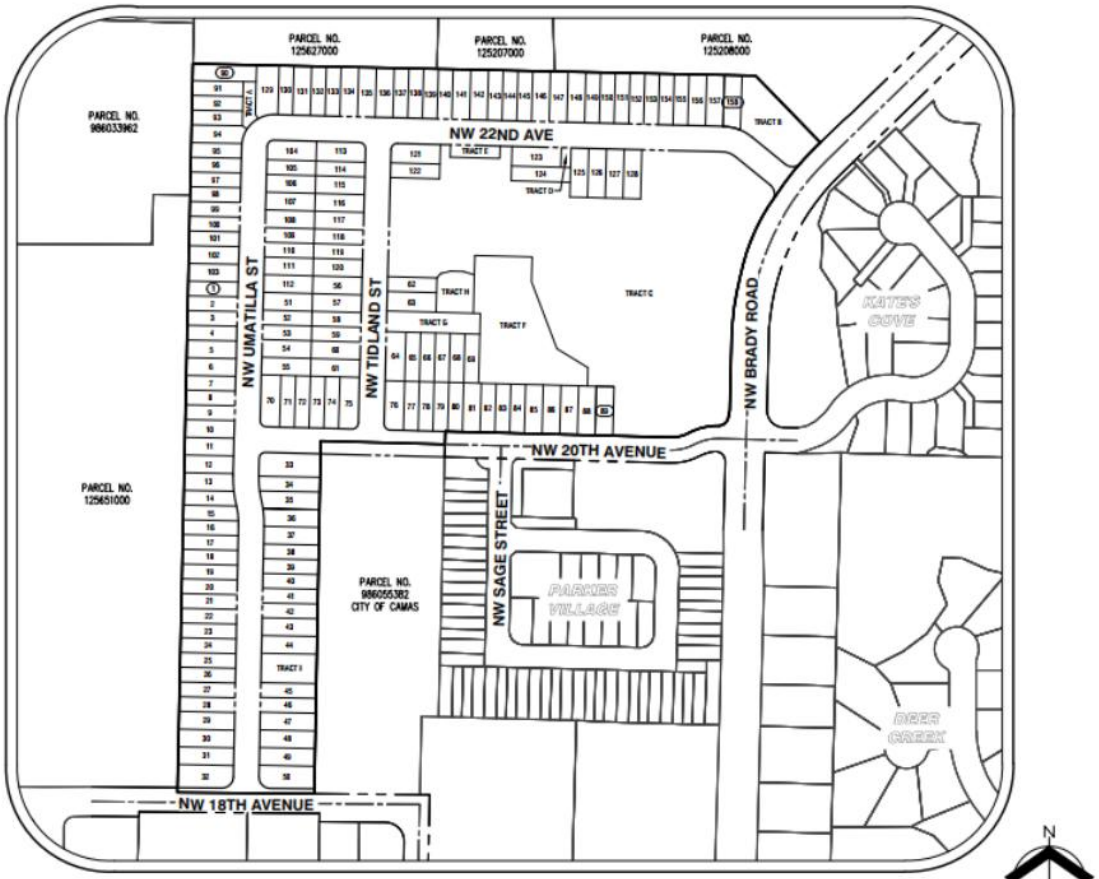
APPLICATION MATERIALS: The application included the following: project narrative, SEPA checklist, preliminary development plans, tree report, preliminary stormwater report, critical areas report, preliminary geotechnical report, archeological pre-determination report, mailing labels, title report and traffic study, as required for a complete application pursuant to Camas Municipal Code (CMC) §18.55.110. The application materials are also available for viewing at the Community Development Department (616 NE 4th Avenue, Camas, WA) during regular business hours Monday – Friday 8 a.m-5 p.m.

PARTICIPATE: All citizens are entitled to have equal access to the services, benefits, and programs of the City of Camas. Please contact the City Clerk at (360) 834-6864 for special accommodation if needed. The city will provide translators for non-English speaking persons who request assistance at least three working days prior to a public meeting.

Public comments and questions are encouraged, and there are several opportunities available to interested citizens. *It is preferable that written comments be received five days prior to the public hearing, in order to be available with the online agenda and materials.* Comments can also be accepted during the public hearing. The public hearing will follow the quasi-judicial process described within Camas Municipal Code §18.55.180. Comments related to this development may be submitted as follows: (1) In person by testifying at the public hearing; (2) by regular mail to Planning Division staff, Madeline Sutherland, Planner, at the Camas City Hall, 616 NE 4th Avenue, Camas, WA 98607; (3) by email to: communitydevelopment@cityofcamas.us; or (4) by phone (360) 817-7237. **For questions related to this application, please contact Madeline Coulter, at (360) 817-1568 or communitydevelopment@cityofcamas.us.**

Published in the Post Record on March 26, 2026 Legal Publication # 1088540
Posted at Camas City Hall, Camas Library, City of Camas website at: http://www.cityofcamas.us
Mailed to property owners within 300-feet on March 25, 2026

Preliminary Plat for Stella Ridge Subdivision (SUB25-1009)



SITE MAP

N.T.S.

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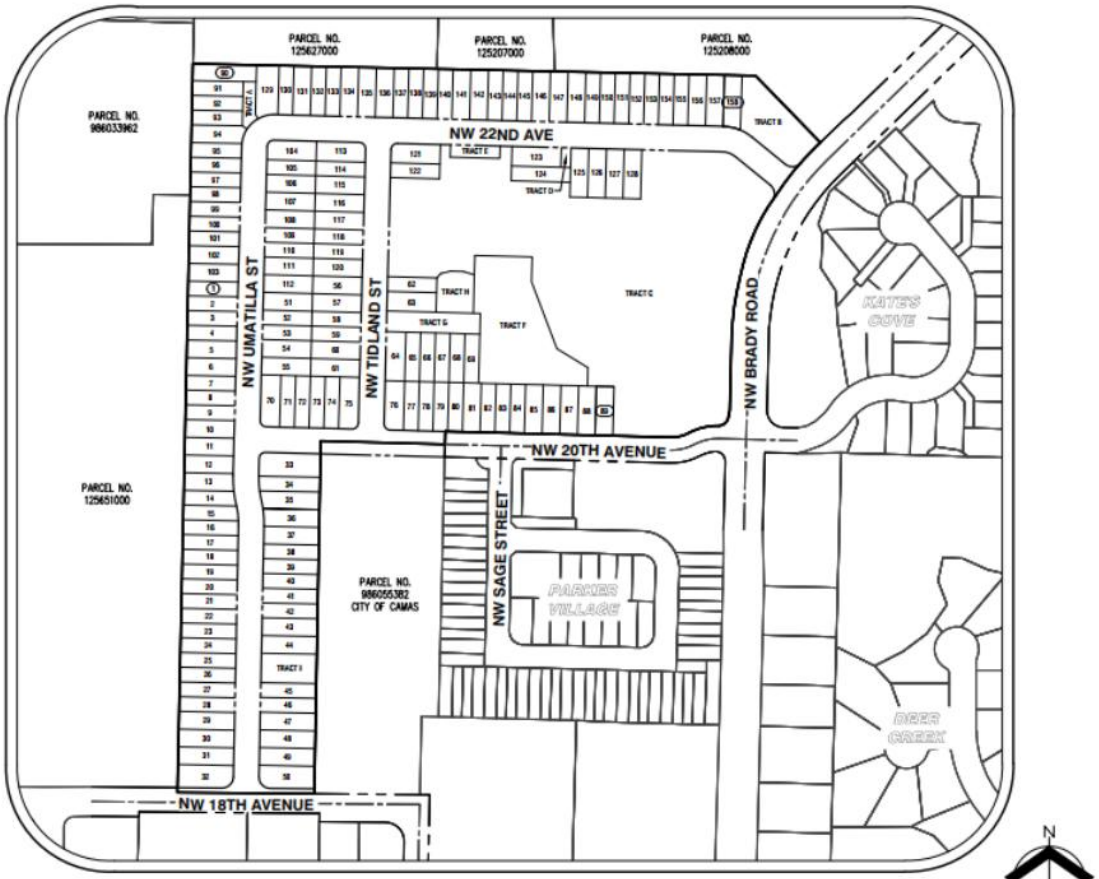
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Preliminary Plat for Stella Ridge Subdivision (SUB25-1009)



SITE MAP

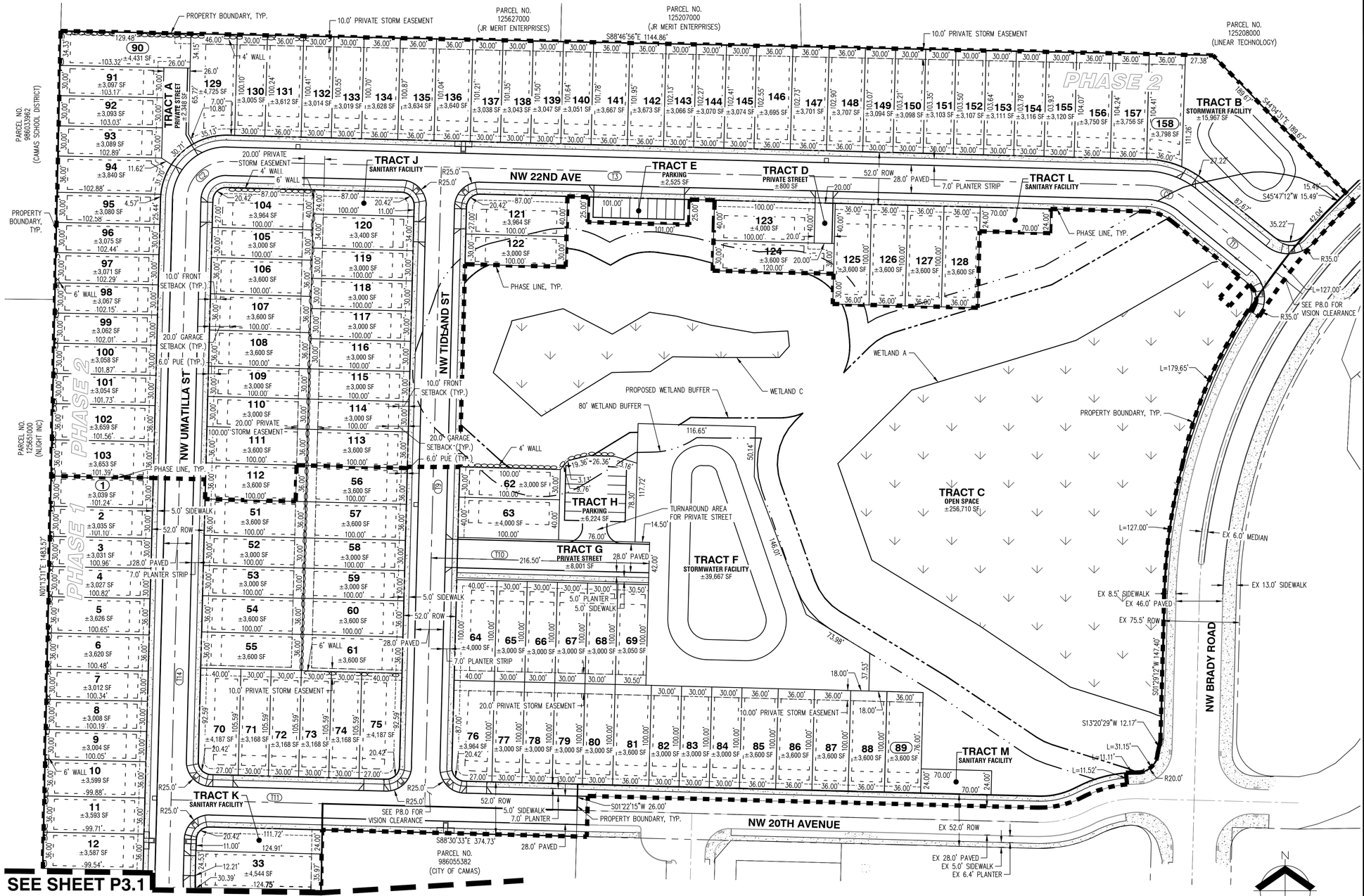
N.T.S.

PROPOSED LAND USE NOTES

1. TOTAL SITE AREA IS 24.41 ACRES (1,063,300 SQUARE FEET).
2. WETLAND AND WETLAND BUFFER AREAS ARE SHOWN ON SHEETS P3.0 AND P3.1.
3. NO PLANNED ENHANCEMENT AREAS ARE PROPOSED. WETLANDS AND CRITICAL AREAS SHALL BE DONE OFF-SITE.
4. PEDESTRIAN FACILITIES ARE SHOWN ON THE PLANS. NO TRANSIT FACILITIES ARE PROPOSED.
5. NO BICYCLE FACILITIES BEYOND THOSE LOCATED IN THE RIGHT-OF-WAY ARE PROPOSED.
6. NW 22ND AVE, NW UMATILLA ST, AND NW TIDLAND ST ARE PUBLIC WITH ASPHALT SURFACING. STREET CROSS SECTIONS ARE SHOWN ON SHEET P8.0 AND P8.1.
7. NO ROADS ON OR WITHIN 500 FEET OF THE SITE PROPOSED TO PROVIDE SITE ACCESS ARE IN EXCESS OF 15% GRADE.
8. ALL CORNER LOT DRIVEWAYS ARE SHOWN ON THE PLAN. ALL OTHER DRIVEWAYS MEET SIGHT DISTANCE STANDARDS.
9. SIGHT DISTANCE TRIANGLES ARE SHOWN ON SHEETS P9.0 AND P9.1.
10. ALL PROPOSED EASEMENTS ARE SHOWN ON THE PLANS.
11. SEE SHEETS P9.0 TO P9.1 FOR LANDSCAPE PLANS.
12. OFF-STREET PARKING IS SHOWN ON THE PLANS. NO LOADING AREAS ARE REQUIRED.
13. FINAL WALL DESIGNS TO BE PROVIDED WITH FINAL ENGINEERING.

CENTERLINE TANGENT TABLE		
LINE #	LENGTH	DIRECTION
T1	145.86	N50° 46' 33.13"W
T3	913.00	N88° 30' 33.46"W
T8	564.34	S1° 08' 19.41"W
T9	635.59	S1° 29' 26.54"W
T10	216.50	S88° 30' 33.46"E
T11	861.70	S88° 30' 33.46"E
T14	671.12	S1° 29' 26.54"W

CENTERLINE CURVE TABLE			
CURVE #	ARC LENGTH	DELTA	RADIUS
C1	46.10	37°44'00"	70.00
C2	61.26	90°00'00"	39.00
C3	51.93	14°52'35"	200.00
C4	50.70	14°31'28"	200.00



APPLICANT/CONTACT

ALLIED DEVELOPMENT, LLC
CONTACT: JOSEPH DEASER
16430 N SCOTTSDALE RD, STE 210
SCOTTSDALE, AZ 85254
PH: (602) 932-9590
EMAIL: JOSEPHD@ALLIEDDEV.COM

OWNER

DALEY DENNIS
PO BOX 757
RANCHO SANTA FE, CA 92067

PROJECT PURPOSE

PHASED SUBDIVISION WITH 156 SINGLE-FAMILY RESIDENTIAL LOTS WITH ASSOCIATED ROAD AND SITE IMPROVEMENTS.

SITE AREA

24.41 AC (1,063,300 SF)

EXISTING LAND USE

UNDEVELOPED PROPERTY ZONED MULTIFAMILY RESIDENTIAL (MF-18)

CONTACT/ENGINEERING/PLANNING/ ARBORIST/SURVEYING/LANDSCAPE ARCHITECT/NATURAL RESOURCES

AKS ENGINEERING & FORESTRY, LLC.
CONTACT: MICHAEL ANDREOTTI
9600 NE 126TH AVENUE, SUITE 2520
VANCOUVER, WA 98682
PH: 360-882-0419
FAX: 360-882-0426
E-MAIL: ANDREOTTIM@AKS-ENG.COM

GEOTECHNICAL ENGINEER

COLUMBIA WEST ENGINEERING, INC.
CONTACT: DANIEL E. LEHTO, PE, GE
11917 NE 95TH STREET
VANCOUVER, WA 98682
PH: 360-823-2900

PROPERTY DESCRIPTION

LOCATED IN THE SOUTHEAST 1/4 OF SECTION 5, THE NORTHEAST 1/4 OF SECTION 8, AND SOUTHWEST 1/4 OF SECTION 4, TOWNSHIP 1 NORTH, RANGE 3 EAST, WILLAMETTE MERIDIAN, CLARK COUNTY, WASHINGTON. PROPERTY SERIAL NO.'S 125193-000, 986055-381, & 125185-000.

VERTICAL DATUM

CLARK COUNTY VERTICAL DATUM NGVD29(47); ELEVATIONS ARE BASED ON CLARK COUNTY BENCHMARK "LACAMAS-50", LOCATED TO THE NE OF THE INTERSECTION OF NW 16TH AVE & NW BRADY RD; ELEVATION = 521.19 FEET (NAVD29(47)).

LOT STATISTICS

SINGLE FAMILY DETACHED:	158
TOTAL LOTS:	158

SITE STATISTICS

PARCEL ZONE:	MULTI-FAMILY (MF-18)
GROSS AREA:	±24.41 AC (±1,063,300 SF)
OPEN SPACE:	±5.97 AC (±260,070 SF)
NET AREA:	±18.44 AC (±803,247 SF)
TOTAL ROW DEDICATION:	±3.99 AC (±173,800 SF)
PROPOSED AVERAGE LOT AREA:	±3,436 SF

RESIDENTIAL PARKING STATISTICS

REQUIRED PARKING:	32 SPACES (158 LOTS/5 LOTS/SPACE)
TRACT E:	10 SPACES
TRACT H:	12 SPACES
TRACT I:	10 SPACES
TOTAL PROPOSED	32 SPACES

TRACT	PURPOSE	AREA
TRACT A	PRIVATE STREET	2,348 SF
TRACT B	STORMWATER FACILITY	15,967 SF
TRACT C	OPEN SPACE	260,070 SF
TRACT D	PRIVATE STREET	800 SF
TRACT E	PARKING	2,525 SF
TRACT F	STORMWATER FACILITY	39,667 SF
TRACT G	PRIVATE STREET	8,001 SF
TRACT H	PARKING	6,772 SF
TRACT I	PARKING	6,224 SF
TRACT J	SANITARY FACILITY	2,364 SF
TRACT K	SANITARY FACILITY	2,959 SF
TRACT L	SANITARY FACILITY	1,680 SF
TRACT M	SANITARY FACILITY	1,680 SF
TOTAL		*351,057 SF

*HOA TO OWN ALL TRACTS.

DEVELOPMENT STANDARDS (MF-18)

MINIMUM FRONT YARD SETBACK:	10 FEET
GARAGE SETBACK:	20 FEET
MINIMUM SIDE YARD:	3* FEET
MINIMUM STREET SIDE YARD:	15 FEET
MINIMUM REAR YARD:	10 FEET

* THE NON-ATTACHED SIDE OF A DWELLING UNIT SHALL BE THREE FEET, OTHERWISE A ZERO-LOT LINE IS ASSUMED.

DENSITY CALCULATIONS (MF-18)

MAXIMUM DENSITY (18 DU/AC X 18.44 AC):	332 UNITS
MINIMUM DENSITY (6 DU/AC X 18.44 AC):	111 UNITS
PROPOSED DESNITY (DU/AC):	158 UNITS
REQUIRED MINIMUM LOT AREA:	2,100 SF
REQUIRED MINIMUM LOT WIDTH:	26 FT
REQUIRED MINIMUM LOT DEPTH:	60 FT

SCALE: 1"=50 FEET

THE PURPOSE OF THIS PRELIMINARY PLAT IS TO SHOW THE PROPOSED LOT DIMENSIONS AND AREAS FOR PLANNING PURPOSES. THIS IS NOT AN OFFICIAL PLAT AND IS NOT TO BE USED FOR SURVEY PURPOSES.

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
360.882.0419
WWW.AKS-ENG.COM

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PRELIMINARY SUBDIVISION PLAT AND PHASING PLAN
STELLA RIDGE SUBDIVISION
ALLIED DEVELOPMENT, LLC
CAMAS, WASHINGTON

STATE OF WASHINGTON — JOSEPH C. SCHMITT — 22614 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	2/18/2026
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	NTL

P3.0

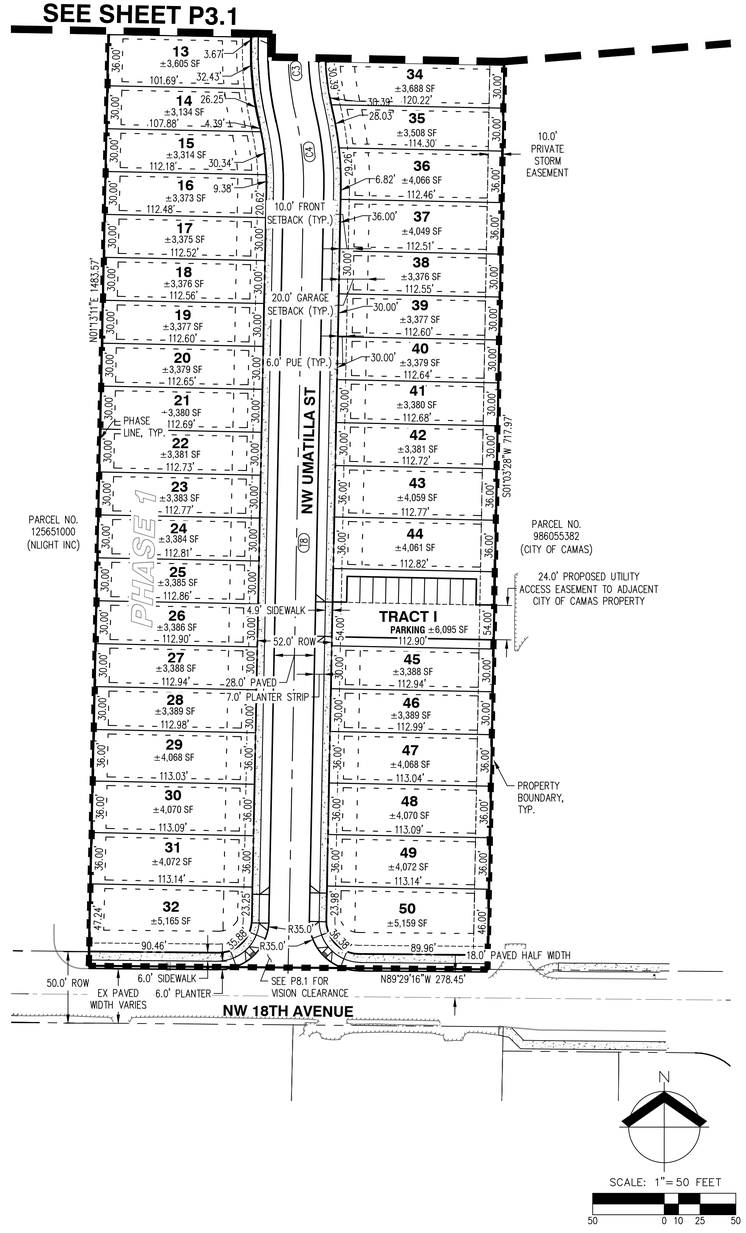
AKS DRAWING FILE: 12107 P3.0 PLAT - ALTDWG | LAYOUT: P3.0

PROPOSED LAND USE NOTES

1. TOTAL SITE AREA IS 24.41 ACRES (1,063,300 SQUARE FEET).
2. WETLAND AND WETLAND BUFFER AREAS ARE SHOWN ON SHEETS P3.0 AND P3.1.
3. NO PLANNED ENHANCEMENT AREAS ARE PROPOSED. WETLANDS AND CRITICAL AREAS SHALL BE DONE OFF-SITE.
4. PEDESTRIAN FACILITIES ARE SHOWN ON THE PLANS. NO TRANSIT FACILITIES ARE PROPOSED.
5. NO BICYCLE FACILITIES BEYOND THOSE LOCATED IN THE RIGHT-OF-WAY ARE PROPOSED.
6. NW 22ND AVE, NW UMATILLA ST, AND NW TIDLAND ST ARE PUBLIC WITH ASPHALT SURFACING. STREET CROSS SECTIONS ARE SHOWN ON SHEET P8.0 AND P8.1.
7. NO ROADS ON OR WITHIN 500 FEET OF THE SITE PROPOSED TO PROVIDE SITE ACCESS ARE IN EXCESS OF 15% GRADE.
8. ALL CORNER LOT DRIVEWAYS ARE SHOWN ON THE PLAN. ALL OTHER DRIVEWAYS MEET SIGHT DISTANCE STANDARDS.
9. SIGHT DISTANCE TRIANGLES ARE SHOWN ON SHEETS P9.0 AND P9.1.
10. ALL PROPOSED EASEMENTS ARE SHOWN ON THE PLANS.
11. SEE SHEETS P9.0 TO P9.1 FOR LANDSCAPE PLANS.
12. OFF-STREET PARKING IS SHOWN ON THE PLANS. NO LOADING AREAS ARE REQUIRED.
13. FINAL WALL DESIGNS TO BE PROVIDED WITH FINAL ENGINEERING.

CENTERLINE TANGENT TABLE		
LINE #	LENGTH	DIRECTION
T1	145.86	N50° 46' 33.13"W
T3	913.00	N88° 30' 33.46"W
T8	564.34	S1° 08' 19.41"W
T9	635.59	S1° 29' 26.54"W
T10	216.50	S88° 30' 33.46"E
T11	861.70	S88° 30' 33.46"E
T14	671.12	S1° 29' 26.54"W

CENTERLINE CURVE TABLE			
CURVE #	ARC LENGTH	DELTA	RADIUS
C1	46.10	37°44'00"	70.00
C2	61.26	90°00'00"	39.00
C3	51.93	14°52'35"	200.00
C4	50.70	14°31'28"	200.00



THE PURPOSE OF THIS PRELIMINARY PLAT IS TO SHOW THE PROPOSED LOT DIMENSIONS AND AREAS FOR PLANNING PURPOSES. THIS IS NOT AN OFFICIAL PLAT AND IS NOT TO BE USED FOR SURVEY PURPOSES.

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PRELIMINARY SUBDIVISION PLAT AND PHASING PLAN

STELLA RIDGE SUBIDIVSION

ALLIED DEVELOPMENT, LLC

CAMAS, WASHINGTON

JOHN C. SCHMIDT — STATE OF WASHINGTON — 22614 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	12107
DATE:	2/18/2026
DESIGNED BY:	NTL
DRAWN BY:	JCS
CHECKED BY:	NTL

P3.1

AKS DRAWING FILE: 12107 P3.0 PLAT – ALTDWG | LAYOUT: P3.1

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Southwest Region Office
PO Box 47775, Olympia, WA 98504-7775 • 360-407-6300

March 4, 2026

Robert Maul, Planning Manager
City of Camas
Community Development Department
616 Northeast Fourth Avenue
Camas, WA 98607

Dear Robert Maul:

Thank you for the opportunity to comment on the mitigated determination of non-significance for the Stella Ridge Subdivision Project (SUB25-1009) located at 4511 Northwest 18th Avenue as proposed by Michael Andreotti. The Department of Ecology (Ecology) reviewed the environmental checklist and has the following comment(s):

SOLID WASTE MANAGEMENT: Derek Rockett (360) 995-3176

All grading and filling of land must utilize only clean fill. All other materials may be considered solid waste and permit approval may be required from your local jurisdictional health department prior to filling. All removed debris resulting from this project must be disposed of at an approved site. Contact the local jurisdictional health department or Department of Ecology for proper management of these materials.

TOXICS CLEANUP: Tia Misuraca (360) 742-2807

There appears to be one contamination site near the proposed project area. Vacant Lots 4511 NW 18th Ave site (CSID 15319 and parcel #986055382) has confirmed soil and suspected groundwater contamination including TPH-G TPH-D/O in excess of MTCA Method A cleanup screening levels.
Should contamination be encountered, please report it to comply with WAC 173-340-120 and -300 by using the online statewide environmental incident reporting (ERTS) form at: https://ecology.wa.gov/footer-pages/report-an-environmental-issue/statewide-reporting-form-erts.

Ecology's comments are based upon information provided by the lead agency. As such, they may not constitute an exhaustive list of the various authorizations that must be obtained or legal requirements that must be fulfilled in order to carry out the proposed action.

If you have any questions or would like to respond to these comments, please contact the appropriate reviewing staff listed above.

Department of Ecology

Southwest Regional Office

(JKT:202600638)

cc: Derek Rockett, SWM
Tia Misuraca, TCP

Carey Certo

From: Shana Lombard <slombard@cowlitz.org>
Sent: Thursday, March 5, 2026 3:19 PM
To: Community Development Email
Cc: James Gordon; Stone, Jessica (DAHP)
Subject: Fw: SUB25-1009 Stella Ridge Subdivision - SEPA Mitigated Determination of Non-Significance
Attachments: SUB25-1009 SEPA Distribution Packet.pdf; CIT Unanticipated Discoveries Protocol - Feb 2026.pdf; CIT Cultural Resource Protection Laws - Feb 2026.pdf

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Hello,

Given that the above-referenced project is within the Cowlitz Indian Tribe's territory, the Tribe's Cultural Resources Department (CRD) would like to state its interest. The Tribe attaches religious and cultural significance to cultural resources throughout our area of concern, and this includes archaeological resources, traditional cultural properties, and elements of the built environment.

In the event of ground-disturbing activity, the Cultural Resources Department of the Cowlitz Indian Tribe recommends an Unanticipated Discoveries Protocol be attached to the permit; we have included language for your consideration.

This determination is based on all currently available knowledge and is subject to revision should new information arise. Please contact me at slombard@cowlitz.org or (360) 353-9924 with any questions or concerns you may have. We look forward to working with you on this undertaking.

Thank you for your time and attention.

náxʷɬqʷul'as,

***Shana Lombard* (She/Her)**
Cultural Resources Technician
Enrolled Member of the Cowlitz Indian Tribe
slombard@cowlitz.org
D: (360) 353-9924
https://www.Cowlitz.org

https://www.cowlitz.org/cultural-resources

COWLITZ INDIAN TRIBE

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From: Community Development Email <communitydevelopment@cityofcamas.us>
Sent: Thursday, February 19, 2026 8:15 AM
To: Michael Andreotti <andreottim@aks-eng.com>; Camas School District, Laura Nowland <laura.nowland@camas.wednet.edu>; Camas School District, Sherman Davis <sherman.davis@camas.wednet.edu>; Camas Washougal Post Record <kelly.moyer@camaspostrecord.com>; Chinook Indian Nation <Office@chinooknation.org>; Clark County Concurrency Engineer <David.Jardin@clark.wa.gov>; Clark County Natural Resources, John S. Karpinski <karpjd@comcast.net>; Clark County, Environmental Services, Kevin Tyler <kevin.tyler@clark.wa.gov>; Clark PUD, Construction Design Manager, David Tetz <dtetz@clarkpud.com>; Clark PUD, Senior ROW Agent, Vera Anderson <vanderson@clarkpud.com>; PermitReview <permitreview@cowlitz.org>; NRDpermit <nrdpermit@cowlitz.org>; C-Tran Analyst <devrev@c-tran.org>; Dept of Fish & Wildlife <R5Planning@dfw.wa.gov>; Dept. of Archeological & Historic Preservation <sepa@dahp.wa.gov>; Dept. of Natural Resources SEPA Center <sepacenter@dnr.wa.gov>; Lorie Clark, Lower Columbia Fish Recovery Board <lclark@lcfrb.gen.wa.us>; Southwest Clean Air Agency, Duane Johnson <Duane@swcleanair.org>; US Army Corp of Engineers <Joshua.A.Sindel@usace.army.mil>; Vancouver-Clark Parks & Recreation <parksrec@cityofvancouver.us>; Washington Parks & Recreation Commission, Environmental Program Manager <sepa@parks.wa.gov>; WSDOT SW Region <SW-SEPA-REVIEW@WSDOT.WA.GOV>; Yakama Indian Nation, Environmental Resources <enviroreview@yakama.com>; Yakama Indian Nation, Environmental Resources, Elizabeth Sanchey <esanchey@yakama.com>
Cc: Alan Peters <APeters@cityofcamas.us>; Alan Peters <APeters@cityofcamas.us>; Allen Westersund <AWestersund@cityofcamas.us>; Anita Ashton <AAshton@cityofcamas.us>; Brian Smith <BSmith@cityofcamas.us>; permits <permits@cityofcamas.us>; Cathy Huber Nickerson <chuber@cityofcamas.us>; Chris Witkowski <CWitkowski@cityofcamas.us>; Community Development Email <communitydevelopment@cityofcamas.us>; Connie Urquhart <CUrquhart@cityofcamas.us>; Curleigh (Jim) Carothers <jcarothers@cityofcamas.us>; Doug Quinn <DQuinn@cityofcamas.us>; Jennifer Senescu <JSenescu@cityofcamas.us>; Jim Hodges <JHodges@cityofcamas.us>; John Nohr <JNohr@cityofcamas.us>; John Svilarich <JSvilarich@cityofcamas.us>; Lauren Hollenbeck <LHollenbeck@cityofcamas.us>; Madeline Coulter <mcoulter@cityofcamas.us>; Mahsa Eshghi <MEshghi@cityofcamas.us>; Marilyn Boerke <MBoerke@cityofcamas.us>; Martin Elzingre <MElzingre@cityofcamas.us>; Randy Miller <RMiller@cityofcamas.us>; Robert Maul <RMaul@cityofcamas.us>; Scott Collins <SCollins@cityofcamas.us>; Steve Hogan <shogan@cityofcamas.us>; Tim Hein <THein@cityofcamas.us>; Tina Jones <TJones@cityofcamas.us>; Yvette Sennewald <YSennewald@cityofcamas.us>
Subject: SUB25-1009 Stella Ridge Subdivision - SEPA Mitigated Determination of Non-Significance

WARNING: This email originated outside of the Cowlitz Indian Tribe. Please verify sender before replying, opening attachments or clicking on links.

Attached is a SEPA Mitigated Determination of Non-Significance (MDNS) for Stella Ridge Subdivision for your review and comment.

Request: Subdivide the subject lot into a 158-lot subdivision.

Publication: The publication date for this MDNS is Thursday, February 19, 2026. The SEPA comment period ends on Thursday, March 5, 2026, at 5:00 p.m.

Comments: Send comments to **communitydevelopment@cityofcamas.us** or by standard mail to the City of Camas SEPA Official, Community Development Department at 616 NE Fourth Avenue, Camas, WA 98607

Carey Certo
Senior Administrative Support Assistant
Community Development
Office: 360-817-1568 x 2
ccerto@cityofcamas.us
www.cityofcamas.us

The permit center is closed daily 12-1pm

The City of Camas has gone digital! Apply for permits online through our new Civic Access Portal at www.cityofcamas.us/permits

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nLIGHT

April 23, 2026

City of Camas Planning Division
Madeline Sutherland
Camas City Hall
616 NE 4th Avenue
Camas, WA 98607

Re: Stella Ridge Subdivision – Comments from Adjacent Industrial User

Dear Chair and Members of the Planning Division:

On behalf of **nLIGHT, Inc.**, an active and growing industrial/manufacturing operation located adjacent to the proposed **Stella Ridge Subdivision**, we respectfully submit the following comments for the public hearing.

Our facility operates under existing zoning allowances and involves regular manufacturing activity, including employee shifts, freight deliveries, truck traffic, equipment operation, and exterior lighting for safety and security. While we recognize the community's interest in residential development, we have several concerns regarding long-term land-use compatibility, operational impacts, and public-safety considerations associated with the proposed subdivision.

1. Land Use Compatibility and Right to Operate

The proposed subdivision introduces residential use directly adjacent to an established industrial/manufacturing facility. As the Planning Division is aware, such adjacency often results in long-term land-use conflicts, particularly when residential expectations are inconsistent with lawfully permitted industrial operations.

We are concerned that:

- Normal industrial activities (equipment noise, loading and unloading, early morning or evening operations) may generate future complaints.
- Over time, residential proximity may place **implicit pressure on the business** to curtail lawful operations.
- The development may set a precedent that compromises long-term industrial viability in this area.

We respectfully request that the Planning Division ensure adequate conditions are imposed to preserve the continued right-to-operate for existing industrial uses.

4637 NW 18th Avenue • Camas, WA 98607 • Tel 360.566.4460 • Fax 360.546.1960 • www.nlight.net

nLIGHT

2. Traffic, Access, and Freight Movement

As shown on the Stella Ridge site plan, the proposed development introduces additional local traffic circulation in close proximity to an active industrial access area and school zone. Our operations rely on predictable, unobstructed access for:

- Employees commuting across multiple shifts
- Commercial deliveries and freight vehicles
- Large truck turning movements and maneuvering

Increased residential traffic, limited crosswalk access, on-street parking, pedestrian activity, and potential future traffic-calming measures raise concerns regarding:

- Congestion during peak business hours
- Conflicts between passenger vehicles and freight traffic
- Reduced safety for students, residents, industrial drivers, and employees

We recommend a thorough evaluation of how residential traffic patterns will interact with existing access points.

3. Residential Density and Site Design Compatibility

We also ask the Planning Division to consider whether the proposed number of homes is appropriate given the immediate adjacency to an active industrial/manufacturing operation. Higher residential density increases the number of households potentially exposed to noise, lighting, truck activity, and other routine industrial impacts, which in turn increases the likelihood of future complaints and pressure to restrict lawful operations. Reducing the overall density—particularly along the shared boundary—would help create a more compatible transition between residential and industrial uses and provide space for meaningful buffers, setbacks, and landscaping.

We ask the Planning Division and applicant to:

- Decrease the number of lots or units, or increase minimum lot sizes.
- Provide a lower-density edge (e.g., fewer homes, deeper rear yards) to accommodate buffering and reduce direct backyard adjacency.
- If density is maintained elsewhere, require enhanced disclosure and enforceable compatibility measures for lots nearest industrial operations.

4. Noise Sensitivity and Operational Impacts

Manufacturing operations inherently generate intermittent noise associated with equipment, material handling, and commercial vehicle activity. Even with standard mitigation measures, proximity to residential homes can create unrealistic noise expectations.

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nLIGHT

We are concerned that residents may not fully appreciate the ongoing nature of industrial activity adjacent to the site, potentially resulting in:

- Noise complaints
- Requests for operational limitations
- Enforcement pressure that did not exist prior to residential development

Clear disclosure requirements and enforceable compatibility standards are strongly encouraged.

5. Buffers, Setbacks, and Screening

As buffers and landscaping are not indicated on the site plan, we request careful consideration of impacts between residential and industrial uses.

Specifically, we ask that the applicant:

- Provide buffers to meaningfully reduce noise, light, and visual exposure to the subdivision.
- Acknowledge applicant/resident responsibility for long-term buffer maintenance.
- Construct sufficient fencing or physical barriers to prevent trespassing on nLIGHT property.
- Acknowledge the intensity of an adjacent industrial/manufacturing facility rather than a lower-impact commercial use.
- Protect existing on-site stormwater facilities (including bioswales) from construction-related impacts such as sedimentation, debris, or inadvertent discharge.
- Ensure grading and stormwater design do not redirect or concentrate runoff toward our property or overwhelm existing bioswale capacity.
- Maintain adequate separation from the shared boundary so subdivision utilities, fencing, or earthwork do not damage bioswale features.

6. Lighting, Security, and Safety

Our facility requires exterior lighting and video surveillance for safety, security, and operational reasons. We are concerned that residential adjacency may create future conflicts resulting in complaints, despite the necessity of such systems for workplace safety.

Additionally, increased pedestrian activity near an industrial site raises concerns related to:

- Trespassing
- Child safety
- Liability exposure for incidents beyond our reasonable control

We encourage clear planning conditions that recognize these realities.

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nLIGHT

7. Long-Term Operational Viability

Finally, we request that the Planning Division consider the cumulative, long-term impacts of siting a residential development adjacent to an active and growing manufacturing operation. Once established, residential uses are difficult to relocate, while industrial limitations can permanently affect employment, economic contribution, and operational flexibility.

In addition, the introduction of new homes along our shared boundary could constrain our ability to expand within company-owned property in the future, as subsequent building or site improvements may be subject to more stringent compatibility expectations, including increased setbacks, enhanced buffering and screening, and additional permitting conditions related to noise, lighting, traffic, and stormwater mitigation.

Conclusion

We respectfully ask that the Planning Division carefully consider these compatibility concerns and ensure that any approval of the Stella Ridge Subdivision includes conditions that:

- Protect existing industrial operations.
- Minimize foreseeable land use conflicts.
- Clearly allocate responsibility for mitigation measures.
- Preserve public safety for residents, students, and employees.

Thank you for the opportunity to provide input. We welcome continued dialogue with the City and the project applicant as this review proceeds.

Sincerely,



Chris Schechter
Chief Operating Officer
nLIGHT, Inc.
(360) 566-4460
Chris.Schechter@nlight.net

1. Pre-Application Conference Report

PRE-APPLICATION MEETING NOTES
PA25-1049

Meeting held via Zoom: Thursday, April 3, at 2:30 p.m.
Notes issued via email on April 14, 2025

Applicant:	AKS Engineering & Forestry LLC
City of Camas:	Madeline Coulter, Planner Ahmed Yanka, Engineering Brian Smith, Building Randy Miller, Fire Marshal
Location:	4511 NW 18TH AVE Parcel Number: 125193000
Zoning:	Multi-Family Residential (MF-18)
Description:	To construct 154 single family lots with associated stormwater facility, critical area, parking, and landscaping tracts.

NOTICE: Notwithstanding any representation by City staff at a pre-application conference, staff is not authorized to waive any requirement of the City Code. Any omission or failure by staff to recite all relevant applicable code requirements to an applicant shall not constitute a waiver of any standard or requirement by the City. [CMC 18.55.60 (C)] This pre-application conference shall be valid for a period of 180 days from the date of the meeting. If an application is not filed within 180 days of the conference or meeting, the applicant must schedule and attend another conference before the city will accept a permit application. [CMC 18.55.060 (D)] Any changes to the code or other applicable laws, which take effect between the pre-application conference and submittal of an application shall be applicable. [CMC 18.55.060 (D)] A link to the Camas Municipal Code (CMC) can be found on the City of Camas website, http://www.cityofcamas.us/ on the main page under "Business and Development".

PLANNING DIVISION **Madeline Coulter | (360) 817-1568 |mcoulter@cityofcamas.us**

Applicable codes for development include Title 16 Environment, Title 17 Land Development, and Title 18 Zoning, of the Camas Municipal Code (CMC), which can be found on the city website. Please note it remains the **applicant's responsibility** to review the CMC and address all applicable provisions. The following pre-application notes are based on application materials and site plan submitted to the City on March 5, 2025.

Application Requirements
Your proposal will need to comply with the general application requirements per **CMC Section 18.55.110** as follows:

1. A completed city application form and required fee(s), which are addressed at on-line submittal;
2. A complete list of the permit approval sought by the applicant;
3. A current (within thirty days prior to application) mailing list and mailing labels of owners of real property within three hundred feet of the subject parcel, certified as based on the records of the Clark County assessor;
4. A complete and detailed narrative description that describes the proposed development, existing site conditions, existing buildings, public facilities and services, and other natural features. The **narrative shall also explain how the criteria are or can be met**, and address any other information indicated by staff at the pre-application conference as being required;

5. Necessary drawings- All documents and reports shall be provided with the on-line application submittal;
6. Copy of the preapplication meeting notes; and
7. A development sign per CMC 18.55.110.H.

Preliminary Subdivision Review
The site development approval process will be considered under a Type III subdivision, which requires a public hearing where the hearings examiner will render the final decision. The application for preliminary plat shall contain information outlined in CMC 17.11.030.B. The application shall address in a narrative the criteria for approval CMC 17.11.030.D. Building height, setback and lot coverage can be found in CMC 18.09.040 Table 1 & 2.

Major Design Review
Design Review is required for all new developments within multi-family zones per CMC 18.19.020. The standards applicable to this property for Design Review are found in the Design Review Manual to include the *Standard Principles & Guidelines* in addition to the *Specific Principles & Guidelines for Multifamily Developments.*

A submittal for Design Review should include a site plan drawing, a detailed landscape plan, exterior building materials and colors, elevation views and lighting specifications and plan. A final design review decision may be consolidated and issued with the preliminary plat review decision.

Landscaping Regulations and Tree Density
A tree survey is required per CMC 18.13.040.B and must be prepared by a certified arborist or professional forester pursuant to the requirements outlined in CMC 18.13.045. A minimum 20-unit tree density per net acre is required and needs to be incorporated in the overall landscape plan per CMC 18.13.051.A. A preliminary landscape plan is required with the preliminary plat submittal.

Parking Regulations
The proposed use will need to meet the automobile parking requirement pursuant to CMC Chapter 18.11. When the proposed development's average lot size is seven thousand four hundred square feet or less, one additional off-street parking space shall be required for every five units, notwithstanding the requirements of CMC Chapter 18.11. These spaces are intended to be located within a common tract.

Critical Areas
Clark County GIS mapping identifies wetlands within the subject property. As such, a critical areas report is required if the proposed development is within or adjacent to (within 200-feet) a critical area per CMC Section 16.51.130. The general requirements for a critical areas report are found in CMC Section 16.51.140. The City's code contains additional requirements for each type of critical area that needs to be addressed in CMC Chapter 16.53. A preliminary mitigation plan is required if there will be impacts to the critical area.

SEPA
The proposed development is not categorically exempt from the requirements of the State Environmental Policy Act (SEPA) per CMC Section 16.07.020.A.

Archaeological Review
The site is located in an area of medium-high probability for the presence of archaeological objects and on a site that is more than 5 acres, therefore an archaeological predetermination is required per CMC Section 16.31.070.A. Proof of mailing or emailing to the tribes per CMC 16.31.160.

ENGINEERING **AHMED YANKA (360) 817-7258 ayanka@cityofcamas.us**

General Requirements:

1. Final engineering site improvement plans shall be prepared in accordance with the Camas Design Standards Manual (CDSM) and CMC 17.19.040, by a licensed Civil Engineer in Washington State.
2. *Civil construction plans are not to be submitted until after Planning issues the land-use decision.*
3. *After the land-use decision is issued, the applicant is to submit civil construction plans via the online portal at www.cityofcamas.us/Permits under the 'Civil Construction Application'.*
4. CDev Engineering Dept. is responsible for plan review (PR) and construction inspection (CI) of the civil site improvements.
5. A 3% PR&CI fee is collected by engineering for all infrastructure improvements.
    a. A stamped preliminary engineer's estimate is to be submitted with the plans for first review.
    b. Payment of the 1% plan review (PR) fee shall be due prior to the start of the first review. Staff will review and approve the estimate and invoice the applicant.
    c. Payment of the 2% construction inspection (CI) fee is due prior to construction plan approval and release of approved plans to the applicant's consultant. Staff will invoice the applicant.
    d. Under no circumstances will the applicant be allowed to begin construction, including any land-disturbing activities prior to engineering plan approval.
6. *Per CMC 17.21.060.H Except for one sales office or one model home, building applications will not be accepted until after Final Acceptance has been issued for all infrastructure improvements.*
7. *Final acceptance is issued by the Community Development Engineering Dept.*
8. Any existing wells and septic tanks and septic drain fields shall be decommissioned in accordance with State and County guidelines per CMC 17.19.020 (A3).
9. The applicant will be required to purchase all permanent traffic control signs, street name signs, street lighting, and traffic control markings for the proposed development.
10. Work within the city right-of-way (ROW) will require submittal an encroachment permit and an approved traffic control plan (TCP), prior to the start of any work. This permit is not to be submitted via the online portal. It is to be submitted to the future site Inspector for review and approval.
11. Regulations for installation of public improvements, improvement agreements, bonding, final plating, and final acceptance can be found at CMC 17.21.
12. The applicant will be responsible for ensuring that private utilities; underground power, telephone, gas, CATV, interior street/parking lighting, and associated appurtenances are installed.

Neighborhood Traffic Management Plan

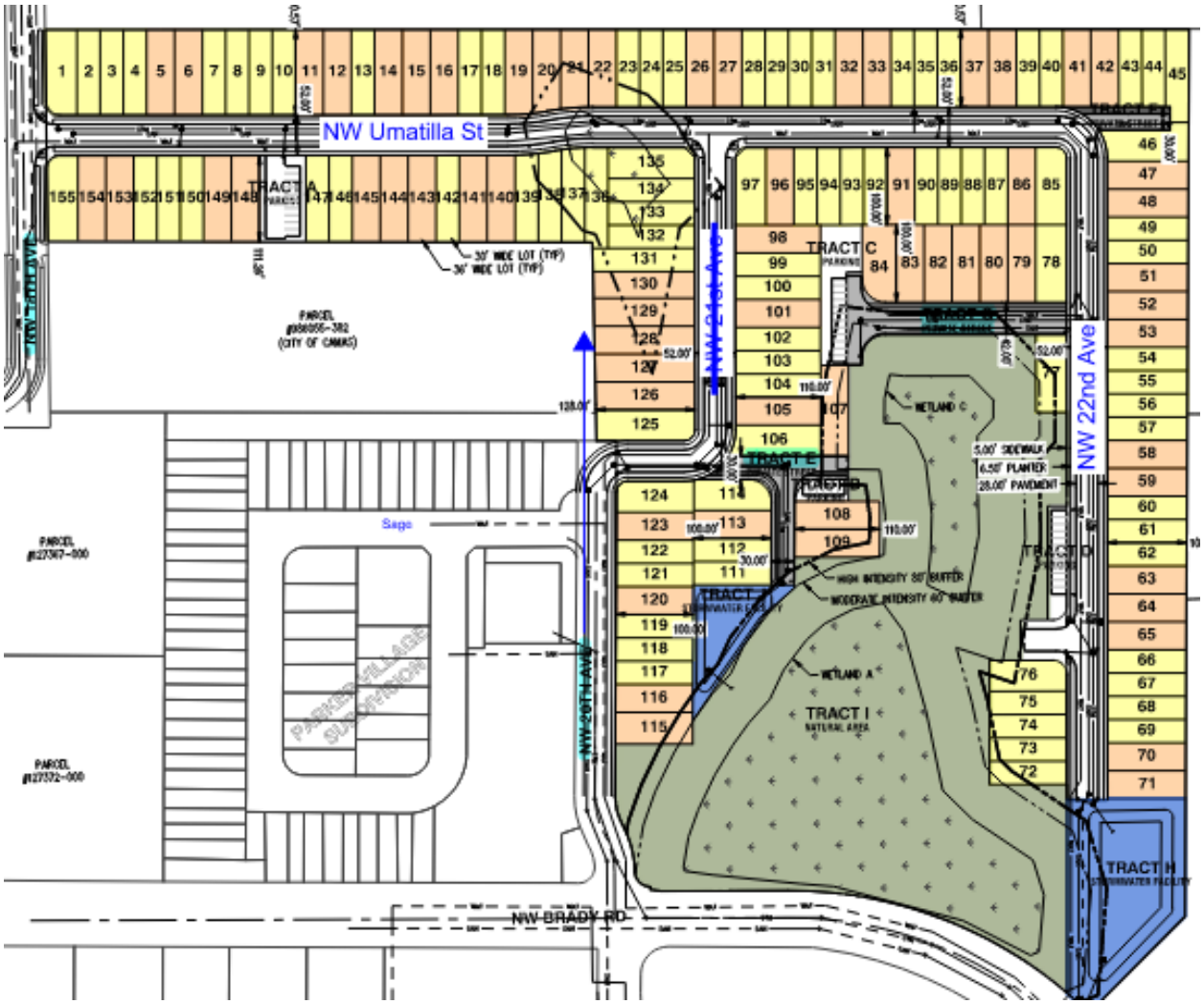
1. The City has a Neighborhood Traffic Management Plan (NTM). The NTM plan identifies the need for installation of acceptable traffic calming features when a proposed development will create 700 Average Daily Trips (ADT) or more.
2. The proposed development will result in 700 or more ADTs and will require traffic calming features. The applicant is to work with staff to determine an acceptable location for the traffic calming features.

Traffic/Transportation:

1. A transportation impact analysis (TIA) is required when a proposed development results in 199 vehicle trips per day (VPD) or more.
2. A transportation impact analysis (TIA) is required and shall be prepared in accordance with the City's adopted Traffic Impact Study Guidelines as outlined in the CDSM
3. The Applicant will be required to have a traffic engineer analyze the following:
   a. Site distance access at applicants proposed access intersections.
   b. Vision clearance areas are to be addressed, per CMC 18.17.030.
   c. Address potential for left-turn pocket at access off NW 18th Avenue
   d. A traffic circulation plan showing on-site ingress and egress, per CMC 17.19.040 (B.10.a).
   e. Address movement conflicts with existing nearby intersections; and
   f. Provide trip AM and PM Peak distribution to and from the site.
   g. AM and PM Peak Hour analysis for intersections with 20 or more additional trips
4. The TIA will be sent to the City of Vancouver (COV) Traffic Engineer for review and comments.
5. COV will require trip distributions to the following intersections for proportionate share fees.

BUILDING DIVISION **BRIAN SMITH (360) 817-1568 bsmith@cityofcamas.us**

1. Existing structures to be removed will need an asbestos survey and demolition permit.
2. Decommissioning of septic tanks and drain fields through Clark County Department of Health
3. Property corners shall be established by a licensed surveyor.
4. The structures will be reviewed under the most current building codes as adopted by the State of Washington.
5. The structural drawings and calculations shall be prepared and stamped by a Professional Engineer licensed by the State of Washington.
6. The required fire suppression system shall be in accordance with IBC and other applicable codes standards and shall be reviewed by the Camas Fire Marshal's office.
7. Storm water from adjacent properties and existing developments should be taken into consideration.
8. Storm sewer disposal and connections shall be identified on the approved plans.
9. All lots shall be provided a storm drain lateral at the lowest practical location.
10. Developer shall provide a designated concrete wash out area.
11. Impact fees and System Development charges shall be applicable
12. An approved monument sign for posting addresses shall be provided at all Flag lots, the monument sign, location and design a shall be noted on the Plat.



FIRE DEPARTMENT **RANDY MILLER (360) 834-6191 FMO@cityofcamas.us**

1) Any existing structures scheduled for demolition may be considered for use as a fire department training burn. Contact DFM Randy Miller at the FMO for further information. 360-834-6191
2) NFPA 13D Residential Fire Sprinklers required in all new dwellings. Additionally, it is recommended or may be required to mitigate access or turnaround issues, to install fire sprinklers in garages. Contact the FMO for further information.
3) If a larger water meter is required to meet fire flow and the larger meter is not required for reasons of the international residential code/building department, the SDC up-charges are waived and the minimal cost difference in the actual meter shall be paid.
4) A flow switch is optional but recommended to tie into the homes security system along with an outside bell.
5) If a PRV is needed for pressures over 80 PSI on the domestic supply, it shall be installed after the fire line supply. If the pressure is over 80 PSI a PRV may be needed on the toilet supply line supplied from the fire sprinkler system.
6) An inside bell or horn strobe is recommended (If system is not tied into a security system) Contact Randy Miller in the FMO for more information.

7) Water supply line from the meter into the structure shall be sized per the fire sprinkler contractors design calculations or a 2- inch line shall be installed.
8) Multiple Fire Hydrants required, will be evaluated based on IFC appendix C and the operational needs of the Fire Department.
9) Witnessed hydrant flushing required with the FMO on all new fire hydrant installations.
10) Access roads or flag lots to be a minimum 12-foot wide paved with a 20-foot wide clearance and a minimum 13.6-foot vertical clearance. These minimums may be greater per city of Camas engineering department.
11) Approved Fire Department turnaround required for dead end streets or access driveway over 150 ft to residential structures measured from the center line of where the access road leaves the public street.
12) Provide approved radiuses to access roads/driveways for tracts.
13) Obstructed access plan required for all private roads, flag lots serving more than one home or access tracts. Towing signs are the recommended plan unless an alternate method is provided and approved.
14) Any discovered underground oil or fuel storage tank during the development requires a decommissioning permit through the Fire Marshal Office.
15) A propane Permit is required with the Fire Marshals Office for any tank installation over 124 gallons.
16) Approved address monument required where the access road, flag lot or driveway leaves the public street. Contact the FMO for approval.
17) Temporary Addresses required at all times for each structure/lot until permanent address numbers are installed, please give attention to making the numbers extremely visible from the street, unlikely to be blocked by parked vehicles so emergency services can easily see & read in order to find 911 generated calls.
18) Please do not hesitate to contact the FMO if you have any questions. 360-834-6191 or FMO@cityofcamas.us

Stella Ridge Subdivision (SUB25-1009)
Index of Exhibits

Exhibit No.	Title/Description	Document Date
1	Applicants Narrative	9/2025
2	Pre-Application Conference Notes	4/25/25
3	Title Report	1/30/25
4	Preliminary Geotechnical Report	5/28/25
5	Mailing Labels	8/28/25
6	Critical Area Report	8/2025
7	Transportation Impact Study	9/8/25
8	Tree Report	9/2025
9	Preliminary Stormwater Plan & Technical Information Report	9/2025
10	SEPA Checklist	9/2025
11	Site Plans	10/23/25
12	Development Sign Posting	41/15/26
13	Application Review Letter	10/2/25
14	Second Application Review Letter	10/22/25
15	Technically Complete Letter	11/5/25
16	Affidavit of Mailing Notice of Application	12/18/25
17	Notice of Application	12/18/25
18	Affidavit of Mailing SEPA Mitigated Determination of Non-Significance	2/19/26
19	SEPA Mitigated Determination of Non-Significance	2/19/26
20	SEPA Mitigated Determination of Non-Significance Distribution Packet	2/19/26
21	Affidavit of Mailing Notice of Application & Public Hearing	3/25/26
22	Notice of Application & Public Hearing	3/26/26
23	Updated Preliminary Plat Sheets	2/16/26
24	Department of Ecology Public Comment	3/4/26
25	Cowlitz Indian Tribe Public Comment	3/5/26
26	nLight Public Comment	4/23/26
27	Pre-Application Conference Notes	4/14/26