Hearings Examiner Meeting Agenda
Thursday, July 31, 2025, 5:00 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 – 859 1415 2652
2. Or, from any device click https://us06web.zoom.us/j/85914152652

OPTION 2 - Join by phone (audio only):
Dial 877-853-5257 and enter meeting ID# 859 1415 2652

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. Camas Woods II (File No. SUB25-1003)
   Presenter: Madeline Coulter, Planner

CLOSE OF MEETING

LAND USE DECISION

STAFF REPORT

Camas Woods Phase II

File No. SUB25-1003

(Consolidated files: SEPA Review and Archaeological Review)

Report Date: July 25, 2025

TO	Hearings Examiner	**HEARING DATE**	July 31, 2025, at 5:00 PM
PROPOSAL	To subdivide 8.79 acres into 78 single-family residential lots.		
LOCATION	The site is located at 26416 SE 8th St Camas, WA 98607 in the NE 1/4 Section 35, Township 2 North, Range 3 East, of the Willamette Meridian; and described as tax parcel 178209000 and 178109000.		
APPLICANT/ OWNER	AKS Engineering & Forestry, LLC Attn: Michael Andreotti 9600 NE 126th Ave Suite 2520 Vancouver, WA 98682	**OWNER**	Windfall Holdings LLC 5616 NE 399th St LaCenter WA , 98629
APPLICATION SUBMITTED	April 14, 2025	**APPLICATION COMPLETE**	May 9, 2025
SEPA	The City issued a SEPA Mitigated Determination of Non-Significance (MDNS) on June 12, 2025, with a comment period that ended on June 26, 2025. The SEPA MDNS was mailed to property owners and published in the Post Record on June 12, 2025. Legal publication #1013130.		
PUBLIC NOTICES	A Notice of Application was mailed to property owners within 300 feet of the site and published in the Post Record on May 22, 2025. Legal publication #1009030. A Notice of Public Hearing was mailed to property owners within 300 feet of the site and published in the Post Record on July 3, 2025. Legal publication #1016970.		

APPLICABLE LAW: The application was submitted on 4/15/2025, 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 8.79 acres into 78 single-family residential lots. The subject site is zoned North Shore High Density Residential (HD-NS). The subject site currently contains two single family homes that are proposed for removal. The site also has several trees, however, there are no critical areas on site. The proposal includes open space, parking, stormwater facility, and private street tracts.

The site is bordered to the north and east by North Shore Low Density Residential zoning with single family residences on site. To the east is Camas Woods Phase I, which will include attached and detached single family residences. To the south and west is Grace Church and single-family residences zoned North Shore High Density Residential.

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

Chapter 16.07 State Environmental Policy Act

A SEPA checklist was submitted, and a Mitigated Determination of Non-Significance (MDNS) was issued on June 12, 2025, as the proposed development includes more than nine residential dwelling units per CMC 16.07.020.A.1. The comment period ended June 26, 2025, and one comment was received. The comment was from the Department of Archaeology and Historic Preservation regarding an inadvertent discovery plan be created and kept on site. Staff finds that an inadvertent discovery plan shall be created and submitted to staff prior to final plat approval and be kept on site.

> **FINDING:** Staff finds the comments provided by the Department Archaeology and Historic Preservation regarding an Inadvertent Discovery Plan shall be complied with.

Chapter 16.31 Archaeological Preservation

An archaeological predetermination report dated November 5, 2024, was prepared by Applied Archaeology 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 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 NS-Multifamily High in the City's Comprehensive Plan, which includes the North Shore High Density Residential 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 trails and streets provide pedestrian connectivity throughout the development. 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 improvements 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.

A Transportation Impact Study (TIS) dated March 14, 2025, was prepared by Kittleson & Associates (Exhibit 6). Per Table 2 *Estimated Site Trip Generation*, page 6 of the TIS, the proposed residential development is composed of the following:

- Attached Single-Family Homes, ITE 215: 78 units which will generate 544 average daily trips (ADTs), for a total of 35 AM Peak Hour trips (9 in, 26 out) and a total of 43 PM Peak Hour trips (25 in, 18 out).

The total number of average daily trips are less than 700 ADTs. Off-site traffic calming features are not required and the proposed interior road design provides traffic calming within the subdivision proper.

FINDING: Staff finds that the proposed project can and will meet the requirements 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 10-inch ductile iron water main located in NE Everett Street (SR 500). The applicant is required to provide a minimum 8-inch water main to serve the proposed development of Camas Woods II.

A Decision was issued earlier in 2025 for Camas Woods (SUB24-1002), located east of the currently proposed Camas Woods II (SUB25-1003). Decision SUB24-1002 required the applicant to tap the existing 10-inch water main at the intersection of SE 8th Street and SE Everett Road and extend the 8-inch water main to the easternmost property line of Camas Woods.

Scenario 1:
If Camas Woods (SUB24-1002) is constructed prior to the currently proposed Camas Woods II (SUB25-1003), the applicant for Camas Woods II (SUB25-1003) is required to tap the 8-inch water main at the intersection of SE 8th Street and proposed A Street and extend a minimum 8-inch water main north that is designed to serve the proposed development of Camas Woods II (SUB25-1003).

Scenario 2:
If the currently proposed development, Camas Woods II (SUB25-1003) is constructed prior to the previously issued decision for Camas Woods (SUB24-1002), the applicant is required to tap the existing 10-inch water main at the intersection of SE 8th Street and NE Everett Street and extend a minimum 8-inch water main east to serve the proposed development, Camas Woods II at the intersection of SE 8th Street and proposed 'A' Street. Additionally, the applicant is required to extend the minimum 8-inch water main in SE 8th Street to the easternmost property line of Parcel No. 178109000 for the future Camas Woods development (SUB24-1002).

The preliminary site plans dated April 15, 2025 (Exhibit 7) include the Composite Utility plan on sheet P9.0. An 8-inch domestic water main is shown to be extended from the 10-inch water main at the intersection of SE Everett Road (SR 500) and SE 8th Street and extending to the easternmost property line of Parcel No. 178109000 for the benefit of the future Camas Woods development. An 8-inch by 8-inch tee is shown at the intersection of SE 8th Street and proposed 'A' Street and extending north to serve the proposed Camas Woods II development.

[Single-Family Lots]
Per the Camas Design Standard Manual (CDSM), individual water services are to be a minimum 1-inch service from the water main to each single-family lot with meter boxes located in planter strips or at the back of sidewalk in areas where the sidewalk is curb tight. Locations behind the sidewalk are to be within the right-of-way on public roads and adjacent to the right-of-way within the private road tracts. The preliminary utility plan provides for a minimum 1-inch domestic water service to each of the proposed single-family lots and as shown each of the single-family water services are shown to be

located per the CDSM for proposed Lots 1 through 8 and Lots 14 through 78. A water service is not shown for proposed Lot 13.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should submit revised water utility plans showing a minimum 1-inch water service from the water main to Lot 13 with the water meter box installed in the planter strip along the frontage of Lot 13.

The preliminary utility plan shows the 1-inch water services for proposed Lots 9 through 12 to be extended to a bank of water meters located outside of the future right-of-way on proposed SE 7th Avenue on the private street Tract B. A water utility easement is to be recorded over the water meters and meter boxes proposed for these proposed lots.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should submit revised water utility plans showing the water utility easement over the water meters and meter boxes located in Tract B for Lots 9, 10, 11, and 12.

Staff recommends a condition of approval that prior to final plat approval, the applicant should provide a water utility easement over the water meters and meter boxes located in Tract B for Lots 9, 10, 11, and 12.

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 distance between fire hydrants, as indicated in the fire code, is allowed to be doubled when automatic fire sprinklers are installed throughout the development, with approval from the Fire Marshal.

The preliminary utility plan (Exhibit 7) shows three (3) proposed fire hydrants located near the intersection of proposed 'A' Street and proposed SE 7th Avenue; near the intersection of proposed 'A' Drive and proposed SE 6th Avenue; and near the intersection of proposed SE 6th Avenue and N Johnson Street. Proposed N Johnson Avenue dead-ends approximately 190-feet from the proposed fire hydrant near the intersection of proposed N Johnson Street and proposed SE 6th Avenue, at the northernmost property line of Parcel No. 178109000.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant is to work with Engineering and the Fire Marshal's Office to determine if a fire hydrant is required at the dead-end of proposed N Johnson Street.

[Irrigation]
Per CMC 17.19.040.C.4.d landscaping in Open Space tracts must have a separate irrigation service and 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 landscape plans. The owner of the open space tract is responsible for all costs associated with the installation of a separate irrigation meter, backflow prevention device, and water usage. The irrigation meter and backflow prevention device are to be placed at the right-of-way. Landscaping water services and meters are to be privately owned and maintained by the property 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 and landscape plans that are to include:

- The location and size of all irrigation meters.
- If the irrigation meter is applicant requests a smaller irrigation meter than what is shown on the approved plans, the applicant may be required to pay a restocking fee.
- The irrigation meter/s and backflow prevention devices are to be located at the right-of-way.

Irrigation meters for the benefit of landscaping are required in all the Open Space Tracts and are to be owned and maintained by the property 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 and landscape plans with the following note:

- The irrigation system is to be owned and maintained by the property owner and/or Homeowners' Association (HOA).

Staff recommends a condition of approval that prior to final plat approval, the applicant should add a note to the final plat stating that irrigation meters for the benefit of landscaping are required in all the Open Space Tracts and are to be owned and maintained by the property owner and/or Homeowners' Association (HOA).

Proposed Plat Note:

- Irrigation meters for the benefit of landscaping are required in all the Open Space Tracts and are to be owned and maintained by the property owner and/or Homeowners' Association (HOA).

FINDINGS: Staff finds that the proposed project, as conditioned, can and will meet the requirements for water in accordance with CDSM and CMC 17.19.040.C.4 Water System.

Storm Drainage:

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 the Preliminary Stormwater Technical Report (PTIR) (Exhibit 9) prepared by AKS Engineering & Forestry and dated April 2025, the site is composed of two parcels (178109000 and 17820900) and is approximately 8.79 acres (382,892 SF) in size. Both parcels consist of single-family residences and outbuildings and are heavily forested.

Per Ecology's *2024 Stormwater Management Manual for Western Washington (SWMMWW*) Figure 1-3.2: Flow Chart for Determining Requirements for Redevelopment, if the land-disturbing activities are greater than 7,000-square feet, minimum requirements #1-#9 will apply. The proposed development will have land-disturbing activities greater than 7,000 square feet, therefore Minimum Requirements (MR) 1 through 9 apply.

The PTIR was prepared in accordance with Ecology's *2024 Stormwater Management Manual for Western Washington (SWMMWW)*. Ecology's 2024 Stormwater Management Manual for Western Washington went into effect on August 1, 2024.

The PTIR was prepared using Figure 1-3.1: Flow Chart for Determining Requirements for New Development in lieu of Figure 1-3.2: Flow Chart for Determining Requirements for Redevelopment. The site is technically being redeveloped as there are two existing single-family residences, outbuildings, garage, and access driveways from SE 8th Street that will be demolished for the proposed development. However, due to the amount of land-disturbing activities, Minimum Requirements 1-9 apply per both Flow Charts. The site is heavily forested with evergreen and deciduous trees; and shrubs, turfgrass, and field grass. Existing grades range from flat to between 5 to 10 percent with portions of the site having slopes up to 15 percent.

MR #1 – Preparation of Stormwater Site Plans: The preliminary stormwater utility plans (Exhibit 7, Sheet P10.0), dated April 15, 2025, are incomplete. The public stormwater collection and conveyance systems are to be prepared per the Camas Design Standards Manual (CDSM), CMC 17.19.040.C.3, and

CMC 14.02 Stormwater. Stormwater detention and treatment are to be prepared in accordance with Ecology's 2024 SWMMWW.

The stormwater plans are to include sizing of storm mains, laterals, and manholes. Plans and profiles are required for the storm mains with invert elevations included for manholes and catch basins. Design plans for stormwater treatment and infiltration/detention are to be included as a component of the stormwater plans.

Public stormwater systems, which consist of catch basins, manholes, and conveyance piping are located with the city's right-of-way and are owned and maintained by the city. The stormwater systems outside of the right-of-way, which may include as catch basins, conveyance piping, storm manholes, or water quality manholes are to be maintained by the Homeowners Association (HOA).

Staff recommends a condition of approval that prior to engineering plan approval the applicant should submit a revised stormwater plans with a note stating that all components of the stormwater system that are located outside of the city's right-of-way which may include as catch basins, conveyance piping, storm manholes, or water quality manholes are to be owned and maintained by the Homeowners Association (HOA).

Staff recommends a condition of approval that prior to final plat approval the applicant should be required to add a note stating that "all components of the stormwater system located outside of the city's right-of-way, which may include catch basins, conveyance piping, storm manholes, or water quality manholes are to be owned and maintained by the Homeowners Association (HOA)".

Proposed Plat Note:

- All components of the stormwater system located outside of the city's right-of-way, which may include catch basins, conveyance piping, storm manholes, or water quality manholes are to be owned and maintained by the Homeowners Association (HOA).

Per CMC 14.02.090.A-C states that stormwater facilities located with residential subdivisions are to be owned and maintained by the Homeowners Association (HOA) with right of access to be granted to the city for inspection purposes. Therefore, access to stormwater facilities for maintenance and inspections purposes is to be provided. The preliminary stormwater plans do not include access roads to said facilities.

Staff recommends a condition of approval that prior to engineering plan approval the applicant should submit a complete set of stormwater plans for review and approval, per MR #1 of the TIR. The revised stormwater plans are to include access roads to Tracts D, F, and I for purposes of maintenance and inspections. The access roads are to be a minimum of 10-feet-wide and constructed of hard surfaces, e.g. rock or asphalt.

MR #2 – Construction Stormwater Pollution Prevention Plan (SWPPP): The SWPPP was not included in the preliminary TIR.

Staff recommends a condition of approval that prior to any land-disturbing activities the applicant should submit an electronic version of the required SWPPP, per MR #2 of the preliminary TIR. The contractor is required to have a copy of the SWPPP on site at all times.

MR #3 – Source Control of Pollution: The preliminary TIR addresses two proposed BMPs for source control, which are included in Section D of the preliminary TIR.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should submit a complete set of erosion and sediment control (ESC) plans that include all the

applicable erosion and sediment control Details and BMPs as noted in the CDSM and Ecology's SWMMWW.

MR #4 – Preservation of Natural Drainage Systems and Outfalls: The preliminary TIR does not mention or discuss the presence of nor the preservation of natural drainage systems and outfalls.

Staff recommends a condition of approval that prior to engineering plan approval, the final TIR is to be is to address Minimum Requirement #4, Preservation of Natural Drainage System and Outfalls, per Ecology's *2024 Stormwater Management Manual for Western Washington* and resubmitted for review.

MR #5 – On-Site Stormwater Management: The preliminary TIR addresses this requirement in Section E of the preliminary TIR. Per the preliminary TIR, the project proposes to meet the LID performance Standards and not use List #2 of Ecology's *SWMMWW*.

Based on the Preliminary Geotechnical Report (Exhibit 5), dated February 18, 2025, infiltration of stormwater runoff is feasible. Therefore, stormwater runoff from pollution-generating surfaces will be collected and treated via mechanical filtration water quality manholes prior to conveyance to the underground infiltration galleries. Treatment for phosphorous is required as stormwater is discharged into Lacamas Creek and Lacamas Lake which are on Ecology's 303D list. After treatment the stormwater runoff will be retained and/or infiltrated and released at pre-development flow rates.

Per CMC 14.02 and CMC 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.

The preliminary site plans (Exhibit 7), sheet P7.0, propose a system of shallow drainage diversion swales and a private drywell for roof drain laterals on Lots 1 through 78. The individual drywells for roof drains are shown on Lots 1 through 78. There are rear yard shallow drainage diversion swales shown on Lots 9 through 21 and Lots 61 through 74. The shallow drainage diversion swales for Lots 22 through 49 which are shown to be shared drainage swales located on the rear property lines of Lots 22 through 49.

Staff is not in support of the shallow rear yard drainage swales, as over time, the property owners are likely to fill-in the swales which will allow for surface water to flow onto adjacent properties. Additionally, staff is not in support of the shallow drainage swale that is located on the rear property lines of Lots 22 through 49. This swale will be backfilled when rear yard fences are installed.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should submit a revised stormwater plan the rear yard drainage system, locating a separate rear yard drainage system for Lots 22 through 35 and a separate system for Lots 36 through 49. Additionally, rear yard drainage systems and roof drain dry wells are to be placed in a stormwater easement across all applicable lots, with a note on the stormwater plans stating that the rear yard

drainage system on Lots 1 through 78 are to be owned and maintained by the property owners of the individual Lots.

Staff recommends a condition of approval that prior to final plat approval, a note is to be added to the plat stating that all rear yard stormwater systems are to be owned and maintained by the individual property owners of Lots 1 through 78.

Proposed Plat Note: All rear yard stormwater systems are to be owned and maintained by the individual property owners of Lots 1 through 78.

MR #6 – Runoff Treatment: The preliminary TIR addresses this requirement in Section F. The proposed development is located within the Lacamas Lake watershed and therefore all pollution-generating surfaces require phosphorus treatment. The preliminary TIR states that both pollution-generating and non-pollution-generating runoff will be treated with mechanical filter cartridge water quality manholes prior to conveyance to the underground infiltration galleries located in Tracts F and I.

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 maintained by the homeowners within the development in accordance with city standards.

Staff recommends a condition of approval that prior to engineering plan approval the stormwater plans are to include a note that states that private stormwater systems located in Tracts B, D, F, I, and H, are to be owned and maintained by the property owner and/or Homeowners' Association (HOA).

MR #7 – Flow Control: The preliminary stormwater report (TIR), addresses this requirement in Section G with the utilization of underground infiltration galleries on Tracts F and I, individual downspout dry wells for Lots 1 through 78, and the rear yard shallow drainage swales for Lots 9 through 74.

Staff recommends a condition of approval that prior to engineering plan approval, the stormwater utility plans are to be submitted with specific design information for the proposed underground infiltration galleries on Tracts F and I, individual downspout dry wells for Lots 1 through 78, and the rear yard shallow drainage swales for Lots 9 through 74.

MR #8 – Wetlands Protection: Section H of the preliminary TIR sufficiently discusses the Type A III wetland that is located approximately 650-feet northwest of the proposed development. Between the proposed development and the existing wetlands are large parcels with single-family residences and outbuildings. Therefore, the proposed development does not directly nor indirectly impact the wetlands to the northwest.

MR #9 – Operation and Maintenance (O&M): The preliminary TIR did not provide an O&M manual for the either the underground infiltration galleries or the mechanical water quality filter manholes. An O&M manual specific to the maintenance requirements and maintenance challenges of the infiltration galleries is to be submitted for review, as the underground infiltration galleries are not included in the City's June 2022 *Stormwater Sewer System Operations & Maintenance Manual*

Staff recommends a condition of approval that prior to engineering plan approval the final stormwater TIR is to be submitted with an O&M Manual specific to the underground infiltration galleries and the City of Camas June 2022 *Stormwater Sewer System Operations & Maintenance Manual* and the maintenance requirements for the water quality filter manholes, catch basins, etc. that are located outside of the city's right-of-way.

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. This

maintenance period shall run concurrently with the city's required two-year warranty period that begins at final acceptance.

Prior to the end of the two-year warranty period, and upon inspection by the city, the applicant shall ensure that fully functional stormwater facilities are turned over to the Homeowners' associations (HOAs)/homeowners). At completion of the 2-year warranty period, the stormwater facilities on Tracts B, D, F, H, and I will be owned and maintained by the Homeowner's Association/homeowners.

Staff recommends a condition of approval that prior to final plat approval the following notes should be added to the final plat stating the following:

- The stormwater facilities located in Tracts B, D, F, I, and H are to be owned and maintained by the property owners and/or homeowners/Homeowner Association (HOA) at the end of the 2-year warranty period, which expires 2-years after final acceptance.
- Right-of-entry is to be granted to the city for inspection purposes of the stormwater facilities located on in Tracts B, D, F, I, and H.
- The private rear yard area drain/wet wells and/or shallow drainage diversion swales on Lots 1 through 78 are to be owned and maintained by the HOA or the applicable Lot owners upon which the private stormwater systems and easements are located.

Proposed Plat Notes:

- Lots 1 – 8 and Lots 13 – 78: A minimum 15-foot-wide stormwater easement over the roof drain dry well system and drainage swales located at rear of the lots are to be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA). Construction of permanent structures with the stormwater easements are not permitted. Permanent structures include but are not limited to retaining walls, patios, play structures, trees, shrubs, etc.
- Lot 9: A minimum 10-foot-wide stormwater easement over the drainage swale located along the southern property line is to be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA).
- Tract B and Lots 9-12: The stormwater catch basin, manhole, and conveyance piping located in the southwest corner are to be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA).

FINDINGS: Staff finds that the proposed project, as conditioned, can and will meet the requirements for stormwater in accordance with CDSM, CMC 14.02 Stormwater Control, and CMC 17.19.040.C.3 Storm Drainage.

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).

The proposed development is composed of two parcels (178109000 and 17820900) and is approximately 8.79 acres (382,892 SF) in size.

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. As the proposed land-disturbing activities are greater than an acre in size financial security for erosion and sediment control (ESC) is to be submitted to the city prior to start of any land-disturbing activities.

Staff will provide documentation to the applicant with the approved amount and the acceptable format for ESC financial security.

Staff recommends a condition of approval that prior to any land-disturbing activities, the applicant should submit an approved form of financial security for erosion and sediment control. Staff will provide documentation with the financial security amount.

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

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, an electronic copy of Ecology's NPDES GCSWP permit, an electronic copy of the SWPPP, and the financial security for erosion and sediment control are to be submitted to the city.

Per CMC 17.21.030.A installation of erosion prevention / sediment control measures are required per an approved erosion and sediment control plan.

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

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.

The preliminary stormwater plans (Exhibit 7, P10.0) are proposing that after treatment via a series of mechanical treatment manholes, stormwater will be detained and released via two (2) stormwater infiltration galleries that will infiltrate stormwater runoff. The ownership and maintenance responsibility for the infiltration galleries will be the responsibility of the Homeowners Association after the two year warranty period expires.

Based on the proposed method for detaining and disposing of stormwater runoff via the infiltration galleries, the applicant is to include as a component of the erosion control plans a series of temporary detention ponds throughout the site to be used during infrastructure construction. The infiltration galleries and the mechanical treatment water quality manholes are not to be brought online until the proposed development is fully stabilized.

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. The ESC plans are to include a series of temporary detention ponds throughout the site to be used during infrastructure construction. The infiltration galleries and the mechanical treatment water quality manholes are not to be brought online until the proposed development is fully stabilized.

FINDINGS: Staff finds that the proposed project, as conditioned, can and will meet the requirements for erosion control in accordance with the CDSM and CMC 14.06 Erosion Control.

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 10-inch sanitary sewer force main on the north side of NE Everett Street (SR 500), approximately 760 feet south of the intersection of NE Everett Street and NE Everett Drive. ***Staff is not in support of the applicant extending or discharging into the existing 10-inch force main in NE Leadbetter Road.***

The preliminary composite utility plan (Exhibit 7, P9.0) dated April 15, 2025, proposes to construct a sanitary sewer force main designed to serve the proposed development from the easternmost end of Parcel No. 178109000 east through SE 8th Street to the intersection with SE Everett Road (SR 500) and south for approximately 350 feet to a connection point to be determined acceptable to the city. The approved connection point will be based on the city's Modeling Analysis for the Leadbetter Lift Station.

Staff is in support of the applicants' request to serve the proposed development with grinder pumps and a force main system with the following requirements:

- The grinder pumps for the single-family residential lots are to be per the City's requirements.
- The applicant is required to construct a sanitary sewer force main from the proposed development to the Leadbetter Lift Station (LS), via a connection point to be determined acceptable from the City's Modeling Analysis.
- City approved grinder pumps for the single-family residences are to be owned and maintained by the individual homeowners.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should revise the sanitary sewer utility plans as follows:

- The grinder pumps for single-family residential uses are to be per the city's Camas Design Standards Manual (CDSM).
- Construct a sanitary sewer force main from the proposed development to the Leadbetter Lift Station (LS), via a connection point to be determined acceptable from the City's Modeling Analysis.
- City approved grinder pumps for the single-family residences are to be owned and maintained by the individual homeowners.

Staff recommends a condition of approval that prior to final plat approval, the applicant should include a note stating that grinder pumps installed for the single-family residences are owned and maintained by the individual homeowners.

Proposed Plat Note:

- Grinder pumps installed for the single-family residences are owned and maintained by the individual homeowners.

Staff recommends a condition of approval that prior to engineering plan approval of the proposed Camas Woods II development, the applicant should construct the offsite sanitary sewer force main from the proposed development to a connection point that is determined to be acceptable based on the City's Modeling Analysis of the Leadbetter Lift Station.

[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 prior to final plat approval. If applicable, any water rights associated with the decommissioned well(s) shall be transferred to the City.

Staff recommends a condition of approval that prior to final acceptance, the applicant should provide documentation to the city that any existing wells, or septic systems have been properly decommissioned in accordance with State and County guidelines. Additionally, any water rights associated with a decommissioned well shall be transferred to the City.

FINDINGS: Staff finds that the proposed project, as conditioned, can and will meet the requirements for sanitary sewer in accordance with the CDSM and CMC 17.19.040.C.2 Sanitary Sewers.

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.A Private Streets, CMC 17.19.040.B Streets and the Camas Design Standards Manual (CDSM).

Street naming is the responsibility of the Building Official. The future (street names), as shown on the preliminary site plans (Exhibit 7) dated April 15, 2025, and discussed throughout the staff report, are street names that were provided by the developer. The preliminary street names are subject to change during the engineering plan approval process.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should submit the final engineering plans with street names for all the proposed local roads that have been assigned and approved by the Building Official.

[Public Roads]
Per 17.19.040.B.1 half-width street improvements along an existing roadway is required when determined appropriate by the city engineer, shall include utility easements, pedestrian pathway, storm water drainage, street lighting and signage, bike lanes, and improvements to the centerline of the right-of-way as necessary to provide the minimum structural street section per CDSM. Additionally, the full depth road section improvements are to provide a minimum 24-foot-wide paved width to allow for 2-way vehicular movements.

Per CMC 17.19.040.B.5 dedication of additional right-of-way may be required for development improvements 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.

Per CMC 17.19.040.B.12.e Curb return radii shall be no less than thirty-five feet on arterial and collector streets, and no less than twenty-five feet on all other streets. Larger radii may be required at the direction of the city engineer.

Proposed Interior Public Roads:
The proposed Camas Woods II development is part of the North Shore Subarea Plan and subject to the North Shore Street Standards section per CDSM.

Per the CDSM, Section III, the North Shore Subarea Plan, North Shore Local Street Standards are as follows:

- A 54-foot right-of-way width;
- 28-feet of paved width that includes two 10-foot-wide shared travel lanes for vehicles and bikes;

- An 8-foot-wide parking lane on one side of the road only
- 6-foot-wide detached sidewalks and 7-foot-wide planter strips on both sides of the road.

The preliminary plat (Exhibit 7, P3.0) dated April 15, 2025, show the following proposed interior local public roads:

- 'A' Street;
- SE 7th Avenue;
- N Johnson Street;
- 'A' Drive;
- SE 6th Avenue

The proposed interior public roads as shown on the preliminary plat meet the North Shore Subarea Local Street Standard.

Additionally, the curb radii at the intersections of the interior local roads show the minimum 25-foot curb radius, with the exception of the curb radii at the intersection of proposed local 'A' Street and SE 8th Street, which is a classified as a collector. The curb radii at the intersection of proposed local road 'A' Street and SE 8th Street are shown as 35-foot curb radius on both sides of the intersection, which meets the minimum curb radius for collectors and arterials.

[Block Lengths]
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 standard manual. The maximum block length for a Local Roadway Classification is 600 feet. 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.

The proposed interior local road's block length from the intersection of proposed SE 6th Avenue and N Johnson Street to the intersection of proposed SE 6th Avenue and 'A' Drive is approximately 400-feet in length, which is less that the maximum block length requirements.

[Access Spacing]
Per CDSM, Access Spacing Standards Table 3: The Access Spacing Standards for a roadway classified as a local road is a minimum of 110-feet and a maximum of 600-feet. The access spacing standard for roadways classified as collectors is 330-feet minimum and a maximum of 600-feet.

Camas Woods II is shown to take access of SE 8th Street, which is classified as a collector per th North Shore Subarea Plan. The Foursquare Gospel Church is located at the intersection of SE Everett Road and SE 8th Street. There are two existing drive accesses to the church on the north side of SE 8th Street, and there are four existing single-family driveway accesses on the south side of SE 8th Street.

The preliminary plat (Exhibit 7, P3.0) dated April 15, 2025, shows the access to the proposed development to be approximately 776-feet and 415-feet respectively east of the two access drives to the Foursquare Gospel Church. The nearest to the church is approximately 415-feet west of the access to the proposed development, which meets the access spacing standard for a collector.

If Camas Woods II is constructed prior to Camas Woods (SUB24-1002), the proposed developments primary access will be from the intersection of SE Everett Road (SR 500) and SE 8th Street. If Camas Woods II is constructed after Camas Woods (SUB24-1002), the proposed development will have access from off SE 8th Street from the west via SE Everett Road (SR 500) and SE 8th Street; and from the east off SE 8th Street through Camas Woods (SUB24-1002) whose primary access will be from NE Everett Drive.

The following discussion is based on the requirements for Camas Woods II (SUB25-1003) taking access from SE Everett Road.

Proposed SE 8th Street Extension:

The existing SE 8th Street is an unimproved road that is designated as a proposed minor road aka a collector street per the North Shore Subarea Plan. As such the road section for the proposed extension to the east of SE 8th Street is to be per the North Shore Subarea Plan, North Shore Collector Street Standard.

Per the CDSM, Section III, North Shore Subarea Plan, North Shore Collector Street Standards are as follows:

- A 60-foot-wide right-of-way width;
- 36-feet of paved width that includes two 10-foot-wide drive lanes, one in each direction, divided by a 2-foot buffer strip; and 5-foot bike lanes on each side of the road.
- 6-foot-wide detached sidewalks and 6-foot-wide planter strips on both sides of the road.

Per 17.19.040.B.1 half-width street improvements along an existing roadway is required when determined appropriate by the city engineer, shall include utility easements, pedestrian pathway, storm water drainage, street lighting and signage, bike lanes, and improvements to the centerline of the right-of-way as necessary to provide the minimum structural street section per CDSM. Additionally, the full depth road section improvements are to provide a minimum 24-foot-wide paved width to allow for 2-way vehicular movements.

Per CMC 17.19.040.B.5 dedication of additional right-of-way may be required for development improvements 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.

Per CMC 17.19.040.B.12.e Curb return radii shall be no less than thirty-five feet on arterial and collector streets, and no less than twenty-five feet on all other streets. Larger radii may be required at the direction of the city engineer.

The preliminary site and street plans (Exhibit 7, P8.0), dated April 15, 2025, show the proposed half-width frontage improvements and right-of-way dedication along the frontage of future SE 8th Street from the westernmost property line of Parcel No. 178209000 to the easternmost property line of Parcel No. 178109000 to meet the North Shore Collector Street Standard. The curb radii on both sides of the intersection of future SE 8th Street and proposed 'A' Street are shown to be the required 35-foot curb radius.

The existing paved segment of SE 8th Street from SE Everett Street to the westernmost property line of Parcel No. 17820900, is an unimproved road that consists of a 60-foot right-of-way width and approximately 20-feet of paved surface. East of Parcel No. 178209000, SE 8th Street transitions to a gravel road that extends to the easternmost property line of Parcel No. 178109000 and provides access to three (3) single-family residences on the south side of the future SE 8th Street improvements.

Per the pre-applicant meeting notes (PA24-1002) the existing gravel road and the three driveways are to be removed, and new asphalt driveways are to be constructed for access to each of the single-family residences. These existing gravel driveways are to be constructed to consist of a minimum 12-foot-wide paved surface, paved perpendicular to SE 8th Street. Staff also recommends that any existing mailboxes impacted by the improvements should be relocated adjacent to the new pavement. The Camas postmaster may need to be contacted by the applicant to determine the exact locations of any impacted mailboxes.

However, the preliminary site and street plans (Exhibit 7, P8.0) dated April 15, 2025, do not address any of the improvements listed in the pre-applicant notes on the south side of SE 8th Street from the

westernmost property line of Parcel No. 178209000 to the easternmost property line of Parcel No. 178109000 as stated in the pre-application meeting notes.

> Staff recommends a condition of approval that prior to engineering plan approval, the applicant should submit revised engineering plans with the following improvements on the south side of SE 8th Street:
>
> - Remove the existing gravel road at the end of SE 8th Street and the three gravel driveways on the south side of SE 8th Street.
> - Construct a minimum 12-foot-wide asphalt driveway for access to each of the single-family residences.
> - The new driveways are to be perpendicular to the SE 8th Street improvements and are to be paved a minimum of 20-feet south from the edge of the new pavement.
> - Any existing mailboxes are to be relocated adjacent to the new paved surface.
> - The Camas postmaster is to be contacted to determine the exact location of mailboxes.

Existing SE 8th Street:
Per the Camas Design Standards Manual, the minimum paved width for two-way vehicular movement is a 24-foot-wide paved surface. Per the pre-applicant meeting notes (PA24-1002) the applicant will be required to improve the existing SE 8th Street to provide the minimum 24-foot-wide paved surface from the westernmost edge of Parcel No. 178209000, Camas Woods II, to the intersection of SE 8th Street and SE Everett Street (SR 500).

However, the preliminary site and street plans (Exhibit 7, P8.0) dated April 15, 2025, do not include the required improvements from the westernmost property line of Parcel No. 178209000 to the intersection of SE 8th Street and SE Everett Road (SR 500).

> Staff recommends a condition of approval that prior to engineering plan approval, the applicant should submit revised engineering plans with the following improvements on SE 8th Street from the westernmost property line of Parcel No. 178209000 to the intersection with SE Everett Road (SR 500):
>
> - Provide a minimum 24-foot-wide paved surface.
> - Additional pavement width may be required at the intersection of SE 8th Street and SE Everett Road (SR 500) to allow for right and left-turn movements.
> - Ensure that the two existing driveway accesses to the Grace Foursquare Church remain unobstructed.
> - The existing community mailbox located on the south side of SE 8th Street is to be relocated adjacent to the new paved surface or as determined by the Camas postmaster.

[Private Roads]
Per the CDSM Table 1 – Guidelines for Geometry of a Private Roadway – Private Street A, a private road less than or equal to 150-feet, as measured from the centerline of the adjacent road, with access to four or less dwelling units is to consist of a 20-foot-wide tract, with a 12-foot paved surface, optional sidewalk, no planter strip, and no on-street parking permitted on either side.

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

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

Per CMC 17.19.040.B.12.e a minimum 25-foot curb radius is required on both sides of the private roadway.

Proposed Tract B – Private

The preliminary site and street plans dated April 15, 2025 (Exhibit 7, P8.0) shows Tract B providing access to four dwellings units (Lots 9-12), to be 24-feet-wide with a 20-foot-wide paved surface with 2-feet of clearance on both sides of the paved surface. Proposed Tract B is approximately 130-feet in length as measured from the centerline of proposed SE 7th Avenue and proposed 'A' Street. The required 25-foot minimum curb radius is not shown on either side of the private road.

Staff recommends a condition of approval that prior to engineering plan approval the applicant should be required to revise the site and street plans to include the required minimum 25-foot curb radii on both sides of Tract B.

FINDINGS: Staff finds that the proposed project, as conditioned, can and will meet the requirements for public and private roads in accordance with the CDSM and CMC 17.19.040.A Private Streets and B Streets.

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, water meter boxes, 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.

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

- Prior to the Electrical contractor's submittal of electrical plans to Clark Public Utilities, the preliminary electrical plans for streetlights, transformers, J-boxes, etc., which are prepared by others, are to be submitted to the city for review and approval.
- Any proposed streetlights for private streets are required to be metered separately and are to be owned and maintained by the HOA / homeowners.

[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. As not all required street trees can be placed within the planter strip in front of each lot, staff finds that lots without a street tree in the planter strip directly adjacent to their frontage shall be required to plant one tree within the front yard.

FINDING: Staff finds that, as conditioned, 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.

[Other Improvements]:
Block retaining wall plans that are to be reviewed and approved by development engineering are to be submitted with the civil construction application and are to include the plans, profiles, and wall sections, as well as the structural calculations.

> Staff recommends a condition of approval that prior to engineering plan approval, the applicant should be required to submit with the civil construction application all block retaining walls that are not part of a building foundation, for review and approval. The block retaining wall plans are to include the retaining wall locations, plans, profiles, and wall sections, as well as the structural calculations.

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

[ROW Dedications]:
The applicant will be required to dedicate sufficient right-of-way for construction of the following proposed public roads: 'A' Street; N Johnson Street; 'A' Drive; SE 6th Avenue; and SE 8th Street. Additional right-of-way dedication may be required for construction of left and/or right turn lanes at the intersection of SE 8th Street and SE Everett Street (SR 500).

The proposed public road names, as shown on the preliminary plat, will be revised during the civil construction application process.

[Easements]:
Staff recommends a condition of approval that prior to final plat approval, the following easements are to be recorded on the final plat for the proposed development:

- The 6-foot public utility easement (PUE) is to be located outside of the right-of-way along all the future public roads.
- A utility access and maintenance easement to the city, for the sanitary sewer system in private street Tracts B.
- A right-of-entry is to be granted to the city for stormwater inspection purposes of the stormwater facilities located in Tracts D, F, and I.
- A public pedestrian access easement over the proposed paths located in Tracts C, D, and F.
- The storm facilities located in Tracts D, F, H, and I are to be owned and maintained by the property owners, individual homeowners and/or Homeowners' Association (HOA) with a right-of-entry easement granted to the city for the purpose of inspection.
- Lots 1 – 8 and Lots 13 – 78: A minimum 15-foot-wide stormwater easement over the roof drain dry well system and drainage swales located at rear of the lots, noted on the preliminary stormwater plan (Exhibit 7, P10) for the benefit of Lots 1 through 78, are to be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA). Construction of permanent structures with the stormwater easements are not permitted. Permanent structures include but are not limited to retaining walls, patios, play structures, trees, shrubs, etc.
- Lot 9: A minimum 10-foot-wide stormwater easement over the drainage swale located along the southern property line is to be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA).
- Tract B and Lots 9-12: The stormwater catch basin, manhole, and conveyance piping located in the southwest corner are to be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA).
- A 100-foot-wide BPA Easement located in Tract D, Open Space.

FINDING: Staff finds that, as conditioned, adequate provisions for dedications, easements and reservations 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.

Dimensional Standards

The parcel is zoned North Shore High-Density Residential (HD-NS) and must follow the dimensional standards per CMC 18.09.050 Table 1.

[Density]: The minimum density permitted is 10 units per acre for a total of 72 units. The maximum density is 18 units per acre for a total of 129 units. The applicant is proposing 78 units. Staff finds the density requirements are met for the proposal.

[Lot Dimensions]: The North Shore High-Density zone requires lots to be a minimum of 20 feet wide, 60 feet deep, and 1,800 square feet total. Each proposed lot will be no less than 20 feet wide, 95 feet deep, and a total of 1,900 square feet. Staff finds the lot sizes meet the required lot dimensional standards.

[Lot Coverage]: The maximum lot coverage is 65%. Staff finds this shall be listed as a plat note.

[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 parcels to the north and east are zoned North Shore Low Density Residential. Therefore, the lots within the proposed development that border this zone shall be the largest size permitted in the North Shore High Density zone. However, the High-Density zone does not have a maximum lot size limitation. Therefore, staff finds the beveling requirements are not applicable.

[Setbacks]: The required setbacks for lots in the North Shore High-Density zone are as follows:

- Minimum Front Yard: 10 feet
- Minimum Front Yard at Garage: 20 feet
- Minimum Side Yard: 3 feet unless attached, then assume zero lot line
- Minimum Rear Yard: 10 feet

The setbacks shown on the preliminary plat meet the required setbacks. Staff finds the setbacks shall be shown on the final plat.

FINDING: Staff finds the proposed lot sizes can conform to the requirements of the North Shore High Density zone 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 homes. Per CMC 17.19.030.F.6 stormwater facilities 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. The storm facility is approximately 35

feet from SE 7th Avenue. Staff finds if the storm facility is within 30 feet of the street or an accessory structure, then a ten-foot L2 landscaped buffer is required.

[Double Frontage Lots]: Per CMC 17.19.030.D.6.a., double frontage lots require a ten-foot-wide landscape tract with trees, shrubs, and groundcover. Lots 1-8 and 75-78 along SE 8th Street are considered double frontage lots. The preliminary plans show Tract A and Tract J as a ten-foot-wide tract with trees. However, shrubs and ground cover are required and shall be shown on the landscape plan. Staff recommends a condition of approval that shrubs and groundcover per the double frontage lot standards be shown on the landscape plan.

[Tree Density]: A minimum of 30 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 1.62 acres. Therefore, the net developable acreage is 7.18 acres, requiring 215 TUs. The arborist report recommends removal of the proposed trees due to grading impacts, tree health, and windthrow potential. The tree report indicates that 373 TUs will be retained which accounts for over half of the required TUs. There will be an additional 81 trees (78 streets trees and 3 site trees) planted for a total of 454 TUs. Per the North Shore standards, 50% of the tree density must be retained on site. The required tree density for the site is 215 TUs and the applicant is retaining 373 TUs. Staff finds this requirement is met.

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.

Parking

Per CMC 18.11.130, two parking spaces per single family dwelling or row house is required. The proposal for 78 attached single-family homes includes a garage and a driveway to provide two spaces. Staff finds the one car garage and the driveway meets the minimum parking requirements of two spaces.

Per CMC 17.07.040.B.10.e., when the proposed development's average lot size is 7,400 square feet or less, one additional off-street parking space shall be required for every five units. These spaces are intended to be located within a common tract. The proposal includes an average lot size less than 7,400 and a total of 78 units. If one space is required for every five units, then 16 additional off street parking spaces are required. The applicant is proposing 16 off-street parking spaces with Tract C, F, and I. Staff finds the off-street parking space requirements are met.

Landscaping is required around the perimeter of parking areas per CMC 18.13.060.A. The parking area in Tract G has perimeter landscaping along the perimeter of the parking stalls, however, the landscaping does not wrap around the entire parking area, which includes the west and north side of the drive isle. Staff finds parking perimeter landscaping is required along the west and north side of the drive isle in Tract G.

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.

The following retaining walls require a separate building permit application and inspections by the building department:

- Retaining walls that are part of a building foundation.
- Standalone poured in-placed concrete and rebar retaining walls.

The following are retaining walls require a submittal and inspections by development engineering:

- Retaining walls that are not part of a building foundation, and are constructed during the civil site improvements, are to be submitted to development engineering for review, approval, and construction inspection.

Signage
If signs are proposed, they must meet CMC 18.15 and may require a building permit.

FINDING: Staff finds that this development, as conditioned, can or will meet any design, shape, and orientation standards of the proposed lots.

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

Traffic Impact Analysis/Study

The applicant's SEPA checklist (Exhibit 11) was submitted with the land-use application in April 2025. WSDOT requires an ICE for intersection improvements on state routes (SRs). The proposed improvements for Camas Woods II include the intersection of SR 500 (NE Everett Street) and SE 8th Street. The applicant included the WSDOT required ICE Report in the list of prepared or to be prepared environmental information in Section 8 of the SEPA Checklist.

The applicant applied for the ICE reimbursable agreement to WSDOT in February 2025 and is in the process of applying for approval of the applicant's ICE report from WSDOT and the City of Camas.

> Staff finds a condition of approval is warranted that prior to engineering plan approval, the applicant should be required to address all comments from Washington State Department of Transportation (WSDOT) and the City of Camas (COC) after said reviews of the ICE Report.

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

Based on the Transportation Impact Study (TIS) (Exhibit 6), dated April 2025, and prepared by Kittelson & Associates, the proposed development will generate approximately 544 ADTs, which triggered the requirement for a TIS. The number of ADTs are based Land-Use Code (LUC) 215 for single-family attached homes.

[Trip Generation and Distribution]:
As shown on Table 2 – Estimated Site Trip Generation (page 6) in the TIS (Exhibit 6), the following Land-Code and number of dwelling units provided the average daily trips (ADTs) and the number of AM and PM peak hour trips based on the 11th Edition ITE Trip Generation Manual.

- Land-Use Code 215 – single-family attached, 78 units = average 544 ADTs, for a total of 35 AM Peak Hour Trips (9 In / 29 out); and a total of 43 PM Peak Hour Trips (25 In / 18 out).

[Capacity Analysis]:
City of Camas Concurrency Review:
The City of Camas has reviewed the Transportation Impact Study (TIS) and concur with the failing intersections noted below. The intersections noted below are identified in Table 3 - Projected Weekday AM Peak Hour Study Intersection Operations Summary (Exhibit 6, page 14) and in Table 5 – Projected Weekday PM Peak Hour Study Intersection Operations Summary (Exhibit 6, page 17).

The intersections were evaluated at Year 2024 without Project and Year 2030 with Project will operate at a LOS F, depending on the noted intersection. The intersections that are currently projected to be at a LOS F are noted below:

1. NE 232nd Avenue & NE 28th Street (AM Peak) – Clark County Jurisdiction
2. NE 232nd Avenue & NE 28th Street (PM Peak) – Clark County Jurisdiction
3. NE Everett Street (SR 500) & NE 15th Avenue (PM Peak) - State Route/Camas Jurisdiction
4. NE Everett Street (SR 500) & NE 14th Avenue (PM Peak) State Route/Camas Jurisdiction
5. NW Lake Road & NW Sierra Street (PM Peak) – Camas Jurisdiction

Staff would note that the applicant's traffic engineer assumes in the TIS that a roundabout is installed at NE Everett Street and NE Everett Drive. While a traffic signal or roundabout installation is required by the preliminary plat approval for Camas Woods I, improvements have yet to be installed. Staff recommends that these improvements should be required prior to final acceptance of the construction of Camas Woods II. Staff finds that a condition is warranted.

> Staff recommends a condition of approval that prior to final acceptance the intersection improvements at NE Everett Street and NE Everett Drive should be constructed.

NW Lake Road & NW Sierra Street
The city of Camas has determined the mitigation requirements for this intersection.

The NW Lake Road and NW Sierra Street Intersection is currently stop controlled on the northbound approach only. The Kittelson traffic study indicates a Level of Service (LOS) F (failure) in the Camas Woods II buildout year (2030). While the intersection is currently in the Transportation Impact Fee (TIF) South District, Camas Woods II is in the TIF North District and is not currently slated to pay into proportionate share by way of TIF collection, therefore Staff recommends that a proportionate share of the new trips entering the intersection be paid by the applicant.

After a roundabout versus traffic signal alternatives analysis, the city has determined that a roundabout will be installed at NW Lake Road and NW Sierra Street.

- A roundabout meets the City's capacity criteria in 2045.
- A traffic signal does not meet the City's capacity criteria in 2045.
- A traffic signal meets the City's capacity criteria in the 2030 Camas Woods buildout year.

> Staff finds a condition of approval is warranted that prior to final acceptance of Camas Woods II, the applicant should be required to pay a proportionate share based on the cost of construction of a traffic signal at the intersection of NW Lake Road and NW Sierra Street. This share would be used to pay for a portion of the intersection improvements at this location.

[City of Camas Proportionate Shares]:
Proportionate share calculations for NW Lake Road & NW Sierra Street

Traffic Signal Construction Cost (per MacKay Sposito Alternatives Analysis – Cost Estimate, dated October 30, 2023 (Exhibit 37) = $995,000 x 1.36 (contingency and time escalation factor) = $1,353,000

- Total New PM Peak Hour Trips Entering Intersection (per DKS Technical Memorandum, dated September 22, 2023, Table 6) (Exhibit 38) = 2,230 (Total 2045) – 1,279 (Total 2023) = 951
- Cost per New PM Peak Hour Trip = $1,353,000/951 = $1,423 per New PM Peak Hour Trip
- Camas Woods II site generated PM Peak Hour Trips Entering Intersection = 9 (per Kittelson TIS)
- Camas Woods II Proportionate Share Contribution = $1,423 x 9 = $12,807.00.

Staff finds a condition of approval is warranted that prior to final acceptance of Camas Woods II, the proportionate share amount that should be paid is calculated at $12,807.00 for the NW Lake Road and NW Sierra Street Intersection improvements.

[City of Vancouver Proportionate Shares]:
The City of Vancouver has identified a list of proportionate share intersections that require the number of PM Peak Hour Trip distributions to be identified. Per Table 6, page 21, City of Vancouver Proportionate Share Fee Summary, the proposed Camas Woods II is projected to add 2 weekday PM Peak Hour Trips to the proportionate share intersection of NE 192nd Avenue and NE 13th Street from the proposed development.

Per the City of Vancouver, "the proportionate share fee amount at the following intersection is $400.00 per PM Peak Hour Trip and that the developer is required to pay the proportionate share fees associated with this intersection."

Based on the TIS, the proportionate share amount for intersection improvement projects in the City of Vancouver are as follows:

Proportionate Share Project Name	Fee Rate	Number of Trips	Proportionate Share Cost
SE 192nd Ave & NE 13th Street	$400 per PM peak hour trip	2	$800.00
Total Proportionate Share Cost			**$800.00**

Staff recommends a condition of approval that prior to final acceptance of Camas Woods II the applicant should be required to pay the proportionate share amount of $800.00 to the City of Vancouver. The applicant is to provide Camas staff with documentation of payment of said proportionate share amount.

[Collision Data]:
Per the TIS (Exhibit 6), "*There were no reported fatal crashes at the study intersections.*

None of the study intersections experienced a crash rate greater that 1.0 crashes per million entering vehicles (i.e., the metric used th the city to assess whether further analyses are warranted)".

[Site Distance Triangles]:

Staff recommends a condition of approval that prior to engineering plan approval, the street plans and the landscape plans are to include site distance triangles on the street improvement plans and the landscape plans at the following proposed intersections:

- SE 8th Street and 'A' Street
- 'A' Street and SE 7th Avenue
- SE 7th Avenue and 'A' Drive
- SE 7th Avenue and N Johnson Street;
- N Johnson Street and SE 6th Avenue
- 'A' Drive and SE 6th Avenue

The Summary of Findings and Recommendations are addressed on pages 22 through 24 of the Traffic Impact Study (Exhibit 6) and as noted below:

SUMMARY OF FINDINGS:

- By the future opening year 2030, the following study intersections are projected to not satisfy the applicable performance metrics:
  - NE 232nd Avenue/NE 28th Street (Intersection #1): AM peak hour LOS F operations with a V/C >1.0;
  - NE 242nd Avenue/NE 28th Street (Intersection #2): PM peak hour LOS F operations with a V/C >1.0;
  - NE Everett Street/NE 15th Avenue (Intersection #9): PM peak hour LOS F operations with a V/C = 0.97;
  - NE Everett Street/NE 14th Avenue (Intersection #10): PM peak hour LOS F operations with a V/C = 0.78; and
  - NW Sierra Street/NW Lake Road (Intersection #15): School PM peak hour LOS F operations with a V/C = 0.45 and PM peak hour LOS F operations with a V/C = 0.99.
- The proposed development adds one or more site-generated trips to each of the study intersections listed above that do not satisfy the applicable performance metrics prior to site development.
- The following site development impacts and potential mitigation considerations were identified.
  - NE 232nd Avenue/NE 28th Street (Intersection #1): AM peak hour LOS F operation with a V/C > 1.0
    - CCC Section 40.350.020.G.1.c.1 requires a proposed development provide mitigation when five (5) or more peak hour trips are added to a failing intersection approach on a regionally significant intersection.
    - The proposed site development is projected to add no (0) weekday AM peak hour trips to the stop controlled northbound approach when the Clark County LOS standard is not met. ***Staff concurs.***
  - NE 242nd Avenue/NE 28th Street (Intersection #2): PM peak hour LOS F operations with a V/C > 1.0
    - Implementation of interim all-way stop control at the intersection would provide acceptable operations during the weekday PM peak hour with site trips added (southbound approach LOS D with a V/C ratio of 0.83, overall intersection LOS C).
    - In the longer-term, installation of a roundabout or other alternative traffic control device and/or turn lanes may be appropriate.

    Staff finds that prior to final acceptance the applicant should install all-way stop control at the intersection of NE 242nd Avenue and NE 28th Street if deemed necessary by WSDOT. A condition of approval is warranted.

- NE Everett Street/NE 15th Avenue (Intersection #9): PM peak hour LOS F operations with a V/C = 0.97
  - No inbound site-generated trips are projected to be added to the failing eastbound approach which remains under-capacity.
  - There are intersections further to the north that drivers can use as alternative routes (including but not limited to NE 17th Avenue, NE 19th Avenue and NE 21st Avenue to the north). ***Staff concurs. No mitigation is recommended.***
- NE Everett Street/NE 14th Avenue (Intersection #10): PM peak hour LOS F operations with a V/C = 0.79.
  - No inbound site-generated trips are projected to be added to the failing eastbound approach which remains under-capacity.
  - There are intersections further to the north that drivers can use as alternative routes (including but not limited to NE 17th Avenue, NE 19th Avenue and NE 21st Avenue to the north). ***Staff concurs. No mitigation is recommended.***
- NW Sierra Street/NW Lake Road (Intersection #15): School PM peak hour LOS F operations with a V/C = 0.45 and PM peak hour LOS F operations with a V/C = 1.0.
  - The City of Camas is currently advancing design plans to construct a roundabout at the intersection but the funding for and timing of the roundabout construction was unknown at the time this report was prepared.
  - It may be appropriate for the Camas Woods 2 development to financially contribute towards the planned future roundabout through payment of a future Traffic Impact Fee methodology that incorporates the roundabout cost or a proportional share mitigation assessment program. ***See calculations and recommended condition of approval 'prior to final acceptance' above.***
- City of Vancouver, NE 192nd Avenue/NE 13th Street:
  - The proposed site development is projected to add 2 weekday PM peak hour trips to the 192nd Avenue/NE 13th Street intersection in the City of Vancouver where proportional share mitigation payments are assessed. ***Staff concurs. See calculation chart and the recommended condition of approval 'prior to final acceptance' above.***

RECOMMENDATIONS:

Based on the traffic operations analysis findings, we recommend the following traffic control changes in conjunction with the proposed Camas Woods 2 site development.

- Construct a southbound left-turn lane on SE Everett Road (SR 500) at SE 8th Street with at least 100 feet of storage. ***Staff concurs. A condition of approval prior to engineering plan approval is warranted.***
- Make a proportional mitigation contribution to the City of Camas planned NW Sierra Street/NW Lake Road roundabout project.
  - Pending City direction, the contribution could be made through (1) payment of a future Traffic Impact Fee (TIF) that incorporates the roundabout cost or (2) via a proportional share mitigation assessment program should the City choose to implement a cost sharing assessment methodology for the roundabout project (we understand City staff anticipates the future TIF program will in part fund the planned roundabout). ***Staff concurs. A condition of approval prior to final***

acceptance is warranted.

- Collaborate with WSDOT to identify and implement (if construction is required) capacity mitigation at the NE 242nd Avenue/NE 28th Street intersection in conjunction with site development.
    - Potential options identified to explore with WSDOT include but are not limited to implementation of an interim all-way stop control or payment of a proportional share contribution to a future intersection capacity improvement. ***Staff concurs. A condition of approval prior to final acceptance is warranted.***

- Post a STOP (R1-1) sign southbound on the new public street approach ("A" Street) to SE 8th Street within the project site in accordance with applicable City standards and the *Manual on Uniform Traffic Control Devices* (MUTCD). ***Staff concurs.***

- Subject to City of Vancouver concurrence and final residential unit count confirmation, pay $800 in proportionate share contributions to the 192nd Avenue/NE 13th Street intersection as identified per City of Vancouver requirements. ***Staff concurs. A condition of approval prior to final acceptance is warranted.***

- Locate and maintain site landscaping, above-ground utilities, and site signage within the site as well as at the site driveways to provide adequate intersection sight distance per applicable City requirements. ***Staff concurs. A condition of approval prior to engineering plan approval is warranted.***

- Contribute financially to the NE Everett Street/NE Everett Drive intersection roundabout design and construction if a reimbursement mechanism is identified for the new roundabout in conjunction with Camas Woods land use entitlement. ***Staff does not concur with this recommendation. A roundabout or signal is to be constructed at this intersection.***

The analysis findings presented in this study are predicated on the assumption that the Camas Woods project has reconstructed the NE Everett Street/NE Everett Drive intersection to a three-approach single lane roundabout in conjunction with site development prior to Camas Woods 2 site development.

FINDING: Staff finds that this development, as conditioned, 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 (2) 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 the stormwater facilities for compliance with this chapter. A note is to be added to the final plat granting 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 private Tract B is 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.

Chapter 18.19 Design Review

Per CMC 18.19.020., design review is required for all developments within the North Shore area. As there are no proposed buildings elevations at this time, staff recommends a condition that design review be required prior to building permit issuance.

PUBLIC COMMENTS

As of the writing of this staff report, staff one written public comments from the Department of Archaeology and Historic Preservation regarding an inadvertent discovery plan. The comment is addressed throughout the staff report.

CONCLUSION

Based on the above findings and discussion provided in this staff report, staff concludes that Camas Woods Phase II (SUB25-1003) 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 Camas Woods Phase II (SUB25-1003) 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), which includes the North Shore Design Standards, 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 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. A building permit shall be required prior to commencement of construction of a building structure.
12. At the time of building permit approval, the applicant shall pay the appropriate impact fees in accordance with the provisions of CMC 3.88.
13. 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.
14. 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.
15. 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.

16. 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.
17. 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.
18. 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, and any retaining walls.
19. The applicant shall comply with the recommendations of the geotechnical report from Columbia West Engineering (CWE), dated February 18, 2025.
20. Unless construction of this site commences within five (5) years of issuance of this decision, this permit will expire.

Special Conditions of Approval:

Planning:

21. All signage shall meet the requirements in CMC 18.15.
22. Retaining walls shall meet CMC 18.17.060.

Prior to Engineering Plan Approval:
Planning:

23. If the storm facility is within 30 feet of the street or an accessory structure, then a ten-foot L2 landscaped buffer shall be required.
24. Shrubs and groundcover per the double frontage lot standards shall be shown on the landscape plan.
25. Staff recommends that the applicant follow the recommendations in the arborist report.
26. A final landscape, tree, and vegetation plan consistent with the landscaping standards in CMC Chapter 18.13 shall 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.
27. Landscaping along the west and north side of the drive isle in Tract G shall be shown on the final landscape plan.

Engineering:

[Water]

28. Prior to engineering plan approval, the applicant shall submit revised water utility plans showing a minimum 1-inch water service from the water main to Lot 13 with the water meter box installed in the planter strip along the frontage of Lot 13.

29. Prior to engineering plan approval, the applicant shall submit revised water utility plans showing the water utility easement over the water meters and meter boxes located in Tract B for Lots 9, 10, 11, and 12.

30. Prior to engineering plan approval, the applicant is to work with Engineering and the Fire Marshal's Office to determine if a fire hydrant is required at the dead-end of proposed N Johnson Street.

[Irrigation]

31. Prior to engineering plan approval, the applicant shall submit revised water utility and landscape plans that are to include the following:

    a. The location and size of all irrigation meters.

    b. If the irrigation meter is applicant requests a smaller irrigation meter than what is shown on the approved plans, the applicant may be required to pay a restocking fee.

    c. The irrigation meter/s and backflow prevention devices are to be located at the right-of-way.

32. Irrigation meters for the benefit of landscaping are required in all the Open Space Tracts and are to be owned and maintained by the property owner and/or Homeowners' Association (HOA). The following note is to be added to the water utility plans and the landscape plans:

    a. The irrigation system is to be owned and maintained by the property owner and/or Homeowners' Association (HOA).

[Storm Drainage]

33. MR #1: Prior to engineering plan approval, the applicant shall submit a revised stormwater plans with a note stating that all components of the stormwater system that are located outside of the city's right-of-way which may include as catch basins, conveyance piping, storm manholes, or water quality manholes are to be owned and maintained by the Homeowners Association (HOA).

34. MR #1: Prior to engineering plan approval, the applicant shall submit a complete set of stormwater plans for review and approval, per MR #1 of the TIR. The revised stormwater plans are to include access roads to Tracts D, F, and I for purposes of maintenance and inspections. The access roads are to be a minimum of 10-feet-wide and constructed of hard surfaces, e.g. rock or asphalt.

35. MR #3: Prior to engineering plan approval, the applicant shall submit a complete set of erosion and sediment control (ESC) plans that include all the applicable erosion and sediment control Details and BMPs as noted in the CDSM and Ecology's SWMMWW.

36. MR #4: Prior to engineering plan approval, the final TIR is to be is to address Minimum Requirement #4, Preservation of Natural Drainage Systems and Outfalls, per Ecology's *2024 Stormwater Management Manual for Western Washington* and resubmitted for review.

37. MR #5: Prior to engineering plan approval, the applicant shall submit a revised stormwater plan the rear yard drainage system, locating a separate rear yard drainage system for Lots 22 through 35 and a separate system for Lots 36 through 49. Additionally, rear yard drainage systems and roof drain dry wells are to be placed in a stormwater easement across all applicable lots, with a note on the stormwater plans stating that the rear yard drainage system on Lots 1 through 78 are to be owned and maintained by the property owners of the individual Lots.

38. MR #6: Prior to engineering plan approval, the stormwater plans are to include a note that states that private stormwater systems located in Tracts B, D, F, I, and H, are to be owned and maintained by the property owner and/or Homeowners' Association (HOA).

39. MR #7: Prior to engineering plan approval, the stormwater utility plans are to be submitted with specific design information for the proposed underground infiltration galleries on Tracts F and I, individual downspout dry wells for Lots 1 through 78, and the rear yard shallow drainage swales for Lots 9 through 74.

40. MR #9: Prior to engineering plan approval, the final stormwater TIR is to be submitted with an O&M Manual specific to the underground infiltration galleries and the City of Camas June 2022 *Stormwater Sewer System Operations & Maintenance Manual* and the maintenance requirements for the water quality filter manholes, catch basins, etc. that are located outside of the city's right-of-way.

[Erosion Control]

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

42. Prior to engineering plan approval, the applicant shall submit a complete set of Erosion Sediment Control (ESC) plans. The ESC plans are to include a series of temporary detention ponds throughout the site to be used during infrastructure construction. The infiltration galleries and the mechanical treatment water quality manholes are not to be brought online until the proposed development is fully stabilized.

[Sanitary Sewage Disposal]

43. Prior to engineering plan approval, the applicant shall revise the sanitary sewer utility plans as follows:
    a. The grinder pumps for single-family residential uses are to be per the city's Camas Design Standards Manual (CDSM).
    b. Construct a sanitary sewer force main from the proposed development to the Leadbetter Lift Station (LS), via a connection point to be determined acceptable from the City's Modeling Analysis.
    c. City approved grinder pumps for the single-family residences are to be owned and maintained by the individual homeowners.

44. Prior to engineering plan approval of the proposed Camas Woods II development, the applicant shall construct the offsite sanitary sewer force main from the proposed development to a connection point that is determined to be acceptable based on the City's Modeling Analysis of the Leadbetter Lift Station.

[Roads]

45. Prior to engineering plan approval, the applicant shall submit the final engineering plans with street names for all the proposed local roads that have been assigned and approved by the Building Official.

[Public Roads]

<u>Proposed SE 8th Street Extension:</u>

46. Prior to engineering plan approval, the applicant shall submit revised engineering plans with the following improvements on the south side of SE 8th Street:

a. Remove the existing gravel road at the end of SE 8th Street and the three gravel driveways on the south side of SE 8th Street.
b. Construct a minimum 12-foot-wide asphalt driveway for access to each of the single-family residences.
c. The new driveways are to be perpendicular to the SE 8th Street improvements and are to be paved a minimum of 20-feet south from the edge of the new pavement.
d. Any existing mailboxes are to be relocated adjacent to the new paved surface.
e. The Camas postmaster is to be contacted to determine the exact location of mailboxes.

Existing SE 8th Street:

47. Prior to engineering plan approval, the applicant shall submit revised engineering plans with the following improvements on SE 8th Street from the westernmost property line of Parcel No. 178209000 to the intersection with SE Everett Road (SR 500):
    a. Provide a minimum 24-foot-wide paved surface.
    b. Additional pavement width may be required at the intersection of SE 8th Street and SE Everett Road (SR 500) to allow for right and left-turn movements.
    c. Ensure that the two existing driveway accesses to the Grace Foursquare Church remain unobstructed.
    d. The existing community mailbox located on the south side of SE 8th Street is to be relocated adjacent to the new paved surface or as determined by the Camas postmaster.

[Private Roads]

Proposed Tract B – Private

48. Prior to engineering plan approval, the applicant shall be required to revise the site and street plans to include the required minimum 25-foot curb radii on both sides of Tract B.

[Utilities, Street Lighting, Street Trees, and Other Improvements]

[Street lighting]

49. Prior to engineering plan approval all streetlight locations shall be required to be shown on the engineering plans, the utility plans, and landscape plans. Additionally:
    a. Prior to the Electrical contractor's submittal of electrical plans to Clark Public Utilities, the preliminary electrical plans for streetlights, transformers, J-boxes, etc., which are prepared by others, are to be submitted to the city for review and approval.
    b. Any proposed streetlights for private streets are required to be metered separately and are to be owned and maintained by the HOA / homeowners.

[Street Trees]

50. Lots without a street tree in the planter strip directly adjacent to their frontage shall be required to plant one tree within the front yard.

[Other Improvements – Retaining Walls]

51. Prior to engineering plan approval, the applicant shall be required to submit with the civil construction application all block retaining walls that are not part of a building foundation, for review and approval. The block retaining wall plans are to include the retaining wall locations, plans, profiles, and wall sections, as well as the structural calculations.

[Traffic Impact Analysis/Study]

52. Prior to engineering plan approval, the applicant shall be required to address all comments from Washington State Department of Transportation (WSDOT) and the City of Camas (COC) after said reviews of the ICE Report.

[Site Distance Triangles]

53. Prior to engineering plan approval, the street plans and the landscape plans are to include site distance triangles on the street improvement plans and the landscape plans at the following proposed intersections:
    a. SE 8th Street and 'A' Street
    b. 'A' Street and SE 7th Avenue
    c. SE 7th Avenue and 'A' Drive
    d. SE 7th Avenue and N Johnson Street;
    e. N Johnson Street and SE 6th Avenue
    f. 'A' Drive and SE 6th Avenue

SE Everett Road (SR 500) at SE 8th Street

54. Prior to engineering plan approval, the applicant is to submit revised street and site plans that includes a dedicated southbound left-turn lane with a minimum 100-feet of vehicular storage at the intersection of SE Everett Road (SR 500) and SE 8th Street.

Prior to Land-Disturbing Activities:

Engineering:

[Storm Drainage]

55. Prior to any land-disturbing activities the applicant shall submit an electronic version of the required SWPPP, per MR #2 of the preliminary TIR. The contractor is required to have a copy of the SWPPP on site at all times.

[Erosion Control]

56. Prior to any land-disturbing activities, the applicant shall submit an approved form of financial security for erosion and sediment control. Staff will provide documentation with the financial security amount.

57. Prior to any land-disturbing activities, the applicant shall have approved engineering plans, which include tree cutting, clearing and grading, an approved set of engineering plans, including the erosion prevention and sediment control measures is required.

58. Prior to any land-disturbing activities, an electronic copy of Ecology's NPDES GCSWP permit, an electronic copy of the SWPPP, and the financial security for erosion and sediment control are to be submitted to the city.

Prior to Final Plat Approval:

Planning:

59. An inadvertent discovery plan shall be created and submitted to staff and be kept on site.

60. The setbacks shall be shown on the plat.

Engineering:

[Water]

61. Prior to final plat approval, the applicant shall provide a water utility easement over the water meters and meter boxes located in Tract B for Lots 9, 10, 11, and 12.

62. Prior to final plat approval, the applicant shall add a note to the final plat stating that Irrigation meters for the benefit of landscaping are required in all the Open Space Tracts and are to be owned and maintained by the property owner and/or Homeowners' Association (HOA).

[Storm Drainage]

63. Prior to final plat approval the applicant shall be required to add a note stating that "all components of the stormwater system located outside of the city's right-of-way, which may include catch basins, conveyance piping, storm manholes, or water quality manholes are to be owned and maintained by the Homeowners Association (HOA)".

64. Prior to final plat approval, a note is to be added to the plat stating that all rear yard stormwater systems are to be owned and maintained by the individual property owners of Lots 1 through 78.

65. Prior to final plat approval the following notes shall be added to the final plat stating the following:
    a. The stormwater facilities located in Tracts B, D, F, I, and H are to be owned and maintained by the property owners and/or homeowners/Homeowner Association (HOA) at the end of the 2-year warranty period, which expires 2-years after final acceptance.
    b. Right-of-entry is to be granted to the city for inspection purposes of the stormwater facilities located on in Tracts B, D, F, I, and H.
    c. The private rear yard area drain/wet wells and/or shallow drainage diversion swales on Lots 1 through 78 are to be owned and maintained by the HOA or the applicable Lot owners upon which the private stormwater systems and easements are located.

[Sanitary Sewage Disposal]

66. Prior to final plat approval, the applicant shall include a note stating that the grinder pumps for the single-family residences are owned and maintained by the individual homeowners.

[Easements]

67. Prior to final plat approval, the following easements are to be recorded on the final plat for the proposed development:
    a. The 6-foot public utility easement (PUE) is to be located outside of the right-of-way along all the future public roads.
    b. A utility access and maintenance easement to the city, for the sanitary sewer system in private street Tracts B.
    c. A right-of-entry is to be granted to the city for stormwater inspection purposes of the stormwater facilities located in Tracts D, F, and I.
    d. A public pedestrian access easement over the proposed paths located in Tracts C, D, and F.
    e. The storm facilities located in Tracts D, F, H, and I are to be owned and maintained by the property owners, individual homeowners and/or Homeowners' Association (HOA) with a right-of-entry easement granted to the city for the purpose of inspection.
    f. Lots 1 – 8 and Lots 13 – 78: A minimum 15-foot-wide stormwater easement over the roof drain dry well system and drainage swales located at rear of the lots, noted on the preliminary stormwater plan (Exhibit 7, P10) for the benefit of Lots 1 through 78, are to be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA). Construction of permanent structures with the stormwater easements

are not permitted. Permanent structures include but are not limited to retaining walls, patios, play structures, trees, shrubs, etc.

g. Lot 9: A minimum 10-foot-wide stormwater easement over the drainage swale located along the southern property line is to be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA).
h. Tract B and Lots 9-12: The stormwater catch basin, manhole, and conveyance piping located in the southwest corner are to be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA).
i. A 100-foot-wide BPA Easement located in Tract D, Open Space.

Prior to Final Acceptance:
Engineering:

[Existing Wells, Septic Tanks and Septic Drain Fields]

68. Prior to final acceptance, the applicant shall provide documentation to the city that any existing wells, or septic systems have been properly decommissioned in accordance with State and County guidelines. Additionally, any water rights associated with a decommissioned well shall be transferred to the City.

[Roads]

69. Prior to final acceptance the intersection improvements at NE Everett Street and NE Everett Drive shall be constructed.
70. Prior to final acceptance of Camas Woods II, the applicant shall be required to pay a proportionate share based on the cost of construction of a traffic signal at the intersection of NW Lake Road and NW Sierra Street. This share would be used to pay for a portion of the intersection improvements at this location.
71. Prior to final acceptance of Camas Woods II, the proportionate share amount that shall be paid is calculated at $12,807.00 for the NW Lake Road and NW Sierra Street Intersection improvements.
72. Prior to final acceptance of Camas Woods II, the applicant shall be required to pay the proportionate share amount of $800.00 to the City of Vancouver. The applicant is to provide Camas staff with documentation of payment of said proportionate share amount.
73. Prior to final acceptance the applicant shall install all-way stop control at the intersection of NE 242nd Avenue and NE 28th Street if deemed necessary by WSDOT.

Prior to Building Permit Issuance:
Planning:

74. Design review shall be required prior to building permit issuance.

Proposed Plat Notes

1. The maximum lot coverage is 65%.
2. Irrigation meters for the benefit of landscaping are required in all the Open Space Tracts and are to be owned and maintained by the property owner and/or Homeowners' Association (HOA).
3. All components of the stormwater system located outside of the city's right-of-way, which may include catch basins, conveyance piping, storm manholes, or water quality manholes are to be owned and maintained by the Homeowners Association (HOA).
4. Lots 1 – 8 and Lots 13 – 78: A minimum 15-foot-wide stormwater easement over the roof drain dry well system and drainage swales located at rear of the lots are to be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA). Construction of permanent structures with the stormwater easements are not permitted. Permanent structures include but are not limited to retaining walls, patios, play structures, trees, shrubs, etc.
5. Lot 9: A minimum 10-foot-wide stormwater easement over the drainage swale located along the southern property line is to be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA).
6. Tract B and Lots 9-12: The stormwater catch basin, manhole, and conveyance piping located in the southwest corner are to be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA).
7. Grinder pumps installed for the single-family residences are owned and maintained by the individual homeowners.

1. Pre-Application Conference Report

PRE-APPLICATION MEETING NOTES
8th Street Development
PA24-1022

Thursday, November 7, 2024
Zoom meeting with City staff

Applicant:	AKS Engineering & Forestry Michael Andreotti
City of Camas attendees:	Madeline Sutherland, Planner Robert Maul, Planning Manager Anita Ashton, Engineering Project Manager Ahmed Yanka, Engineer II Randy Miller, Fire Marshals Office
Location:	26416 SE 8th St Parcel Number: 178209000
Zoning:	North Shore High Density Residential (NS-HD)
Description:	The applicant is proposing to subdivide two parcels into 74 single family lots for future townhomes.

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 to an applicant all relevant applicable code requirements shall not constitute a waiver by the City of any standard or requirement. [CMC 18.55.060 (C)] This pre-application conference shall be valid for a period of 180 days from the date it is held. If no application is 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) 817-7237**

An application for Subdivision is considered a Type III permit. 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 by the applicant:

PLEASE NOTE: Land use applications are now required to be submitted and paid on-line at www.cityofcamas.us/com-dev. When you apply online, be sure to select SUBDIVISION as the main application plan type. If you are unsure, contact the Planning Department for assistance.

Land Use 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 must be posted on site per CMC Section 18.55.110.H(1-5).
8. A copy of a full title report.

Preliminary Subdivision Plat
In addition to the general application requirements listed above, the **specific application requirements for a preliminary subdivision plat in CMC 17.11.030.B** will also need to be complied with and submitted. A narrative addressing the criteria in **CMC 17.11.030.C** shall also be included with the application submittal.

The following comments are based on the site plan materials submitted with this Pre-Application:

1. Double frontage lots require additional landscaping tract per CMC 17.19.030.D.6
2. Net acreage means the total acreage excluding open space and critical area tracts.
3. *"Building heights shall "step-down" and provide compatible scale and privacy between developments. Building height transitions shall be applied to new and vertically expanded buildings in the HD-NS zone within 20 feet (measured horizontally) of an existing single detached residential building 30 feet or less in height. The building-height-transition standard is met when the height of the taller building does not exceed 1 foot of height for every 1 foot separating the new building from the existing single detached residential structure."*

Design Review (major)
Design Review is subject to all new developments in the North Shore area. The development must comply with the design principles in the North Shore Design Review Manual which are subject to review of the Design Review Committee.

A submittal for design review should include a narrative, site plan drawing, a detailed landscape plan, exterior elevation, building materials and colors, lighting specs and plan, and sign plan (optional). A final design review decision may be consolidated and issued with the Preliminary Plat decision.

Landscaping Regulations
Landscaping shall comply with the applicable standards in CMC 18.13.050 and 18.13.060. As such, a landscape plan must be submitted pursuant to the applicable landscape standards. A tree survey is required by an arborist or professional forester. A minimum tree density of 30 tree units per net acre is required in the North Shore area.

Per CMC 18.13.051.B Footnote 1 - "At least fifty percent of minimum tree density shall be achieved through retention of existing trees where the existing tree coverage on the site would allow for this standard to be met. If this standard cannot be met, an arborist report is required to demonstrate that it cannot be met. Replacement trees must be native and/or coniferous species. More information is included in the North Shore Design Manual."

Critical Areas
No critical areas are identified on site or within 300 feet.

SEPA
A SEPA checklist is required due to the amount of excavation and parking spaces proposed per CMC 16.07.020.

Archaeological Review
An archaeological report is required due to high probability of artifacts on site.

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

General Requirements:

1. Final engineering site improvement plans shall be prepared by a licensed Civil Engineer in Washington State in accordance with the North Shore Design Manual (NSDM), Camas Design Standards Manual (CDSM), and CMC 17.19.040.
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 the 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 all the site improvements.
5. A 3% PR&CI fee is collected by engineering for all infrastructure improvements.
    a. A stamped preliminary engineer's estimate shall be submitted to the CDEV Engineering Dept. with submittal of plans for first review.
    b. Payment of the 1% plan review (PR) fee shall be due prior to the start of the first review.
    c. Payment of the 2% construction inspection (CI) fee shall be due prior to construction plan approval and release of approved plans to the applicant's consultant.
    d. Under no circumstances will the applicant be allowed to begin construction 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. 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 approval of a traffic control plan (TCP), prior to the start of any work.
11. Regulations for installation of public improvements, improvement agreements, bonding, final platting, 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.

Traffic/Transportation Impact Studies:

1. A transportation impact study (TIA) is required as the proposed development will result in 200 vehicle trips per day (VPD) or more.
2. The transportation impact study (TIA) shall be prepared in accordance with the City's adopted *Traffic Impact Study Guidelines* as outlined in the CDSM Chapter I Support Documentation and the latest edition of the *ITE Manual* (11th Edition).
3. Developments generating 700 VPD or more on internal roads shall be required to provide for a Neighborhood Traffic Management Plan (NTM) in accordance with the CDSM.
4. The applicant will be required to have a traffic engineer analyze the following:
    a. Site distance access (es) at the intersections of:
        i. NE Everett Street (SR 500) and SE 8th Street.
        ii. NE Everett Drive and NE Everett Street (SR 500).
        iii. NE Everett Drive and SE 9th Street.
    b. A traffic circulation plan showing on-site movements, and ingress and egress to the proposed development, per CMC 17.19.040 (B.10.a).
    c. Address movement conflicts with nearby intersections, left-turn pocket analysis on NE Everett Street (SR 500) at SE 8th Street.
    d. Analyze turn movements at access location from NE Everett Street (SR 500), including storage lanes for turns.
5. Provide trip AM and PM Peak distribution to and from the site.
6. Camas requires offsite intersections to be analyzed based on the trip distribution out to a threshold of 20 new trips per intersection.
7. WSDOT requires all offsite intersections to be analyzed based on the trip distribution out to a threshold of 10 new trips per intersection along SR 500.
8. The City of Vancouver requires trip distributions their proportionate share intersections and payment of said proportionate share fees to be conditioned. A list of COV intersections will be provided.
9. The preliminary TIA will be reviewed by both City of Vancouver and WSDOT.

Streets:

1. The proposed development is located on the east side of NE Everett Street (SR 500) and the north side of SE 8th Street.
2. NE Everett Street (SR 500) is classified as an existing 2-lane arterial in the vicinity of the proposed development per the City's *2016 Transportation Comp Plan.*
3. SE 8th Street is an unimproved local road for approximately 520-feet east of NE Everett Street (SR 500) that consists of approximately 23-feet of paved surface with curb along the northside from the intersection of NE Everett Street to the west property line of the proposed development where it becomes a gravel driveway providing access to three existing single-family residences.
4. Per CMC 17.19.040.B.1, the applicant will be required to:
    a. Construct a minimum 24-foot-wide paved full depth half-width road improvements on SE 8th Street along the frontage of the proposed development from the western property line to the eastern property line.

b. The proposed interior local public roads are required to meet the minimum public road standards per the North Shore Design Manual (NSDM) and the Camas Design Standards Manual (CDSM).
c. Per the NSDM, the local street section shall consist of a 54-foot ROW width and 28-feet paved surface, sidewalks and planter strips on both sides, and on-street parking on one side only.

5. The applicant will be required to provide a minimum 24-foot-wide paved surface on the portion of SE 8th Street from the intersection of NE Everett Street to the western property line of the proposed development.
6. There are three (3) existing SFR located on the south side of SE 8th Street. The driveways to the existing SFRs are to be laid perpendicular to the new road and to be paved a minimum of 20-feet from the south edge of the new pavement.
    a. The existing gravel road that is shown as running parallel to the future SE 8th Street is to be removed or blocked at those locations shown to be in the future/existing right-of-way.
7. Dead-ends in excess of 150-feet from the centerline of the adjacent road require a dead-end turnaround.
    a. The northernmost end of future C Street is approximately 169-feet from the intersection with future D Street.
    b. The applicant is to work with staff and the FMO to provide an acceptable turnaround, which can include/impede on Tract C.
8. Per CMC 17.19.040.B.5, the applicant will be required to provide sufficient right-of-way for construction of the half-width improvements for future SE 8th Street.
    a. SE 8th Street will be a future 60-foot-wide collector per the North Shore Design Manual (NSDM).
9. Street tree planting is required in accordance with CMC 17.19.030 (F).
10. Off-street parking requirements are to be per CMC 18.11.100.
11. LED street lighting is to be installed along all street frontages within and adjacent to the proposed development, in accordance with CDSM.

<u>Stormwater:</u>

1. The site of the proposed development is approximately 8.82 acres in size.
2. The Department of Ecology (DOE) issued the latest edition of the *Stormwater Management Manual for Western Washington* effective August 1, 2024.
3. The applicant shall submit a preliminary stormwater report (PTIR) in accordance with CMC 14.02 Stormwater Control and Ecology's *2024 Stormwater Management Manual for Western Washington* ***(2024 SWMMWW*)**.
4. Stormwater treatment and detention shall be designed in accordance with the ***2024 Stormwater Management Manual for Western Washington (2024 SWMMWW).***
5. Refer to Ecology's *Figure I-3.2 Flow Chart for Determining Requirements for Re-Development (Vol. I, Chapter 3, Page 110)*.
    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.
6. 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.
7. Per CMC 14.02.090 ownership and maintenance of onsite stormwater facilities will be the responsibility of the individual homeowners/HOA, per CMC 17.19.040 (C3), at the end of the 2-

year warranty period. Ownership and maintenance shall be the responsibility of the Developer at the time of issuance of final acceptance until the end of the 2-year warranty period.

8. Private storm easements, if required, are to be shown on the final engineering plans and the final plat.
9. Provisions are to be provided for roof downspout controls. Stormwater from downspouts is not to be directed onto adjoining parcels or future Lots. Reference CMC 14.02 and 17.19.040.C for roof downspout controls.

Erosion Control

1. The site of proposed development is approximately 8.82 acres.
2. 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)*.

a. Copies of both are to be submitted to Engineering prior to any land-disturbing activities.

3. 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.
4. 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.
5. Mud tracking onto road surface during construction of the infrastructure improvements and during homebuilding activities is discouraged and any mud tracking is to be cleaned up immediately.

Water:

1. There is an existing 10-inch ductile iron water main located in NE Everett Street (SR 500).
2. If Camas Woods II proceeds' Camas Woods I, the applicant will be required to design and construct a minimum 8-inch ductile iron water main from SE 8th Street to serve the proposed development.
3. If Camas Woods I proceeds' Camas Wood II, the applicant is to extend the 8-inch water main west in future SE 8th Street to serve the proposed Camas Woods II development.
    a. Extension of the 8-inch water main to tie into the existing 10-inch water main in NE Everett Street (SR 500), may be required to provide a looped water system to serve the Camas Woods development.
4. Per CMC 17.19.040.C.4.a. The applicant shall provide a separate 1-inch water service and install water meter boxes for each of the single-family residential lots located within this development.
5. Per CMC 17.19.040.C.4.d. Landscaping in open space tracts must have a service for an irrigation meter. The owner of the tract is responsible for payment for all fees associated with the installation of the meter and the water usage.
    a. Irrigation meters require backflow prevention devices.
6. There is an existing fire hydrant on the intersection of NE Everett Street (SR 500) and SE 8th Street.
    a. The applicant will be required to provide new fire hydrants located within the proposed development, per the CDSM and the FMO.
7. An onsite water sampling station will be required.
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.

11. Trenching, backfill, and surface restoration on all existing roads will be required, per CDSM Detail G2 and G2A.

Sanitary Sewer:

1. There is an existing sanitary sewer main on NE Everett Street at SE Leadbetter.
2. The applicant will be required to extend the sanitary sewer from SE Leadbetter Road via NE Everett Street to the proposed development and to provide sanitary sewer laterals to each of the future SFRs.
3. The applicant is proposing to construct an 8-inch on-site conventional gravity sewer system to serve the proposed development.
    - An on-site conventional gravity sewer system will require a lift station to serve the Camas Woods project.
    - The future lift station is shown to be in the southern corner of the proposed Camas Woods development.
4. If Camas Woods II proceeds' Camas Woods I, the applicant will be required to design, extend, and construct the sanitary main from the intersection of SE Leadbetter Road and NE Everett Street (SR 500) to the intersection of NE Everett Street (SR 500) and SE 8th Street design to serve the proposed development.
5. If Camas Woods I proceeds' Camas Wood II, the applicant is to extend the 8-inch sanitary sewer main to the westernmost property line of the proposed Camas Woods II development, to serve the proposed development.
6. Per CMC 17.19.040.C.2.a. The applicant shall provide a separate sewer lateral for each of the single-family residential lots located within this development.
7. A 10-foot separation shall be maintained between water and sanitary sewer lines.
8. Trenching, backfill, and surface restoration on all impacted roadways are required, per CDSM Detail G2 and G2A.

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,
   http://www.ferguson.com/branch/nw-3rd-ct-vancouver-wa-waterworks

Parks/Trails:

1. See the 2022 Parks & Open Space Plan

Garbage & Recycling:

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

Impact Fees & System Development Charges (SDCs):

1. The proposed development is in the **North District.**
2. Impact Fees and SDCs are collected at the time of building permit issuance.
3. **Impact fees and SDCs are adjusted on January 1st of each year.**

Impact Fees for 2024:

1. Single Family Detached:
    a. Traffic Impact Fees (TIF) - $10,372.00
    b. School Impact Fees (SIF) (Camas) – $6,650.00
    c. Park/Open Space Impact Fees (PIF) – $5,853.00
    d. Fire Impact Fees (FIF) - $0.69 sf

System Development Charges (SDCs) for 2024:

1. Water - SFR
    a. 3/4" meter - $9,056.00 + $450.00 connection fee
2. Sewer - Residential
    a. Residential - $7,184.00

FIRE DEPARTMENT **RANDY MILLER (360) 834-6191 rmiller@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 long-term dead-end issues, other access or turnaround issues, to install fire sprinklers in the 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) Additional fire hydrants required and are prescriptive per the International Fire Code. Location on se 8th and throughout the subdivision TBD.
9) Witnessed hydrant flushing required with the FMO on any new fire hydrant installation.
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. Provide an approved paved turnaround at the North end of street "C" on the plans. This turnaround will require a joint approval with the FMO and the engineering department.
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 monuments required for tract "G" at the SE corner of the subdivision. Contact the FMO for approval.
17) First street lift, address signs and approved water supply required prior to vertical build.
18) 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 and unlikely to be blocked by parked vehicles so emergency services can easily see and read.
19) Other additional requirements may be noted as construction drawings are received for review.
20) Please do not hesitate to contact the FMO if you have any questions. 360-834-6191 or FMO@cityofcamas.us

BUILDING DIVISION **BRIAN SMITH (360) 817-7243 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. Estimated review for building plan review is currently 4 – 6 weeks.
13. 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.
14. **SE 8th Street will need to be renamed NE 50th Ave to align with the Camas addressing grid.**

10. Title Report

WFG National Title Company of Clark County
a Williston Financial Group company

For closing assistance please contact:

WFG National Title Company of Clark County WA, LLC
2001 SE Columbia River Drive, Suite 100
Vancouver, WA 98661

Escrow Officer: Ashley Gratzer
LPO No.: 11042
Escrow Assistant: Kendall Benson
E-Mail: agratzer@wfgtitle.com
Phone No.: (360) 314-0318

Escrow No. 24-178804

For title assistance on this order please contact:

WFG National Title Company of Clark County WA, LLC
2004 SE 192nd Avenue Suite 100
Vancouver, WA 98683

Title Officer: CC Title Team
Phone No.: (360) 891-5433
Email: CCTitle@wfgtitle.com

License No.: 927557

Recording Department:
Email: CCRecording@wfgtitle.com

For Informational Purposes Only:

Seller(s):	Larry K. Johnston and Melinda S. Johnston
Buyer(s):	HSR Holdings, LLC
Address:	26514 SE 8th Street, Camas, WA 98607
County:	Clark
Tax Account No.:	178109-000
Abbreviated Legal:	TL #15 SEC 35 T2N R3E WM

WFG National Title Company of Clark County
a Williston Financial Group company

SCHEDULE A

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

Issuing Agent:	**WFG National Title Company of Clark County WA, LLC**
Issuing Office:	**2004 SE 192nd Avenue Suite 100, Vancouver, WA 98683**
Loan ID Number:	**Not Available**
Commitment Number:	**24-178804**
Issuing Office File Number:	**24-178804**
Property Address:	**26514 SE 8th Street, Camas, WA 98607**
Revision Number:	

1. Commitment Date: **August 14, 2024 at 8:00 a.m.**
2. Policy or Policies to be issued:

ALTA® Owner's Policy (07-01-21)
Standard Owners Rate

Amount:	**$3,000,000.00**
Premium:	**$2,746.00**
Tax:	**$238.90**
Total:	**$2,984.90**

Proposed Insured: HSR Holdings, LLC

The estate or interest to be insured FEE SIMPLE

ALTA® Ext Loan Policy (07-01-21)

Amount:	**TBD**
Premium:	**$0.00**
Tax:	**$0.00**
Total:	**$0.00**

Proposed Insured: Lender to Follow

The estate or interest to be insured FEE SIMPLE

3. The estate or interest in the Land described or referred to in this Commitment is **Fee Simple.**
4. Title to the Fee Simple estate or interest in the Land is at the Commitment Date vested in:

   Larry Keith Johnston and Melinda Sue Johnston, husband and wife
5. The land referred to in this Commitment is described as follows:

   SEE ATTACHED EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF

Countersigned:
WFG National Title Company of Clark County WA, LLC, as Issuing Agent for WFG National Title Insurance Company

By: _____
Authorized Signature

EXHIBIT "A"
LEGAL DESCRIPTION

THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 35, TOWNSHIP 2 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN, CLARK COUNTY, WASHINGTON.

EXCEPT THAT PORTION CONVEYED TO THE STATE OF WASHINGTON FOR SECONDARY STATE HIGHWAY NO. 8-A.

ALSO EXCEPT BONNEVILLE POWER LINE RIGHT OF WAY.

ALSO EXCEPT THE NORTH 198 FEET OF THE WEST 660 FEET THEREOF.

ALSO EXCEPT ANY PORTION THEREOF LYING SOUTH OF A LINE 1937 FEET SOUTH OF AND PARALLEL TO THE NORTH LINE OF SAID NORTHEAST QUARTER.

ALSO EXCEPT COUNTY ROADS.

ALSO EXCEPT THAT PORTION OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 35, TOWNSHIP 2 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN, DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE EAST LINE OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 35, WITH THE NORTH LINE OF THAT CERTAIN 60 FOOT RIGHT OF WAY CONVEYED TO CLARK COUNTY, BY DEED RECORDED UNDER AUDITOR'S FILE NO. G 219259; THENCE NORTH 89°44' WEST ALONG SAID NORTH LINE, A DISTANCE OF 500 FEET TO THE TRUE POINT OF BEGINNING; THENCE NORTH A DISTANCE OF 208.7 FEET; THENCE NORTH 89°44' WEST, PARALLEL WITH THE NORTH LINE OF SAID 60 FOOT RIGHT OF WAY, A DISTANCE OF 208.7 FEET; THENCE SOUTH, A DISTANCE OF 208.7 FEET TO THE NORTH LINE OF SAID 60 FOOT RIGHT OF WAY; THENCE SOUTH 89°44' EAST, ALONG SAID NORTH LINE, A DISTANCE OF 208.7 FEET TO THE TRUE POINT OF BEGINNING.

ALSO EXCEPT THAT PORTION CONVEYED TO INTERNATIONAL FOUR SQUARE CHURCH, BY DEED RECORDED UNDER AUDITOR'S FILE NO. 8808240008.

SITUATE IN THE CITY OF CAMAS, COUNTY OF CLARK, STATE OF WASHINGTON.

File No. 24-178804

ALTA 2021 COMMITMENT FOR TITLE INSURANCE
Issued By
WFG NATIONAL TITLE INSURANCE COMPANY

SCHEDULE B, PART I

REQUIREMENTS

The following requirements are to be complied with:

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.

INFORMATIONAL NOTES

NOTE: Effective January 1, 1997, and pursuant to amendment of Washington State Statutes relating to standardization of recorded documents, certain format and content requirements must be met (refer to RCW 65.04.045). Failure to comply may result in rejection of the document by the recorder or additional fees may be charged, subject to the Auditor's discretion.

NOTE: As to any and all covenants and restrictions set forth herein, the following is added: "but omitting any covenant or restriction based on race, color, religion, sex, handicap, familial status or national origin, unless and only to the extent that said covenant(s): (a) is/are exempt under Chapter 42, Section 3607 of the United States Code; or (b) relates to a handicap, but does not discriminate against handicapped persons."

NOTE: In the event that the Commitment Jacket is not attached hereto, all of the terms, conditions and provisions contained in said jacket are incorporated herein. The Commitment Jacket is available for inspection at any Company office.

NOTE: If you would like the company to act as trustee in a proposed Deed of Trust, please note that WFG National Title Company, a Washington limited liability company may act as Trustee of a Deed of Trust under RCW 61.24.010(1).

NOTE: Due to current conflicts or potential conflicts between state and federal law, which conflicts may extend to local law, regarding marijuana, if the transaction to be insured involves property which is currently used or is to be used in connection with a marijuana enterprise, including but not limited to the cultivation, storage, distribution, transport, manufacture, or sale of marijuana and/or products containing marijuana, the Company declines to close or insure the transaction, and this Commitment shall automatically be considered null and void and of no force and effect.

End of Schedule B, Part I

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 provisions 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. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.

3. Any rights, interests or claims of parties in possession not shown by the public records.

4. Any lien, or right to a lien, for services, labor, materials or equipment in connection with improvements, repairs or renovations provided before, on, or after Date of Policy and not shown by the Public Records at Date of Policy.

5. Any encroachment, encumbrance, violation, conflict in boundary line(s), shortage in area, or adverse circumstance affecting the title that would be disclosed by an accurate and complete land survey and/or physical inspection of the land. The term "encroachment" includes encroachments of existing improvements located on the land onto adjoining land, and encroachments on the land of existing improvements located on adjoining land.

6. (a) Taxes or assessments that 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; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.

7. Easements or claims of easements not shown by the public records.

8. (a) Unpatented mining claims; (b)reservations or exceptions in patents or in Acts authorizing the issuance thereof; and (c) Oil, natural gas, coal, fissionable materials or other minerals previously conveyed, leased or retained by prior owners, whether or not appearing in the Public Records or listed in Schedule B. The Company makes no representation as to the present ownership of any such interests. There may be leases, grants, exceptions or reservations of interests that are not listed.

9. Any adverse ownership claim by right of sovereignty to any portion of the lands insured hereunder, including tidelands, submerged, filled and artificially exposed lands and lands accreted to such lands or dispute as to the boundaries purportedly caused by a change in the location of any water body within or adjacent to the land.

10. Water rights, and claims or title to water, whether or not shown by the Public Records.

11. Any lien for service, installation, connection, maintenance, tap, capacity, or construction or similar charges for sewer, water, electricity, natural gas or other utilities, or for garbage collection and disposal not shown by the Public Records.

12. Reservation, including the terms and provisions thereof, contained in Deed from the Northern Pacific Railway Company, (now Burlington Northern, Inc.) under which title is claimed, whereby the Grantor excepts and reserves all minerals of any nature whatsoever, including coal, iron, natural gas and oil, and also the use of such surface ground as may be necessary for exploring for and mining or otherwise extracting and carrying away the same.

    Recorded in Book 68, Page 269, Deed records.
    Said Mineral Rights were conveyed to Milestone Petroleum, Inc.,
    a Delaware corporation, by Deed recorded under Auditor's File No. 8405290055, and the
    remainder assigned to Meridian Minerals Company, a Montana corporation, recorded under Auditor's File No. 8806270039. Said interests now held by Burlington Resources Oil & Gas Company, L.P.,
    a Delaware Corporation and Glacier Park Company, a Delaware Corporation, pursuant to documents recorded under Auditor's File Nos. 3557941, 3557942, 4600577, 4600578 and 6083717 respectively.

13. Easement and the terms, conditions and provisions thereof, as disclosed by that certain instrument recorded as E60580, Book 312, Page 426, of Official Records.

For:	Electric transmission and distribution lines
In favor of:	Bonneville Power Administration, a United States Corporation

14. Easement and the terms, conditions and provisions thereof, as disclosed by that certain instrument recorded as G520203, of Official Records.

For:	Electric transmission and distribution lines
In favor of:	Public Utility District No. 1 of Clark County

15. Matters set forth by survey recorded on March 12, 1990, in Book 26, Page 104, of Official Records.

16. Real estate excise tax pursuant to the authority of RCW Chapter 82.45 and subsequent amendments thereto.

    The rate of real estate excise tax to a sale on or after 1/1/2023 for properties which are not formally classified and specially valued as timberland or agricultural land is:

    1.60% on any portion of the sale price of $525,000 or less;
    1.78% on any portion of the sale price above $525,000.01, up to $1,525,000;
    3.25% on any portion of the sale price above $1,525,000.01, up to $3,025,000;
    3.50% on any portion of the sale price above $3,025,000;

    Levy Code: 117055

17. Taxes and charges, together with interest, penalty and statutory foreclosure costs, if any, after delinquency:

Tax Year:	2024
Tax Type:	County
Tax ID No.:	178109-000
Taxing Entity:	Clark County Treasurer
Total Annual Tax:	$13,820.99
First Installment:	$6,910.54
First Installment Status:	Paid
Second Installment:	$6,910.45
Second Installment Status:	Due
Second Installment Due/Paid Date:	October 31, 2024

18. Any unpaid assessments or charges, and liability for further assessments or charges by:
    City of Camas.

19. NOTE: Please be advised that our search did not disclose any open deeds of trust of record. If you should have knowledge of any outstanding obligation, please contact your title officer immediately for further review.

20. There is a manufactured home title elimination filed on April 30, 2003, in 3630354, of Official Records. Said manufactured home is therefore classified as real estate and the value of same will be included for title insurance coverage within the policy to issue. The forthcoming Lenders Policy to be issued (if applicable) will include the ALTA 7-06 Endorsement.

Note 1: According to the application for title insurance, the proposed insured(s) is/are: HSR Holdings, LLC.
We find no pertinent matters of record against the name(s) of said party(ies).

Note 2: We are informed that HSR Holdings is a limited liability company (LLC). A copy of the duplicate original of the filed LLC certificate of formation, the LLC agreement, and all subsequent modifications or amendments must be submitted to the company for review.

Note 3: Upon examination it has been determined that the subject property does not meet the underwriting qualifications to receive the coverage provided in the ALTA Homeowner's Policy of Title Insurance for a one to four family residence. The coverage provided for the subject property will be the Standard 2021 ALTA Owner's Policy. The policy and any applicable endorsements will be issued at the filed rate.

Note 4: The following is incorporated herein for information purposes only and is not part of the exception from coverage (Schedule B-II of the commitment and Schedule B of the policy):The following instrument(s), affecting said property, is (are) the last instrument(s) conveying subject property filed for record within 24 months of the effective date of this commitment:
None of Record

Note 5: The matters relating to the questions of survey, rights of parties in possession, and unrecorded liens for labor and material have been cleared for the loan policy which, when issued, will contain the ALTA 9.10 or WLTA 100 Endorsement, as appropriate for the policy form.

Note 6: Based on information provided to the company, on the date of this commitment it appears that there is located on the land:

1-4 Family Residence

Known As:
26514 SE 8th Street
Camas, WA 98607

Note 7: The county tax rolls disclose the current assessed valuations as follows:

Land:	$1,611,935.00
Improved:	$0.00
Total:	$1,611,935.00
Levy Code:	117055

Note 8: The Company requires the proposed insured to verify that the land covered by this Commitment is the land intended to be conveyed in this transaction. The description of the land may be incorrect, if the application for title insurance contained incomplete or inaccurate information. Notify the Company well before closing if changes are necessary. Closing instructions must indicate that the legal description has been reviewed and approved by all parties.

Note 9: The following may be used as an abbreviated legal description on the documents to be recorded, per amended RCW 65.04. Said abbreviated legal description is not a substitute for a complete legal description within the body of the document:

TL #15 SEC 35 T2N R3E WM

Note 10: When sending documents for recording, via U.S. mail or special courier service, please send to the following address, unless specific arrangements have been made with your title unit:
WFG National Title Company
2004 SE 192nd Avenue
Suite 100
Vancouver, WA 98683
Attn: Recording Dept.

End of Schedule B, Part II

File No. 24-178804

WFG National Title Insurance Company
a Williston Financial Group company

COMMITMENT FOR TITLE INSURANCE
Issued By
WFG NATIONAL 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, WFG National Title Insurance Company, a Florida 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 one hundred eighty (180) days after the Commitment Date, this Commitment terminates and the Company's liability and obligation end.

WFG NATIONAL TITLE INSURANCE COMPANY

By: _____
Steve Ozonian, President/CEO

ATTEST: _____
Joseph V. McCabe, EVP/General Counsel/Secretary



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;
   e. Schedule B, Part I—Requirements; and
   f. Schedule B, Part II—Exceptions; and
   g. a counter-signature by the Company or its issuing agent that may be in electronic form.
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 shall not be 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.

   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 and authenticated by a person authorized by the Company**.**

   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

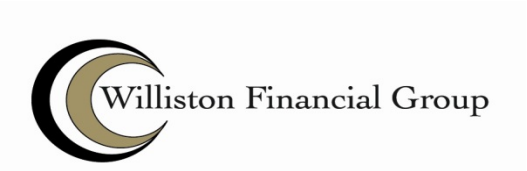
This Commitment incorporates by reference all Conditions for making a claim in the Policy to be issued to the Proposed Insured. Commitment Condition 9 does not modify the limitations of liability in Commitment Conditions 5 and 6.

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.

11. ARBITRATION – *INTENTIONALLY DELETED*

File No. 24-178804



Williston Financial Group Privacy Notice

Williston Financial Group LLC, WFG National Title Insurance Company, and each of the affiliates listed below (collectively "WFG" or the "WFG Family") believe it is important to protect your privacy and confidences. We recognize and respect the privacy expectations of our customers. We believe that making you aware of how we collect information about you, how we use that information, and with whom we share that information will form the basis for a relationship of trust between us. This Privacy Notice provides that explanation. We reserve the right to change this Privacy Notice from time to time.

WFG's primary business is providing appraisal, title insurance, and escrow services for the sale or refinance of real property. This can be a complicated process involving multiple parties, many of whom have been selected by our customers, each filling a specialized role. In part, you have hired WFG to coordinate and smooth the passage of the information necessary for an efficient settlement or closing.

In the course of this process, WFG collects a significant amount of personal and identifying information about the parties to a transaction, including sensitive items that include but are not limited to: your contact information, including email addresses, Social Security numbers, driver's license, and other identification numbers and information; financial, bank and insurance information; information about past and proposed mortgages and loans; information about properties you currently or previously owned; your mortgage application package; and the cookie, IP address, and other information captured automatically by computer systems.

Much of this information is gathered from searches of public land, tax, court and credit records to make certain that any liens, challenges or title defects are addressed properly. Some of the information that is collected is provided by you or the computer systems you use. We also may receive information from real estate brokers and agents, mortgage brokers and lenders, and others working to facilitate your transaction, as well as information from public, private or governmental databases including credit bureaus, 'no-fly' lists, and terrorist 'watch lists'.

What Information is Shared?

WFG DOES NOT SELL any of your information to non-affiliated companies for marketing or any other purpose.

However, some of the same information does get shared with persons inside and outside the WFG Family in order to facilitate and complete your transaction.

For example:

However, some of the same information does get shared with persons inside and outside the WFG Family in order to facilitate and complete current and future transactions.

For example:

- Information, draft documents, and closing costs will pass back and forth between WFG and your mortgage broker and lender to facilitate your transaction.
- Information, including purchase agreements and amendments, will pass back and forth between WFG and the real estate agents and brokers, the mortgage brokers and lenders, the lawyers and accountants, and others involved in facilitating the transaction.
- WFG may order property searches and examinations from title searchers, abstractors and title plants.
- WFG may use third parties to obtain tax information, lien information, payoff information, and condominium or homeowners' association information.
- Third parties may be engaged to prepare documents in connection with your transaction.
- Surveys, appraisals, and inspections may be ordered.
- Within the WFG Family of companies, we may divide up the work to handle each closing in the most efficient manner possible and to meet specific legal and licensing requirements. Certain parts of your closing (for example a search or disbursement) may be handled by another division or company within the WFG Family.

- When it is time for signatures, your complete closing package may be sent to a notary, remote online notary, or notary service company who will arrange to meet with you to sign documents. The notary will, in turn, send signed copies back to us along with copies of your driver's license or other identity documents, usually by mail, UPS, Federal Express or another courier service.
- Your deed, mortgage and other documents required to perfect title will be recorded with the local recorder of deeds.
- In some cases, we use an outside service to coordinate the recording or electronic-recording of those instruments, and they will receive copies of your deeds, mortgages and other recordable documents to process, scan and send on to the recording office.
- Information within your title policy may be shared with WFG National Title Insurance Company title policy issuing agents to facilitate future financial transactions involving your property.
- Various government agencies get involved. The law requires us to provide certain information to the IRS, the U.S. Department of the Treasury, local and state tax authorities, and other regulatory and governmental agencies.
- **WFG title policy issuing agents only**: personal information provided by you may be shared with a third party for the purposes of facilitating training to obtain CE/CLE credits.

You have a choice in the selection of a mortgage broker, lender, real estate broker or agent and others that make up your 'transaction team.' Information flows to and from the members of the transaction team you have selected to facilitate an efficient transaction for you.

When WFG selects and engages a third party provider, we limit the scope of the information shared with that third party to the information reasonably necessary for that service provider to provide the requested services. With most, we have entered into agreements in which they expressly commit to maintain a WFG customer's information in strict confidence and use the information only for purposes of providing the requested services, clearing title, preventing fraud and addressing claims under our title insurance policies.

How does WFG use your Information?

We may use your personal information in a variety of ways, including but not limited to:

- Provide the products, services and title insurance you have requested, and to close and facilitate your transaction.
- Provide and use historic transaction information to facilitate future financial transactions.
- Coordinate and manage the appraisal process.
- Handle a claim or provide other services relating to your title insurance policies.
- Create, manage, and maintain your account.
- Operate and improve WFG's applications and websites, including WFG MyHome®, WFG's secure communication and transaction portal. Your information is used for access management, payment processing, site administration, internal operations, troubleshooting, data analysis, testing, research, and for statistical purposes.
- Respond to your requests, feedback or inquiries.
- Comply with laws, regulations, and other legal requirements.
- Comply with relevant industry standards and our policies, including managing WFG's risk profile through reinsurance.
- Protect and enforce your rights and the rights of other users against unlawful activity, including identity theft and fraud.
- Protect and enforce our collective rights arising under any agreements entered into between WFG and you or any other third party.
- Protect the integrity and maintain security of our applications, websites, and products.
- Operate, evaluate, and improve our business.
- Provide you with information about products, services, and promotions from WFG or third parties that may interest you.
- **WFG title policy issuing agents only**: Provide you with a training platform to obtain CE/CLE credits

How Do We Store and Protect Your Personal Information?

Although no system can guarantee the complete security of your personal information, we will use our best efforts to maintain commercially reasonable technical, organizational, and physical safeguards, consistent with applicable law, to protect your personal information and our systems and sites from malicious intrusions or hacking.

How Long Do We Keep Your Personal Information?

We keep your personal information for as long as necessary to comply with the purpose for which it was collected, our business needs, and our legal and regulatory obligations. We may store some personal information indefinitely. If we dispose of your personal information, we will do so in a way that is secure and appropriate to the nature of the information subject to disposal.

Computer Information

When you access a WFG website, or communicate with us by e-mail, we may automatically collect and store more information than you are expressly providing when you fill out a survey or send an email. This may include:

- Your IP Address.
- Your email address, your alias and, social media handles.
- The type of browser and operating system you use.
- The time of your visit.
- The pages of our site you visit.
- Cookies.

In order to provide you with customized service, we make use of Web browser cookies. Cookies are files that help us identify your computer and personalize your online experience. You may disable cookies on your computer, but you may not be able to download online documents or access certain websites unless cookies are enabled.

The technical information we collect is used for administrative and technical purposes and to prevent fraud and provide identity verification. For instance, we may use it to count the number of visitors to our website and determine the most popular pages. We may also use it to review types of technology you are using, determine which link brought you to our website, assess how our advertisements on other websites are working, help with maintenance, and improve our customers' experience.

We may compare information gathered on previous visits to verify that we are interacting with the same parties and not a potential imposter.

If we ask you to fill out any forms or surveys, we will use the information we receive only for the specific purposes indicated in those forms or surveys.

The information you and your transaction team send us in emails or attached to an email, or provide through any of our online tools, is used for purposes of providing title, escrow and appraisal management services and used for the purposes described above.

In addition to the above, if you use an eClosing platform to sign your real estate transaction additional information may be collected. This may include:

- Your IP address.
- Your location.
- Your email address and your alias.
- The type of browser and operating system you use.
- The time of your visit.
- Your biometrics.
- Your image.
- Video recording of your transaction signing.
- Transaction metadata.
- Cookies.

Links to Third Party Sites

Our Applications and Websites may contain links to third-party websites and services. Please note that these links are provided for your convenience and information, and the websites and services may operate independently from us and have their own privacy policies or notices, which we strongly suggest you review. This Privacy Notice applies to WFG's applications and websites only.

Do Not Track

Because there is not an industry-standard process or defined criteria to permit a user to opt-out of tracking their online activities ("Do Not Track"), our websites do not currently change the way they operate based upon detection of a Do Not Track or similar signal. Likewise, we cannot assure that third parties are not able to collect information about your online activities on WFG websites or applications.

Social Media Integration

Our applications, websites, and products contain links to and from social media platforms. You may choose to connect to us through a social media platform, such as Facebook, Twitter, Google, etc. When you do, we may collect from the social media platform additional information from or about you, such as your screen names, profile picture, contact information, contact list, and the profile pictures of your contacts. The social media platforms may also collect information from you.

When you click on a social plug-in, such as Facebook's "Like" button, Twitter's "tweet" button, or the Google+, that particular social network's plug-in will be activated and your browser will directly connect to that provider's servers. Your action in clicking on the social plug-in causes information to be passed to the social media platform.

We do not have control over the collection, use and sharing practices of social media platforms. We therefore encourage you to review their usage and disclosure policies and practices, including their data security practices, before using social media platforms.

How Can You "Opt-Out?"

We do not sell your information; therefore there is no need to opt-out of such reselling. Under various laws, you can opt-out of the sharing of your information for more narrow purposes. For additional detail, consult the Links under the "Legal" Notices attached below.

The "Legal" Notices

To comply with various federal and state laws, we are required to provide more complete legal notices and disclosures – see links below. The state-specific statutes referenced therein may also give residents of those states additional rights and remedies.

Privacy Notice for California Residents - https://national.wfgnationaltitle.com/privacy-notice-california

Privacy Notice for Oregon Residents - https://national.wfgnationaltitle.com/privacy-notice-oregon

How to Contact Us

If you have any questions about WFG's privacy notice or how we protect your information, please contact WFG:

- By email: Consumerprivacy@willistonfinancial.com
- By telephone: 833-451-5718
- By fax: 503-974-9596
- By mail: 12909 SW 68th Pkwy, Suite 350, Portland, OR 97223

WFG FAMILY

WILLISTON FINANCIAL GROUP LLC
WFG NATIONAL TITLE INSURANCE COMPANY
WFG LENDER SERVICES, LLC
WFGLS TITLE AGENCY OF UTAH, LLC
WFG NATIONAL TITLE COMPANY OF WASHINGTON, LLC
WFG NATIONAL TITLE COMPANY OF CALIFORNIA
WFG NATIONAL TITLE COMPANY OF TEXAS, LLC D/B/A WFG NATIONAL TITLE COMPANY
UNIVERSAL TITLE PARTNERS, LLC
VALUTRUST SOLUTIONS, LLC
MYHOME, A WILLISTON FINANCIAL GROUP COMPANY, LLC (formerly known as WILLISTON ENTERPRISE SOLUTIONS & TECHNOLOGY, LLC)
WFG NATIONAL TITLE COMPANY OF CLARK COUNTY, WA, LLC, D/B/A WFG NATIONAL TITLE

Rev 12.20.2022

File No. 24-178804

Rev. 12/2022

FACTS	WHAT DOES WILLISTON FINANCIAL GROUP DO WITH YOUR PERSONAL INFORMATION?
Why?	Financial companies choose how they share your personal information. Federal law gives consumers the right to limit some but not all sharing. Federal law also requires us to tell you how we collect, share, and protect your personal information. Please read this notice carefully to understand what we do.
What?	The types of personal information we collect and share depend on the product or service you have with us. This information can include: • Social Security number and other government identification information • Your name, address, phone, and email • Information about the property, any liens and restrictions • Financial Information including credit history and other debt • Financial account information, including wire transfer instructions.
How?	All financial companies need to share customers' personal information to run their everyday business. In the section below, we list the reasons financial companies can share their customers' personal information; the reasons Williston Financial Group chooses to share; and whether you can limit this sharing.

Reasons we can share your personal information	Does Williston Financial Group share?	Can you limit this sharing?
For our everyday business purposes— such as to process your transactions, maintain your account(s), respond to court orders and legal investigations, or report to credit bureaus	Yes	No
For our marketing purposes— to offer our products and services to you	Yes	No
For joint marketing with other financial companies	No	We don't share
For our affiliates' everyday business purposes— information about your transactions and experiences	Yes	No
For our affiliates' everyday business purposes— information about your creditworthiness	No	We don't share
For our affiliates to market to you	No	We don't share
For nonaffiliates to market to you	No	We don't share

To limit our sharing	• Call 833-451-5718—our menu will prompt you through your choice(s) • Visit us online: http://bit.ly/WFGsConsumerPrivacyInformationRequestPage or e-mailing us at consumerprivacy@willistonfinancial.com • Mail the form below Please note: If you are a new customer, we can begin sharing your information from the date we sent this notice. When you are no longer our customer, we continue to share your information as described in this notice. However, you can contact us at any time to limit our sharing.
Questions?	Call 833-451-5718 or Email consumerprivacy@willistonfinancial.com

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Who we are	
Who is providing this notice	Williston Financial Group, LLC and its affiliates and subsidiaries as listed below:
What we do	
How does Williston Financial Group protect my personal information?	To protect your personal information from unauthorized access and use, we use security measures that comply with federal law. These measures include computer safeguards and secured files and buildings. We limit access to your information to employees that need to use the information to process or protect transaction. We take industry standard (IPSEC) measures to protect against malicious intrusions or hacking
How does Williston Financial Group collect my personal information?	We collect your personal information, for example, when you • Apply for insurance • Engage us to provide appraisal, title and escrow services • Give us your contact information • Provide your mortgage information • Show your driver's license We also collect your personal information from others, such as real estate agents and brokers, mortgage brokers, lenders, credit bureaus, affiliates, and others
Why can't I limit all sharing?	Federal law gives you the right to limit only • sharing for affiliates' everyday business purposes—information about your creditworthiness • affiliates from using your information to market to you • sharing for nonaffiliates to market to you State laws and individual companies may give you additional rights to limit sharing. See below for more on your rights under state law.
What happens when I limit sharing for an account I hold jointly with someone else?	Your choices will apply to everyone on your policy.
Definitions	
Affiliates	Companies related by common ownership or control. They can be financial and nonfinancial companies. Our affiliates include companies with a common corporate identity, including those listed below.
Nonaffiliates	Companies not related by common ownership or control. They can be financial and nonfinancial companies. Nonaffilliates we share with can include real estate agents and brokers, mortgage brokers, lenders, appraisers, abstractors and title searchers and others as appropriate to facilitate your transaction.
Joint marketing	A formal agreement between nonaffiliated financial companies that together market financial products or services to you. Williston Financial Group does not jointly market.
Other important information	
As a resident or citizen of certain states, we may have to provide additional state specific privacy notices and you may have rights other than as set forth above. The links below will provide state specific information: **Privacy Notice for California Residents** - https://national.wfgnationaltitle.com/privacy-notice-california **Privacy Notice for Oregon Residents** - https://national.wfgnationaltitle.com/privacy-notice-oregon	

WFG National Title Company of Clark County
a Williston Financial Group company

For closing assistance please contact:

WFG National Title Company of Clark County WA, LLC
2001 SE Columbia River Drive, Suite 100
Vancouver, WA 98661

Escrow Officer: Ashley Gratzer
LPO No.: 11042
Escrow Assistant: Kendall Benson
E-Mail: agratzer@wfgtitle.com
Phone No.: (360) 314-0318

Escrow No. 24-178830

For title assistance on this order please contact:

WFG National Title Company of Clark County WA, LLC
2004 SE 192nd Avenue Suite 100
Vancouver, WA 98683

Title Officer: CC Title Team
Phone No.: (360) 891-5433
Email: CCTitle@wfgtitle.com

License No.: 927557

Recording Department:
Email: CCRecording@wfgtitle.com

For Informational Purposes Only:

Seller(s):	Windfall Holdings, LLC
Buyer(s):	HSR Holdings, LLC
Address:	26416 SE 8th Street, Camas, WA 98607
County:	Clark
Tax Account No.:	178209-000
Abbreviated Legal:	TL #117 SEC 35 T2N R3E WM

WFG National Title Company of Clark County
a Williston Financial Group company

SCHEDULE A

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

Issuing Agent:	**WFG National Title Company of Clark County WA, LLC**
Issuing Office:	**2004 SE 192nd Avenue Suite 100, Vancouver, WA 98683**
Loan ID Number:	**Not Available**
Commitment Number:	**24-178830**
Issuing Office File Number:	**24-178830**
Property Address:	**26416 SE 8th Street, Camas, WA 98607**
Revision Number:	

1. Commitment Date: **August 14, 2024 at 8:00 a.m.**
2. Policy or Policies to be issued:

ALTA® Owner's Policy (07-01-21)
Standard Owners Rate

Amount:	**$1,000,000.00**
Premium:	**$1,416.00**
Tax:	**$123.19**
Total:	**$1,539.19**

Proposed Insured: HSR Holdings, LLC

The estate or interest to be insured FEE SIMPLE

ALTA® Ext Loan Policy (07-01-21)

Amount:	**TBD**
Premium:	**$0.00**
Tax:	**$0.00**
Total:	**$0.00**

Proposed Insured: Lender to Follow

The estate or interest to be insured FEE SIMPLE

3. The estate or interest in the Land described or referred to in this Commitment is **Fee Simple.**
4. Title to the Fee Simple estate or interest in the Land is at the Commitment Date vested in:

   Windfall Holdings LLC, a Washington Limited Liability Company
5. The land referred to in this Commitment is described as follows:

   SEE ATTACHED EXHIBIT "A" ATTACHED HERETO AND MADE A PART HEREOF

Countersigned:
WFG National Title Company of Clark County WA, LLC, as Issuing Agent for WFG National Title Insurance Company

By: _____
Authorized Signature

EXHIBIT “A”
LEGAL DESCRIPTION

THAT PORTION OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 35, TOWNSHIP 2 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN, CLARK COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

BEGINNING AT THE INTERSECTION OF THE EAST LINE OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SAID SECTION 35 WITH THE NORTH LINE OF THAT CERTAIN 60 FOOT RIGHT OF WAY CONVEYED TO CLARK COUNTY, BY DEED RECORDED UNDER AUDITOR'S FILE NO. G 219359; THENCE NORTH 89°44' WEST ALONG SAID NORTH LINE A DISTANCE OF 500 FEET TO THE TRUE POINT OF BEGINNING; THENCE NORTH A DISTANCE OF 208.7 FEET; THENCE NORTH 89°44' WEST PARALLEL WITH THE NORTH LINE OF SAID 60 FOOT RIGHT OF WAY, A DISTANCE OF 208.7 FEET; THENCE SOUTH A DISTANCE OF 208.7 FEET TO THE NORTH LINE OF SAID 60 FOOT RIGHT OF WAY; THENCE SOUTH 89°44' EAST ALONG SAID NORTH LINE A DISTANCE OF 208.7 FEET TO THE TRUE POINT OF BEGINNING.

SITUATE IN THE CITY OF CAMAS, COUNTY OF CLARK, STATE OF WASHINGTON.

File No. 24-178830

ALTA 2021 COMMITMENT FOR TITLE INSURANCE
Issued By
WFG NATIONAL TITLE INSURANCE COMPANY

SCHEDULE B, PART I

REQUIREMENTS

The following requirements are to be complied with:

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.

INFORMATIONAL NOTES

NOTE: Effective January 1, 1997, and pursuant to amendment of Washington State Statutes relating to standardization of recorded documents, certain format and content requirements must be met (refer to RCW 65.04.045). Failure to comply may result in rejection of the document by the recorder or additional fees may be charged, subject to the Auditor's discretion.

NOTE: As to any and all covenants and restrictions set forth herein, the following is added: "but omitting any covenant or restriction based on race, color, religion, sex, handicap, familial status or national origin, unless and only to the extent that said covenant(s): (a) is/are exempt under Chapter 42, Section 3607 of the United States Code; or (b) relates to a handicap, but does not discriminate against handicapped persons."

NOTE: In the event that the Commitment Jacket is not attached hereto, all of the terms, conditions and provisions contained in said jacket are incorporated herein. The Commitment Jacket is available for inspection at any Company office.

NOTE: If you would like the company to act as trustee in a proposed Deed of Trust, please note that WFG National Title Company, a Washington limited liability company may act as Trustee of a Deed of Trust under RCW 61.24.010(1).

NOTE: Due to current conflicts or potential conflicts between state and federal law, which conflicts may extend to local law, regarding marijuana, if the transaction to be insured involves property which is currently used or is to be used in connection with a marijuana enterprise, including but not limited to the cultivation, storage, distribution, transport, manufacture, or sale of marijuana and/or products containing marijuana, the Company declines to close or insure the transaction, and this Commitment shall automatically be considered null and void and of no force and effect.

End of Schedule B, Part I

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 provisions 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. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.

3. Any rights, interests or claims of parties in possession not shown by the public records.

4. Any lien, or right to a lien, for services, labor, materials or equipment in connection with improvements, repairs or renovations provided before, on, or after Date of Policy and not shown by the Public Records at Date of Policy.

5. Any encroachment, encumbrance, violation, conflict in boundary line(s), shortage in area, or adverse circumstance affecting the title that would be disclosed by an accurate and complete land survey and/or physical inspection of the land. The term "encroachment" includes encroachments of existing improvements located on the land onto adjoining land, and encroachments on the land of existing improvements located on adjoining land.

6. (a) Taxes or assessments that 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; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.

7. Easements or claims of easements not shown by the public records.

8. (a) Unpatented mining claims; (b)reservations or exceptions in patents or in Acts authorizing the issuance thereof; and (c) Oil, natural gas, coal, fissionable materials or other minerals previously conveyed, leased or retained by prior owners, whether or not appearing in the Public Records or listed in Schedule B. The Company makes no representation as to the present ownership of any such interests. There may be leases, grants, exceptions or reservations of interests that are not listed.

9. Any adverse ownership claim by right of sovereignty to any portion of the lands insured hereunder, including tidelands, submerged, filled and artificially exposed lands and lands accreted to such lands or dispute as to the boundaries purportedly caused by a change in the location of any water body within or adjacent to the land.

10. Water rights, and claims or title to water, whether or not shown by the Public Records.

11. Any lien for service, installation, connection, maintenance, tap, capacity, or construction or similar charges for sewer, water, electricity, natural gas or other utilities, or for garbage collection and disposal not shown by the Public Records.

12. Reservation, including the terms and provisions thereof, contained in Deed from the Northern Pacific Railway Company, (now Burlington Northern, Inc.) under which title is claimed, whereby the Grantor excepts and reserves all minerals of any nature whatsoever, including coal, iron, natural gas and oil, and also the use of such surface ground as may be necessary for exploring for and mining or otherwise extracting and carrying away the same.

    Recorded in Book 68, Page 269, Deed records.
    Said Mineral Rights were conveyed to Milestone Petroleum, Inc.,
    a Delaware corporation, by Deed recorded under Auditor's File No. 8405290055, and the
    remainder assigned to Meridian Minerals Company, a Montana corporation, recorded under Auditor's File No. 8806270039. Said interests now held by Burlington Resources Oil & Gas Company, L.P.,
    a Delaware Corporation and Glacier Park Company, a Delaware Corporation, pursuant to documents recorded under Auditor's File Nos. 3557941, 3557942, 4600577, 4600578 and 6083717 respectively.

13. Easement and the terms, conditions and provisions thereof, as disclosed by that certain instrument recorded as G520203, of Official Records.

For:	Electric transmission and distribution lines
In favor of:	Public Utility District No. 1 of Clark County

14. Matters set forth by survey recorded on March 12, 1990, in Book 26, Page 104, of Official Records.

15. Real estate excise tax pursuant to the authority of RCW Chapter 82.45 and subsequent amendments thereto.

    The rate of real estate excise tax to a sale on or after 1/1/2023 for properties which are not formally classified and specially valued as timberland or agricultural land is:

    1.60% on any portion of the sale price of $525,000 or less;
    1.78% on any portion of the sale price above $525,000.01, up to $1,525,000;
    3.25% on any portion of the sale price above $1,525,000.01, up to $3,025,000;
    3.50% on any portion of the sale price above $3,025,000;

    Levy Code: 117055

16. Taxes and charges, together with interest, penalty and statutory foreclosure costs, if any, after delinquency:

Tax Year:	2024
Tax Type:	County
Tax ID No.:	178209-000
Taxing Entity:	Clark County Treasurer
Total Annual Tax:	$5,481.67
First Installment:	$2,740.88
First Installment Status:	Paid
Second Installment:	$2,740.79
Second Installment Status:	Due
Second Installment Due/Paid Date:	October 31, 2024

17. Any unpaid assessments or charges, and liability for further assessments or charges by:
    City of Camas.

18. NOTE: Please be advised that our search did not disclose any open deeds of trust of record. If you should have knowledge of any outstanding obligation, please contact your title officer immediately for further review.

19. We are informed that Windfall Holdings is a limited liability company (LLC). A copy of the duplicate original of the filed LLC certificate of formation, the LLC agreement, and all subsequent modifications or amendments must be submitted to the company for review.

Note 1: According to the application for title insurance, the proposed insured(s) is/are: HSR Holdings, LLC.
We find no pertinent matters of record against the name(s) of said party(ies).

Note 2: We are informed that HSR Holdings is a limited liability company (LLC). A copy of the duplicate original of the filed LLC certificate of formation, the LLC agreement, and all subsequent modifications or amendments must be submitted to the company for review.

Note 3: Upon examination it has been determined that the subject property does not meet the underwriting qualifications to receive the coverage provided in the ALTA Homeowner's Policy of Title Insurance for a one to four family residence. The coverage provided for the subject property will be the Standard 2021 ALTA Owner's Policy. The policy and any applicable endorsements will be issued at the filed rate.

Note 4: The following is incorporated herein for information purposes only and is not part of the exception from coverage (Schedule B-II of the commitment and Schedule B of the policy):The following instrument(s), affecting said property, is (are) the last instrument(s) conveying subject property filed for record within 24 months of the effective date of this commitment:
None of Record

Note 5: The matters relating to the questions of survey, rights of parties in possession, and unrecorded liens for labor and material have been cleared for the loan policy which, when issued, will contain the ALTA 9.10 or WLTA 100 Endorsement, as appropriate for the policy form.

Note 6: Based on information provided to the company, on the date of this commitment it appears that there is located on the land:

1-4 Family Residence

Known As:
26416 SE 8th Street
Camas, WA 98607

Note 7: The county tax rolls disclose the current assessed valuations as follows:

Land:	$638,400.00
Improved:	$0.00
Total:	$638,400.00
Levy Code:	117055

Note 8: The Company requires the proposed insured to verify that the land covered by this Commitment is the land intended to be conveyed in this transaction. The description of the land may be incorrect, if the application for title insurance contained incomplete or inaccurate information. Notify the Company well before closing if changes are necessary. Closing instructions must indicate that the legal description has been reviewed and approved by all parties.

Note 9: The following may be used as an abbreviated legal description on the documents to be recorded, per amended RCW 65.04. Said abbreviated legal description is not a substitute for a complete legal description within the body of the document:

TL #117 SEC 35 T2N R3E WM

Note 10: When sending documents for recording, via U.S. mail or special courier service, please send to the following address, unless specific arrangements have been made with your title unit:
WFG National Title Company
2004 SE 192nd Avenue
Suite 100
Vancouver, WA 98683
Attn: Recording Dept.

End of Schedule B, Part II

File No. 24-178830

WFG National Title Insurance Company
a Williston Financial Group company

COMMITMENT FOR TITLE INSURANCE
Issued By
WFG NATIONAL 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, WFG National Title Insurance Company, a Florida 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 one hundred eighty (180) days after the Commitment Date, this Commitment terminates and the Company's liability and obligation end.

WFG NATIONAL TITLE INSURANCE COMPANY

By: _____
Steve Ozonian, President/CEO

ATTEST: _____
Joseph V. McCabe, EVP/General Counsel/Secretary



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;
   e. Schedule B, Part I—Requirements; and
   f. Schedule B, Part II—Exceptions; and
   g. a counter-signature by the Company or its issuing agent that may be in electronic form.
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 shall not be 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.

   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 and authenticated by a person authorized by the Company**.**

   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

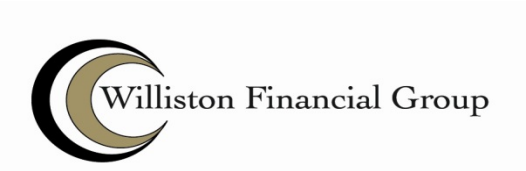
This Commitment incorporates by reference all Conditions for making a claim in the Policy to be issued to the Proposed Insured. Commitment Condition 9 does not modify the limitations of liability in Commitment Conditions 5 and 6.

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.

11. ARBITRATION – *INTENTIONALLY DELETED*

File No. 24-178830



Williston Financial Group Privacy Notice

Williston Financial Group LLC, WFG National Title Insurance Company, and each of the affiliates listed below (collectively "WFG" or the "WFG Family") believe it is important to protect your privacy and confidences. We recognize and respect the privacy expectations of our customers. We believe that making you aware of how we collect information about you, how we use that information, and with whom we share that information will form the basis for a relationship of trust between us. This Privacy Notice provides that explanation. We reserve the right to change this Privacy Notice from time to time.

WFG's primary business is providing appraisal, title insurance, and escrow services for the sale or refinance of real property. This can be a complicated process involving multiple parties, many of whom have been selected by our customers, each filling a specialized role. In part, you have hired WFG to coordinate and smooth the passage of the information necessary for an efficient settlement or closing.

In the course of this process, WFG collects a significant amount of personal and identifying information about the parties to a transaction, including sensitive items that include but are not limited to: your contact information, including email addresses, Social Security numbers, driver's license, and other identification numbers and information; financial, bank and insurance information; information about past and proposed mortgages and loans; information about properties you currently or previously owned; your mortgage application package; and the cookie, IP address, and other information captured automatically by computer systems.

Much of this information is gathered from searches of public land, tax, court and credit records to make certain that any liens, challenges or title defects are addressed properly. Some of the information that is collected is provided by you or the computer systems you use. We also may receive information from real estate brokers and agents, mortgage brokers and lenders, and others working to facilitate your transaction, as well as information from public, private or governmental databases including credit bureaus, 'no-fly' lists, and terrorist 'watch lists'.

What Information is Shared?

WFG DOES NOT SELL any of your information to non-affiliated companies for marketing or any other purpose.

However, some of the same information does get shared with persons inside and outside the WFG Family in order to facilitate and complete your transaction.

For example:

However, some of the same information does get shared with persons inside and outside the WFG Family in order to facilitate and complete current and future transactions.

For example:

- Information, draft documents, and closing costs will pass back and forth between WFG and your mortgage broker and lender to facilitate your transaction.
- Information, including purchase agreements and amendments, will pass back and forth between WFG and the real estate agents and brokers, the mortgage brokers and lenders, the lawyers and accountants, and others involved in facilitating the transaction.
- WFG may order property searches and examinations from title searchers, abstractors and title plants.
- WFG may use third parties to obtain tax information, lien information, payoff information, and condominium or homeowners' association information.
- Third parties may be engaged to prepare documents in connection with your transaction.
- Surveys, appraisals, and inspections may be ordered.
- Within the WFG Family of companies, we may divide up the work to handle each closing in the most efficient manner possible and to meet specific legal and licensing requirements. Certain parts of your closing (for example a search or disbursement) may be handled by another division or company within the WFG Family.

- When it is time for signatures, your complete closing package may be sent to a notary, remote online notary, or notary service company who will arrange to meet with you to sign documents. The notary will, in turn, send signed copies back to us along with copies of your driver's license or other identity documents, usually by mail, UPS, Federal Express or another courier service.
- Your deed, mortgage and other documents required to perfect title will be recorded with the local recorder of deeds.
- In some cases, we use an outside service to coordinate the recording or electronic-recording of those instruments, and they will receive copies of your deeds, mortgages and other recordable documents to process, scan and send on to the recording office.
- Information within your title policy may be shared with WFG National Title Insurance Company title policy issuing agents to facilitate future financial transactions involving your property.
- Various government agencies get involved. The law requires us to provide certain information to the IRS, the U.S. Department of the Treasury, local and state tax authorities, and other regulatory and governmental agencies.
- **WFG title policy issuing agents only**: personal information provided by you may be shared with a third party for the purposes of facilitating training to obtain CE/CLE credits.

You have a choice in the selection of a mortgage broker, lender, real estate broker or agent and others that make up your 'transaction team.' Information flows to and from the members of the transaction team you have selected to facilitate an efficient transaction for you.

When WFG selects and engages a third party provider, we limit the scope of the information shared with that third party to the information reasonably necessary for that service provider to provide the requested services. With most, we have entered into agreements in which they expressly commit to maintain a WFG customer's information in strict confidence and use the information only for purposes of providing the requested services, clearing title, preventing fraud and addressing claims under our title insurance policies.

How does WFG use your Information?

We may use your personal information in a variety of ways, including but not limited to:

- Provide the products, services and title insurance you have requested, and to close and facilitate your transaction.
- Provide and use historic transaction information to facilitate future financial transactions.
- Coordinate and manage the appraisal process.
- Handle a claim or provide other services relating to your title insurance policies.
- Create, manage, and maintain your account.
- Operate and improve WFG's applications and websites, including WFG MyHome®, WFG's secure communication and transaction portal. Your information is used for access management, payment processing, site administration, internal operations, troubleshooting, data analysis, testing, research, and for statistical purposes.
- Respond to your requests, feedback or inquiries.
- Comply with laws, regulations, and other legal requirements.
- Comply with relevant industry standards and our policies, including managing WFG's risk profile through reinsurance.
- Protect and enforce your rights and the rights of other users against unlawful activity, including identity theft and fraud.
- Protect and enforce our collective rights arising under any agreements entered into between WFG and you or any other third party.
- Protect the integrity and maintain security of our applications, websites, and products.
- Operate, evaluate, and improve our business.
- Provide you with information about products, services, and promotions from WFG or third parties that may interest you.
- **WFG title policy issuing agents only**: Provide you with a training platform to obtain CE/CLE credits

How Do We Store and Protect Your Personal Information?

Although no system can guarantee the complete security of your personal information, we will use our best efforts to maintain commercially reasonable technical, organizational, and physical safeguards, consistent with applicable law, to protect your personal information and our systems and sites from malicious intrusions or hacking.

How Long Do We Keep Your Personal Information?

We keep your personal information for as long as necessary to comply with the purpose for which it was collected, our business needs, and our legal and regulatory obligations. We may store some personal information indefinitely. If we dispose of your personal information, we will do so in a way that is secure and appropriate to the nature of the information subject to disposal.

Computer Information

When you access a WFG website, or communicate with us by e-mail, we may automatically collect and store more information than you are expressly providing when you fill out a survey or send an email. This may include:

- Your IP Address.
- Your email address, your alias and, social media handles.
- The type of browser and operating system you use.
- The time of your visit.
- The pages of our site you visit.
- Cookies.

In order to provide you with customized service, we make use of Web browser cookies. Cookies are files that help us identify your computer and personalize your online experience. You may disable cookies on your computer, but you may not be able to download online documents or access certain websites unless cookies are enabled.

The technical information we collect is used for administrative and technical purposes and to prevent fraud and provide identity verification. For instance, we may use it to count the number of visitors to our website and determine the most popular pages. We may also use it to review types of technology you are using, determine which link brought you to our website, assess how our advertisements on other websites are working, help with maintenance, and improve our customers' experience.

We may compare information gathered on previous visits to verify that we are interacting with the same parties and not a potential imposter.

If we ask you to fill out any forms or surveys, we will use the information we receive only for the specific purposes indicated in those forms or surveys.

The information you and your transaction team send us in emails or attached to an email, or provide through any of our online tools, is used for purposes of providing title, escrow and appraisal management services and used for the purposes described above.

In addition to the above, if you use an eClosing platform to sign your real estate transaction additional information may be collected. This may include:

- Your IP address.
- Your location.
- Your email address and your alias.
- The type of browser and operating system you use.
- The time of your visit.
- Your biometrics.
- Your image.
- Video recording of your transaction signing.
- Transaction metadata.
- Cookies.

Links to Third Party Sites

Our Applications and Websites may contain links to third-party websites and services. Please note that these links are provided for your convenience and information, and the websites and services may operate independently from us and have their own privacy policies or notices, which we strongly suggest you review. This Privacy Notice applies to WFG's applications and websites only.

Do Not Track

Because there is not an industry-standard process or defined criteria to permit a user to opt-out of tracking their online activities ("Do Not Track"), our websites do not currently change the way they operate based upon detection of a Do Not Track or similar signal. Likewise, we cannot assure that third parties are not able to collect information about your online activities on WFG websites or applications.

Social Media Integration

Our applications, websites, and products contain links to and from social media platforms. You may choose to connect to us through a social media platform, such as Facebook, Twitter, Google, etc. When you do, we may collect from the social media platform additional information from or about you, such as your screen names, profile picture, contact information, contact list, and the profile pictures of your contacts. The social media platforms may also collect information from you.

When you click on a social plug-in, such as Facebook's "Like" button, Twitter's "tweet" button, or the Google+, that particular social network's plug-in will be activated and your browser will directly connect to that provider's servers. Your action in clicking on the social plug-in causes information to be passed to the social media platform.

We do not have control over the collection, use and sharing practices of social media platforms. We therefore encourage you to review their usage and disclosure policies and practices, including their data security practices, before using social media platforms.

How Can You "Opt-Out?"

We do not sell your information; therefore there is no need to opt-out of such reselling. Under various laws, you can opt-out of the sharing of your information for more narrow purposes. For additional detail, consult the Links under the "Legal" Notices attached below.

The "Legal" Notices

To comply with various federal and state laws, we are required to provide more complete legal notices and disclosures – see links below. The state-specific statutes referenced therein may also give residents of those states additional rights and remedies.

Privacy Notice for California Residents - https://national.wfgnationaltitle.com/privacy-notice-california

Privacy Notice for Oregon Residents - https://national.wfgnationaltitle.com/privacy-notice-oregon

How to Contact Us

If you have any questions about WFG's privacy notice or how we protect your information, please contact WFG:

- By email: Consumerprivacy@willistonfinancial.com
- By telephone: 833-451-5718
- By fax: 503-974-9596
- By mail: 12909 SW 68th Pkwy, Suite 350, Portland, OR 97223

WFG FAMILY

WILLISTON FINANCIAL GROUP LLC
WFG NATIONAL TITLE INSURANCE COMPANY
WFG LENDER SERVICES, LLC
WFGLS TITLE AGENCY OF UTAH, LLC
WFG NATIONAL TITLE COMPANY OF WASHINGTON, LLC
WFG NATIONAL TITLE COMPANY OF CALIFORNIA
WFG NATIONAL TITLE COMPANY OF TEXAS, LLC D/B/A WFG NATIONAL TITLE COMPANY
UNIVERSAL TITLE PARTNERS, LLC
VALUTRUST SOLUTIONS, LLC
MYHOME, A WILLISTON FINANCIAL GROUP COMPANY, LLC (formerly known as WILLISTON ENTERPRISE SOLUTIONS & TECHNOLOGY, LLC)
WFG NATIONAL TITLE COMPANY OF CLARK COUNTY, WA, LLC, D/B/A WFG NATIONAL TITLE

Rev 12.20.2022

File No. 24-178830

Rev. 12/2022

FACTS	WHAT DOES WILLISTON FINANCIAL GROUP DO WITH YOUR PERSONAL INFORMATION?
Why?	Financial companies choose how they share your personal information. Federal law gives consumers the right to limit some but not all sharing. Federal law also requires us to tell you how we collect, share, and protect your personal information. Please read this notice carefully to understand what we do.
What?	The types of personal information we collect and share depend on the product or service you have with us. This information can include: • Social Security number and other government identification information • Your name, address, phone, and email • Information about the property, any liens and restrictions • Financial Information including credit history and other debt • Financial account information, including wire transfer instructions.
How?	All financial companies need to share customers' personal information to run their everyday business. In the section below, we list the reasons financial companies can share their customers' personal information; the reasons Williston Financial Group chooses to share; and whether you can limit this sharing.

Reasons we can share your personal information	Does Williston Financial Group share?	Can you limit this sharing?
For our everyday business purposes— such as to process your transactions, maintain your account(s), respond to court orders and legal investigations, or report to credit bureaus	Yes	No
For our marketing purposes— to offer our products and services to you	Yes	No
For joint marketing with other financial companies	No	We don't share
For our affiliates' everyday business purposes— information about your transactions and experiences	Yes	No
For our affiliates' everyday business purposes— information about your creditworthiness	No	We don't share
For our affiliates to market to you	No	We don't share
For nonaffiliates to market to you	No	We don't share

To limit our sharing	• Call 833-451-5718—our menu will prompt you through your choice(s) • Visit us online: http://bit.ly/WFGsConsumerPrivacyInformationRequestPage or e-mailing us at consumerprivacy@willistonfinancial.com • Mail the form below Please note: If you are a new customer, we can begin sharing your information from the date we sent this notice. When you are no longer our customer, we continue to share your information as described in this notice. However, you can contact us at any time to limit our sharing.
Questions?	Call 833-451-5718 or Email consumerprivacy@willistonfinancial.com

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Who we are	
Who is providing this notice	Williston Financial Group, LLC and its affiliates and subsidiaries as listed below:
What we do	
How does Williston Financial Group protect my personal information?	To protect your personal information from unauthorized access and use, we use security measures that comply with federal law. These measures include computer safeguards and secured files and buildings. We limit access to your information to employees that need to use the information to process or protect transaction. We take industry standard (IPSEC) measures to protect against malicious intrusions or hacking
How does Williston Financial Group collect my personal information?	We collect your personal information, for example, when you • Apply for insurance • Engage us to provide appraisal, title and escrow services • Give us your contact information • Provide your mortgage information • Show your driver's license We also collect your personal information from others, such as real estate agents and brokers, mortgage brokers, lenders, credit bureaus, affiliates, and others
Why can't I limit all sharing?	Federal law gives you the right to limit only • sharing for affiliates' everyday business purposes—information about your creditworthiness • affiliates from using your information to market to you • sharing for nonaffiliates to market to you State laws and individual companies may give you additional rights to limit sharing. See below for more on your rights under state law.
What happens when I limit sharing for an account I hold jointly with someone else?	Your choices will apply to everyone on your policy.
Definitions	
Affiliates	Companies related by common ownership or control. They can be financial and nonfinancial companies. Our affiliates include companies with a common corporate identity, including those listed below.
Nonaffiliates	Companies not related by common ownership or control. They can be financial and nonfinancial companies. Nonaffilliates we share with can include real estate agents and brokers, mortgage brokers, lenders, appraisers, abstractors and title searchers and others as appropriate to facilitate your transaction.
Joint marketing	A formal agreement between nonaffiliated financial companies that together market financial products or services to you. Williston Financial Group does not jointly market.
Other important information	
As a resident or citizen of certain states, we may have to provide additional state specific privacy notices and you may have rights other than as set forth above. The links below will provide state specific information: **Privacy Notice for California Residents** - https://national.wfgnationaltitle.com/privacy-notice-california **Privacy Notice for Oregon Residents** - https://national.wfgnationaltitle.com/privacy-notice-oregon	

7. Critical Areas Report

Ecological Land Services

October 7, 2024

HSR Capital, LLC
Attn: Andy Swanson
500 Broadway Street #120
Vancouver, WA 98660

Subject: **Critical Areas Determination – Camas Woods NW**

Dear Mr. Swanson,

Ecological Land Services, Inc. (ELS) has assessed Clark County parcel numbers 178109000 and 178209000 in Camas, Washington for the presence of critical areas. The approximately 8.82-acre study area is located at 26416 SE 8th Street in Camas, Washington within Section 29, Township 4 North, and Range 1 East of the Willamette Meridian (Figure 1). ELS biologists conducted field work on September 13, 2024, to inventory site conditions. This memorandum summarizes the findings of field work in accordance with the *Camas Municipal Code (CMC), Title 16 – Environment (Updated Jul 12, 2024).*

Methods

The property was evaluated for the presence of wetlands using the Routine Determination Method according to the U.S. Army Corps of Engineers' 1987 *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers' Wetland Delineation Manual* (Environmental Laboratory 1987)*; Western Mountains, Valleys, and Coast Region (Version 2.0)* (Corps 2010). The Routine Determination Method and defining wetland criteria are discussed further in Attachment A. Wetlands are regulated as "Waters of the United States" by the U.S. Army Corps of Engineers (Corps) and as "Waters of the State" by the Washington Department of Ecology (Ecology), and locally by the City of Camas.

ELS biologists conducted a reconnaissance of the aforementioned parcels on September 13, 2024, to determine if critical areas exist within the study area. Prior to field work, ELS reviewed current and historic aerial photographs of the study area and consulted online databases for soil, wetland, and priority habitat and species records. No test plots were taken as there was no evidence of wetlands onsite. No hydric soils are mapped and vegetation consisted entirely of upland species. General vegetation was noted and is discussed later in this report.

Study Area Description

The study area is located just off SE 8th Street, east of SE Everett Street, and abuts Grace Foursquare Church. Existing structures within the study area include two separate single-family residences (Figure 2). In the northeast corner of parcel 178109000 lies a utility easement for transmission lines.

Topographically the study area is relatively flat. Vegetation is dominated by planted Douglas fir (*Pseudotsuga menziesii*, FACU) with typical native understory vegetation.

1157 · 3rd Avenue Suite 220A • Longview, Washington 98632 • Tel (360) 578-1371 • Fax (360) 414-9305

Vegetation

Two distinct areas of vegetation exist onsite. The area surrounding the residences consisted of tall, mature Douglas fir with some big leaf maples (*Acer macrophyllum*, FACU) throughout. Understory vegetation was sparse and consisted of low growing herbaceous species such as strawberry (*Fragaria vesca*, FACU**)**, hairy cat's ear (*Hypochaeris radicata*, FACU), creeping buttercup (*Ranunculus repens*, FAC), and mowed grasses. The rest of the study area was dominated by Douglas fir trees planted in rows, with some deciduous trees, including big leaf maple, red alder (*Alnus rubra*, FAC), and cherry (*Prunus* sp., assumed FACU) spread throughout. Understory plants were typical of a forested area and included beaked hazelnut (*Corylus cornuta*, FACU), sword fern (*Polystichum munitu*, FACU), salal (*Gaultheria shallon*, FACU), trailing blackberry (*Rubus ursinus*, FACU), and vine maple (*Acer circinatum*, FAC). Invasive species included herb Robert (*Geranium robertianum*, FACU), English holly (*Ilex aquifolium*, FACU), Himalayan blackberry (*Rubus armeniacus*, FAC), burdock (*Arctium* sp., unknown), and old man's beard (*Clematis vitalba*, FAC)

The plant indicator status following the plant scientific name is defined by the *National Wetland Plant List Indicator Rating Definitions* (Corps 2012) and is in Attachment A.

Soils

Soils onsite are mapped as Hesson clay loam, 0 to 8 percent slopes (HcB) and Washougal gravelly loam, 8 to 30 percent slopes (WgE) as referenced on the Natural Resources Conservation Service (NRCS 2024a) website (Figure 3). HcB is identified as a well-drained soil, with an average depth to water table of more than 80 inches; this soil is typically found on terraces and is formed of the parent material alluvium. A typical profile for this soil consists of clay loam from 0 to 12 inches, and clay from 12 to 60 inches below ground surface (BGS). WgE is identified as somewhat excessively drained soil, with an average depth to water table of more than 80 inches; this soil is typically found on terraces and is formed of the parent material alluvium. A typical profile for this soil is made up of gravelly medial loam from 0 to 20 inches, very gravelly medial loam from 20 to 28 inches, and very cobbly coarse sand from 28 to 60 inches BGS. According to the *Washington State Hydric Soils List* HcB and WgE are not classified as hydric soils (NRCS 2024b)

Hydrology

No primary or secondary wetland hydrology indicators were observed within the study area.

National Wetlands Inventory

The U.S Fish and Wildlife Service's webpage National Wetland Inventory (NWI) does not identify wetlands onsite (Figure 4). ELS biologists agree with the NWI as no wetlands were found onsite. Two wetlands are present to the northwest of the study area, a Freshwater Emergent Wetland and a Freshwater Forested/Shrub Wetland. Neither connect nor convey water to the study area and are not within 300 feet of the study area, therefore buffers would not extend onto the study area. NWI maps are typically used to gather wetland information about a region and, because of the large scale necessary for regional mapping, are limited in accuracy for localized analysis.

Clark County Critical Areas Mapping

Clark County critical areas mapping (Figure 5) does not show any critical areas onsite. ELS field investigations are consistent with this mapping.

Results
No wetlands or other critical areas were identified onsite. No hydric soils or wetland hydrology were observed, and vegetation consisted primarily of upland species. ELS biologists were constrained to the boundaries of the study area; however, no offsite wetlands were observed which may have buffers that extend onsite.

Limitations
ELS bases this report's determinations on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with our determinations. However, the information contained in this report should be considered preliminary and used at your own risk until it has been approved in writing by the appropriate regulatory agencies. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

If you have any questions or need additional information, please contact me at (360) 835-9082 or Jess@eco-land.com.

Sincerely,



Jess Andrade
Biologist

Figures:
Figure 1 Vicinity Map
Figure 2 Existing Conditions
Figure 3 NRCS Soil Survey
Figure 4 USFWS National Wetlands Inventory
Figure 5 Clark County Critical Areas

Attachment A:
Routine Determination Methods and Plant Indicator Rating Definitions

References

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual,* Technical Report Y-87-1. U.S. Army Corps of Engineer Waterways Experiment Station, Vicksburg, Mississippi.

City of Camas. July 12, 2024. *Camas Municipal Code (WMC),* Chapter *16.51 Critical Areas*. Camas, Washington.

Clark County, 2024. Clark County Maps Online. Accessed online September 2024. https://gis.clark.wa.gov/mapsonline/.

U.S. Army Corps of Engineers. 2010. *Final Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-13. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center.

U.S. Army Corps of Engineers. 2012. *National Wetland Plant List Indicator Rating Definitions,* ed. R.W. Lichvar, N.C. Melvin, M.L. Butterwick, and W.N. Kirchner. ERDC/CRREL TN-12-1. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center.

U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). 2024a. *Soil Survey of Clark County, Washington.* Accessed online September 2024. http:www.or.nrcs.gov/pnw_soil/wa_reports.html.

U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS). 2024b. *Washington State Hydric Soils List*. Accessed online September 2024. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx.

U.S. Fish and Wildlife Service. 1988. *National Wetlands Inventory.* Accessed online September 2024. http://wetlandsfws.er.usgs.gov/wtlnds/launch.html.

WASHINGTON

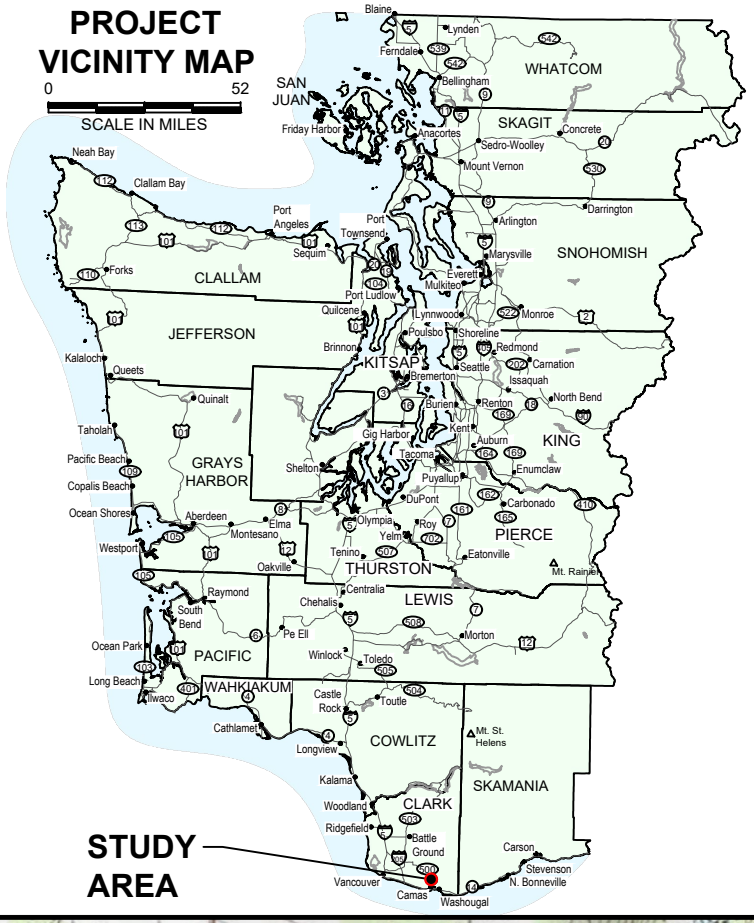


45.616831° Latitude
-122.400263° Longitude

LOCATION MAP

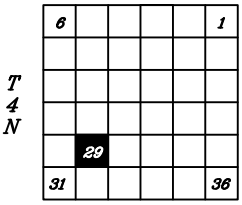
PROJECT VICINITY MAP

0 52
SCALE IN MILES



STUDY AREA

R 1 E



NOTE:
Quadrangle topographic map from USGS.

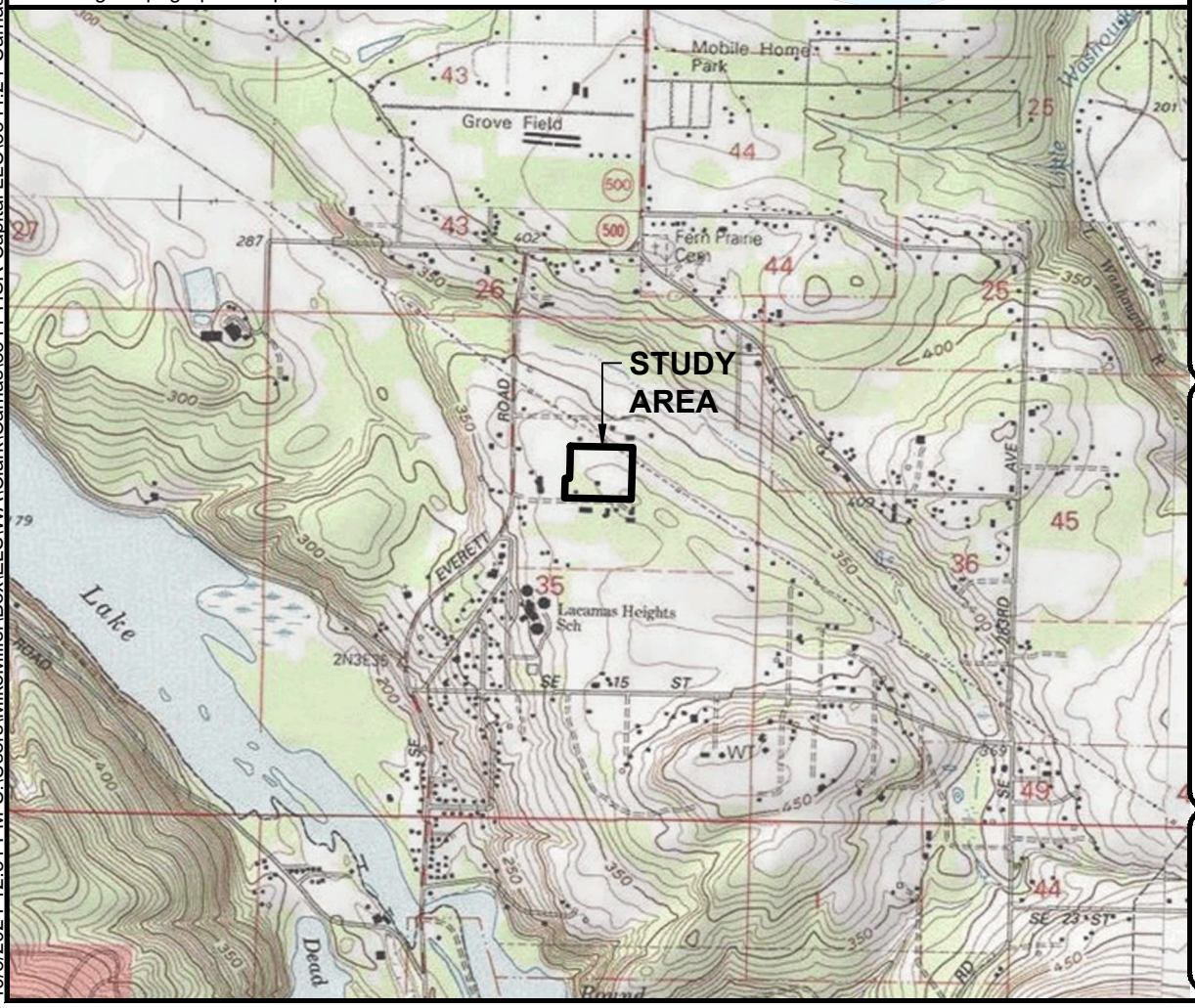


Figure 1-
VICINITY MAP
Camas Woods NW
HSR Capital, LLC
City of Camas, Clark County, WA
Section 29, Township 4N, Range 1E, W.M.

DATE: 10/3/24
DWN: MPM
REQ. BY: JA
PRJ. MGR: JA
CHK:
PROJECT NO: 3341.24

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578–1371
Fax: (360) 414–9305
www.eco-land.com

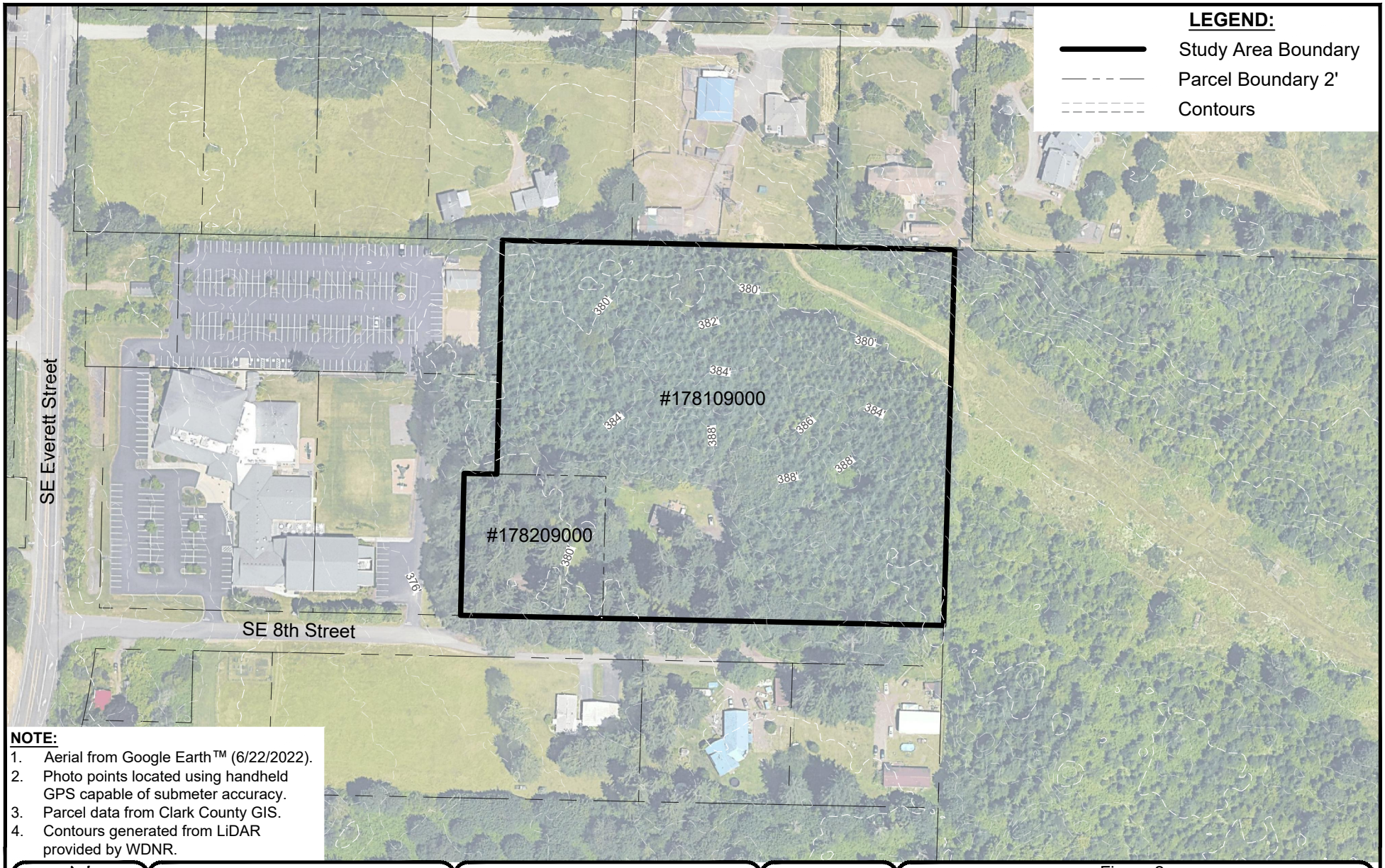
Ecological Land Services

0 2000 4000
SCALE IN FEET

N
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NOTE:

1. Aerial from Google Earth™ (6/22/2022).
2. Photo points located using handheld GPS capable of submeter accuracy.
3. Parcel data from Clark County GIS.
4. Contours generated from LiDAR provided by WDNR.

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Ecological Land Services
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

DATE: 10/3/24
DWN: MPM
REQ. BY: JA
PRJ. MGR: JA
CHK:
PROJECT NO: 3341.24

Figure 2-
EXISTING CONDITIONS
Camas Woods NW
HSR Capital, LLC
City of Camas, Clark County, WA
Section 29, Township 4N, Range 1E, W.M.

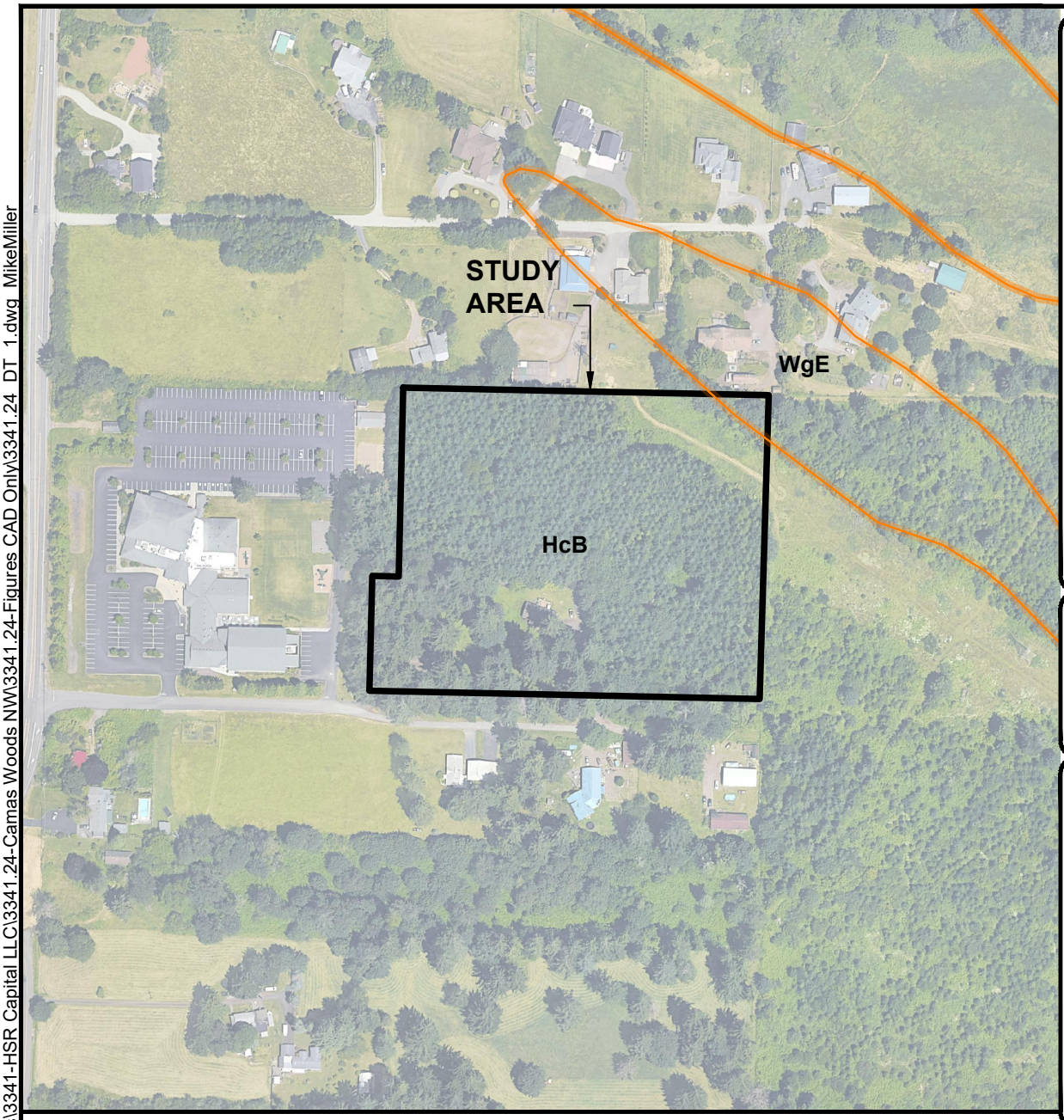


Figure 3-
NRCS SOIL SURVEY
Camas Woods NW
HSR Capital, LLC
City of Camas, Clark County, WA
Section 29, Township 4N, Range 1E, W.M.

DATE: 10/3/24
DWN: MPM
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www.eco-land.com
Ecological Land Services

LEGEND:

- Study Area Boundary
- NRCS Soil Boundary
- **HcB** Hesson clay loam, 0 to 8 percent slopes. Not hydric.
- **WgE** Washougal gravelly loam, 8 to 30 percent slopes. Not Hydric.

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NOTE(S):
1. Map provided on-line by NRCS at web address: *http://websoilsurvey.nrcs.usda.gov/app/*

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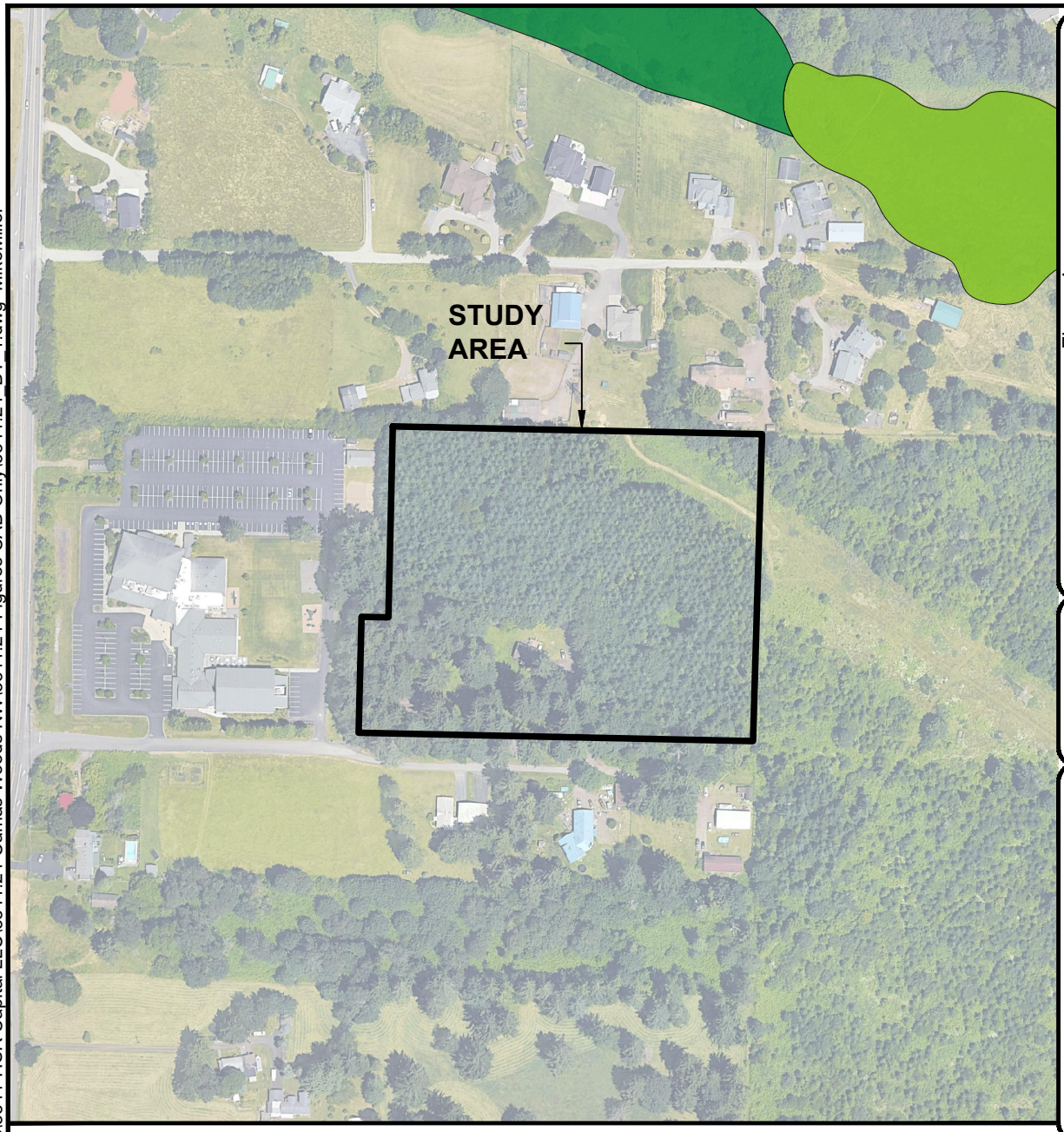


Figure 4-
USFWS NATIONAL WETLANDS INVENTORY
Camas Woods NW
HSR Capital, LLC
City of Camas, Clark County, WA
Section 29, Township 4N, Range 1E, W.M.

DATE: 10/3/24
DWN: MPM
REQ. BY: JA
PRJ. MGR: JA
CHK:
PROJECT NO: 3341.24

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services

No mapped wetlands indicated onsite by US Fish & Wildlife Service.

LEGEND:

Study Area Boundary

Wetlands

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

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NOTE(S):

1. Map provided on-line by US Fish & Wildlife Service at web address: *https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper*

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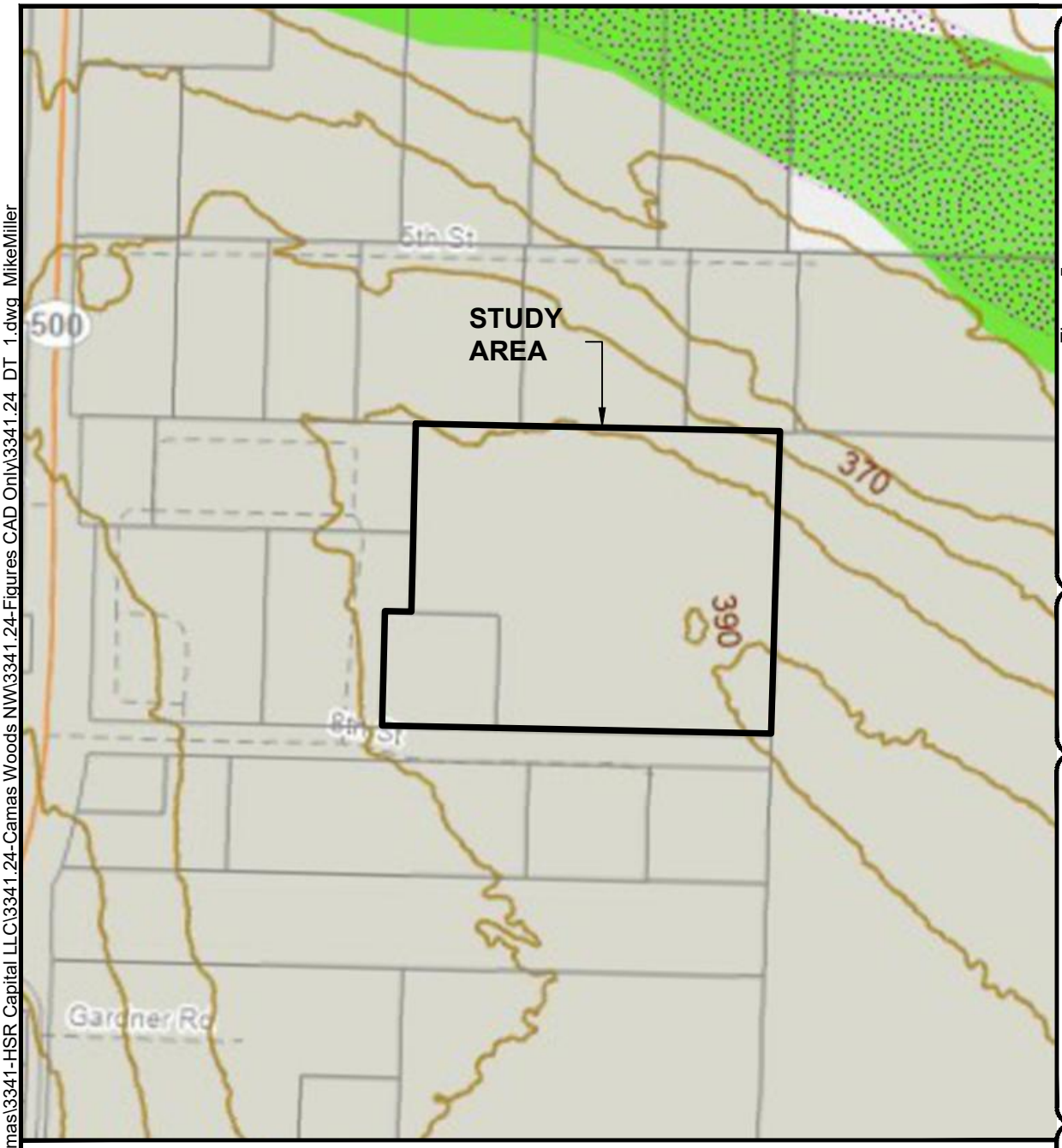


Figure 5-
CLARK COUNTY CRITICAL AREAS
Camas Woods NW
HSR Capital, LLC
City of Camas, Clark County, WA
Section 29, Township 4N, Range 1E, W.M.

DATE: 10/3/24
DWN: MPM
REQ. BY: JA
PRJ. MGR: JA
CHK:
PROJECT NO: 3341.24

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www.eco-land.com
Ecological Land Services

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LEGEND:

Study Area Boundary

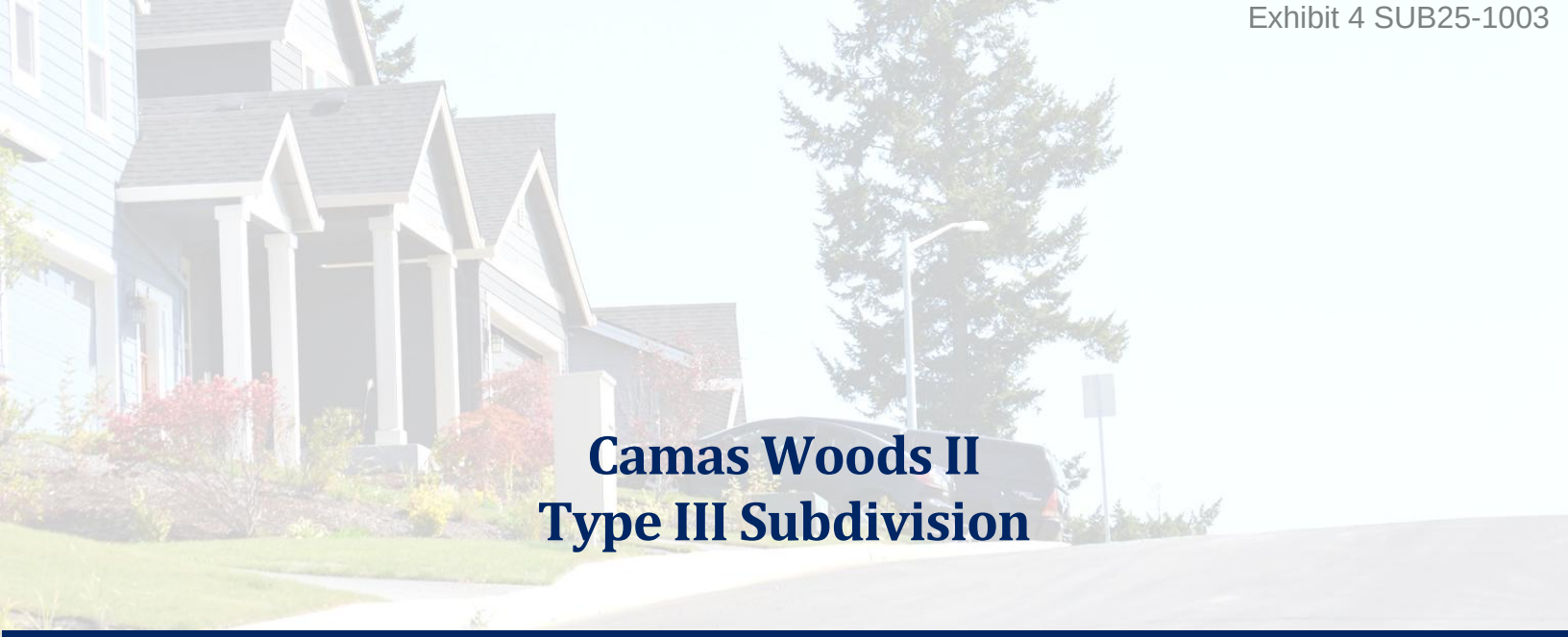
Slopes and Geologic Hazards Group Contour Lines
Contour Lines - 10 ft

Soils and Wetlands Inventory
Hydric Soils
Potential Wetlands Presence

NOTE(S):
1. Map provided on-line by Clark County at web address: *https://gis.clark.wa.gov/mapsonline/index.cfm?site=Environmental*

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2. Land Use Narrative



Camas Woods II
Type III Subdivision

Date: April 2025

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

Applicant:
Camas Woods 3, LLC
19120 SE 34th Street, Suite 103
Vancouver, WA 98683
Andy Swanson
(503) 936-8514
andy@hsr-capital.com

AKS Job Number: 8397-01

AKS ENGINEERING & FORESTRY

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Camas Woods II
Type III Subdivision

Submitted to:

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

Applicant:

Camas Woods 3, LLC
19120 SE 34th Street, Suite 103
Vancouver, WA 98683
Andy Swanson
(503) 936-8514
andy@hsr-capital.com

Property Owners:

Larry K. Johnston & Melinda S. Johnston
5616 NE 399th Street
La Center, WA 98629

Windfall Holdings LLC
5616 NE 399th Street
La Center, WA 98629

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:

26514 SE 8th Street & 26416 SE 8th Street
Camas, WA 98607

Clark County Parcels:

178109-000 & 178209-000

Site Size:

±8.79 acres (±383,003 square feet)

Land Use Districts:

North Shore Higher Density Residential (HD-NS)

I. Executive Summary

Through this application, Camas Woods 3, LLC (Applicant) requests approval from the City of Camas (City) to subdivide the subject site (described below) into a 78-lot subdivision (Camas Woods II). The subdivision will include 78 lots for the future construction of 78 attached single-family homes. The project site will gain access from SE 8th Street. An internal street network will be constructed to serve the lots. The project will also accommodate future circulation to the east and west with the half-width frontage improvements of SE 8th Street. A local street within the site will stub to the north to provide future circulation and connectivity. Each lot will be provided with sanitary sewer and water service, storm sewer, and other dry utilities. In addition to this narrative, the application package includes the materials necessary for the City to review and approve this submittal, including Applicant Authorization Forms, the Pre-Application Conference Report, Preliminary Engineering Plans, a Geotechnical Soil Analysis Report, a Preliminary Stormwater Design Report (TIR), a Traffic Study, a Critical Areas Report, a SEPA Checklist, an Archaeological Predetermination Report, a Title Report, a Tree Report, and Mailing Labels.

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

- Subdivision of two single-family lots into 78 attached single-family lots
- Construction of an internal public street network to serve the development and provide future circulation to adjacent properties
- Construction of all necessary utilities to serve the project and future development
- Creation of opens space for existing tree preservation.
- Extension of the multi-use path from the Camas Woods subdivision to the east.

This written narrative includes findings of fact demonstrating that this application complies with all applicable approval criteria. These findings are supported by substantial evidence, including Preliminary Engineering 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 two parcels and is ±8.79 acres in size. The site is addressed as 26514 SE 8th Street and 26416 SE 8th Street, Camas, WA 98607. The included properties are identified as Parcels 178109-000 and 178209-000 of the Northeast Quarter of Section 35, Township 2 North, Range 3 East, Willamette Meridian. The site is zoned North Shore Higher Density Residential (HD-NS) and is in the Airport Overlay – Zone C overlay. The properties north and east of the site are zoned North Shore Lower Density Residential (LD-NS). The properties south and west of the site are zoned HD-NS. The parcels to the north and east are in use as single-family residential. The parcels to the west are in use as a church. The parcels to the south of the site across SE 8th Street are currently in use as single-family residential.

The site fronts SE 8th Street (public) right-of-way to the south. Pavement for SE 8th Street currently terminates at the west side of Parcel 178209-000. Access for Parcels 178109-000 and 178209-000 is currently gained through driveways from termination SE 8th Street pavement. Access to SE 8th Street is from SE Everett Steet (State Route 500).

The site is relatively flat, with a low ridge that runs from the southeast corner to the northwest corner, and slopes down to the northeast and southwest. According to Clark County Geographic Information Services (GIS), portions of the site have slopes up to 15 percent. The existing vegetation consists of

evergreen and deciduous trees and shrubs, turfgrass, and field grass. The archaeological predictive for the site is moderate to high and there are mapping indicators for archaeological site buffers. All critical areas and wetlands will be discussed in further detail later in this narrative.

III. Applicable Review Criteria

Camas Municipal Code

Title 5 – Business Taxes, Licenses and Regulations

Chapter 5.45 Telecommunications

5.45.365 Location of facilities.

All facilities shall be constructed, installed, and located in accordance with the following terms and conditions, unless otherwise specified in an authorization, franchise, or lease agreement.

Response: All electric, cable, and telecommunication lines that will be installed for the project will be located underground. The final location of these utilities will be determined with final construction plans.

Title 12 – Streets, Sidewalks and Public Places

Chapter 12.24 Street Names

Response: All planned streets will be named according to the City of Camas *Street Naming Manual* (October 2010). All street names shown in the Preliminary Engineering Plans are placeholders for reference purposes only. All streets will be named prior to final platting.

Title 14 – Stormwater Provisions

Chapter 14.02 Stormwater Control

Response: The site has two drainage basins for stormwater. Stormwater runoff generated from the south half of the site will be collected on-site and conveyed to stormwater vaults for treatment, underground detention, and infiltration. An emergency overflow is provided to the existing ditch in SE 8th Street. Stormwater runoff generated by the north half of the site will be collected on-site and conveyed to stormwater vaults for treatment, underground detention, and infiltration. An emergency overflow is provided in open space Tract D. All stormwater will be discharged as allowed by the City of Camas Municipal Code (CMC). The planned stormwater system is designed to meet the Washington State Department of Ecology (ECY) 2024 Stormwater Management Manual for Western Washington (SWMMWW). Refer to the Preliminary Stormwater Design Report (TIR) and Preliminary Engineering Plans included with this application for more information.

Title 15 – Buildings and Construction

Chapter 15.04 Building Code

15.04.030 Amendments to the referenced codes.

(…)

D. International Fire Code.

(…)

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.

Response: There is an existing fire hydrant located along SE Everett Street just north of SE 8th Street. New fire hydrants are planned within the site. All new fire hydrants are designed to meet spacing requirements. All future homes in the subdivision will be provided with fire sprinklers as required by the City of Camas. Emergency access for all lots in the subdivision will come 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.

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. This project will create 78 attached 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 this application is the City of Camas.

Chapter 16.31 Archaeological Resource Preservation

16.31.070 Predetermination report required.

Response: An Archaeological Predetermination Report was performed by Applied Archaeological Research, Inc. (AAR) on November 5, 2024. That report is included in this application. It looked at Parcels 178109-000 and 178209-000 and found no artifacts within the site and does not recommend further archaeological work within the project area. The report did not identify any structures that meet the requirements for listing in the National Register of Historic Places. 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.

Response: This application is for a Type III Subdivision. Ecological Land Services, Inc. (ELS) prepared a Critical Areas Determination for the project. ELS did not identify any wetlands or other critical areas on-site. Refer to the Critical Areas Report included in this application for more information.

Chapter 16.59 Geologically Hazardous Areas

Response: A Geotechnical Soil Analysis Report was completed by Columbia West on September 6, 2024. No evidence of steep slopes or unstable soil conditions was found within the project area. Refer to the Geotechnical Soil Analysis Report included with this application for more 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 November 7, 2024. The meeting notes for the pre-application conference were issued on November 22, 2024. The pre-application report is included in 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. The application package contains an owner authorization form in lieu of the completed general application form, the Pre-Application Conference Report, Preliminary Engineering Plans, a Geotechnical Soil Analysis Report, a Preliminary Stormwater Design Report (TIR), a Traffic Study, a Critical Areas Report, a SEPA Checklist, an Archaeological Predetermination Report, a Title Report, a Tree Report, and Mailing Labels.

Response: This application is for a Type III Subdivision to divide two parcels into 78 attached single-family residential lots.

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 meets all applicable goals of the Camas Comprehensive Plan by providing housing and circulation for vehicles and pedestrians. This planned subdivision will provide future connections to the surrounding parcels and develop underutilized parcels. This project will create open space tracts that will blend the natural and built environments. This project is anticipated to generate a total of 544 average daily trips (ADTs) therefore no additional traffic management measures are required as no road within the project will carry more than 700 ADT.

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 require water, stormwater, and sanitary sewer facilities.

Two drainage basins for stormwater are planned. Stormwater runoff generated from the south half of the site will be collected on-site and conveyed to stormwater vaults for treatment, underground detention, and infiltration. An emergency overflow is provided to the existing ditch in SE 8th Street. Stormwater runoff generated by the north half of the site will be collected on-site and conveyed to stormwater vaults for treatment, underground detention, and infiltration. An emergency overflow is provided in open space Tract D. All stormwater will be discharged as allowed by the CMC. The planned stormwater system is designed to meet the Washington State Department of Ecology (ECY) 2024 Stormwater Management Manual for Western Washington (SWMMWW).

This project will extend the planned water main in SE 8th Street from the Camas Woods subdivision to the east and connect to the existing water main in SE Everett Street. Water will be extended into the site from the main in SE 8th Street and looped through the site to provide service to each lot.

Sanitary sewer for the site will be run through individual grinder pumps for each lot, with connections to a force main installed in SE 8th Street. That force main will continue west to SE Everett Street and Washington State Department of Transportation (WSDOT) right-of-way, then head south along SE Everett Street and connect to a pressure lateral that will be installed with the Camas Woods subdivision.

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, North Shore Design Standards Manual, and the Camas Design Standards Manual. Planter strips are provided along public streets for street trees, and street lighting is included in the design. Provisions have been made for utilities, as shown in the plans included with this application. Refer to the Preliminary Engineering 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 five new public streets within the project site. One private road will be placed in a tract to allow for private lot access. A 6-foot private utility easement (PUE) will be provided along the frontage of each proposed lot with the final plat. Refer to the Preliminary Engineering 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 plans submitted with this application, all lots are oriented to front a public street or private street tract and are appropriately shaped to allow for future home construction. Refer to the Preliminary Engineering 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 on the plans and documents submitted with this application, this project complies with all requirements of the Camas Municipal Code (CMC) and other relevant regulations. Refer to the submitted application materials included with 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). The TIS used a subdivision with up to 78 attached single-family lots. Trip generation was calculated using the *ITE Trip Generation Manual 11th Edition.* The TIS states the project will generate 544 ADTs with 35 a.m. peak hour trips and 43 p.m. peak hour trips.

The site contains two existing single-family residences. These existing residences generate 20 ADT with two a.m. peak hour trips and two p.m. peak hour trips. Therefore, the planned subdivision will generate a net of 524 new ADT with 33 new a.m. peak hour trips and 41 new p.m. peak hour trips.

The TIS provides recommendations for transportation improvements for the planned projects. The trigger for the improvements is also identified in the TIS. 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 homeowners' association (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 planned subdivision meets all applicable goals of the Camas Comprehensive Plan. The site is within ±1.5 miles of multiple parks and a public boat launch for Lacamas Lake. The project will also provide open space tracts within the site. Existing trees on-site will be protected to the greatest extent practicable, and new trees will be planted. This project will construct a street network to provide vehicle and pedestrian circulation and provide safe walking routes to the schools south of the site.

Refer to the Preliminary Engineering 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.

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: Parcels 178109-000 and 178209-000 are currently used as single-family residences. Two septic systems and a water well are present on-site and will be abandoned in accordance with state and City guidelines. Paved streets with curbs, gutters, and sidewalks will be constructed during the project. Lots will be provided with all required utilities, including sanitary sewer, water, and other private utilities. Refer to the Preliminary Engineering Plans included with this application for more information.

17.19.030 Tract, block and lot standards.

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 practical. Lots along the east boundary will generally create a two-tiered block with the neighboring subdivision and lots along the west boundary allow for a two-tiered block to be created should the parcel to the west redevelop. Single-tiered blocks are proposed along the north and south boundary due to a stormwater facility that will be constructed along the north boundary and a collector street located along the south boundary. Refer to the Preliminary Engineering Plans included with this application for more information.

C. Compatibility with Existing Land Use and Plans.

Response: The planned subdivision is surrounded by existing residential uses to the north and south, a proposed subdivision to the east, and a church to the west. The single-family residential use of the subject site is compatible with the surrounding uses. All planned streets and private roads meet or exceed the requirements of existing adopted plans and other adopted City regulations.

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: Lots nine through 12 do not front a public road. All other lots within the planned subdivision front a public road. Lots nine through 12 are designed to front a private road tract which fronts a public road. Refer to the Preliminary Engineering Plans included with this application for more 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: Side lot lines are perpendicular to the street or radial to the curve on which the lot fronts. Refer to the Preliminary Engineering Plans included with this application for more 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 shown on the Preliminary Engineering Plans. The planned lots are designed for attached townhomes with setbacks that allow for homes ranging from 20 feet wide to 25 feet wide. All lots allow for homes that are a minimum of 40 feet deep. Refer to the Preliminary Engineering Plans included with this application for more information.

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: The planned subdivision does not include flag lots; 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: Lots one through eight and 75 through 78 are designed with frontage to SE 7th Avenue with their rear backing up to SE 8th Street, which is classified as a Collector Street. A 10-foot landscape tract has been provided between the rear of the lots and SE 8th Street's right-of-way. A 6-foot-tall wood fence will be constructed along the rear lot line. Refer to the Preliminary Engineering Plans included with this application for more information.

> 7. Corner Lots. Corner lots may be required to be platted with additional width to allow for the additional side yard requirements;

Response: All corner lots have sufficient width and depth to allow for adequate vision clearance at the corners. Refer to the Preliminary Engineering Plans included with this application for more information.

> 8. Restricted Corner Lots. Corner lots restricted from access on side yard flanking street shall be treated as interior lots and conform to front, side and rear yard interior setbacks of CMC Chapter 18.09; and

Response: No restricted corner lots are proposed with this application; therefore, this standard does not apply.

> E. Tracts and Trails.
>
> 1. If land division is located in the area of an officially designated trail, in accordance with the current version of the parks, recreation and open space comprehensive plan, provisions shall be made for reservation of the right-of-way or for easements to the city for trail purposes including the construction of the trail. Trail standards for each trail type shall be as specified in appendix B of the parks, recreation and open space comprehensive plan or as amended.

Response: A trail is planned through the BPA easement on site, extending the trail from the Camas Meadows subdivision to the east. An easement will be provided over the trail to the City. Refer to the Preliminary Engineering Plans included with this application for more information.

> F. Landscaping.

Response: One street tree is planned for each single-family lot. Due to driveways, streetlights, and utilities, trees are not able to be placed at 30 feet on center throughout the development. Existing trees on-site will be protected to the greatest extent practicable. Street trees will be installed within the designated timeframe and landscaping will conform to the Camas Design Standards Manual and will not obstruct any vision clearance areas. Refer to the Preliminary Engineering Plans included with this application for more 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 is shown on the Preliminary Engineering Plans and will be provided on the final plat. Refer to the Preliminary Engineering Plans included with this application for more 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: All street lighting will conform with City of Camas and Clark Public Utilities (CPU) standards. Refer to the Preliminary Engineering Plans included with this application for more 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: One private street tract is planned. That private street will gain access from SE 7th Avenue within the project site boundary. The planned private street will not affect existing or future circulation. Refer to the Preliminary Engineering 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: One private street tract is planned. That private street tract will be owned and maintained by the HOA. Refer to the Preliminary Engineering Plans included with this application for more information.

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

Response: The planned private street tract will provide access to four lots with full development of the subdivision. Refer to the Preliminary Engineering Plans included with this application for more information.

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

Response: The planned private street tract will only connect to SE 7th Avenue. Refer to the Preliminary Engineering Plans included with this application for more information.

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

Response: The private street will serve four lots. Private streets serving four or fewer lots are required to be built to Private Street A standards with a minimum 12-foot paved surface in a 20-foot tract with no parking on both sides. The private street is designed with a 20-foot paved surface within a 24-foot tract. This meets or exceeds the requirements of the CMC Private Street A standards. Refer to the Preliminary Engineering Plans included with this application for more information.

6. Alleys shall be privately owned and maintained;

Response: Alleys are not proposed with this application. This standard does not apply.

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

Response: Garbage and recycling for lots that access from the private street tract will be placed at the public right-of-way frontage.

Emergency vehicle access is planned from the public right-of-way to the private street. The planned private street is ±117 feet long and does not require a fire turnaround. Refer to the Preliminary Engineering 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 parking enforcement covenant will be recorded and included on the final plat, outlining the provisions for parking enforcement.

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: Half-width frontage improvements are planned for SE 8th Street, which include a 24-foot-wide paved surface, with a six-foot detached sidewalk and a six-foot planter strip on the north side of the road. All planned interior local streets will be built to CMC and public road standards. Refer to the Preliminary Engineering 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: Half-width frontage improvements are planned for SE 8th Street. SE 8th Street is classified as a North Shore Collector Street within the North Shore Subarea Plan. All road improvements are designed to meet CMC 17.19.040 and North Shore Subarea standards. Refer to the Preliminary Engineering 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:

a. If the future grade or alignment of the adjacent public street is unknown and it is not feasible to establish the grade in a reasonable period;

b. The immediate improvement of the street would result in a short, isolated segment of improved street;

c. The frontage is part of an impending or imminent city street improvement project;

d. Street improvements in the vicinity are unlikely to occur within six years.

Response: A delay in frontage improvements is not 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: A delay in frontage improvements is not requested; therefore, this standard does not apply.

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.

Response: N Johnson Street is designed to stub to Parcel 178226-005 at the north site boundary. Half-width street improvements are planned to be constructed along SE 8th Street at the south and east site boundary. The half-width improvements to SE 8th Street will connect with the road improvements that occurred during the Camas Woods construction. Circulation is not planned for parcels to the west, as they are fully developed as a church. Refer to the Preliminary Engineering Plans included with this application for more information.

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 subject site is within the North Shore Subarea. All streets within the project are designed to meet CMC 17.19.040 and the North Shore Subarea standards. Five public roads are planned with the project ("A" Street, SE 7th Avenue, "A" Drive, SE 6th Avenue, and N Johnson Street). All public roads within the project will be constructed as Local Streets. SE 8th Street abuts the south boundary of the project site and is designated as a Collector Street. All planned Local Streets will be constructed with 54 feet of right-of-way, including a 28-foot wide paved surface with two 10-foot travel lanes and one 8-foot parking lane, 7-foot planter strips, and 6-foot detached sidewalks. Half-width frontage improvements are planned along SE 8th Street, which include a 24-foot-wide paved surface, with a six-foot detached sidewalk and a six-foot planter strip on the north side of the road. Refer to the Preliminary Engineering 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 intersections are designed at right angles. Offset intersections and intersections with arterial roadways are not planned with this project. Refer to the Preliminary Engineering 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 circulation plan meeting the above standards is provided in the Preliminary Engineering Plans, which are included in this application. The planned street network provides internal circulation, complete with connections to existing infrastructure, street stubs, and half-width street improvements, allowing for the future expansion of the circulation network. This project will also provide a pedestrian path outside of the planned street network for additional circulation. The planned pedestrian path travels through tracts C, D, and F and will connect to paths that are being built with the Camas Woods subdivision. These paths connect under the BPA easement in tract D. An easement will be provided over the trail to the City. All planned paths will be constructed to City specifications. Refer to the Preliminary Engineering 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: There are no blocks within the project that are greater than 600 feet long; therefore, this standard does not apply. Refer to the Preliminary Engineering Plans included with this 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: There are no cul-de-sacs or permanent dead ends within the project that are over 300 feet long; therefore, this standard does not apply. Refer to the Preliminary Engineering 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: There are no cul-de-sacs or permanent dead ends within the project that are over 300 feet long; therefore, this standard does not apply. Refer to the Preliminary Engineering 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: No rights-of-way are planned within the critical areas; therefore, this standard does not apply. Refer to the Preliminary Engineering Plans included with this application for more 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. The planned subdivision includes 78 residential lots; therefore, 16 off-street parking spaces are required. Common parking areas are planned in Tracts C, F, and G, for a total of 16 parking stalls. These parking areas are distributed throughout the site. Refer to the Preliminary Engineering 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: The subject site is within the North Shore Subarea. All streets within the project are designed to meet CMC 17.19.040 and the North Shore Subarea standards. Five public roads are planned with the project ("A" Street, SE 7th Avenue, "A" Drive, SE 6th Avenue, and N Johnson Street). All public roads within the project will be constructed as Local Streets. SE 8th Street abuts the south boundary of the project site and is designated as a Collector Street. All planned Local Streets will be constructed with 54-feet of right-of-way, including a 28-foot wide paved surface with two 10-foot travel lanes and one 8-foot parking lane, 7-foot planter strips, and 6-foot detached sidewalks. Half-width frontage improvements are planned along SE 8th Street, which include a 24-foot-wide paved surface, with a six-foot detached sidewalk and a six-foot planter strip on the north side of the road. Refer to the Preliminary Engineering Plans included with this application for more information.

N Johnson Street is stubbed to the northern property line for future extension, creating a temporary dead end ±173 feet in length. However, access to lot 61 and the parking area are within 150 feet of the N Johnson Street and SE 6th Avenue intersection. The Applicant is not proposing a turnaround for this temporary dead end, as all access can be obtained within 150 feet of the intersection. Refer to the Preliminary Engineering 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 sidewalks are designed to meet the standards of Table 17.19.040-1 and Table 17.09.040-2 and the North Shore Subarea Design standards. Refer to the Preliminary Engineering Plans included with this application for more information.

C. Utilities.

1. Generally. All utilities designed to serve the development shall be placed underground and, if located within a critical area, shall be designed to meet the standards of the critical areas ordinance.

   a. Those utilities to be located beneath paved surfaces shall be installed, including all service connections, as approved by the public works department; such installation shall be completed and approved prior to application of any surface materials.

   b. Easements may be required for the maintenance and operation of utilities as specified by the public works department.

2. Sanitary sewers shall be provided to each lot at no cost to the city and designed in accordance with city standards.

a. Detached units shall have their own sewer service and STEP or STEF or conventional gravity system as required.

b. Duplex, tri-plex, and townhome units shall each have a dedicated sewer lateral, unless otherwise approved by the public works director or designee.

c. Multifamily units shall have one sewer lateral per building.

d. Commercial or industrial units shall have privately owned and maintained sewer systems acceptable to the city.

Response: All lots will be served with public sanitary sewer by the City of Camas. Sanitary sewer for the site will be run through individual grinder pumps for each lot, with connections to a force main installed in SE 8th Street. That force main will continue west to SE Everett Street and WSDOT right-of-way, then head south along SE Everett Street and connect to a pressure lateral that will be installed with the Camas Woods subdivision. Refer to the Preliminary Engineering 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 site has two drainage basins for stormwater. Stormwater runoff generated from the south half of the site will be collected on-site and conveyed to stormwater vaults for treatment, underground detention, and infiltration. An emergency overflow is provided to the existing ditch in SE 8th Street. Stormwater runoff generated by the north half of the site will be collected on-site and conveyed to stormwater vaults for treatment, underground detention, and infiltration. An emergency overflow is provided in open space Tract D. All stormwater will be discharged as allowed by the CMC. The planned stormwater system is designed to meet the Washington State Department of Ecology (ECY) 2024 Stormwater Management Manual for Western Washington (SWMMWW). Refer to the Preliminary Stormwater Design Report (TIR) and Preliminary Engineering Plans included with this application for more information.

4. Water System.

Response: All lots will be served with public water provided by the City of Camas. This project will extend the planned water main in SE 8th Street from the Camas Woods subdivision to the east and connect to the existing water main in SE Everett Street. Water will be extended into the site from the main in SE 8th Street and looped through the site to provide service to each lot. Refer to the Preliminary Engineering 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 erosion control plan is included in the Preliminary Engineering Plans. A detailed and site-specific erosion control plan will be provided with final construction plans for review and approval by the City. Refer to the Preliminary Engineering 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	
	HD-NS
Density	
Maximum density (dwelling units per net acre)	18[6]
Minimum density (dwelling units per net acre)	10
Standard Lots	
Minimum lot area (square feet)	1,800
Minimum lot width (feet)	20
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[1]
Minimum side yard, flanking a street (feet)	15[8]
Minimum rear yard	10
Lot coverage	
Maximum building lot coverage	65%
Building height	
Maximum building height (feet)	50[5, 9, 10]

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.
6. Does not apply to cottage-style development.
8. Minimum side yard flanking street shall be 10 feet for cottage-style and rowhouse developments.
9. Building heights shall "step-down" and provide compatible scale and privacy between developments. Building height transitions shall be applied to new and vertically expanded buildings in the HD-NS

zone within 20 feet (measured horizontally) of an existing single detached residential building 30 feet or less in height. The building-height-transition standard is met when the height of the taller building does not exceed 1 foot of height for every 1 foot separating the new building from the existing single detached residential structure.

10. Maximum building height for cottage-style development shall be 25 feet.

Response: The site is in the HD-NS zoning district and is required to meet the dimensional and setback standards of this zoning district. The site has a gross area of ±8.79 acres. Approximately 1.61 acres are planned as open space, creating a net area of ±7.17 acres. The minimum density allowed on the site is 10 units per acre. The maximum density allowed on the site is 18 units per acre. A minimum of 72 units are required and up to 129 units are allowed. Seventy-eight attached units are planned. The minimum lot area is 1,900 square feet, with a minimum width of 20 feet and minimum depth of 95 feet. All lots are designed to meet dimensional standards and are sized to allow for future home construction while meeting setback requirements. The planned attached lots will have a 0-foot side setback where the units are attached. All garages that are facing the public right-of-way will be set back a minimum of 20 feet to allow for vehicle parking on each planned lot. Refer to the Preliminary Engineering Plans included with this application for more information.

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: Parking for the residential lots is located on the same lot as the residence. Refer to the Preliminary Engineering 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 detached lot and will consist of a garage and driveway. Additional off-street parking will be provided in three common parking areas distributed throughout the subdivision. Refer to the Preliminary Engineering 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.

Response: 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 driveway and garage spaces. Additionally, 16 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 Engineering Plans included with this application for more information.

Chapter 18.13 Landscaping

18.13.020 Scope.

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

1. Commercial, industrial, governmental uses, and land divisions;

(…)

3. Parking lots with greater than four spaces;

Response: This application is for a Type III Subdivision to divide two parcels into 78 attached single-family residential lots with open space tracts that include parking stalls. 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.

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

Response: A tree survey was completed by AKS Engineering & Forestry, LLC (AKS) and is included in the Tree Report and the Preliminary Engineering Plans. Landscape Plans are also included in the Preliminary Engineering Plans with this application. Two-Hundred-Fifteen Tree Units are required for this project. Four-Hundred-Fifty-Four Tree Units are planned with this project. Refer to the Tree Report and Preliminary Engineering Plans included with this application for more information.

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 (included in the Tree Report) has been prepared by a certified arborist with AKS and is included with this application. Trees on the interior of the site were not included in a topographic survey. A fixed radius plot cruise was performed as an alternative to a topographic survey and detailed evaluation of the site's trees. Six plots were randomly located throughout the tree stand to determine the average density, size, and condition of the site's trees. The stand is dominated by Douglas-Firs planted in rows with a density of ±300 trees per acre. The tree rows are spaced ±12' apart and each tree is spaced at ±10' within the rows. Some scattered Bigleaf Maples and Red Alders were found in the stand. According to AKS's certified arborist, the trees are generally in good condition. Refer to the attached Tree Report and Preliminary Engineering Plans for more information.

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: The tree survey, conducted by AKS's certified arborist, includes a detailed tree inventory with location numbers, identifying significant trees along the edges of the development area and within open space zones. This tree inventory is included in the Tree Report. Surveyed trees that will be protected and impacted with the project are identified on the Preliminary Engineering Plans. All trees that were determined to be within the middle of the development area were not surveyed. Refer to the Preliminary Engineering Plans and Tree Report 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: The tree survey, conducted by AKS's certified arborist, includes a detailed tree inventory with tree size, species, and condition. This tree inventory is included in the Tree Report. Surveyed trees that will be protected and impacted with the project are identified on the Preliminary Engineering Plans. All trees that were determined to be within the middle of the development area were not surveyed. Refer to the Preliminary Engineering Plans and Tree Report 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: One street tree is planned for each single-family lot. Due to driveways, streetlights, and utilities, trees are not able to be placed at 30 feet on center throughout the development. Existing trees on-site will be protected to the greatest extent practicable. Planned street trees and landscaping will conform to the Camas Design Standards Manual. Landscaping will be provided on the individual lots by the future homeowners. Refer to the Preliminary Engineering 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 plants used in this project will be native or adapted to the northwest climate. All plant materials will meet the requirements of this section. Two-Hundred-Fifteen Tree Units are required for this project. Four-Hundred-Fifty-Four Tree Units are planned with this project. Refer to the Landscape Plans within the Preliminary Engineering 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 will be provided along all public streets within the project. Trees are planned to be spaced a minimum of 30 feet in the center where feasible. Due to driveways and utilities, there are areas where street trees will not be able to be installed. However, a total of one street tree per single-family residential lot is planned. Refer to the Preliminary Engineering 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: No invasive species are planned to be used as vegetation in this project. Refer to the Preliminary Engineering 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).**
>
> **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 plant materials and sizes are shown on the Landscape Plans included in the Preliminary Engineering Plans. Planting size is selected to provide the best opportunity for plant survival and integration into the overall development. Refer to the Preliminary Engineering 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 system. All irrigation in common landscape areas will be installed with the landscape 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 that homeowner. All irrigation will be design-build by the 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 proposed landscape. Refer to the Preliminary Engineering Plans included with this application for more information.

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	North Shore Subarea Required Minimum Tree Density per Net Acre[1]
New Development	30 Tree Units
1 At least fifty percent of minimum tree density shall be achieved through retention of existing trees where the existing tree coverage on the site would allow for this standard to be met. If this standard cannot be met, an arborist report is required to demonstrate that it cannot be met. Replacement trees must be native and/or coniferous species. More information is included in the North Shore Design Manual.	

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 ±8.79 acres. Approximately 1.62 acres of open space are planned, for a net site area of ±7.17 acres. Thirty tree units per acre are required per the CMC; therefore, 215 units are required. There are 373 tree units planned for retention on-site. Planned site trees and street trees will provide an additional 81 tree units. The planned project will provide a total of 454 tree units, with more than 82 percent of the tree units provided through the retention of existing trees. Refer to the Preliminary Engineering Plans included with this application for more information.

18.13.052 Tree and native vegetation preservation.

A. When determining where to retain or plant trees, locations with healthy soils, native understory vegetation, and mature trees shall have priority when there are feasible alternative locations on site for proposed buildings and site improvements to achieve the minimum tree unit density per acre. This may require site redesign. Provided, where necessary, density transfer areas may be used to ensure protection and retention of trees. Residential and mixed-use developments may use density transfer standards when setting aside area outside of critical or natural areas to protect existing trees.

Response: The areas selected for tree retention are where larger, mature trees were grouped together. There is no significant native understory vegetation on the site. Invasive species will be removed with the project. Refer to the Preliminary Engineering Plans included with this application for more information.

B. In designing a development project and in meeting the required tree density, the applicant must provide a Landscape, Tree and Vegetation plan that retains healthy, wind firm trees in the following priority:

1. Trees located within critical area buffers. Trees must be identified within a protected tract.
2. Significant wildlife habitat, or areas adjacent and buffering habitat.
3. Significant trees that are greater than 36 inch dbh.
4. Groves of trees, or other individual healthy trees with the intent to retain must be located in separate tract if part of a land division, or other protective mechanism if other development type,
5. Trees, that if removed would cause trees on adjacent properties to become hazardous.

Response: There are no critical area buffers or significant wildlife habitat areas located on the project site as evidenced by the Critical Areas Report that is included in this application. Two groves of mature significant trees are being protected with this project. These groves are located in separate tracts and contain the largest diameter trees within the site. It is not anticipated that on-site tree removal will cause trees on adjacent properties to become hazardous. Refer to the Preliminary Engineering Plans, and Tree Report included with this application for more information.

C. Mitigation and Replacement. In areas where there are currently inadequate numbers of existing trees to meet minimum tree density, where the trees are inappropriate for preservation, the soils are poor, or there are significant invasive species, then mitigation shall be required to meet the minimum tree

density. The applicant's proposed location for replacement trees or mitigation shall be subject to the city's approval of the Landscape Plan. Replacement trees shall be planted in the following priority:

1. Onsite.
   a. Within or adjacent to critical area buffers or wildlife habitat areas
   b. Adjacent to stormwater facilities
   c. Landscaping tracts, such as at entrances, traffic islands or other common areas
   d. Removal of invasive species and restorative native vegetation planting equivalent to the area necessary for new tree planting.
2. City tree fund. When on-site locations are unavailable or infeasible, then the applicant can pay an amount equal to the market value of the replacement trees into the city's tree fund.

Response: Existing trees will be preserved on-site and provide adequate tree units to meet this requirement. Three-Hundred-Seventy-Three tree units planned for retention on-site. Planned street trees will provide an additional 81 tree units. The planned project will provide a total of 454 tree units, with more than 82 percent of the tree units provided through the retention of existing trees. Street trees will also be provided, for additional tree units. Refer to the Preliminary Engineering Plans included with this application for more information.

18.13.060 Parking areas.

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

Response: All planned parking areas are provided with perimeter landscaping. Refer to the Preliminary Engineering Plans included with this application for more information.

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

Response: The interior of the planned parking areas is landscaped with trees and shrubs. Refer to the Preliminary Engineering Plans included with this application for more information.

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

Response: Per CMC, two trees are required for the planned parking areas. Three trees are planned; one in Tract G and two in Tract C. Refer to the Preliminary Engineering Plans included with this application for more 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: Perimeter landscape areas are planned with the parking areas in the open space tracts. Refer to the Preliminary Engineering Plans included with this application for more 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 Engineering Plans included with this application for more information.

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

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

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

Response: Where parking aisles are shown, planting areas are provided to protect parked vehicles. Refer to the Preliminary Engineering Plans included with this application for more information.

H. No more than fifteen parking spaces shall be located in a row without a landscaped divider strip

Response: No more than 15 parking stalls are in a single row within the project. Refer to the Preliminary Engineering Plans included with this application for more information.

Chapter 18.15 Signs

Response: No signs are proposed as part of this application. Any signs that will be installed 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.

18.17.050 Fences and walls.

Response: All residential lot fences will not exceed 6 feet in height. Therefore, permits will not be required for fences. Refer to the Preliminary Engineering Plans included with this application for more information.

Chapter 18.19 Design Review

18.19.050 Design principles.

The principles as provided in the DDM or DRM are mandatory and must be demonstrated to have been satisfied in overall intent in order for approval of a design review application to be granted. Standard principles shall apply to all commercial, mixed use, or multifamily uses. Specific principles are used in addition to the standard principles for gateways and corridors, commercial, mixed uses, and multifamily (e.g. apartments, townhouses, duplexes).

A. Standard Principles.

1. Landscaping shall be done with a purpose. It shall be used as a tool to integrate the proposed development into the surrounding environment.

Response: All landscaping is planned to be done with a purpose and will help integrate the neighborhood into the surrounding environment. Refer to the Preliminary Engineering Plans included with this application for more information.

2. All attempts shall be made at minimizing the removal of significant natural features. Significant natural features shall be integrated into the overall site plan.

Response: This project provides multiple open spaces to protect existing trees to the greatest extent practicable. The open spaces will be integrated into the development and be open for future residential use. Refer to the Preliminary Engineering Plans included with this application for more information.

3. Buildings shall have a "finished" look. Any use of panelized materials shall be integrated into the development in a manner that achieves a seamless appearance.

Response: No structures are proposed as part of this application; however, guidelines will be included in the codes, covenants, & restriction (CC&Rs) documents for the subdivision. These elements will be reviewed during the building permit process.

4. A proposed development shall attempt to incorporate or enhance historic/heritage elements related to the specific site or surrounding area.

Response: The subject site does not have any known historic or heritage elements specifically related to it. This project will provide large open space tracts for tree protection. These protected open spaces will help maintain some of the natural elements of the site. Refer to the Preliminary Engineering Plans included with this application for more information.

B. Specific Principles.

1. Gateways.

Response: There are no gateways located on the subject site. Any off-site gateways impacted by the project will be addressed through off-site improvements under a separate project, if necessary.

2. Commercial and Mixed Uses.

a. On-site parking areas shall be placed to the interior of the development unless site development proves prohibitive. All on-site parking areas along adjacent roadways shall be screened with landscaping. Downtown commercial and mixed-use areas shall not be required to provide on-site parking.

Response: There are no commercial or mixed-use areas located on the subject site. Refer to the Preliminary Engineering Plans included with this application for more information.

3. Multifamily.

(…)

b. Townhomes and Rowhouses.

i. All on-site parking areas (excluding driveways and garages) shall be screened with landscaping.

Response: All parking for the townhomes will be in driveways and garages. Therefore, no screening is required. Common parking areas are planned and distributed throughout the site. All common parking areas will be screened with landscaping. Refer to the Preliminary Engineering Plans included with this application for more information.

ii. **Buildings shall be used to define the streetscape unless site conditions prove prohibitive.**

Response: All future buildings will be two-story townhomes and range from two to four attached units per structure. Refer to the Preliminary Engineering Plans included with this application for more information.

iii. **When appropriate, structures abutting or located in single-family residentially zoned areas shall be designed to mitigate size and scale differences.**

Response: All future buildings will be two-story townhomes and range from two to four attached units per structure. These structures will be similar in size to the surrounding existing homes. Refer to the Preliminary Engineering Plans included with this application for more information.

iv. **Walls shall be articulated in order to avoid a blank look and to provide a sense of scale.**

Response: No structures are proposed as part of this application; however, future building walls will be broken up and have articulation and the blank look will be avoided. These elements will be reviewed during the building permit review.

v. **Detached garages shall be located to the rear of the townhouse or rowhouse unit(s) so as not to be directly viewable from a public street.**

Response: Detached garages are not proposed with this application. Therefore, this standard does not apply.

vi. **Attached garages shall account for less than fifty percent of the front face of the structure. Garages visible from the street shall be articulated by architectural features, such as windows, to avoid a blank look.**

Response: No structures are being proposed as part of this application; however, the Applicant will include these guidelines in the CC&Rs documents for the subdivision. These elements will also be reviewed during the building permit process.

4. **North Shore Subarea. All development within the North Shore subarea shall meet the minimum requirements determined in North Shore Design Manual.**

a. **Use a stepped-transition in building height and mass to move from higher density to lower density and from more intense mix-of-uses to single uses to provide compatible scale and privacy between developments. Building height transitions shall be applied to new and vertically expanded buildings in the HD-NS, C-NS, MX-NS, and ME-NS zones within twenty feet (measured horizontally) of an existing single detached residential building thirty feet or less in**

height. The building height transition standard is met when the height of the taller building does not exceed one foot of height for every one foot separating the new building from the existing single detached residential structure.

b. Vary lot sizes, front yard setbacks, and building product type for residential uses to avoid predictable suburban development patterns (also known as "cookie cutter" development) and better reflect the natural geography.

Response: No structures are proposed as part of this application; however, future construction will create single-family-unit townhomes. The planned single-family lots range from ±20 feet wide to ±29 feet wide, with a few lots wider than 29 feet. Multiple open spaces are planned with this project, which will help break up the site. Refer to the Preliminary Engineering Plans included with this application for more information.

c. Minimize the visibility of off-street surface parking where feasible by instead integrating structured and tuck-under parking in buildings or locating surface parking behind buildings.

Response: All attached single-family units within the project have a garage, which assists in minimizing the visibility of off-street surface parking. Additional common parking areas are planned and distributed throughout the site to minimize the amount of parking in one location. These common parking areas are landscaped to minimize the visibility of off-street parking. Refer to the Preliminary Engineering Plans included with this application for more information.

d. Provide public-facing facades and building entries-regardless of land use-that provide weather protection from wind, rain, sun, and the occasional snow.

Response: No structures are proposed as part of this application; however, during future construction, public-facing facades will be provided, and entries will be covered for weather protection. This will be reviewed during building permit review.

e. Include multiple entries and windows on ground floor commercial uses facilitate business access, create visual interest, and promote safety.

Response: Commercial use buildings are not proposed with this application. This standard does not apply.

f. Encourage an aesthetic that complements the surroundings (such as the Pacific Northwest style) through site design, exterior building materials, landscaping, and other features. Exterior building materials may include: concrete, wood, standing-seam sheet metal, glass, board-and-batten, wood siding, corrugated sheet metal, board-formed concrete, board-and-batten siding, commercial/industrial terra-cotta, stone siding, spaced wood sun screens, ply-formed concrete, horizontal wood siding, brick, sheet metal panels, standing-seam metal roofing, stucco, and/or heavy-timber.

Response: No structures are proposed as part of this application. Building aesthetics and materials will be reviewed during building permits. The project provides multiple open spaces, complete with native trees, to maintain some of the natural environment within the site. Landscaping using native and naturalized plant material will help complement the surroundings.

g. Use dark-sky friendly lighting for outdoor areas, such as full cutoff fixtures, or limiting light trespass from buildings into the street.

Response: All lighting will meet the requirements of the CMC. Preliminary Lighting Plans are included within the Preliminary Engineering Plans.

Chapter 18.55 Administration and Procedures

18.55.060 Preapplication conference meeting—Type II, Type III.

Response: This application requires a pre-application conference meeting, which was held on November 7, 2024.

18.55.110 Application—Required information.

Type II or Type III applications include all the materials listed in this subsection. The director may waive the submission of any of these materials if not deemed to be applicable to the specific review sought. Likewise, the director may require additional information beyond that listed in this subsection or elsewhere in the city code, such as a traffic study or other report prepared by an appropriate expert where needed to address relevant approval criteria. In any event, the applicant is responsible for the completeness and accuracy of the application and all of the supporting documentation. Unless specifically waived by the director, the following must be submitted at the time of application:

A. A copy of a completed city application form(s) and required fee(s);

B. A complete list of the permit approvals sought by the applicant;

C. 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 Clark County assessor;

D. 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 preapplication conference as being required;

E. Necessary drawings in the quantity specified by the director;

F. Copy of the preapplication meeting notes (Type II and Type III);

G. SEPA checklist, if required;

H. Signage for Type III applications and short subdivisions: Prior to an application being deemed complete and Type III applications are scheduled for public hearing, the applicant shall post one four-foot by eight-foot sign per road frontage, unless a different size (not to be less than six square feet) is approved by the director. The sign shall be attached to the ground with a minimum of two four-inch by four-inch posts or better. The development sign shall remain posted and in reasonable condition until a final decision of the city is issued, and then shall be removed by the applicant within fourteen days of the notice of decision by the city. The sign shall be clearly visible from adjoining rights-of-way and generally include the following:

1. Description of proposal,
2. Types of permit applications on file and being considered by the City of Camas,
3. Site plan,
4. Name and phone number of applicant, and City of Camas contact for additional information,
5. If a Type III application, then a statement that a public hearing is required and scheduled. Adequate space shall be provided for the date and location of the hearing to be added upon scheduling by the city.

I. A copy of a full title report.

Response: This application is for preliminary plat approval. All information required to satisfy the conditions of CMC 18.55.110 are included in this application.

North Shore Subarea Design Manual

Section 2 – Land Use and Development Standards

2.2 North Shore Higher Density Residential (HD-NS)

Intent and Character

The North Shore – Higher Density (HD-NS) district is intended for high density residential developments. Developments in this zone should provide for a variety of housing options with a minimum density of 10 dwellings per acre. Housing types permitted in this district include multifamily buildings, rowhouses, triplexes, and fourplexes, and cottage clusters.

Response: This application is for a 78-lot preliminary plat approval. Future construction of attached single-family homes (townhomes/rowhouses) is planned. Townhomes are permitted outright, subject to the approval of applicable permits in the HD-NS zoning district. The planned use for the project is appropriate for the existing zoning of the property.

Design Standards and Guidelines

Dimensional Standards

The tables below identify the dimensional standards applicable to the HD-NS district. All standards should be confirmed in CMC 18.09. Parking requirements are determined by CMC 18.11.

Table 3: Dimensions and Standards for Standard Lots in HD-NS	
Item	Standard
Density range (min-max dwelling units/acre)	10 - 18
Minimum lot size (square feet)	1,800
Maximum gross floor area	No maximum
Minimum lot width	20
Minimum lot depth	60
Average building lot coverage	65%
Maximum building height (feet)	50
Setbacks (feet):	
Front yard/ at garage front	10/20
Side yard	3
Side yard, flanking street	15
Rear yard	10

Response: The site is in the HD-NS zoning district and is required to meet the dimensional and setback standards of this zoning district. The site has a gross area of ±8.79 acres. Approximately 1.61 acres are planned as open space, creating a net area of ±7.17 acres. The minimum density allowed on the site is 10 units per acre. The maximum density allowed on the site is 18 units per acre. A minimum of 72 units are required and up to 129 units are allowed. Seventy-eight attached units are planned. The minimum lot area is 1,900 square feet, with a minimum width of 20 feet and minimum depth of 95 feet. All lots are designed to meet dimensional standards and are sized to allow for future home construction while meeting setback requirements. The planned attached lots will have a 0-foot side setback where the units are attached. All garages that are facing the public right-of-way will be set back a minimum of 20 feet to allow for vehicle parking on each planned lot. Refer to the Preliminary Engineering Plans included with this application for more information.

Site Development Guidelines

The following guidelines apply to development in the HD-NS district.

- **Residential units should be organized around common green spaces that incorporate stormwater draining, seating areas, play spaces, and internal pathways.**

Response: Open spaces are provided throughout the site for the protection of existing trees and to provide green space for future residents. Refer to the Preliminary Engineering Plans included with this application for more information.

- **The visibility of off-street surface parking should be minimized by integrating structure and tuck-under parking in buildings or locating surface parking behind buildings.**

Response: Each lot will have its own garage, which will provide off-street parking and minimize the visibility of off-street parking. Additional common parking areas are planned and distributed throughout the site to minimize the amount of parking in one location. These common parking areas are landscaped to minimize the visibility of off-street parking. Refer to the Preliminary Engineering Plans included with this application for more information.

- **Stoops and porches are encouraged for ground-level units. Porches are also encouraged for upper units to provide visual interest.**

Response: No structures are planned as part of this application; however, stoops and porches will be considered for residences within the HD-NS zoning district. If proposed, these elements will be reviewed during the building permit process.

- **Publicly dedicated parks and green or open-space within the HD-NS district should follow the design guidelines described in Section 2.6.**

Response: Open spaces are provided throughout the site for the protection of existing trees and to provide green space for future residents. These open spaces will not be publicly dedicated. Refer to the Preliminary Engineering Plans included with this application for more information.

Site Development Principles

The following principles apply to all development in the HD-NS district.

- **All off-street surface parking areas shall be screened with landscaping. See CMC 18.13.060 for specific requirements for parking lot landscaping.**

Response: Planned parking areas will be screened with landscaping. Refer to the Preliminary Engineering Plans included with this application for more information.

- **Principal pedestrian entries shall be located along a public street or public common space.**

Response: No structures are proposed as part of this application; however, attached single-family buildings are planned for future construction. All single-family buildings will have entries facing the public streets, except for townhomes served by a private street. Those entrances will face the private street. Refer to the Preliminary Engineering Plans included with this application for more information.

- **A stepped-transition shall be used in building height and mass to move from higher density to lower density.**

Response: The on-site HD-NS zoning district abuts the LD-NS zoning district to the east and north off-site. No structures are proposed as part of this application; however, attached single-family buildings are planned for future construction. The planned attached townhomes will be two-story and similar in scale to the homes allowed in the lower-density residential zoning districts. Refer to the Preliminary Engineering Plans included with this application for more information.

- **Weather protection shall be provided along public-facing facades and building entries.**

Response: No structures are proposed as part of this application. Weather protection for public-facing facades and building entries will be provided. These elements will be reviewed during the building permit process.

- **Dark-sky friendly lighting shall be used for outdoor areas.**

Response: All lighting will meet the requirements of the CMC. Preliminary Lighting Plans are included within the Preliminary Engineering Plans.

- **Appropriate sustainable design features shall be integrated where feasible, such as passive building design, green roofs, permeable surfaces, stormwater management, and naturescaping (see Section 4).**

Response: No structures are planned as part of this application; however, sustainable design features will be considered for buildings within the HD-NS zoning district. If proposed, these elements will be reviewed during the building permit process.

2.6 Parks and Open Space

Intent and Character

A key feature of the North Shore is the Legacy Lands, which are over 240 acres of protected open space along the north shore of Lacamas Lake.

The intent of the subarea is to locate trails and open spaces throughout the area, as well as on the edge of the subarea to create buffers for wildlife and to provide recreation opportunities.

Design guidelines for parks and open space should be applied to all developments that incorporate parks and open space uses, regardless of the zone of the development. Parks and open space uses could include public plazas, pocket parks, sustainable stormwater management, HOA/private parks with future development agreements, public easements, and streetscapes, including public gathering spaces.

Response: The planned application will include multiple open spaces for the protection of existing on-site trees, as well as providing recreational opportunities for residents. Refer to the Preliminary Engineering Plans included with this application for more information.

Site Design Principles

The following principles apply to parks and open space.

- Private developments with future development agreements shall collaborate with the Parks and Recreation Department to ensure the design is consistent with Parks and Recreation standards. Any City-owned parks or developments involving parks / open space land dedications must comply with the City's parks and open space standards include in the Camas Parks, Recreation, and Open Space Plan.

Response: The planned project will not have a development agreement and will not dedicate any open spaces to the City.

- Native soils, existing tree canopy, and topography shall be preserved to the greatest extent possible where feasible as determined by project engineers.

Response: Multiple open spaces are planned for the protection of existing on-site trees. Soil within the open space tracts will be protected. The project will also follow the general topography of the site to the greatest extent possible. Refer to the Preliminary Engineering Plans included with this application for more information.

- Parks and open space shall incorporate landscaping consistent with Section 4 to reflect the natural character of the subarea.

Response: Existing trees on-site will be protected to the greatest extent practicable. Planned landscaping includes native and naturalized plant material to retain the natural character of the subarea. Refer to the Preliminary Engineering Plans included with this application for more information.

- All public and regional trails throughout the subarea shall be constructed according to City specifications and refer to the design standards for trails in Appendix G of the Camas Parks, Recreation and Open Space Plan.

Response: A pedestrian path is planned with this project. The planned pedestrian path travels through tracts C, D, and F and will connect to paths that are being built with the Camas Woods subdivision. All planned paths will be constructed to City specifications. Refer to the Preliminary Engineering Plans included with this application for more information.

- Path or bollard lighting shall be used along trails as appropriate and shall have low visual impacts to minimize interference with the natural environment while still provided safe use.

Response: Appropriate path lighting will be provided for the trail during final engineering with each phase the trail will be constructed in.

Section 3 – Streetscapes and Right-of-Way

Streetscapes refer to the elements within the public realm, typically within a right-of-way. Elements of the streetscape, such as streetlights, landscaping, benches, litter bins, etc., help set the tone of the public space. These guidelines are intended to provide a consistent theme and identity for streetscapes that reflect the natural surroundings and a small-town feel.

3.1 Design Guidelines

Street Lighting

Land use districts within the North Shore should employee lighting to set the tone for each distinct area. Not every district will use the same lighting type, but lighting elements in each district should match the general style and theme of the North Shore.

The following guidelines reflect the desire traditional "main street" lamppost form (e.g., four-sided, tapered profile) but with modern dark-sky features, including hooded luminaires directed downward to minimize shedding and light pollution.

- Lighting in the curb zone should be at the pedestrian scale, with place-identifying banners.
- Path and bollard lighting should use a traditional form and blend with natural surroundings.
- Streetlights should use a traditional form and include dark-sky features (downlighting and shielding)

Response: Streetlights will provide lighting for the streets. Street lighting details will be determined and reviewed during final engineering.

Signage

- Consistent signage shall be used within the North Shore to establish a sense of place, signaling to visitors they are in a distinct, unique location.
- Materials should reflect the highlight the natural surroundings and promote a transitional "main street" composition.
- Non-street signs should be constructed of natural materials, such as wood and metal, to reflect the natural surroundings.
- Wayfinding and interpretive signage should be provided that directs people to historic, cultural, and natural resources throughout the area.
- Commercial blade or wall signs should be used to provide place identification at a pedestrian scale within the streetscape.

Response: No signs are proposed as part of this application. Any signs that will be installed will receive a sign permit prior to installation to ensure the sign meets the requirements.

Street Furniture

- Seating should be provided in public spaces (within mixed-use, commercial, and open spaces) to create passive recreation opportunities to pause or spend time.
- Planters should be used to provide transition from streetscapes to public plazas and establish a sense of place.
- To promote alternative transportation, proposed bicycle lanes, shared use paths, and trails should be supplemented with access to bicycle parking to allow for safe and easy transition from transit to interaction with commercial activities.
- Bike facilities shall be visually appealing and enhance the streetscape.

- **Bike infrastructure, such as covered bike-parking, repair stations, and docked bike share, is encouraged near hubs in open space and commercial and mixed use areas.**

Response: Street furniture is not proposed with this application. This standard does not apply.

Street Landscaping

- **Landscaped area in streetscapes should be designed to reflect the natural charact and ecology of the Pacific Northwest and use drought tolerant native species that increase biodiversity. See Section 4 for additional details related to landscaping.**

Response: Street trees and street landscaping in front of open space tracts are planned with this application. Street landscaping in front of private residential lots will be provided during home construction. Refer to the Preliminary Engineering Plans included with this application for more information.

Tree Grates

- **Custom tree and storm grates should be used to establish place identity and connect with natural surroundings.**

Response: Tree grates and specific storm grates are not proposed with this application. This standard does not apply.

3.2 Rights-of-Way

Rights-of-way refer to the components and dimensions of public streets, such as sidewalks, curb zones, bicycle facilities, and drive lanes Each right-of-way standard in this manual is set as a minimum required standard, where creativity and expansion beyond the standard is encourages to establish North Shore as a unique setting within Camas. Components, such as bulb-outs and midblock crossings, shall be incorporated to promote safe pedestrian activity, designed according to Camas Engineering Design Standards Manual. Street trees are to follow the Landscape Standards of the Camas Engineering Design Standards Manual and Section 3.3, Street Trees below.

Local Streets

Local streets are designated for residential areas with a speed limit of 25 miles per hour. The figure below identifies some of the key elements of local street rights-of-way. Street dimensions are represented as minimum requirements and will be subject to review by the City engineer.

Response: The subject site is within the North Shore Subarea. All streets within the project are designed to meet CMC 17.19.040 and the North Shore Subarea standards. Five public roads are planned with the project ("A" Street, SE 7th Avenue, "A" Drive, SE 6th Avenue, and N Johnson Street). All public roads within the project will be constructed as Local Streets. SE 8th Street abuts the south boundary of the project site and is designated as a Collector Street. All planned Local Streets will be constructed with 54-feet of right-of-way, including a 28-foot wide paved surface with two 10-foot travel lanes and one 8-foot parking lane, 7-foot planter strips, and 6-foot detached sidewalks. Half-width frontage improvements are planned along SE 8th Street, which include a 24-foot-wide paved surface, with a six-foot detached sidewalk and a six-foot planter strip on the north side of the road. Refer to the Preliminary Engineering Plans included with this application for more information.

Collector Streets

Collectors are the main connectors between local streets and arterials. The figure below identifies some of the key elements of collector streets rights-of-way. Street dimensions are represented as minimum requirements and will be subject to review by the City engineer. Cross section details are subject to change, including the need for on-street parking in commercial nodes. Right-of-way elements should be modified to allow median turn lanes at intersections.

Response: The subject site is within the North Shore Subarea. All streets within the project are designed to meet CMC 17.19.040 and the North Shore Subarea standards. Five public roads are planned with the project ("A" Street, SE 7th Avenue, "A" Drive, SE 6th Avenue, and N Johnson Street). All public roads within the project will be constructed as Local Streets. SE 8th Street abuts the south boundary of the project site and is designated as a Collector Street. All planned Local Streets will be constructed with 54-feet of right-of-way, including a 28-foot wide paved surface with two 10-foot travel lanes and one 8-foot parking lane, 7-foot planter strips, and 6-foot detached sidewalks. Half-width frontage improvements are planned along SE 8th Street, which include a 24-foot-wide paved surface, with a six-foot detached sidewalk and a six-foot planter strip on the north side of the road. Refer to the Preliminary Engineering Plans included with this application for more information.

Enhanced Pedestrian Crossings

Enhanced crossings provide additional pedestrian safety and elevate the design elements of the streetscape. Developers shall work closely with the City engineer to locate and design these elements.

Bulb Outs, Refuge Islands, and Midblock Crossings

- **Bulb outs should be used at intersections and midblock pedestrian crossing to shorten distances and preserve a protective visibility range by removing parking spaces where cars may otherwise obscure the view of the sidewalk.**
- **Where feasibility, midblock crossings should be paired with bulb outs and refuge islands to shorten crossing distances across drive lanes.**
- **Raised crosswalks should be used to create a ramped speed table that allows pedestrians to cross at grade with the sidewalk. This design combines the effect of speed reduction with increased pedestrian visibility and accessibility.**
- **Midblock crossings shall be installed within block longer than 600 feet, or as designated by the City engineer.**
- **Pedestrian refuge islands shall be installed with midblock crossings and intersection of arterial streets.**

Response: The planned roadway network is made up mostly of Local Streets, with SE 8th Street having the only higher classification as a Collector Street. No Arterial Street crossings are planned with this project. Enhanced crossings are not typically used for Local Streets; therefore, no enhanced crossings are planned. Refer to the Preliminary Engineering Plans included with this application for more information.

3.3 Street Trees

Trees selected for use as street trees shall be long-lived species possessing qualities suitable for an urban streetscape, including branching characteristics, rooting characteristics, disease resistance, and non-fruiting. Street trees shall be selected from the Camas Design Standard Manual.

- **Street trees shall be a minimum of 2-inch caliper, fully branches, and staked at the time of planting.**
- **Street trees shall be maintained to provide 8 feet of clearance area under the canopy at the sidewalk and 10 feet of clearance at the street.**
- **Street trees shall be planted on all street frontages at minimum 30-foot on-center spacing, as measured along abutting curb.**
- **Street trees shall be placed a minimum of 2-1/2 feet from the back of the curb as measured from the center of the tree, unless otherwise specified by the City.**
- **Street tree planters shall be covered with Americans with Disabilities Act (ADA) accessible tree grates that are a minimum of 6 feet by 6 feet. Street tree placement shall not impede pedestrian access and shall allow for a minimum 6-foot path of travel (the ADA accessible tree grates may be placed within the path of travel to meet these specifications).**

Response: One street tree is planned for each single-family lot. Due to driveways, streetlights, and utilities, trees are not able to be placed at 30 feet on center throughout the development. Planned street trees and landscaping will conform to the Camas Design Standards Manual. Landscaping will be provided on the individual lots by the future homeowners. The planned Local Street sections require planter strips; therefore, no tree grates are proposed with this application. Refer to the Preliminary Engineering Plans included with this application for more information.

IV. Conclusion

This application is for the approval of a 78-lot preliminary plat within the North Shore Sub Area for the future construction of attached single-family homes. The planned development meets the requirements of the City of Camas HD-NS zoning district standards and the 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 this application and are supported by substantial evidence in the application materials. Therefore, the Applicant respectfully requests approval of the proposed project (Camas Woods II).

4. Geotechnical Soil Analysis Report

Report of Geotechnical Engineering Services

Camas Woods Phase 3

Camas, Washington

February 18, 2025

Geotechnical ■ Environmental ■ Special Inspections

Columbia West
Engineering, Inc



Geotechnical ▪ Environmental ▪ Special Inspections
Columbia West Engineering, Inc

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February 18, 2025

HSR Capital LLC
500 East Broadway, Suite 120
Vancouver, WA 98660

Attn: Kevin Miller

Re: Report of Geotechnical Engineering Services
Camas Woods Phase 3
26514 and 26416 SE 8th Street
Camas, Washington
CWE Project: HSR-4-01-1

Columbia West Engineering, Inc. (Columbia West) is pleased to present this geotechnical engineering report for the Camas Woods Phase 3 project located at 26514 and 26416 SE 8th Street (parcel numbers 178209000 and 178109000) in Camas, Washington. Our services were conducted in accordance with our proposal dated September 6, 2024.

We appreciate the opportunity to work on the project. Please contact us if you have any questions regarding this report.

Sincerely,

Michael A. Chacon, PE
Senior Staff Engineer

Daniel E. Lehto, PE, GE
Principal Engineer



Signed 02/18/2025

Expires 06/05/2025

cc: Bryce Hanson, AKS Engineering & Forestry

MAC:ASR:DEL:kat
Attachments
Document ID: HSR-4-01-1-021825-geor.docx

EXECUTIVE SUMMARY

This section provides a summary of the geotechnical considerations associated with the Camas Woods Phase 3 project 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 team. A detailed discussion of the geotechnical considerations summarized here is presented in respective sections of the report.

- The proposed lightly loaded residential structures can be supported by conventional spread footings bearing on firm soil as described in the report.

- 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.

- Cobbles and boulders were encountered in the explorations at the site. Cobbles and boulders will result in difficult excavation and trenches may be wider than anticipated, increasing the amount of backfill material required.

- Moisture conditioning will likely 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. It will be difficult, if not impossible, to adequately compact the on-site soil during the rainy season or during prolonged periods of rainfall.

- Groundwater was encountered at 12 feet BGS in test pit TP-6 during our subsurface exploration on December 31, 2024. Dewatering may be required for deeper utilities, particularly in areas of cut and in the wet season.

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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
CSZ	Cascadia subduction zone
g	gravitational acceleration (32.2 feet/second^2)
GIS	geographic information system
HMA	hot mix asphalt
H:V	horizontal to vertical
IBC	International Building Code
in/hr	inch(es) per hour
km	kilometers
MCE	maximum considered earthquake
M_W	moment magnitude
NAVD 88	North American Vertical Datum of 1988
OSHA	Occupational Safety and Health Administration
pcf	pounds per cubic foot
pci	pounds per cubic inch
PG	performance grade
psf	pounds per square foot
psi	pounds per square inch
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
WSS	Washington Standard Specifications for Road, Bridge, and Municipal Construction (2024)

REPORT OF GEOTECHNICAL ENGINEERING SERVICES
CAMAS WOODS PHASE 3
CAMAS, WASHINGTON

1.0 INTRODUCTION

Columbia West is pleased to submit this geotechnical engineering report for the Camas Woods Phase 3 project in Camas, Washington. The approximately 8.82-acre site is comprised of parcel numbers 178209000 and 178109000 and is located at 26514 and 26416 SE 8th Street in Camas, Washington. The site is shown relative to surrounding physical features on Figure 1. Figure 2 shows the existing conditions at the site and our exploration locations. Abbreviations and acronyms used herein are defined immediately following the Table of Contents.

Development plans include construction of a single-family residential subdivision with associated infrastructure. Infrastructure specifics and grading plans were not available for review at the time this report was prepared. Foundation loads were also unknown at the time this report was prepared; however, we estimate maximum column and wall loads will be less than 30 kips and 4 kips per lineal foot, respectively.

2.0 BACKGROUND

Based on historical aerial photographs, the site has been an undeveloped property since at least the 1950s, with single-family residences constructed in the 1970s. The site is bounded by a church to the west; single-family rural development to the north and south; and vacant, forested land to the east.

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 development. Specifically, we completed the following tasks:

- Reviewed information available in Columbia West's files from previous geological and geotechnical studies conducted in the site vicinity.
- Coordinated and managed the field exploration program, which included locating public utilities, coordinating site access, and scheduling subcontractors and Columbia West field staff.
- Explored subsurface conditions at the site by excavating six test pits to depths between 12.5 and 16 feet BGS.
- Collected soil samples from the explorations for laboratory testing and maintained a log of encountered soil and groundwater conditions in the explorations.
- Conducted infiltration testing in three of the test pits at depths of 3 and 6 feet BGS.
- Performed laboratory testing on select soil samples collected from the explorations, including the following:
  - Seven moisture content determinations in general accordance with ASTM D2216
  - Six particle-size analyses in general accordance with ASTM D1140
  - One particle-size analysis in general accordance with ASTM D6913
  - Two Atterberg limits tests in general accordance with ASTM D4318

- Prepared this geotechnical engineering report that includes the following:
  - Summary of subsurface conditions at the site
  - Results of research of existing geologic and seismic maps and literature to determine relevant seismic risks, including locations of faults and earthquake magnitudes
  - Assessment of seismic hazards
  - Laboratory testing results
  - Foundation support recommendations, including allowable bearing capacity, estimated foundation settlement, and lateral resistance parameters
  - 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
  - Stormwater disposal recommendations
  - Code-based seismic design parameters in accordance with the 2021 IBC

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 central portion of the Portland/Vancouver Basin, an open, somewhat elliptical, northwest-trending syncline approximately 60 miles wide.

The near-surface soil is expected to consist of Pleistocene- to Pliocene-aged, semi-consolidated, pebble- to cobble-sized sedimentary Conglomerate (QTc). The conglomerate is underlain by Oligocene aged Elkhorn Mountain basaltic andesite flows (Evarts and O'Connor 2008). Well logs for 26416 SE 8th Street indicate that the conglomerate extends to a depth of at least 160 feet BGS (Washington State Department of Ecology 2025).

The USDA Web Soil Survey identifies the surface soil as Hesson clay loam (USDA 2025). Hesson 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.

4.2 SEISMOLOGY

Recent research and subsurface mapping investigations in the Pacific Northwest appear to suggest the historical potential risk for a large earthquake event with strong localized ground movement may be underestimated. Past earthquakes in the Pacific Northwest appear to have caused landslides and ground subsidence, in addition to severe flooding near coastal areas. Earthquakes may also induce soil liquefaction, which occurs when elevated horizontal ground

acceleration and velocity cause soil particles to interact as a fluid as opposed to a solid. Liquefaction of soil can result in lateral spreading and temporary loss of bearing capacity and shear strength.

Three scenario earthquakes are possible with the local seismic setting. Two of the possible earthquake sources are associated with the CSZ, and the third event is a shallow, local crustal earthquake that could occur in the North American Plate. The three earthquake scenarios are discussed below.

4.2.1 CSZ

The CSZ is the region where the Juan de Fuca Plate is being subducted beneath the North American Plate. This subduction is occurring in the coastal region between Vancouver Island and northern California. Evidence has accumulated suggesting that this subduction zone has generated eight great earthquakes in the last 4,000 years, with the most recent event occurring approximately 300 years ago (Weaver and Shedlock 1991). The fault trace is mapped approximately 50 to 120 km off the Washington Coast.

Two types of subduction zone earthquakes are possible and considered in this report:

1. An interface event earthquake on the seismogenic part of the interface between the Juan de Fuca Plate and the North American Plate on the CSZ. This source is capable of generating earthquakes with a M_W of 9.0+.
2. A deep intraplate earthquake on the seismogenic part of the subducting Juan de Fuca Plate. These events typically occur at depths of between 30 and 60 km. This source is capable of generating an event with a M_W of up to 8.0.

4.2.2 Crustal Events

A significant earthquake could occur on a local fault near the site within the design life of the development. Such an event would cause ground shaking at the site that could be more intense than the CSZ events, although the duration would be shorter. Table 1 provides information on local faults close to the site.

Table 1. Faults within the Site Vicinity[1]

Fault Name	Proximity to Site (km)	Mapped Length (km)
Lacamas Lake fault	1	24
Portland Hills fault	22	49
East Bank fault	27	29

1. Reported by USGS (2025)

4.3 SURFACE CONDITIONS

The site is relatively undeveloped and flat. The site is primarily forested and contains two single-family residential structures. According to Clark County GIS, site elevations range from approximately 382 feet at the northwest area of the site to 390 feet in the southeast area of the site (NAVD 88).

4.4 SUBSURFACE CONDITIONS

Subsurface conditions at the site were explored by excavating six test pits (TP-1 through TP-6) to depths between 12.5 and 16 feet BGS. The exploration locations are shown on Figure 2. A description of our 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. Photograph taken during our subsurface explorations are presented in Appendix C. A summary of the subsurface conditions is presented below.

4.4.1 Root and Topsoil Zones

The topsoil zone is generally 6 to 12 inches thick and consists of sandy silt with trace organics. The topsoil zone generally contains a 3-inch-thick root zone. Areas covered by forest may have deeper root zones or thicker topsoil zones.

4.4.2 Near-Surface Soil

Beneath the topsoil, the soil generally consists of silty gravel with sand and cobbles or clayey sand to silty sand with gravel to the maximum depth explored of 16 feet BGS. Variable amounts boulders up to 24 inches in diameter were encountered in several locations. Based on laboratory testing, the moisture content varied from 23 to 30 percent at the time of exploration.

4.4.3 Groundwater

Groundwater seepage was observed in test pit TP-6 at a depth of 12 feet BGS on December 31, 2024. Based on our knowledge of the surrounding area, perched water could be present in isolated, discontinuous zones below the ground surface and particularly where higher infiltrating soil is present above lower infiltrating soil.

4.5 INFILTRATION TESTING

Infiltration testing was completed in three of the test pits in December 2024 to assist in the evaluation of stormwater infiltration facilities for the project. The infiltration testing was conducted in general accordance with the recommendations for the encased falling head method in general accordance with the Clark County Stormwater Manual (Clark County 2021). Table 2 summarizes our infiltration testing results.

Table 2. Infiltration Testing Results

Location	Depth (feet BGS)	Soil Type	Fines Content[1] (percent)	Coefficient of Permeability, k (in/hr)
TP-1	3	Silty GRAVEL with sand (GM)	35	4
	6	Silty GRAVEL with sand (GM)	21	19
TP-3	3	Silty GRAVEL with sand (GM)	32	5
	6	GRAVEL with silt and sand (GP-GM)	20	4
TP-6	3	Clayey SAND (SC)	43	5
	6	Silty GRAVEL with sand (GM)	14	20

1. Fines content: percent passing U.S. Standard No. 200 sieve

Recommendations for design of infiltration system are provided in Section 6.6.3 (Stormwater Infiltration Systems).

5.0 GEOLOGICALLY HAZARDOUS AREAS

Camas Municipal Code, Section 16.59 defines geologic hazard requirements for proposed development in areas subject to City of Camas jurisdiction. Three potential geologic hazards are identified: (1) erosion hazard areas, (2) landslide hazard areas, and (3) seismic hazard areas.

Columbia West conducted a geologic hazard review to assess whether these hazards are present at the site proposed for development and, if so, to provide mitigation recommendations. The geologic hazard review was based on physical and visual reconnaissance, subsurface exploration, laboratory testing of collected soil samples, and review of maps and other published technical literature. The results of the geologic hazard review are discussed in the following sections.

5.1 EROSION HAZARDS

Camas Municipal Code, Section 16.59.020.A defines an erosion hazard as areas where slope grades meet or exceed 40 percent. Based on review of slope grade mapping published by Clark County Maps Online, maximum slope grades of 15 percent are mapped in the northeast corner of the site. Therefore, site slopes do not meet the definition of an erosion hazard according to Camas Municipal Code.

5.2 LANDSLIDE HAZARDS

Columbia West conducted a review of available mapping and Clark County GIS data and conducted a site reconnaissance to evaluate the potential presence of a landslide hazard on or near the site. Due to the relatively flat topography, the site does not pose a significant landslide hazard.

5.3 SEISMIC HAZARD AREAS

Seismic hazards include areas subject to severe risk of earthquake-induced damage. Damage may occur due to soil liquefaction, dynamic settlement, ground shaking amplification, or surface faulting rupture. These seismic hazards are discussed below.

5.3.1 Soil Liquefaction and Dynamic Settlement

According to the Liquefaction Susceptibility Map of Clark County, Washington (Palmer et al. 2004), the site is mapped as very low susceptibility for liquefaction. Liquefaction, defined as the transformation of the behavior of a granular material from a solid to a liquid due to increased pore water pressure and reduced effective stress, may occur when granular materials quickly compact under cyclic stresses caused by a seismic event. The effects of liquefaction may include immediate ground settlement, lateral spreading, and differential compaction.

Soil most susceptible to liquefaction is recent geologic deposits, such as river and floodplain sediments. This soil is generally saturated, cohesionless, loose to medium dense sand within 50 feet of the ground surface. Potentially liquefiable soil located above the existing, historical, or expected groundwater levels do not generally pose a liquefaction hazard. It is important to note that changes in perched groundwater elevation may occur due to project development or other factors not observed at the time of investigation.

Based on the results of subsurface exploration, literature review, and laboratory testing, the above-mentioned criteria were not observed during the geotechnical site investigation. Therefore, the potential for soil liquefaction is considered to be very low.

5.3.2 Ground Shaking Amplification

Review of the Site Class Map of Clark County, Washington, (Palmer et al. 2004) indicates that site soil may be represented by Site Class C as defined in 2021 IBC Section 1613.3.2. A designation of Site Class C indicates that minor amplification of seismic energy may occur during a seismic event due to subsurface conditions. However, this is typical for many areas within Clark County, does not represent a geologic hazard in Columbia West's opinion, and will not prohibit development if properly accounted for during the design process. Additional seismic information is presented in Section 6.3 (Seismic Design Criteria).

5.3.3 Fault Rupture

Because there are no known geologic seismic faults within the site boundaries, fault rupture is unlikely.

6.0 DESIGN

Based on the results of our explorations, laboratory testing, and analysis, the proposed project is feasible, provided the recommendations presented in this report are incorporated into design and implemented during construction.

6.1 SHALLOW FOUNDATION SUPPORT

6.1.1 General

The proposed residential structures may be supported by conventional spread footings bearing on firm, native soil or engineered structural fill. Any loose or disturbed soil should be improved or removed and replaced with structural fill. If the moisture content of the footing subgrade soil is above optimum moisture content, we recommend that a minimum of 6 inches of compacted aggregate be placed over exposed subgrade soil. The aggregate pad should extend 6 inches

beyond the edges of the foundations and consist of imported granular material as described in Section 7.6.1 (Structural Fill). Columbia West should observe exposed subgrade conditions prior to placement of crushed aggregate to verify adequate subgrade support.

6.1.2 Footing Dimensions and 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 be 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.

6.1.3 Settlement

Provided the subgrade soil is prepared as described above and in Section 7.1 (Site Preparation), we anticipate that post-construction static foundation settlement will be less than approximately 1 inch. Differential settlement between comparably loaded foundations is not expected to exceed approximately 0.5 inch over a distance of 50 feet.

6.1.4 Resistance to Sliding

Lateral foundation loads can be resisted by passive earth pressure on the sides of footings and by friction at the bases of footings. Recommended passive earth pressure for footings confined by native soil or engineered structural fill is 250 pcf. The upper 6 inches of soil should be neglected when calculating passive pressure resistance. Adjacent floor slabs and pavement, if present, should also be neglected from the analysis. The recommended passive pressure resistance assumes that a minimum horizontal clearance of 10 feet is maintained between the footing face and adjacent down-gradient slopes.

The estimated coefficient of friction between in-situ native soil or engineered structural fill and in-place poured concrete is 0.35. The estimated coefficient of friction between compacted crushed aggregate and in-place poured concrete is 0.45.

6.2 FLOOR SLABS

Floor slabs can be supported on firm, competent, native soil or engineered structural fill prepared as described in this report. Disturbed soil and unsuitable fill in proposed slab locations, if encountered, should be removed and replaced with structural fill. Floor slabs with a maximum floor load of 100 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 7.6 (Materials).

6.3 SEISMIC DESIGN CRITERIA

The structures will likely be constructed in accordance with the 2021 IBC, which references ASCE 7-16 for design parameters. Based on our literature review of surrounding sites, the appropriate seismic site class for design is C. Seismic design parameters in accordance with ASCE 7-16 are provided in Table 3.

Table 3. ASCE 7-16 Seismic Design Parameters[1]

Parameter	Short Period (T_s)	1-Second Period (T_1)
MCE spectral response acceleration, S	S_s = 0.787 g	S_1 = 0.345 g
Site class	C	
Site coefficient, F	F_a = 1.2	F_v = 1.5
Adjusted spectral response acceleration, S_M	S_{MS} = 0.945 g	S_{M1} = 0.518 g
Design spectral response acceleration, S_D	S_{DS} = 0.630 g	S_{D1} = 0.345 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 C provided in Table 3 can be used for design or if a site-specific seismic hazard evaluation is required.

6.4 RETAINING STRUCTURES

Lateral earth pressures should be considered during design of retaining walls and below-grade structures. Hydrostatic pressure and additional surcharge loading should also be considered. Wall foundation construction and bearing capacity should adhere to the specifications in Section 6.1 (Shallow Foundation Support).

Permanent retaining walls that are not restrained from rotation and are retaining undisturbed, native soil should be designed for active earth pressures using an equivalent fluid pressure of 39 pcf. Walls retaining undisturbed, native soil that are restrained from rotation should be designed for an at-rest equivalent fluid pressure of 64 pcf. For walls with imported well-drained granular backfill meeting WSS 9-03.12(2) – Gravel Backfill for Walls, equivalent fluid pressures of 34 pcf and 60 pcf are applicable for active and at-rest earth pressures, respectively.

The recommended earth pressures assume a maximum wall height of 10 feet with 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 distributed load with the resultant located at 0.6H from the base of the wall.

6.4.1 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 material 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 7.6.1 (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.

6.5 PAVEMENT

We recommend that public roadways for the subdivision be constructed in accordance with City of Camas standards. For dry weather construction, pavement surface sections should bear on competent subgrade consisting of scarified and compacted native soil or engineered structural fill. Wet weather construction may require an increased thickness of aggregate base as discussed in Section 7.2 (Construction Traffic and Staging). Refer to Section 7.6.3.2 (Cold Weather Paving Considerations) for compaction requirements.

6.6 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 7.6 (Materials). Drains should be closely monitored after construction to assess their effectiveness. If additional surface or shallow subsurface seepage become evident, the drainage provisions may require modification or additional drains. We should be consulted to provide appropriate recommendations.

6.6.1 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.

6.6.2 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.

6.6.3 Stormwater Infiltration Systems

Based on the tested infiltration rates, on-site infiltration systems are viable in the native soil at the site. The rates in Table 2 are field infiltration rates and factors of safety have not been applied. Correction factors should be applied to the recommended infiltration rates to account for soil variations and the potential for long-term clogging due to siltation and buildup of organic material. Confirmation testing of infiltration systems should be completed as described below. In addition, the local jurisdiction may require a limit on the design infiltration rates. We recommend the stormwater system designer determine if a design rate limit is required.

We recommend a contingency be in place if tested rates do not meet design rates. Columbia West should be allowed to review the final design and provide comments, as necessary. The infiltration flow rate of disposal systems will diminish over time as suspended solids and precipitates in the stormwater slowly clog the void spaces between soil particles in the zone of infiltration. Accordingly, systems may eventually fail and need to be replaced.

7.0 CONSTRUCTION

7.1 SITE PREPARATION

7.1.1 General

Site grading should be performed in accordance with the requirements specified in the 2021 IBC, Chapter 18 and Appendix J, with exceptions noted in this report. Site preparation should be observed and documented by Columbia West.

7.1.2 Demolition

Where required, demolition includes removal of structural features that may be at the site. Abandoned foundations and utilities, if present, will need to be removed and the resulting excavations backfilled. Utility lines should be completely removed or, with prior approval, grouted full if left in place. Excavations left from demolition and removal of existing structures should be backfilled with compacted structural fill in accordance with the recommendations in Section 7.6 (Materials).

7.1.3 Stripping and Grubbing

The existing root zones should be stripped and removed from all areas to receive new structural improvements. A stripping depth of approximately 12 inches is anticipated in areas where the entire topsoil zone is removed. The actual stripping depth should be based on field observations at the time of construction and may increase in areas of heavy vegetation or deep tree roots. Stripped material should be transported offsite for disposal or used in landscaped areas on 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.

Trees and shrubs should be removed from fill areas. In addition, root balls should be grubbed out to the depth of the roots, which could exceed 3 feet BGS. Depending on the methods used to remove root balls, considerable disturbance and loosening of the subgrade could occur during site grubbing. We recommend that soil disturbed during grubbing operations be removed to expose firm, undisturbed subgrade. The resulting excavations should be backfilled with structural fill. Columbia West recommends removing undocumented fill completely and backfilling, as needed, with clean structural fill. Undocumented structural fill material should be evaluated by Columbia West prior to being reused as structural fill to determine suitability.

7.1.4 Test Pits

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.

7.1.5 Subgrade Evaluation

Upon completion of stripping and prior to the placement of structural fill or pavement improvements, 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, 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.

7.2 CONSTRUCTION TRAFFIC AND STAGING

The fine-grained soil present on this site is easily disturbed. If not carefully executed, site preparation, utility trench work, and roadway excavation can create extensive soft areas and significant repair costs can result. Earthwork planning, regardless of the time of year, should include considerations for minimizing subgrade disturbance.

If construction occurs during or extends into the wet season or if the moisture content of the surficial soil is more than a couple percentage points above optimum, site stripping and cutting may need to be accomplished using track-mounted equipment. Likewise, the use of granular haul roads and staging areas will be necessary for support of construction traffic during the rainy season or when the moisture content of the surficial soil is more than a few percentage points above optimum. The aggregate base thickness for pavement areas is intended to support post-

construction design traffic loads and is not designed to support construction traffic. Moreover, if construction is planned for periods when the subgrade soil is wet, staging areas and haul roads with increased thicknesses of base rock will be required. The amount of staging areas and haul roads, as well as the required thickness of granular material, will vary with the contractor's sequencing of a project and type/frequency of construction equipment and should, therefore, be the responsibility of the contractor. 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 haul roads. The contractor should also be responsible for selecting the type of material for construction of haul roads and staging areas. A geotextile fabric can be placed as a barrier between the subgrade and imported granular material in areas of repeated construction traffic to help prevent silt migration into the base rock. The imported granular material, stabilization material, and geotextile fabric should meet the specifications in Section 7.6 (Materials).

Cement amendment is an alternative to thickened crushed rock sections, haul roads, and utility work zones. Cement amendment recommendations are presented in Section 7.6.4 (Soil Amendment with Cement).

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.

7.3 CUT AND FILL SLOPES

Fill slopes should consist of structural fill material as discussed in Section 7.6.1 (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 the 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.

7.4 EXCAVATION

7.4.1 General

Conventional earthmoving equipment in proper working condition should be capable of making necessary site excavations. Temporary excavation sidewalls should maintain a vertical cut to a depth of approximately 4 feet BGS in the near-surface silt, 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 test pit TP-6 at a depth of 12 feet BGS on December 31, 2024. Recommendations as described in Section 7.5 (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.

7.4.2 Cobbles and Boulders

Cobbles and boulders were encountered in the explorations at the site. Construction considerations associated with cobbles and boulders include the following:

- Excavations can become difficult, if not impossible, with conventional equipment.
- Excavation volumes for utility trenches may be greater than anticipated due to sloughing and the need to remove oversized material.
- We recommend that project bid documents include a contingency for boulder removal, as well as the associated increased trench volumes for backfilling.

7.5 DEWATERING

Groundwater or perched water tables may be encountered at the site. Therefore, groundwater may be encountered in utility trench excavations and in areas of cut. General recommendations for temporary construction dewatering are presented in the following section.

7.5.1 Construction Dewatering

The contractor should be responsible for temporary drainage of surface water, perched water, and groundwater. Dewatering should be performed to the extent necessary to prevent standing water and/or erosion of 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. Depending on proposed utility depths, a site-specific dewatering plan may be necessary.

If groundwater is present at the bases of utility excavations, we recommend placing 18 to 24 inches of stabilization material at the base 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 7.6 (Materials).

7.6 MATERIALS

7.6.1 Structural Fill

7.6.1.1 General

Areas proposed for fill placement should be appropriately prepared as described in Section 7.1 (Site Preparation). Engineered fill placement should be observed by Columbia West. Compaction of engineered structural fill should be verified by proof rolling or 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, should have a maximum particle size of less than 6 inches, and should 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.

7.6.1.2 On-Site Soil

The near-surface soil at the site generally consists of fine-grained soil. The native surficial soil at the site is generally suitable for use as structural fill if adequately dried or moisture conditioned to achieve recommended compaction specifications. Based on laboratory testing, we anticipate the moisture content of the soil will generally be above the optimum moisture content required to meet compaction requirements and drying of the soil will be necessary. Accordingly, extended

dry weather will be required to adequately condition and place the soil as structural fill. It will be difficult, if not impossible, to adequately compact the on-site soil during the rainy season or during prolonged periods of rainfall.

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.

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.

7.6.1.3 Imported Granular Material

Imported granular material should consist of pit- or quarry-run rock, crushed rock, or crushed gravel and sand. 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.

7.6.1.4 Stabilization Material

Stabilization material should consist of durable, 4- or 6-inch-minus pit- or quarry-run rock, crushed rock, or crushed gravel and sand that is free of organic material and other deleterious material. The material should have a maximum particle size of 6 inches with less than 5 percent by dry weight passing the U.S. Standard No. 4 sieve. The material should have at least two mechanically fractured faces.

Stabilization material should be placed in loose lifts between 12 and 24 inches thick and compacted to a firm, unyielding condition. Equipment with vibratory action should not be used when compacting stabilization material over wet, fine-grained soil. If stabilization material is used to stabilize soft subgrade below pavement or construction haul roads, a subgrade geotextile should be placed as a separation barrier between the soil subgrade and the stabilization material.

7.6.1.5 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 the specifications in 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 material meeting the specifications in 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.

7.6.1.6 Pavement and Floor Slab Aggregate Base

Imported granular material used as base rock for building floor slabs and pavement should consist of 1¼-inch-minus crushed aggregate meeting the specifications in WSS 9-03.9(3) – Crushed Surfacing. Pavement and slab aggregate base should be compacted to at least 95 percent of maximum dry density as determined by ASTM D1557.

7.6.1.7 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.

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 (e.g., 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.

7.6.1.8 Retaining Wall Leveling Pad

Crushed aggregate used as a leveling pad for retaining wall footings should consist of ¾- or 1¼-inch-minus crushed rock and should have less than 7 percent fines by dry weight. The leveling pad material should be compacted to at least 95 percent of maximum dry density as determined by ASTM D1557.

7.6.1.9 Drain Rock

Drain rock should consist of angular, granular material with a maximum particle size of 2 inches. The material should be free of roots, organic material, and other unsuitable material; should have less than 2 percent fines by dry weight; and should have at least two mechanically fractured faces. Drain rock should be compacted to a well-keyed, firm condition.

7.6.2 Geotextile Fabric

7.6.2.1 Subgrade Geotextile

A geotextile separation fabric will be required at the interface of the existing soil and imported granular material beneath proposed walls. In addition, geotextile fabric may be required where

soft subgrade is encountered. The separation fabric should meet the specifications in WSS 9-33.2(1) – Geotextile Properties (Table 3) for soil separation. The geotextile should be installed in conformance with the specifications in WSS 2-12 – Construction Geosynthetic.

7.6.2.2 Drainage Geotextile

Drainage 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.

7.6.3 Pavement

7.6.3.1 AC

The AC should conform to the specifications in WSS 5-04 – Hot Mix Asphalt and WSS 9-03.8 – Aggregates for Hot Mix Asphalt. The asphalt cement binder should be PG 28-22 Performance Grade Asphalt Cement meeting WSS 9-02.1(4) – Performance Graded (PG) Asphalt Binder. The AC should be ½-inch HMA. The lift thickness should be 2 to 3 inches. The AC should be compacted to 92 percent of maximum specific gravity of the mix as determined by ASTM D2041.

7.6.3.2 Cold Weather Paving Considerations

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 thickness greater than 2.5 inches and at least 50 degrees Fahrenheit for lift thickness between 2 and 2.5 inches.

If AC paving activities must take place during cold weather construction as defined above, the contractor and design team should discuss options for minimizing risk of pavement serviceability.

7.6.4 Soil Amendment with Cement

The on-site soil can be amended with portland cement to obtain suitable properties for use as wet weather structural fill or subbase for pavement. The effectiveness of soil amendment is highly dependent on proper mixing techniques, soil moisture conditioning, and the quantity of cement. The quantity of cement applied during amendment should be based on an assumed dry unit weight of 100 pcf for the site soil.

7.6.4.1 Subbase Stabilization

Specific recommendations for soil amendment should be based on exposed site conditions at the time of construction. For preliminary design purposes, we recommend cement-amended subgrade for building pads and pavement subbase (below the aggregate base layer) achieve a

target strength of 100 psi. The quantity of cement required to achieve the target strength will vary with moisture content and soil type. Laboratory testing of cement-amended soil should be used to confirm design expectations.

Based on our experience, near-surface soil will require approximately 6 to 7 percent cement by weight to achieve the target strength of 100 psi. This cement percentage assumes that the soil moisture content does not exceed 20 percent at the time of amendment. If the soil moisture content is in the range of 25 to 35 percent, 7 to 8 percent cement by weight may be required to achieve the target strength. The amount of cement added to the soil at the time of construction should be based on observed field conditions and subgrade performance. During extended periods of dry weather, water may need to be applied during the amendment and tilling process to achieve the optimum moisture content required for compaction.

Cement-amendment equipment should have balloon tires to minimize softening, rutting, and disturbance of fine-grained site soil. A sheepsfoot or segmented pad roller with a minimum static weight of 40,000 pounds should be used for initial compaction. Rollers with vibratory action should not be used to compact fine-grained, cement-amended soil. Final compaction should be conducted with a smooth-drum roller with a minimum applied linear force of 700 pounds per inch. The amended soil should be compacted to at least 95 percent of maximum dry density as determined by ASTM D558.

Following cement amendment, a minimum curing time of four days is required prior to exposure to construction traffic. Construction traffic should not be allowed on unprotected, cement-amended subgrade. To protect cement-amended areas from damage, the finished surface should be covered with 4 to 6 inches of imported granular material. The protective layer of crushed rock often becomes contaminated with soil during construction, particularly in staging and haul road areas. Contaminated aggregate, where present, should be removed and replaced with clean crushed aggregate prior to construction of pavement or other permanent site improvements supported by aggregate base.

Cement amendment should not be attempted during moderate to heavy precipitation or when the ambient air temperature is below 40 degrees Fahrenheit. Cement should not be placed in areas of standing water or where saturated subgrade conditions exist.

7.6.4.2 Cement-Amended Structural Fill

If adequate compaction is not achievable with the on-site fine-grained soil due to moisture or weather conditions, the soil may be cement amended and placed as general structural fill. Prior to placement of cement-amended fill, subgrade soil should be prepared as described in Section 7.1 (Site Preparation). Where multiple lifts of cement-amended fill are necessary to meet finished grade, consecutive lifts may be placed immediately following amendment and compaction of the underlying lift. However, where the final lift of cement-amended fill will serve as building pad or pavement subbase material, the four-day cure period as discussed above is recommended.

7.6.4.3 QA/QC Testing and Inspection

Cement amendment of site soil should be observed and tested by Columbia West to document conformance with design recommendations. Cement spread rate should be verified with a pan

sample test conducted at one random location per lift per 20,000 square feet of cement-amended fill. Amendment depth should be verified through excavation of a small test pit and measurement at one random location per lift of cement-amended fill. Adequate compaction and moisture content should be verified by conducting nuclear gauge density testing at a frequency of approximately one test per 5,000 square feet of cement-amended fill in accordance with ASTM D6938. At least one representative sample should be collected per day of cement amendment, cured for seven days, and tested for unconfined compressive strength in accordance with ASTM D1633. The tested samples should have a minimum seven-day, unconfined compressive strength of 100 psi.

7.7 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.

8.0 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.

9.0 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 D.

♦ ♦ ♦

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,

Michael A. Chacon, PE
Senior Staff Engineer

Daniel E. Lehto, PE, GE
Principal Engineer

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FIGURES



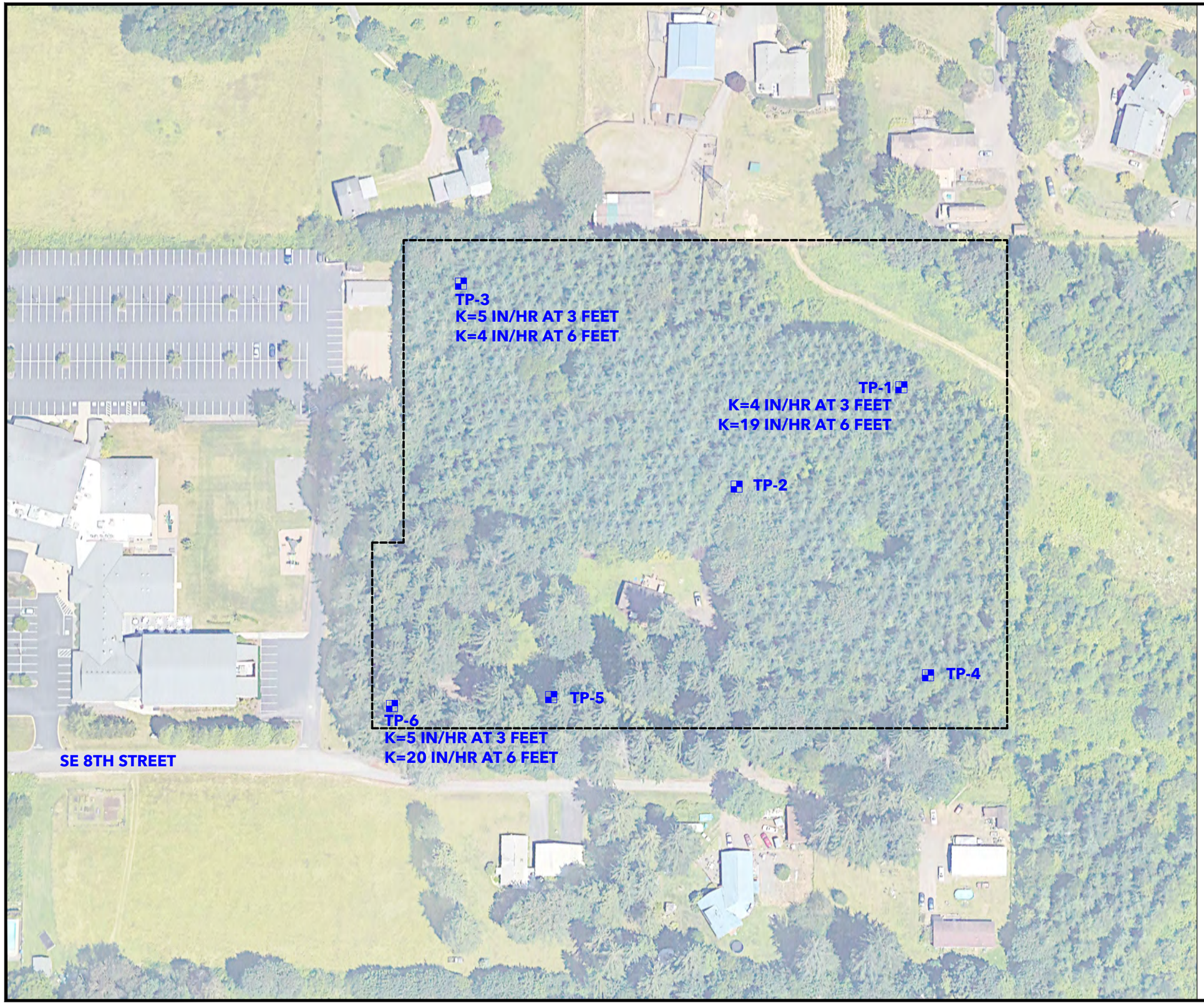
Geotechnical ▪ Environmental ▪ Special Inspections
Columbia West Engineering, Inc

PROJECT NO.: HSR-4-01-1

FEBRUARY 2025

VICINITY MAP
CAMAS WOODS PHASE 3
CAMAS, WASHINGTON

FIGURE 1



LEGEND

- SITE BOUNDARY
- TEST PIT
- K UNFACTORED COEFFICIENT OF PERMEABILITY

N

0 26 52 78 80 130 260

NOTES:
1. AERIAL PHOTO SOURCED FROM GOOGLE EARTH.
2. EXPLORATION LOCATIONS ARE APPROXIMATE AND NOT SURVEYED.
3. REFER TO REPORT TEXT FOR EXPLORATION DESCRIPTIONS.

Geotechnical ■ Environmental ■ Special Inspections
Columbia West Engineering, Inc

CAMAS WOODS PHASE 3
CAMAS, WASHINGTON
26514 AND 26416 SE 8TH STREET

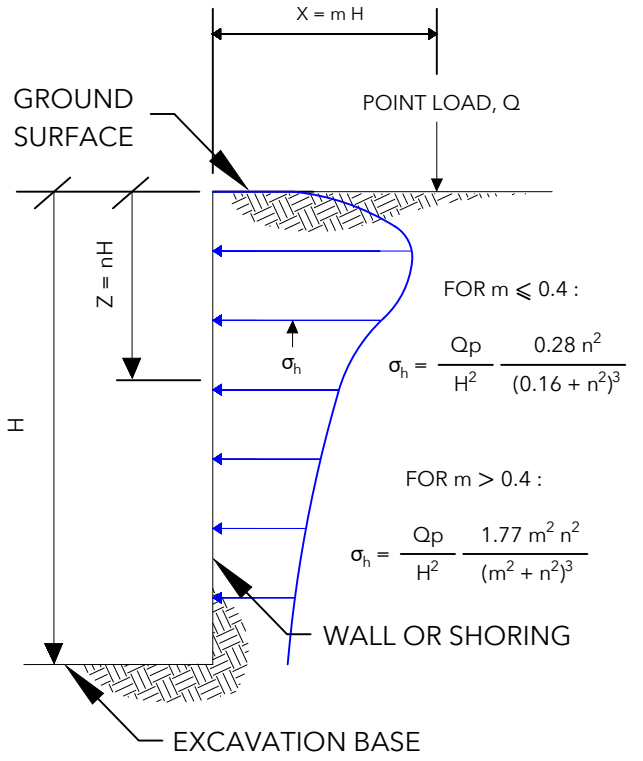
SITE PLAN

PROJECT NO:
HSR-4-01-1

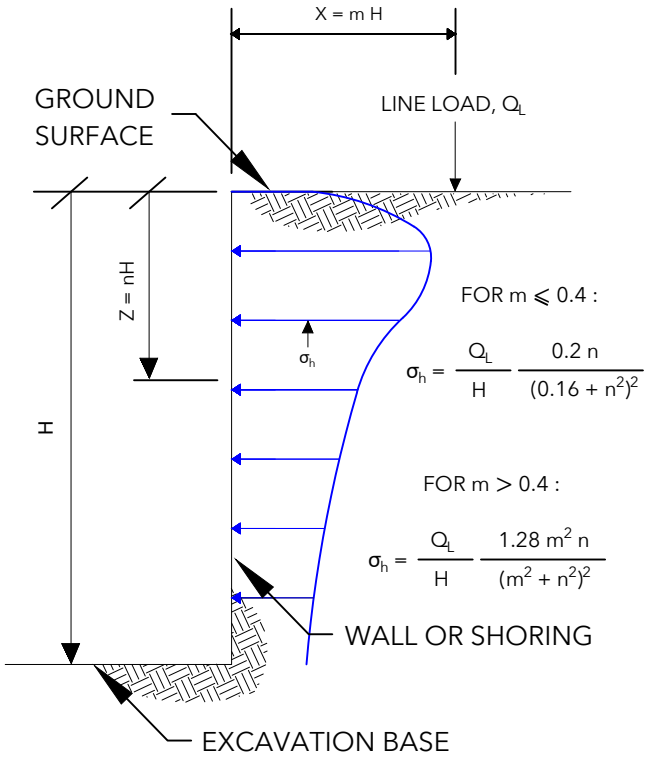
FEBRUARY 2025

FIGURE
2

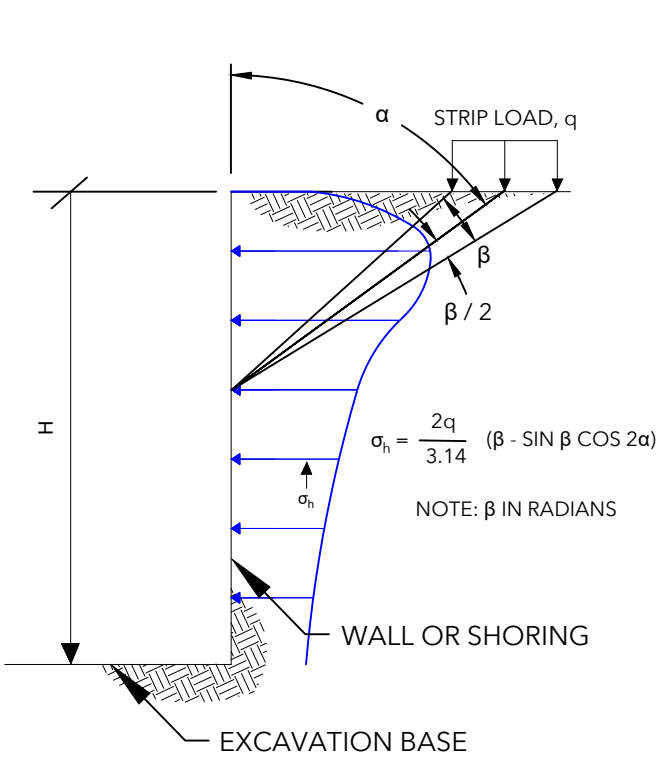
VERTICAL POINT LOAD



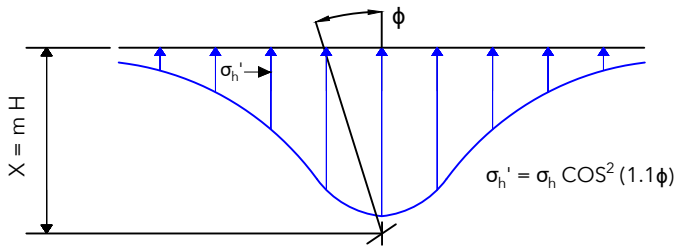
LINE LOAD PARALLEL TO WALL



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.

APPENDIX A

APPENDIX A
FIELD EXPLORATIONS

GENERAL

We explored subsurface conditions at the site by excavating six test pits (TP-1 through TP-6) to depths between 12.5 and 16 feet BGS. Excavation services were provided by L&S Contracting LLC of Yacolt, Washington, on December 31, 2024. The explorations were logged on a full-time basis by Columbia West personnel. The exploration logs are presented in this appendix.

The approximate exploration locations are shown on Figure 2. The exploration locations are approximate and were not surveyed.

SOIL SAMPLING

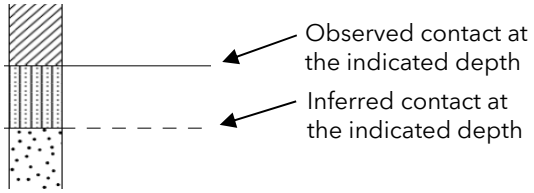
Representative disturbed samples of soil observed in the test pit explorations were collected from the test pit walls and base using the excavator bucket.

SOIL CLASSIFICATION

The soil samples were classified in accordance with the "Exploration Key," "Soil Classification System," and "AASHTO Soil Classification System," which are presented in this appendix. The exploration logs indicate the depths at which the soils or their characteristics change, although the change actually 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
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		

AASHTO SOIL CLASSIFICATION SYSTEM

TABLE 1. CLASSIFICATION OF SOILS AND SOIL-AGGREGATE MIXTURES

General Classification	Granular Materials (35 Percent or Less Passing No. 200 Sieve [0.075 mm])			Silty-Clay Materials (More Than 35 Percent Passing No. 200 Sieve [0.075 mm])			
Group Classification	A-1	A-3*	A-2	A-4	A-5	A-6	A-7
Sieve analysis, percent passing							
2.00 mm (No. 10)	--	--	--	--	--	--	--
0.425 mm (No. 40)	50 max.	51 min.	--	--	--	--	--
0.075 mm (No. 200)	25 max.	10 max.	35 max.	36 min.	36 min.	36 min.	36 min.
Characteristics of fraction passing 0.425 mm (No. 40)							
Liquid limit	--	--	**	40 max.	41 min.	40 max.	41 min.
Plasticity index	6 max.	Non-plastic	**	10 max.	10 max.	11 min.	11 min.
General rating as subgrade	Excellent to Good			Fair to Poor			

* The placing of A-3 before A-2 is necessary in the "left to right elimination process" and does not indicate superiority of A-3 over A-2.
** See Table 2 for values.

TABLE 2. CLASSIFICATION OF SOILS AND SOIL-AGGREGATE MIXTURES

General Classification	Granular Materials (35 Percent or Less Passing No. 200 Sieve [0.075 mm])							Silty-Clay Materials (More Than 35 Percent Passing No. 200 Sieve [0.075 mm])			
Group Classification	A-1		A-3	A-2				A-4	A-5	A-6	A-7
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6
Sieve analysis, percent passing											
2.00 mm (No. 10)	50 max.	--	--	--	--	--	--	--	--	--	--
0.425 mm (No. 40)	30 max.	50 max.	51 min.	--	--	--	--	--	--	--	--
0.075 mm (No. 200)	15 max.	25 max.	10 max.	35 max.	35 max.	35 max.	35 max.	36 min.	36 min.	36 min.	36 min.
Characteristics of fraction passing 0.425 mm (No. 40)											
Liquid limit	--	--	--	40 max.	41 min.	40 max.	41 min.	40 max.	41 min.	40 max.	41 min.
Plasticity index	6 max.		Non-plastic	10 max.	10 max.	11 min.	11 min.	10 max.	10 max.	11 min.	11 min.*
Usual types of significant constituent materials	Stone fragments Gravel and sand		Fine sand	Silty or clayey gravel and sand				Silty soil		Clayey soil	
General rating as subgrade	Excellent to Good							Fair to Poor			

*Plasticity index of A-7-5 subgroup is equal to or less than liquid limit minus 30 (i.e., plastic limit greater than 30 percent). Plasticity index of A-7-6 subgroup is greater than liquid limit minus 30 (i.e., plastic limit less than 30 percent).

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TEST PIT NUMBER: TP-1

PROJECT NAME Camas Woods Phase 3 **CLIENT** HSR Capital LLC
PROJECT NO. HSR-4-01-1 **LOGGED BY** S. Chandra **PROJECT LOCATION** Camas, Washington
CONTRACTOR L&S Contracting LLC **EQUIPMENT** CAT 307E2
CAVING Not observed **DATE COMPLETED** 12/31/2024
GROUNDWATER Not observed **TIME STARTED** 11:20 AM **TIME COMPLETED** 2:22 PM

DEPTH (ft)	SAMPLE ID	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (LL-PL-PI)	FINES (%)	REMARKS
				Medium stiff, brown sandy SILT, trace organics, moist (12 inches of topsoil, 3-inch-thick root zone). 1.0					
	TP1.1		GM	Medium dense, brown silty GRAVEL with sand and cobbles, moist, gravel is fine to coarse, sand is fine, cobbles are subrounded and up to 12 inches in diameter.					
	TP1.2					29	48-30-18	34	Infiltration test at 3 feet.
5									
	TP1.3					23		21	Infiltration test at 6 feet.
									Increase in cobbles at 6 feet.
									Decrease in fines at 9 feet.
10				With boulders at 11 feet.					
				15.0					
15	TP1.4		SM	Medium dense, brown-tan-orange silty SAND with gravel, moist, sand is fine to coarse, gravel is fine. 16.0					
				Exploration completed at 16 feet.					

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TEST PIT NUMBER: TP-2

PROJECT NAME Camas Woods Phase 3 **CLIENT** HSR Capital LLC

PROJECT NO. HSR-4-01-1 **LOGGED BY** S. Chandra **PROJECT LOCATION** Camas, Washington

CONTRACTOR L&S Contracting LLC **EQUIPMENT** CAT307E2

CAVING Not observed **DATE COMPLETED** 01/01/2025

GROUNDWATER Not observed **TIME STARTED** 11:32 AM **TIME COMPLETED** 12:07 PM

DEPTH (ft)	SAMPLE ID	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (LL-PL-PI)	FINES (%)	REMARKS
				Medium stiff, brown sandy SILT, trace organics, moist (10 inches of topsoil, 4-inch-thick root zone). 0.8					
	TP2.1		GM	Medium dense, brown silty GRAVEL with sand and cobbles, moist, gravel is fine to coarse, sand is fine, cobbles are subrounded and up to 12 inches in diameter.		24	53-31-22	25	AASHTO soil classification: A-2-7(1)
5	TP2.2								
10	TP2.3			12.5					Decrease in fines at 9 feet.
				Exploration completed at 12.5 feet.					
15									

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TEST PIT NUMBER: TP-3

PROJECT NAME Camas Woods Phase 3 **CLIENT** HSR Capital LLC
PROJECT NO. HSR-4-01-1 **LOGGED BY** S. Chandra **PROJECT LOCATION** Camas, Washington
CONTRACTOR L&S Contracting LLC **EQUIPMENT** CAT307E2
CAVING Minor at 6.5 feet **DATE COMPLETED** 12/31/2024
GROUNDWATER Not observed **TIME STARTED** 9:49 AM **TIME COMPLETED** 10:50 AM

DEPTH (ft)	SAMPLE ID	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	FINES (%)	REMARKS
				Medium stiff, brown sandy SILT, trace organics, moist (12 inches of topsoil, 5-inch-thick root zone). 1.0				
	TP3.1		GM	Medium dense, brown silty GRAVEL with sand and cobbles, moist, gravel is fine to coarse, sand is fine, cobbles are subrounded and up to 12 inches in diameter.				
	TP3.2					27	32	Infiltration test at 3 feet.
5				6.0				
	TP3.3		GP-GM	Medium dense, brown GRAVEL with silt, sand, and cobbles, moist, gravel is fine to coarse, sand is fine, cobbles are subrounded to rounded and up to 12 inches in diameter.		25	20	Infiltration test at 6 feet. Minor caving at 6.5 feet.
10	TP3.4			13.5				
				Exploration completed at 13.5 feet.				
15								

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TEST PIT NUMBER: TP-4

PROJECT NAME Camas Woods Phase 3 **CLIENT** HSR Capital LLC
PROJECT NO. HSR-4-01-1 **LOGGED BY** S. Chandra **PROJECT LOCATION** Camas, Washington
CONTRACTOR L&S Contracting LLC **EQUIPMENT** CAT307E2
CAVING Not observed **DATE COMPLETED** 12/31/2024
GROUNDWATER Not observed **TIME STARTED** 12:33 PM **TIME COMPLETED** 1:05 PM

DEPTH (ft)	SAMPLE ID	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
				Medium stiff, brown sandy SILT, trace organics, moist (10 inches of topsoil, 3-inch-thick root zone). 0.8			
			GM	Medium dense, brown silty GRAVEL with sand and cobbles, moist, gravel is fine to coarse, sand is fine to medium, cobbles are subrounded and 3 to 12 inches in diameter.			
5	TP4.1						
	TP4.2						Decrease in fines at 9 feet.
10				With boulders, boulders are 18 to 24 inches in diameter at 13 feet. 14.0			
			SM	Medium dense, brown-orange-tan silty SAND with gravel, moist, sand is fine to medium, gravel is coarse. 15.5			
15	TP4.3						
				Exploration completed at 15.5 feet.			

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TEST PIT NUMBER: TP-5

PROJECT NAME Camas Woods Phase 3 **CLIENT** HSR Capital LLC
PROJECT NO. HSR-4-01-1 **LOGGED BY** S. Chandra **PROJECT LOCATION** Camas, Washington
CONTRACTOR L&S Contracting LLC **EQUIPMENT** CAT307E2
CAVING Not observed **DATE COMPLETED** 12/31/2024
GROUNDWATER Not observed **TIME STARTED** 9:10 AM **TIME COMPLETED** 9:40 AM

DEPTH (ft)	SAMPLE ID	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
				Medium stiff, brown sandy SILT, trace organics, moist (6 inches of topsoil, 3-inch-thick root zone). 0.5			
	TP5.1		SC	Medium dense, brown clayey SAND with gravel, moist, sand is fine, gravel is fine to coarse. 2.5			
			GM	Medium dense, brown silty GRAVEL with sand, cobbles, and boulders, moist, gravel is fine to coarse, sand is fine, cobbles are rounded to subrounded, boulders are subrounded and up to 16 inches in diameter.			
5	TP5.2						
10	TP5.3			13.5			
				Exploration completed at 13.5 feet.			
15							

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TEST PIT NUMBER: TP-6

PROJECT NAME Camas Woods Phase 3 **CLIENT** HSR Capital LLC
PROJECT NO. HSR-4-01-1 **LOGGED BY** S. Chandra **PROJECT LOCATION** Camas, Washington
CONTRACTOR L&S Contracting LLC **EQUIPMENT** CAT307E2
CAVING Minor from 12 to 13 feet. **DATE COMPLETED** 12/31/2024
GROUNDWATER Moderate seepage at 12 feet **TIME STARTED** 8:15 AM **TIME COMPLETED** 11:13 AM

DEPTH (ft)	SAMPLE ID	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	FINES (%)	REMARKS
				Medium stiff, brown sandy SILT, trace organics, moist (6 inches of topsoil, 3-inch-thick root zone). 0.5				
	TP6.1		SC	Medium dense, brown clayey SAND, trace gravel, moist, sand is fine to coarse.				
	TP6.2			4.0		30	43	Infiltration test at 3 feet.
5			GM	Medium dense, brown silty GRAVEL with sand and cobbles, moist, gravel is fine to coarse, sand is fine, cobbles are subrounded and up to 12 inches in diameter.				
	TP6.3					24	14	Infiltration test at 6 feet.
10	TP6.4			Wet at 12 feet. 13.0				Minor caving from 12 to 13 feet.
				Exploration completed at 13 feet.				
15								

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 D2216. 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 performed on a select soil sample in general accordance with ASTM D6913. This test is a quantitative determination of the soil particle size distribution expressed as a percentage of dry soil weight. Particle-size analysis was also performed 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.	
Camas Woods Phase 3 26514 and 26416 SE 8th Street Camas, Washington	HSR Capital LLC 500 East Broadway, Suite 120 Vancouver, WA 98660	HSR-4-01-1	
		ISSUE DATE: 01/21/25	PAGE: 1 of 1
		DATE SAMPLED: 12/31/24	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
S25-0073	777.12	3,002.92	2,505.70	1,907.74	TP1.2	3	29%	35%
S25-0074	772.20	4,644.63	3,912.20	3,259.20	TP1.3	6	23%	21%
S25-0075	579.10	4,256.49	3,550.51	sieved sample	TP2.1	2	24%	25%
S25-0076	780.04	4,041.64	3,338.44	2,519.96	TP3.2	3	27%	32%
S25-0077	787.34	5,353.00	4,449.88	3,714.65	TP3.3	6	25%	20%
S25-0078	771.52	2,452.58	2,069.49	1,514.03	TP6.2	3	30%	43%
S25-0079	752.77	4,771.61	3,983.45	3,517.80	TP6.3	6	24%	14%

NOTES:
Sample weights received for Lab ID: S25-0073, 0074, 0075, 0076, 0077, 0078, and 0079 did not meet the minimum size requirements; entire sample used for analysis.

DATE TESTED: 01/13/25
TESTED BY: M. Scherette

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ATTERBERG LIMITS REPORT

PROJECT	CLIENT	PROJECT NO.	
Camas Woods Phase 3 26514 and 26416 SE 8th Street Camas, Washington	HSR Capital LLC 500 East Broadway, Suite 120 Vancouver, WA 98660	HSR-4-01-1	
		ISSUE DATE: 01/21/25	PAGE: 1 of 1
		LAB ID: S25-0073	FIELD ID: TP1.2
		DATE SAMPLED: 12/31/24	SAMPLED BY: S. Chandra

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
Silty GRAVEL with Sand	Test Pit TP-1 depth = 3 feet	no data provided

LABORATORY TEST DATA

LABORATORY EQUIPMENT: Liquid Limit Machine, Hand Rolled

TEST PROCEDURE: ASTM D4318 - Method A

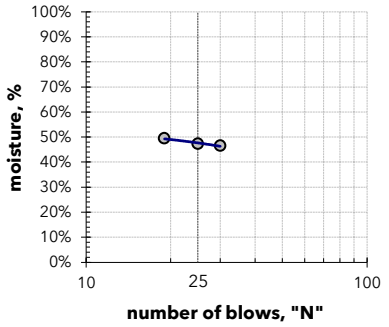
ATTERBERG LIMITS

liquid limit =	48
plastic limit =	30
plasticity index =	18

LIQUID LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	32.98	32.61	32.76	
dry soil + pan weight, g =	29.11	28.79	28.78	
pan weight, g =	20.79	20.71	20.73	
N (blows) =	30	25	19	
moisture, % =	46.5 %	47.3 %	49.4 %	

LIQUID LIMIT



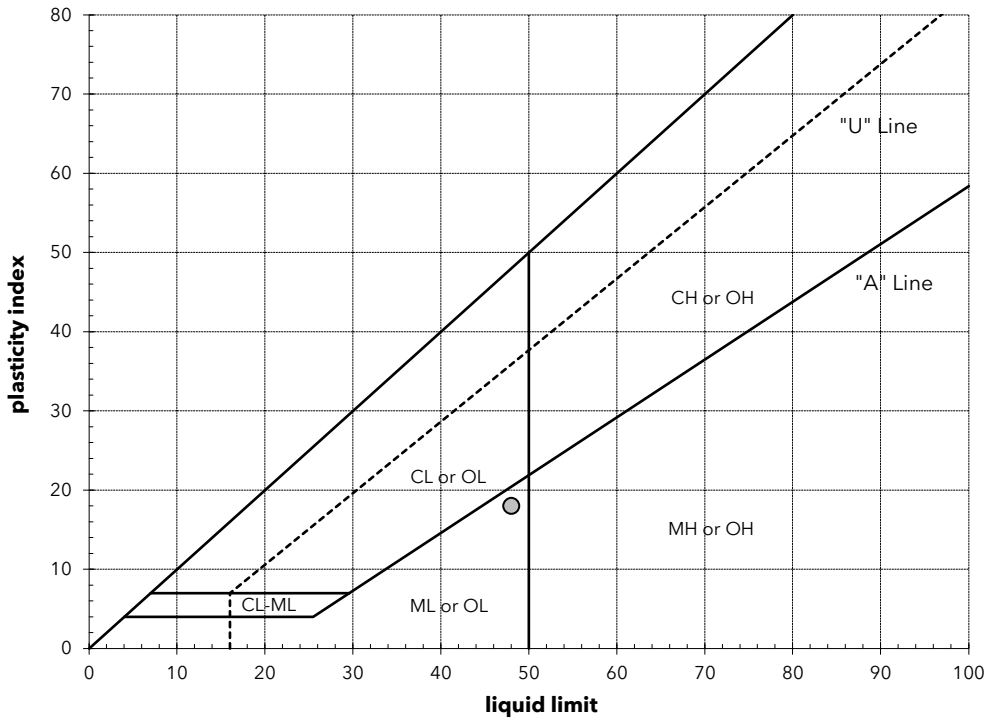
SHRINKAGE

shrinkage limit =	n/a
shrinkage ratio =	n/a

PLASTIC LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	28.05	27.97		
dry soil + pan weight, g =	26.40	26.32		
pan weight, g =	20.95	20.94		
moisture, % =	30.3 %	30.7 %		

PLASTICITY CHART



ADDITIONAL DATA

% gravel =	n/a
% sand =	n/a
% silt and clay =	n/a
% silt =	n/a
% clay =	n/a
moisture content =	29%

DATE TESTED	TESTED BY
01/15/25	B. Taylor

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CWE-S14-021524

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Geotechnical ▪ Environmental ▪ Special Inspections
Columbia West Engineering, Inc

PARTICLE-SIZE ANALYSIS REPORT

PROJECT	CLIENT	PROJECT NO.	
Camas Woods Phase 3 26514 and 26416 SE 8th Street Camas, Washington	HSR Capital LLC 500 East Broadway, Suite 120 Vancouver, WA 98660	HSR-4-01-1	
		ISSUE DATE: 01/21/25	PAGE: 1 of 2
		LAB ID: S25-0075	FIELD ID: TP2.1
		DATE SAMPLED: 12/31/24	SAMPLED BY: S. Chandra

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
Silty GRAVEL with Sand	Test Pit TP-2 depth = 2 feet	GM, Silty Gravel with Sand

SPECIFICATIONS	AASHTO CLASSIFICATION
none	A-2-7(1)

LABORATORY TEST DATA

LABORATORY EQUIPMENT	TEST PROCEDURE
Rainhart "Mary Ann" Sifter, air-dried prep, hand washed, composite sieve - #4 split	ASTM D6913, Method A

ADDITIONAL DATA

initial dry mass (g) =	2971.41		
as-received moisture content =	24%	coefficient of curvature, C_C =	n/a
liquid limit =	53	coefficient of uniformity, C_U =	n/a
plastic limit =	31	effective size, $D_{(10)}$ =	n/a
plasticity index =	22	$D_{(30)}$ =	0.138 mm
fineness modulus =	n/a	$D_{(60)}$ =	7.692 mm

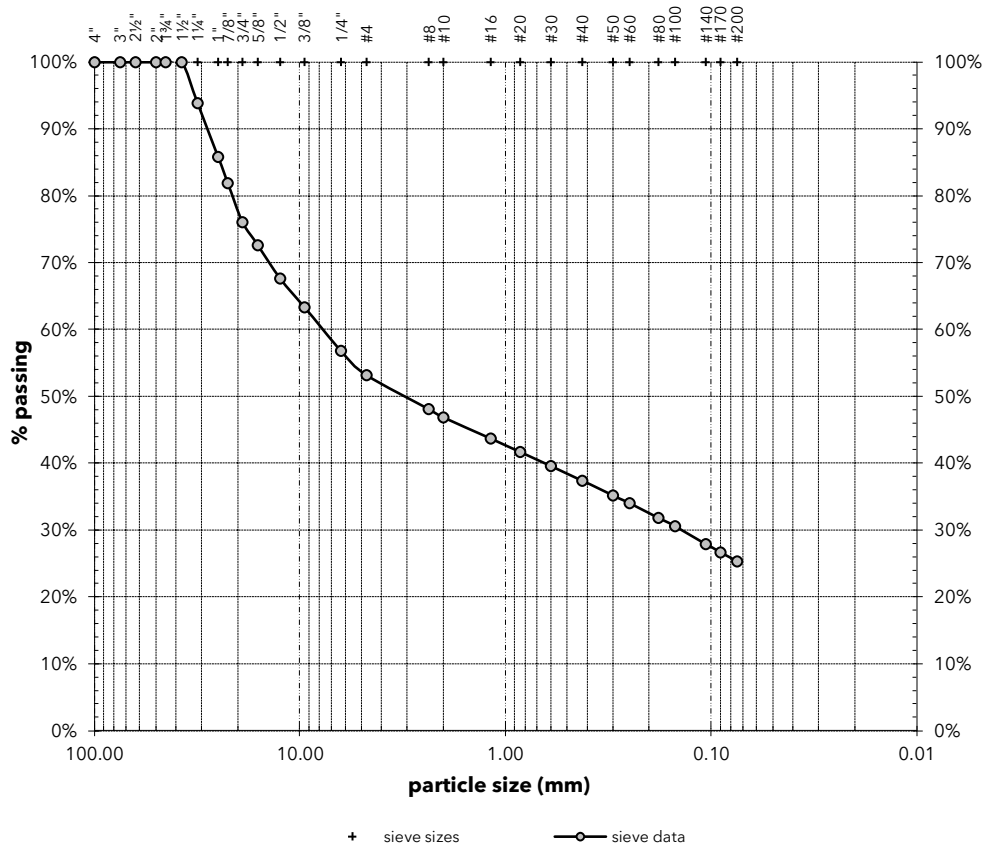
NOTE: Entire sample used for analysis; did not meet minimum size required.

SIEVE DATA

% gravel = 46.8%
% sand = 27.8%
% silt and clay = 25.3%

	SIEVE SIZE		PERCENT PASSING			
			SIEVE		SPECS	
	US	mm	act.	interp.	max	min
GRAVEL	6.00"	150.0		100%		
	4.00"	100.0		100%		
	3.00"	75.0		100%		
	2.50"	63.0		100%		
	2.00"	50.0		100%		
	1.75"	45.0		100%		
	1.50"	37.5	100%			
	1.25"	31.5		94%		
	1.00"	25.0	86%			
	7/8"	22.4		82%		
	3/4"	19.0	76%			
	5/8"	16.0		73%		
	1/2"	12.5	68%			
	3/8"	9.50	63%			
	1/4"	6.30	57%			
	#4	4.75	53%			
SAND	#8	2.36		48%		
	#10	2.00	47%			
	#16	1.18		44%		
	#20	0.850	42%			
	#30	0.600		40%		
	#40	0.425	37%			
	#50	0.300		35%		
	#60	0.250	34%			
	#80	0.180		32%		
	#100	0.150	31%			
	#140	0.106		28%		
	#170	0.090		27%		
	#200	0.075	25%			

GRAIN SIZE DISTRIBUTION



DATE TESTED	TESTED BY
01/15/25	M. Scherette

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ATTERBERG LIMITS REPORT

PROJECT	CLIENT	PROJECT NO.	
Camas Woods Phase 3 26514 and 26416 SE 8th Street Camas, Washington	HSR Capital LLC 500 East Broadway, Suite 120 Vancouver, WA 98660	HSR-4-01-1	
		ISSUE DATE: 01/21/25	PAGE: 2 of 2
		LAB ID: S25-0075	FIELD ID: TP2.1
		DATE SAMPLED: 12/31/24	SAMPLED BY: S. Chandra

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
Silty GRAVEL with Sand	Test Pit TP-2 depth = 2 feet	GM, Silty Gravel with Sand

LABORATORY TEST DATA

LABORATORY EQUIPMENT: Liquid Limit Machine, Hand Rolled

TEST PROCEDURE: ASTM D4318 - Method A

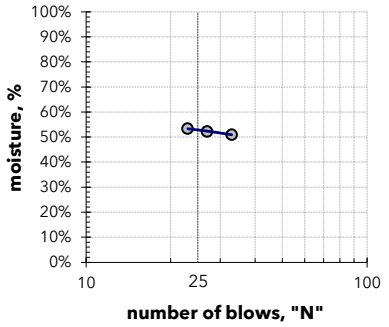
ATTERBERG LIMITS

liquid limit =	53
plastic limit =	31
plasticity index =	22

LIQUID LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	31.89	32.65	33.50	
dry soil + pan weight, g =	28.13	28.57	28.91	
pan weight, g =	20.75	20.76	20.31	
N (blows) =	33	27	23	
moisture, % =	51.0 %	52.2 %	53.4 %	

LIQUID LIMIT



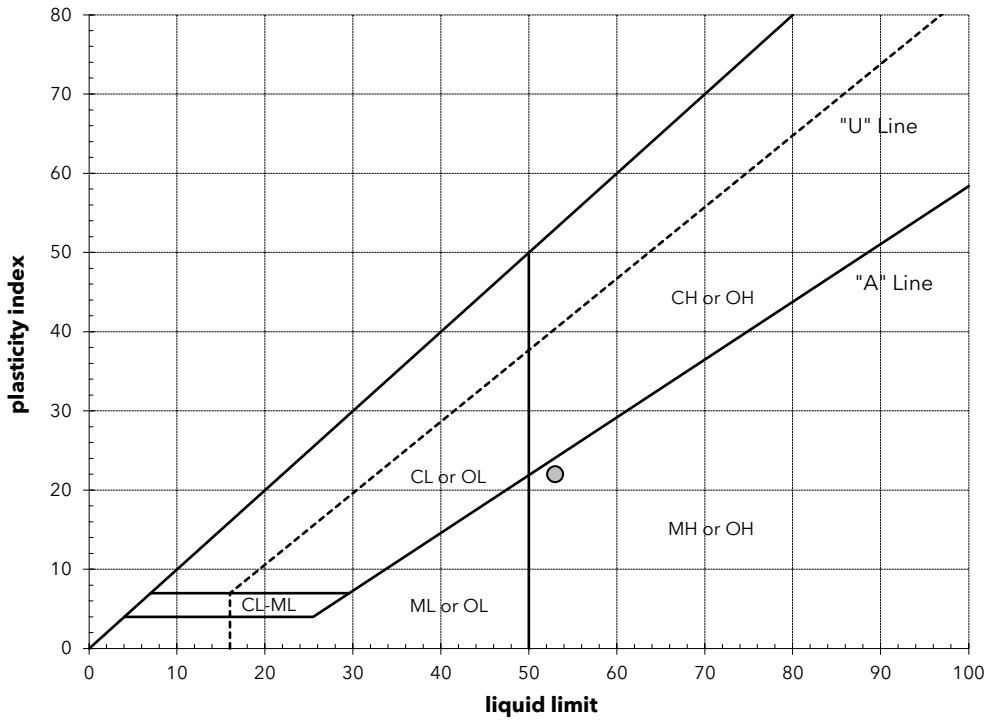
SHRINKAGE

shrinkage limit =	n/a
shrinkage ratio =	n/a

PLASTIC LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	27.99	29.51		
dry soil + pan weight, g =	26.32	27.47		
pan weight, g =	20.93	20.92		
moisture, % =	31.0 %	31.2 %		

PLASTICITY CHART



ADDITIONAL DATA

% gravel =	46.8%
% sand =	27.8%
% silt and clay =	25.3%
% silt =	n/a
% clay =	n/a
moisture content =	24%

DATE TESTED	TESTED BY
01/16/25	B. Taylor

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APPENDIX C

APPENDIX C
PHOTO LOG

Photographs of the site are presented in this appendix.



Central portion of the site. Photograph taken facing south.



Test pit TP-1 profile.



Test pit TP-2 profile.



Test pit TP-3 profile.



Test pit TP-4 profile.



Test pit TP-5 profile.



Test pit TP-6 profile.

APPENDIX D

APPENDIX D
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 services 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. The 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.

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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.

6. Traffic Study

KITTELSON & ASSOCIATES
851 SW 6th Avenue, Suite 600
Portland, OR 97204
P 503.228.5230

Transportation Impact Study

March 14, 2025 Project# 30088.3

To: James E Carothers, PE & Anita Ashton
City of Camas
616 NE 4th Avenue
Camas, WA 98607

Dylan Bass, Jason Lugo, & Courtney Hajda
Washington State Department of Transportation (WSDOT) Southwest Region
11018 Northeast 51st Circle
Vancouver, WA 98668-1709

From: Chris Brehmer, PE, Russ Doubleday, AICP & Julia Kuhn, PE

CC: Eric Hahn, PE, City of Vancouver
David Jardin, Clark County Department of Public Works
Bryce Hanson, PE, LSIT, AKS Engineering & Forestry, LLC
Andy Swanson & Kevin Miller, Camas Woods LLC

RE: Camas Woods 2 Transportation Impact Study (City File PA24-1022)

Camas Woods LLC proposes to develop up to 78 townhomes as part of Camas Woods 2. The new homes are proposed within a land area situated on the north side of SE 8th Street west of the previously submitted Camas Woods site.

A Transportation Impact Study (TIS) is required as part of the land use submittal per City of Camas Municipal Code (CMC) Section 17.11.030.B.12. This memorandum documents the TIS analysis, findings, and recommendations and is predicated in part on the *Camas Woods Transportation Impact Study* dated November 5, 2024.

Subject to City and Washington State Department of Transportation (WSDOT) review and direction, the following recommendations were identified to be implemented in conjunction with Camas Woods 2 site development:

- Construct a southbound left-turn lane on NE Everett Street at SE 8th Street with at least 100 feet of storage.
- Make a proportional mitigation contribution to the City of Camas' planned NW Sierra Street/NW Lake Road roundabout project.
  - Pending City direction, the contribution could be made through (1) payment of a future Traffic Impact Fee (TIF) that incorporates the roundabout cost or (2) via a proportional share mitigation assessment program should the City choose to implement a cost sharing assessment methodology for the roundabout project (we understand City staff anticipates the future TIF program will in part fund the planned roundabout).
- Collaborate with WSDOT to identify and implement (if construction is required) capacity mitigation at the NE 242nd Avenue/NE 28th Street intersection in conjunction with site development.
  - Potential options identified to explore with WSDOT include but are not limited to implementation of interim all-way stop control or payment of a proportional share contribution to a future intersection capacity improvement.

- Post a STOP (R1-1) sign southbound on the new public street approach ("A" Street) to SE 8th Street within the project site in accordance with applicable City standards and the *Manual on Uniform Traffic Control Devices* (MUTCD).

- Subject to City of Vancouver concurrence and final residential unit count confirmation, pay $800 in proportionate share contributions to the 192nd Avenue/NE 13th Street intersection as identified per City of Vancouver requirements.

- Locate and maintain site landscaping, above-ground utilities, and site signage within the site as well as at the site driveways to provide adequate intersection sight distance per applicable City requirements.

- Contribute financially to the NE Everett Street/NE Everett Drive intersection roundabout design and construction if a reimbursement mechanism is identified for the new roundabout in conjunction with Camas Woods land use entitlement.
  - The analysis findings presented in this study are predicated on the assumption that the Camas Woods project has reconstructed the NE Everett Street/NE Everett Drive intersection to a three-approach single lane roundabout in conjunction with site development prior to Camas Woods 2 site development.

The details of the study methodology, findings, and recommendations are summarized herein.

INTRODUCTION

Camas Woods LLC proposes to develop up to 78 townhomes on approximately 8.8 acres of land located on the north side of SE 8th Street directly west of the previously submitted Camas Woods project. Figure 1 shows the site vicinity map and Figure 2 shows a preliminary site plan.

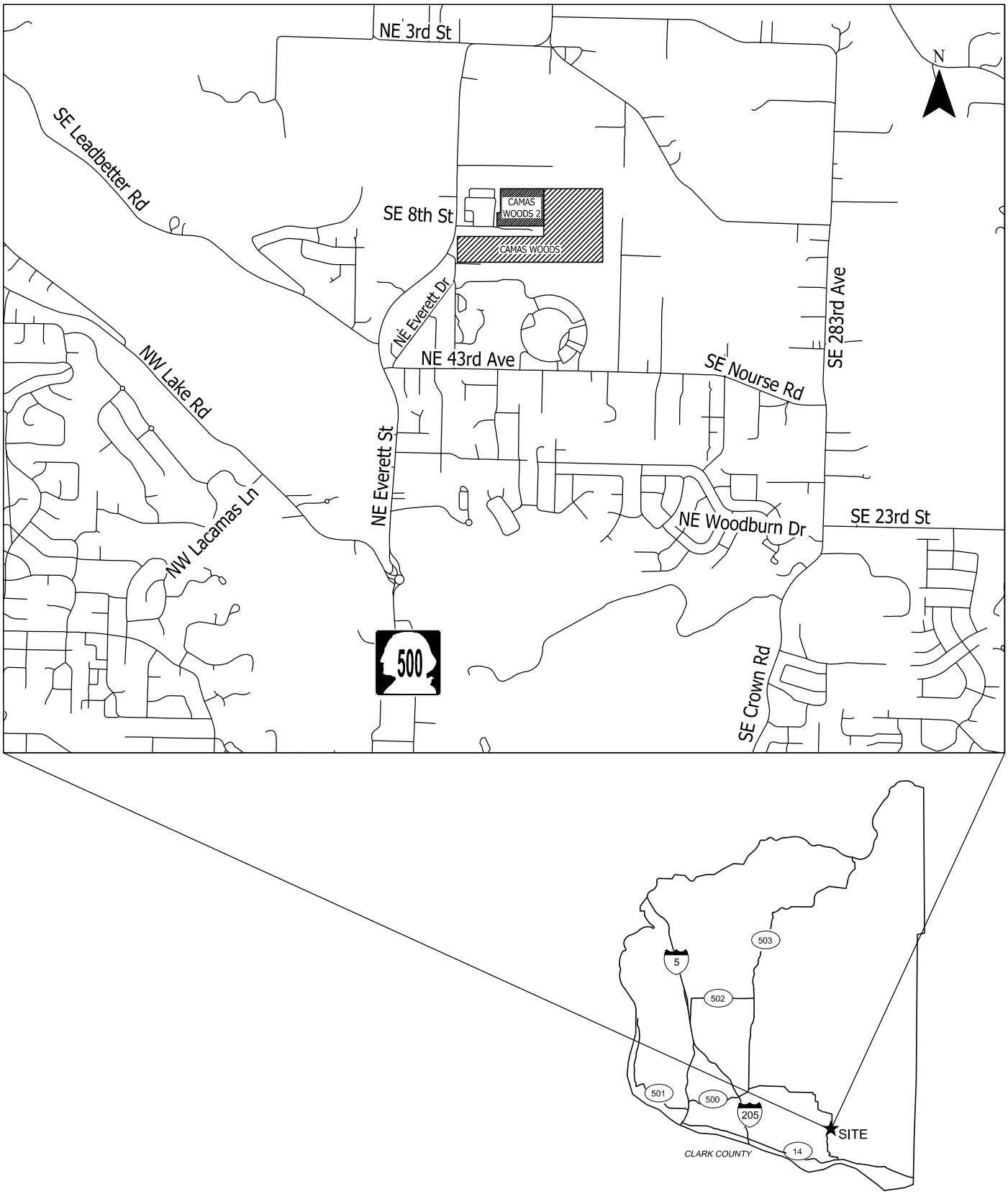
Primary vehicular site access is proposed via a new public street ("A" Street) connection to SE 8th Street. SE 8th Street would in turn be connected between NE Everett Street and the previously proposed Camas Woods project.

For consistency with the prior *Camas Woods Transportation Impact Study*, full occupancy of the 78 townhomes is assumed to occur by 2030.

STUDY METHODOLOGY

This study is predicated on and prepared as a supplement to the *Camas Woods Transportation Impact Study*. Analysis of weekday morning (7-9 AM), school PM (2-4 PM) and weekday PM (4-6 PM) commuter peak period traffic conditions were assessed for the following analysis scenarios:

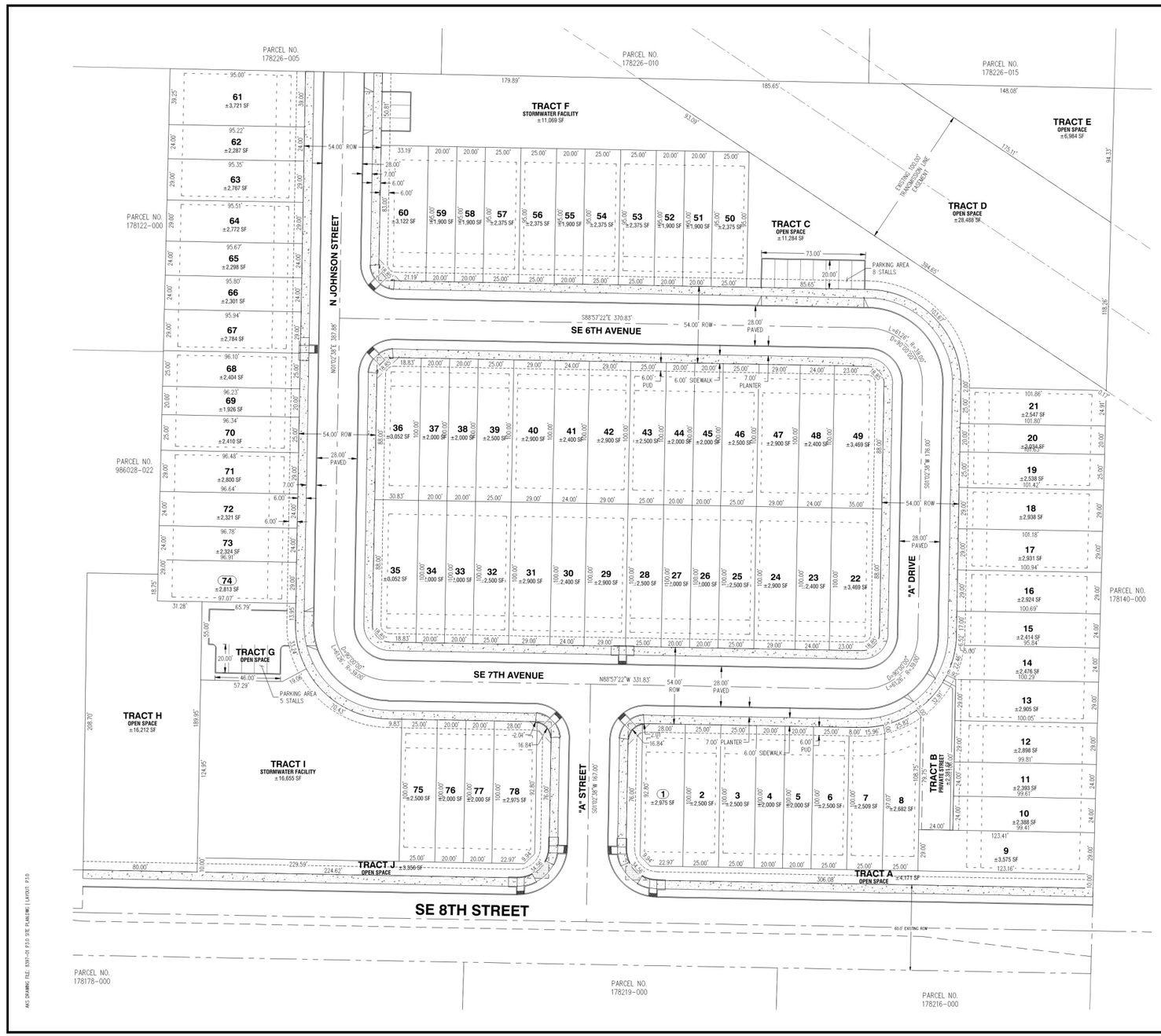
- Year 2030 background traffic conditions (including background growth and identified in-process developments with the previously submitted Camas Woods development, but not including any site-generated traffic volumes related to the proposed Camas Woods 2 development); and,
- Year 2030 total traffic conditions with Camas Woods 2 site-generated traffic volumes and the completion of SE 8th Street as a two-way public street connection between NE Everett Street and Camas Woods, resulting in the re-routing of some background Camas Woods trips to and from NE Everett Street via SE 8th Street.



Site Vicinity Map
Camas, Washington

Figure
1

H:\30\30088 - Camas Woods\report\figs\30088_figureset_Phase3.dwg Mar 04, 2025 - 9:11am - rdoubleday Layout Tab: Fig1 Phase 3 Site Vicinity Map



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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ENGINEERING • SURVEYING • NATURAL RESOURCES
FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

PRELIMINARY PLAT
CAMAS WOODS II
HSR CAPITAL
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	8937-01
DATE:	3/14/2025
DESIGNED BY:	MA
DRAWN BY:	SAG
CHECKED BY:	BDH

P3.0

AKS DRAWING FILE: 8397-01 P3.0 SITE PLANNING | LAYOUT: P3.0

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SITE PLAN PROVIDED BY AKS ENGINEERING & FORESTRY, LLC DATED MARCH 14, 2025

Preliminary Site Plan
Camas, Washington

Figure
2

The study intersections and capacity analysis methodology are identical to those documented in the *Camas Woods Transportation Impact Study* using the same intersection number system for easy of review. Analysis of existing conditions at the study intersections is incorporated by reference from the *Camas Woods Transportation Impact Study*.

Table 1 summarizes the applicable study intersection performance requirements for reference.

Table 1. Study Intersection Performance Metrics

ID	Study Intersection	Traffic Control	Jurisdictional Authority	Facility Designation	Operating Requirement
1	NE 232nd Ave/NE 28th St	TWSC	Clark County	Arterial	LOS E
2	SR 500/NE 28th St	TWSC	RTC[1]	Urban non-HSS	LOS E
3	NE Everett St/SE 8th St	TWSC	RTC[1]	Urban non-HSS	LOS E
4	NE Everett St/NE Everett Dr	TWSC	RTC[1]	Urban non-HSS	LOS E
5	NE Everett St/SE Leadbetter Rd	TWSC	RTC[1]	Urban non-HSS	LOS E
6	NE Everett St/NE 43rd Ave	Signalized	RTC[1]	Urban non-HSS	LOS E
7	NE Everett St/NW Lake Rd	Roundabout	RTC[1]	Urban non-HSS	LOS E
8	NE Everett St/NE 17th Ave	TWSC	RTC[1]	Urban non-HSS	LOS E
9	NE Everett St/NE 15th Ave	TWSC	RTC[1]	Urban non-HSS	LOS E
10	NE Everett St/NE 14th Ave	TWSC	RTC[1]	Urban non-HSS	LOS E
11	NE Dallas St/NE 6th Ave	TWSC	City of Camas	City Arterial	LOS D
12	Division St/NW 6th Ave	TWSC	City of Camas	City Arterial	LOS D
13	NW Norwood St/NW 6th Ave	Roundabout	WSDOT	Urban HSS	LOS D
14	NW Lacamas Ln/NW Lake Rd	TWSC	City of Camas	City Arterial	LOS D
15	NW Sierra St/NW Lake Rd	TWSC	City of Camas	City Arterial	LOS D
16	NW Leadbetter Dr/NW Lake Rd	TWSC	City of Camas	City Arterial	LOS D
17	NW Parker St/NW Lake Rd	Signalized	City of Camas	City Arterial	LOS D
18	NW Friberg-Strunk St/NW Lake Rd	Signalized	City of Camas	City Arterial	LOS D
19	NW Parker St/NW Leadbetter Dr	TWSC	City of Camas	City Arterial	LOS D
20	NW Parker St/NE 38th Ave	Signalized	City of Camas	City Arterial	LOS D
21	NW 232nd Ave/N Shore Blvd	TWSC	City of Camas	City Arterial	LOS D
22	SE 283rd Ave/SE Nourse Rd	TWSC	City of Camas	City Arterial	LOS D
23	SE 283rd Ave/SE 23rd St	TWSC	City of Camas	City Arterial	LOS D
24	SE 283rd Ave/NE Woodburn Dr	TWSC	City of Camas	City Arterial	LOS D
25	SE Crown Rd/NE 3rd Ave	Signalized	City of Camas	City Arterial	LOS D

Where: TWSC = Two-way Stop Control
[1] Regional Transportation Planning Organizations (RTPOs) have the authority to set LOS thresholds for non-Highways of Statewide Significance (non-HSS). The Urban non-HSS standard established by RTC for Clark County is LOS E.

2030 BACKGROUND TRAFFIC CONDITIONS

The year 2030 background traffic analysis identifies how the study intersections will operate prior to the construction and occupancy of Camas Woods 2 homes. This analysis includes traffic attributed to planned developments within the study area and to general growth in the region plus presumes construction of the previously proposed Camas Woods but does not include traffic from the proposed development.

The year 2030 background traffic analysis volumes and findings are the year 2030 total traffic conditions documented in the *Camas Woods Transportation Impact Study*.

TRIP GENERATION ESTIMATE

The anticipated vehicular trips for the proposed townhomes were calculated based on fitted equation trip rates contained in *the Trip Generation Manual, 11th Edition* (Reference 1) as shown in Table 2. The daily, weekday AM and PM peak hour trip rates were obtained directly from the fitted curve equations within the *Trip Generation Manual* while the weekday school PM peak hour rates were obtained by applying a time of day adjustment factor to the daily trip generation for the 2:45-3:45 school PM period using data in the *Trip Generation Manual* appendix related to time of day trip profiles for vehicular trips.

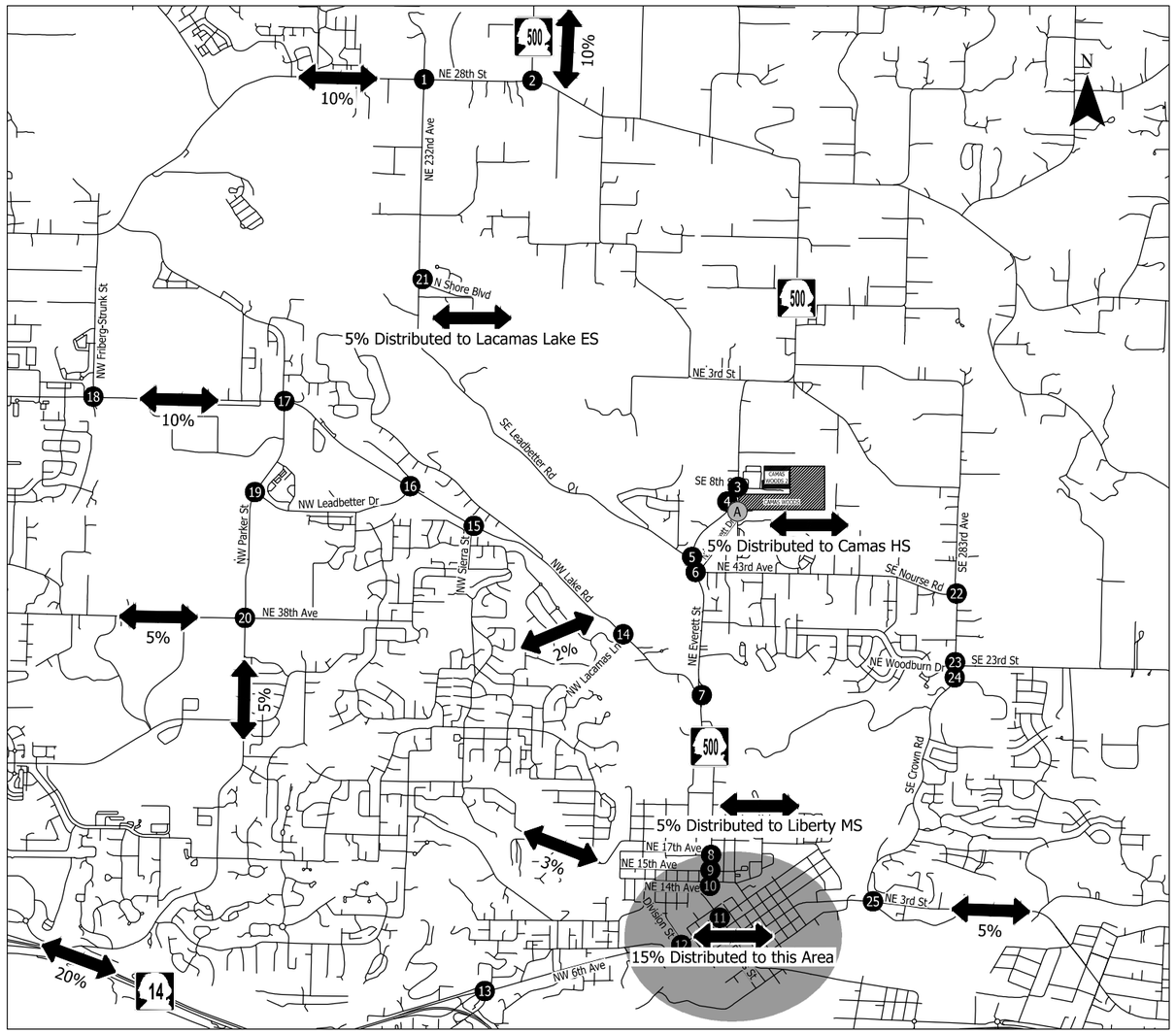
Table 2. Estimated Site Trip Generation

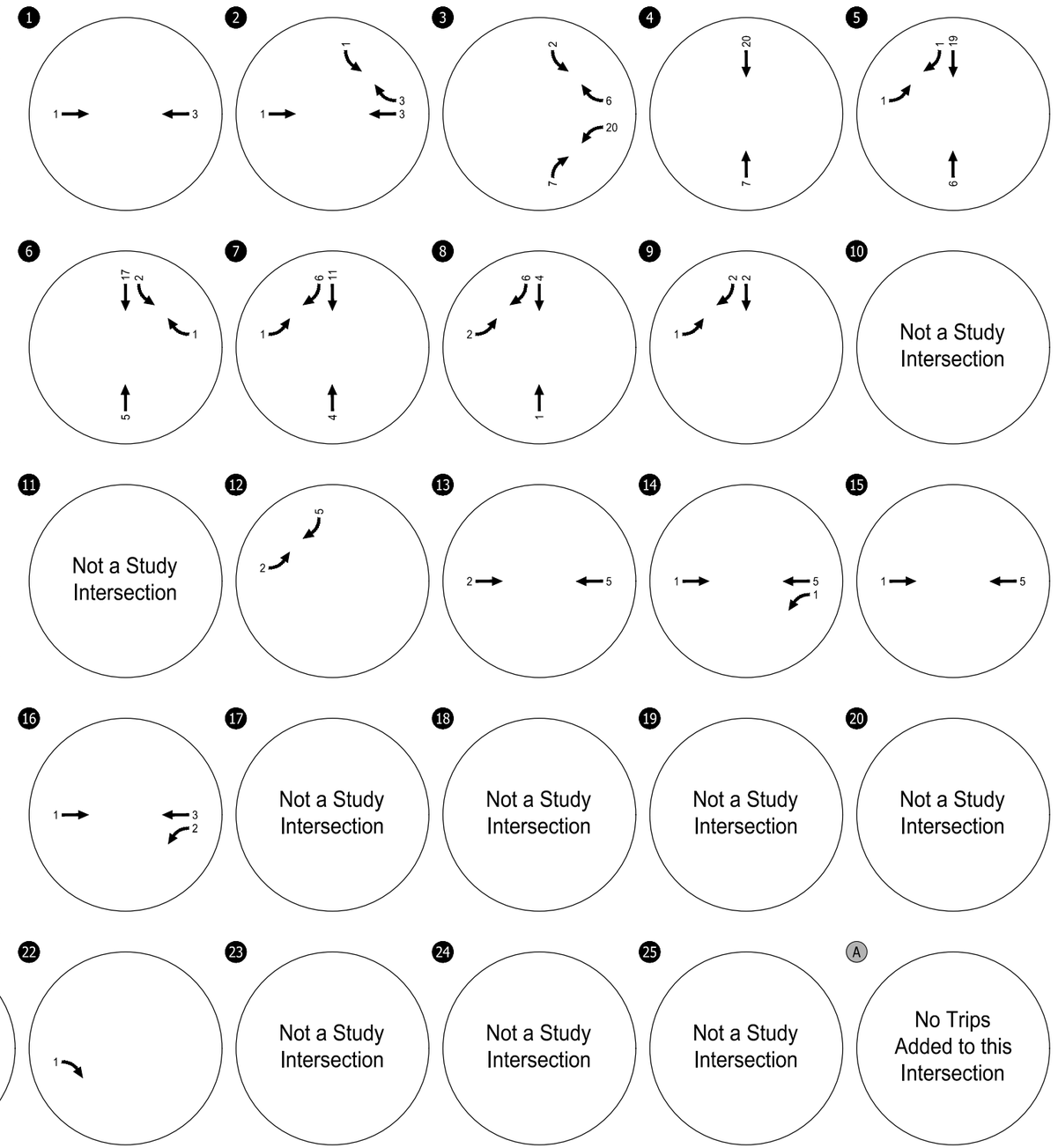
Land Use	ITE Code	Size	Daily Trips	Weekday AM Peak			Weekday School PM Peak			Weekday PM Peak		
				Total	In	Out	Total	In	Out	Total	In	Out
Attached Single-Family Homes	215	78 units	544	35	9	26	30	16	14	43	25	18

Note that the trip estimates shown in Table 2 and the study intersection operations analysis presented in this report do not include a reduction for the two existing single-family homes present on the Camas Woods 2 project site today. A typical single-family home can be estimated to generate approximately 10 trips per day including one during the weekday AM peak hour and one during the weekday PM peak hour based on trip rates in the *Trip Generation Manual*. While no reduction was made in the site trip generation to account for the existing site trips in this report, credit for the existing uses should be provided when calculating Traffic Impact Fees for the development.

Trip Distribution and Assignment

The site-generated trips shown in Table 2 were assigned using the residential trip distribution pattern shown in Figure 10 of the *Camas Woods Transportation Impact Study*. Figures 3 through 5 summarize the Phase 3 site-generated trip assignment during each of the three respective peak hour analysis periods.



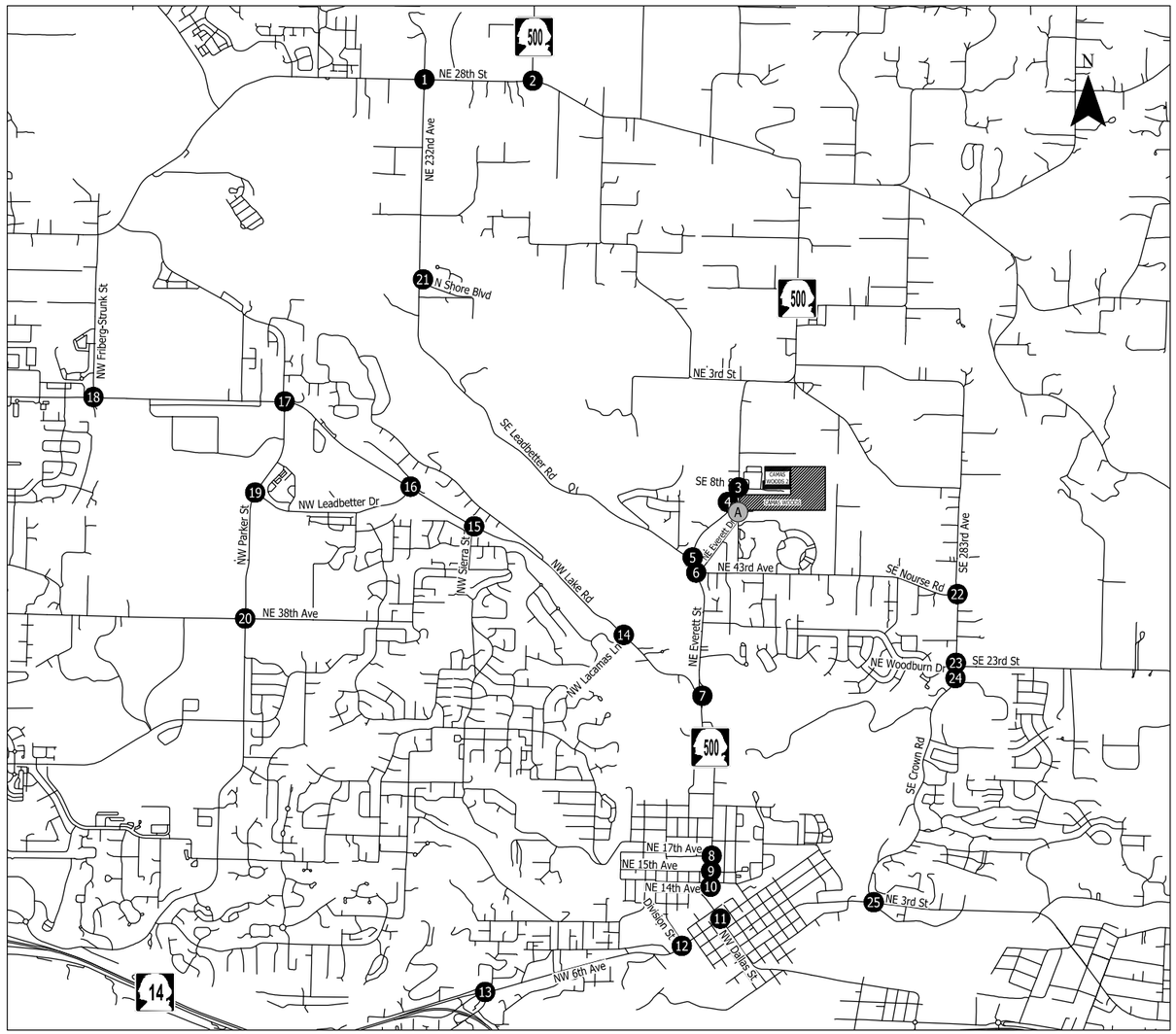


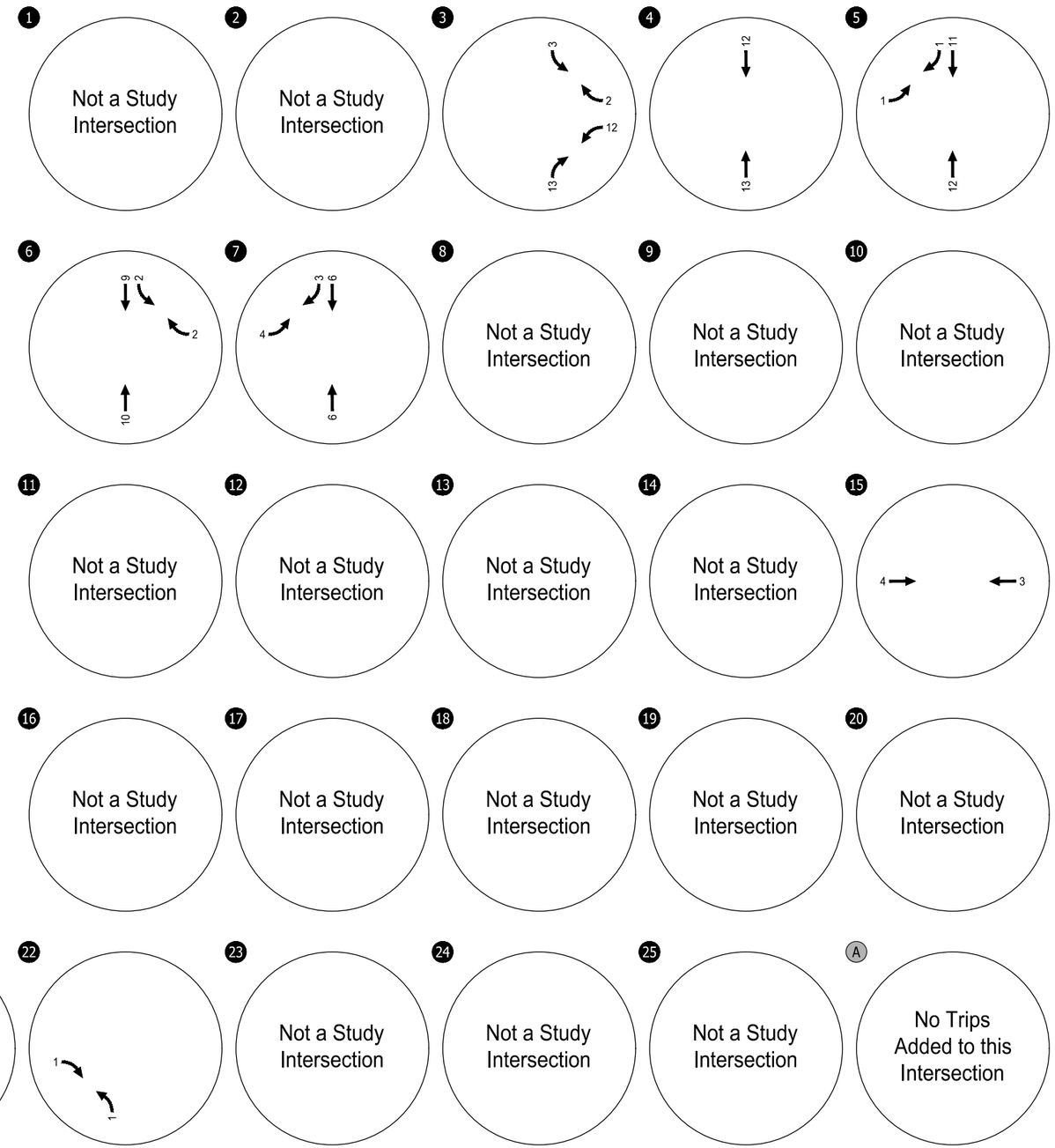
Site-Generated Trip Assignment
Weekday AM Peak Hour
Camas, Washington

Figure 3

- # Study Intersections
- (A) Site Driveway
- XX% Trip Distribution Percentage

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Site-Generated Trip Assignment
Weekday School PM Peak Hour
Camas, Washington

Figure 4

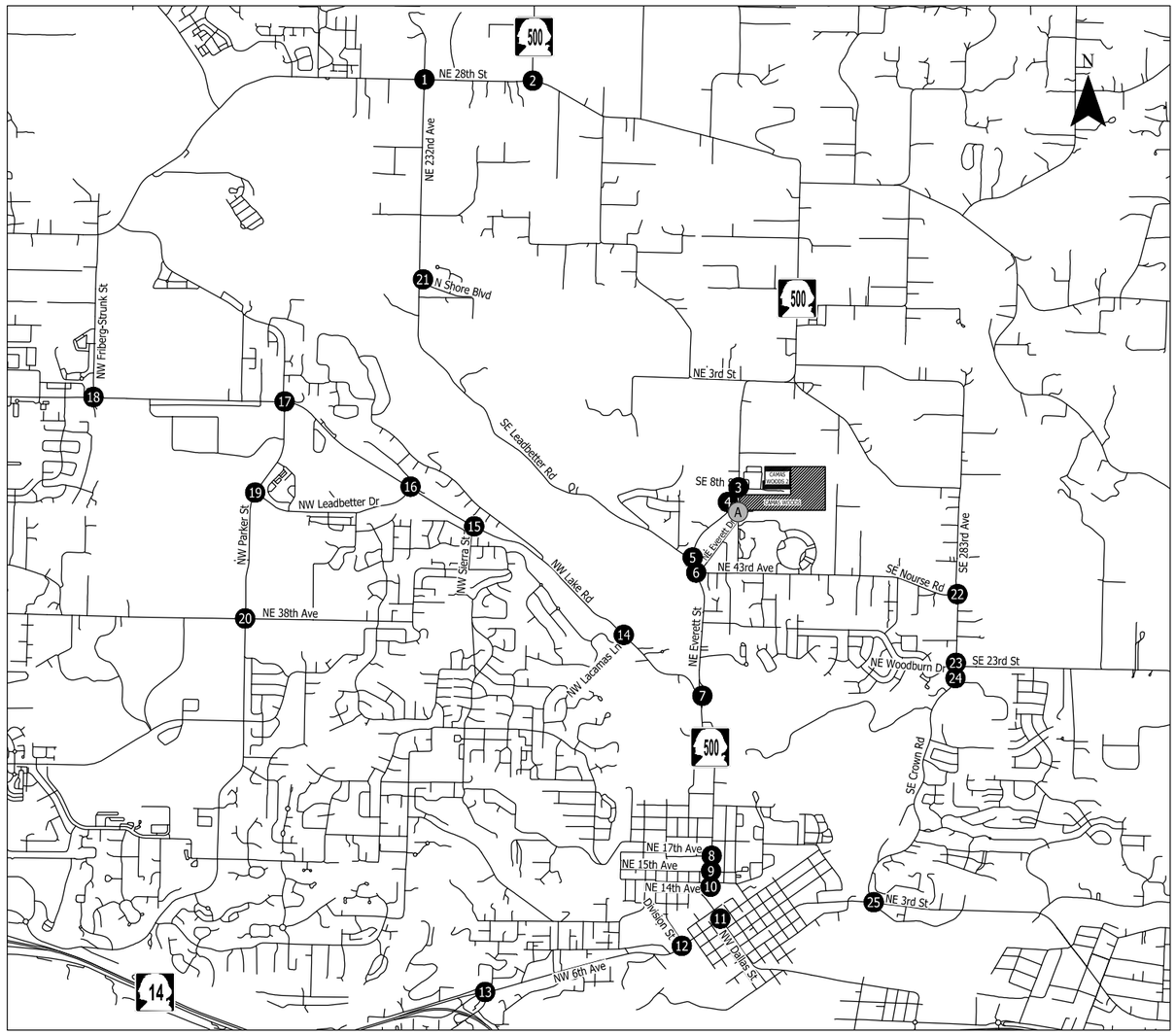
(#) Study Intersections

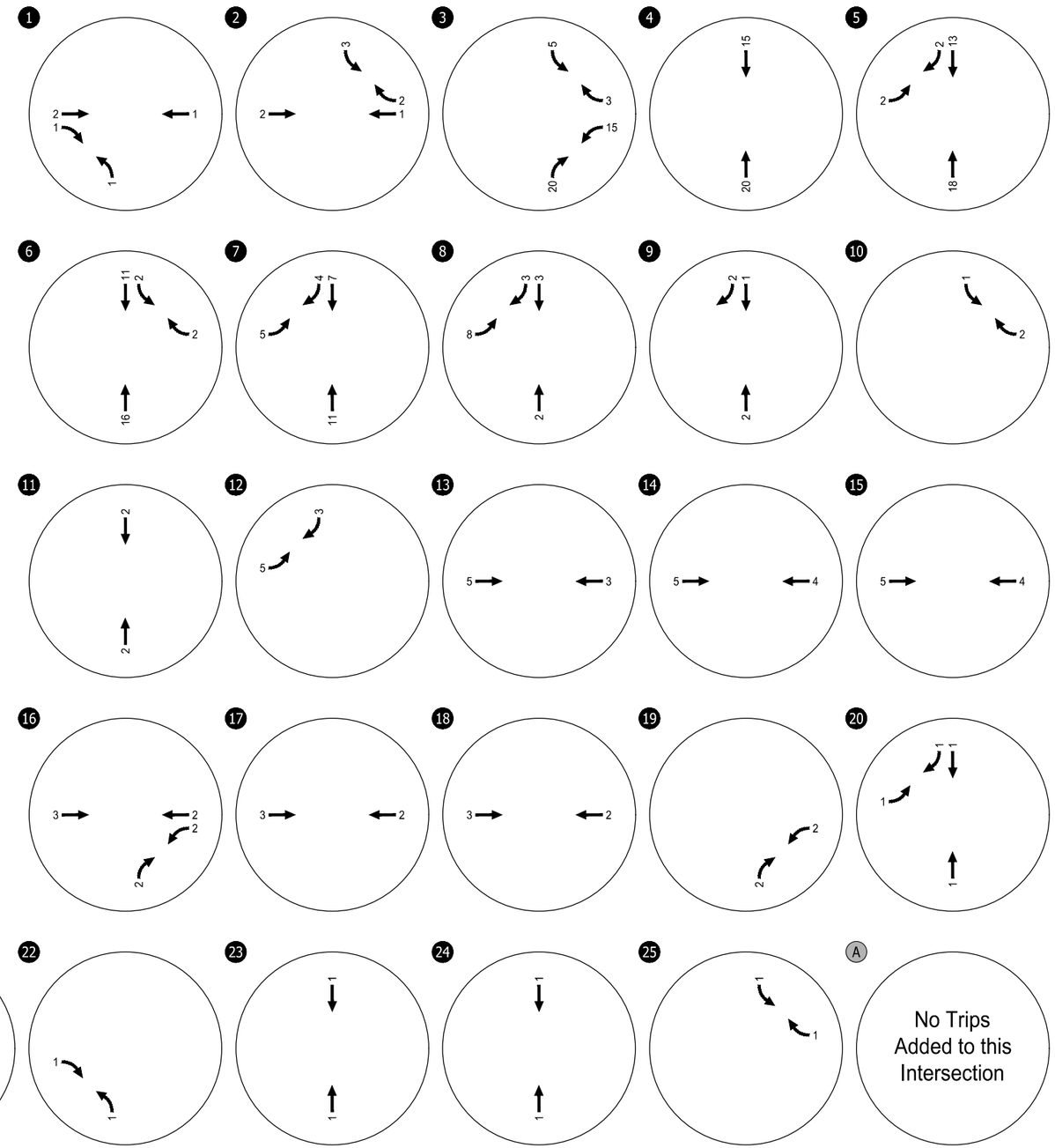
(A) Site Driveway

XX% Trip Distribution Percentage

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Site-Generated Trip Assignment
Weekday PM Peak Hour
Camas, Washington

Figure 5

Study Intersections
A Site Driveway
XX% Trip Distribution Percentage

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2030 TOTAL TRAFFIC CONDITIONS

The total traffic conditions analysis forecasts how the study intersections will operate with the traffic associated with full occupancy of Camas Woods 2 homes. The site-generated trips shown in Figures 3-5 were added to the previously prepared 2030 total traffic volumes (with recommended mitigations) reflected in *Camas Woods Transportation Impact Study* Figures 15-17.

Figures 6-9 show the 2030 total traffic conditions and the corresponding intersection operations during the three analysis periods. Note that the traffic volumes in Figures 6-9 assume that some Camas Woods trips from the prior study re-route to the new public street connection between Camas Woods and NE Evertt Drive via SE 8th Street.

Study Intersection Assumptions

The 2030 total traffic analysis findings presented in this report are predicated on the assumption that:

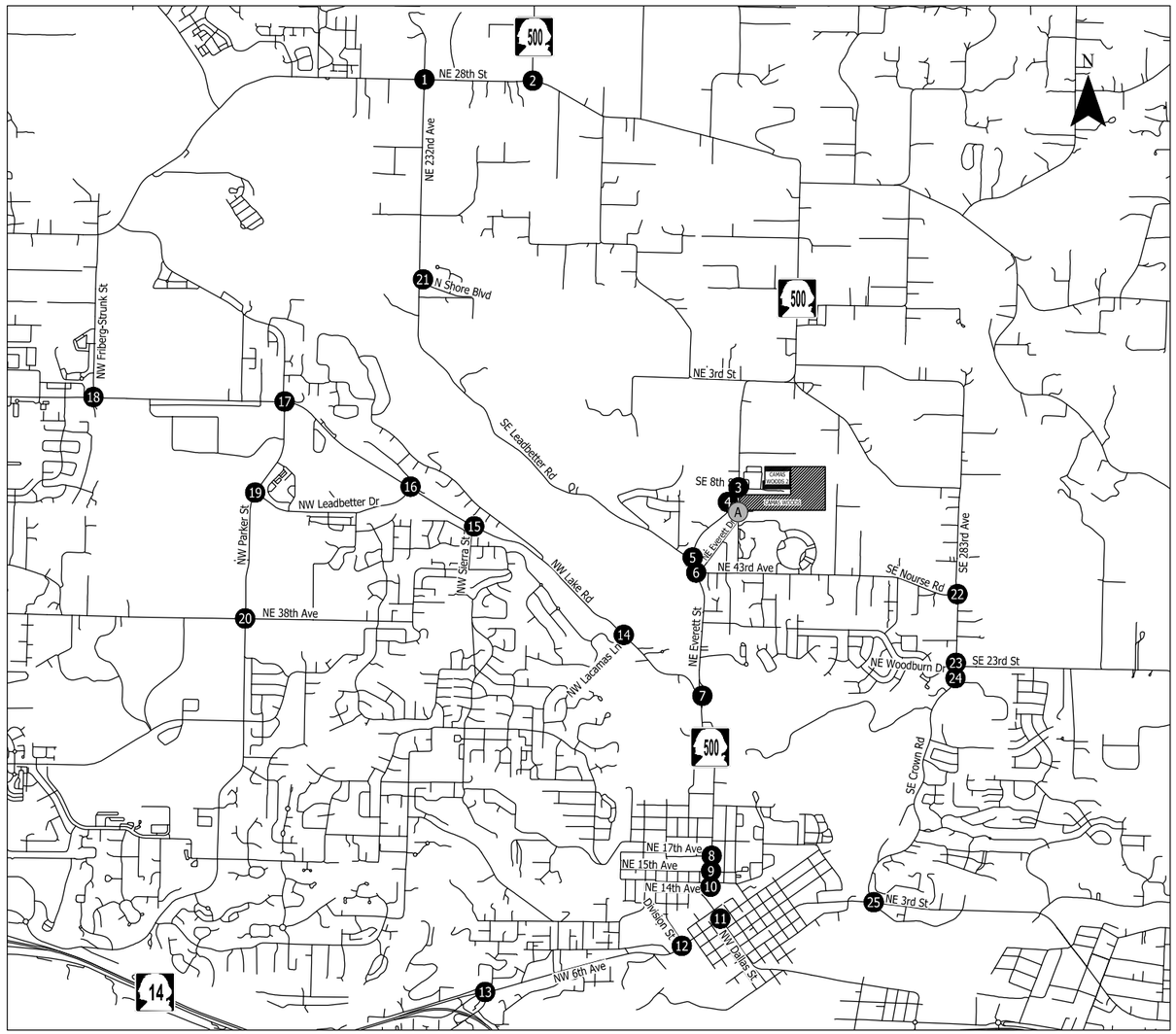
1. The Camas Woods project will reconstruct the NE Everett Street/NE Everett Drive intersection to a three-approach single lane roundabout in conjunction with site development prior to Camas Woods site development.
2. The Camas Woods 2 development will construct a southbound left-turn lane on NE Everett Street at SE 8th Street with at least 100 feet of storage prior to Phase 3 home occupancy.

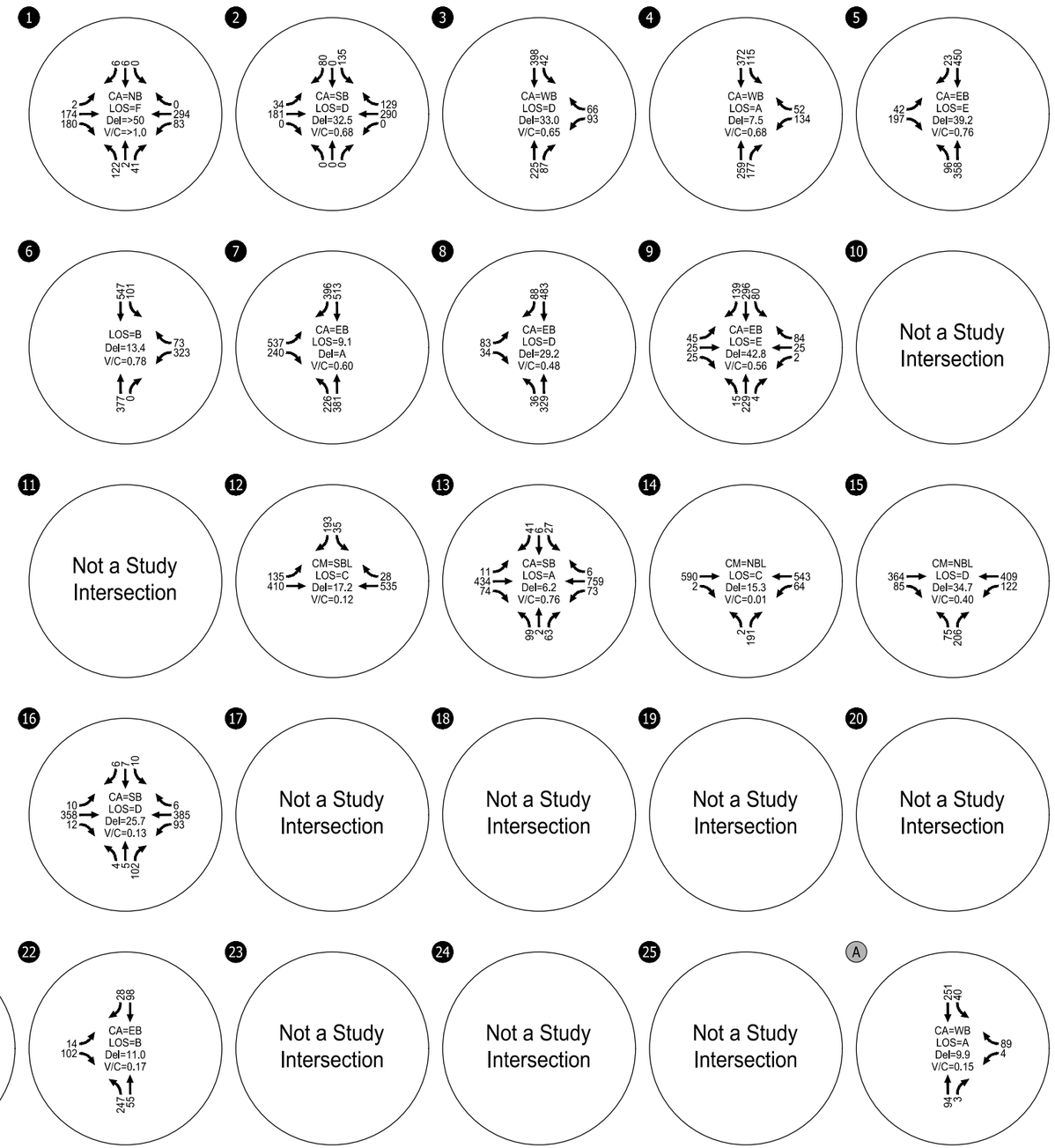
Intersection Operations Findings

Compared to the prior 2030 total traffic analysis presented in the *Camas Woods Transportation Impact Study*, those intersections that did not satisfy the applicable performance metrics under background conditions are projected to experience an incremental increase in delay/degradation in operations with the addition of site trips associated with the 78 proposed townhomes.

For ease of comparison, Tables 3-5 summarize intersection operations for each of the applicable analysis periods. Operations findings at intersections that don't satisfy the applicable performance requirements are then presented individually including recommended mitigation measures where appropriate. Per the City of Camas *Transportation Impact Study Guidelines*, mitigation measures are to be identified at locations where site traffic contributes to traffic operations that exceed the City's LOS performance standard.

Appendix A contains the year 2030 total traffic analysis worksheets.



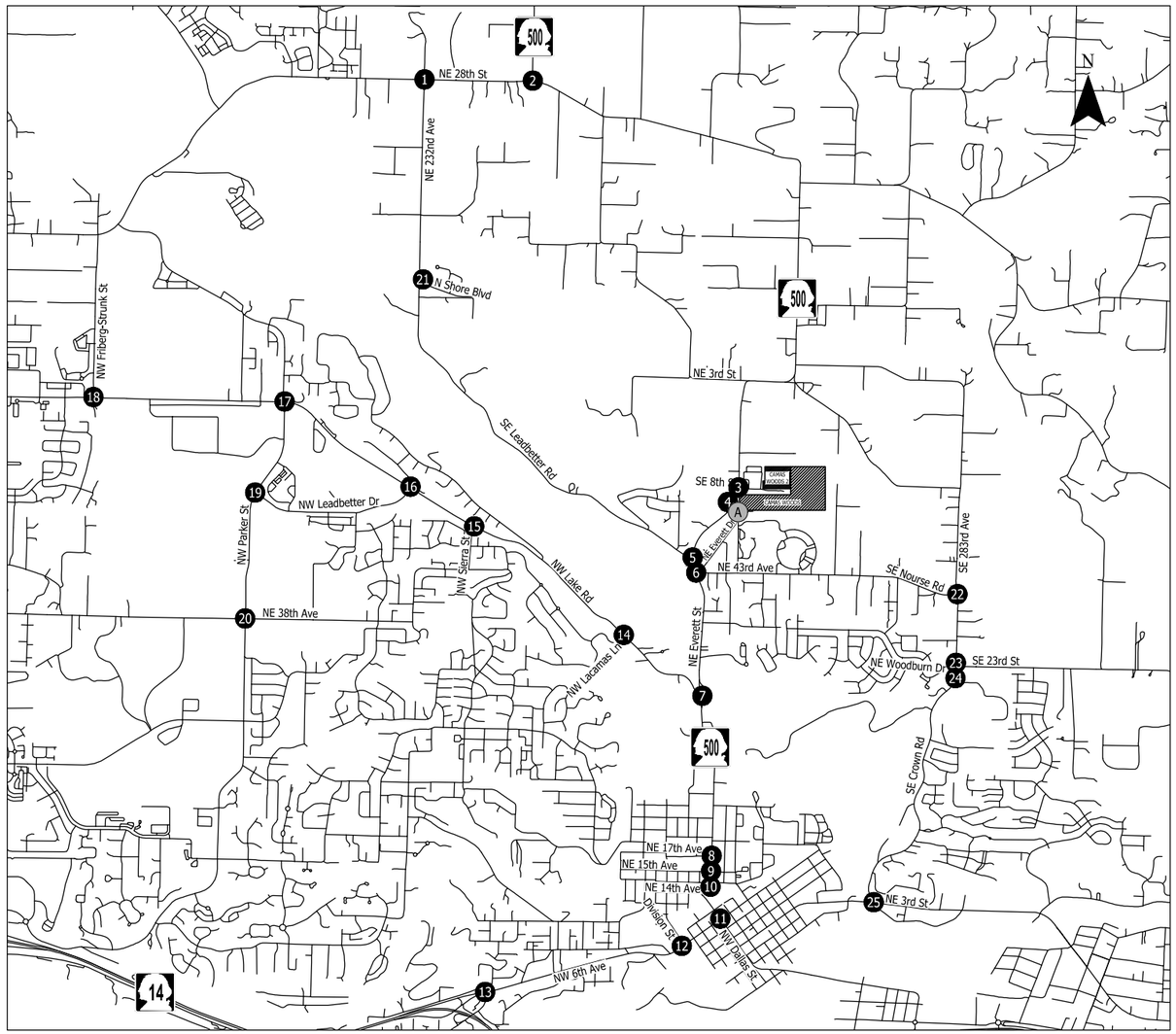


CA = CRITICAL APPROACH (TWSC / ROUNDABOUT)
CM = CRITICAL MOVEMENT (TWSC)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC / ROUNDABOUT)
V/C = VOLUME-TO-CAPACITY RATIO
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED) / CRITICAL MOVEMENT CONTROL DELAY (TWSC / ROUNDABOUT)
TWSC = TWO-WAY STOP CONTROL

2030 Total Traffic Conditions
Weekday AM Peak Hour
Camas, Washington

Figure
6

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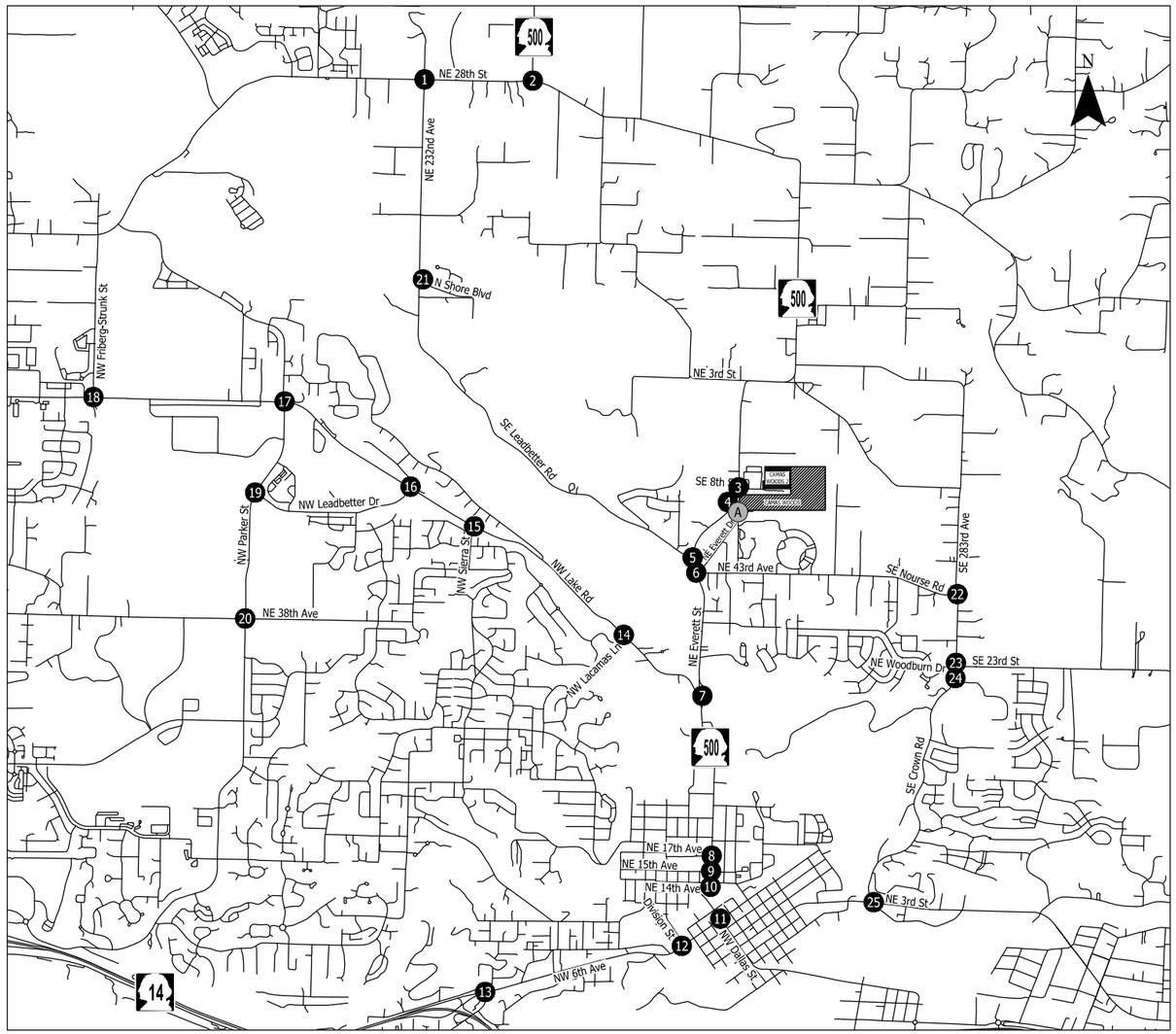
1 Not a Study Intersection	2 Not a Study Intersection	3 CA=WB LOS=D Del=32.0 V/C=0.62 (269, 33, 57, 73, 302, 116)	4 CA=WB LOS=A Del=5.7 V/C=0.57 (305, 38, 24, 60, 394, 79)	5 CA=EB LOS=C Del=20.6 V/C=0.44 (20, 340, 17, 120, 131, 409)
6 LOS=B Del=10.4 V/C=0.65 (399, 67, 69, 161, 462, 136)	7 CA=EB LOS=7.0 Del=A V/C=0.37 (287, 378, 286, 371, 260, 408)	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 CM=NBL LOS=E Del=41.5 V/C=0.45 (472, 108, 378, 105, 74, 113)
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 CA=EB LOS=B Del=10.3 V/C=0.17 (111, 14, 107, 13, 20, 19)	22 CA=EB LOS=A Del=9.7 V/C=0.14 (17, 67, 11, 95, 71, 99)	23 Not a Study Intersection	24 Not a Study Intersection	25 Not a Study Intersection
A CA=WB LOS=A Del=9.0 V/C=0.09 (48, 40, 61, 4, 23, 5)				

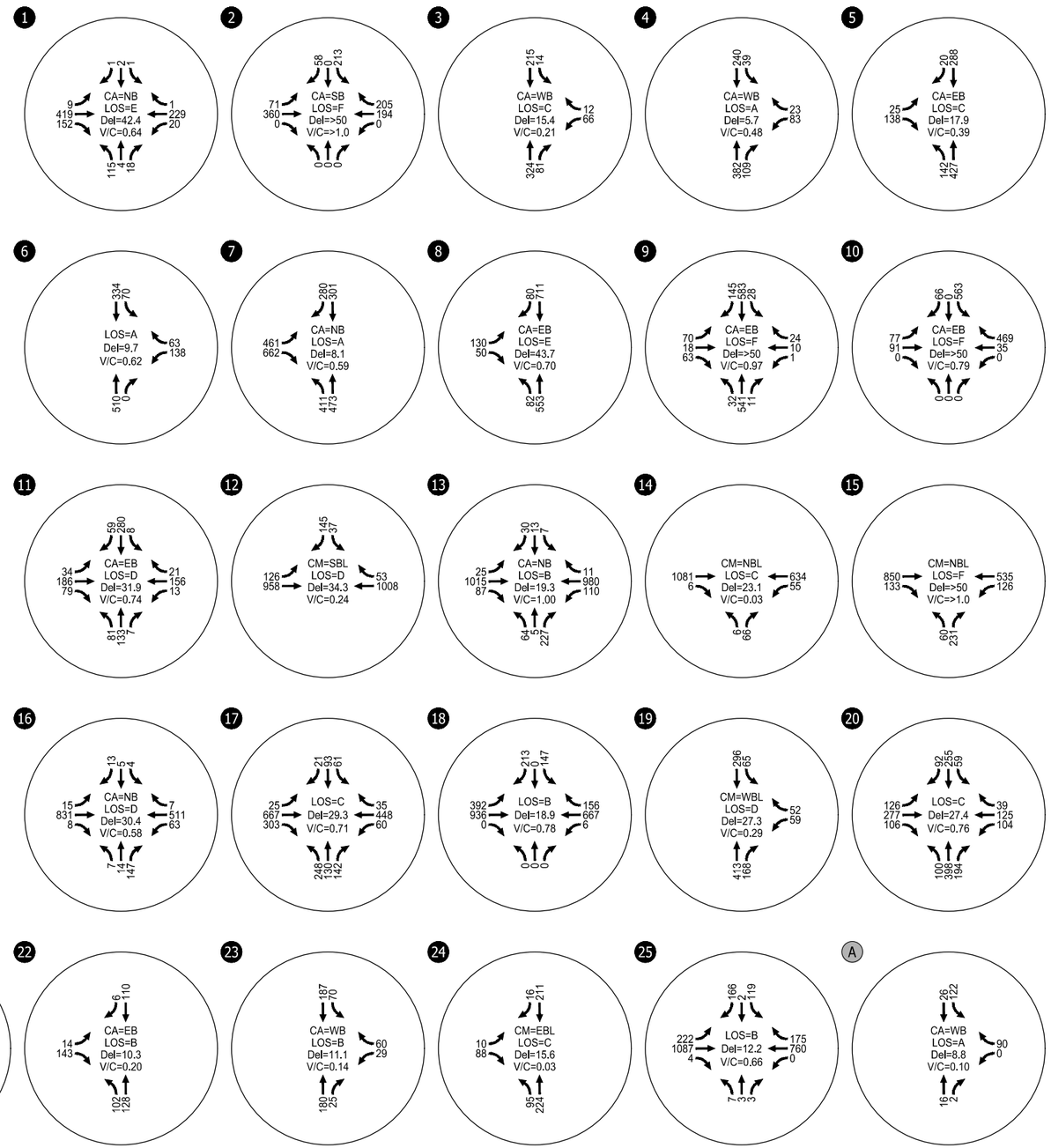
CA = CRITICAL APPROACH (TWSC / ROUNDABOUT)
CM = CRITICAL MOVEMENT (TWSC)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC / ROUNDABOUT)
V/C = VOLUME-TO-CAPACITY RATIO
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED) / CRITICAL MOVEMENT CONTROL DELAY (TWSC / ROUNDABOUT)
TWSC = TWO-WAY STOP CONTROL

2030 Total Traffic Conditions
Weekday School PM Peak Hour
Camas, Washington

Figure 7

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CA = CRITICAL APPROACH (TWSC / ROUNDABOUT)
CM = CRITICAL MOVEMENT (TWSC)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC / ROUNDABOUT)
V/C = VOLUME-TO-CAPACITY RATIO
Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED) / CRITICAL MOVEMENT CONTROL DELAY (TWSC / ROUNDABOUT)
TWSC = TWO-WAY STOP CONTROL

2030 Total Traffic Conditions
Weekday PM Peak Hour
Camas, Washington

Figure
8

Table 3. Projected Weekday AM Peak Hour Study Intersection Operations Summary

ID	Study Intersection	Traffic Control	Operating Requirement	Existing Conditions[1]	2030 Background Traffic[2]	2030 Total Traffic
1	NE 232nd Ave/ NE 28th St	TWSC	LOS E	CA = NB LOS D, 30.5 sec V/C = 0.54	**CA = NB** **LOS F, >50 sec** **V/C > 1.0**	**CA = NB** **LOS F, >50 sec** **V/C > 1.0**
2	NE 242nd Avenue (SR 500)/ NE 28th St	TWSC	LOS E	CA = SB LOS C, 18.5 sec V/C = 0.45	CA = SB LOS D, 31.7 sec V/C = 0.67	CA = SB LOS D, 32.5 sec V/C = 0.68
3	NE Everett St/ SE 8th St	TWSC	LOS E	CA = WB LOS C, 18.1 sec V/C = 0.33	CA = WB LOS D, 26.4 sec V/C = 0.48	CA = WB LOS D, 33.0 sec V/C = 0.65
4	NE Everett St/ NE Everett Dr	TWSC in Existing Roundabout in 2030	LOS E	CA = WB LOS D, 26.7 sec V/C = 0.43	LOS A, 7.8 sec V/C = 0.63	LOS A, 7.5 sec V/C = 0.68
5	NE Everett St/ SE Leadbetter Rd	TWSC	LOS E	CA = EB LOS C, 22.7 sec V/C = 0.54	CA = EB LOS D, 34.7 sec V/C = 0.71	CA = EB LOS E, 39.2 sec V/C = 0.76
6	NE Everett St/ NE 43rd Ave	Signalized	LOS E	LOS B, 12.4 sec V/C = 0.69	LOS B, 13.3 sec V/C = 0.77	LOS B, 13.4 sec V/C = 0.78
7	NE Everett St/ NW Lake Rd	Roundabout	LOS E	LOS A, 8.5 sec V/C = 0.52	LOS A, 9.0 sec V/C = 0.59	LOS A, 9.1 sec V/C = 0.60
8	NE Everett St/ NE 17th Ave	TWSC	LOS E	CA = EB LOS B, 22.9 sec V/C = 0.38	CA = EB LOS D, 28.5 sec V/C = 0.47	CA = EB LOS D, 29.2 sec V/C = 0.48
9	NE Everett St/ NE 15th Ave	TWSC	LOS E	CA = EB LOS D, 32.9 sec V/C = 0.46	CA = EB LOS E, 41.6 sec V/C = 0.55	CA = EB LOS E, 42.8 sec V/C = 0.56
12	Division St/ NW 6th Ave	TWSC	LOS D	CM = SBL LOS C, 15.7 sec V/C = 0.04	CM = SBL LOS C, 17.1 sec V/C = 0.12	CM = SBL LOS C, 17.2 sec V/C = 0.12
13	NW Norwood St/ NW 6th Ave	Roundabout	LOS D	LOS A, 6.2 sec V/C = 0.73	LOS A, 6.2 sec V/C = 0.76	LOS A, 6.2 sec V/C = 0.76
14	NW Lacamas Ln/ NW Lake Rd	TWSC	LOS D	CM = NBL LOS B, 14.7 sec V/C = 0.01	CM = NBL LOS C, 15.2 sec V/C = 0.01	CM = NBL LOS C, 15.3 sec V/C = 0.01
15	NW Sierra St/ NW Lake Rd	TWSC	LOS D	CM = NBL LOS D, 30.6 sec V/C = 0.37	CM = NBL LOS D, 34.2 sec V/C = 0.40	CM = NBL LOS D, 34.7 sec V/C = 0.40
16	NW Leadbetter Dr/ NW Lake Rd	TWSC	LOS D	CA = SB LOS C, 23.0 sec V/C = 0.11	CA = SB LOS D, 25.4 sec V/C = 0.13	CA = SB LOS D, 25.7 sec V/C = 0.13

ID	Study Intersection	Traffic Control	Operating Requirement	Existing Conditions[1]	2030 Background Traffic[2]	2030 Total Traffic
21	NW 232nd Ave/ N Shore Blvd	TWSC	LOS D	CA = EB LOS C, 17.9 sec V/C = 0.37	CA = EB LOS D, 32.0 sec V/C = 0.67	CA = EB LOS D, 32.6 sec V/C = 0.67
22	SE 283rd Ave/ SE Nourse Rd	TWSC	LOS D	CA = EB LOS B, 10.8 sec V/C = 0.15	CA = EB LOS B, 11.0 sec V/C = 0.17	CA = EB LOS B, 11.0 sec V/C = 0.17
A	NE Everett Street/ N Rekdahl Street	TWSC	LOS D	*Not Applicable*	CA = WB LOS B, 10.3 sec V/C = 0.22	CA = WB LOS A, 9.9 sec V/C = 0.15

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

[1] Refer to the existing conditions analysis documented in the *Camas Woods Transportation Impact Study* dated November 5, 2024.

[2] Refer to the traffic conditions analysis documented in the *Camas Woods Transportation Impact Study* dated November 5, 2024.

Table 4. Projected Weekday School PM Peak Hour Study Intersection Operations Summary

ID	Study Intersection	Traffic Control	Operating Requirement	Existing Conditions[1]	2030 Background[2]	2030 Total Traffic
3	NE Everett St/ SE 8th St	TWSC	LOS E	CA = WB LOS C, 16.2 sec V/C = 0.29	CA = WB LOS C, 21.1 sec V/C = 0.39	CA = WB LOS D, 32.0 sec V/C = 0.62
4	NE Everett St/ NE Everett Dr	TWSC in Existing Roundabout in 2030	LOS E	CA = WB LOS B, 13.8 sec V/C = 0.07	LOS A, 6.0 sec V/C = 0.56	LOS A, 5.7 sec V/C = 0.57
5	NE Everett St/ SE Leadbetter Rd	TWSC	LOS E	CA = EB LOS B, 12.5 sec V/C = 0.20	CA = EB LOS C, 19.2 sec V/C = 0.40	CA = EB LOS C, 20.6 sec V/C = 0.44
6	NE Everett St/ NE 43rd Ave	Signalized	LOS E	LOS A, 9.3 sec V/C = 0.58	LOS B, 10.3 sec V/C = 0.64	LOS B, 10.4 sec V/C = 0.65
7	NE Everett St/ NW Lake Rd	Roundabout	LOS E	LOS A, 6.8 sec V/C = 0.32	LOS A, 6.9 sec V/C = 0.36	LOS A, 7.0 sec V/C = 0.37
15	NW Sierra St/ NW Lake Rd	TWSC	LOS D	**CM = NBL** **LOS E, 35.4 sec** **V/C = 0.40**	**CM = NBL** **LOS E, 40.7 sec** **V/C = 0.45**	**CM = NBL** **LOS E, 41.5 sec** **V/C = 0.45**
21	NW 232nd Ave/ N Shore Blvd	TWSC	LOS D	CA = EB LOS A, 9.4 sec V/C = 0.07	CA = EB LOS B, 10.2 sec V/C = 0.17	CA = EB LOS B, 10.3 sec V/C = 0.17
22	SE 283rd Ave/ SE Nourse Rd	TWSC	LOS D	CA = EB LOS A, 9.6 sec V/C = 0.12	CA = EB LOS A, 9.7 sec V/C = 0.14	CA = EB LOS A, 9.7 sec V/C = 0.14
A	NE Everett Street/ N Rekdahl Street	TWSC	LOS D	*Not Applicable*	CA = WB LOS A, 9.1 sec V/C = 0.13	CA = WB LOS A, 9.0 sec V/C = 0.09

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

[1] Refer to the existing conditions analysis documented in the *Camas Woods Transportation Impact Study* dated November 5, 2024.

[2] Refer to the traffic conditions analysis documented in the *Camas Woods Transportation Impact Study* dated November 5, 2024.

Table 5. Projected Weekday PM Peak Hour Study Intersection Operations Summary

ID	Study Intersection	Traffic Control	Operating Requirement	Existing Conditions[1]	2030 Background[2]	2030 Total Traffic
1	NE 232nd Ave/ NE 28th St	TWSC	LOS E	CA = NB LOS C, 17.3 sec V/C = 0.21	CA = NB LOS E, 41.8 sec V/C =0.63	CA = NB LOS E, 42.4 sec V/C =0.64
2	NE 242nd Avenue (SR 500)/ NE 28th St	TWSC	LOS E	CA = SB LOS E, 38.7 sec V/C = 0.73	**CA = SB** **LOS F, >50 sec** **V/C >1.0**	**CA = SB** **LOS F, >50 sec** **V/C >1.0**
3	NE Everett St/ SE 8th St	TWSC	LOS E	CA = WB LOS B, 12.1 sec V/C = 0.07	CA = WB LOS B, 13.6 sec V/C = 0.08	CA = WB LOS C, 15.4 sec V/C = 0.21
4	NE Everett St/ NE Everett Dr	TWSC in Existing Roundabout in 2030	LOS E	CA = WB LOS B, 11.6 sec V/C = 0.03	LOS A, 6.0 sec V/C = 0.47	LOS A, 5.7 sec V/C = 0.48
5	NE Everett St/ SE Leadbetter Rd	TWSC	LOS E	CA = EB LOS B, 10.8 sec V/C = 0.16	CA = EB LOS C, 16.9 sec V/C = 0.38	CA = EB LOS C, 17.9 sec V/C = 0.39
6	NE Everett St/ NE 43rd Ave	Signalized	LOS E	LOS A, 8.8 sec V/C = 0.54	LOS A, 9.6 sec V/C = 0.61	LOS A, 9.7 sec V/C = 0.62
7	NE Everett St/ NW Lake Rd	Roundabout	LOS E	LOS A, 7.7 sec V/C = 0.54	LOS A, 8.1 sec V/C = 0.58	LOS A, 8.1 sec V/C = 0.59
8	NE Everett St/ NE 17th Ave	TWSC	LOS E	CA = EB LOS D, 25.4 sec V/C = 0.44	CA = EB LOS E, 39.6 sec V/C = 0.66	CA = EB LOS E, 43.7 sec V/C = 0.70
9	NE Everett St/ NE 15th Ave	TWSC	LOS E	**CA = EB** **LOS F, >50.0 sec** **V/C = 0.85**	**CA = EB** **LOS F, >50 sec** **V/C = 0.97**	**CA = EB** **LOS F, >50 sec** **V/C = 0.97**
10	NE Everett St/ NE 14th Ave	TWSC	LOS E	CA = EB LOS E, 44.4 sec V/C = 0.70	**CA = EB** **LOS F, >50 sec** **V/C = 0.78**	**CA = EB** **LOS F, >50 sec** **V/C = 0.79**
11	NE Dallas St/ NE 6th Ave	TWSC	LOS D	CA = EB LOS D, 29.2 sec V/C = 0.71	CA = EB LOS D, 31.4 sec V/C = 0.73	CA = EB LOS D, 31.9 sec V/C = 0.74
12	Division St/ NW 6th Ave	TWSC	LOS D	CM = SBL LOS D, 25.3 sec V/C = 0.11	CM = SBL LOS D, 33.0 sec V/C = 0.23	CM = SBL LOS D, 34.3 sec V/C = 0.24
13	NW Norwood St/ NW 6th Ave	Roundabout	LOS D	LOS B, 14.6 sec V/C = 0.97	LOS B, 18.3 sec V/C = 0.99	LOS B, 19.3 sec V/C = 1.0
14	NW Lacamas Ln/ NW Lake Rd	TWSC	LOS D	CM = NBL LOS C, 21.7 sec V/C = 0.03	CM = NBL LOS C, 23.0 sec V/C = 0.03	CM = NBL LOS C, 23.1 sec V/C = 0.03
15	NW Sierra St/ NW Lake Rd	TWSC	LOS D	**CM = NBL** **LOS F, >50 sec**	**CM = NBL** **LOS F, >50 sec**	**CM = NBL** **LOS F, >50 sec**

ID	Study Intersection	Traffic Control	Operating Requirement	Existing Conditions[1]	2030 Background[2]	2030 Total Traffic
				V/C = 0.85	**V/C = 0.99**	**V/C = 1.0**
16	NW Leadbetter Dr/ NW Lake Rd	TWSC	LOS D	CA = NB LOS D, 26.2 sec V/C = 0.50	CA = NB LOS D, 29.1 sec V/C = 0.54	CA = NB LOS D, 30.4 sec V/C = 0.58
17	NW Parker St/ NW Lake Rd	Signalized	LOS D	LOS C, 27.4 sec V/C = 0.69	LOS C, 29.9 sec V/C = 0.71	LOS C, 29.3 sec V/C = 0.71
18	NW Friberg-Strunk St/NW Lake Rd	Signalized	LOS D	LOS B, 14.6 sec V/C = 0.68	LOS B, 18.9 sec V/C = 0.78	LOS B, 18.9 sec V/C = 0.78
19	NW Parker St/ NW Leadbetter Dr	TWSC	LOS D	CM = WBL LOS C, 23.7 sec V/C = 0.22	CM = WBL LOS D, 27.3 sec V/C = 0.29	CM = WBL LOS D, 27.3 sec V/C = 0.29
20	NW Parker St/ NE 38th Ave	Signalized	LOS D	LOS C, 26.4 sec V/C = 0.75	LOS D, 27.3 sec V/C = 0.76	LOS D, 27.4 sec V/C = 0.76
21	NW 232nd Ave/ N Shore Blvd	TWSC	LOS D	CA = EB LOS A, 9.6 sec V/C = 0.14	CA = EB LOS B, 10.7 sec V/C = 0.25	CA = EB LOS B, 10.8 sec V/C = 0.25
22	SE 283rd Ave/ SE Nourse Rd	TWSC	LOS D	CA = EB LOS B, 10.2 sec V/C = 0.18	CA = EB LOS B, 10.3 sec V/C = 0.20	CA = EB LOS B, 10.3 sec V/C = 0.20
23	SE 283rd Ave/ SE 23rd St	TWSC	LOS D	CA = WB LOS B, 10.9 sec V/C = 0.13	CA = WB LOS B, 11.1 sec V/C = 0.14	CA = WB LOS B, 11.1 sec V/C = 0.14
24	SE 283rd Ave/ NE Woodburn Dr	TWSC	LOS D	CM = EBL LOS C, 15.0 sec V/C = 0.03	CA = EB LOS C, 15.6 sec V/C = 0.03	CA = EB LOS C, 15.6 sec V/C = 0.03
25	SE Crown Rd/ NE 3rd Ave	Signalized	LOS D	LOS B, 12.1 sec V/C = 0.65	LOS B, 12.2 sec V/C = 0.66	LOS B, 12.2 sec V/C = 0.66
A	NE Everett Street/ N Rekdahl Street	TWSC	LOS D	*Not Applicable*	CA = WB LOS A, 8.9 sec V/C = 0.13	CA = WB LOS A, 8.8 sec V/C = 0.10

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

[1] Refer to the existing conditions analysis documented in the *Camas Woods Transportation Impact Study* dated November 5, 2024.

[2] Refer to the traffic conditions analysis documented in the *Camas Woods Transportation Impact Study* dated November 5, 2024.

Exhibit 6 SUB25-1003

Total Traffic Intersection Operations Discussion

Considerations associated with each of the intersections not satisfying the applicable agency performance metrics during one or more of the three peak hour analysis periods are presented below.

NE 232nd Avenue/NE 28th Street (Intersection #1)

As shown in the tables, the northbound stop-control movement does not meet County standards under year 2030 background or total traffic operations during the weekday AM peak hour. Figure 2 demonstrates that the proposed site development is not projected to add any weekday AM peak hour trips to this movement. Accordingly, no mitigation is recommended in conjunction with the proposed site development per CCC Section 40.350.020.G.1.c.1 (the proposed development adds fewer than five (5) peak hour trips to the failing intersection approach). We note that no site-generated trips that are projected to use the northbound approach at this intersection given they can reach the intersection traveling westbound on NE 28th Street by first leaving the project site and traveling north on NE Everett Street to travel SR 500 north to NE 28th Street.

NE 242nd Avenue/NE 28th Street (Intersection #2)

Consistent with the background conditions a, delay experienced on the southbound stop controlled approach continues to result in LOS F operations (exceed LOS E requirement) during the weekday PM peak hour with a V/C ratio over 1.0. The intersection is projected to continue to operate acceptably during the weekday AM peak hour analysis period.

Implementation of interim all-way stop control at the intersection would provide for acceptable operations during the weekday PM peak hour (southbound approach LOS D with a V/C ratio of 0.83, overall intersection LOS C) as well as the other analysis periods. In the longer-term, installation of a roundabout or other alternative traffic control device and/or turn lanes may be appropriate. Given the forecast LOS F conditions occur under background conditions and that the proposed Camas Woods 2 development is projected to add 3 southbound left-turns to the intersection during the weekday PM peak hour (8 total site trips are projected to enter the intersection during the PM peak hour), we recommend the Applicant collaborate with WSDOT to determine if implementation of interim all-way stop control or a proportional share financial contribution to a future intersection capacity improvement is appropriate in conjunction with the proposed development.

NE Everett Street/NE 15th Avenue (Intersection #9)

Consistent with forecast background conditions, delay experienced on the eastbound stop controlled approach continues to result in LOS F operations (exceed LOS E requirement) during the weekday PM peak hour (V/C ratio = 0.97). Given the eastbound stop controlled intersection approach is projected to operate near capacity without site trips and that there are intersections further to the north that drivers can use as a route alternative (including but not limited to NE 17th Avenue, NE 19th Avenue and NE 21st Avenue to the north), no inbound site-generated trips are projected to be added to the failing approach. As such, no mitigation is recommended in conjunction with site development.

NE Everett Street/NE 14th Avenue (Intersection #10)

Consistent with forecast background conditions, delay experienced on the eastbound stop controlled approach continues to result in LOS F operations (exceed LOS E requirement) during the weekday PM peak hour (V/C ratio = 0.79). No site-generated trips are projected to use the eastbound approach during the PM

peak hour given there are alternative travel routes available eastbound within the downtown urban grid that drivers can use as a route alternative to the project site (including but not limited to NE 17th Avenue, NE 19th Avenue and NE 21st Avenue to the north). As such, no mitigation is recommended in conjunction with site development.

NW Sierra Street/NW Lake Road (Intersection #15)

Consistent with forecast background conditions, delay experienced by the stop controlled northbound left-turn movement results in LOS F operations (exceeds LOS D requirement and with a V/C ratio of 1.0) during the weekday PM peak hour. As noted previously, the City of Camas is currently advancing design plans to construct a roundabout at the intersection but the funding for and timing of the roundabout construction was unknown at the time this report was prepared. Subject to direction from the City of Camas, it may be appropriate for the applicant to financially contribute towards the planned roundabout through payment of a future Traffic Impact Fee (if the fee methodology incorporates the roundabout cost) or a proportional share mitigation assessment program should the City alternatively choose to implement a cost sharing assessment methodology for the roundabout project (we understand City staff anticipate the future Traffic Impact Fee program will in part fund the planned roundabout).

INTERSECTION QUEUING CONSIDERATIONS

Table 5 summarizes projected queues at the NE Everett Street/SE 8th Street and NE Everett Street/NE Everett Drive study intersections for existing and projected future traffic conditions[1]. As shown, all the movements are anticipated to experience vehicular queues that can be accommodated within the turn bay lengths at the two intersections assuming provision of a separate southbound left-turn lane on NE Everett Street at SE 8th Street with site development.

Table 5. Weekday Peak Hour Projected 95th Percentile Queues at Study Intersections

Intersection	Movement	Storage (feet)	95th-percentile Queue (feet)									Adequate Storage Provided?
			AM Peak Hour			School PM Peak Hour			PM Peak Hour			
			EX	BK	TT	EX	BK	TT	EX	BK	TT	
NE Everett Street/ SE 8th Street	SB	>300	25	25	25	25	25	25	25	25	25	Yes
	SBL	100	N/A	N/A	25	N/A	N/A	25	N/A	N/A	25	Yes
	NBR	80	0	0	0	0	0	0	0	0	0	Yes
	WB	190	50	75	75	50	50	50	25	25	25	Yes
NE Everett Street/ NE Everett Drive with Roundabout	SB	375[1]	N/A	150	175	N/A	75	75	N/A	50	50	Yes
	WB	>165[2]	N/A	75	50	N/A	25	25	N/A	25	25	Yes
	NB	>500	N/A	125	125	N/A	125	125	N/A	100	100	Yes

Where: EX = 2024 Existing Conditions, BK = 2030 Background Traffic Conditions, TT = 2030 Total Traffic Conditions, EB = Eastbound, WB = Westbound, NB = Northbound, SB = Southbound, L = left-turn, T = Through, R = Right-turn

[1] There is approximately 375 feet between SE 8th Street and NE Everett Drive along NE Everett Street.

[2] Approximate distance to the first paved access driveways on NE Everett Drive east (south) of NE Everett Street. Additional storage is available to the south.

[1] Queues were rounded to the nearest 25 feet.

INTERSECTION SIGHT DISTANCE

Documentation demonstrating adequate intersection sight distance at the new public street roadways and intersections will be provided by AKS Engineering & Forestry through the site plan application process. We recommend that on-site landscaping, signage, and any new above-ground utilities be appropriately located and maintained to provide adequate intersection sight distance per applicable City requirements.

PROPORTIONATE SHARE CONTRIBUTIONS

The City of Vancouver collects proportionate share fee contributions from all future development 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	Commercial		Residential		Total	
		Peak Hour Trips Added	Estimated Mitigation Cost	Peak Hour Trips Added	Estimated Mitigation Cost	Peak Hour Trips Added	Estimated Mitigation Cost
137th Ave: 49th St to Fourth Plain Blvd	$3,000/PM	0	$0	0	$0	0	$0
Fourth Plain Blvd & 152nd Ave Signal	$333/PM	0	$0	0	$0	0	$0
Lieser/St. Helens/MacArthur	$2,000/PM	0	$0	0	$0	0	$0
176th Ave & SE 20th St	$400/PM	0	$0	0	$0	0	$0
192nd Avenue & NE 13th Street	$400/PM	0	$0	2	$800	2	$800
192nd Ave & SE 34th St	$150/PM	0	$0	0	$0	0	$0
192nd Ave & SR-14 ramps	$2,000/PM	0	$0	0	$0	0	$0
MacArthur & Andresen Roundabout	$2,285/PM	0	$0	0	$0	0	$0
MacArthur & Devine Roundabout	$2,226/PM	0	$0	0	$0	0	$0
Grove St/Columbia House Blvd/SR-14 WB Ramp	$600/AM	0	$0	0	$0	0	$0
NE 172nd Avenue & NE 18th Street	$300/PM	0	$0	0	$0	0	$0
NE 179th Place & NE 18th Street	$900/PM	0	$0	0	$0	0	$0
NE 187th Avenue & NE 18th Street	$1,200/PM	0	$0	0	$0	0	$0
NE 162nd Avenue & NE 9th Street	$1,500/PM	0	$0	0	$0	0	$0
NE 172nd Avenue & NE 9th Street	$4,100/PM	0	$0	0	$0	0	$0
NE 192nd Avenue & NE 9th Street	$1,100/PM	0	$0	0	$0	0	$0
NE 187th Avenue & SE 1st Street	$1,100/PM	0	$0	0	$0	0	$0
Total Proportional Share Cost			$0		$800		$800

SUMMARY FINDINGS & RECOMMENDATIONS

Based on the transportation impact analysis results, the proposed townhomes can be developed while maintaining acceptable operations at the study intersections assuming provision of the recommended mitigation measures in conjunction with site redevelopment.

Findings

- By the future opening year 2030, the following study intersections are projected to not satisfy the applicable performance metrics:
  - NE 232nd Avenue/NE 28th Street (Intersection #1): AM peak hour LOS F operations with a V/C >1.0;
  - NE 242nd Avenue/NE 28th Street (Intersection #2): PM peak hour LOS F operations with a V/C >1.0;
  - NE Everett Street/NE 15th Avenue (Intersection #9): PM peak hour LOS F operations with a V/C = 0.97;
  - NE Everett Street/NE 14th Avenue (Intersection #10): PM peak hour LOS F operations with a V/C = 0.78; and
  - NW Sierra Street/NW Lake Road (Intersection #15): School PM peak hour LOS F operations with a V/C = 0.45 and PM peak hour LOS F operations with a V/C = 0.99.
- The proposed development adds one or more site-generated trips to each of the study intersections listed above that do not satisfy the applicable performance metrics prior to site development. The following site development impacts and potential mitigation considerations were identified.
  - NE 232nd Avenue/NE 28th Street (Intersection #1): AM peak hour LOS F operations with a V/C >1.0
    - CCC Section 40.350.020.G.1.c.1 requires a proposed development provide mitigation when five (5) or more peak hour trips are added to a failing intersection approach on a regionally significant intersection.
    - The proposed site development is projected to add no (0) weekday AM peak hour trips to the stop controlled northbound approach when the Clark County LOS standard is not met.
  - NE 242nd Avenue/NE 28th Street (Intersection #2): PM peak hour LOS F operations with a V/C >1.0
    - Implementation of interim all-way stop control at the intersection would provide for acceptable operations during the weekday PM peak hour with site trips added (southbound approach LOS D with a V/C ratio of 0.83, overall intersection LOS C).
    - In the longer-term, installation of a roundabout or other alternative traffic control device and/or turn lanes may be appropriate.
  - NE Everett Street/NE 15th Avenue (Intersection #9): PM peak hour LOS F operations with a V/C = 0.97
    - No inbound site-generated trips are projected to be added to the failing eastbound approach which remains under-capacity.
    - There are intersections further to the north that drivers can use as alternative routes (including but not limited to NE 17th Avenue, NE 19th Avenue and NE 21st Avenue to the north).
  - NE Everett Street/NE 14th Avenue (Intersection #10): PM peak hour LOS F operations with a V/C = 0.79.

Exhibit 6 SUB25-1003

    - No inbound site-generated trips are projected to be added to the failing eastbound approach which remains under-capacity.
    - There are intersections further to the north that drivers can use as alternative routes (including but not limited to NE 17th Avenue, NE 19th Avenue and NE 21st Avenue to the north).

  - NW Sierra Street/NW Lake Road (Intersection #15): School PM peak hour LOS F operations with a V/C = 0.45 and PM peak hour LOS F operations with a V/C = 1.0.
    - The City of Camas is currently advancing design plans to construct a roundabout at the intersection but the funding for and timing of the roundabout construction was unknown at the time this report was prepared.
    - It may be appropriate for the Camas Woods 2 development to financially contribute towards the planned future roundabout through payment of a future Traffic Impact Fee methodology that incorporates the roundabout cost or a proportional share mitigation assessment program.

- The proposed site development is projected to add 2 weekday PM peak hour trips to the 192nd Avenue/NE 13th Street intersection in the City of Vancouver where proportional share mitigation payments are assessed.

Recommendations

Based on the traffic operations analysis findings, we recommend the following traffic control changes in conjunction with the proposed Camas Woods 2 site development.

- Construct a southbound left-turn lane on NE Everett Street at SE 8th Street with at least 100 feet of storage.
- Make a proportional mitigation contribution to the City of Camas' planned NW Sierra Street/NW Lake Road roundabout project.
  - Pending City direction, the contribution could be made through (1) payment of a future Traffic Impact Fee (TIF) that incorporates the roundabout cost or (2) via a proportional share mitigation assessment program should the City choose to implement a cost sharing assessment methodology for the roundabout project (we understand City staff anticipates the future TIF program will in part fund the planned roundabout).
- Collaborate with WSDOT to identify and implement (if construction is required) capacity mitigation at the NE 242nd Avenue/NE 28th Street intersection in conjunction with site development.
  - Potential options identified to explore with WSDOT include but are not limited to implementation of interim all-way stop control or payment of a proportional share contribution to a future intersection capacity improvement.
- Post a STOP (R1-1) sign southbound on the new public street approach ("A" Street) to SE 8th Street within the project site in accordance with applicable City standards and the *Manual on Uniform Traffic Control Devices* (MUTCD).
- Subject to City of Vancouver concurrence and final residential unit count confirmation, pay $800 in proportionate share contributions to the 192nd Avenue/NE 13th Street intersection as identified per City of Vancouver requirements.

- Locate and maintain site landscaping, above-ground utilities, and site signage within the site as well as at the site driveways to provide adequate intersection sight distance per applicable City requirements.
- Contribute financially to the NE Everett Street/NE Everett Drive intersection roundabout design and construction if a reimbursement mechanism is identified for the new roundabout in conjunction with Camas Woods land use entitlement.
  - The analysis findings presented in this study are predicated on the assumption that the Camas Woods project has reconstructed the NE Everett Street/NE Everett Drive intersection to a three-approach single lane roundabout in conjunction with site development prior to Camas Woods 2 site development.

Please contact us if you have any questions regarding our analysis findings or recommendations.

Sincerely,
KITTELSON & ASSOCIATES, INC.

Chris Brehmer, PE
Senior Principal Engineer

Julia Kuhn, PE
Senior Principal Engineer

CHRISTOPHER LYNN BREHMER
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37571
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PROFESSIONAL ENGINEER

2025.03.14
14:15:19-07'00'

REFERENCES

1. Institute of Transportation Engineers. *Trip Generation Manual, 11th Edition*. September 2021.

LIST OF APPENDIX

A. Year 2030 Total Traffic Conditions Analysis Worksheets

Appendix A: Year 2030 Total Traffic Analysis

Intersection Level Of Service Report
Intersection 1: NE 232nd Avenue & NE 28th Street

Control Type:	Two-way stop	Delay (sec / veh):	208.9
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.157

Intersection Setup

Name	NE 232nd Avenue			NE 232nd Avenue			NE 28th Street			NE 28th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	10.00	10.00	10.00	10.00	10.00	10.00	11.00	11.00	11.00	11.00	11.00	11.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	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]	45.00			25.00			40.00			40.00		
Grade [%]	0.02			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	NE 232nd Avenue			NE 232nd Avenue			NE 28th Street			NE 28th Street		
Base Volume Input [veh/h]	122	2	41	0	6	6	2	174	180	83	294	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 [%]	5.00	0.00	6.00	0.00	0.00	0.00	0.00	8.00	12.00	11.00	1.00	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]	122	2	41	0	6	6	2	174	180	83	294	0
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]	43	1	14	0	2	2	1	61	63	29	104	0
Total Analysis Volume [veh/h]	172	3	58	0	8	8	3	245	254	117	414	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	1.16	0.02	0.09	0.00	0.05	0.01	0.00	0.00	0.00	0.11	0.00	0.00
d_M, Delay for Movement [s/veh]	208.92	204.83	190.24	28.94	27.18	11.46	8.12	0.00	0.00	8.67	0.00	0.00
Movement LOS	F	F	F	D	D	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	12.85	12.85	12.85	0.19	0.19	0.19	0.01	0.01	0.01	0.21	0.21	0.21
95th-Percentile Queue Length [ft/ln]	321.29	321.29	321.29	4.75	4.75	4.75	0.14	0.14	0.14	5.21	5.21	5.21
d_A, Approach Delay [s/veh]	204.22			19.32			0.05			1.91		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	38.17											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 2: SR 500 & NE 28th Street

Control Type:	Two-way stop	Delay (sec / veh):	34.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.527

Intersection Setup

Name	Private Driveway			SR 500			NE 28th Street			SR 500		
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	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	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]	20.00			45.00			40.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Private Driveway			SR 500			NE 28th Street			SR 500		
Base Volume Input [veh/h]	0	0	0	135	0	80	34	181	0	0	290	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 [%]	0.00	0.00	0.00	15.00	0.00	6.00	4.00	6.00	0.00	0.00	3.00	6.00
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]	0	0	0	135	0	80	34	181	0	0	290	129
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
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]	0	0	0	41	0	24	10	55	0	0	87	39
Total Analysis Volume [veh/h]	0	0	0	163	0	96	41	218	0	0	349	155
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.53	0.00	0.15	0.04	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	19.03	16.82	9.35	34.70	33.73	28.87	8.47	0.00	0.00	7.64	0.00	0.00
Movement LOS	C	C	A	D	D	D	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	4.87	4.87	4.87	0.07	0.07	0.07	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	121.68	121.68	121.68	1.75	1.75	1.75	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	15.07			32.54			1.34			0.00		
Approach LOS	C			D			A			A		
d_I, Intersection Delay [s/veh]	8.59											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 3: NE Everett Street & SE 8th Street

Control Type:	Two-way stop	Delay (sec / veh):	36.8
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.524

Intersection Setup

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		SE 8th Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	85.00	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		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		SE 8th Street	
Base Volume Input [veh/h]	225	87	42	398	93	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	0.00	0.00	2.00	0.00	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]	225	87	42	398	93	66
Peak Hour Factor	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	80	31	15	142	33	24
Total Analysis Volume [veh/h]	321	124	60	569	133	94
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.05	0.01	0.52	0.13
d_M, Delay for Movement [s/veh]	0.00	0.00	8.38	0.00	36.77	27.55
Movement LOS	A	A	A	A	E	D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.17	0.00	4.38	4.38
95th-Percentile Queue Length [ft/ln]	0.00	0.00	4.22	0.00	109.61	109.61
d_A, Approach Delay [s/veh]	0.00		0.80		32.95	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	6.14					
Intersection LOS	E					

MOVEMENT SUMMARY

Site: 4 [NE Everett St & NE Everett Dr_TotalAM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SR500/NE Everett Drive
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR500															
8	T1	All MCs	370	3.0	370	3.0	0.588	5.9	LOS A	5.0	126.6	0.58	0.53	0.58	34.6
18	R2	All MCs	253	1.0	253	1.0	0.588	5.7	LOS A	5.0	126.6	0.58	0.53	0.58	34.3
Approach			623	2.2	623	2.2	0.588	5.8	LOS A	5.0	126.6	0.58	0.53	0.58	34.5
East: NE Everett Drive															
1	L2	All MCs	191	4.0	191	4.0	0.303	11.7	LOS B	1.7	44.8	0.58	0.68	0.58	32.5
16	R2	All MCs	74	0.0	74	0.0	0.303	6.4	LOS A	1.7	44.8	0.58	0.68	0.58	32.9
Approach			266	2.9	266	2.9	0.303	10.2	LOS B	1.7	44.8	0.58	0.68	0.58	32.6
North: SR500															
7	L2	All MCs	164	0.0	164	0.0	0.676	11.6	LOS B	6.7	169.8	0.68	0.61	0.71	33.1
4	T1	All MCs	531	3.0	531	3.0	0.676	6.9	LOS A	6.7	169.8	0.68	0.61	0.71	33.6
Approach			696	2.3	696	2.3	0.676	8.0	LOS A	6.7	169.8	0.68	0.61	0.71	33.5
All Vehicles			1584	2.3	1584	2.3	0.676	7.5	LOS A	6.7	169.8	0.62	0.59	0.64	33.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection Level Of Service Report
Intersection 5: NE Everett Street & SE Leadbetter Road

Control Type:	Two-way stop	Delay (sec / veh):	52.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.315

Intersection Setup

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		SE Leadbetter Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	120.00	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		30.00		30.00	
Grade [%]	0.04		-0.02		0.03	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		SE Leadbetter Road	
Base Volume Input [veh/h]	96	358	450	23	42	197
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	4.00	4.00	0.00	1.00	1.00
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]	96	358	450	23	42	197
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	28	104	131	7	12	57
Total Analysis Volume [veh/h]	112	416	523	27	49	229
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.11	0.00	0.01	0.00	0.32	0.44
d_M, Delay for Movement [s/veh]	8.94	0.00	0.00	0.00	52.64	36.37
Movement LOS	A	A	A	A	F	E
95th-Percentile Queue Length [veh/ln]	0.37	0.00	0.00	0.00	6.01	6.01
95th-Percentile Queue Length [ft/ln]	9.17	0.00	0.00	0.00	150.15	150.15
d_A, Approach Delay [s/veh]	1.90		0.00		39.23	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	8.78					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 6: NE Everett Street & NE 43rd Avenue

Control Type:	Signalized	Delay (sec / veh):	13.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.782

Intersection Setup

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		NE 43rd Avenue	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	300.00	120.00	100.00	100.00	80.00
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		25.00	
Grade [%]	0.03		-0.04		-0.04	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		NE 43rd Avenue	
Base Volume Input [veh/h]	377	468	101	547	323	73
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	5.00	18.00	4.00	11.00	4.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	0.0000	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
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	377	0	101	547	323	73
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	110	0	29	159	94	21
Total Analysis Volume [veh/h]	438	0	117	636	376	85
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	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]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	8	0
Auxiliary Signal Groups						
Maximum Green [s]	40	0	20	40	40	0
Amber [s]	4.0	0.0	3.0	4.0	3.0	0.0
All red [s]	1.0	0.0	2.0	1.0	1.0	0.0
Walk [s]	7	0	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	3.0	3.0	2.0	0.0
Detector Location [ft]	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
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	14	0	9	14	9	0
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	4	5	4	0
Vehicle Extension [s]	5.0	0.0	3.0	3.5	3.0	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	45	45	45	45	45	45
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	23	23	13	13
g / C, Green / Cycle	0.34	0.34	0.52	0.52	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.25	0.00	0.11	0.35	0.23	0.05
s, saturation flow rate [veh/h]	1737	1451	1020	1840	1653	1564
c, Capacity [veh/h]	585	489	570	950	469	444
d1, Uniform Delay [s]	13.26	0.00	7.00	8.05	14.97	12.23
k, delay calibration	0.23	0.23	0.11	0.13	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.10	0.00	0.18	0.99	3.23	0.21
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.00	0.21	0.67	0.80	0.19
d, Delay for Lane Group [s/veh]	17.36	0.00	7.18	9.04	18.19	12.43
Lane Group LOS	B	A	A	A	B	B
Critical Lane Group	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]	3.69	0.00	0.40	3.10	3.48	0.59
50th-Percentile Queue Length [ft/ln]	92.37	0.00	9.95	77.61	86.99	14.76
95th-Percentile Queue Length [veh/ln]	6.65	0.00	0.72	5.59	6.26	1.06
95th-Percentile Queue Length [ft/ln]	166.26	0.00	17.90	139.71	156.58	26.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	17.36	0.00	7.18	9.04	18.19	12.43
Movement LOS	B	A	A	A	B	B
d_A, Approach Delay [s/veh]	17.36		8.75		17.13	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	13.37					
Intersection LOS	B					
Intersection V/C	0.782					

Emissions

Vehicle Miles Traveled [mph]	256.90	0.00	8.18	44.45	9.83	2.22
Stops [stops/h]	296.08	0.00	31.88	248.79	278.83	47.33
Fuel consumption [US gal/h]	13.57	0.00	0.72	4.74	2.90	0.50
CO [g/h]	948.28	0.00	50.50	331.07	202.97	34.71
NOx [g/h]	184.50	0.00	9.82	64.41	39.49	6.75
VOC [g/h]	219.77	0.00	11.70	76.73	47.04	8.04

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	12.81	12.81
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.384	2.120
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1781	1781	1781
d_b, Bicycle Delay [s]	0.27	0.27	0.27
l_b,int, Bicycle LOS Score for Intersection	2.282	2.802	1.560
Bicycle LOS	B	C	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



MOVEMENT SUMMARY

Site: 7 [NE Everett St & NW Lake Rd_TotalAM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: NE Everett Street															
3	L2	All MCs	238	12.0	238	12.0	0.384	14.6	LOS B	2.5	67.5	0.79	0.76	0.80	30.7
8	T1	All MCs	401	8.0	401	8.0	0.482	7.7	LOS A	3.9	104.0	0.84	0.71	0.89	34.2
Approach			639	9.5	639	9.5	0.482	10.2	LOS B	3.9	104.0	0.82	0.73	0.86	32.8
North: NE Everett Street															
4	T1	All MCs	540	9.0	540	9.0	0.484	5.5	LOS A	3.7	100.1	0.62	0.53	0.62	34.6
14	R2	All MCs	417	4.0	417	4.0	0.350	5.2	LOS A	2.4	62.9	0.54	0.54	0.54	35.0
Approach			957	6.8	957	6.8	0.484	5.3	LOS A	3.7	100.1	0.59	0.53	0.59	34.8
West: NW Lake Road															
5	L2	All MCs	565	3.0	565	3.0	0.598	15.2	LOS B	5.9	152.1	0.87	0.81	1.03	30.7
12	R2	All MCs	253	6.0	253	6.0	0.280	6.9	LOS A	1.9	48.5	0.72	0.65	0.72	34.6
Approach			818	3.9	818	3.9	0.598	12.7	LOS B	5.9	152.1	0.82	0.76	0.93	31.7
All Vehicles			2414	6.5	2414	6.5	0.598	9.1	LOS A	5.9	152.1	0.73	0.66	0.78	33.2

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection Level Of Service Report
Intersection 8: NE Everett Street & NE 17th Avenue

Control Type:	Two-way stop	Delay (sec / veh):	31.6
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.399

Intersection Setup

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		NE 17th Avenue	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	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	No		Yes		Yes	

Volumes

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		NE 17th Avenue	
Base Volume Input [veh/h]	36	329	483	88	83	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	6.00	5.00	3.00	0.00	4.00	6.00
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]	36	329	483	88	83	34
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]	10	93	137	25	24	10
Total Analysis Volume [veh/h]	41	374	549	100	94	39
Pedestrian Volume [ped/h]	0		2		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.00	0.01	0.00	0.40	0.08
d_M, Delay for Movement [s/veh]	9.10	0.00	0.00	0.00	31.59	23.59
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh/ln]	0.14	0.00	0.00	0.00	2.42	2.42
95th-Percentile Queue Length [ft/ln]	3.50	0.00	0.00	0.00	60.59	60.59
d_A, Approach Delay [s/veh]	0.90		0.00		29.24	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	3.56					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 9: NE Everett Street & NE 15th Avenue

Control Type:	Two-way stop	Delay (sec / veh):	50.6
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.381

Intersection Setup

Name	NE Everett Street (SR 500)			NE Everett Street (SR 500)			NE 15th Avenue			NE 15th Avenue		
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	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NE Everett Street (SR 500)			NE Everett Street (SR 500)			NE 15th Avenue			NE 15th Avenue		
Base Volume Input [veh/h]	15	229	4	80	296	139	45	25	25	2	25	84
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 [%]	7.00	7.00	0.00	0.00	2.00	2.00	3.00	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]	15	229	4	80	296	139	45	25	25	2	25	84
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
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]	5	69	1	24	89	42	14	8	8	1	8	25
Total Analysis Volume [veh/h]	18	276	5	96	357	167	54	30	30	2	30	101
Pedestrian Volume [ped/h]	5			16			0			5		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	2	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	0.02	0.00	0.00	0.07	0.00	0.00	0.38	0.13	0.05	0.01	0.14	0.14
d_M, Delay for Movement [s/veh]	8.60	0.00	0.00	8.04	0.00	0.00	50.57	40.42	31.01	29.08	25.27	13.16
Movement LOS	A	A	A	A	A	A	F	E	D	D	D	B
95th-Percentile Queue Length [veh/ln]	0.05	0.00	0.00	0.24	0.00	0.00	2.99	2.99	2.99	1.20	1.20	1.20
95th-Percentile Queue Length [ft/ln]	1.35	0.00	0.00	6.06	0.00	0.00	74.75	74.75	74.75	30.03	30.03	30.03
d_A, Approach Delay [s/veh]	0.52			1.24			42.75			16.13		
Approach LOS	A			A			E			C		
d_I, Intersection Delay [s/veh]	6.81											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 12: Division Street & NE 6th Avenue

Control Type:	Two-way stop	Delay (sec / veh):	17.2
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.120

Intersection Setup

Name	Division Street		NW 6th Avenue		NE 6th Avenue	
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	1	0	0	0	0
Entry Pocket Length [ft]	100.00	40.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	-0.12		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Division Street		NW 6th Avenue		NE 6th Avenue	
Base Volume Input [veh/h]	35	193	135	410	535	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	4.00	5.00	4.00	7.00
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]	35	193	135	410	535	28
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]	10	55	38	116	152	8
Total Analysis Volume [veh/h]	40	219	153	466	608	32
Pedestrian Volume [ped/h]	2		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
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	0.12	0.29	0.17	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	17.22	11.74	9.08	0.00	0.00	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.40	1.21	0.28	0.14	0.00	0.00
95th-Percentile Queue Length [ft/ln]	10.08	30.27	6.96	3.48	0.00	0.00
d_A, Approach Delay [s/veh]	12.59		2.25		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	3.06					
Intersection LOS	C					

MOVEMENT SUMMARY

Site: 13 [NW Norwood St & NW 6th Ave_TotalAM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: NW 6th Avenue															
3	L2	All MCs	106	1.0	106	1.0	0.214	12.6	LOS B	1.2	30.1	0.62	0.69	0.62	32.6
8	T1	All MCs	2	0.0	2	0.0	0.214	6.3	LOS A	1.2	30.1	0.62	0.69	0.62	33.3
18	R2	All MCs	68	13.0	68	13.0	0.214	7.4	LOS A	1.2	30.1	0.62	0.69	0.62	32.7
Approach			176	5.6	176	5.6	0.214	10.5	LOS B	1.2	30.1	0.62	0.69	0.62	32.7
East: NW 6th Avenue															
1	L2	All MCs	78	3.0	78	3.0	0.761	11.4	LOS B	9.1	234.5	0.68	0.50	0.68	33.7
6	T1	All MCs	816	3.0	816	3.0	0.761	5.1	LOS A	9.1	234.5	0.68	0.50	0.68	34.4
16	R2	All MCs	6	50.0	6	50.0	0.761	7.2	LOS A	9.1	234.5	0.68	0.50	0.68	33.1
Approach			901	3.3	901	3.3	0.761	5.7	LOS A	9.1	234.5	0.68	0.50	0.68	34.4
North: NW Norwood Street															
7	L2	All MCs	29	4.0	29	4.0	0.172	17.8	LOS B	1.1	28.7	0.88	0.80	0.88	31.0
4	T1	All MCs	6	0.0	6	0.0	0.172	11.0	LOS B	1.1	28.7	0.88	0.80	0.88	31.7
14	R2	All MCs	44	5.0	44	5.0	0.172	11.8	LOS B	1.1	28.7	0.88	0.80	0.88	31.4
Approach			80	4.2	80	4.2	0.172	13.9	LOS B	1.1	28.7	0.88	0.80	0.88	31.3
West: NW 6th Avenue															
5	L2	All MCs	12	27.0	12	27.0	0.484	11.4	LOS B	3.5	92.5	0.41	0.43	0.41	33.9
2	T1	All MCs	467	7.0	467	7.0	0.484	4.5	LOS A	3.5	92.5	0.41	0.43	0.41	35.4
12	R2	All MCs	80	3.0	80	3.0	0.484	4.6	LOS A	3.5	92.5	0.41	0.43	0.41	35.1
Approach			558	6.9	558	6.9	0.484	4.7	LOS A	3.5	92.5	0.41	0.43	0.41	35.4
All Vehicles			1715	4.8	1715	4.8	0.761	6.2	LOS A	9.1	234.5	0.59	0.51	0.59	34.3

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Intersection Level Of Service Report
Intersection 14: NW Lacamas Lane & NW Lake Road

Control Type:	Two-way stop	Delay (sec / veh):	15.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.006

Intersection Setup

Name	NW Lacamas Lane		NW Lake Road		NW Lake Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	1	0
Entry Pocket Length [ft]	100.00	85.00	100.00	100.00	110.00	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 [%]	-0.11		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	NW Lacamas Lane		NW Lake Road		NW Lake Road	
Base Volume Input [veh/h]	2	191	590	2	64	543
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	4.00	0.00	10.00	5.00
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	191	590	2	64	543
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	51	159	1	17	146
Total Analysis Volume [veh/h]	2	205	634	2	69	584
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
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	0.01	0.35	0.01	0.00	0.08	0.01
d_M, Delay for Movement [s/veh]	15.30	14.48	0.00	0.00	9.28	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.02	1.57	0.00	0.00	0.25	0.00
95th-Percentile Queue Length [ft/ln]	0.43	39.35	0.00	0.00	6.14	0.00
d_A, Approach Delay [s/veh]	14.49		0.00		0.98	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	2.43					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 15: NW Sierra Street & NW Lake Road

Control Type:	Two-way stop	Delay (sec / veh):	34.7
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.401

Intersection Setup

Name	NW Sierra Street		NW Lake Road		NW Lake Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	1	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		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	NW Sierra Street		NW Lake Road		NW Lake Road	
Base Volume Input [veh/h]	75	206	364	85	122	409
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	4.00	7.00	2.00	8.00	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]	75	206	364	85	122	409
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	55	97	23	32	109
Total Analysis Volume [veh/h]	80	219	387	90	130	435
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
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	0.40	0.35	0.00	0.00	0.12	0.00
d_M, Delay for Movement [s/veh]	34.69	13.96	0.00	0.00	8.89	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.80	1.59	0.00	0.00	0.42	0.00
95th-Percentile Queue Length [ft/ln]	44.90	39.77	0.00	0.00	10.51	0.00
d_A, Approach Delay [s/veh]	19.50		0.00		2.05	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	5.21					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 16: NW Lake Road & NW Leadbetter Drive

Control Type:	Two-way stop	Delay (sec / veh):	33.8
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.080

Intersection Setup

Name	NW Leadbetter Drive			NW Leadbetter Drive			NW Lake Road			NW Lake Road		
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	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	135.00	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]	30.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	NW Leadbetter Drive			NW Leadbetter Drive			NW Lake Road			NW Lake Road		
Base Volume Input [veh/h]	4	5	102	10	7	6	10	358	12	93	385	6
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	20.00	16.00	0.00	0.00	17.00	0.00	4.00	0.00	5.00	2.00	33.00
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]	4	5	102	10	7	6	10	358	12	93	385	6
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]	1	1	28	3	2	2	3	97	3	25	105	2
Total Analysis Volume [veh/h]	4	5	111	11	8	7	11	389	13	101	418	7
Pedestrian Volume [ped/h]	2			2			1			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.02	0.03	0.18	0.08	0.04	0.01	0.01	0.00	0.00	0.09	0.00	0.00
d_M, Delay for Movement [s/veh]	27.32	25.92	12.79	33.78	25.21	13.72	8.19	0.00	0.00	8.48	0.00	0.00
Movement LOS	D	D	B	D	D	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.87	0.87	0.87	0.44	0.44	0.44	0.03	0.00	0.00	0.29	0.00	0.00
95th-Percentile Queue Length [ft/ln]	21.72	21.72	21.72	11.02	11.02	11.02	0.73	0.00	0.00	7.30	0.00	0.00
d_A, Approach Delay [s/veh]	13.82			25.74			0.22			1.63		
Approach LOS	B			D			A			A		
d_I, Intersection Delay [s/veh]	3.02											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 21: N Shore Boulevard and NE 232nd Avenue

Control Type:	Two-way stop	Delay (sec / veh):	35.1
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.534

Intersection Setup

Name	N Shore Boulevard		NE 232nd Avenue		NE 232nd Avenue	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	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]	35.00		45.00		45.00	
Grade [%]	0.00		-0.02		0.02	
Crosswalk	No		No		No	

Volumes

Name	N Shore Boulevard		NE 232nd Avenue		NE 232nd Avenue	
Base Volume Input [veh/h]	65	66	103	149	79	47
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	13.00	3.00	7.00	6.00	7.00	8.00
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]	65	66	103	149	79	47
Peak Hour Factor	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	33	52	75	40	24
Total Analysis Volume [veh/h]	130	132	206	298	158	94
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.13	0.00	0.00	0.00	0.53	0.14
d_M, Delay for Movement [s/veh]	8.73	0.00	0.00	0.00	35.13	28.39
Movement LOS	A	A	A	A	E	D
95th-Percentile Queue Length [veh/ln]	0.23	0.23	0.00	0.00	4.76	4.76
95th-Percentile Queue Length [ft/ln]	5.83	5.83	0.00	0.00	119.04	119.04
d_A, Approach Delay [s/veh]	4.33		0.00		32.62	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	9.19					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 22: SE 283rd Avenue & SE Nourse Road

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):	0.051

Intersection Setup

Name	SE 283rd Avenue		SE 283rd Avenue		NE 43rd Avenue	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	11.00	11.00	11.00	11.00	11.00	11.00
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 [%]	0.00		0.00		0.02	
Crosswalk	No		No		No	

Volumes

Name	SE 283rd Avenue		SE 283rd Avenue		NE 43rd Avenue	
Base Volume Input [veh/h]	247	55	98	28	14	102
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	2.00	10.00	18.00	0.00	7.00
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]	247	55	98	28	14	102
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	67	15	27	8	4	28
Total Analysis Volume [veh/h]	268	60	107	30	15	111
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.19	0.00	0.00	0.00	0.05	0.12
d_M, Delay for Movement [s/veh]	7.91	0.00	0.00	0.00	18.15	9.98
Movement LOS	A	A	A	A	C	A
95th-Percentile Queue Length [veh/ln]	0.56	0.56	0.00	0.00	0.62	0.62
95th-Percentile Queue Length [ft/ln]	14.02	14.02	0.00	0.00	15.51	15.51
d_A, Approach Delay [s/veh]	6.46		0.00		10.95	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	5.92					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 101: NE Everett Drive and Site Access

Control Type:	Two-way stop	Delay (sec / veh):	14.0
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.014

Intersection Setup

Name	NE Everett Drive		NE Everett Drive		Site Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	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		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	NE Everett Drive		NE Everett Drive		Site Access	
Base Volume Input [veh/h]	94	3	40	251	4	89
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	0.00	0.00	1.00	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]	94	3	40	251	4	89
Peak Hour Factor	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	1	14	90	1	32
Total Analysis Volume [veh/h]	134	4	57	359	6	127
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.04	0.00	0.01	0.14
d_M, Delay for Movement [s/veh]	0.00	0.00	7.53	0.00	13.95	9.72
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.10	0.10	0.54	0.54
95th-Percentile Queue Length [ft/ln]	0.00	0.00	2.45	2.45	13.53	13.53
d_A, Approach Delay [s/veh]	0.00		1.03		9.91	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	2.54					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: NE Everett Street & SE 8th Street

Control Type:	Two-way stop	Delay (sec / veh):	35.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.468

Intersection Setup

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		SE 8th Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	85.00	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		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		SE 8th Street	
Base Volume Input [veh/h]	302	116	33	269	73	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	0.00	2.00	5.00	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]	302	116	33	269	73	57
Peak Hour Factor	0.6300	0.6300	0.6300	0.6300	0.6300	0.6300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	46	13	107	29	23
Total Analysis Volume [veh/h]	479	184	52	427	116	90
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.06	0.00	0.47	0.15
d_M, Delay for Movement [s/veh]	0.00	0.00	9.08	0.00	35.71	27.28
Movement LOS	A	A	A	A	E	D
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.18	0.00	3.93	3.93
95th-Percentile Queue Length [ft/ln]	0.00	0.00	4.41	0.00	98.13	98.13
d_A, Approach Delay [s/veh]	0.00		0.99		32.03	
Approach LOS	A		A		D	
d_I, Intersection Delay [s/veh]	5.24					
Intersection LOS	E					

MOVEMENT SUMMARY

Site: 4 [NE Everett St & NE Everett Dr_TotalSchoolPM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SR500/NE Everett Drive
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR500															
8	T1	All MCs	563	3.0	563	3.0	0.573	4.9	LOS A	4.9	125.3	0.32	0.43	0.32	35.2
18	R2	All MCs	113	0.0	113	0.0	0.573	4.8	LOS A	4.9	125.3	0.32	0.43	0.32	34.9
Approach			676	2.5	676	2.5	0.573	4.9	LOS A	4.9	125.3	0.32	0.43	0.32	35.1
East: NE Everett Drive															
1	L2	All MCs	86	0.0	86	0.0	0.151	12.4	LOS B	0.8	19.7	0.61	0.72	0.61	32.2
16	R2	All MCs	34	0.0	34	0.0	0.151	7.4	LOS A	0.8	19.7	0.61	0.72	0.61	32.5
Approach			120	0.0	120	0.0	0.151	11.0	LOS B	0.8	19.7	0.61	0.72	0.61	32.3
North: SR500															
7	L2	All MCs	54	0.0	54	0.0	0.428	9.8	LOS A	3.0	77.0	0.34	0.46	0.34	34.2
4	T1	All MCs	436	2.0	436	2.0	0.428	5.0	LOS A	3.0	77.0	0.34	0.46	0.34	34.9
Approach			490	1.8	490	1.8	0.428	5.5	LOS A	3.0	77.0	0.34	0.46	0.34	34.8
All Vehicles			1286	2.0	1286	2.0	0.573	5.7	LOS A	4.9	125.3	0.36	0.47	0.36	34.7

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection Level Of Service Report
Intersection 5: NE Everett Street & SE Leadbetter Road

Control Type:	Two-way stop	Delay (sec / veh):	40.7
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.178

Intersection Setup

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		SE Leadbetter Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	120.00	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		30.00		30.00	
Grade [%]	0.04		-0.02		0.03	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		SE Leadbetter Road	
Base Volume Input [veh/h]	131	409	340	20	17	120
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	4.00	2.00	1.00	1.00	1.00
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]	131	409	340	20	17	120
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]	41	129	108	6	5	38
Total Analysis Volume [veh/h]	166	518	430	25	22	152
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.15	0.01	0.00	0.00	0.18	0.26
d_M, Delay for Movement [s/veh]	8.81	0.00	0.00	0.00	40.73	17.72
Movement LOS	A	A	A	A	E	C
95th-Percentile Queue Length [veh/ln]	0.52	0.00	0.00	0.00	2.13	2.13
95th-Percentile Queue Length [ft/ln]	13.12	0.00	0.00	0.00	53.31	53.31
d_A, Approach Delay [s/veh]	2.14		0.00		20.63	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	3.85					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 6: NE Everett Street & NE 43rd Avenue

Control Type:	Signalized	Delay (sec / veh):	10.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		NE 43rd Avenue	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	300.00	120.00	100.00	100.00	80.00
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		25.00	
Grade [%]	0.03		-0.04		-0.04	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		NE 43rd Avenue	
Base Volume Input [veh/h]	462	136	67	399	161	69
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	1.00	4.00	2.00	1.00	2.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	0.0000	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
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	462	0	67	399	161	69
Peak Hour Factor	0.8300	0.8300	0.8300	0.8300	0.8300	0.8300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	139	0	20	120	48	21
Total Analysis Volume [veh/h]	557	0	81	481	194	83
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	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]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	8	0
Auxiliary Signal Groups						
Maximum Green [s]	40	0	20	40	40	0
Amber [s]	4.0	0.0	3.0	4.0	3.0	0.0
All red [s]	1.0	0.0	2.0	1.0	1.0	0.0
Walk [s]	7	0	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	3.0	3.0	2.0	0.0
Detector Location [ft]	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
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	14	0	9	14	9	0
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	4	5	4	0
Vehicle Extension [s]	5.0	0.0	3.0	3.5	3.0	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	40	40	40	40	40	40
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	24	24	6	6
g / C, Green / Cycle	0.43	0.43	0.61	0.61	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.32	0.00	0.08	0.26	0.11	0.05
s, saturation flow rate [veh/h]	1737	1502	1040	1869	1795	1589
c, Capacity [veh/h]	740	640	679	1144	292	259
d1, Uniform Delay [s]	9.67	0.00	4.75	4.05	15.68	14.76
k, delay calibration	0.23	0.23	0.11	0.13	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.31	0.00	0.08	0.30	2.59	0.71
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.00	0.12	0.42	0.66	0.32
d, Delay for Lane Group [s/veh]	12.98	0.00	4.83	4.35	18.27	15.47
Lane Group LOS	B	A	A	A	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.33	0.00	0.12	0.86	1.65	0.63
50th-Percentile Queue Length [ft/ln]	83.32	0.00	2.88	21.50	41.13	15.72
95th-Percentile Queue Length [veh/ln]	6.00	0.00	0.21	1.55	2.96	1.13
95th-Percentile Queue Length [ft/ln]	149.97	0.00	5.18	38.70	74.03	28.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	12.98	0.00	4.83	4.35	18.27	15.47
Movement LOS	B	A	A	A	B	B
d_A, Approach Delay [s/veh]	12.98		4.42		17.43	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	10.42					
Intersection LOS	B					
Intersection V/C	0.649					

Emissions

Vehicle Miles Traveled [mph]	326.70	0.00	5.66	33.62	5.07	2.17
Stops [stops/h]	301.66	0.00	10.41	77.84	148.91	56.91
Fuel consumption [US gal/h]	16.19	0.00	0.37	2.29	1.52	0.58
CO [g/h]	1131.89	0.00	26.12	160.25	106.30	40.34
NOx [g/h]	220.22	0.00	5.08	31.18	20.68	7.85
VOC [g/h]	262.33	0.00	6.05	37.14	24.64	9.35

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	10.41	10.41
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.347	2.043
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2011	2011	2011
d_b, Bicycle Delay [s]	0.00	0.00	0.00
l_b,int, Bicycle LOS Score for Intersection	2.479	2.487	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



MOVEMENT SUMMARY

Site: 7 [NE Everett St & NW Lake Rd_TotalSchoolPM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: NE Everett Street															
3	L2	All MCs	277	1.0	277	1.0	0.271	11.5	LOS B	1.6	41.4	0.54	0.66	0.54	31.9
8	T1	All MCs	434	3.0	434	3.0	0.365	5.0	LOS A	2.5	63.5	0.56	0.51	0.56	35.2
Approach			711	2.2	711	2.2	0.365	7.5	LOS A	2.5	63.5	0.55	0.57	0.55	33.8
North: NE Everett Street															
4	T1	All MCs	402	3.0	402	3.0	0.330	5.0	LOS A	2.1	55.0	0.51	0.49	0.51	35.1
14	R2	All MCs	305	1.0	305	1.0	0.243	5.0	LOS A	1.5	37.5	0.48	0.53	0.48	35.2
Approach			707	2.1	707	2.1	0.330	5.0	LOS A	2.1	55.0	0.50	0.51	0.50	35.2
West: NW Lake Road															
5	L2	All MCs	304	2.0	304	2.0	0.269	11.7	LOS B	1.7	43.3	0.58	0.67	0.58	31.8
12	R2	All MCs	395	2.0	395	2.0	0.348	5.8	LOS A	2.3	59.5	0.62	0.59	0.62	34.9
Approach			699	2.0	699	2.0	0.348	8.4	LOS A	2.3	59.5	0.60	0.62	0.60	33.4
All Vehicles			2117	2.1	2117	2.1	0.365	7.0	LOS A	2.5	63.5	0.55	0.57	0.55	34.1

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection Level Of Service Report
Intersection 15: NW Sierra Street & NW Lake Road

Control Type:	Two-way stop	Delay (sec / veh):	41.5
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.455

Intersection Setup

Name	NW Sierra Street		NW Lake Road		NW Lake Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	1	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		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	NW Sierra Street		NW Lake Road		NW Lake Road	
Base Volume Input [veh/h]	74	113	472	108	105	378
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	3.00	2.00	2.00	1.00	1.00
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]	74	113	472	108	105	378
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	20	31	128	29	29	103
Total Analysis Volume [veh/h]	80	123	513	117	114	411
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
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	0.45	0.24	0.01	0.00	0.12	0.00
d_M, Delay for Movement [s/veh]	41.51	14.10	0.00	0.00	9.27	0.00
Movement LOS	E	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.13	0.92	0.00	0.00	0.40	0.00
95th-Percentile Queue Length [ft/ln]	53.16	22.93	0.00	0.00	10.10	0.00
d_A, Approach Delay [s/veh]	24.90		0.00		2.01	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	4.50					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 21: N Shore Boulevard and NE 232nd Avenue

Control Type:	Two-way stop	Delay (sec / veh):	10.3
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.152

Intersection Setup

Name	N Shore Boulevard		NE 232nd Avenue		NE 232nd Avenue	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	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]	35.00		45.00		45.00	
Grade [%]	0.00		-0.02		0.02	
Crosswalk	No		No		No	

Volumes

Name	N Shore Boulevard		NE 232nd Avenue		NE 232nd Avenue	
Base Volume Input [veh/h]	20	19	14	111	107	13
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	4.00	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]	20	19	14	111	107	13
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]	6	5	4	32	31	4
Total Analysis Volume [veh/h]	23	22	16	128	123	15
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.00	0.00	0.00	0.15	0.02
d_M, Delay for Movement [s/veh]	7.51	0.00	0.00	0.00	10.33	9.55
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.04	0.04	0.00	0.00	0.60	0.60
95th-Percentile Queue Length [ft/ln]	0.97	0.97	0.00	0.00	14.99	14.99
d_A, Approach Delay [s/veh]	3.84		0.00		10.25	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.85					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 22: SE 283rd Avenue & SE Nourse Road

Control Type:	Two-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):	0.023

Intersection Setup

Name	SE 283rd Avenue		SE 283rd Avenue		NE 43rd Avenue	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	11.00	11.00	11.00	11.00	11.00	11.00
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 [%]	0.00		0.00		0.02	
Crosswalk	No		No		No	

Volumes

Name	SE 283rd Avenue		SE 283rd Avenue		NE 43rd Avenue	
Base Volume Input [veh/h]	71	99	67	11	11	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	6.00	6.00	4.00	0.00	9.00	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]	71	99	67	11	11	95
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]	21	29	20	3	3	28
Total Analysis Volume [veh/h]	84	116	79	13	13	112
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.06	0.00	0.00	0.00	0.02	0.12
d_M, Delay for Movement [s/veh]	7.53	0.00	0.00	0.00	12.12	9.39
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.15	0.15	0.00	0.00	0.48	0.48
95th-Percentile Queue Length [ft/ln]	3.67	3.67	0.00	0.00	12.11	12.11
d_A, Approach Delay [s/veh]	3.16		0.00		9.67	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	4.42					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 101: NE Everett Drive and Site Access

Control Type:	Two-way stop	Delay (sec / veh):	10.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	NE Everett Drive		NE Everett Drive		Site Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	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		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	NE Everett Drive		NE Everett Drive		Site Access	
Base Volume Input [veh/h]	23	5	70	48	4	61
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	0.00	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]	23	5	70	48	4	61
Peak Hour Factor	0.7000	0.7000	0.7000	0.7000	0.7000	0.7000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	2	25	17	1	22
Total Analysis Volume [veh/h]	33	7	100	69	6	87
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.06	0.00	0.01	0.08
d_M, Delay for Movement [s/veh]	0.00	0.00	7.39	0.00	10.95	8.82
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.18	0.18	0.31	0.31
95th-Percentile Queue Length [ft/ln]	0.00	0.00	4.41	4.41	7.65	7.65
d_A, Approach Delay [s/veh]	0.00		4.37		8.96	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	5.21					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 1: NE 232nd Avenue & NE 28th Street

Control Type:	Two-way stop	Delay (sec / veh):	43.6
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.578

Intersection Setup

Name	NE 232nd Avenue			NE 232nd Avenue			NE 28th Street			NE 28th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	10.00	10.00	10.00	10.00	10.00	10.00	11.00	11.00	11.00	11.00	11.00	11.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	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]	45.00			25.00			40.00			40.00		
Grade [%]	0.02			0.00			0.02			-0.02		
Crosswalk	No			No			No			No		

Volumes

Name	NE 232nd Avenue			NE 232nd Avenue			NE 28th Street			NE 28th Street		
Base Volume Input [veh/h]	115	4	18	1	2	1	9	419	152	20	229	1
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	0.00	2.00	0.00	0.00	100.00	0.00	1.00	0.00	0.00	1.00	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]	115	4	18	1	2	1	9	419	152	20	229	1
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]	33	1	5	0	1	0	3	119	43	6	65	0
Total Analysis Volume [veh/h]	131	5	20	1	2	1	10	476	173	23	260	1
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.58	0.02	0.04	0.00	0.01	0.00	0.01	0.00	0.00	0.02	0.00	0.00
d_M, Delay for Movement [s/veh]	43.57	42.25	34.75	20.44	19.99	11.28	7.75	0.00	0.00	8.83	0.00	0.00
Movement LOS	E	E	D	C	C	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	3.90	3.90	3.90	0.04	0.04	0.04	0.02	0.02	0.02	0.04	0.04	0.04
95th-Percentile Queue Length [ft/ln]	97.52	97.52	97.52	1.08	1.08	1.08	0.44	0.44	0.44	0.97	0.97	0.97
d_A, Approach Delay [s/veh]	42.40			17.93			0.12			0.72		
Approach LOS	E			C			A			A		
d_I, Intersection Delay [s/veh]	6.32											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 2: SR 500 & NE 28th Street

Control Type:	Two-way stop	Delay (sec / veh):	188.5
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.164

Intersection Setup

Name	Private Driveway			SR 500			NE 28th Street			SR 500		
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	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	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]	20.00			45.00			40.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Private Driveway			SR 500			NE 28th Street			SR 500		
Base Volume Input [veh/h]	0	0	0	213	0	58	71	360	0	0	194	205
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	6.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	5.00
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]	0	0	0	213	0	58	71	360	0	0	194	205
Peak Hour Factor	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	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	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	63	0	17	21	106	0	0	57	60
Total Analysis Volume [veh/h]	0	0	0	251	0	68	84	424	0	0	228	241
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	1.16	0.00	0.10	0.08	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	24.05	22.72	10.68	188.46	186.82	177.00	8.36	0.00	0.00	8.14	0.00	0.00
Movement LOS	C	C	B	F	F	F	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	15.85	15.85	15.85	0.15	0.15	0.15	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	396.13	396.13	396.13	3.67	3.67	3.67	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	19.15			186.01			1.38			0.00		
Approach LOS	C			F			A			A		
d_I, Intersection Delay [s/veh]	46.33											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 3: NE Everett Street & SE 8th Street

Control Type:	Two-way stop	Delay (sec / veh):	15.8
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.190

Intersection Setup

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		SE 8th Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	0
Entry Pocket Length [ft]	100.00	85.00	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		35.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		SE 8th Street	
Base Volume Input [veh/h]	324	81	14	215	66	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	0.00	0.00	4.00	0.00	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]	324	81	14	215	66	12
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	96	24	4	64	20	4
Total Analysis Volume [veh/h]	386	96	17	256	79	14
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.02	0.00	0.19	0.02
d_M, Delay for Movement [s/veh]	0.00	0.00	8.35	0.00	15.84	12.58
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.05	0.00	0.79	0.79
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.19	0.00	19.72	19.72
d_A, Approach Delay [s/veh]	0.00		0.52		15.35	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	1.85					
Intersection LOS	C					

MOVEMENT SUMMARY

Site: 4 [NE Everett St & NE Everett Dr_TotalPM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SR500/NE Everett Drive
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: SR500															
8	T1	All MCs	455	0.0	455	0.0	0.483	4.7	LOS A	3.5	88.4	0.25	0.43	0.25	35.5
18	R2	All MCs	130	1.0	130	1.0	0.483	4.6	LOS A	3.5	88.4	0.25	0.43	0.25	35.1
Approach			585	0.2	585	0.2	0.483	4.7	LOS A	3.5	88.4	0.25	0.43	0.25	35.4
East: NE Everett Drive															
1	L2	All MCs	99	0.0	99	0.0	0.142	11.6	LOS B	0.7	17.5	0.53	0.69	0.53	32.5
16	R2	All MCs	27	0.0	27	0.0	0.142	6.6	LOS A	0.7	17.5	0.53	0.69	0.53	32.8
Approach			126	0.0	126	0.0	0.142	10.5	LOS B	0.7	17.5	0.53	0.69	0.53	32.5
North: SR500															
7	L2	All MCs	46	0.0	46	0.0	0.295	9.8	LOS A	1.7	44.3	0.31	0.48	0.31	34.3
4	T1	All MCs	286	3.0	286	3.0	0.295	5.0	LOS A	1.7	44.3	0.31	0.48	0.31	34.9
Approach			332	2.6	332	2.6	0.295	5.7	LOS A	1.7	44.3	0.31	0.48	0.31	34.8
All Vehicles			1043	0.9	1043	0.9	0.483	5.7	LOS A	3.5	88.4	0.30	0.48	0.30	34.8

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection Level Of Service Report
Intersection 5: NE Everett Street & SE Leadbetter Road

Control Type:	Two-way stop	Delay (sec / veh):	32.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.172

Intersection Setup

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		SE Leadbetter Road	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	0
Entry Pocket Length [ft]	120.00	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		30.00		30.00	
Grade [%]	0.04		-0.02		0.03	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		SE Leadbetter Road	
Base Volume Input [veh/h]	142	427	288	20	25	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	4.00	5.00	5.00	0.00	1.00
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]	142	427	288	20	25	138
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]	40	120	81	6	7	39
Total Analysis Volume [veh/h]	160	480	324	22	28	155
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.13	0.00	0.00	0.00	0.17	0.22
d_M, Delay for Movement [s/veh]	8.40	0.00	0.00	0.00	32.23	15.27
Movement LOS	A	A	A	A	D	C
95th-Percentile Queue Length [veh/ln]	0.45	0.00	0.00	0.00	1.88	1.88
95th-Percentile Queue Length [ft/ln]	11.30	0.00	0.00	0.00	46.89	46.89
d_A, Approach Delay [s/veh]	2.10		0.00		17.87	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	3.95					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 6: NE Everett Street & NE 43rd Avenue

Control Type:	Signalized	Delay (sec / veh):	9.7
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.621

Intersection Setup

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		NE 43rd Avenue	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	1	0	0	1
Entry Pocket Length [ft]	100.00	300.00	120.00	100.00	100.00	80.00
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		25.00	
Grade [%]	0.03		-0.04		-0.04	
Curb Present	No		No		No	
Crosswalk	No		Yes		Yes	

Volumes

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		NE 43rd Avenue	
Base Volume Input [veh/h]	510	316	70	334	138	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	1.00	0.00	4.00	0.00	0.00
Proportion of CAVs [%]	0.00					
Growth Factor	1.0000	0.0000	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
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	510	0	70	334	138	63
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	139	0	19	91	38	17
Total Analysis Volume [veh/h]	554	0	76	363	150	68
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	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]	12.00

Phasing & Timing (Basic)

Control Type	Permissive	Permissive	ProtPerm	Permissive	Permissive	Permissive
Signal Group	2	0	1	6	8	0
Auxiliary Signal Groups						
Maximum Green [s]	40	0	20	40	40	0
Amber [s]	4.0	0.0	3.0	4.0	3.0	0.0
All red [s]	1.0	0.0	2.0	1.0	1.0	0.0
Walk [s]	7	0	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	12	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.0	0.0	3.0	3.0	2.0	0.0
Detector Location [ft]	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
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Phasing & Timing: Free Running (No Pattern)

Split [s]	14	0	9	14	9	0
Lead / Lag	-	-	Lead	-	Lead	-
Minimum Green [s]	5	0	4	5	4	0
Vehicle Extension [s]	5.0	0.0	3.0	3.5	3.0	0.0
Minimum Recall	Yes		No	Yes	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	R	L	C	L	R
C, Cycle Length [s]	37	37	37	37	37	37
L, Total Lost Time per Cycle [s]	5.00	5.00	5.00	5.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	3.00	3.00	0.00	3.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	23	23	5	5
g / C, Green / Cycle	0.43	0.43	0.62	0.62	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.31	0.00	0.07	0.20	0.08	0.04
s, saturation flow rate [veh/h]	1767	1502	1080	1840	1809	1614
c, Capacity [veh/h]	757	643	741	1147	240	215
d1, Uniform Delay [s]	8.79	0.00	4.09	3.26	15.13	14.48
k, delay calibration	0.23	0.23	0.11	0.13	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.93	0.00	0.06	0.19	2.64	0.84
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.00	0.10	0.32	0.62	0.32
d, Delay for Lane Group [s/veh]	11.72	0.00	4.15	3.45	17.77	15.32
Lane Group LOS	B	A	A	A	B	B
Critical Lane Group	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.82	0.00	0.07	0.40	1.19	0.49
50th-Percentile Queue Length [ft/ln]	70.62	0.00	1.78	9.90	29.79	12.26
95th-Percentile Queue Length [veh/ln]	5.08	0.00	0.13	0.71	2.15	0.88
95th-Percentile Queue Length [ft/ln]	127.12	0.00	3.20	17.81	53.63	22.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	11.72	0.00	4.15	3.45	17.77	15.32
Movement LOS	B	A	A	A	B	B
d_A, Approach Delay [s/veh]	11.72		3.57		17.01	
Approach LOS	B		A		B	
d_I, Intersection Delay [s/veh]	9.72					
Intersection LOS	A					
Intersection V/C	0.621					

Emissions

Vehicle Miles Traveled [mph]	324.94	0.00	5.31	25.37	3.92	1.78
Stops [stops/h]	276.48	0.00	6.97	38.75	116.64	48.02
Fuel consumption [US gal/h]	15.79	0.00	0.32	1.51	1.17	0.48
CO [g/h]	1103.47	0.00	22.31	105.80	81.53	33.29
NOx [g/h]	214.69	0.00	4.34	20.58	15.86	6.48
VOC [g/h]	255.74	0.00	5.17	24.52	18.90	7.71

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	0.00	9.04	9.04
l_p,int, Pedestrian LOS Score for Intersectio	0.000	2.288	2.018
Crosswalk LOS	F	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	2175	2175	2175
d_b, Bicycle Delay [s]	0.14	0.14	0.14
l_b,int, Bicycle LOS Score for Intersection	2.474	2.284	1.560
Bicycle LOS	B	B	A

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



MOVEMENT SUMMARY

Site: 7 [NE Everett St & NW Lake Rd_TotalPM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: NE Everett Street															
3	L2	All MCs	433	1.0	433	1.0	0.478	13.3	LOS B	3.6	90.3	0.75	0.73	0.78	31.5
8	T1	All MCs	498	2.0	498	2.0	0.476	6.2	LOS A	3.6	91.9	0.74	0.62	0.74	34.6
Approach			931	1.5	931	1.5	0.478	9.5	LOS A	3.6	91.9	0.75	0.68	0.76	33.0
North: NE Everett Street															
4	T1	All MCs	317	4.0	317	4.0	0.305	5.8	LOS A	2.1	53.0	0.65	0.57	0.65	34.6
14	R2	All MCs	295	1.0	295	1.0	0.271	5.7	LOS A	1.8	46.0	0.63	0.60	0.63	34.9
Approach			612	2.6	612	2.6	0.305	5.8	LOS A	2.1	53.0	0.64	0.58	0.64	34.7
West: NW Lake Road															
5	L2	All MCs	485	1.0	485	1.0	0.403	11.4	LOS B	2.9	73.1	0.60	0.65	0.60	31.8
12	R2	All MCs	697	2.0	697	2.0	0.587	6.1	LOS A	5.2	132.7	0.71	0.62	0.73	34.7
Approach			1182	1.6	1182	1.6	0.587	8.3	LOS A	5.2	132.7	0.66	0.63	0.68	33.4
All Vehicles			2724	1.8	2724	1.8	0.587	8.1	LOS A	5.2	132.7	0.69	0.64	0.70	33.6

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Signalised Intersections.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
Intersection and Approach LOS values are based on average delay for all movements (v/c not used).
Roundabout Capacity Model: SIDRA HCM.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Intersection Level Of Service Report
Intersection 8: NE Everett Street & NE 17th Avenue

Control Type:	Two-way stop	Delay (sec / veh):	45.2
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.562

Intersection Setup

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		NE 17th Avenue	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	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	No		Yes		Yes	

Volumes

Name	NE Everett Street (SR 500)		NE Everett Street (SR 500)		NE 17th Avenue	
Base Volume Input [veh/h]	82	553	711	80	130	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	2.00	3.00	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]	82	553	711	80	130	50
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	147	189	21	35	13
Total Analysis Volume [veh/h]	87	588	756	85	138	53
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.01	0.01	0.00	0.56	0.14
d_M, Delay for Movement [s/veh]	10.03	0.00	0.00	0.00	45.23	39.84
Movement LOS	B	A	A	A	E	E
95th-Percentile Queue Length [veh/ln]	0.36	0.00	0.00	0.00	4.75	4.75
95th-Percentile Queue Length [ft/ln]	9.08	0.00	0.00	0.00	118.73	118.73
d_A, Approach Delay [s/veh]	1.29		0.00		43.74	
Approach LOS	A		A		E	
d_I, Intersection Delay [s/veh]	5.40					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 9: NE Everett Street & NE 15th Avenue

Control Type:	Two-way stop	Delay (sec / veh):	94.3
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.750

Intersection Setup

Name	NE Everett Street (SR 500)			NE Everett Street (SR 500)			NE 15th Avenue			NE 15th Avenue		
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	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NE Everett Street (SR 500)			NE Everett Street (SR 500)			NE 15th Avenue			NE 15th Avenue		
Base Volume Input [veh/h]	32	541	11	28	583	145	70	18	63	1	10	24
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	2.00	1.00	0.00	0.00	3.00	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]	32	541	11	28	583	145	70	18	63	1	10	24
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]	9	150	3	8	162	40	19	5	18	0	3	7
Total Analysis Volume [veh/h]	36	601	12	31	648	161	78	20	70	1	11	27
Pedestrian Volume [ped/h]	8			2			0			5		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			Yes	No
Storage Area [veh]	0	0	2	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	0.01	0.00	0.03	0.01	0.00	0.75	0.09	0.13	0.01	0.10	0.05
d_M, Delay for Movement [s/veh]	9.56	0.00	0.00	8.84	0.00	0.00	94.31	76.36	66.47	59.45	42.58	15.65
Movement LOS	A	A	A	A	A	A	F	F	F	F	E	C
95th-Percentile Queue Length [veh/ln]	0.14	0.00	0.00	0.10	0.00	0.00	6.22	6.22	6.22	0.61	0.61	0.61
95th-Percentile Queue Length [ft/ln]	3.42	0.00	0.00	2.48	0.00	0.00	155.52	155.52	155.52	15.36	15.36	15.36
d_A, Approach Delay [s/veh]	0.53			0.33			80.57			24.37		
Approach LOS	A			A			F			C		
d_I, Intersection Delay [s/veh]	8.91											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 10: NE Everett Street & NE 14th Avenue

Control Type:	Two-way stop	Delay (sec / veh):	64.2
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.515

Intersection Setup

Name				NE Everett Street (SR 500)			NE 14th Avenue			SR 500		
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	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			2.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				NE Everett Street (SR 500)			NE 14th Avenue			SR 500		
Base Volume Input [veh/h]	0	0	0	563	0	66	77	91	0	0	35	469
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	3.00	2.00	0.00	0.00	2.00	2.00	2.00	3.00	1.00
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]	0	0	0	563	0	66	77	91	0	0	35	469
Peak Hour Factor	0.8600	0.8600	0.8600	0.8600	1.0000	0.8600	0.8600	0.8600	1.0000	1.0000	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]	0	0	0	164	0	19	22	26	0	0	10	136
Total Analysis Volume [veh/h]	0	0	0	655	0	77	90	106	0	0	41	545
Pedestrian Volume [ped/h]	3			1			5			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				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	0.41	0.00	0.00	0.52	0.27	0.00	0.00	0.11	0.50
d_M, Delay for Movement [s/veh]	7.28	0.00	0.00	9.07	0.00	0.00	64.25	52.93	0.00	0.00	20.05	13.95
Movement LOS	A	A	A	A		A	F	F			C	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.00	2.28	0.00	2.28	5.91	5.91	0.00	0.00	4.28	4.28
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.00	56.91	0.00	56.91	147.70	147.70	0.00	0.00	106.97	106.97
d_A, Approach Delay [s/veh]	2.43			8.12			58.13			14.38		
Approach LOS	A			A			F			B		
d_I, Intersection Delay [s/veh]	17.02											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 11: NE Dallas Street & NE 6th Avenue

Control Type:	Two-way stop	Delay (sec / veh):	38.0
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.148

Intersection Setup

Name	NE Dallas Street			NE Dallas Street			NE 6th Avenue			NE 6th Avenue		
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	0	0	0	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	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			30.00			25.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NE Dallas Street			NE Dallas Street			NE 6th Avenue			NE 6th Avenue		
Base Volume Input [veh/h]	81	133	7	8	280	59	34	186	79	13	156	21
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	0.00	0.00	0.00	2.00	0.00	3.00	1.00	1.00	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]	81	133	7	8	280	59	34	186	79	13	156	21
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	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	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	37	2	2	79	17	10	52	22	4	44	6
Total Analysis Volume [veh/h]	91	149	8	9	315	66	38	209	89	15	175	24
Pedestrian Volume [ped/h]	0			9			1			1		

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	0.08	0.00	0.00	0.01	0.00	0.00	0.15	0.48	0.11	0.07	0.41	0.03
d_M, Delay for Movement [s/veh]	8.20	0.00	0.00	7.52	0.00	0.00	37.98	32.18	28.60	31.17	22.00	17.45
Movement LOS	A	A	A	A	A	A	E	D	D	D	C	C
95th-Percentile Queue Length [veh/ln]	0.16	0.16	0.16	0.02	0.02	0.02	5.99	5.99	5.99	2.81	2.81	2.81
95th-Percentile Queue Length [ft/ln]	4.03	4.03	4.03	0.39	0.39	0.39	149.81	149.81	149.81	70.21	70.21	70.21
d_A, Approach Delay [s/veh]	3.01			0.17			31.89			22.13		
Approach LOS	A			A			D			C		
d_I, Intersection Delay [s/veh]	13.69											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 12: Division Street & NE 6th Avenue

Control Type:	Two-way stop	Delay (sec / veh):	34.2
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.241

Intersection Setup

Name	Division Street		NW 6th Avenue		NE 6th Avenue	
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	1	0	0	0	0
Entry Pocket Length [ft]	100.00	40.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	1	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	49.21	0.00	0.00
Speed [mph]	25.00		35.00		35.00	
Grade [%]	-0.12		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Division Street		NW 6th Avenue		NE 6th Avenue	
Base Volume Input [veh/h]	37	145	126	958	1008	53
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	2.00	0.00	2.00	3.00	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]	37	145	126	958	1008	53
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	38	33	252	265	14
Total Analysis Volume [veh/h]	39	153	133	1008	1061	56
Pedestrian Volume [ped/h]	2		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
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	0.24	0.27	0.21	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	34.25	13.68	10.87	0.00	0.00	0.00
Movement LOS	D	B	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.90	1.09	0.24	0.12	0.00	0.00
95th-Percentile Queue Length [ft/ln]	22.55	27.14	5.98	2.99	0.00	0.00
d_A, Approach Delay [s/veh]	17.86		1.27		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.99					
Intersection LOS	D					

MOVEMENT SUMMARY

Site: 13 [NW Norwood St & NW 6th Ave_TotalPM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Existing AM
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] ft	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed mph
South: NW 6th Avenue															
3	L2	All MCs	67	2.0	67	2.0	0.926	59.6	LOS E	14.1	358.5	1.00	1.40	2.15	19.8
8	T1	All MCs	5	0.0	5	0.0	0.926	53.0	LOS D	14.1	358.5	1.00	1.40	2.15	20.1
18	R2	All MCs	236	2.0	236	2.0	0.926	53.5	LOS D	14.1	358.5	1.00	1.40	2.15	20.0
Approach			308	2.0	308	2.0	0.926	54.8	LOS D	14.1	358.5	1.00	1.40	2.15	19.9
East: NW 6th Avenue															
1	L2	All MCs	115	3.0	115	3.0	0.957	14.4	LOS E	28.9	745.0	1.00	0.77	1.05	32.6
6	T1	All MCs	1021	4.0	1021	4.0	0.957	8.2	LOS E	28.9	745.0	1.00	0.77	1.05	33.3
16	R2	All MCs	11	0.0	11	0.0	0.957	8.1	LOS E	28.9	745.0	1.00	0.77	1.05	33.1
Approach			1147	3.9	1147	3.9	0.957	8.8	LOS A	28.9	745.0	1.00	0.77	1.05	33.2
North: NW Norwood Street															
7	L2	All MCs	7	0.0	7	0.0	0.204	23.4	LOS C	1.5	37.9	1.00	0.87	1.00	27.1
4	T1	All MCs	14	0.0	14	0.0	0.204	17.1	LOS B	1.5	37.9	1.00	0.87	1.00	27.6
14	R2	All MCs	31	7.0	31	7.0	0.204	28.2	LOS C	1.5	37.9	1.00	0.87	1.00	6.9
Approach			52	4.2	52	4.2	0.204	24.6	LOS C	1.5	37.9	1.00	0.87	1.00	9.9
West: NW 6th Avenue															
5	L2	All MCs	26	0.0	26	0.0	1.000	25.9	LOS E	42.5	1079.5	1.00	1.25	1.40	28.8
2	T1	All MCs	1057	2.0	1057	2.0	1.000	19.8	LOS E	42.5	1079.5	1.00	1.25	1.40	29.3
12	R2	All MCs	91	1.0	91	1.0	1.000	19.9	LOS E	42.5	1079.5	1.00	1.25	1.40	29.0
Approach			1174	1.9	1174	1.9	1.000	19.9	LOS B	42.5	1079.5	1.00	1.25	1.40	29.2
All Vehicles			2681	2.8	2681	2.8	1.000	19.3	LOS B	42.5	1079.5	1.00	1.05	1.33	28.1

Site Level of Service (LOS) Method: Delay & Degree of Saturation (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).

Intersection Level Of Service Report
Intersection 14: NW Lacamas Lane & NW Lake Road

Control Type:	Two-way stop	Delay (sec / veh):	23.1
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.034

Intersection Setup

Name	NW Lacamas Lane		NW Lake Road		NW Lake Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	1	0
Entry Pocket Length [ft]	100.00	85.00	100.00	100.00	110.00	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 [%]	-0.11		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	NW Lacamas Lane		NW Lake Road		NW Lake Road	
Base Volume Input [veh/h]	6	66	1081	6	55	634
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	5.00	1.00	0.00	2.00	1.00
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]	6	66	1081	6	55	634
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	2	18	294	2	15	172
Total Analysis Volume [veh/h]	7	72	1175	7	60	689
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
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	0.03	0.22	0.01	0.00	0.10	0.01
d_M, Delay for Movement [s/veh]	23.14	19.03	0.00	0.00	11.78	0.00
Movement LOS	C	C	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.11	0.82	0.00	0.00	0.34	0.00
95th-Percentile Queue Length [ft/ln]	2.63	20.56	0.00	0.00	8.43	0.00
d_A, Approach Delay [s/veh]	19.39		0.00		0.94	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.11					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 15: NW Sierra Street & NW Lake Road

Control Type:	Two-way stop	Delay (sec / veh):	221.8
Analysis Method:	HCM 7th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.008

Intersection Setup

Name	NW Sierra Street		NW Lake Road		NW Lake Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	1	0	0	1	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		35.00		35.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		No		No	

Volumes

Name	NW Sierra Street		NW Lake Road		NW Lake Road	
Base Volume Input [veh/h]	60	231	850	133	126	535
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	1.00	2.00	0.00	1.00
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]	60	231	850	133	126	535
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	16	63	231	36	34	145
Total Analysis Volume [veh/h]	65	251	924	145	137	582
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
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	1.01	0.84	0.01	0.00	0.21	0.01
d_M, Delay for Movement [s/veh]	221.76	57.37	0.00	0.00	11.88	0.00
Movement LOS	F	F	A	A	B	A
95th-Percentile Queue Length [veh/ln]	4.97	7.15	0.00	0.00	0.78	0.00
95th-Percentile Queue Length [ft/ln]	124.23	178.77	0.00	0.00	19.43	0.00
d_A, Approach Delay [s/veh]	91.18		0.00		2.26	
Approach LOS	F		A		A	
d_I, Intersection Delay [s/veh]	14.47					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 16: NW Lake Road & NW Leadbetter Drive

Control Type:	Two-way stop	Delay (sec / veh):	46.4
Analysis Method:	HCM 7th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.044

Intersection Setup

Name	NW Leadbetter Drive			NW Leadbetter Drive			NW Lake Road			NW Lake Road		
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	0	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	135.00	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]	30.00			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	NW Leadbetter Drive			NW Leadbetter Drive			NW Lake Road			NW Lake Road		
Base Volume Input [veh/h]	7	14	147	4	5	13	15	831	8	63	511	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 [%]	14.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	12.00	0.00	1.00	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]	7	14	147	4	5	13	15	831	8	63	511	7
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]	2	4	40	1	1	4	4	228	2	17	140	2
Total Analysis Volume [veh/h]	8	15	162	4	5	14	16	913	9	69	562	8
Pedestrian Volume [ped/h]	2			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
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	0.06	0.11	0.41	0.04	0.03	0.02	0.02	0.01	0.00	0.09	0.01	0.00
d_M, Delay for Movement [s/veh]	45.56	45.07	28.34	46.43	27.09	12.20	8.61	0.00	0.00	10.31	0.00	0.00
Movement LOS	E	E	D	E	D	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	3.40	3.40	3.40	0.31	0.31	0.31	0.05	0.00	0.00	0.30	0.00	0.00
95th-Percentile Queue Length [ft/ln]	85.09	85.09	85.09	7.77	7.77	7.77	1.20	0.00	0.00	7.61	0.00	0.00
d_A, Approach Delay [s/veh]	30.44			21.39			0.15			1.11		
Approach LOS	D			C			A			A		
d_I, Intersection Delay [s/veh]	3.91											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 17: NW Parker Street & NW Lake Road

Control Type:	Signalized	Delay (sec / veh):	29.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.708

Intersection Setup

Name	NW Parker Street			NW Larkspur Street			NW Lake Road			NW Lake Road		
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]	265.00	100.00	100.00	80.00	100.00	100.00	110.00	100.00	100.00	75.00	100.00	85.00
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			25.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker Street			NW Larkspur Street			NW Lake Road			NW Lake Road		
Base Volume Input [veh/h]	248	130	142	61	93	21	25	667	303	60	448	35
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	1.00	1.00	2.00	0.00	0.00	0.00	1.00	0.00	2.00	1.00	3.00
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]	248	130	142	61	93	21	25	667	303	60	448	35
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
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]	67	35	38	16	25	6	7	179	81	16	120	9
Total Analysis Volume [veh/h]	267	140	153	66	100	23	27	717	326	65	482	38
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]	3			1			1			4		

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	Overlap	ProtPer	Permiss	Permiss
Signal Group	7	4	0	3	8	0	5	2	7	1	6	0
Auxiliary Signal Groups									2,7			
Maximum Green [s]	15	30	0	15	20	0	15	45	15	25	45	0
Amber [s]	3.0	3.6	0.0	3.0	3.0	0.0	3.0	4.0	3.0	3.0	3.6	0.0
All red [s]	2.2	2.3	0.0	2.6	3.3	0.0	2.5	1.7	2.2	2.7	1.9	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	18	0	0	22	0	0	16	0	0	10	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	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	3.2	3.9	0.0	3.6	4.3	0.0	3.5	3.7	3.2	3.7	3.5	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	9	9	14	0
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	8	5	5	8	0
Vehicle Extension [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	Yes	No	No	Yes	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	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	L	C	L	C	R	L	C	C
C, Cycle Length [s]	81	81	81	81	81	81	81	81	81	81
L, Total Lost Time per Cycle [s]	5.55	5.90	5.95	6.30	5.60	5.70	5.70	5.60	5.50	5.50
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	3.90	0.00	4.30	0.00	3.70	0.00	0.00	3.50	3.50
g_i, Effective Green Time [s]	27	17	27	16	42	33	43	42	33	33
g / C, Green / Cycle	0.34	0.21	0.34	0.20	0.53	0.41	0.53	0.52	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.17	0.17	0.05	0.07	0.02	0.38	0.21	0.07	0.14	0.14
s, saturation flow rate [veh/h]	1527	1701	1396	1834	1134	1885	1588	879	1885	1830
c, Capacity [veh/h]	463	359	312	370	533	765	845	299	780	757
d1, Uniform Delay [s]	26.43	30.36	29.20	27.60	14.70	23.04	11.10	29.68	16.14	16.17
k, delay calibration	0.12	0.27	0.04	0.04	0.04	0.50	0.04	0.04	0.04	0.04
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]	1.21	10.52	0.12	0.19	0.01	20.50	0.11	0.13	0.09	0.10
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	0.58	0.82	0.21	0.33	0.05	0.94	0.39	0.22	0.34	0.34
d, Delay for Lane Group [s/veh]	27.64	40.89	29.33	27.79	14.71	43.54	11.21	29.82	16.24	16.26
Lane Group LOS	C	D	C	C	B	D	B	C	B	B
Critical Lane Group	No	No	No	Yes	No	Yes	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.81	6.21	0.85	2.03	0.21	16.15	3.03	0.52	3.08	3.02
50th-Percentile Queue Length [ft/ln]	95.24	155.20	21.20	50.72	5.19	403.80	75.85	13.00	76.98	75.45
95th-Percentile Queue Length [veh/ln]	6.86	10.29	1.53	3.65	0.37	22.74	5.46	0.94	5.54	5.43
95th-Percentile Queue Length [ft/ln]	171.44	257.36	38.15	91.30	9.33	568.57	136.53	23.41	138.57	135.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.64	40.89	40.89	29.33	27.79	27.79	14.71	43.54	11.21	29.82	16.25	16.26
Movement LOS	C	D	D	C	C	C	B	D	B	C	B	B
d_A, Approach Delay [s/veh]	34.57			28.33			32.96			17.76		
Approach LOS	C			C			C			B		
d_I, Intersection Delay [s/veh]	29.27											
Intersection LOS	C											
Intersection V/C	0.708											

Emissions

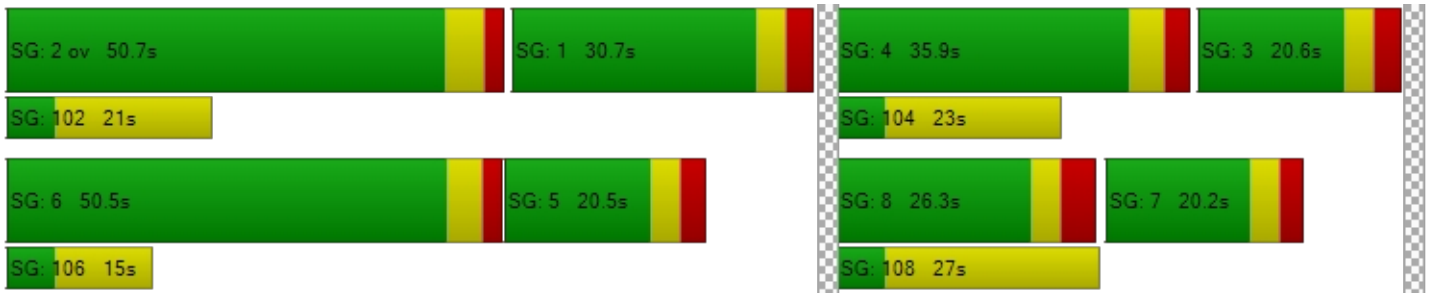
Vehicle Miles Traveled [mph]	123.72	135.77	4.54	8.46	23.88	634.26	288.38	46.33	187.33	183.31
Stops [stops/h]	170.16	277.28	37.87	90.62	9.26	721.41	135.51	23.23	137.54	134.79
Fuel consumption [US gal/h]	7.50	9.70	0.74	1.42	1.06	35.95	12.76	2.34	9.04	8.85
CO [g/h]	524.07	677.90	51.94	99.51	74.16	2513.19	891.59	163.22	632.13	618.77
NOx [g/h]	101.96	131.89	10.11	19.36	14.43	488.98	173.47	31.76	122.99	120.39
VOC [g/h]	121.46	157.11	12.04	23.06	17.19	582.46	206.63	37.83	146.50	143.41

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]	31.80	31.80	31.80	31.80
l_p,int, Pedestrian LOS Score for Intersectio	2.414	2.076	3.017	2.639
Crosswalk LOS	B	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	744	496	1117	1117
d_b, Bicycle Delay [s]	15.91	22.79	7.87	7.88
l_b,int, Bicycle LOS Score for Intersection	2.484	1.871	3.325	2.042
Bicycle LOS	B	A	C	B

Sequence

Ring 1	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	8	7	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: NW Friberg-Strunk Street & NW Lake Road

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):	0.780

Intersection Setup

Name	Private Driveway			NW Friberg-Strunk Street			NW 1st Street			NW Lake Road		
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	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	140.00	220.00	100.00	100.00	85.00	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]	20.00			40.00			40.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Private Driveway			NW Friberg-Strunk Street			NW 1st Street			NW Lake Road		
Base Volume Input [veh/h]	0	0	0	147	0	213	392	936	0	6	667	156
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	2.00	0.00	1.00	0.00	0.00	1.00	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	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	147	0	213	392	936	0	6	667	156
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]	0	0	0	40	0	58	107	254	0	2	181	42
Total Analysis Volume [veh/h]	0	0	0	160	0	232	426	1017	0	7	725	170
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			2			4			2		

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	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Maximum Green [s]	0	30	0	0	30	0	25	45	0	15	45	0
Amber [s]	0.0	3.0	0.0	0.0	4.0	0.0	3.0	4.0	0.0	3.0	4.0	0.0
All red [s]	0.0	2.9	0.0	0.0	2.0	0.0	2.6	1.5	0.0	2.8	1.6	0.0
Walk [s]	0	7	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	0	0	0	14	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]	0.0	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]	0.0	3.9	0.0	0.0	4.0	0.0	3.6	3.5	0.0	3.8	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]	0	14	0	0	14	0	9	14	0	9	14	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	0	5	8	0	5	8	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	Yes		No	Yes	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		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	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	63	63	63	63	63	63	63	63	63
L, Total Lost Time per Cycle [s]	5.90	6.00	6.00	5.60	5.50	5.50	5.80	5.60	5.60
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	4.00	4.00	3.60	3.50	3.50	3.80	3.60	3.60
g_i, Effective Green Time [s]	11	11	11	17	34	34	1	18	18
g / C, Green / Cycle	0.18	0.18	0.18	0.26	0.54	0.54	0.01	0.28	0.28
(v / s)_i Volume / Saturation Flow Rate	0.00	0.11	0.15	0.24	0.27	0.27	0.00	0.25	0.25
s, saturation flow rate [veh/h]	1795	1504	1566	1810	1885	1885	1810	1885	1745
c, Capacity [veh/h]	303	383	280	479	1013	1013	17	535	495
d1, Uniform Delay [s]	0.00	23.54	24.89	22.30	9.24	9.24	31.07	21.44	21.51
k, delay calibration	0.04	0.04	0.04	0.06	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.27	2.40	3.27	0.14	0.14	6.13	1.68	1.96
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.42	0.83	0.89	0.50	0.50	0.42	0.86	0.87
d, Delay for Lane Group [s/veh]	0.00	23.81	27.29	25.57	9.38	9.38	37.20	23.13	23.47
Lane Group LOS	A	C	C	C	A	A	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.00	1.99	3.18	5.74	3.35	3.35	0.13	6.16	5.82
50th-Percentile Queue Length [ft/ln]	0.00	49.68	79.51	143.51	83.79	83.79	3.25	153.99	145.39
95th-Percentile Queue Length [veh/ln]	0.00	3.58	5.72	9.67	6.03	6.03	0.23	10.23	9.77
95th-Percentile Queue Length [ft/ln]	0.00	89.43	143.12	241.74	150.81	150.81	5.84	255.74	244.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	23.81	23.81	27.29	25.57	9.38	9.38	37.20	23.25	23.47
Movement LOS	A	A	A	C	C	C	C	A	A	D	C	C
d_A, Approach Delay [s/veh]	0.00			25.87			14.16			23.40		
Approach LOS	A			C			B			C		
d_I, Intersection Delay [s/veh]	18.88											
Intersection LOS	B											
Intersection V/C	0.780											

Emissions

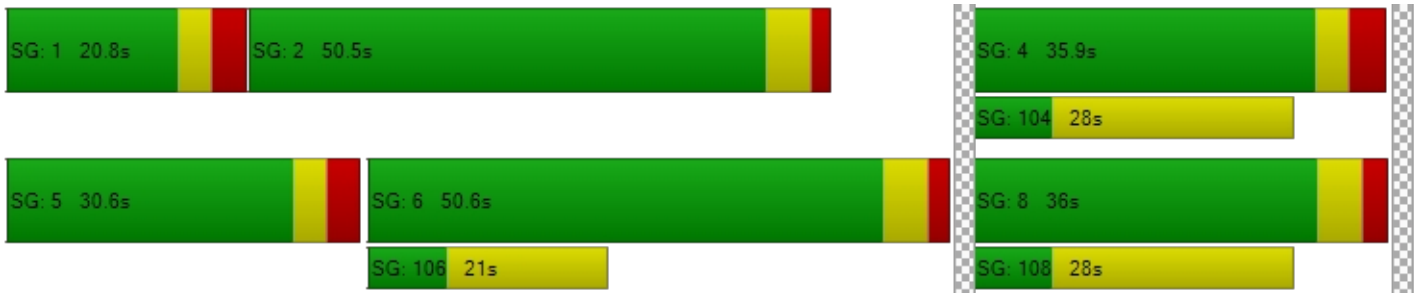
Vehicle Miles Traveled [mph]	0.00	11.34	16.44	46.13	55.07	55.07	6.19	409.06	382.66
Stops [stops/h]	0.00	113.67	181.91	328.32	191.69	191.69	7.43	352.30	332.63
Fuel consumption [US gal/h]	0.00	2.30	3.66	7.09	4.83	4.83	0.35	20.96	19.66
CO [g/h]	0.00	160.64	256.14	495.90	337.36	337.36	24.39	1465.26	1374.00
NOx [g/h]	0.00	31.25	49.83	96.48	65.64	65.64	4.75	285.09	267.33
VOC [g/h]	0.00	37.23	59.36	114.93	78.19	78.19	5.65	339.59	318.44

Other Modes

g_Walk,mi, Effective Walk Time [s]	8.5	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]	23.54	21.43	21.43	21.43
l_p,int, Pedestrian LOS Score for Intersectio	1.701	2.349	2.904	2.913
Crosswalk LOS	A	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	953	953	1430	1430
d_b, Bicycle Delay [s]	8.62	8.63	2.56	2.56
l_b,int, Bicycle LOS Score for Intersection	1.560	2.206	2.750	2.304
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: NW Parker Street & NW Leadbetter Drive

Control Type:	Two-way stop	Delay (sec / veh):	27.3
Analysis Method:	HCM 7th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.291

Intersection Setup

Name	NW Parker Street		NW Parker Street		NW Leadbetter Drive	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	1
Entry Pocket Length [ft]	100.00	100.00	80.00	100.00	100.00	180.00
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		30.00	
Grade [%]	0.02		-0.02		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	NW Parker Street		NW Parker Street		NW Leadbetter Drive	
Base Volume Input [veh/h]	413	168	65	296	59	52
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	1.00	0.00	0.00	4.00	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]	413	168	65	296	59	52
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]	116	47	18	83	17	15
Total Analysis Volume [veh/h]	464	189	73	333	66	58
Pedestrian Volume [ped/h]	0		0		13	

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	0.08	0.00	0.29	0.11
d_M, Delay for Movement [s/veh]	0.00	0.00	9.24	0.00	27.28	12.84
Movement LOS	A	A	A	A	D	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.26	0.00	1.16	0.38
95th-Percentile Queue Length [ft/ln]	0.00	0.00	6.44	0.00	29.12	9.41
d_A, Approach Delay [s/veh]	0.00		1.66		20.52	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	2.72					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 20: NW Parker Street & NW 38th Avenue

Control Type:	Signalized	Delay (sec / veh):	27.4
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

Intersection Setup

Name	NW Parker Street			NW Parker Street			NW 38th Avenue			NW 38th Avenue		
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	1	1	0	0	1	0	0
Entry Pocket Length [ft]	130.00	100.00	100.00	245.00	100.00	130.00	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	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker Street			NW Parker Street			NW 38th Avenue			NW 38th Avenue		
Base Volume Input [veh/h]	100	398	194	59	255	92	126	277	106	104	125	39
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	0.00	1.00	0.00	0.00	0.00	1.00	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	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	100	398	194	59	255	92	126	277	106	104	125	39
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]	29	116	56	17	74	27	37	81	31	30	36	11
Total Analysis Volume [veh/h]	116	463	226	69	297	107	147	322	123	121	145	45
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]	4			13			4			11		

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]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	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]	74	74	74	74	74	74	74	74	74	74
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]	32	21	32	32	21	32	31	20	30	20
g / C, Green / Cycle	0.43	0.29	0.43	0.43	0.29	0.44	0.41	0.27	0.41	0.26
(v / s)_i Volume / Saturation Flow Rate	0.09	0.25	0.14	0.06	0.16	0.07	0.10	0.25	0.16	0.11
s, saturation flow rate [veh/h]	1310	1885	1587	1182	1900	1566	1467	1797	741	1778
c, Capacity [veh/h]	451	538	681	359	550	686	517	484	355	471
d1, Uniform Delay [s]	22.28	25.04	14.05	25.39	22.12	12.56	20.65	26.25	25.45	22.37
k, delay calibration	0.04	0.16	0.04	0.04	0.14	0.04	0.04	0.28	0.04	0.04
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]	0.11	6.22	0.11	0.10	1.09	0.04	0.11	16.55	0.22	0.21
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	0.26	0.86	0.33	0.19	0.54	0.16	0.28	0.92	0.34	0.40
d, Delay for Lane Group [s/veh]	22.39	31.26	14.15	25.49	23.21	12.60	20.76	42.80	25.68	22.58
Lane Group LOS	C	C	B	C	C	B	C	D	C	C
Critical Lane Group	No	Yes	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.09	8.01	2.28	0.63	4.20	0.98	1.40	9.12	1.15	2.53
50th-Percentile Queue Length [ft/ln]	27.15	200.16	56.93	15.65	105.10	24.38	35.06	228.03	28.84	63.16
95th-Percentile Queue Length [veh/ln]	1.96	12.65	4.10	1.13	7.57	1.76	2.52	14.07	2.08	4.55
95th-Percentile Queue Length [ft/ln]	48.88	316.17	102.48	28.18	189.17	43.89	63.10	351.85	51.91	113.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	22.39	31.26	14.15	25.49	23.21	12.60	20.76	42.80	42.80	25.68	22.58	22.58
Movement LOS	C	C	B	C	C	B	C	D	D	C	C	C
d_A, Approach Delay [s/veh]	25.18			21.14			37.33			23.79		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	27.40											
Intersection LOS	C											
Intersection V/C	0.761											

Emissions

Vehicle Miles Traveled [mph]	15.76	62.89	30.70	40.39	173.86	62.64	30.95	93.68	28.22	44.31
Stops [stops/h]	52.95	390.27	111.01	30.52	204.93	47.54	68.35	444.62	56.23	123.15
Fuel consumption [US gal/h]	1.53	8.28	2.66	2.13	9.57	3.02	2.40	11.60	2.20	3.67
CO [g/h]	106.75	578.62	185.64	148.68	669.05	211.06	167.82	810.81	153.46	256.54
NOx [g/h]	20.77	112.58	36.12	28.93	130.17	41.06	32.65	157.75	29.86	49.91
VOC [g/h]	24.74	134.10	43.02	34.46	155.06	48.92	38.89	187.91	35.57	59.46

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]	28.47	28.47	28.47	28.47
l_p,int, Pedestrian LOS Score for Intersectio	2.644	2.615	2.486	2.415
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]	677	677	542	542
d_b, Bicycle Delay [s]	16.19	16.26	19.67	19.74
l_b,int, Bicycle LOS Score for Intersection	2.888	2.340	2.536	2.073
Bicycle LOS	C	B	B	B

Sequence

Ring 1	2	1	4	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	5	8	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 21: N Shore Boulevard and NE 232nd Avenue

Control Type:	Two-way stop	Delay (sec / veh):	10.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.219

Intersection Setup

Name	N Shore Boulevard		NE 232nd Avenue		NE 232nd Avenue	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	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]	35.00		45.00		45.00	
Grade [%]	0.00		-0.02		0.02	
Crosswalk	No		No		No	

Volumes

Name	N Shore Boulevard		NE 232nd Avenue		NE 232nd Avenue	
Base Volume Input [veh/h]	16	5	10	139	138	25
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	0.00	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]	16	5	10	139	138	25
Peak Hour Factor	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	2	3	45	45	8
Total Analysis Volume [veh/h]	21	6	13	181	179	32
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.00	0.00	0.00	0.22	0.03
d_M, Delay for Movement [s/veh]	7.61	0.00	0.00	0.00	10.85	10.23
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.04	0.04	0.00	0.00	1.00	1.00
95th-Percentile Queue Length [ft/ln]	0.89	0.89	0.00	0.00	25.00	25.00
d_A, Approach Delay [s/veh]	5.92		0.00		10.75	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	5.62					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 22: SE 283rd Avenue & SE Nourse Road

Control Type:	Two-way stop	Delay (sec / veh):	13.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.034

Intersection Setup

Name	SE 283rd Avenue		SE 283rd Avenue		NE 43rd Avenue	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	11.00	11.00	11.00	11.00	11.00	11.00
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 [%]	0.00		0.00		0.02	
Crosswalk	No		No		No	

Volumes

Name	SE 283rd Avenue		SE 283rd Avenue		NE 43rd Avenue	
Base Volume Input [veh/h]	102	128	110	6	14	143
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	4.00	4.00	0.00	0.00	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]	102	128	110	6	14	143
Peak Hour Factor	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
Total 15-Minute Volume [veh/h]	28	36	31	2	4	40
Total Analysis Volume [veh/h]	113	142	122	7	16	159
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.08	0.00	0.00	0.00	0.03	0.17
d_M, Delay for Movement [s/veh]	7.58	0.00	0.00	0.00	13.80	10.00
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.20	0.20	0.00	0.00	0.77	0.77
95th-Percentile Queue Length [ft/ln]	5.02	5.02	0.00	0.00	19.32	19.32
d_A, Approach Delay [s/veh]	3.36		0.00		10.34	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	4.77					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 23: SE 283rd Avenue & SE 23rd Street

Control Type:	Two-way stop	Delay (sec / veh):	13.1
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.062

Intersection Setup

Name	SE 283rd Avenue		SE 283rd Avenue		SE 23rd Street	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	11.00	11.00	11.00	11.00	11.00	11.00
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]	40.00		40.00		40.00	
Grade [%]	-0.02		0.02		-0.03	
Crosswalk	No		No		No	

Volumes

Name	SE 283rd Avenue		SE 283rd Avenue		SE 23rd Street	
Base Volume Input [veh/h]	180	25	70	187	29	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	0.00	0.00	3.00	7.00	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]	180	25	70	187	29	60
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	7	19	50	8	16
Total Analysis Volume [veh/h]	194	27	75	201	31	65
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
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	0.06	0.00	0.06	0.08
d_M, Delay for Movement [s/veh]	0.00	0.00	7.73	0.00	13.10	10.12
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.13	0.13	0.48	0.48
95th-Percentile Queue Length [ft/ln]	0.00	0.00	3.26	3.26	12.09	12.09
d_A, Approach Delay [s/veh]	0.00		2.10		11.08	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.77					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 24: SE 283rd Avenue and NE Woodburn Drive

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):	0.031

Intersection Setup

Name	SE 283rd Avenue		SE 283rd Avenue		NE Woodburn Drive	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	0	0	1
Entry Pocket Length [ft]	175.00	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		30.00		30.00	
Grade [%]	-0.02		0.02		0.02	
Crosswalk	No		No		Yes	

Volumes

Name	SE 283rd Avenue		SE 283rd Avenue		NE Woodburn Drive	
Base Volume Input [veh/h]	95	224	211	16	10	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	1.00	3.00	0.00	0.00	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]	95	224	211	16	10	88
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	62	58	4	3	24
Total Analysis Volume [veh/h]	104	246	232	18	11	97
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	0.08	0.00	0.00	0.00	0.03	0.12
d_M, Delay for Movement [s/veh]	7.94	0.00	0.00	0.00	15.59	10.21
Movement LOS	A	A	A	A	C	B
95th-Percentile Queue Length [veh/ln]	0.25	0.00	0.00	0.00	0.10	0.42
95th-Percentile Queue Length [ft/ln]	6.37	0.00	0.00	0.00	2.42	10.49
d_A, Approach Delay [s/veh]	2.36		0.00		10.76	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	2.81					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 25: SE Crown Road & NE 3rd Avenue

Control Type:	Signalized	Delay (sec / veh):	12.2
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.661

Intersection Setup

Name	SE Crown Road			SE Crown Road			NE 3rd Avenue			NE 3rd Avenue		
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	0	0	1	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	30.00	110.00	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]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	SE Crown Road			SE Crown Road			NE 3rd Avenue			NE 3rd Avenue		
Base Volume Input [veh/h]	7	3	3	119	2	166	222	1087	4	0	760	175
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	2.00	0.00	1.00	0.00	2.00	0.00	0.00	2.00	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	0	0	0	60	0	0	0	0	0	0
Total Hourly Volume [veh/h]	7	3	3	119	2	106	222	1087	4	0	760	175
Peak Hour Factor	0.8900	0.8900	0.8900	0.8900	0.8900	0.8900	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	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	1	1	33	1	30	62	305	1	0	213	49
Total Analysis Volume [veh/h]	8	3	3	134	2	119	249	1221	4	0	854	197
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			2			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	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	4	0	0	8	5	5	2	0	1	6	0
Auxiliary Signal Groups						5,8						
Maximum Green [s]	0	25	0	0	25	25	25	45	0	15	45	0
Amber [s]	0.0	3.0	0.0	0.0	4.0	3.0	3.0	3.0	0.0	3.0	4.0	0.0
All red [s]	0.0	3.8	0.0	0.0	2.0	2.6	2.6	2.0	0.0	2.2	1.3	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	21	0	0	24	0	0	11	0	0	10	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]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	4.8	0.0	0.0	4.0	3.6	3.6	3.0	0.0	3.2	3.3	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]	0	14	0	0	14	9	9	14	0	9	14	0
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	5	0	0	5	5	5	8	0	5	8	0
Vehicle Extension [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		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	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	45	45	45	45	45	45	45	45	45
L, Total Lost Time per Cycle [s]	6.80	6.00	5.60	5.60	5.00	5.00	5.20	5.30	5.30
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	4.80	0.00	0.00	3.60	3.00	3.00	3.20	3.30	3.30
g_i, Effective Green Time [s]	4	5	19	8	24	24	0	15	15
g / C, Green / Cycle	0.09	0.11	0.42	0.18	0.53	0.53	0.00	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.03	0.08	0.07	0.14	0.33	0.33	0.00	0.29	0.29
s, saturation flow rate [veh/h]	318	1811	1602	1810	1870	1868	1810	1870	1750
c, Capacity [veh/h]	166	277	672	321	997	995	0	637	596
d1, Uniform Delay [s]	18.94	19.28	8.26	17.82	7.36	7.37	0.00	13.92	13.92
k, delay calibration	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	0.50	0.05	1.54	0.23	0.23	0.00	1.29	1.38
d3, Initial Queue Delay [s]	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
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.49	0.18	0.78	0.61	0.62	0.00	0.85	0.85
d, Delay for Lane Group [s/veh]	19.00	19.78	8.31	19.37	7.60	7.60	0.00	15.20	15.30
Lane Group LOS	B	B	A	B	A	A	A	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.10	1.26	0.58	2.30	2.80	2.80	0.00	4.38	4.11
50th-Percentile Queue Length [ft/ln]	2.43	31.52	14.42	57.41	70.08	70.04	0.00	109.38	102.81
95th-Percentile Queue Length [veh/ln]	0.18	2.27	1.04	4.13	5.05	5.04	0.00	7.81	7.40
95th-Percentile Queue Length [ft/ln]	4.38	56.73	25.96	103.33	126.14	126.07	0.00	195.14	185.05

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	19.00	19.00	0.00	19.78	19.78	8.31	19.37	7.60	7.60	0.00	15.24	15.30
Movement LOS	B	B		B	B	A	B	A	A	A	B	B
d_A, Approach Delay [s/veh]	19.00			14.43			9.58			15.25		
Approach LOS	B			B			A			B		
d_I, Intersection Delay [s/veh]	12.20											
Intersection LOS	B											
Intersection V/C	0.661											

Emissions

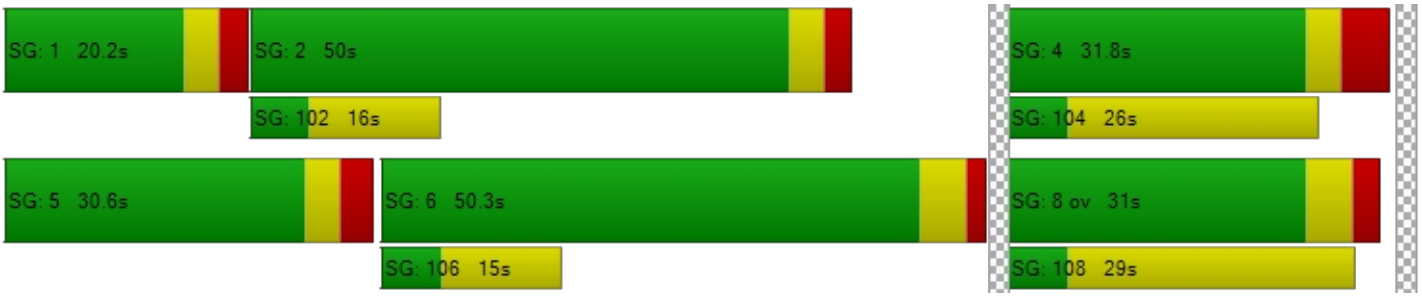
Vehicle Miles Traveled [mph]	0.67	9.12	7.98	19.31	47.52	47.48	0.00	49.15	46.03
Stops [stops/h]	7.73	100.18	45.84	182.46	222.73	222.60	0.00	347.65	326.75
Fuel consumption [US gal/h]	0.11	1.48	0.78	2.78	4.13	4.13	0.00	5.62	5.28
CO [g/h]	7.90	103.19	54.73	194.63	288.98	288.78	0.00	393.10	369.22
NOx [g/h]	1.54	20.08	10.65	37.87	56.23	56.19	0.00	76.48	71.84
VOC [g/h]	1.83	23.92	12.68	45.11	66.97	66.93	0.00	91.10	85.57

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]	14.55	14.55	14.55	14.55
l_p,int, Pedestrian LOS Score for Intersectio	1.688	2.239	2.766	2.915
Crosswalk LOS	A	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1104	1104	1986	1986
d_b, Bicycle Delay [s]	4.55	4.55	0.00	0.00
l_b,int, Bicycle LOS Score for Intersection	1.578	2.079	2.776	2.427
Bicycle LOS	A	B	C	B

Sequence

Ring 1	1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 101: NE Everett Drive and Site Access

Control Type:	Two-way stop	Delay (sec / veh):	8.8
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.101

Intersection Setup

Name	NE Everett Drive		NE Everett Drive		Site Access	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	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		25.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	NE Everett Drive		NE Everett Drive		Site Access	
Base Volume Input [veh/h]	16	2	122	26	0	90
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	0.00	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]	16	2	122	26	0	90
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	36	8	0	27
Total Analysis Volume [veh/h]	19	2	145	31	0	107
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

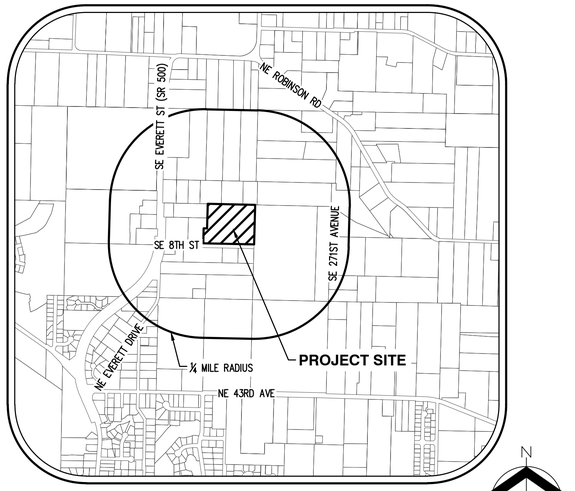
Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.09	0.00	0.00	0.10
d_M, Delay for Movement [s/veh]	0.00	0.00	7.41	0.00	11.39	8.76
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.26	0.26	0.33	0.33
95th-Percentile Queue Length [ft/ln]	0.00	0.00	6.56	6.56	8.37	8.37
d_A, Approach Delay [s/veh]	0.00		6.11		8.76	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	6.62					
Intersection LOS	A					

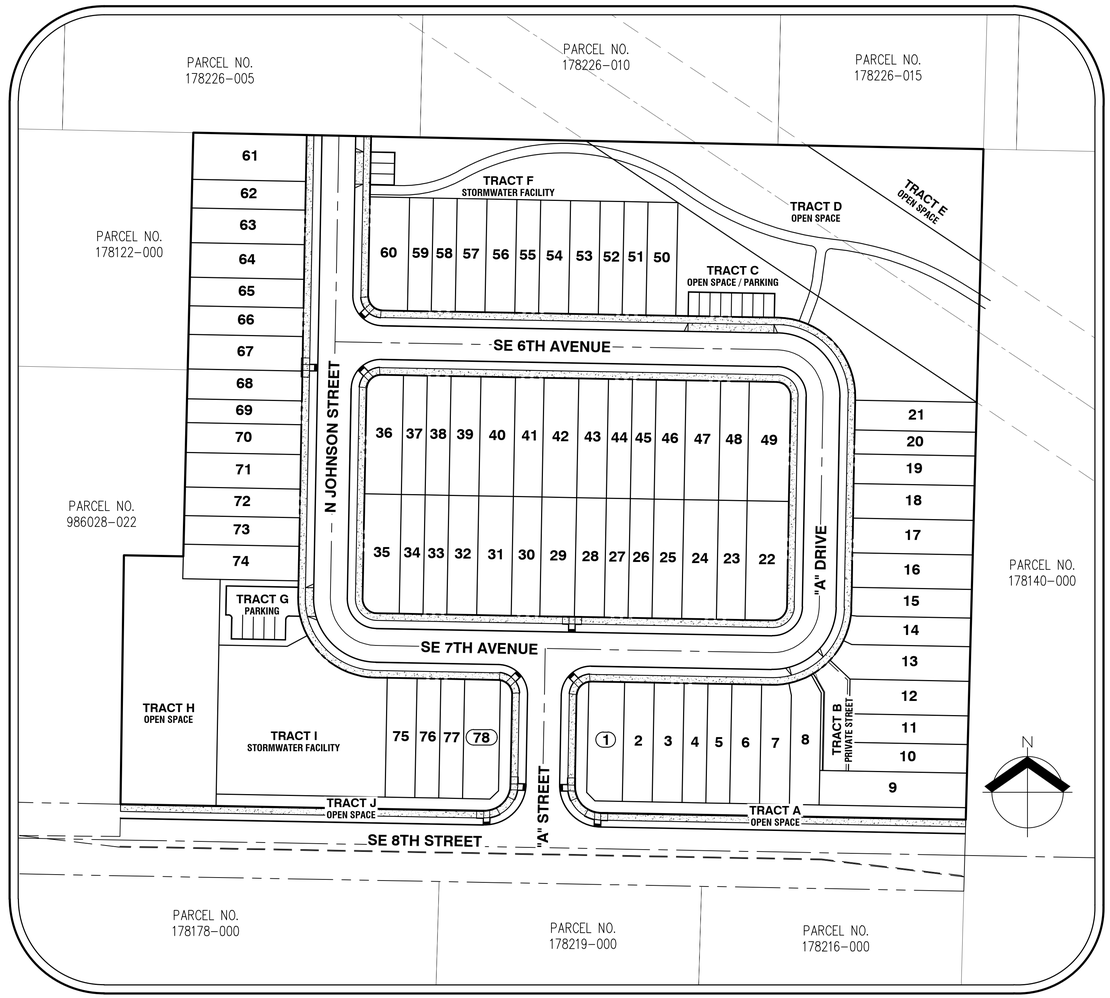
CAMAS WOODS II

PRELIMINARY ENGINEERING/SITE/SUBDIVISION PLANS



VICINITY MAP
N.T.S.

PROPERTY LOCATION
26514 SE 8TH STREET, CAMAS, WA 98607 &
26416 SE 8TH STREET, CAMAS, WA 98607



SITE MAP
N.T.S.

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		
EDGE OF PAVEMENT		
EASEMENT		
FENCE LINE		
GRAVEL EDGE		
POWER LINE	PWR	PWR
OVERHEAD WIRE	OHW	OHW
COMMUNICATIONS LINE	COM	COM
FIBER OPTIC LINE	CFO	CFO
GAS LINE	GAS	GAS
STORM DRAIN LINE	STM	STM
SANITARY SEWER LINE	SAN	SAN
WATER LINE	WAT	WAT
RECLAIMED WATER LINE	NPWAT	NPWAT

SHEET INDEX

P1.0	COVER SHEET
P2.0	EXISTING CONDITIONS
P3.0	PRELIMINARY PLAT
P5.0	PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN
P5.1	PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN
P5.2	TREE INVENTORY
P5.3	TREE INVENTORY
P5.4	TREE INVENTORY
P6.0	PRELIMINARY DEMOLITION PLAN
P7.0	PRELIMINARY GRADING & EC PLAN
P8.0	PRELIMINARY SITE & STREET PLAN
P8.1	PRELIMINARY STREET CROSS SECTIONS
P8.5	PRELIMINARY CIRCULATION PLAN
P9.0	PRELIMINARY COMPOSITE UTILITY PLAN
P10.0	PRELIMINARY STORMWATER PLAN
P11.0	PRELIMINARY LANDSCAPE PLAN
P12.0	PRELIMINARY LIGHTING PLAN

APPLICANT
CAMAS WOODS 3, LLC
CONTACT: ANDY SWANSON
19120 SE 34TH STREET SUITE #103
VANCOUVER, WA 98683
PH: (503) 936-8514
EMAIL: ANDY@HSR-CAPITAL.COM

OWNERS
JOHNSTON LARRY K &
JOHNSTON MELINDA S
PARCEL NO 178109-000
5616 NE 399TH STREET
LA CENTER, WA 98629

WINDFALL HOLDINGS LLC
PARCEL NO 178209-000
5616 NE 399TH STREET
LA CENTER, WA 98629

CONTACT/ENGINEERING/ PLANNING/SURVEYING/ LANDSCAPE ARCHITECT
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

PROPERTY DESCRIPTION
LOCATED IN THE NORTHEAST 1/4 OF SECTION 35, TOWNSHIP 2 NORTH RANGE 3 EAST, WILLAMETTE MERIDIAN, CLARK COUNTY, WASHINGTON. PROPERTY SERIAL NO.'S 178109-000, & 178209-000.

EXISTING LAND USE
2 RESIDENTIAL HOUSES, FORESTED
LAND ZONED HD-NS

PROJECT PURPOSE
78 LOT SUBDIVISION
SINGLE-FAMILY RESIDENTIAL ATTACHED ROW HOMES, AND ASSOCIATED ROADS AND OTHER SITE IMPROVEMENTS.

SITE AREA
8.79 AC (383,003 SF)

VERTICAL DATUM
VERTICAL DATUM: ELEVATIONS ARE BASED ON CLARK COUNTY BENCHMARK NO. 240, LOCATED AT THE NE CORNER OF STATE ROUTE 500 (EVERETT STREET) AND 23RD AVENUE.
ELEVATION = 213.07 FEET (NGVD 29(47)).

AKS ENGINEERING & FORESTRY, LLC
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VANCOUVER, WA 98682
360.882.0419
WWW.AKS-ENG.COM

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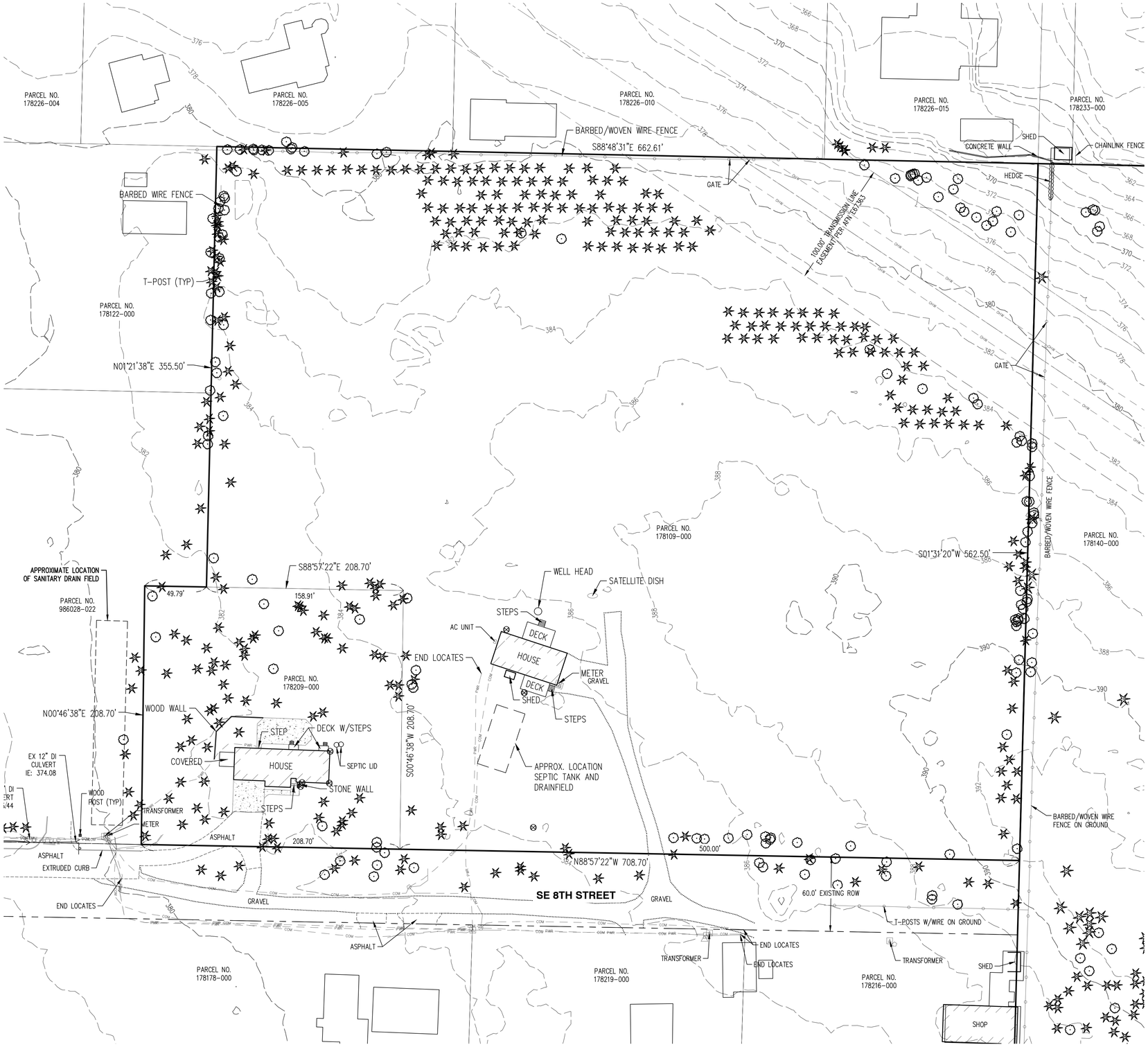
COVER SHEET
CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION
BRYCE D. HENRY
STATE OF WASHINGTON
REGISTERED PROFESSIONAL ENGINEER

JOB NUMBER:	8397-01
DATE:	4/15/2025
DESIGNED BY:	MA
DRAWN BY:	SAG
CHECKED BY:	BDH

P1.0

AKS DRAWING FILE: 8397-01 P1.0 COVERLDWG | LAYOUT: P1.0



N

SCALE: 1"=40 FEET

40 0 8 20 40

ORIGINAL PAGE SIZE: 22" x 34"

EXISTING LAND USE NOTES

1. THE SITE IS COMPRISED OF PARCELS NO. 178109-000 AND 178209-000. THE GROSS SITE AREA IS ±8.79 ACRES (383,003 SF).
2. A SINGLE FAMILY RESIDENCE EXISTS ON PARCELS NO. 178109-000 AND 178209-000.
3. ACCORDING TO CLARK COUNTY GIS, SEPTIC SYSTEMS EXIST ON-SITE ON PARCELS 178109-000 AND 178209-000. OFF-SITE SEPTIC SYSTEMS EXIST ON NEIGHBORING PARCELS 178226-005, 178226-010, 178226-015, 178216-000, 178219-000, 178178-000 AND 986028-022.
4. ACCORDING TO CLARK COUNTY GIS, THERE IS A SEPTIC SYSTEM ON BOTH PARCEL 178109-000 AND 178209-000.
5. ACCORDING TO CLARK COUNTY GIS, NO WELLS ARE KNOWN TO EXIST ON-SITE OR OFF-SITE ON NEIGHBORING PROPERTIES. HOWEVER, A WELL HEAD WAS LOCATED ON PARCEL 178109-000 AND WAS SHOWN ON THE SEPTIC ASBUILT PLAN FROM 1989 FOR THE ON-SITE SEPTIC SYSTEM.
6. ACCORDING TO CLARK COUNTY GIS AND CONFIRMED BY ELS, NO WETLANDS EXIST ON-SITE.
7. SE 8TH STREET IS CURRENTLY PAVED TO PARCEL 178209-000, PAVED WIDTH VARIES ±23 FEET. ACCESS TO PARCEL 178109-000 IS BY A GRAVEL DRIVEWAY EXTENDING OFF THE EXISTING EDGE OF PAVEMENT.
8. THERE ARE NO BIKE FACILITIES ON-SITE OR WITHIN 100' OF THE SITE.
9. NO SIDEWALKS EXIST ALONG THE SITE.
10. ACCORDING TO C-TRAN THERE ARE NO TRANSIT STOPS WITHIN A 1/4 MILE RADIUS OF THE SITE.
11. ACCORDING TO CLARK COUNTY GIS, SLOPES GREATER THAN 15% OR AREAS OF POTENTIAL SLOPE INSTABILITY DO NOT EXIST ON-SITE.
12. ACCORDING TO CLARK COUNTY GIS, THE ARCHAEOLOGICAL PROBABILITY RANGES FROM MODERATE TO HIGH.
13. ACCORDING TO CLARK COUNTY GIS, THE SITE IS INSIDE A CRITICAL AQUIFER RECHARGE AREA-CATEGORY 2 (CARA 2).

SURVEY DATA:

1. UTILITIES SHOWN ARE BASED ON UNDERGROUND UTILITY LOCATE MARKINGS AS PROVIDED BY OTHERS, PROVIDED PER UTILITY LOCATE TICKET NUMBERS 23334122, 23334123, 2334124, 2334125, 2334128, 23423747, 2342379, 23423753, 23423774, AND 23470865, RECORD DRAWINGS PROVIDED BY OTHERS, AND ABOVE GROUND UTILITIES OBSERVED IN THE PROCESS OF THIS SURVEY. 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 AUGUST 21-DECEMBER 5, 2023, AND JANUARY 16-30, 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.
4. VERTICAL DATUM: ELEVATIONS ARE BASED ON CLARK COUNTY BENCHMARK NO. 240, LOCATED AT THE NE CORNER OF STATE ROUTE 500 (EVERETT STREET) AND 23RD AVENUE. ELEVATION = 213.07 FEET (NGVD 29(47)).
5. CONTOUR INTERVAL IS 2-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. BUILDING FOOTPRINTS ARE MEASURED TO SIDING UNLESS NOTED OTHERWISE. CONTACT SURVEYOR WITH QUESTIONS REGARDING BUILDING TIES.
8. NOT ALL ON-SITE TREES WERE SURVEYED. ADDITIONAL TREES EXIST WITH THE SITE INTERIOR. SEE SHEETS P5.0 – P5.4 FOR MORE INFORMATION.

LEGEND

EXISTING GROUND CONTOUR (2 FT) — 352 —

EXISTING GROUND CONTOUR (10 FT) — 350 —

AKS ENGINEERING & FORESTRY, LLC
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VANCOUVER, WA 98682
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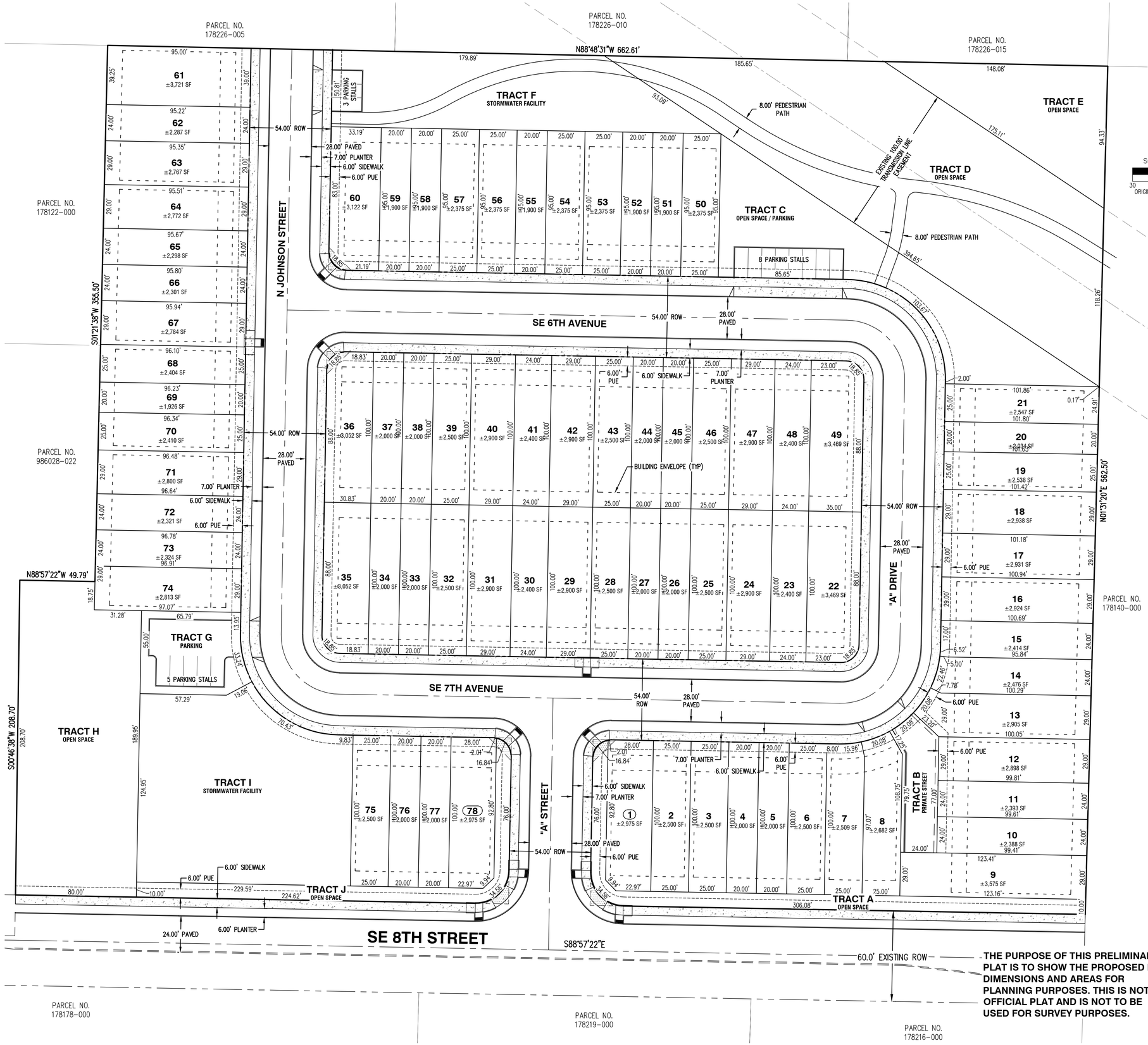
EXISTING CONDITIONS
CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	8397-01
DATE:	4/15/2025
DESIGNED BY:	MA
DRAWN BY:	SAG
CHECKED BY:	BDH

P2.0

AKS DRAWING FILE: 8397-01 P2.0 EX CONDS.DWG | LAYOUT: P2.0



SCALE: 1" = 30 FEET
30 0 6 15 30
ORIGINAL PAGE SIZE: 24" x 36"

DEVELOPMENT STANDARDS (HD-NS)

MINIMUM LOT AREA:	1,800 SF
MINIMUM LOT WIDTH:	20 FEET
MINIMUM LOT DEPTH:	60 FEET
MINIMUM FRONT YARD / GARAGE:	10 / 20 FEET
MINIMUM SIDE YARD:	3 FEET
MINIMUM STREET SIDE YARD:	10/ 15 FEET
MINIMUM REAR YARD:	10 FEET
MAXIMUM BUILDING LOT COVERAGE:	65%
MAXIMUM BUILDING HEIGHT:	50 FEET

HD-NS DENSITY

GROSS SITE AREA:	383,003 SF (8.79 AC)
OPEN SPACE AREA:	70,495 SF (1.62 AC)
NET AREA:	312,508 SF (7.17 AC)
LANDSCAPE AREA:	165,092 SF (3.79 AC)
IMPERVIOUS AREA:	127,195 SF (2.92 AC)

DENSITY PER NORTH SHORE ZONING:

MAXIMUM DENSITY (18 X 7.17):	129 UNITS
MINIMUM DENSITY (10 X 7.17):	72 UNITS
TOTAL PROPOSED ATTACHED UNITS:	78 UNITS

PARKING STATISTICS

REQUIRED OFF-STREET PARKING STALLS:	16 SPACES
PROPOSED OFF-STREET PARKING STALLS:	16 SPACES
TRACT C:	8 SPACES
TRACT F:	3 SPACES
TRACT G:	5 SPACES
TOTAL PROPOSED:	16 SPACES

GENERAL SITE PLAN NOTES

1. TRACT A & J TO BE OPEN SPACE LANDSCAPING TO BE PRIVATELY OWNED AND MAINTAINED BY THE HOMEOWNERS ASSOCIATION (HOA).
2. TRACT B TO BE PRIVATE ACCESS TO LOTS 9-12, PRIVATELY OWNED AND MAINTAINED BY THE HOA.
3. TRACT C TO BE OPEN SPACE AND PARKING TO BE OWNED AND MAINTAINED BY THE HOA. TREE RETENTION WHERE FEASIBLE TO MEET TREE ORDINANCE.
4. TRACT D IS EXISTING BONNEVILLE POWER ADMINISTRATION (BPA) EASEMENT TO BE OWNED AND MAINTAINED BY THE HOA.
5. TRACT E & H TO BE OPEN SPACE NATURAL AREA OWNED AND MAINTAINED BY THE HOA FOR TREE RETENTION WHERE FEASIBLE TO MEET TREE ORDINANCE.
6. TRACT F TO BE PARKING AND STORMWATER FACILITIES. THE STORMWATER FACILITY TO BE PRIVATELY OWNED AND MAINTAINED BY THE HOA. AN INSPECTION AND ACCESS EASEMENT TO THE CITY OF CAMAS WILL BE PROVIDED WITH THE FINAL PLAT.
7. TRACT G TO BE OFF-STREET PARKING, PRIVATELY OWNED AND MAINTAINED BY THE HOA.
8. TRACT I TO BE STORMWATER FACILITIES PRIVATELY OWNED AND MAINTAINED BY THE HOA. AN INSPECTION AND ACCESS EASEMENT TO THE CITY OF CAMAS WILL BE PROVIDED WITH THE FINAL PLAT.
9. BUILDING ENVELOPES SHALL BE PER THE PROPOSED DEVELOPMENT STANDARDS TABLE SHOWN ON THIS SHEET.
10. THERE ARE FIVE PROPOSED INTERNAL PUBLIC ROADS TO SERVE THE DEVELOPMENT. THE ROADS ARE PROPOSED TO BE CONSTRUCTED TO THE LOCAL STREET RIGHT-OF-WAY SECTION. FRONTAGE IMPROVEMENTS INCLUDE EXTENDING AND WIDENING SE 8TH STREET WITH HALF STREET IMPROVEMENTS CONSTRUCTED TO THE COLLECTOR STREET RIGHT-OF-WAY SECTION. ALL ROADS TO BE PER THE NORTH SHORE SUB-AREA DESIGN MANUAL.
11. WATER – ALL LOTS WILL BE SERVED WITH PUBLIC WATER (CITY OF CAMAS).
12. SANITARY SEWER – ALL LOTS WILL BE SERVED WITH PRIVATELY OWNED AND MAINTAINED, GRINDER PUMPS THAT DISCHARGE TO A FORCE MAIN IN THE RIGHT-OF-WAY TO PUBLIC SANITARY SEWER (CITY OF CAMAS).
13. SURFACE MATERIAL FOR ALL PROPOSED ROADWAYS IS ASPHALT.
14. STORMWATER RUNOFF FROM PERVIOUS FRONT YARDS, IMPERVIOUS DRIVEWAYS, PARKING AREAS, AND ROADWAYS WILL BE COLLECTED VIA CATCH BASINS, TREATED WITH WATER QUALITY MECHANICAL FILTER UNITS, AND DISCHARGED INTO UNDERGROUND INFILTRATION GALLERIES LOCATED IN TRACTS F & I. EACH FACILITY WILL HAVE AN EMERGENCY OVERFLOW THAT WILL DISCHARGE IN IT'S NATURAL FLOW PATH BASIN/DIRECTION.
15. STORMWATER RUNOFF FROM IMPERVIOUS ROOF AREAS AND PERVIOUS REAR YARD AREAS WILL BE COLLECTED IN PRIVATE INDIVIDUAL LOT INFILTRATION DRYWELLS.
16. THERE ARE NO BICYCLE IMPROVEMENTS PROPOSED ON SITE.
17. THE SITE IS WITHIN THE NEHRP SITE CLASS B.
18. FINAL ADDRESS MONUMENT LOCATION TO BE DETERMINED DURING FINAL ENGINEERING.
19. SEE LIGHTING PLAN, P12.0, FOR SITE LIGHTING.

TRACT AREA TABLE			
TRACT	AREA (SF)	DESCRIPTION	OWNERSHIP
TRACT A	4,171	OPEN SPACE	HOA
TRACT B	2,381	PRIVATE STREET	HOA
TRACT C	11,284	OPEN SPACE / PARKING	HOA
TRACT D	28,488	OPEN SPACE	HOA
TRACT E	6,984	OPEN SPACE	HOA
TRACT F	11,069	STORMWATER FACILITY	HOA
TRACT G	3,702	PARKING	HOA
TRACT H	16,212	OPEN SPACE	HOA
TRACT I	16,655	STORMWATER FACILITY	HOA
TRACT J	3,356	OPEN SPACE	HOA

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
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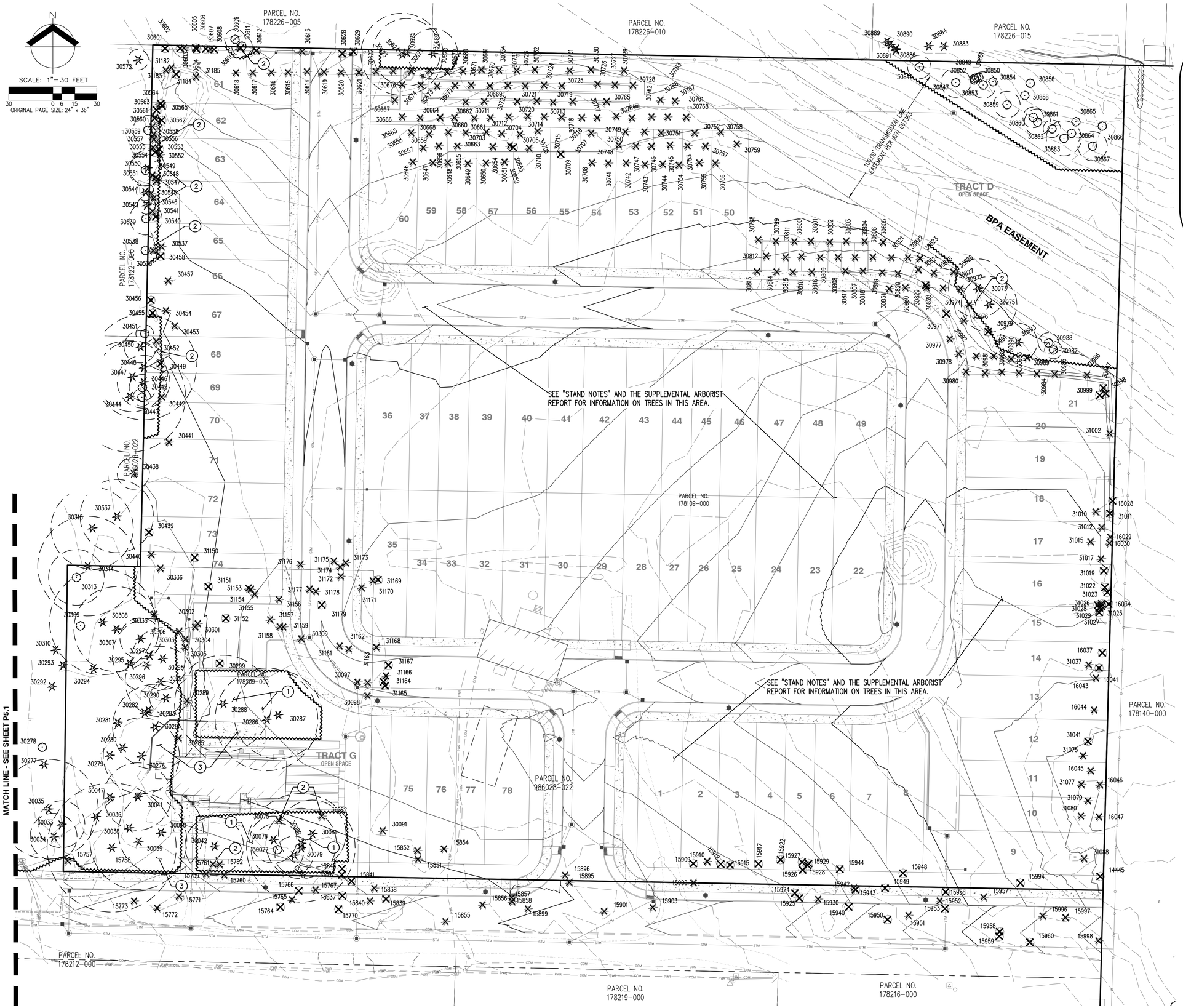
PRELIMINARY PLAT
CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

BRYCE D. HENRY — STATE OF WASHINGTON — 24393 — REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY — NOT FOR CONSTRUCTION

JOB NUMBER:	8397-01
DATE:	4/15/2025
DESIGNED BY:	MA
DRAWN BY:	SAG
CHECKED BY:	BDH

P3.0

AKS DRAWING FILE: 8397-01 P3.0 SITE PLAN.DWG | LAYOUT: P3.0



LEGEND

- EXISTING GROUND CONTOUR (1 FT) — 149
- EXISTING GROUND CONTOUR (5 FT) — 150
- FINISHED GRADE CONTOUR (1 FT) — 149
- FINISHED GRADE CONTOUR (5 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)

TREE PLAN

SITE AREA:	8.79 AC
SITE AREA EXCLUDING OPEN SPACE:	7.17 AC
TOTAL TREE UNITS REQUIRED (7.18 AC X 30):	215
EXISTING TREES RETAINED/(TREE UNITS):	60/(373)
PROPOSED SITE TREES/(TREE UNITS):	81/(81)
TOTAL TREE UNITS: (RETAINED AND PROPOSED)	454

NOTE: SEE LANDSCAPE PLAN (P11.0) FOR PROPOSED TREE PLANTING PLAN

GENERAL NOTES

1. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO DEMOLITION AND SITE GRADING ACTIVITIES. SEE DETAIL ON SHEET 5.1.
2. SEE SHEETS 5.2–5.4 FOR TREE INVENTORY.
3. SEE SHEET 5.1 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 (SHEETS 5.2–5.4), THAT CURRENTLY PRESENT MINIMAL CONCERNS; 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.

STAND NOTES

TREES ON THE INTERIOR OF THE SITE WERE NOT INCLUDED IN THE TOPOGRAPHIC SURVEY. A FIXED RADIUS PLOT CRUISE WAS CONDUCTED TO DETERMINE GENERAL STAND CONDITIONS AND CALCULATE AN APPROXIMATE TREE COUNT.

THE STAND IS DOMINATED BY DOUGLAS-FIRS PLANTED IN ROWS WITH A DENSITY OF ±300 TREES PER ACRE. THE TREE ROWS ARE SPACED ±12' APART AND EACH TREE IS SPACED AT ±10' WITHIN THE ROWS. SOME SCATTERED BIGLEAF MAPLES AND RED ALDERS WERE FOUND IN THE STAND. THE TREES ARE GENERALLY IN GOOD CONDITION.

TREE PROTECTION KEYED NOTES:

1. PRESERVATION OF TREES IN THIS AREA TO BE DETERMINED BY THE PROJECT ARBORIST DURING FINAL ENGINEERING DESIGN.
2. ARBORIST OBSERVATION REQUIRED DURING TREE REMOVAL BEHIND TREE PROTECTION FENCE.
3. TREE PROTECTION FENCING MAY NEED TO BE TEMPORARILY ADJUSTED TO CONDUCT DEMOLITION ACTIVITIES IN THIS AREA. ARBORIST OBSERVATION REQUIRED DURING ANY DEMOLITION ACTIVITIES WITHIN THE TREE PROTECTION AREA

CERTIFIED ARBORIST ISA

PRELIMINARY NOT FOR CONSTRUCTION

BENNETT R. KOCSIS
CERTIFICATE NUMBER: PN 8977A
EXPIRATION DATE: 12/31/2025

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PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN

CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION
BRYCE D. KOCSIS — 23679 — REGISTERED PROFESSIONAL ENGINEER

JOB NUMBER:	8397-01
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DESIGNED BY:	MA
DRAWN BY:	SAG
CHECKED BY:	BDH

P5.0

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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 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 PRACTICES SHALL BE IMPLEMENTED PURSUANT TO VMC CHAPTER 14.24 AND 14.25.

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 URBAN FORESTER 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.

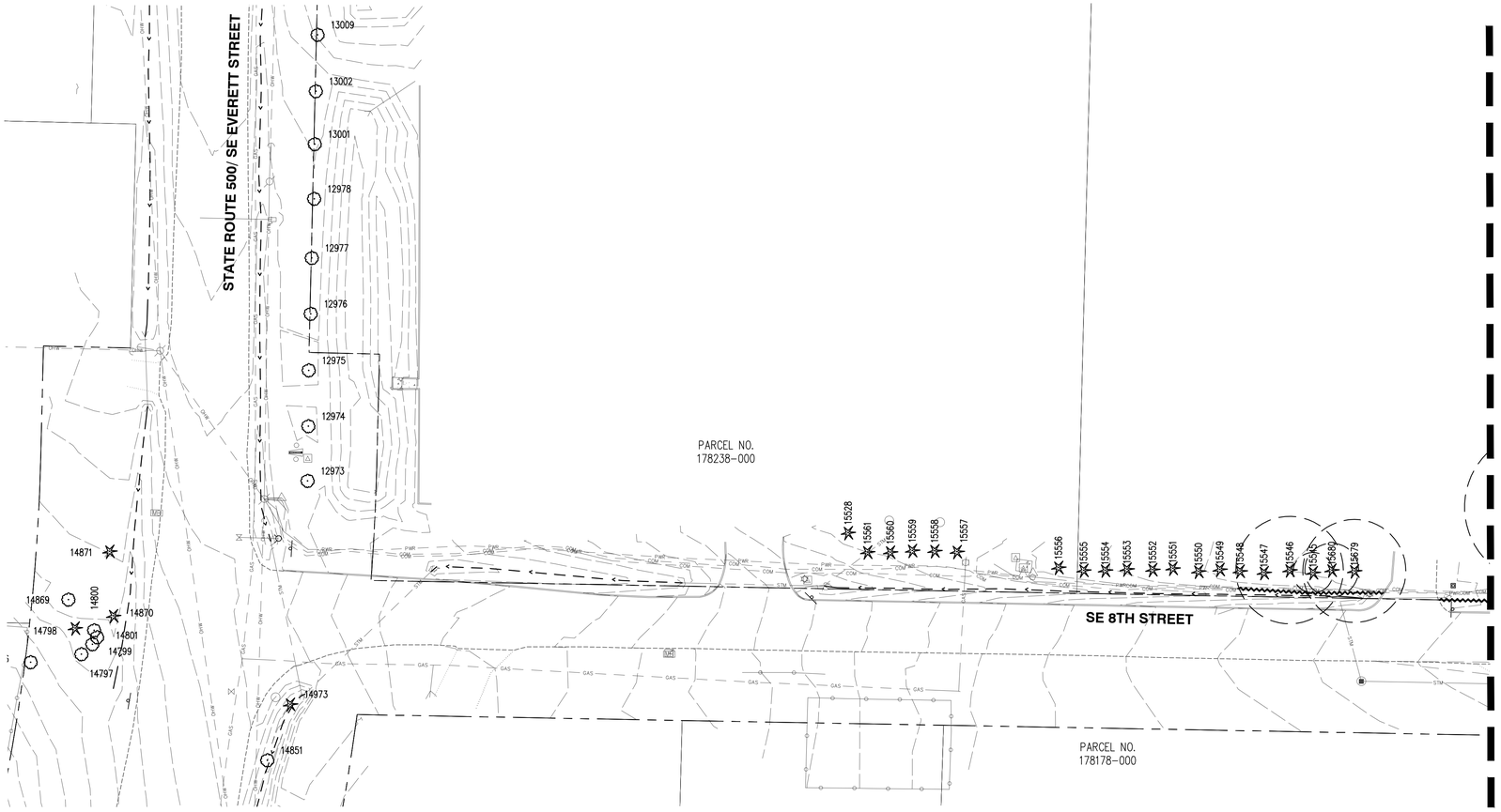
J.I. ANY BRUSH CLEARING REQUIRED WITHIN THE TREE PROTECTION ZONE SHALL BE ACCOMPLISHED WITH HAND OPERATED EQUIPMENT.

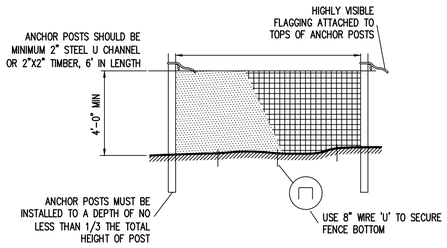
J.J. TREES TO BE REMOVED SHALL BE FELLED SO AS TO FALL AWAY FROM TREE ROOT PROTECTION ZONES AND TO AVOID PULLING AND BREAKING OF ROOTS TO REMAIN.

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.





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.

LEGEND

- EXISTING GROUND CONTOUR (1 FT) — 149 —
- EXISTING GROUND CONTOUR (5 FT) — 150 —
- FINISHED GRADE CONTOUR (1 FT) — 149 —
- FINISHED GRADE CONTOUR (5 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)

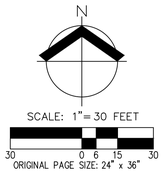
TREE PLAN

SITE AREA:	8.79 AC
SITE AREA EXCLUDING OPEN SPACE:	7.17 AC
TOTAL TREE UNITS REQUIRED (7.18 AC X 30):	215
EXISTING TREES RETAINED/(TREE UNITS):	60/(373)
PROPOSED SITE TREES/(TREE UNITS):	81/(81)
TOTAL TREE UNITS: (RETAINED AND PROPOSED)	454

NOTE: SEE LANDSCAPE PLAN (P11.0) FOR PROPOSED TREE PLANTING PLAN

GENERAL NOTES

1. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO DEMOLITION AND SITE GRADING ACTIVITIES. SEE DETAIL ON SHEET 5.1.
2. SEE SHEETS 5.2–5.4 FOR TREE INVENTORY.
3. SEE SHEET 5.1 FOR TREE PROTECTION NOTES.
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CERTIFIED ARBORIST ISA

BENNETT R. KOCSIS
CERTIFICATE NUMBER: PN 6617A
EXPIRATION DATE: 12/31/2025

PRELIMINARY NOT FOR CONSTRUCTION

AKS ENGINEERING & FORESTRY, LLC
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ENGINEERING · SURVEYING · NATURAL RESOURCES
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PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN

CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION
STATE OF WASHINGTON
BRUCE D. HAGEMAN
REGISTERED PROFESSIONAL ENGINEER
21809

JOB NUMBER:	8397–01
DATE:	4/15/2025
DESIGNED BY:	MA
DRAWN BY:	SAG
CHECKED BY:	BDH

P5.1

AKS DRAWING FILE: 8397-01 PX TREE.DWG | LAYOUT: P5.1

Detailed Tree Inventory for Camas Woods II

AKS Job No. 8397-01 - Evaluation Date: 01/28/2025 - Evaluated By: BRK

Tree #	DBH (in.)	Tree Species Common Name (Scientific name)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
12973	12	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
12974	14	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
12975	14	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
12976	13	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
12977	13	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
12978	12	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
13001	13	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
13002	14	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
13009	18	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14445	8	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
14796	10	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14797	7	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14798	8	Conifer	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14799	11	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14800	8	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14801	12	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14851	9	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14869	22	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14870	10	Conifer	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14871	16	Conifer	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14973	8	Conifer	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
15528	23	Deodar Cedar (Cedrus deodara)	0	OFFSITE; Good condition	C	Preserve	0
15545	9	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15546	24,7	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15547	7	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15548	26	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15549	14	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15550	20	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15551	16	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15552	19	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15553	10	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15554	10	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15555	14,14	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15556	21	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15557	11	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15558	13	Western Redcedar (Thuja plicata)	0	OFFSITE; Good condition	C	Preserve	0
15559	13	Western Redcedar (Thuja plicata)	0	OFFSITE; Good condition	C	Preserve	0
15560	13	Western Redcedar (Thuja plicata)	0	OFFSITE; Good condition	C	Preserve	0
15561	11	Western Redcedar (Thuja plicata)	0	OFFSITE; Good condition	C	Preserve	0
15679	23	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15680	12	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15757	20,44	Douglas-fir (Pseudotsuga menziesii)	20	Good condition	C	Impacts from public road construction	0
15758	34,26	Douglas-fir (Pseudotsuga menziesii)	18	Good condition	C	Preserve	18
15759	17	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from public road construction	0
15760	28	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Weak vertical leaders	B	Impacts from public road construction	0
15761	36	Douglas-fir (Pseudotsuga menziesii)	14	Good condition	C	Impacts from public road construction	0
15762	24	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Impacts from public road construction	0
15764	8	Cherry (Prunus spp.)	2	Good condition	C	Impacts from public road construction	0
15765	10	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Sweep; 1-sided canopy (S)	C	Impacts from public road construction	0
15766	16	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Broken at very top	B	Impacts from public road construction	0
15767	19	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Dead; Broken @ ~25'	A	Impacts from public road construction	0
15768	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Preserve	3
15770	9	Sweet Cherry (Prunus avium)	0	OFFSITE; Lean (S)	B	Impacts from public road construction	0
15771	35	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15772	40	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15773	37	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Pruned branches; Low vigor	B	Impacts from public road construction	0
15837	11	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Broken top half	A	Impacts from public road construction	0
15838	21	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; High canopy	C	Impacts from public road construction	0
15839	22	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15840	16	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; 1-sided canopy (S)	C	Impacts from public road construction	0
15841	8	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15842	10,6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from public road construction	0
15843	10,11	Bigleaf Maple (Acer macrophyllum)	4	Good condition	C	Impacts from public road construction	0
15851	24	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Impacts from lot construction	0
15852	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
15854	30	Douglas-fir (Pseudotsuga menziesii)	11	Good condition	C	Impacts from lot construction	0
15855	27	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15856	29	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Dead (~130')	A	Impacts from public road construction	0
15857	27	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15858	18	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15895	26	Western Hemlock (Tsuga heterophylla)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15896	6	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
15899	31	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Codominant top; Abnormal dead branches	B	Impacts from public road construction	0
15901	30	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15903	34	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Codominant top with included bark	B	Impacts from public road construction	0
15908	48	Douglas-fir (Pseudotsuga menziesii)	20	Codominant top with included bark	B	Impacts from public road construction	0
15909	9	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
15910	17	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from lot construction	0
15912	11,11,13	Bigleaf Maple (Acer macrophyllum)	6	Good condition	C	Impacts from lot construction	0
15915	9,6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
15917	10,9,9,9,8,7,14	Bigleaf Maple (Acer macrophyllum)	9	Good condition	C	Impacts from lot construction	0
15922	7	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
15924	10,8	Red Alder (Alnus rubra)	0	OFFSITE; Dead (~50')	A	Impacts from public road construction	0
15925	13	Sweet Cherry (Prunus avium)	0	OFFSITE; Lean (S)	B	Impacts from public road construction	0
15926	8	Bigleaf Maple (Acer macrophyllum)	2	Broken @ ~15'	A	Impacts from lot construction	0
15927	10	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
15928	9	Sweet Cherry (Prunus avium)	2	Good condition	C	Impacts from lot construction	0
15929	15	Bigleaf Maple (Acer macrophyllum)	4	Good condition	C	Impacts from lot construction	0
15930	23	Western Hemlock (Tsuga heterophylla)	8	Good condition	C	Impacts from public road construction	0
15940	19,6	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Cavity with decay	B	Impacts from public road construction	0
15942	23	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15943	6	Sweet Cherry (Prunus avium)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15944	21	Sweet Cherry (Prunus avium)	7	Dead and broken limbs; Decay	B	Impacts from lot construction	0

Detailed Tree Inventory for Camas Woods II

AKS Job No. 8397-01 - Evaluation Date: 01/28/2025 - Evaluated By: BRK

Tree #	DBH (in.)	Tree Species Common Name (Scientific name)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
15948	8	Red Alder (Alnus rubra)	2	Good condition	C	Impacts from lot construction	0
15949	15	Red Alder (Alnus rubra)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15950	10	Red Alder (Alnus rubra)	0	OFFSITE; Broken at very top	B	Impacts from public road construction	0
15951	28	Western Hemlock (Tsuga heterophylla)	0	OFFSITE; Dead (~90')	A	Impacts from public road construction	0
15952	32	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15953	25,14,9	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; 1-sided canopy (S)	C	Impacts from public road construction	0
15956	10	Willow (Salix spp.)	0	OFFSITE; Broken limbs; Small cavities with decay	B	Impacts from public road construction	0
15957	38	Western Hemlock (Tsuga heterophylla)	0	OFFSITE; Codominant with included bark	B	Impacts from public road construction	0
15958	13	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15959	22	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Growing horizontal (S)	B	Impacts from public road construction	0
15960	9	Willow (Salix spp.)	0	OFFSITE; Dead nad broken codominant stem with decay	B	Impacts from public road construction	0
15994	7	Red Alder (Alnus rubra)	2	Good condition	C	Impacts from public road construction	0
15996	25	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15997	20	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15998	20	Grand Fir (Abies grandis)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
16020	17	Douglas-fir (Pseudotsuga menziesii)	5	LINE TREE; Good condition	C	Preserve	5
16021	14	Bigleaf Maple (Acer macrophyllum)	3	LINE TREE; Good condition	C	Preserve	3
16022	23,12,11,10,7	Bigleaf Maple (Acer macrophyllum)	12	LINE TREE; Good condition	C	Preserve	12
16023	10	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Preserve	2
16024	12	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Preserve	0
16025	12	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Preserve	0
16026	12	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
16027	14	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Preserve	0
16028	12	Willow (Salix spp.)	2	LINE TREE; Good condition	C	Impacts from lot construction	0
16029	18	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from lot construction	0
16030	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
16031	22	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
16032	7	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
16034	9	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
16035	10	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Preserve	0
16036	9,6	Douglas-fir (Pseudotsuga menziesii)	2	LINE TREE; Good condition	C	Preserve	2
16037	11	Black Cottonwood (Populus trichocarpa)	2	Broken at very top	B	Impacts from lot construction	0
16038	6	Black Cottonwood (Populus trichocarpa)	0	OFFSITE; Good condition	C	Preserve	0
16041	8	Black Cottonwood (Populus trichocarpa)	2	Good condition	C	Impacts from lot construction	0
16042	10	Black Cottonwood (Populus trichocarpa)	0	OFFSITE; Good condition	C	Preserve	0
16043	16	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
16044	16	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
16045	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
16046	23	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Impacts from lot construction	0
16047	16	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
30033	16	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30034	16	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30035	34	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30036	35	Douglas-fir (Pseudotsuga menziesii)	14	Good condition	C	Preserve	14
30038	25	Douglas-fir (Pseudotsuga menziesii)	9	Good condition	C	Preserve	9
30039	33	Douglas-fir (Pseudotsuga menziesii)	13	Good condition	C	Preserve	13
30040	29	Douglas-fir (Pseudotsuga menziesii)	11	Good condition	C	Preserve	11
30041	23	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Preserve	8
30042	20	Grand Fir (Abies grandis)	6	Good condition	C	Potential Preservation	0
30047	18	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Preserve	5
30075	40	Douglas-fir (Pseudotsuga menziesii)	16	Good condition	C	Impacts from stormwater facility construction	0
30076	16	Grand Fir (Abies grandis)	4	Good condition	C	Potential Preservation	0
30077	18,16,10	Bigleaf Maple (Acer macrophyllum)	9	Broken tops; Epicormic leaders; Cavities with decay; Broken limbs	A	Potential Preservation	0
30078	14	Douglas-fir (Pseudotsuga menziesii)	3	Sweep (S); Some dead branches	B	Preserve	3
30079	37	Douglas-fir (Pseudotsuga menziesii)	15	Good condition	C	Potential Preservation	0
30080	24	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Potential Preservation	0
30081	23	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Potential Preservation	0
30082	22	Grand Fir (Abies grandis)	7	Good condition	C	Impacts from stormwater facility construction	0
30091	36	Douglas-fir (Pseudotsuga menziesii)	14	Good condition	C	Impacts from lot construction	0
30097	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from public road construction	0
30098	41	Douglas-fir (Pseudotsuga menziesii)	17	Good condition	C	Impacts from public road construction	0
30276	26	Douglas-fir (Pseudotsuga menziesii)	9	Good condition	C	Preserve	9
30277	23	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30278	20,18,17,15,12	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Dead codominant stem; Broken limbs; Asymmetrical canopy (W)	B	Preserve	0
30279	39	Douglas-fir (Pseudotsuga menziesii)	16	Codominant top with included bark	B	Preserve	16
30280	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Preserve	3
30281	27	Douglas-fir (Pseudotsuga menziesii)	10	Good condition	C	Preserve	10
30282	17	Douglas-fir (Pseudotsuga menziesii)	5	Dead (~80')	A	Preserve	5
30283	17,13	Douglas-fir (Pseudotsuga menziesii)	7	Codominant base; Epicormic sprouts; Sparse canopy	B	Preserve	7
30284	29	Douglas-fir (Pseudotsuga menziesii)	11	Good condition	C	Preserve	11
30285	34	Douglas-fir (Pseudotsuga menziesii)	13	Good condition	C	Impacts from storm line construction	0
30286	35	Douglas-fir (Pseudotsuga menziesii)	14	Good condition	C	Potential Preservation	0
30287	30	Douglas-fir (Pseudotsuga menziesii)	11	Good condition	C	Potential Preservation	0
30288	33	Grand Fir (Abies grandis)	13	Good condition	C	Potential Preservation	0
30289	28	Douglas-fir (Pseudotsuga menziesii)	10	Good condition	C	Impacts from storm line construction	0
30290	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Preserve	2
30291	24	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Preserve	8
30292	33	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30293	38	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30294	50	Douglas-fir (Pseudotsuga menziesii)	21	Codominant base with included bark	B	Preserve	21
30295	27	Douglas-fir (Pseudotsuga menziesii)	10	Good condition	C	Preserve	10
30296	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Preserve	2
30297	25	Douglas-fir (Pseudotsuga menziesii)	9	Good condition	C	Preserve	9
30298	21	Douglas-fir (Pseudotsuga menziesii)	7	Good condition	C	Preserve	7
30299	28	Bigleaf Maple (Acer macrophyllum)	10	Large scar at base; Some dead limbs	B	Impacts from parking lot construction	0
30300	28	Douglas-fir (Pseudotsuga menziesii)	10	Good condition	C	Impacts from public road construction	0
30301	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from parking lot construction	0
30302	28	Douglas-fir (Pseudotsuga menziesii)	10	Good condition	C	Impacts from parking lot construction	0
30303	24	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Impacts from storm line construction	0
30304	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from storm line construction	0
30305	18	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from storm line construction	0
30306	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Preserve	3

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TREE INVENTORY
CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

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CERTIFIED ARBORIST ISA
BENNETT R. KOCSIS
CERTIFICATE NUMBER: PN 8877A
EXPIRATION DATE: 12/31/2025

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STATE OF WASHINGTON
CHRISTOPHER A. GOW
PROFESSIONAL ENGINEER

JOB NUMBER:	8397-01
DATE:	4/15/2025
DESIGNED BY:	MA
DRAWN BY:	SAC
CHECKED BY:	BDH

P5.2

AKS DRAWING FILE: 8397-01 PX TREE.DWG | LAYOUT: P5.2

Detailed Tree Inventory for Camas Woods II

AKS Job No. 8397-01 - Evaluation Date: 01/28/2025 - Evaluated By: BRK

Tree #	DBH (in.)	Tree Species Common Name (Scientific name)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
30307	29	Douglas-fir (Pseudotsuga menziesii)	11	Good condition	C	Preserve	11
30308	36	Douglas-fir (Pseudotsuga menziesii)	14	Good condition	C	Preserve	14
30309	16	Bigleaf Maple (Acer macrophyllum)	4	Good condition	C	Preserve	4
30310	30	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30313	19	Bigleaf Maple (Acer macrophyllum)	6	Many broken limbs; Slight lean (W)	B	Preserve	6
30314	34	Douglas-fir (Pseudotsuga menziesii)	13	Good condition	C	Preserve	13
30315	28	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30335	28,16	Douglas-fir (Pseudotsuga menziesii)	12	Codominant base; Good condition	C	Impacts from storm line construction	0
30336	33,20,12	Douglas-fir (Pseudotsuga menziesii)	16	Codominant base; Good condition	C	Impacts from lot construction	0
30337	25	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30438	11	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30439	9,6	Bigleaf Maple (Acer macrophyllum)	2	Codominant base; Good condition	C	Impacts from lot construction	0
30440	28	Douglas-fir (Pseudotsuga menziesii)	10	Good condition	C	Impacts from lot construction	0
30441	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30442	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30443	6	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Preserve	0
30444	38	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30445	9	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Broken top; Suppressed	B	Preserve	0
30446	18	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30447	24	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30448	36	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30449	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30450	11	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30451	6	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30452	6	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30453	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30454	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30455	8	Bigleaf Maple (Acer macrophyllum)	2	Good condition; Asymmetrical canopy (W)	C	Impacts from lot construction	0
30456	13,11	Bigleaf Maple (Acer macrophyllum)	5	Good condition; Asymmetrical canopy (W)	C	Impacts from lot construction	0
30457	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30458	12	Bigleaf Maple (Acer macrophyllum)	2	Good condition; Asymmetrical canopy (W)	C	Impacts from lot construction	0
30536	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30537	13,7	Douglas-fir (Pseudotsuga menziesii)	4	Good condition; Codominant base	C	Impacts from lot construction	0
30538	10	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Preserve	0
30539	11	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30540	8	Bigleaf Maple (Acer macrophyllum)	2	Suppressed; Some broken limbs	B	Impacts from lot construction	0
30541	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30542	6	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30544	6	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Suppressed	B	Preserve	0
30545	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30546	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30547	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30548	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30549	10	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30550	12	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30551	11	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Sweep (S)	C	Preserve	0
30552	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30553	7	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30554	6	Bigleaf Maple (Acer macrophyllum)	2	Lean (W)	B	Impacts from lot construction	0
30555	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30556	6	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30557	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30558	6	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30559	10	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30560	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30561	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30562	6	Bigleaf Maple (Acer macrophyllum)	2	Lean (W)	B	Impacts from lot construction	0
30563	6	Bigleaf Maple (Acer macrophyllum)	2	Lean (W)	B	Impacts from lot construction	0
30564	13	Bigleaf Maple (Acer macrophyllum)	3	Good condition	C	Impacts from lot construction	0
30565	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30572	7	Western Redcedar (Thuja plicata)	0	OFFSITE; Low vigor	B	Preserve	0
30601	17,6	Bigleaf Maple (Acer macrophyllum)	5	Sweep (N)	B	Impacts from lot construction	0
30602	11	Bigleaf Maple (Acer macrophyllum)	2	Asymmetrical canopy (N)	C	Impacts from lot construction	0
30603	21	Douglas-fir (Pseudotsuga menziesii)	7	Good condition	C	Impacts from lot construction	0
30604	12	Bigleaf Maple (Acer macrophyllum)	2	Lean (N)	B	Impacts from lot construction	0
30605	6	Sweet Cherry (Prunus avium)	2	Good condition	C	Impacts from lot construction	0
30606	10,7	Sweet Cherry (Prunus avium)	2	Codominant base with included bark; Asymmetrical canopy (N)	B	Impacts from lot construction	0
30607	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30608	14,6	Bigleaf Maple (Acer macrophyllum)	4	Good condition	C	Impacts from lot construction	0
30609	7	Sweet Cherry (Prunus avium)	0	OFFSITE; Good condition	C	Preserve	0
30610	7	Sweet Cherry (Prunus avium)	2	Good condition	C	Impacts from lot construction	0
30611	7	Sweet Cherry (Prunus avium)	0	OFFSITE; Good condition	C	Preserve	0
30612	12	Bigleaf Maple (Acer macrophyllum)	2	Sweep (N); Asymmetrical canopy (N)	B	Impacts from lot construction	0
30613	20	Douglas-fir (Pseudotsuga menziesii)	6	Good condition	C	Impacts from public road construction	0
30614	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30615	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30616	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30617	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30618	7	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30619	7	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30620	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30621	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30622	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30623	8	Douglas-fir (Pseudotsuga menziesii)	2	Dead; Lean (W)	A	Impacts from parking lot construction	0
30624	28	Douglas-fir (Pseudotsuga menziesii)	10	Good condition	C	Preserve	0
30625	23	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Preserve	0
30628	7	Bigleaf Maple (Acer macrophyllum)	2	Slight lean (SW)	C	Impacts from public road construction	0
30629	20,15,10,7	Bigleaf Maple (Acer macrophyllum)	10	Clustered base; Included bark	B	Impacts from public road construction	0
30646	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30647	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30648	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30649	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0

Detailed Tree Inventory for Camas Woods II

AKS Job No. 8397-01 - Evaluation Date: 01/28/2025 - Evaluated By: BRK

Tree #	DBH (in.)	Tree Species Common Name (Scientific name)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
30650	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30651	7	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30652	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30653	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30654	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30655	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30656	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30657	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30658	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30659	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30660	7	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30661	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30662	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30663	8	Douglas-fir (Pseudotsuga menziesii)	2	Dead	A	Impacts from stormwater facility construction	0
30664	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30665	7	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30666	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from parking lot construction	0
30667	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30668	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30669	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30670	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from stormwater facility construction	0
30671	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30672	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30673	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30674	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30676	6	Douglas-fir (Pseudotsuga menziesii)	2	Dead	A	Impacts from stormwater facility construction	0
30677	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30678	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30679	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from stormwater facility construction	0
30680	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30681	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30682	17	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Preserve	0
30703	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30704	6	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30705	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30706	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30707	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
30708	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30709	26	Bigleaf Maple (Acer macrophyllum)	9	Several large cavities with decay	B	Impacts from lot construction	0
30710	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30711	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30712	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30713	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30714	10	Douglas-fir (Pseudotsuga menziesii)	2	Low vigor; Some dead branches	B	Impacts from stormwater facility construction	0
30715	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from stormwater facility construction	0
30716	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30717	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30718	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30719	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30720	7	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30721	12	Douglas-fir (Pseudotsuga menziesii)	2	Codominant with included bark	B	Impacts from stormwater facility construction	0
30722	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30723	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30724	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from stormwater facility construction	0
30725	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30726	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30727	7	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30728	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30729	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30730	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30731	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30732	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30733	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30734	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30741	10	Douglas-fir (Pseudotsuga menziesii)	2	Sweep (W)	B	Impacts from lot construction	0
30742	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30743	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30744	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30745	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30746	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30747	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30748	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
30749	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30750	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30751	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30752	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30753	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30754	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30755	6	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30756	16	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
30757	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
30758	20	Douglas-fir (Pseudotsuga menziesii)	6	Good condition	C	Impacts from lot construction	0
30759	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30761	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30762	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30763	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30764	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30765	16	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from stormwater facility construction	0
30766	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30767	13	Douglas-fir (Pseudotsuga menziesii)	3	Low vigor	B	Impacts from stormwater facility construction	0
30768	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30798	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0

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TREE INVENTORY
CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

CERTIFIED ARBORIST ISA
BENNETT R. KOCSIS
CERTIFICATE NUMBER: PN 8877A
EXPIRATION DATE: 12/31/2025

PRELIMINARY NOT FOR CONSTRUCTION

BRYCE D. HENRY
STATE OF WASHINGTON
PRELIMINARY NOT FOR CONSTRUCTION
REGISTERED PROFESSIONAL ENGINEER

JOB NUMBER:	8397-01
DATE:	4/15/2025
DESIGNED BY:	MA
DRAWN BY:	SAG
CHECKED BY:	BDH

P5.3

AKS DRAWING FILE: 8397-01 PX TREE.DWG | LAYOUT: P5.3

Detailed Tree Inventory for Camas Woods II

AKS Job No. 8397-01 - Evaluation Date: 01/28/2025 - Evaluated By: BRK

Tree #	DBH (in.)	Tree Species Common Name (Scientific name)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
30799	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from parking lot construction	0
30800	16	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from parking lot construction	0
30801	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from parking lot construction	0
30802	17	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from parking lot construction	0
30803	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from parking lot construction	0
30804	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from parking lot construction	0
30805	19	Douglas-fir (Pseudotsuga menziesii)	6	Good condition	C	Impacts from site grading	0
30806	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30807	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30808	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30809	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30810	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30811	9	Douglas-fir (Pseudotsuga menziesii)	2	Dead	A	Impacts from parking lot construction	0
30812	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30813	5	Douglas-fir (Pseudotsuga menziesii)	1	Dead	A	Impacts from public road construction	0
30814	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from public road construction	0
30815	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from public road construction	0
30816	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30817	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30818	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from public road construction	0
30819	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30820	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30821	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from site grading	0
30822	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from site grading	0
30823	17	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from site grading	0
30824	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from site grading	0
30825	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from site grading	0
30826	18	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from site grading	0
30827	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from site grading	0
30828	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30829	9	Red Alder (Alnus rubra)	2	Good condition	C	Impacts from public road construction	0
30830	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from public road construction	0
30831	7	Douglas-fir (Pseudotsuga menziesii)	2	Dead	A	Impacts from public road construction	0
30845	8,8	Red Alder (Alnus rubra)	2	Codominant base with included bark; Several large cavities with decay	B	Preserve	2
30847	9,9,10	Bigleaf Maple (Acer macrophyllum)	4	Stems leaning; Actively failing; Decay in base	A	Preserve	4
30849	10,6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Preserve	2
30850	12	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Preserve	2
30851	14,6	Bigleaf Maple (Acer macrophyllum)	4	Good condition	C	Preserve	4
30852	10	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Preserve	2
30853	9,6	Bigleaf Maple (Acer macrophyllum)	2	Lean (S); Asymmetrical canopy (S)	B	Preserve	2
30854	14,12,9,9,8,8	Bigleaf Maple (Acer macrophyllum)	9	Clustered base; Included bark	B	Preserve	9
30856	12,6	Willow (Salix spp.)	3	Good condition	C	Preserve	3
30858	12	Sweet Cherry (Prunus avium)	2	Good condition	C	Preserve	2
30859	9,6	Willow (Salix spp.)	2	Lean (S); Dead branches	B	Preserve	2
30860	7	Sweet Cherry (Prunus avium)	2	Good condition	C	Preserve	2
30861	9,8	Sweet Cherry (Prunus avium)	2	Codominant base	B	Preserve	2
30862	6,6	Bigleaf Maple (Acer macrophyllum)	2	Dead; Failed south	A	Preserve	2
30863	12,10	Bigleaf Maple (Acer macrophyllum)	4	Large cavity; Asymmetrical canopy (S)	B	Preserve	4
30864	7	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Preserve	2
30865	15,14,7	Bigleaf Maple (Acer macrophyllum)	7	Sluffing bark and dead wood in two stems	A	Preserve	7
30866	31,16	Bigleaf Maple (Acer macrophyllum)	14	Several cavities; Large broken limbs; Dead limbs; Low vigor	B	Preserve	14
30867	10,10	Bigleaf Maple (Acer macrophyllum)	3	Good condition	C	Preserve	3
30883	17	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30884	9	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30886	19	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30889	10	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30890	6	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30891	17	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30971	10,8,8,7,7,7,6,6	Bigleaf Maple (Acer macrophyllum)	7	Some dead limbs	B	Impacts from public road construction	0
30972	7	Douglas-fir (Pseudotsuga menziesii)	2	Dead	A	Impacts from site grading	0
30973	20	Douglas-fir (Pseudotsuga menziesii)	6	Good condition	C	Preserve	6
30974	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from site grading	0
30975	19	Douglas-fir (Pseudotsuga menziesii)	6	Good condition	C	Preserve	6
30976	7	Douglas-fir (Pseudotsuga menziesii)	2	Dead	A	Impacts from public road construction	0
30977	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from public road construction	0
30978	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30979	6,6	Bigleaf Maple (Acer macrophyllum)	2	Broken and dead tops	B	Impacts from site grading	0
30980	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30981	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30982	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30983	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
30984	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30985	18	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from lot construction	0
30986	16	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
30987	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Preserve	2
30988	7,6	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Preserve	2
30989	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from site grading	0
30990	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from site grading	0
30991	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from site grading	0
30992	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30993	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Preserve	2
30997	8	Red Alder (Alnus rubra)	2	Good condition	C	Impacts from lot construction	0
30998	9	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30999	7	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31002	6	Douglas-fir (Pseudotsuga menziesii)	2	Many epicormic sprouts; Dead branches	B	Impacts from lot construction	0
31010	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
31011	7	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31012	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
31014	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Preserve	2
31015	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
31017	7	Douglas-fir (Pseudotsuga menziesii)	2	Many epicormic sprouts; Dead branches	B	Impacts from lot construction	0
31019	6	Red Alder (Alnus rubra)	2	Dead	A	Impacts from lot construction	0

Detailed Tree Inventory for Camas Woods II

AKS Job No. 8397-01 - Evaluation Date: 01/28/2025 - Evaluated By: BRK

Tree #	DBH (in.)	Tree Species Common Name (Scientific name)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
31020	8,7	Bigleaf Maple (Acer macrophyllum)	2	Asymmetrical canopy (E)	C	Preserve	2
31021	10	Bigleaf Maple (Acer macrophyllum)	2	Asymmetrical canopy (E)	C	Preserve	2
31022	7	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31023	7	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31025	9	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31026	8	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31027	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31028	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31029	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31037	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
31041	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31075	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
31077	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
31079	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
31080	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
31088	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
31150	17	Deciduous	5	Not evaluated by an arborist	-	Impacts from lot construction	0
31151	17	Deciduous	5	Not evaluated by an arborist	-	Impacts from lot construction	0
31152	16	Deciduous	4	Not evaluated by an arborist	-	Impacts from parking lot construction	0
31153	6	Douglas-fir (Pseudotsuga menziesii)	2	Not evaluated by an arborist	-	Impacts from lot construction	0
31154	15	Douglas-fir (Pseudotsuga menziesii)	4	Not evaluated by an arborist	-	Impacts from lot construction	0
31155	23	Douglas-fir (Pseudotsuga menziesii)	8	Not evaluated by an arborist	-	Impacts from lot construction	0
31156	17	Douglas-fir (Pseudotsuga menziesii)	5	Not evaluated by an arborist	-	Impacts from public road construction	0
31157	21	Douglas-fir (Pseudotsuga menziesii)	7	Not evaluated by an arborist	-	Impacts from public road construction	0
31158	12	Douglas-fir (Pseudotsuga menziesii)	2	Not evaluated by an arborist	-	Impacts from public road construction	0
31159	20	Douglas-fir (Pseudotsuga menziesii)	6	Not evaluated by an arborist	-	Impacts from public road construction	0
31161	25	Douglas-fir (Pseudotsuga menziesii)	9	Not evaluated by an arborist	-	Impacts from public road construction	0
31162	15	Douglas-fir (Pseudotsuga menziesii)	4	Not evaluated by an arborist	-	Impacts from public road construction	0
31163	28	Douglas-fir (Pseudotsuga menziesii)	10	Not evaluated by an arborist	-	Impacts from public road construction	0
31164	14	Deciduous	3	Not evaluated by an arborist	-	Impacts from public road construction	0
31165	23	Deciduous	8	Not evaluated by an arborist	-	Impacts from public road construction	0
31166	26	Douglas-fir (Pseudotsuga menziesii)	9	Not evaluated by an arborist	-	Impacts from public road construction	0
31167	21	Deciduous	7	Not evaluated by an arborist	-	Impacts from public road construction	0
31168	32	Douglas-fir (Pseudotsuga menziesii)	12	Not evaluated by an arborist	-	Impacts from public road construction	0
31169	16	Deciduous	4	Not evaluated by an arborist	-	Impacts from lot construction	0
31170	21	Douglas-fir (Pseudotsuga menziesii)	7	Not evaluated by an arborist	-	Impacts from lot construction	0
31171	15	Douglas-fir (Pseudotsuga menziesii)	4	Not evaluated by an arborist	-	Impacts from public road construction	0
31172	14	Douglas-fir (Pseudotsuga menziesii)	3	Not evaluated by an arborist	-	Impacts from public road construction	0
31173	23	Douglas-fir (Pseudotsuga menziesii)	8	Not evaluated by an arborist	-	Impacts from public road construction	0
31174	11	Douglas-fir (Pseudotsuga menziesii)	2	Not evaluated by an arborist	-	Impacts from public road construction	0
31175	23	Douglas-fir (Pseudotsuga menziesii)	8	Not evaluated by an arborist	-	Impacts from public road construction	0
31176	32	Douglas-fir (Pseudotsuga menziesii)	12	Not evaluated by an arborist	-	Impacts from public road construction	0
31177	10	Douglas-fir (Pseudotsuga menziesii)	2	Not evaluated by an arborist	-	Impacts from public road construction	0
31178	18	Douglas-fir (Pseudotsuga menziesii)	5	Not evaluated by an arborist	-	Impacts from public road construction	0
31179	22	Deciduous	7	Not evaluated by an arborist	-	Impacts from public road construction	0
31182	6	Douglas-fir (Pseudotsuga menziesii)	2	Not evaluated by an arborist	-	Impacts from lot construction	0
31183	7	Douglas-fir (Pseudotsuga menziesii)	2	Not evaluated by an arborist	-	Impacts from lot construction	0
31184	28,6	Deciduous	11	Not evaluated by an arborist	-	Impacts from lot construction	0
31185	23	Douglas-fir (Pseudotsuga menziesii)	8	Not evaluated by an arborist	-	Impacts from lot construction	0

Total # of Existing Trees Inventoried = 510

Site Area = 7.18

Total # of Existing Onsite Trees = 382

Total Onsite Existing Tree Units = 1625

Total # of Onsite Trees Retained = 60

Total # of Tree Units Retained = 373

Minimum Tree Units Required per City Code = 215.4

*(7.18 acres * 30 trees/acre)*

Minimum # Trees to Replant = -229.4

Total # of Existing Trees Removed = 362

Total Existing Tree Units Removed = 1252

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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TREE INVENTORY
CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

BRYCE D. HARRY — STATE OF WASHINGTON — 21379 — REGISTERED PROFESSIONAL ENGINEER

CERTIFIED ARBORIST — ISA

BENNETT R. KOCSIS
CERTIFICATE NUMBER: PN 8877A
EXPIRATION DATE: 12/31/2025

JOB NUMBER:	8397-01
DATE:	4/15/2025
DESIGNED BY:	MA
DRAWN BY:	SAG
CHECKED BY:	BDH

P5.4

AKS DRAWING FILE: 8397-01 PX TREE.DWG | LAYOUT: P5.4

GENERAL NOTES

1. SEE THE PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN P5.0–P5.4 FOR TREE PROTECTION AND CONSTRUCTION FENCE LOCATIONS AND TREE ROOT PROTECTION ZONE RADIUS ZONES.
2. ALL EXISTING ON–SITE WELLS AND SEPTIC FACILITIES TO BE DECOMMISSIONED.

NOTE: DEMOLITION AND REMOVAL OF ALL STRUCTURES TOGETHER WITH DECOMMISSIONING OF ALL WELLS, SEPTIC TANKS, AND UNDERGROUND STORAGE TANKS (IF ANY EXIST) SHALL BE COMPLETED PRIOR TO SITE GRADING.

CONTRACTOR TO PROPERLY ABANDON AND/OR PROPERLY DECOMMISSIONED ANY WATER WELLS LOCATED ON SITE PER CLARK COUNTY HEALTH DEPARTMENT REQUIREMENTS. CONTRACTOR SHALL SUBMIT ALL ABANDONMENT DOCUMENTATION TO THE CITY INSPECTOR.

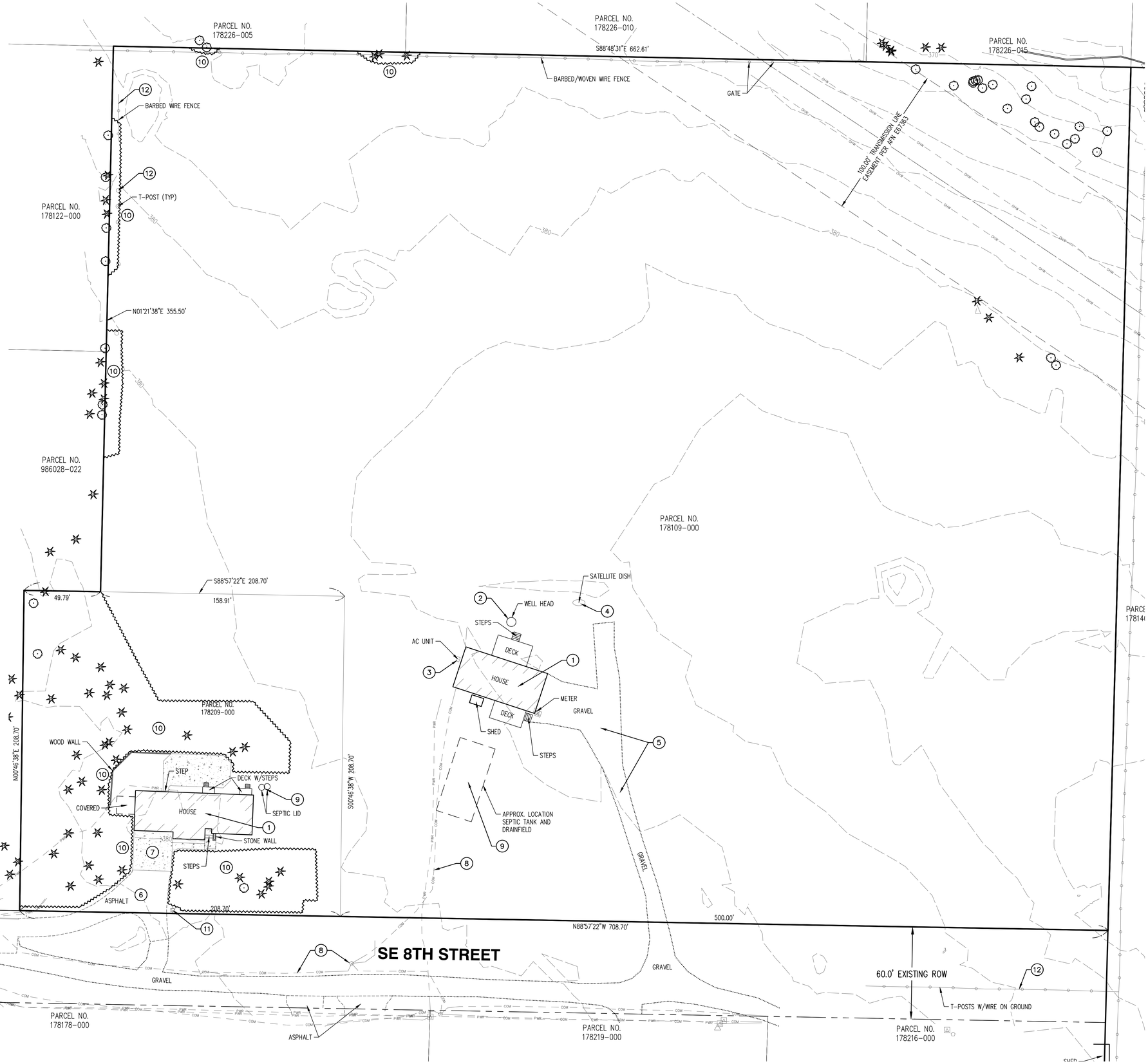
DEMOLITION PERMITS FROM THE CITY OF CAMAS BUILDING DEPARTMENT REQUIRED PRIOR TO REMOVING EXISTING STRUCTURES.

LEGEND

- EXISTING GROUND CONTOUR (2 FT)
- EXISTING GROUND CONTOUR (10 FT) — 350
- EXISTING CONIFEROUS TREE (TO REMAIN)
- EXISTING DECIDUOUS TREE (TO REMAIN)
- TREE PROTECTION/CONSTRUCTION FENCE

DEMOLITION KEYED NOTES

1. REMOVE EXISTING HOUSE, STEPS, DECKS, DRIVEWAY, WALLS, CONCRETE PADS, AND EXISTING FEATURES.
2. REMOVE WELL AND WELL HEAD
3. REMOVE EXISTING AC UNIT
4. REMOVE EXISTING SATELLITE DISH
5. REMOVE EXISTING GRAVEL DRIVEWAY
6. REMOVE EXISTING ASPHALT
7. REMOVE EXISTING CONCRETE
8. COORDINATE WITH UTILITY PURVEYORS TO REMOVE / RELOCATE AS NEEDED
9. REMOVE EXISTING SEPTIC TANKS AND DRAINFIELD
10. CONTRACTOR TO PROTECT AND PRESERVE EXISTING TREES DURING DEMOLITION WORK. SEE TREE PRESERVATION AND REMOVAL PLANS AND DETAILS, SHEETS P5.0–P5.1 FOR ADDITIONAL NOTES AND DETAILS.
11. REMOVE EXISTING POWER/UTILITY LIGHT POLE
12. REMOVE FENCE



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SCALE: 1"=30 FEET

30 0 6 15 30

ORIGINAL PAGE SIZE: 24" x 36"

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PRELIMINARY DEMOLITION PLAN

CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

BRUCE D. HENRY — STATE OF WASHINGTON — 21810 — REGISTERED PROFESSIONAL ENGINEER

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	8397–01
DATE:	4/15/2025
DESIGNED BY:	MA
DRAWN BY:	SAG
CHECKED BY:	BDH

P6.0

AKS DRAWING FILE: 8397–01 P6.0 DEMOLDWG | LAYOUT: P6.0

GENERAL NOTES

1. SEE THE PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN P5.0–P5.1 FOR TREE PROTECTION AND CONSTRUCTION FENCE LOCATIONS AND TREE ROOT PROTECTION ZONE RADIUS ZONES.
2. ADDITIONAL EROSION CONTROL MEASURES WILL BE INCLUDED DURING FINAL ENGINEERING TO ACCOUNT FOR CONSTRUCTION GRADING.
3. ALL EXISTING ON–SITE WELLS AND SEPTIC FACILITIES TO BE DECOMMISSIONED.
4. SEE DEMOLITION PLAN P6.0 FOR DEMOLITION AND REMOVAL OF ALL STRUCTURES.

THESE EROSION AND SEDIMENT CONTROL PLANS APPLY TO "DRY WEATHER" AND "WET WEATHER" CONDITIONS.

PRELIMINARY GRADING QUANTITIES

CUT: 2,500 C.Y. STRIPPINGS (ASSUME 12" DEPTH): 12,000 C.Y.
FILL: 4,700 C.Y.

VOLUMES ARE FOR THE OVERALL 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.

ASSUMPTIONS:
BASED ON 12" STRIPPINGS DEPTH OVER SITE
UTILITY TRENCHING NOT INCLUDED

NOTE: CONTRACTOR IS RESPONSIBLE FOR VERIFYING QUANTITIES FOR BID PURPOSES.

CUT AND FILL QUANTITIES SHOWN ARE BASED OFF OF GENERAL SITE GRADING ESTABLISHED FROM THE FINISHED STRIPPING GRADE TO THE FINISHED PROPOSED SUBGRADE. THESE VOLUMES ALSO 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, NOR WET WEATHER CONDITIONS AND MEASURES SHOULD THIS APPLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PRODUCE THEIR OWN INDEPENDENT GRADING VOLUMES AS WELL AS ACCOUNT FOR ANY OBSERVATIONS OR MEASURES DIRECTED WITHIN THE GEOTECHNICAL REPORT OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER ONSITE THROUGHOUT CONSTRUCTION.

LEGEND

- EXISTING GROUND CONTOUR (2 FT) — 382 —
- EXISTING GROUND CONTOUR (10 FT) — 380 —
- FINISHED GRADE CONTOUR (2 FT) — 382 —
- FINISHED GRADE CONTOUR (10 FT) — 380 —
- SEDIMENT FENCE (TO BE INSTALLED PRIOR TO GRADING) — x — x —
- SEDIMENT FENCE (TO BE INSTALLED AFTER GRADING) — xx —
- AREA DRAIN PROTECTION (TYP) PER CATCH BASIN INSERT BAG DETAIL
- DRAINAGE FLOW DIRECTION
- GRAVEL CONSTRUCTION ENTRANCE
- EXISTING CONIFEROUS TREE (TO REMAIN)
- EXISTING DECIDUOUS TREE (TO REMAIN)
- GRADING LIMITS
- TREE PROTECTION/CONSTRUCTION FENCE
- STRAW WATTLES — xxx —
- POTENTIAL STOCKPILE AREA

EROSION CONTROL KEYED NOTES

1. INSTALL INLET PROTECTION (TYP).
2. POTENTIAL STOCKPILE AREA.
3. INSTALL SEDIMENT FENCE (TYP).
4. DISTURBED LIMITS (TYP).
5. INSTALL TREE PROTECTION FENCE (TYP).
6. CONSTRUCTION ENTRANCE.
7. INSTALL TEMPORARY SEDIMENT POND.
8. INSTALL STRAW WATTLES WITH TREE PROTECTION FENCING.

N

SCALE: 1"=30 FEET

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ORIGINAL PAGE SIZE: 24" x 36"

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PARCEL NO. 178225–005
PARCEL NO. 178226–010
PARCEL NO. 178226–015
PARCEL NO. 178122–000
PARCEL NO. 986028–022
PARCEL NO. 178178–000
PARCEL NO. 178219–000
PARCEL NO. 178216–000
PARCEL NO. 178146

TRACT E OPEN SPACE
TRACT F STORMWATER FACILITY
TRACT C OPEN SPACE/PARKING
TRACT D OPEN SPACE
TRACT G PARKING
TRACT H OPEN SPACE
TRACT I STORMWATER FACILITY
TRACT J OPEN SPACE
TRACT A OPEN SPACE
TRACT B PRIVATE STREET

SE 6TH AVENUE
SE 7TH AVENUE
SE 8TH STREET
N JOHNSON STREET
"A" DRIVE
"A" STREET

SHALLOW DRAINAGE DIVERSION SWALE

PRVT LOT DRYWELL SEE SHEET P10.0 (TYP)

MAINTAIN ACCESS AT ALL TIMES TO ADJACENT LOTS DURING CONSTRUCTION (TYP)

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P7.0

PARCEL NO. 178226-005

PARCEL NO. 178226-010

PARCEL NO. 178226-015

PARCEL NO. 178122-000

PARCEL NO. 986028-022

PARCEL NO. 178140-000

PARCEL NO. 178178-000

PARCEL NO. 178219-000

PARCEL NO. 178216-000

PARKING AREA 3 STALLS

20.50'

28.00'

8.00' PEDESTRIAN PATH

TRACT F
STORMWATER FACILITY

TRACT E
OPEN SPACE

9.00' (TYP)

54.00' ROW

28.00' PAVED

7.00' PLANTER

6.00' SIDEWALK

6.00' PUE

EXISTING 100.00' TRANSMISSION LINE EASEMENT

TRACT C
OPEN SPACE / PARKING

TRACT D
OPEN SPACE

8.00' PEDESTRIAN PATH

73.00'

20.00'

PARKING AREA 8 STALLS

R25.00'

SE 6TH AVENUE

N88°57'22"W 331.83'

PT: 20+79

L=61.26', R=39.00'
Δ=90°00'00"

Mid: 20+49

PC: 20+18

VISION CLEARANCE AREA (TYP)

S01°02'38"W 215.00'

"A" DRIVE

N JOHNSON STREET

PC: 13+88

L=61.26', R=39.00'
Δ=90°00'00"

PT: 18+42

TRACT G
PARKING

20.00'

46.00'

Mid: 14+19

PT: 14+49

SE 7TH AVENUE

S88°57'22"E 331.83'

PI: 3+67

PC: 17+81

Mid: 18+12

WIDTH VARIES 20'-25'

PARKING AREA 5 STALLS

TRACT H
OPEN SPACE

TRACT I
STORMWATER FACILITY

TRACT J
OPEN SPACE

TRACT A
OPEN SPACE

TRACT B
PRIVATE STREET

PRVT SHARED ACCESS

24.00'

20.00' PAVED

2.00' CLEAR

"A" STREET

N01°02'38"E 167.00'

SE 8TH STREET

60.0' EXISTING ROW

24.00' PAVED

18.00'

6.00'

S88°57'22"E

61 62 63 64 65 66 67 68 69 70 71 72 73 74

60 59 58 57 56 55 54 53 52 51 50

36 37 38 39 40 41 42 43 44 45 46 47 48 49

35 34 33 32 31 30 29 28 27 26 25 24 23 22

21 20 19 18 17 16 15 14 13 12 11 10 9

75 76 77 78

1 2 3 4 5 6 7 8

N

SCALE: 1" = 30 FEET

30 0 6 15 30

ORIGINAL PAGE SIZE: 24" x 36"

GENERAL NOTES

1. THE PROPOSED DEVELOPMENT WILL ACCESS OFF SE 8TH STREET, WHICH IS CLASSIFIED AS A COLLECTOR STREET WITHIN THE NORTH SHORE SUBAREA.
2. SE 8TH STREET FRONTAGE IMPROVEMENTS WILL INCLUDE:
   - HALF STREET IMPROVEMENTS (NORTH SIDE)
   - INSTALLATION OF CURB AND GUTTER
   - INSTALLATION OF DETACHED SIDEWALK
   - RIGHT-OF-WAY IS EXISTING 60' WIDE

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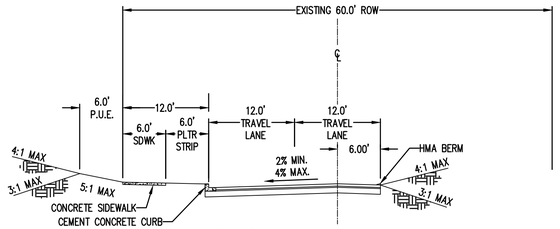
PRELIMINARY SITE & STREET PLAN
CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

BRYCE D. HAMBY — STATE OF WASHINGTON — 24979 — PROFESSIONAL ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	8397-01
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DRAWN BY:	SAG
CHECKED BY:	BDH

P8.0

AKS DRAWING FILE: 8397-01 P8.0 STREET PLANDWG | LAYOUT: P8.0

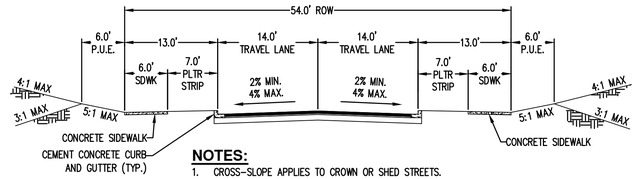


NOTES:

1. MINIMUM CURB RETURN RADIUS SHALL BE 35'.
2. NO PARKING, MARGINAL ACCESS STREET, NO NEW RESIDENTIAL DRIVEWAYS ALLOWED.

NORTH SHORE COLLECTOR HALF - STREET (60' ROW)

SE 8TH STREET

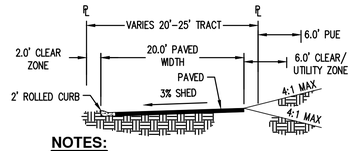


NOTES:

1. CROSS-SLOPE APPLIES TO CROWN OR SHED STREETS.
2. PARKING ONLY ALLOWED ONE SIDE OF THE STREET.
3. MINIMUM CURB RADIUS 25'.

NORTH SHORE LOCAL STREET (54' ROW)

N JOHNSON STREET (STATION 10+00 TO 14+19)
SE 7TH AVENUE (STATION 14+19 TO 18+12)
"A" DRIVE (STATION 18+12 TO 20+49)
SE 6TH AVENUE (STATION 20+49 TO 24+50)
"A" STREET (STATION 2+00 TO 3+67)

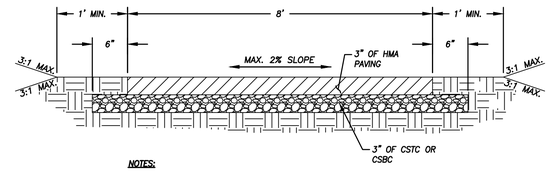


NOTES:

1. ACCESS TO FOUR OR LESS DWELLING UNITS.

PRIVATE STREET - (24' TRACT WIDTH)

TRACT B

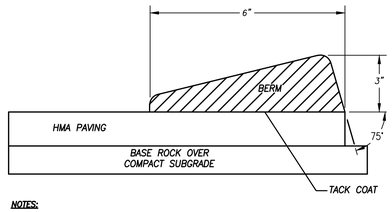


NOTES:

1. *THE SUBGRADE AND CRUSHED SURFACING MATERIALS SHALL BE COMPACTED PER WSDOT STANDARDS.*

ASPHALT PATH/WALWAY

N.T.S.



NOTES:

1. *HEIGHT OF BERM SHALL BE FINISH GRADE OF HMA TO TOP OF BERM, MINIMUM OF 3".*
2. *TACK COAT PRIOR TO BERM PLACEMENT WSDOT STANDARD SPEC. 5-04.3(5)A.*

HMA BERM

N.T.S.

GENERAL NOTES

1. THE PROPOSED DEVELOPMENT WILL ACCESS OFF SE 8TH STREET, WHICH IS CLASSIFIED AS A COLLECTOR STREET WITHIN THE NORTH SHORE SUBAREA.
2. SE 8TH STREET FRONTAGE IMPROVEMENTS WILL INCLUDE:
   - HALF STREET IMPROVEMENTS (NORTH SIDE)
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   - RIGHT-OF-WAY IS EXISTING 60' WIDE

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PRELIMINARY STREET CROSS SECTIONS

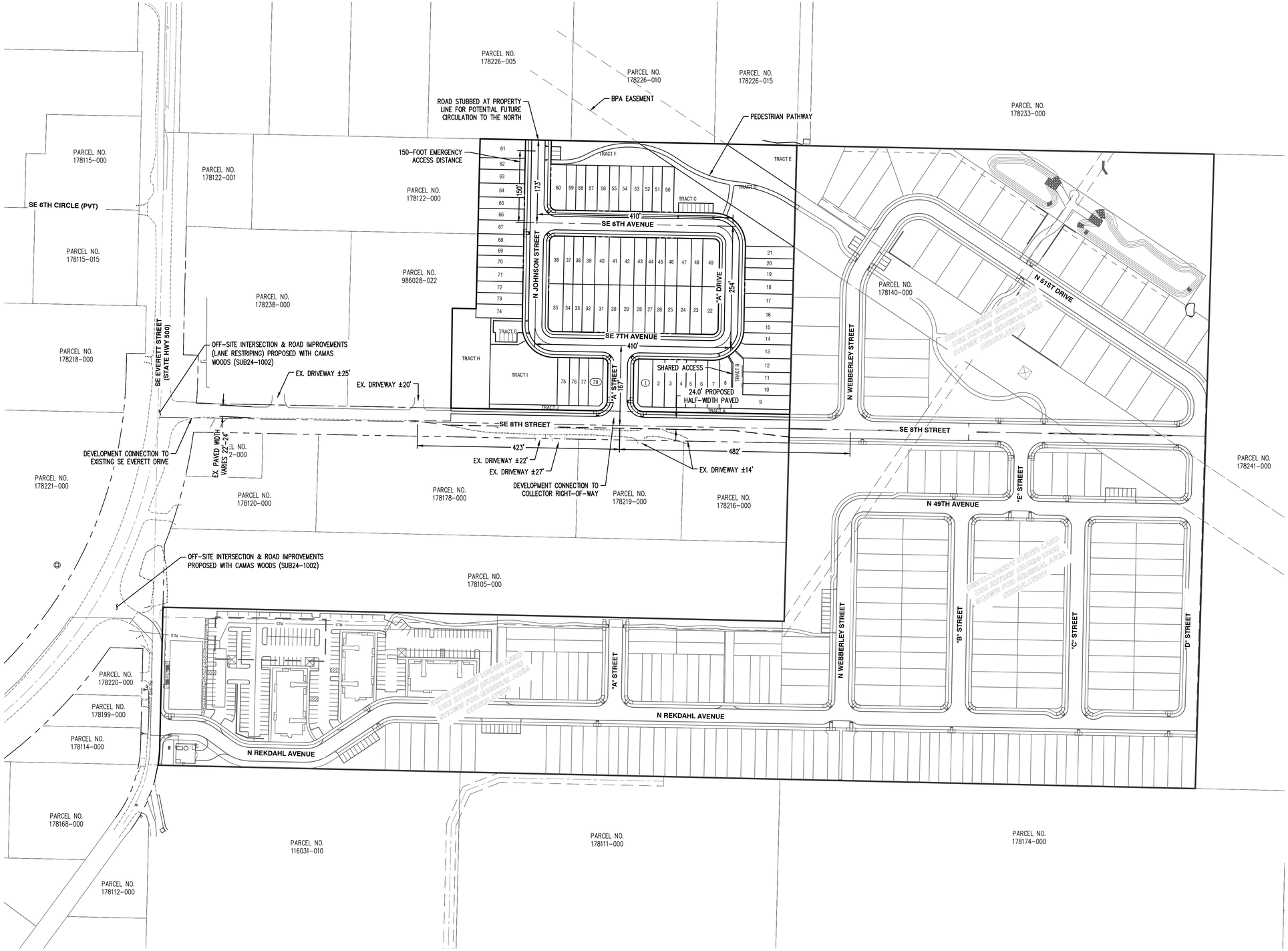
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CAMAS, WASHINGTON

BRYCE D. ANDERY — STATE OF WASHINGTON — 24079 — REGISTERED PROFESSIONAL ENGINEER
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P8.1

AKS DRAWING FILE: 8397-01 P8.0 STREET PLANTING | LAYOUT: P8.1



N

SCALE: 1"=100 FEET

100 0 20 50 100

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GENERAL NOTES

1. SEE SHEET P8.0 FOR PROPOSED ROADWAY WIDTHS, TURNING RADII, AND PARKING.

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PRELIMINARY CIRCULATION PLAN

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CAMAS, WASHINGTON

OFFICE OF DAVID H. HARRISON — PRELIMINARY NOT FOR CONSTRUCTION — 24039 REGISTERED PROFESSIONAL ENGINEER

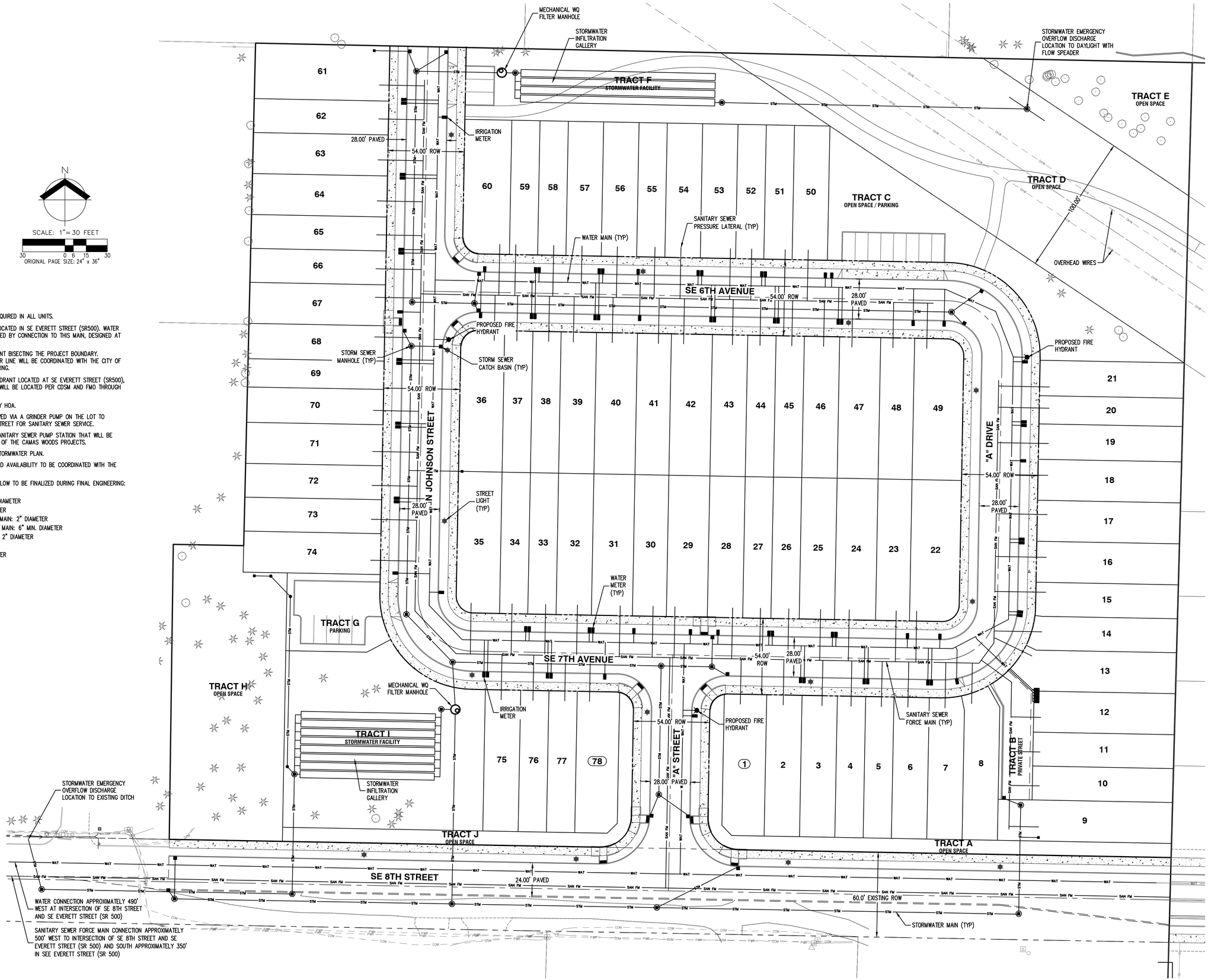
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GENERAL NOTES

1. RESIDENTIAL FIRE SPRINKLERS ARE REQUIRED IN ALL UNITS.
2. AN EXISTING 10" DI WATER MAIN IS LOCATED IN SE EVERETT STREET (SR500). WATER TO THE DEVELOPMENT WILL BE SUPPLIED BY CONNECTION TO THIS MAIN, DESIGNED AT THE TIME OF FINAL ENGINEERING.
3. THERE IS AN EXISTING WATER EASEMENT BISECTING THE PROJECT BOUNDARY. ABANDONMENT OF THE EXISTING WATER LINE WILL BE COORDINATED WITH THE CITY OF CAMAS STAFF DURING FINAL ENGINEERING.
4. IN ADDITION TO THE EXISTING FIRE HYDRANT LOCATED AT SE EVERETT STREET (SR500), PROPOSED FIRE HYDRANT LOCATIONS WILL BE LOCATED PER CDSM AND FMO THROUGH THE PROPOSED DEVELOPMENT.
5. IRRIGATION METERS WILL BE OWNED BY HOA.
6. ALL LOTS ARE PROPOSED TO BE SERVED VIA A GRINDER PUMP ON THE LOT TO CONNECT TO A FORCE MAIN IN THE STREET FOR SANITARY SEWER SERVICE.
7. PROJECT SITE TO BE SERVED BY A SANITARY SEWER PUMP STATION THAT WILL BE CONSTRUCTED WITH THE FIRST PHASE OF THE CAMAS WOODS PROJECTS.
8. SEE SHEET P10.0 FOR PRELIMINARY STORMWATER PLAN.
9. VERIFICATION OF WATER PRESSURE AND AVAILABILITY TO BE COORDINATED WITH THE STAFF.
10. PRELIMINARY UTILITY SIZING LISTED BELOW TO BE FINALIZED DURING FINAL ENGINEERING:
    WATER MAIN: 8" MIN. DIAMETER
    SINGLE-FAMILY WATER SERVICES: 1" DIAMETER
    FIRE HYDRANT LEADS: 6" MIN. DIAMETER
    ON-SITE SANITARY SEWER PRESSURE MAIN: 2" DIAMETER
    OFF-SITE SANITARY SEWER PRESSURE MAIN: 6" MIN. DIAMETER
    SANITARY SEWER PRESSURE LATERAL: 2" DIAMETER
    STORM MAIN: 12" MIN. DIAMETER
    CATCH BASIN LEADS: 10" MIN. DIAMETER



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PRELIMINARY COMPOSITE UTILITY PLAN

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CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

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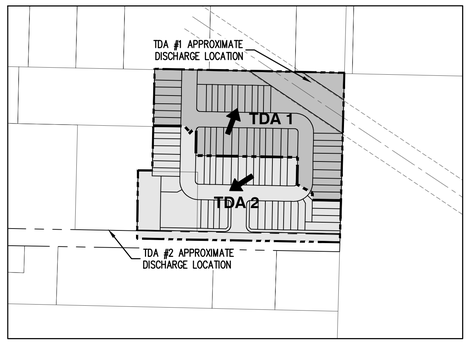
AKS DRAWING FILE: 8397-01 P9.0 UTILITY PLANLOWG | LAYOUT: P9.0

GENERAL NOTES

1. CONTOUR INTERVAL IS 2 FEET.
2. TREES ARE NOT SHOWN.
3. STORMWATER TREATMENT AND RETENTION/INFILTRATION FACILITIES FOR THIS DEVELOPMENT ARE TO BE OWNED AND MAINTAINED BY THE HOA.
4. ACCORDING TO CLARK COUNTY GIS, THE SITE IS NOT WITHIN OR ADJACENT TO A 100-YEAR FLOODPLAIN OR SHORELINE MANAGEMENT AREA.
5. THERE ARE NO KNOWN EXISTING ON-SITE STORMWATER FACILITIES.
6. ACCORDING TO CLARK GIS, NO FLOODPLAIN, FLOODWAYS, OR SHORELINE EXIST ON-SITE.
7. EXISTING DRAINAGE FLOW ROUTES ARE SOUTHWEST TOWARD INTO THE EXISTING DITCHES ALONG NE 8TH STREET AND NORTHEAST TOWARD TRACT E, WITH THE SITE BEING SPLIT DIAGONALLY AT APPROXIMATELY THE CENTER BY A RIDGE. THE SITE IS TWO THRESHOLD DISCHARGE AREAS (TDAs).
8. PROPOSED DRAINAGE FLOW ROUTES TO FOLLOW EXISTING FLOW ROUTES TO EXTENT POSSIBLE, WITH STORMWATER OVERFLOW DISCHARGED FROM STORMWATER INFILTRATION FACILITIES INTO EXISTING DITCH ALONG NE 8TH STREET AND NORTHEAST TOWARDS TRACT E.
9. ROOF AREAS FOR ALL LOTS DRAIN TO A PRIVATE STORMWATER DOWNSPOUT DRYWELL TO BE INSTALLED DURING HOME BUILD CONSTRUCTION.
10. SEE OVERALL THRESHOLD DISCHARGE AREA (TDA) VICINITY MAP ON THIS SHEET, P10.0.
11. PRELIMINARY STORM SIZING LISTED BELOW TO BE FINALIZED DURING FINAL ENGINEERING:
    STORM MAIN: 12" MIN. DIAMETER
    CATCH BASIN LEADS: 10" MIN. DIAMETER

LEGEND

- EXISTING GROUND CONTOUR (2 FT)
- EXISTING GROUND CONTOUR (10 FT)
- FINISHED GRADE CONTOUR (2 FT)
- FINISHED GRADE CONTOUR (10 FT)
- DRAINAGE FLOW DIRECTION
- GRADING LIMITS
- DRAINAGE SWALE



TDA VICINITY MAP

N.T.S.

PARCEL NO. 178226-005
PARCEL NO. 178226-010
PARCEL NO. 178226-015
PARCEL NO. 178122-000
PARCEL NO. 986028-022
PARCEL NO. 178178-000
PARCEL NO. 178219-000
PARCEL NO. 178216-000
PARCEL NO. 178146

MECHANICAL WQ FILTER MANHOLE
STORMWATER INFILTRATION GALLERY
TRACT F STORMWATER FACILITY
STORMWATER EMERGENCY OVERFLOW DISCHARGE LOCATION TO DAYLIGHT WITH FLOW SPEADER
TRACT E OPEN SPACE
STORM SEWER AREA DRAIN/CB
SHALLOW DRAINAGE DIVERSION SWALE
TRACT C OPEN SPACE / PARKING
TRACT D OPEN SPACE
SE 6TH AVENUE
STORM SEWER MANHOLE (TYP)
STORM SEWER DRAIN INLET (TYP)
N JOHNSON STREET
"A" DRIVE
REAR YARD AREA DRAIN/DOWNSPOUT INFILTRATION DRYWELL (TYP)
TRACT G PARKING
TRACT H OPEN SPACE
SE 7TH AVENUE
"A" STREET
TRACT B PRIVATE STREET
TRACT I STORMWATER FACILITY
MECHANICAL WQ FILTER MANHOLE
STORMWATER INFILTRATION GALLERY
STORMWATER EMERGENCY OVERFLOW DISCHARGE LOCATION TO EXISTING DITCH
TRACT J OPEN SPACE
TRACT A OPEN SPACE
SE 8TH STREET
STORMWATER MAIN (TYP)

N

SCALE: 1"= 20 FEET
20 0 4 10 20
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PRELIMINARY STORMWATER PLAN

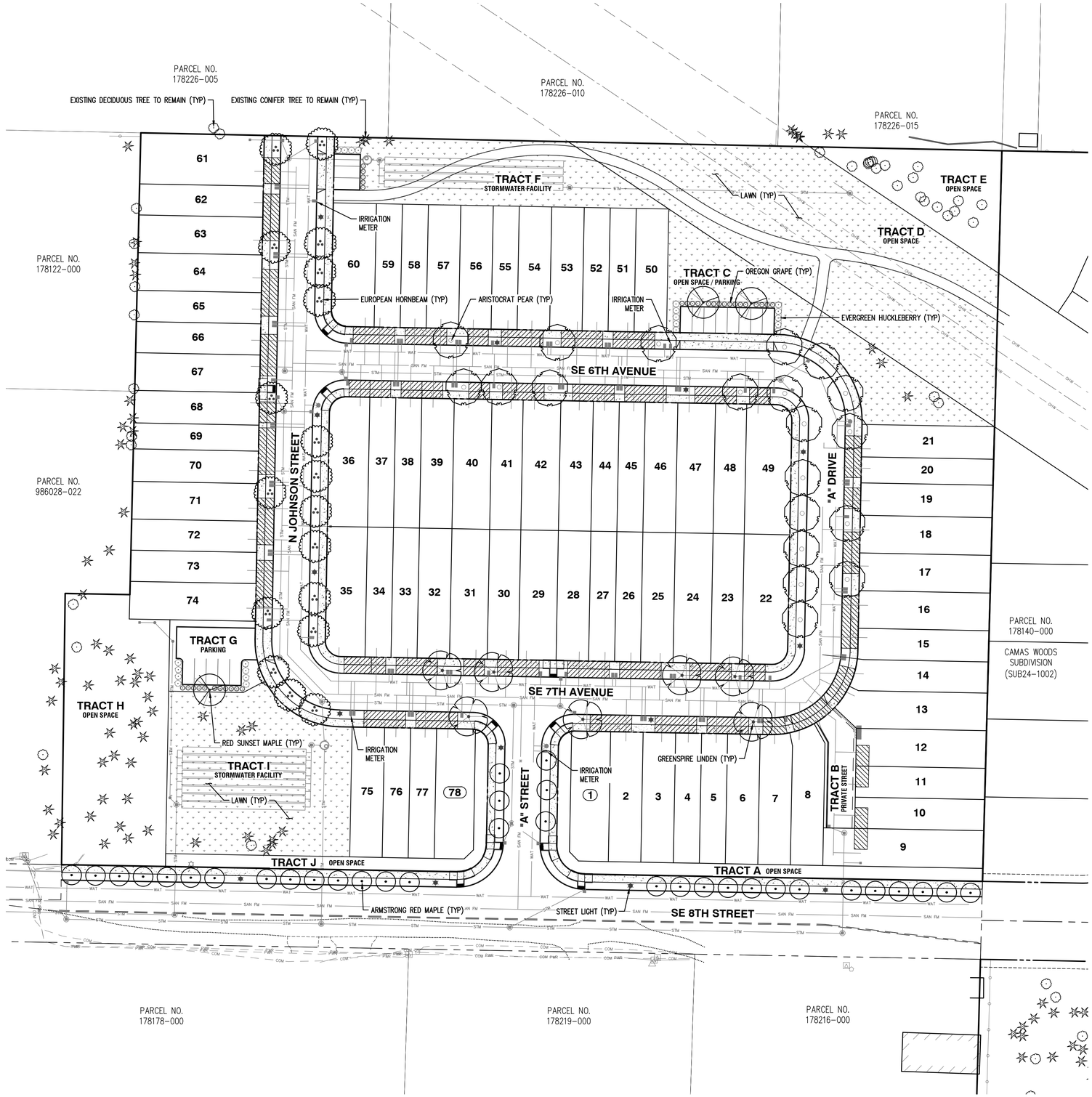
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CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

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PRELIMINARY PLANT SCHEDULE

SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
TREES					
	3	ACER RUBRUM 'FRANKSRED'	RED SUNSET MAPLE	2" CAL MIN./B&B	AS SHOWN
STREET TREES					
	33	ACER RUBRUM 'ARMSTRONG'	ARMSTRONG RED MAPLE	2" CAL MIN./B&B	AS SHOWN
	18	CARPINUS BETULUS	EUROPEAN HORNBEAM	2" CAL MIN./B&B	AS SHOWN
	20	PYRUS CALLERYANA 'ARISTOCRAT'	ARISTOCRAT PEAR	2" CAL MIN./B&B	AS SHOWN
	7	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	2" CAL MIN./B&B	AS SHOWN
SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
SHRUBS					
	32	MAHONIA AQUIFOLIUM	OREGON GRAPE	3 GAL. CONT.	48" o.c.
	22	VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	3 GAL. CONT.	60" o.c.
GROUND COVERS					
	59,877 SF±	LAWN: NORTHWEST SUPREME LAWN SEED MIX – SUNMARK SEEDS (OR APPROVED EQUAL) DASHER 3 PERENNIAL RYEGRASS (LOLIUM PERENNE VAR. DASHER 3) 35%; CUTTER II PERENNIAL RYEGRASS (LOLIUM PERENNE VAR. CUTTER II) 35%; GARNET CREEPING RED FESCUE (FESTUCA RUBRA VAR. GARNET) 15%; WINDWARD CHEWINGS FESCUE (FESTUCA RUBRA SPP FALLAX VAR. WINDWARD) 15% APPLY AT A RATE OF 8 LBS. PER 1,000 SF OR AS RECOMMENDED BY SUPPLIER.			

PRELIMINARY LANDSCAPE NOTES

1. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PLANT AND MATERIAL QUANTITIES. IF DISCREPANCIES OCCUR, DESIGN INTENT PREVAILS OVER QUANTITIES LISTED.
2. ALL PLANTS AND PLANTINGS SHALL CONFORM TO CITY OF CAMAS DESIGN STANDARDS AND TO AMERICAN STANDARDS FOR NURSERY STOCK ANSI Z60.1. PLANT IN ACCORDANCE WITH BEST PRACTICE INDUSTRY STANDARDS SUCH AS THOSE ADOPTED BY THE WESTERN WASHINGTON ASSOCIATION OF LANDSCAPE PROFESSIONALS (WALP).
3. REVISIONS OR SUBSTITUTIONS TO PLANTING, INCLUDING CHANGES AND LOCATION, QUANTITIES, SPECIES, SIZES, SPACING, ETC. DUE TO UNFORESEEN SITE CONDITIONS, PLANT AVAILABILITY, ETC. MAY BE MADE WITH APPROVAL WHERE ALLOWED BY THE CITY OF CAMAS DESIGN STANDARDS PRIOR TO FINAL INSTALLATION.
4. CENTER TREES IN LANDSCAPE STRIP WHERE POSSIBLE UNLESS OTHERWISE SHOWN. KEEP THE TRUNKS 3' O.C. MINIMUM FROM CURBS, SIDEWALKS, AND OTHER PAVING. 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 CONFLICTS WITH UTILITIES, HYDRANTS, LIGHT POLES, METERS, ETC.
5. HATCHED AREAS ARE MEANT TO CONVEY GENERAL PLANT LOCATION. PLANT COVERAGE, SPACING, AND LAYOUT SHALL BE CONSISTENT WITH THE SPACING LISTED IN THE PLANT SCHEDULE FOR FULL COVERAGE.
6. MULCH: APPLY 3" DEEP WELL-AGED MEDIUM GRIND OR SHREDDED DARK HEMLOCK OR FIR BARK MULCH UNDER AND AROUND ALL PLANTINGS. AVOID COVERING FOLIAGE OR ROOT CROWN OF PLANTS WITH BARK MULCH. PLANTS SHALL BE SET TO A DEPTH TO ACCOMMODATE MULCH APPLICATION.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING STREET TREES AND GROUNDCOVER ALONG THE FRONTAGE OF OPEN SPACE TRACTS AND SIDE LOTS. HOME OWNERS SHALL BE RESPONSIBLE FOR INSTALLING STREET TREES AND GROUNDCOVER ALONG LOT FRONTAGE AT TIME OF HOME CONSTRUCTION.
8. SOIL PREPARATION: GROWING MEDIUM IN ALL NEW PLANTING BEDS SHALL BE A MINIMUM OF 12" DEEP (6" OVER LAWN AREAS) OVER NON-COMPACTED, FREE-DRAINING SUBSOIL. EXISTING, NON-COMPACTED, NATIVE SOIL MAY COUNT TOWARDS THIS REQUIREMENT. REUSE SURFACE SOIL STOCKPILED ON THE SITE AND/OR IMPORT NEW TOPSOIL TO MAKE UP REQUIRED AMOUNTS FOR INSTALLATION. TOPSOIL SHALL BE FREE OF ROOTS, PLANTS, SOD, STONES (3/4" OR LARGER), CLAY LUMPS, DEBRIS, ALKALI SALTS, AND OTHER EXTRANEOUS MATERIALS HARMFUL TO PLANT GROWTH. SOIL PLACEMENT AND PLANTING SHALL OCCUR IN CONDITIONS THAT DO NOT RESULT IN OVER-COMPACTION OR EROSION, SATURATED SOIL OR OTHER CONDITIONS SUCH AS FREEZING OR ABOVE AVERAGE TEMPERATURES, RAINY CONDITIONS, ETC. SOIL SHALL BE IN FRIABLE (WORKABLE) CONDITION WHEN PLACED. FINISH GRADE OF NEW PLANTING AREAS SHALL SEAMLESSLY MEET FINISH GRADE SET IN GRADING PLANS.
9. ALL PLANTING AREAS SHALL BE AUTOMATICALLY IRRIGATED. LANDSCAPE CONTRACTOR TO 'DESIGN-BUILD' IRRIGATION SYSTEM AND SUBMIT PLANS TO CITY OF CAMAS AND THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO BEGINNING INSTALLATION. REFER TO CAMAS DESIGN STANDARDS MANUAL FOR IRRIGATION DETAILS.
10. ALL STREET TREE LOCATIONS ARE SUBJECT TO CHANGE DUE TO DRIVEWAY, UTILITIES, STREET LIGHTS, FIRE HYDRANTS, CATCH BASIN, ETC.
11. BENCH LOCATIONS SHOWN ARE CONCEPTUAL. FINAL LOCATIONS TO BE DETERMINED WITH FINAL LANDSCAPE PLAN.

TREE PLAN

GROSS SITE AREA:	383,003 SF (8.79 AC)
NET SITE AREA:	312,508 SF (7.11 AC)
TOTAL TREE UNITS REQUIRED (7.17 AC X 30):	215
EXISTING TREES RETAINED/(TREE UNITS):	373
PROPOSED SITE TREES/(TREE UNITS):	81/(81)
TOTAL TREE UNITS: (RETAINED AND PROPOSED)	454

*** NET AREA EXCLUDES OPEN SPACE AND CRITICAL AREA**

STREET TREES REQUIRED:	78
STREET TREES PROPOSED:	78

N

SCALE: 1"=40 FEET

40 0 8 20 40

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PRELIMINARY LANDSCAPE PLAN
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CAMAS, WASHINGTON

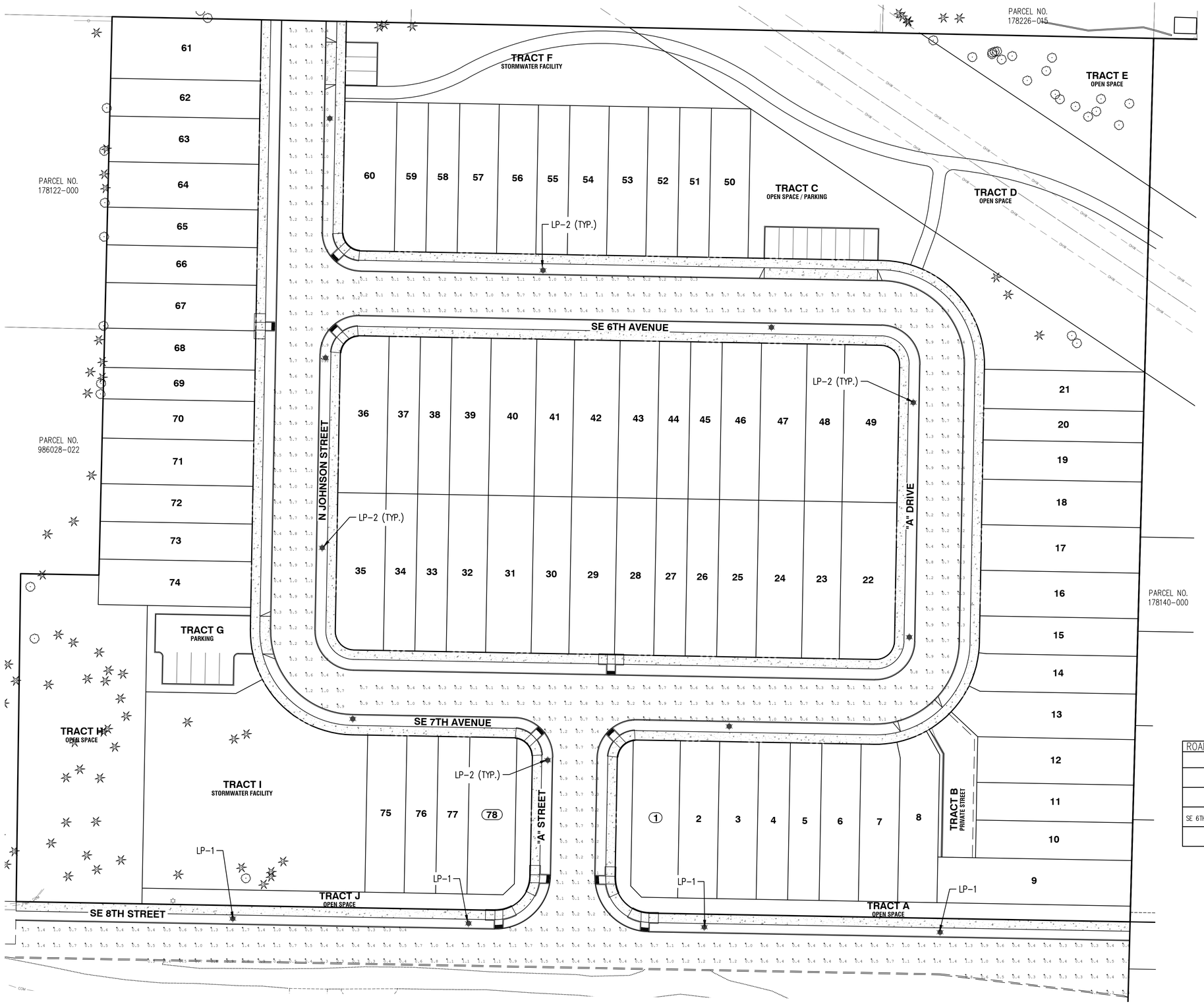
STATE OF WASHINGTON
TIMOTHY E. BOYCE
3/26/2025
REGISTERED LANDSCAPE ARCHITECT
EXP. 02/12/2026

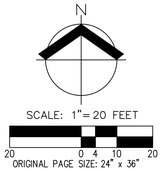
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CHECKED BY:	TEB

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AKS DRAWING FILE: 8397-01 P11.0 LANDSCAPE PLAN.DWG | LAYOUT: P11.0





ROADWAY LIGHT LEVEL SUMMARY – CITY OF CAMAS

ROADWAY	UNITS	AVERAGE	MAX	MIN
SE 8TH STREET	Fc	0.67	1.7	0.1
"A" STREET	Fc	0.54	1.3	0.1
SE 6TH & 7TH AVENUE, "A" DRIVE	Fc	0.54	1.3	0.1
N JOHNSON STREET	Fc	0.64	1.3	0.1

LUMINAIRE SCHEDULE

SYMBOL /LABEL	QUANTITY	STYLE	LUMINAIRE TYPE	POLE TYPE	POLE HEIGHT
(LP-1)	4	PROPOSED	LEOTEK – LED COBRA HEAD – GCJ1-20H-MV-WW-2R-GY-700-BBL-PCR7-WL	N/A	25.0' HT.
(LP-2)	11	PROPOSED	HOLOPHANE AWDE3-P20-30K-MVOLT-MS-AL3-BK-ST-TBK-AO-PR7-L1H-TB-NL1X1-UA-GVDHSS90	PLP DECORATIVE POLE SPECIFICATIONS PLP MODEL# DOM-DB-FL-14.5-BL-CI	14.5' HT.

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PRELIMINARY LIGHTING PLAN
CAMAS WOODS II
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5. Preliminary Stormwater Design Report (TIR)

Camas Woods II
(PA24-1022)
Camas, Washington

Preliminary Stormwater Technical Information Report

Date: April 2025

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

Applicant:
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Vancouver, WA 98683
(503) 936-8514 | andy@hsr-capital.com

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Certificate of the Engineer

Camas Woods II Subdivision
Camas, Washington
Preliminary Technical Information Report

This Preliminary 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)

CAMAS WOODS II 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 hydraulic analysis. The proposed plan is to subdivide the subject site into a 78-lot subdivision (Camas Woods II) and develop the lots with 78 attached single-family homes.

Section A.1 – Site Location

The Camas Woods II Subdivision is located on two parcels of land, totaling approximately 8.79 acres. Parcels 178109-000 and 178209-000 have a site address 26514 SE 8th Street, Camas, WA 98607, and 26416 SE 8th Street, Camas, WA 98607, respectively. Access to the site will be from SE 8th Street. The project is located within the Northeast ¼ of Section 35, Township 2 North, Range 3 East, Willamette Meridian, Clark County. The site is zoned North Shore Mixed Use (MX-NS), North Shore Higher Density Residential (HD-NS).

Section A.2 – Site Topography and Critical Areas

The site has two houses on it with a combination of asphalt and gravel driveways that access from SE 8th Street. The site is relatively flat, with a slight high spot in the southeast corner of the site. From this high point, a slight broad ridge extends from the southeast to the northwest corner of the site. According to Clark County Geographic Information Services (GIS), portions of the site have slopes up to 15 percent. However, the majority of the grades on site range from flat to between 5 and 10 percent. The existing vegetation consists of evergreen and deciduous trees and shrubs, turfgrass, and field grass.

Section A.3 – Existing On-Site Stormwater System

The site consists of two threshold discharge areas (TDAs). Currently the stormwater sheet flows as it infiltrates towards the northeast and southwest corners of the property. See the pre-developed basin plan within Appendix D for existing drainage patterns for the site.

Section A.4 – Site Parameters That Influence Stormwater Design

The Camas Woods II Subdivision project site mainly consists of (HcB) Hesson clay loam, 0-8% slopes, well drained, non-hydric, WWHMSoil Group 3 soil. Infiltration testing performed in January of 2025 by Columbia West Engineering concluded infiltration to be feasible on-site. Design recommendation and testing results are outlined within the project geotechnical report (Appendix G). The site is in the Lacamas watershed above Round Lake dam, water exiting the site will require phosphorus treatment for all pollution-generating surfaces. Due to the ridge in the middle of the site stormwater will be analyzed as two separate TDAs.

Section A.5 – Adjacent Property Drainage

Adjacent properties do not drain onto the project site. Surrounding parcels drain away from site.

Section A.6 – Adjacent Site Areas

The site is bounded by the SE 8th Street existing Right-of-Way to the south. Properties to the west are zoned North Shore Higher Density Residential (HD-NS). The property bordering the east side of the site is zoned both North Shore Lower Density Residential (LD-NS) and North Shore Higher Density Residential

(HD-NS) and also known at Camas Woods Subdivision (SUB24-1002). Properties north of the site are zoned North Shore Lower Density Residential (LD-NS).

Section A.7 – General Project Stormwater Description

Proposed site improvements for the development include sidewalks, public streets, open space tracts, 78 attached single-family homes. Construction will take place in one phase. Stormwater is proposed to infiltrate the majority of the runoff from the site utilizing 2 separate infiltration galleries. Each infiltration gallery will be equipped with an emergency overflow outlet that will release runoff at peak stormwater events, while keeping flows at or below the required release rates. Site stormwater will be collected by catch basins and conveyed to the respective treatment and detention facility within each basin or subbasin.

TDA 1 – Runoff from driveways, parking areas, sidewalks, roadways, and any landscaped areas that contribute runoff to the roadways, will be collected and conveyed to water quality/filter media manhole through a series of catch basins and manholes. Stormwater from the water quality manhole will then be discharged into an infiltration gallery where runoff will be stored and either infiltrate into the ground or will be released through the overflow/emergency outlet into Tract D, it's natural drainage outfall location. Tract D consists of an existing utility easement for above ground electric transmission lines. This TDA will meet MR #5 utilizing the LID Performance Standard to demonstrate compliance that discharges from the site will match developed discharges durations to pre-developed durations for the range of pre-developed discharge rates from 8% of the 2-year peak flow to 50% of the 2-year peak flow. The water quality manhole and infiltration gallery are located in Tract F. Stormwater from pollution generating surfaces will be treated by mechanical filtration to meet MR #6 guidelines for water quality. Roof runoff from the buildings and rear yard pervious landscaped areas are proposed to discharge to individual roof downspout drywells. The assumed roof areas are not included in the impervious surface mitigated basin area shown on the Post-Developed Basin Map (Appendix D).

TDA 2 – Runoff from driveways, parking areas, sidewalks, roadways, and any landscaped areas that contribute runoff to the roadways, will be collected and conveyed to water quality/filter media manhole through a series of catch basins and manholes. Stormwater from the water quality manhole will then be discharged into an infiltration gallery where runoff will be stored and either infiltrate into the ground or will be released through the overflow/emergency outlet into an existing drainage ditch located along the north side of SE 8th Street, west of the site, the natural drainage direction from this site. This TDA will meet MR #5 utilizing the LID Performance Standard to demonstrate compliance that discharges from the site will match developed discharges durations to pre-developed durations for the range of pre-developed discharge rates from 8% of the 2-year peak flow to 50% of the 2-year peak flow. The water quality manhole and infiltration gallery are located in Tract I. Stormwater from pollution generating surfaces will be treated by mechanical filtration to meet MR #6 guidelines for water quality. Roof runoff from the buildings and rear yard pervious landscaped areas are proposed to discharge to individual roof downspout drywells. The assumed roof areas are not included in the impervious surface mitigated basin area shown on the Post-Developed Basin Map (Appendix D).

Due to the location of the entire site being within the Lacamas Lake watershed above the Round Lake dam, water quality for the site is required to meet phosphorus treatment per the 2024 Stormwater Management Manual for Western Washington (SWMMWW). See the development plans, Appendix C, and the Stormwater Basin Map, Appendix D, for stormwater information.

Section B – Minimum Requirements

Section B.1 – Determination of Applicable Minimum Requirements

Proposed land disturbances shall include grading, excavation, and removal of unsuitable soils for the proposed developments. Due to the amount of proposed hard surfaces (greater than 5,000 square feet), the project is required to meet MR #'s 1 through 9 per Figure I-3.1 of the 2024 Stormwater Management Manual for Western Washington (SWMMWW) (see Appendix B).

The tables in this section provide information pertaining to each stormwater subbasin within the project area. See the Stormwater Basin Maps for basin locations (Appendix D).

Table B-1: Proposed Hard Surface and Landscaping

Sub-Basin	Existing Hard Surfaces (acres)	New Hard Surfaces (acres)	Replaced Hard Surfaces (acres)	Native Vegetation Replaced with Landscaping (acres)	Total Land Disturbed (acres)
1A	0.000	2.593	0.000	1.283	3.876
1B	0.000	0.007	0.000	0.000	0.007
2A	0.290	2.902	0.290	1.316	4.218
2B	0.000	0.000	0.000	0.000	0.000

Note: Assumes an average area of 450-square-foot driveway and 70% lot coverage for HD-NS Zoning.

Tables B-2 and B-3 present information for the mitigated site basins, differentiated between pollution- and non-pollution-generating surfaces. It is important to note that all 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

Sub-Basin	Hard Surfaces (acres)	Pervious Surfaces (acres)	Total Surface Area (acres)
1A	1.243	0.817	2.060
1B	0.000	0.000	0.000
2A	1.568	0.987	2.555
2B	0.000	0.000	0.000

Note: Assumes an average area of 450-square-foot driveway and 70% lot coverage for HD-NS Zoning.

Table B-3: Non-Pollution-Generating Surfaces

Sub-Basin	Hard Surfaces (acres)	Pervious Surfaces (acres)	Total Surface Area (acres)
1A	1.350	0.466	1.816
1B	0.007	0.000	0.007
2A	1.334	0.329	1.663
2B	0.000	0.000	0.000

Note: Assumes an average area of 450-square-foot driveway and 70% lot coverage for HD-NS Zoning.

The developed basin's effective hard surfaces and the applicability of MRs #6 through #8 are summarized in Table B-4, below.

Table B-4: Effective Hard Surfaces

TDA	Hard Surface Area (acres)	MR #6 Required (Y/N)	MR #7 Required (Y/N)	MR #8 Required (Y/N)
1	1.243	Y	Y	N
2	1.568	Y	Y	N

Note: Assumes an average area of 450-square-foot driveway and 70% lot coverage for HD-NS Zoning.

Section C – Soils Evaluation

Section C.1 – Soil Suitability for Low Impact Development BMPs

The Camas Woods II development is suitable for infiltration of stormwater. The project geotechnical report dated February 18, 2025, and within Appendix G, and states, "Based on the tested infiltration rates, on-site systems are viable in the native soil at the site." Recommendations for the design of the infiltration system are provided in section 6.6.3 of the report.

Section C.2 – Water Table Information

Per the project geotechnical report, groundwater seepage was observed at a depth of 12 feet below ground surface at TP-6 located in the southwest corner of the site. Groundwater was not present in any of the other test pit locations. See geotechnical report in Appendix G.

Section C.3 – Soil Parameters

Per Natural Resources Conservation Service (NRCS) Soil Survey of Clark County, Washington, on-site soils consist of the following:

- HcB (Hesson clay loam, 0 to 8 percent slopes), 98.7 percent of the site (Type C soil / WWHM Soil Group 3)
- WgE (Washougal gravelly loam, 8 to 30 percent slopes), 1.3 percent of the site (Type B soil / WWHM Soil Group 2)

In general, clay loam soils exhibit moderately slow permeability, however, are suitable for traditional infiltration facilities. The gravelly loam soils on-site are located in the northeast corner of the site where no development is proposed. An NCRS soils map is included in Appendix A. The NCRS soils map is consistent with the soils that were observed on site and documented in the geotechnical report.

Section C.4 – Infiltration Rate Testing

A geotechnical site investigation was performed on site by Columbia West Engineering. See Appendix G for the full report. Infiltration rates were measured at three test pit locations. The infiltration rate (coefficient of permeability) at the test pits ranged from 4 inches per hour to 20 inches per hour. The depth the tests were performed were at 3 and 6 feet below ground surface (bgs). A total of 6 pits were excavated that ranged from 12.5 to 16 feet below ground surface (bgs).

Section C.5 – Complex Soil Conditions

A geotechnical report has been prepared and is attached to this report, see Appendix G. Existing soil conditions are summarized, and recommendations are presented in relation to site stormwater design considerations. No complex soil conditions are present on-site.

Section D – Source Control

Volume IV of the SWMMWW contains the following applicable source control best management practices (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).

- S407: BMPs for Dust Control at Disturbed Land Areas and Unpaved Roadways and Parking Lots
- S411: BMPs for Landscaping and Lawn/Vegetation Management

Section E – On-Site Stormwater Management BMPs

Per Figure I-3.3 of the SWMMWW, the project proposes to meet the LID Performance Standard and not use List #2. Table I-3.2, Site runoff which is pollution-generating will be collected and treated by mechanical filtration. After receiving treatment stormwater will be retained/infiltrated and released at rates that are at or below pre-developed flows. All pervious areas that will be disturbed with construction activities will meet post-construction soil quality and quantity requirements per BMP T5.13.

Section F – Runoff Treatment Analysis and Design

MR #6 requires that at least 91% of the post-developed pollution-generating runoff volume, as predicted by a continuous runoff model, be treated. All water conveyed to the infiltration facilities through piping will be treated as pollutant-generating runoff due to the mixing of pollutant and non-pollutant generating surfaces before treatment. Stormwater will be treated by mechanical filter cartridges located in concrete manholes before entering each of the site's stormwater infiltration galleries.

The Camas Woods II development is within the Lacamas Lake watershed, above the Round Lake dam, which requires phosphorus treatment. Lacamas Lake is listed as a category 5-303d waterbody for total phosphorus. Phosphorous treatment will be met by using filter media approved by the Washington Department of Ecology. This design satisfies the design requirement of CMC Chapter 14.02 by adhering to all relevant regulations from the State of Washington and City of Camas.

Table F-1: Water Quality Structure

TDA & Subbasin	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)	Required Number of Treatment Filter Cartridges (Cartridge size)
WQ Vault 1	1.243	0.817	0.1453	0.2100	5 (27")
WQ Vault 2	1.568	0.987	0.1832	0.210	5 (27")

**Note: Provided water quality flow rate is determined by using approved flow rates for Contech Phosphosorb media (0.042 cfs per 27" cartridge).*

Section G – Flow Control Analysis and Design

The Camas Woods II development consists of 2 TDAs. The site will be required to meet flow control standards as stated above. The project proposes infiltration galleries to meet flow control requirements. The galleries will be equipped with high flow/emergency overflow outlet that will only release runoff from

the system during high flow events while designed to maintain pre-development release rates at or below required flows.

TDA 1 is split into two subbasins (subbasin 1A & 1B). Subbasin 1A proposes to use an infiltration gallery utilizing 48" corrugated metal pipe (CMP) for retention embedded in drain rock trenches, consisting of four linked rows, 137.5' long, and a standard drywell. Subbasin 1B is proposed to remain in it's pre-developed condition with post-development runoff rates remaining the same as pre-development runoff conditions. Proposed overflow discharge from TDA 1 is proposed at or near its natural discharge location in the northeast corner of the site. The overflow conveyance pipe is proposed to daylight in Tract D of the project in the BPA easement. The soils in this location consist of well to excessively drained Type B soils where we anticipate discharge will dissipate subsurface into the gravelly soils. The outfall will be equipped with a discharge flow spreader. Discharge from TDA 1 has been analyzed and designed to meet MR #7.

TDA 2 is split into two subbasins (subbasin 2A & 2B). Subbasin 2A proposes to use an infiltration gallery utilizing 48" corrugated metal pipe (CMP) for retention embedded in drain rock trenches, consisting of eight linked rows, 95' long, and a standard drywell. Subbasin 2B is proposed to remain in its pre-developed condition with post-development runoff rates remaining the same as pre-development runoff conditions. Proposed overflow discharge from TDA 2 is proposed at or near it's natural discharge location in the southwest corner of the site. The overflow conveyance pipe is proposed to daylight west of the property into an existing ditch. The outfall will be equipped with riprap to protect the existing ditch from erosion from new construction installation. Discharge from TDA 2 has been analyzed and designed to meet MR #7.

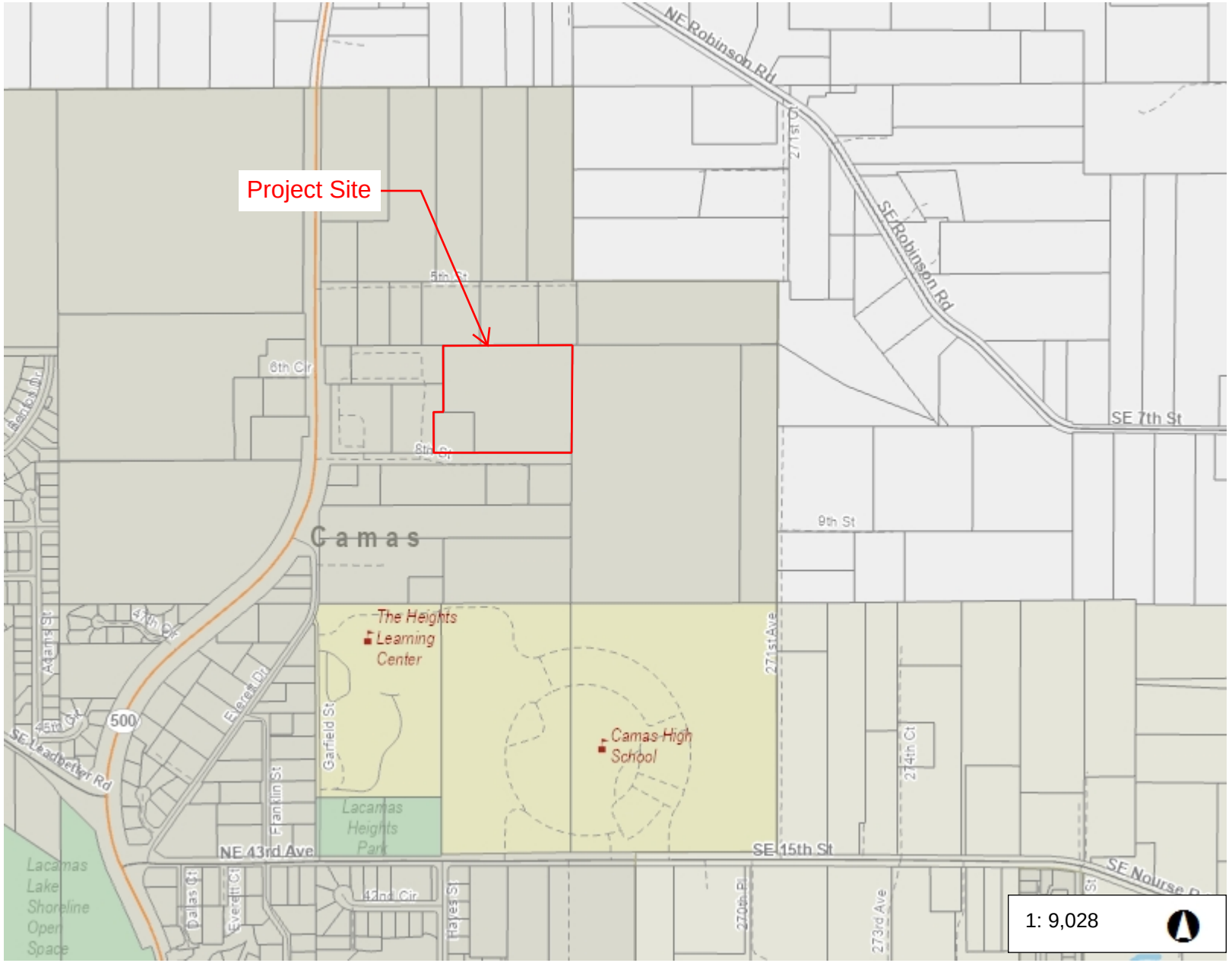
All facilities were sized with the use of WWHM 2012 (see Appendix F for flow control WWHM output.

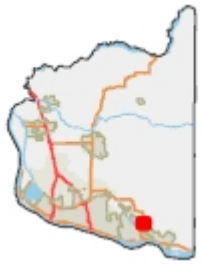
Section H – Wetland Protection

A Type III Wetland is located approximately 650' northwest of the project site. Historically, TDA #1 would have contributed runoff in the direction of this wetland. However, between the project site and the wetland, single family residence homes with large outbuildings are now developed. The project does not contribute either direct or indirect runoff to a wetland.

Appendix A: Map Submittals

Camas Woods





Legend

- Taxlots

Notes:

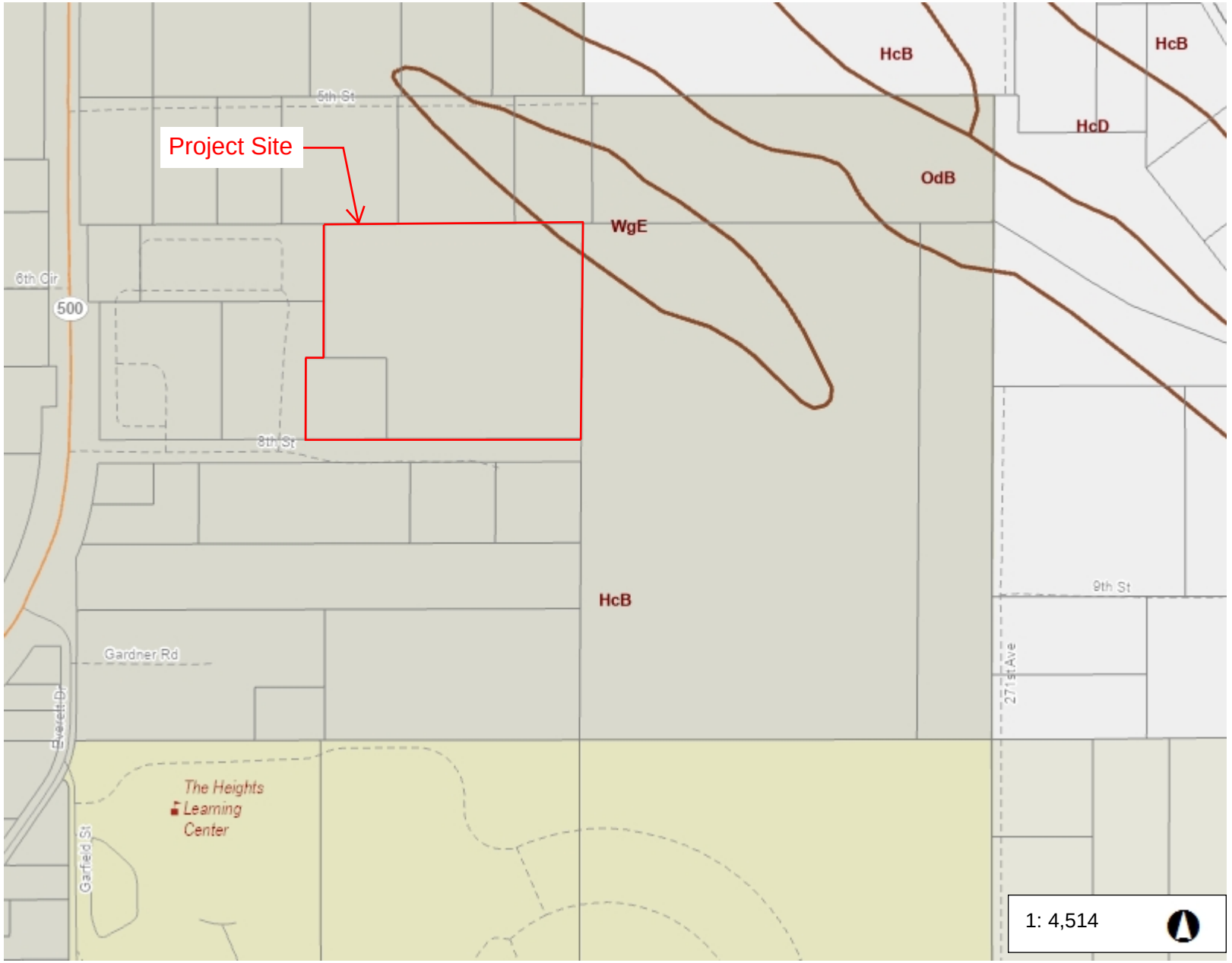
1: 9,028

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.

Camas Woods Soils Map





Legend

- Taxlots
- Soil Type

Notes:

752.3 0 376.17 752.3 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.

Custom Soil Resource Report
Soil Map



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
HcB	Hesson clay loam, 0 to 8 percent slopes	9.7	98.7%
WgE	Washougal gravelly loam, 8 to 30 percent slopes	0.1	1.3%
Totals for Area of Interest		**9.8**	**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

HcB—Hesson clay loam, 0 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2dx8
Elevation: 300 to 1,000 feet
Mean annual precipitation: 50 to 75 inches
Mean annual air temperature: 50 degrees F
Frost-free period: 170 to 210 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hesson and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hesson

Setting

Landform: Terraces
Parent material: Alluvium

Typical profile

H1 - 0 to 12 inches: clay loam
H2 - 12 to 60 inches: clay

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F002XB004WA - Portland Basin Forest
Forage suitability group: Soils with Few Limitations (G002XV502WA)
Other vegetative classification: Soils with Few Limitations (G002XV502WA)
Hydric soil rating: No

WgE—Washougal gravelly loam, 8 to 30 percent slopes

Map Unit Setting

National map unit symbol: 2f03
Elevation: 100 to 490 feet

Mean annual precipitation: 60 to 90 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 170 to 210 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Washougal and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Washougal

Setting

Landform: Terraces
Parent material: Gravelly alluvium

Typical profile

H1 - 0 to 20 inches: gravelly medial loam
H2 - 20 to 28 inches: very gravelly medial loam
H3 - 28 to 60 inches: very cobbly coarse sand

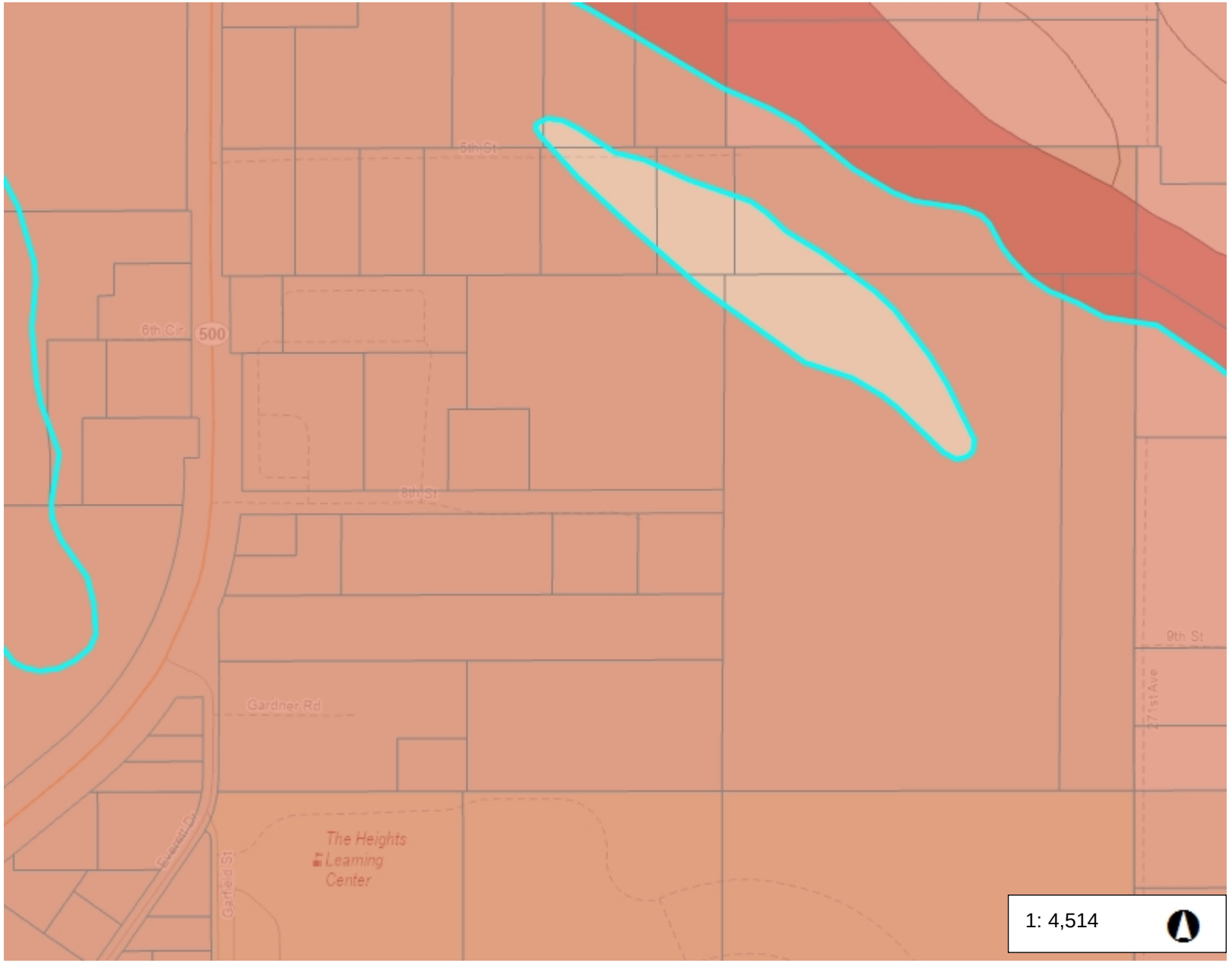
Properties and qualities

Slope: 8 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F002XB001WA - Portland Basin Dry Forest
Forage suitability group: Droughty Soils (G002XV402WA)
Other vegetative classification: Droughty Soils (G002XV402WA)
Hydric soil rating: No

WWHM Soil Group 3





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:

1: 4,514

752.3 0 376.17 752.3 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

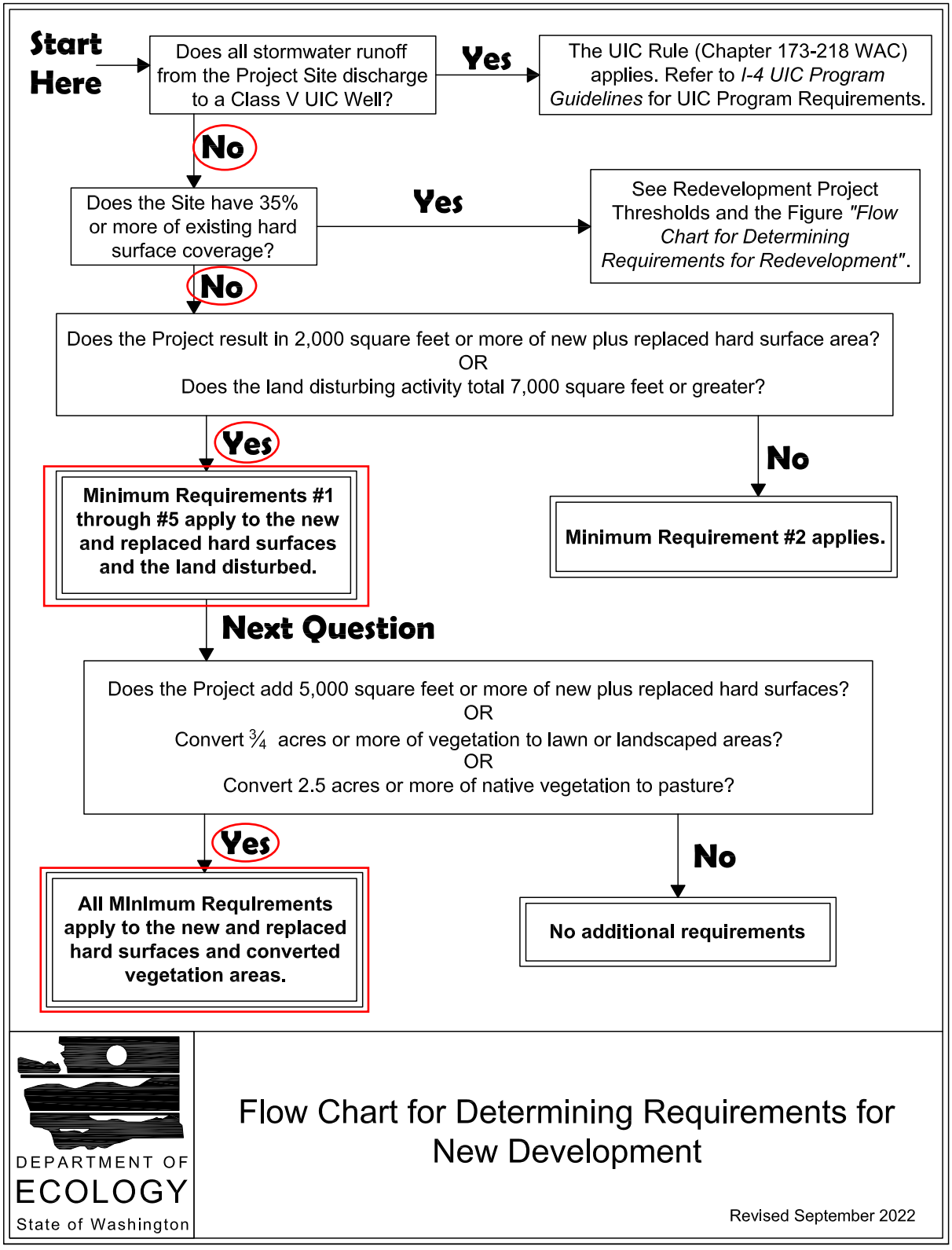
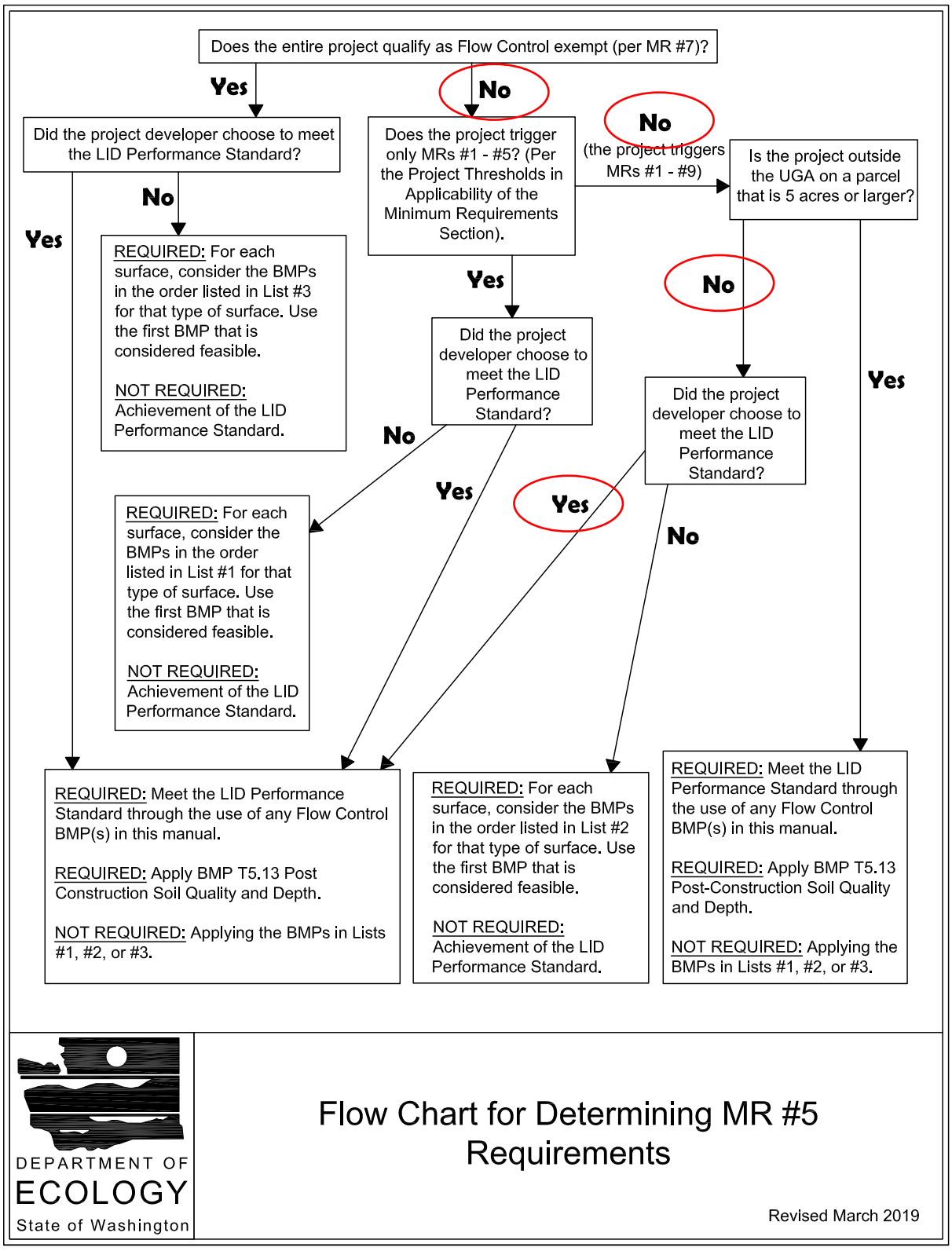


Figure I-3.3: Flow Chart for Determining MR #5 Requirements



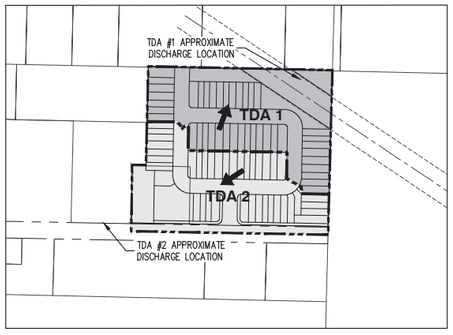
Appendix C: Development Plans

GENERAL NOTES

1. CONTOUR INTERVAL IS 2 FEET.
2. TREES ARE NOT SHOWN.
3. STORMWATER TREATMENT AND RETENTION/INFILTRATION FACILITIES FOR THIS DEVELOPMENT ARE TO BE OWNED AND MAINTAINED BY THE HOA.
4. ACCORDING TO CLARK COUNTY GIS, THE SITE IS NOT WITHIN OR ADJACENT TO A 100-YEAR FLOODPLAIN OR SHORELINE MANAGEMENT AREA.
5. THERE ARE NO KNOWN EXISTING ON-SITE STORMWATER FACILITIES.
6. ACCORDING TO CLARK GIS, NO FLOODPLAIN, FLOODWAYS, OR SHORELINE EXIST ON-SITE.
7. EXISTING DRAINAGE FLOW ROUTES ARE SOUTHWEST TOWARD INTO THE EXISTING DITCHES ALONG NE 8TH STREET AND NORTHEAST TOWARD TRACT E, WITH THE SITE BEING SPLIT DIAGONALLY AT APPROXIMATELY THE CENTER BY A RIDGE. THE SITE IS TWO THRESHOLD DISCHARGE AREAS (TDAs).
8. PROPOSED DRAINAGE FLOW ROUTES TO FOLLOW EXISTING FLOW ROUTES TO EXTENT POSSIBLE, WITH STORMWATER OVERFLOW DISCHARGED FROM STORMWATER INFILTRATION FACILITIES INTO EXISTING DITCH ALONG NE 8TH STREET AND NORTHEAST TOWARDS TRACT E.
9. ROOF AREAS FOR ALL LOTS DRAIN TO A PRIVATE STORMWATER DOWNSPOUT DRYWELL TO BE INSTALLED DURING HOME BUILD CONSTRUCTION.
10. SEE OVERALL THRESHOLD DISCHARGE AREA (TDA) VICINITY MAP ON THIS SHEET, P10.0.
11. PRELIMINARY STORM SIZING LISTED BELOW TO BE FINALIZED DURING FINAL ENGINEERING:
    STORM MAIN: 12" MIN. DIAMETER
    CATCH BASIN LEADS: 10" MIN. DIAMETER

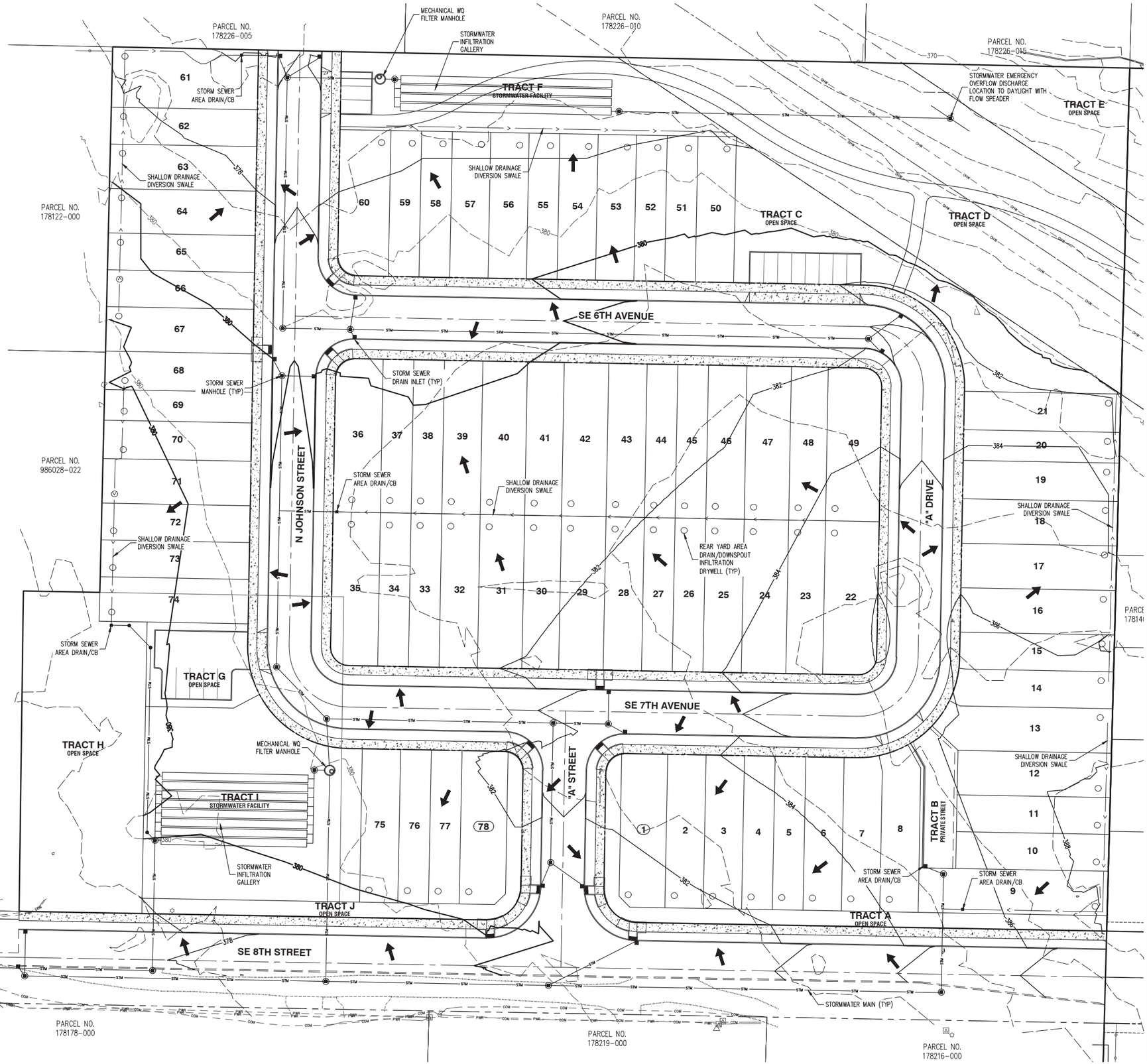
LEGEND

- EXISTING GROUND CONTOUR (2 FT) — 352
- EXISTING GROUND CONTOUR (10 FT) — 350
- FINISHED GRADE CONTOUR (2 FT) — 352
- FINISHED GRADE CONTOUR (10 FT) — 350
- DRAINAGE FLOW DIRECTION
- GRADING LIMITS
- DRAINAGE SWALE



TDA VICINITY MAP

N.T.S.



SCALE: 1" = 20 FEET
20 0 4 10 20
ORIGINAL PAGE SIZE: 24" x 36"

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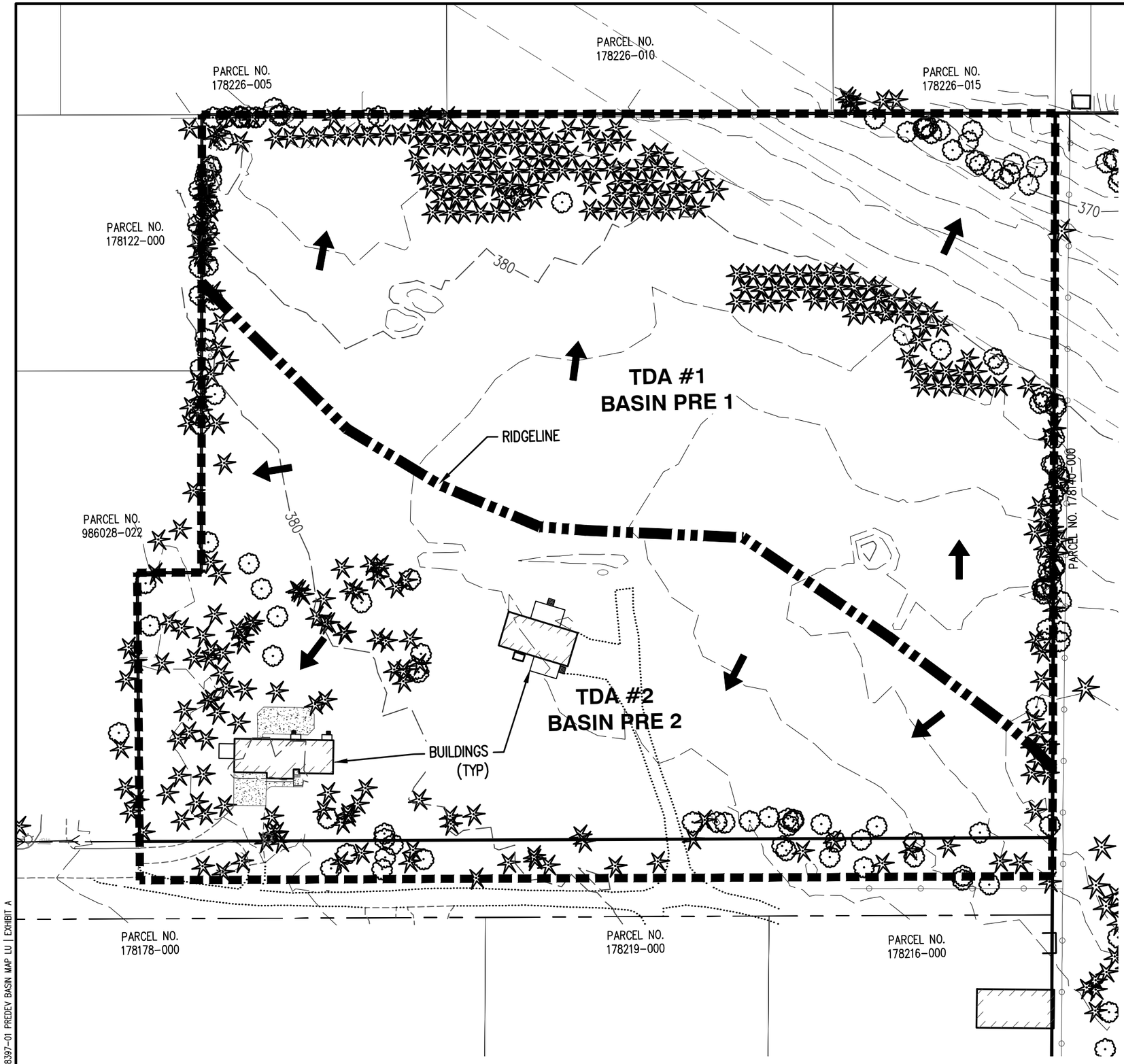
PRELIMINARY STORMWATER PLAN
CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

JOB NUMBER:	8397-01
DATE:	4/3/2025
DESIGNED BY:	MA
DRAWN BY:	SAG
CHECKED BY:	

P10.0

AKS DRAWING FILE: 8397-01 P10.0 STRM PLANDWG | LAYOUT: P10.0

Appendix D: Stormwater Basin Maps



LEGEND

- EXISTING GROUND CONTOUR (2 FT)
- EXISTING GROUND CONTOUR (10 FT) — 350
- DRAINAGE FLOW DIRECTION
- PRE-DEVELOPED BASIN BOUNDARY
- PRE-DEVELOPED TDA BOUNDARY

BASIN AREAS:

BASIN	FORESTED (AC)	PASTURE (AC)	IMPERVIOUS	TOTAL(AC)
BASIN PRE 1	4.69	0.00	0.00	4.69
BASIN PRE 2	4.59	0.00	0.00	4.59
TOTAL	9.28	0.00	0.00	9.28

N

SCALE: 1"= 80 FEET

80 0 16 40 80

ORIGINAL PAGE SIZE: 11" x 17"

DATE: 3/7/2025

PRE-DEVELOPED BASIN MAP

CAMAS WOODS II

EXHIBIT **A**

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DRWN: SAG
CHKD: BDH
AK 8397-01

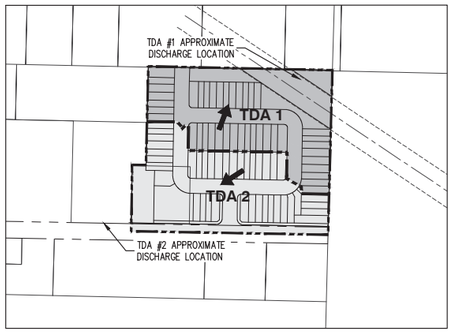
DWG: 8397-01 PREDEV BASIN MAP LU | EXHIBIT A

GENERAL NOTES

1. CONTOUR INTERVAL IS 2 FEET.
2. TREES ARE NOT SHOWN.
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11. PRELIMINARY STORM SIZING LISTED BELOW TO BE FINALIZED DURING FINAL ENGINEERING:
    STORM MAIN: 12" MIN. DIAMETER
    CATCH BASIN LEADS: 10" MIN. DIAMETER

LEGEND

- EXISTING GROUND CONTOUR (2 FT) — 352
- EXISTING GROUND CONTOUR (10 FT) — 350
- FINISHED GRADE CONTOUR (2 FT) — 352
- FINISHED GRADE CONTOUR (10 FT) — 350
- DRAINAGE FLOW DIRECTION
- GRADING LIMITS
- DRAINAGE SWALE



TDA VICINITY MAP

N.T.S.

PARCEL NO. 178226-005
PARCEL NO. 178226-010
PARCEL NO. 178226-015
PARCEL NO. 178122-000
PARCEL NO. 986028-022
PARCEL NO. 178178-000
PARCEL NO. 178219-000
PARCEL NO. 178216-000
PARCEL NO. 178146

MECHANICAL WQ FILTER MANHOLE
STORMWATER INFILTRATION GALLERY
TRACT F STORMWATER FACILITY
STORMWATER EMERGENCY OVERFLOW DISCHARGE LOCATION TO DAYLIGHT WITH FLOW SPREADER
TRACT E OPEN SPACE
STORM SEWER AREA DRAIN/CB
SHALLOW DRAINAGE DIVERSION SWALE
TRACT C OPEN SPACE / PARKING
TRACT D OPEN SPACE
SE 6TH AVENUE
STORM SEWER MANHOLE (TYP)
STORM SEWER DRAIN INLET (TYP)
N JOHNSON STREET
"A" DRIVE
REAR YARD AREA DRAIN/DOWNSPOUT INFILTRATION DRYWELL (TYP)
TRACT G PARKING
SE 7TH AVENUE
TRACT H OPEN SPACE
TRACT I STORMWATER FACILITY
"A" STREET
TRACT B PRIVATE STREET
TRACT J OPEN SPACE
TRACT A OPEN SPACE
SE 8TH STREET
STORMWATER MAIN (TYP)

N

SCALE: 1" = 20 FEET
20 0 4 10 20
ORIGINAL PAGE SIZE: 24" x 36"

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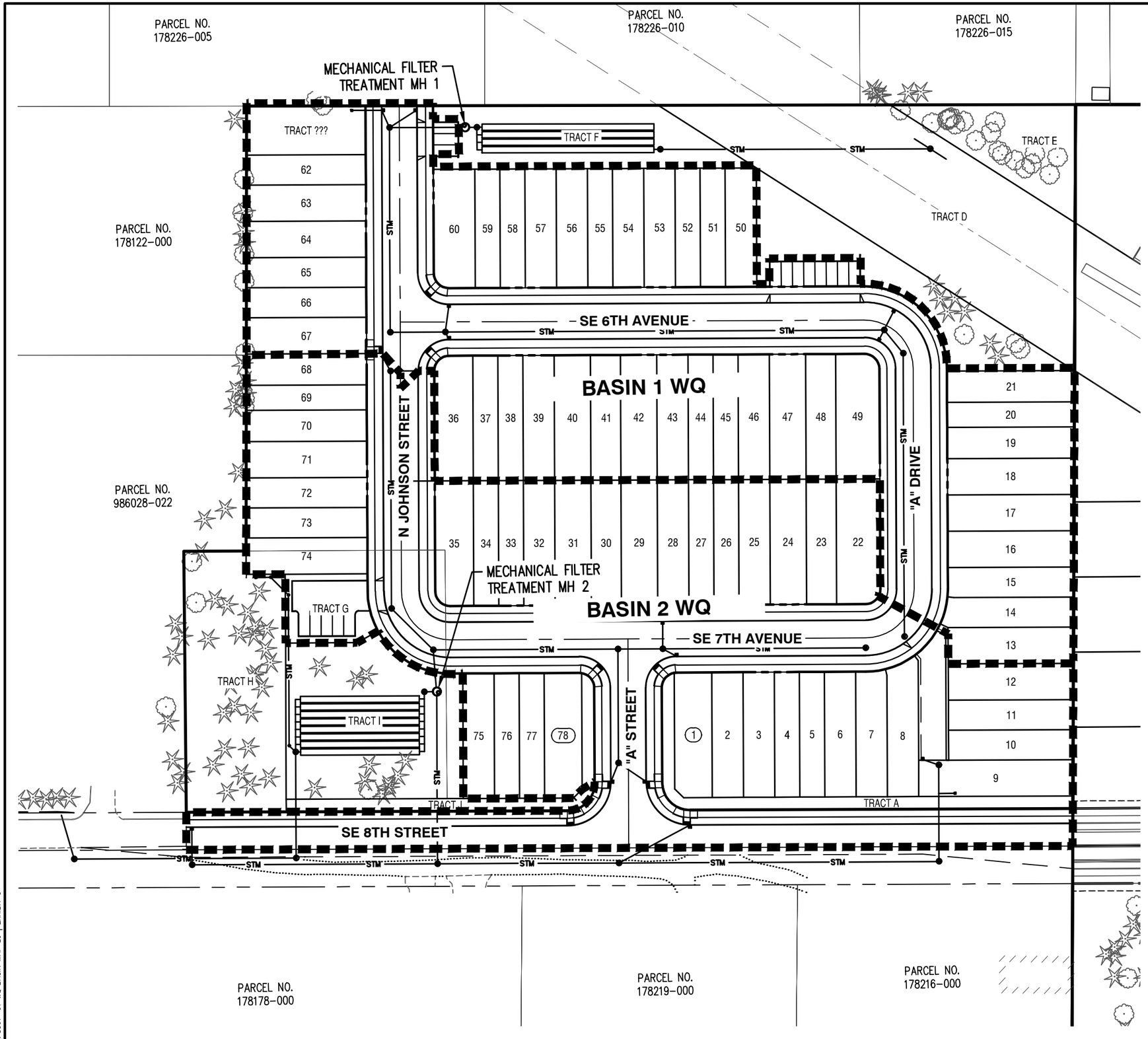
PRELIMINARY STORMWATER PLAN
CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	8397-01
DATE:	4/14/2025
DESIGNED BY:	MA
DRAWN BY:	SAG
CHECKED BY:	

P10.0

AKS DRAWING FILE: 8397-01 P10.0 STRM PLANONLY | LAYOUT: P10.0



LEGEND

WQ BASIN BOUNDARY

BASIN AREAS:

BASIN	PERVIOUS (AC)	IMPERVIOUS (AC)	TOTAL(AC)
BASIN 1 WQ	0.817	1.243	2.060
BASIN 2 WQ	0.987	1.568	2.555

BASIN NOTES:

1. ROOF DOWNSPOUT BMP V-4.3, DOWNSPOUT INFILTRATION DRYWELLS ARE PROPOSED FOR ROOF RUNOFF. ASSUMED ROOF AREAS ARE NOT INCLUDED IN THE IMPERVIOUS SURFACE MITIGATED BASIN AREAS. THEY ARE CONSIDERED FULLY INFILTRATED.

N

SCALE: 1"= 80 FEET

80 0 16 40 80

ORIGINAL PAGE SIZE: 11" x 17"

DATE: 3/13/2025

WQ BASIN MAP	EXHIBIT
CAMAS WOODS II	**C**
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DWG: 8397-01 WQ BASIN MAP LU | EXHIBIT C

Appendix E: BMP Details

BMP T7.50: Drywells

Purpose and Definition

Drywells are subsurface concrete structures, typically precast, that convey stormwater runoff into the soil matrix. They can be used as standalone structures, or as part of a larger drainage system (i.e. the overflow for a biofiltration swale).

Note that drywells meet the definition of an Underground Injection Control (UIC) well, and must meet the regulations per I-4 UIC Program Guidelines. Also note that per I-3.3 Applicability of the Minimum Requirements if there is overflow to the MS4, then the Minimum Requirements apply and only the registration requirement of the UIC rule applies.

General Criteria

Figure V-5.29: Typical Infiltration Drywell – Type 1 and Figure V-5.30: Typical Infiltration Drywell – Type 2 show typical infiltration drywell systems.

These systems are designed as specified below. The following general requirements apply to design of drywells. Check with the local jurisdiction for outflow capacity or other local requirements:

- Drywell bottoms should be a minimum of 5 feet above seasonal high groundwater level or impermeable soil layers. Refer to V-5.6 Site Suitability Criteria (SSC).
- Drywells are typically a minimum of 48 inches in diameter and approximately 5 to 10 feet deep, or more.
- Filter fabric (geotextile) may need to be placed on top of the drain rock and on trench or drywell sides prior to backfilling to prevent migration of fines into the drain rock, depending on local soil conditions and local jurisdiction requirements.
- Drywells should be no closer than 30 feet center to center or twice the depth, whichever is greater.
- Drywells should not be built on slopes greater than 25% (4H:1V).
- Drywells may not be placed on or above a landslide hazard area or slopes greater than 15% without evaluation by a licensed engineer in the state of Washington with geotechnical expertise or licensed geologist and jurisdiction approval.

Design Procedure

Refer to the guidance earlier in this chapter that is applicable to the design for all infiltration BMPs.

Operation and Maintenance Criteria

The structural life of a drywell is approximately 20 years, although hydraulic failure could potentially occur at any time. Drywell performance is dependent on proper installation, regularly scheduled maintenance, and contaminants reaching the drywell. The following schedule is

recommended as a guide; actual schedule may need to be varied based on observed performance.

Table V-5.7: Maintenance Criteria for Drywells

Maintenance Interval	Description of Maintenance to Be Performed
Every 3 months	Visually inspect
Every 6 months	Remove debris and sediment
Annually	Check for structural damage
Whichever Is More Frequent: Above Schedule or Below Observed Events:	
Following substantial (> 24-hour) rainfall event	If possible, observe drywells in operation during the rainfall event. Aim to identify and correct problem prior to failure.
Following intense but short-duration event	
Following snowmelt event	It is especially important to observe the drywells if the melt occurred concurrently with frozen ground conditions.

Maintenance Tasks

Visual Inspection

Ensure metal grate and drywell are free of debris and obstructions. Remove any debris from on top of or around drywell and grate. Remove grate and inspect drywell for debris and sediment buildup in the barrel. Debris needs to be removed immediately, if possible. Sediment needs to be cleaned out before depth reaches the lowest row of slots providing outflow from drywell barrel.

Anytime that standing water is noticed in a drywell > 24 hours after an event has ceased, a visual inspection is warranted. When standing water is observed, the inspector should be aware of any signs of illicit discharge. If any of the following are observed, in addition to the sod and topsoil being affected and requiring replacement, if it is evident that discharge was made directly into the drywell, the drywell and affected surrounding drain rock must be replaced as soon as possible: oil sheen, spilled paint, burned area due to battery acid, multicolored appearance of antifreeze, brown to black fuel oil, or any other materials that may be deemed deleterious to water quality. Sod, topsoil and drain rock removed must be handled and disposed of in a manner consistent with a hazardous material.

Remove Debris and Sediment

Remove any large debris that would interfere with the vactoring (suction removal) of the drywell. Sediment must be completely suctioned out of the drywell barrel. Care should be taken to note the depth of the sediment. If it appears that the sediment is increasing with depth at each inspection, this may be a sign that the swale is not functioning properly; stormwater may be ponding and spilling, carrying sediment laden stormwater into the drywell, rather than infiltrating at the design rate.

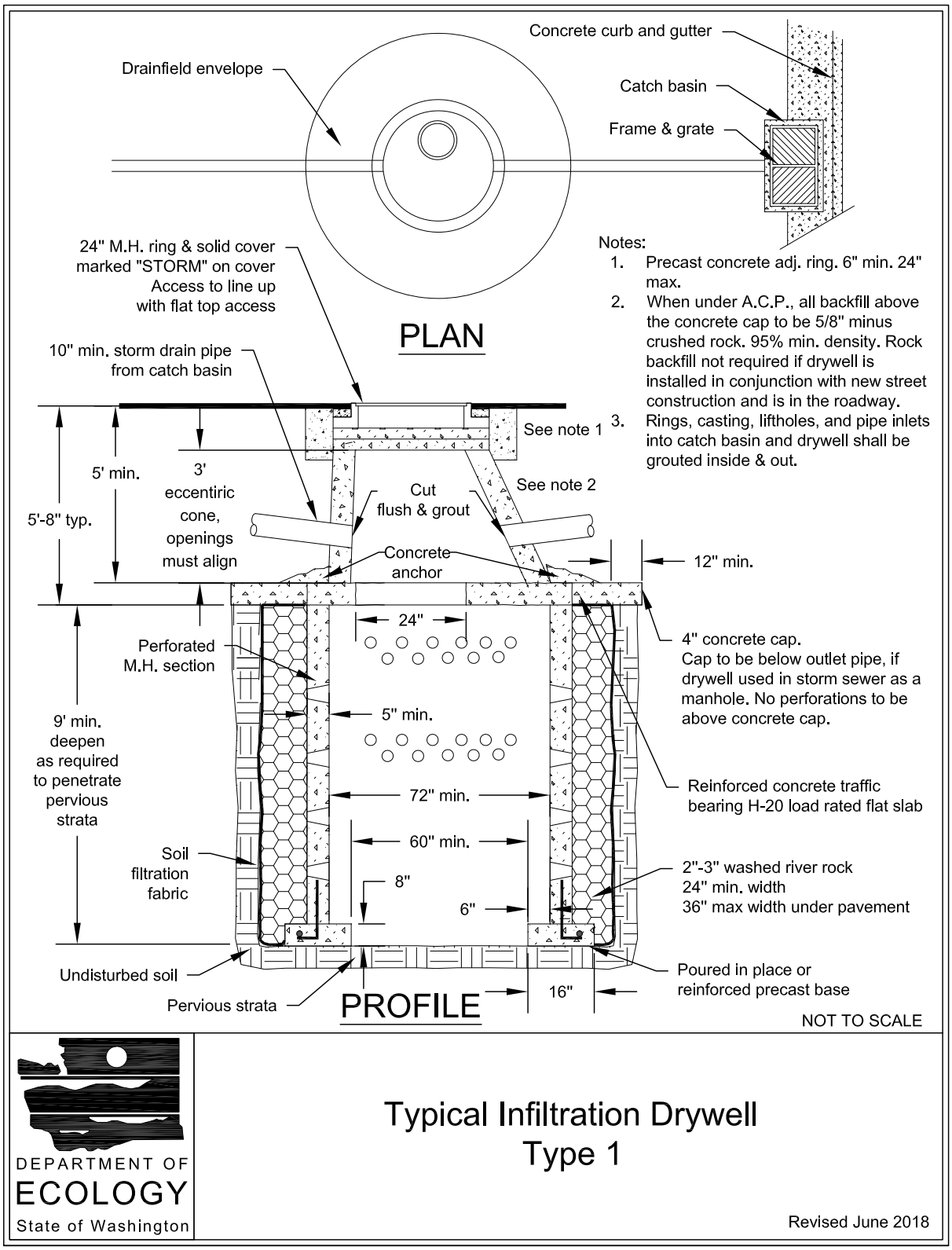
Check for Structural Damage

Inspect metal frame and grate, adjustment rings, mortar or any other visible parts of the drywell structure. The metal frame and grate should sit flush on the top ring. Any separation of ≥ 0.75 inches must be adjusted and repaired. The drywell should be replaced or repaired to design standards if it has settled > 2 inches or if standing water fails to drain out of the barrel slots. Adjustment rings should be free of cracks. Crack repair should adhere be performed when:

Location of Crack	Maximum Width of Crack
Top ring of drywell	0.25 inches
Drywell barrel	0.5 inches and longer than 3 feet
Drywell floor	0.5 inches and longer than 1 foot

Note: Any crack, regardless of location or width, in which sediment is observed, needs to be repaired as soon as possible. Cracks should be repaired with mortar similar to that used between the adjustment rings. Mortar or grout should be waterproof and of the nonshrink variety.

Figure V-5.29: Typical Infiltration Drywell – Type 1



BMP T7.20: Infiltration Trenches

Infiltration trenches are generally at least 24 inches wide, and are backfilled with a coarse stone aggregate, allowing for temporary storage of stormwater runoff in the voids of the aggregate material. Stored runoff then gradually infiltrates into the surrounding soil. The surface of the trench can be covered with grating and/or consist of stone, gabion, sand, or a grassed or asphalt area with a surface inlet. Perforated rigid pipe of at least 8-inch diameter can also be used to distribute the stormwater in an infiltration trench.

Refer to the guidance earlier in this chapter for information pertinent to all infiltration BMPs. Guidance specific to infiltration trenches is provided below.

Design Criteria

Due to accessibility and maintenance limitations, carefully design and construct infiltration trenches. Contact the local jurisdiction for additional specifications.

Runoff Treatment

If this BMP is proposed to be used for Runoff Treatment, the design must show that the subgrade soils (or an engineered soil layer) meet the criteria for Runoff Treatment in V-5.6 Site Suitability Criteria (SSC).

Catch basin and tee: A tee section should be provided in the nearest catch basin upstream of the infiltration trench if a catch basin is used. The tee will trap floatable debris and oils.

Infiltration Rate

See V-5.4 Determining the Design Infiltration Rate of the Native Soils for design infiltration rates. Check with the local jurisdiction for outflow capacity requirements.

Backfill Material

The aggregate material for the infiltration trench should consist of a clean aggregate with a maximum diameter of 1.5 inches and a minimum diameter of 3/8 inches conforming to the Gravel Backfill for Drywells specification in the current version of the WSDOT Standard Specifications. For calculations assume a void space of 30% maximum.

Access Port

Consider including an access port or open or grated top for accessibility to conduct inspections and maintenance.

Geotextile

Geotextile fabric liner – Completely encase the aggregate fill material in an engineering geotextile material. In the case of an aggregate surface, geotextile should surround all of the aggregate fill

material except for the top one-foot, which is placed over the geotextile. Carefully select geotextile fabric with acceptable properties to avoid plugging (see V-1.3.4 Geotextile Specifications).

The bottom sand or geotextile fabric as shown in Figure V-5.15: Observation Well Details is optional.

See *Geosynthetic Design and Construction Guidelines* (FHWA, 1998) for design guidance on geotextiles in drainage applications. See the *NCHRP Long-Term Performance of Geosynthetics in Drainage Applications* (NCHRP, 1994), for long-term performance data and background on the potential for geotextiles to clog, blind, or to allow piping to occur and how to design for these issues.

Overflow Channel

Because an infiltration trench is generally used for small drainage areas, an emergency spillway is not necessary. However, provide a non-erosive overflow channel leading to a stabilized watercourse.

Surface Cover

An infiltration trench can be placed under a pervious or impervious surface cover to conserve space.

Observation Well

Install an observation well at the lower end of the infiltration trench to check water levels, drawdown time, sediment accumulation, and conduct water quality monitoring. Figure V-5.15: Observation Well Details illustrates observation well details. It should consist of a perforated PVC pipe that is 4 to 6 inches in diameter, and it should be constructed flush with the ground elevation. For larger trenches, a 12-36 inch diameter well can be installed to facilitate maintenance operations such as pumping out the sediment. Cap the top of the well to discourage vandalism and tampering.

Perforated Pipe

A minimum of 8-inch perforated pipe may be included to increase the storage capacity of the infiltration trench and to enhance conveyance of flows throughout the trench area.

Underground Injection Control (UIC) regulations apply to infiltration trenches when perforated pipe is used, unless the perforated pipe is included for the purpose of conveying overflows to surface.

- If the design, operation, and maintenance criteria in this section are met, only the registration requirement of the UIC regulations applies to the infiltration trench.
- Where perforated pipe is not used, the registration requirement does not apply.
- See I-4 UIC Program Guidelines for details.

Construction Criteria

Trench Preparation

Place excavated materials away from the trench sides to enhance trench wall stability. Take care to keep this material away from slopes, neighboring property, sidewalks, and streets. It is recommended that this material be temporarily covered with plastic. (See BMP C123: Plastic Covering).

Rock Aggregate Placement and Compaction

Place rock aggregate in lifts and compact using plate compactors. In general, a maximum loose lift thickness of 12 inches is recommended. The compaction process ensures geotextile conformity to the excavation sides, thereby reducing potential piping and geotextile clogging, and settlement problems.

Potential Contamination

Prevent natural or fill soils from intermixing with the rock aggregate. Remove all contaminated rock aggregate and replaced with uncontaminated rock aggregate.

Overlapping and Covering

Following the rock aggregate placement, fold the geotextile over the rock aggregate to form a 12 inch minimum longitudinal overlap. When overlaps are required between rolls, the upstream roll should overlap a minimum of 2 feet over the downstream roll in order to provide a shingled effect.

Voids Behind Geotextile

Voids between the geotextile and excavation sides must be avoided. Removing boulders or other obstacles from the trench walls is one source of such voids. Place natural soils in these voids at the most convenient time during construction to ensure geotextile conformity to the excavation sides. This remedial process will avoid soil piping, geotextile clogging, and possible surface subsidence.

Unstable Excavation Sites

Vertically excavated walls may be difficult to maintain in areas where the soil moisture is high or where soft or cohesionless soils predominate. Trapezoidal, rather than rectangular, cross-sections may be needed.

Maintenance Criteria

Monitor sediment buildup in the top foot of stone aggregate or the surface inlet on the same schedule as the observation well.

V-12 Miscellaneous LID BMPs

V-12.1 Introduction to Miscellaneous LID BMPs

BMPs in this section have been grouped because they have the following in common:

- They employ Low Impact Development (LID) Principles
- They cannot be used to meet I-3.4.6 MR6: Runoff Treatment
- They typically cannot, by themselves, be used to meet the Flow Control Performance Standard within I-3.4.7 MR7: Flow Control or the LID Performance Standard within I-3.4.5 MR5: On-Site Stormwater Management
    - Some of the BMPs in this chapter do allow for some amount of Flow Control credit. See the guidance for each individual BMP for details.
- The design methods for each BMP in this section are unique. They do not have strong enough design similarities to other BMPs in this volume to place them in the other BMP categories identified in this volume.

BMP T5.13: Post-Construction Soil Quality and Depth

Purpose and Definition

Naturally occurring (undisturbed) soil and vegetation provide important stormwater functions including: infiltration; nutrient, sediment, and pollutant adsorption; sediment and pollutant biofiltration; water interflow storage and transmission; and pollutant decomposition. These functions are largely lost when development strips away native soil and vegetation and replaces it with minimal topsoil and sod. Not only are these important stormwater functions lost, but such landscapes themselves can become pollution generating pervious surfaces due to increased use of pesticides, fertilizers and other landscaping and household/industrial chemicals, the concentration of pet wastes, and pollutants that accompany roadside litter.

Establishing soil quality and depth can obtain greater stormwater functions in the post-development landscape and help preserve the plant and soil system more effectively. This type of approach provides a soil/landscape system with adequate depth, permeability, and organic matter to sustain itself and to continue working as an effective stormwater infiltration system.

Applications and Limitations

Amending soils to establish a minimum soil quality and depth is not the same as preservation of naturally occurring soil and vegetation. However, establishing a minimum soil quality and depth will provide improved on-site management of stormwater flow and water quality.

This BMP can be considered infeasible on till soil slopes greater than 33 percent.

In addition to providing some amount of Flow Control benefit, this BMP also offers the following benefits:

- Amended soils can be included in designs for dispersion BMPs (see V-3 Dispersion BMPs) to improve dispersal and absorption of stormwater flows.
- This BMP creates a medium for healthy plant growth, reducing the need for fertilizers and pesticides and peak summer irrigation needs (Chollak, n.d.).
- This BMP can improve overall site water quality performance by promoting infiltration; increasing cation exchange capacity, pollutant adsorption, and filtration; and buffering soil pH (USDA and USCC, 2005).

Design Guidelines

Organic Matter

Soil organic matter can be attained through numerous materials such as compost, composted woody material, biosolids, forest product residuals, or other locally available materials deemed suitable for this application. The materials used must be appropriate and beneficial to the plant cover to be established and must not have an excessive percentage of clay fines.

Soil Retention

Retain, in an undisturbed state, the duff layer and native topsoil to the maximum extent practicable. In any areas requiring grading, remove and stockpile the duff layer and topsoil on site in a designated, controlled area, not adjacent to public resources and critical areas, to be reapplied to other portions of the site where feasible.

Soil Quality

All areas subject to clearing and grading that have not been covered by impervious surface, incorporated into a drainage facility, or engineered as structural fill or slope shall, at project completion, demonstrate the following:

1. A topsoil layer comprised as follows:
    - **Planting Beds:** 8-10 percent organic content using 3 inches of compost incorporated to an 8-inch depth or a topsoil mix containing 35-40 percent compost by volume.
    - **Turf areas:** 3-5 percent organic content using 1.75 inches of compost incorporated to an 8-inch depth or a topsoil mix containing 20-25 percent compost by volume.
    - pH between 6.0 and 8.0 or a pH appropriate for installed plants.
2. The topsoil layer shall have a minimum depth of eight inches except where tree roots limit the depth of incorporation of amendments needed to meet the criteria. Subsoils below the topsoil layer should be scarified at least 4 inches with some incorporation of the upper material to avoid stratified layers, where feasible.

3. Mulch planting beds with 2 inches of organic material.
4. Use compost and other materials that meet the following organic content requirements:
    - The organic content must be met using the compost specification for BMP T7.30: Bioretention, with the exception that the compost may have up to 35% biosolids or manure.
    - The compost must also have an organic matter content of 40% to 65%, and a carbon to nitrogen ratio below 25:1. The carbon to nitrogen ratio may be as high as 35:1 for plantings composed entirely of plants native to the Puget Sound Lowlands region.

The resulting soil should be conducive to the type of vegetation to be established.

Implementation Options

The soil quality design guidelines listed above can be met by using one of the methods listed below:

1. Leave undisturbed native vegetation and soil, and protect from compaction during construction.
2. Amend existing site topsoil or subsoil with organic content at the rates given above.
3. Stockpile existing topsoil during grading, and replace it prior to planting. Stockpiled topsoil must also be amended if needed to meet the organic matter or depth requirements as given above.
4. Import topsoil mix of sufficient organic content and depth to meet the requirements.

More than one method may be used on different portions of the same site. Soil that already meets the depth and organic matter quality standards, and is not compacted, does not need to be amended.

Construction Criteria

Protecting and enhancing site soils requires planning and sequencing of construction activities to reduce impacts. The following recommended steps are adapted from the *Low Impact Development Technical Guidance Manual for Puget Sound* (WSU and PSP, 2012) and the Building Soil – A Foundation for Success website (http://www.buildingsoil.org/). These steps begin with land clearing and grading and continue through end of construction (prior to planting) and after planting is complete:

Land Clearing and Grading Phase

- Fence all vegetation and soil protection areas prior to first disturbance, and communicate those areas to clearing and grading operators. The root zones of trees that may extend into the grading zone should be protected or cut rather than ripped during grading.
- Chip land-clearing debris on-site and reuse as erosion-control cover or stockpile for reuse as mulch at end of project.

- Stockpile topsoil to be reused with a breathable cover, such as wood chips or landscape fabric.
- If amended, topsoils will be placed at end of project. Grade 8 to 12 inches below finish grade to allow for placing the topsoil.

Construction Phase

- Ensure erosion and sediment control BMPs are in place before and modified after grading to protect construction activities. Compost-based BMPs (compost "blankets" for surface, and compost berms or socks for perimeter controls) give a "two-for-one" benefit because the compost can be reused as soil amendment at the end of the project.
- Lay out roads and driveways immediately after grading and place rock bases for them as soon as possible. Keep as much construction traffic as possible on the road base, and off open soils. This will improve erosion compliance, reduce soil compaction, and increase site safety by keeping rolling equipment on a firm base.
- Protect amended/restored soils from equipment-caused compaction by using steel plates or other BMPs if equipment access is unavoidable across amended soils.
- Maintain vegetation and soil protection area barriers and temporary tree root zone protection BMPs throughout construction and ensure that all contractors understand their importance.

End of Construction, Soil Preparation Before Planting

- Ensure vegetation and soil protection barriers are maintained through the end of construction.
- Disturbed or graded soil areas that have received vehicle traffic will need to be decompacted to a minimum 12-inch depth. This can be done with a cat-mounted ripper or with bucket-mounted ripping teeth.
- Amend all disturbed areas with compost or other specified amendments ≥ 8 inches deep by tilling, ripping, or mixing with a bucket loader. Alternatively, place amended stockpiled topsoil or import an amended topsoil. It is good practice to scarify or mix amended soils several inches into the underlying subsoil to enhance infiltration and root penetration. Compost from erosion BMPs (compost blankets, berms, or socks) can be reused as appropriate if immediately followed by planting and mulching so there is no lapse in erosion control.
- Amended topsoil can be placed as soon as building exterior work is complete. During this step, vehicles should stay on roads and driveway pads. Compost, soil blends provide good ongoing erosion protection.
- Avoid tilling through tree roots – instead use shallow amendment and mulching.
- Final preparation for turf areas should include raking rocks, rolling, and possibly placing 1 to 2 inches of sandy loam topsoil before seeding or sodding.

- Plan for amended soil to settle by placing amended soil slightly higher than desired final grade, or retain or import a smaller amount of amended topsoil to meet final grades adjacent to hardscape such as sidewalks.
- Keep compost, topsoil, and mulch delivery tickets so inspector can verify that quantities and products used match those intended per the design.

After Planting and End of Project Phase

- Remove protection area barriers, including sediment fences, filter socks, and curb and storm drain barriers. Evaluate trees for stress and need for treatment, such as pruning, root-feeding, mulching etc. Plan to have an arborist on-site, as appropriate.
- Mulch all planting beds where soil has been amended and replanted with 2 to 3 inches of arborist wood chip or other specified mulch.
- Communicate a landscape management plan to property owners that includes: on-site reuse of organics (e.g. mulch leaves, mulch-mow grass clippings) to maintain soil health; avoiding pesticide use; and minimal organic-based fertilization.

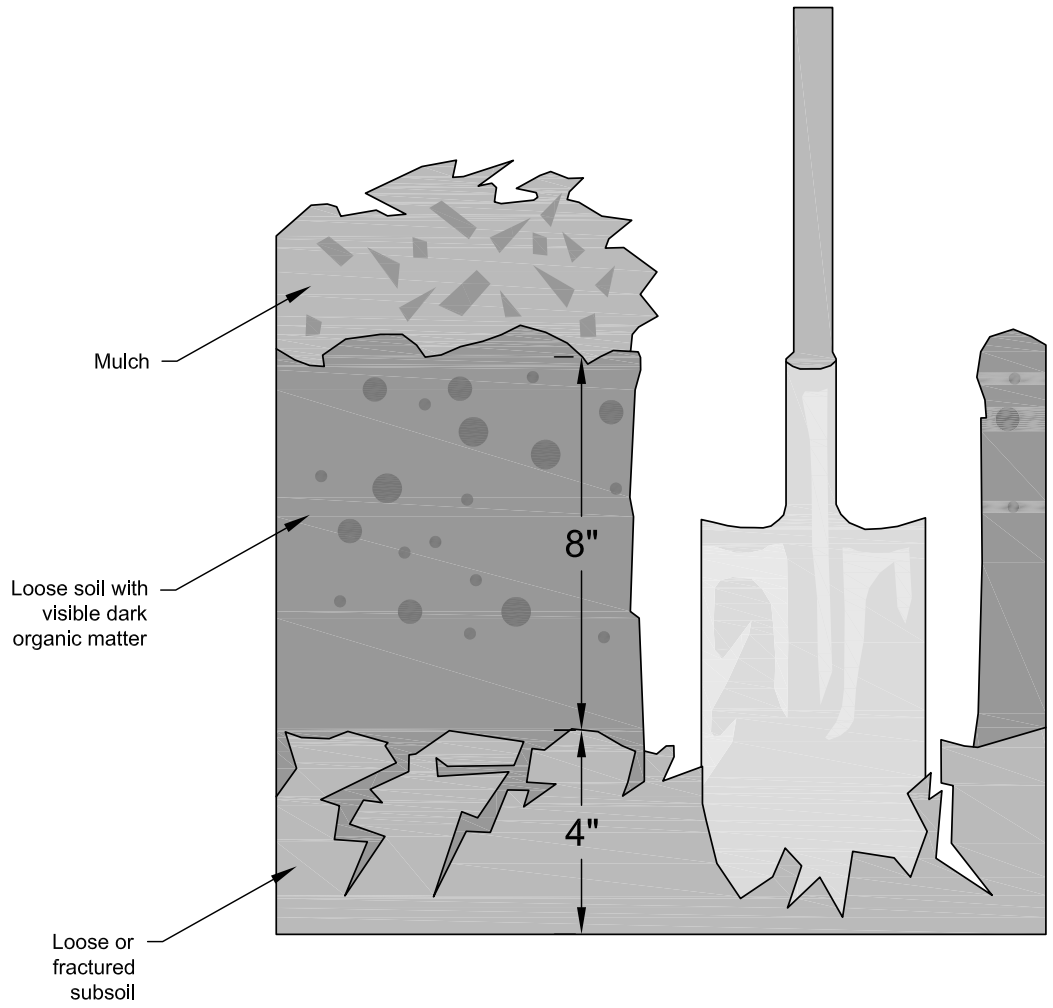
Operation and Maintenance Criteria

- Establish soil quality and depth toward the end of construction and once established, protect from compaction, such as from large machinery use, and from erosion.
- Plant and mulch areas immediately after amending and settling the soil to stabilize the site as soon as possible.
- Leave plant debris or its equivalent on the soil surface to replenish organic matter.
- Landscape management plans should continually renew organic levels through mulch-mowing on turf areas, allowing fallen leaves to remain on beds, and/or replenishing mulch layers every 1 to 2 years.
- Minimize or eliminate use of irrigation, herbicides, pesticides and fertilizers. Landscape management personnel should be trained to minimize chemical inputs, use nontoxic alternatives, and manage the landscape areas to minimize erosion, recognize soil and plant health problems, and optimize water storage and soil permeability.
- Remove weeds as necessary or appropriate through manual removal, tilling and/or re-mulching.
- Protect amended areas from excessive foot traffic and equipment to prevent compaction and erosion.

Runoff Model Representation

All areas meeting the soil quality and depth design criteria may be entered into approved runoff models as “Pasture” rather than “Lawn/Landscaping”.

Figure V-12.1: Planting Bed Cross-Section



Reprinted from *Guidelines and Resources For Implementing Soil Quality and Depth BMP T5.13 in WDOE Stormwater Management Manual for Western Washington*, 2010, Washington Organic Recycling Council

NOT TO SCALE

DEPARTMENT OF ECOLOGY
State of Washington

Planting Bed Cross-Section

Revised June 2016

V-11 Manufactured Treatment Devices as BMPs

V-11.1 Introduction to Manufactured Treatment Devices as BMPs

Traditional best management practices (BMPs) such as wetponds and filtration swales may not be appropriate in many situations due to size and space constraints or their inability to remove target pollutants. Because of this, the stormwater treatment industry emerged to develop new manufactured stormwater treatment devices.

Manufactured treatment devices are emerging technologies that are new to the stormwater treatment marketplace. These devices include both permanent and construction site treatment technologies. Many of these devices have not undergone complete performance testing, so their performance claims cannot be verified.

Ecology has established a program, the Technology Assessment Protocol – Ecology (TAPE), to evaluate the capabilities of manufactured treatment devices. Manufactured treatment devices that have been evaluated by TAPE are approved at some level of use designation under specified conditions. Their use is restricted in accordance with their evaluation as explained in V-11.3 Approval Process for Manufactured Treatment Devices. The recommendations for use of individual manufactured treatment devices may change as we collect more data on their performance. Updated recommendations on their use are posted to Ecology's TAPE website at the following address:

https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Stormwater-permittee-guidance-resources/Emerging-stormwater-treatment-technologies

Manufactured treatment devices can also be considered for retrofit situations, where TAPE approval may not be required.

V-11.2 Use Level Designations of Manufactured Treatment Devices

Ecology's Technology Assessment Protocol - Ecology (TAPE) program developed "use level designations" to assess levels of development for manufactured treatment devices. The use level designations are based upon the quantity, quality, and type of performance data. There are three use level designations:

- pilot use level designation (PULD),
- conditional use level designation (CULD), and
- general use level designation (GULD).

Appendix F: Flow Control & Water Quality Analysis

WWHM2012

PROJECT REPORT

TDAs #1 AND #2 FLOW CONTROL (INFILTRATION WITH OVERFLOW/EMERGECY OUTLET

General Model Information

WWHM2012 Project Name: 8397 WWHM TDA 1 No Roof

Site Name:	Camas Woods II
Site Address:	
City:	Camas
Report Date:	4/11/2025
Gage:	Lacamas
Data Start:	1948/10/01
Data End:	2008/09/30
Timestep:	15 Minute
Precip Scale:	1.300
Version Date:	2024/06/28
Version:	4.3.1

POC Thresholds

Low Flow Threshold for POC1:	8 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year
Low Flow Threshold for POC2:	8 Percent of the 2 Year
High Flow Threshold for POC2:	50 Year

Landuse Basin Data

Predeveloped Land Use

BASIN 1 PRE

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG3, Forest, Flat	4.69
Pervious Total	4.69

Impervious Land Use	acre
Impervious Total	0
Basin Total	4.69

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

POC 1	POC 1

BASIN 2 PRE

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG3, Forest, Flat	4.59
Pervious Total	4.59

Impervious Land Use	acre
Impervious Total	0
Basin Total	4.59

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

POC 2	POC 2

Mitigated Land Use

BASIN 1A

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG3, Lawn, Flat	1.283
Pervious Total	1.283

Impervious Land Use	acre
ROADS FLAT	0.537
DRIVEWAYS FLAT	0.428
SIDEWALKS FLAT	0.23
PARKING FLAT	0.048
Impervious Total	1.243
Basin Total	2.526

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

DRYWELL 1	DRYWELL 1

BASIN 2A

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG3, Lawn, Flat	1.316
Pervious Total	1.316

Impervious Land Use	acre
ROADS FLAT	0.901
DRIVEWAYS FLAT	0.383
SIDEWALKS FLAT	0.289
PARKING FLAT	0.106
Impervious Total	1.679
Basin Total	2.995

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
DRYWELL 2	DRYWELL 2	

BASIN 2B

Bypass:	Yes
GroundWater:	No

Pervious Land Use	acre
SG3, Forest, Flat	0.372
Pervious Total	0.372

Impervious Land Use	acre
Impervious Total	0
Basin Total	0.372

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

POC 2	POC 2

BASIN 1B

Bypass:	Yes
GroundWater:	No

Pervious Land Use	acre
SG3, Forest, Flat	0.744
Pervious Total	0.744

Impervious Land Use	acre
SIDEWALKS FLAT	0.07
Impervious Total	0.07
Basin Total	0.814

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 1	POC 1	

Routing Elements
Predeveloped Routing

Mitigated Routing

DRYWELL 1

Bottom Length:	10.00 ft.
Bottom Width:	10.00 ft.
Trench bottom slope 1:	0 To 1
Trench Left side slope 0:	0 To 1
Trench right side slope 2:	0 To 1
Material thickness of first layer:	13
Pour Space of material for first layer:	0.45
Material thickness of second layer:	0
Pour Space of material for second layer:	0
Material thickness of third layer:	0
Pour Space of material for third layer:	0
Infiltration On	
Infiltration rate:	11.5
Infiltration safety factor:	0.1188
Total Volume Infiltrated (ac-ft.):	56.016
Total Volume Through Riser (ac-ft.):	278.879
Total Volume Through Facility (ac-ft.):	334.896
Percent Infiltrated:	16.73
Total Precip Applied to Facility:	0
Total Evap From Facility:	0
Discharge Structure	
Riser Height:	6 ft.
Riser Diameter:	10 in.
Element Outlets:	
Outlet 1	Outlet 2
Outlet Flows To:	
Gravel Trench Bed 1	

Gravel Trench Bed Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.002	0.000	0.000	0.000
0.1556	0.002	0.000	0.000	0.003
0.3111	0.002	0.000	0.000	0.003
0.4667	0.002	0.000	0.000	0.003
0.6222	0.002	0.000	0.000	0.003
0.7778	0.002	0.000	0.000	0.003
0.9333	0.002	0.001	0.000	0.003
1.0889	0.002	0.001	0.000	0.003
1.2444	0.002	0.001	0.000	0.003
1.4000	0.002	0.001	0.000	0.003
1.5556	0.002	0.001	0.000	0.003
1.7111	0.002	0.001	0.000	0.003
1.8667	0.002	0.001	0.000	0.003
2.0222	0.002	0.002	0.000	0.003
2.1778	0.002	0.002	0.000	0.003
2.3333	0.002	0.002	0.000	0.003
2.4889	0.002	0.002	0.000	0.003
2.6444	0.002	0.002	0.000	0.003
2.8000	0.002	0.002	0.000	0.003
2.9556	0.002	0.003	0.000	0.003
3.1111	0.002	0.003	0.000	0.003
3.2667	0.002	0.003	0.000	0.003
3.4222	0.002	0.003	0.000	0.003

3.5778	0.002	0.003	0.000	0.003
3.7333	0.002	0.003	0.000	0.003
3.8889	0.002	0.004	0.000	0.003
4.0444	0.002	0.004	0.000	0.003
4.2000	0.002	0.004	0.000	0.003
4.3556	0.002	0.004	0.000	0.003
4.5111	0.002	0.004	0.000	0.003
4.6667	0.002	0.004	0.000	0.003
4.8222	0.002	0.005	0.000	0.003
4.9778	0.002	0.005	0.000	0.003
5.1333	0.002	0.005	0.000	0.003
5.2889	0.002	0.005	0.000	0.003
5.4444	0.002	0.005	0.000	0.003
5.6000	0.002	0.005	0.000	0.003
5.7556	0.002	0.005	0.000	0.003
5.9111	0.002	0.006	0.000	0.003
6.0667	0.002	0.006	0.151	0.003
6.2222	0.002	0.006	0.835	0.003
6.3778	0.002	0.006	1.337	0.003
6.5333	0.002	0.006	1.597	0.003
6.6889	0.002	0.006	1.815	0.003
6.8444	0.002	0.007	2.009	0.003
7.0000	0.002	0.007	2.187	0.003
7.1556	0.002	0.007	2.351	0.003
7.3111	0.002	0.007	2.504	0.003
7.4667	0.002	0.007	2.648	0.003
7.6222	0.002	0.007	2.785	0.003
7.7778	0.002	0.008	2.916	0.003
7.9333	0.002	0.008	3.041	0.003
8.0889	0.002	0.008	3.161	0.003
8.2444	0.002	0.008	3.276	0.003
8.4000	0.002	0.008	3.388	0.003
8.5556	0.002	0.008	3.496	0.003
8.7111	0.002	0.009	3.601	0.003
8.8667	0.002	0.009	3.703	0.003
9.0222	0.002	0.009	3.802	0.003
9.1778	0.002	0.009	3.899	0.003
9.3333	0.002	0.009	3.993	0.003
9.4889	0.002	0.009	4.085	0.003
9.6444	0.002	0.010	4.175	0.003
9.8000	0.002	0.010	4.263	0.003
9.9556	0.002	0.010	4.350	0.003
10.111	0.002	0.010	4.434	0.003
10.267	0.002	0.010	4.517	0.003
10.422	0.002	0.010	4.599	0.003
10.578	0.002	0.010	4.679	0.003
10.733	0.002	0.011	4.758	0.003
10.889	0.002	0.011	4.836	0.003
11.044	0.002	0.011	4.912	0.003
11.200	0.002	0.011	4.987	0.003
11.356	0.002	0.011	5.061	0.003
11.511	0.002	0.011	5.134	0.003
11.667	0.002	0.012	5.206	0.003
11.822	0.002	0.012	5.277	0.003
11.978	0.002	0.012	5.347	0.003
12.133	0.002	0.012	5.416	0.003
12.289	0.002	0.012	5.485	0.003
12.444	0.002	0.012	5.552	0.003

12.600	0.002	0.013	5.619	0.003
12.756	0.002	0.013	5.685	0.003
12.911	0.002	0.013	5.750	0.003
13.067	0.002	0.013	5.814	0.003
13.222	0.002	0.014	5.878	0.003
13.378	0.002	0.014	5.941	0.003
13.533	0.002	0.014	6.003	0.003
13.689	0.002	0.015	6.065	0.003
13.844	0.002	0.015	6.126	0.003
14.000	0.002	0.015	6.186	0.003

Gravel Trench Bed 1

Bottom Length:	550.00 ft.
Bottom Width:	6.00 ft.
Trench bottom slope 1:	0 To 1
Trench Left side slope 0:	0 To 1
Trench right side slope 2:	0 To 1
Material thickness of first layer:	1
Pour Space of material for first layer:	0.3
Material thickness of second layer:	5
Pour Space of material for second layer:	0.9
Material thickness of third layer:	2
Pour Space of material for third layer:	0.3
Infiltration On	
Infiltration rate:	11.5
Infiltration safety factor:	0.1188
Total Volume Infiltrated (ac-ft.):	278.505
Total Volume Through Riser (ac-ft.):	0.379
Total Volume Through Facility (ac-ft.):	278.884
Percent Infiltrated:	99.86
Total Precip Applied to Facility:	0
Total Evap From Facility:	0
Discharge Structure	
Riser Height:	7.5 ft.
Riser Diameter:	12 in.
Element Outlets:	
Outlet 1	Outlet 2
Outlet Flows To:	

Gravel Trench Bed Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.075	0.000	0.000	0.000
0.0889	0.075	0.002	0.000	0.104
0.1778	0.075	0.004	0.000	0.104
0.2667	0.075	0.006	0.000	0.104
0.3556	0.075	0.008	0.000	0.104
0.4444	0.075	0.010	0.000	0.104
0.5333	0.075	0.012	0.000	0.104
0.6222	0.075	0.014	0.000	0.104
0.7111	0.075	0.016	0.000	0.104
0.8000	0.075	0.018	0.000	0.104
0.8889	0.075	0.020	0.000	0.104
0.9778	0.075	0.022	0.000	0.104
1.0667	0.075	0.028	0.000	0.104
1.1556	0.075	0.034	0.000	0.104
1.2444	0.075	0.040	0.000	0.104
1.3333	0.075	0.046	0.000	0.104
1.4222	0.075	0.052	0.000	0.104
1.5111	0.075	0.058	0.000	0.104
1.6000	0.075	0.064	0.000	0.104
1.6889	0.075	0.070	0.000	0.104
1.7778	0.075	0.076	0.000	0.104
1.8667	0.075	0.082	0.000	0.104
1.9556	0.075	0.088	0.000	0.104
2.0444	0.075	0.094	0.000	0.104
2.1333	0.075	0.101	0.000	0.104

2.2222	0.075	0.107	0.000	0.104
2.3111	0.075	0.113	0.000	0.104
2.4000	0.075	0.119	0.000	0.104
2.4889	0.075	0.125	0.000	0.104
2.5778	0.075	0.131	0.000	0.104
2.6667	0.075	0.137	0.000	0.104
2.7556	0.075	0.143	0.000	0.104
2.8444	0.075	0.149	0.000	0.104
2.9333	0.075	0.155	0.000	0.104
3.0222	0.075	0.161	0.000	0.104
3.1111	0.075	0.167	0.000	0.104
3.2000	0.075	0.173	0.000	0.104
3.2889	0.075	0.179	0.000	0.104
3.3778	0.075	0.185	0.000	0.104
3.4667	0.075	0.191	0.000	0.104
3.5556	0.075	0.198	0.000	0.104
3.6444	0.075	0.204	0.000	0.104
3.7333	0.075	0.210	0.000	0.104
3.8222	0.075	0.216	0.000	0.104
3.9111	0.075	0.222	0.000	0.104
4.0000	0.075	0.228	0.000	0.104
4.0889	0.075	0.234	0.000	0.104
4.1778	0.075	0.240	0.000	0.104
4.2667	0.075	0.246	0.000	0.104
4.3556	0.075	0.252	0.000	0.104
4.4444	0.075	0.258	0.000	0.104
4.5333	0.075	0.264	0.000	0.104
4.6222	0.075	0.270	0.000	0.104
4.7111	0.075	0.276	0.000	0.104
4.8000	0.075	0.282	0.000	0.104
4.8889	0.075	0.288	0.000	0.104
4.9778	0.075	0.294	0.000	0.104
5.0667	0.075	0.301	0.000	0.104
5.1556	0.075	0.307	0.000	0.104
5.2444	0.075	0.313	0.000	0.104
5.3333	0.075	0.319	0.000	0.104
5.4222	0.075	0.325	0.000	0.104
5.5111	0.075	0.331	0.000	0.104
5.6000	0.075	0.337	0.000	0.104
5.6889	0.075	0.343	0.000	0.104
5.7778	0.075	0.349	0.000	0.104
5.8667	0.075	0.355	0.000	0.104
5.9556	0.075	0.361	0.000	0.104
6.0444	0.075	0.363	0.000	0.104
6.1333	0.075	0.365	0.000	0.104
6.2222	0.075	0.367	0.000	0.104
6.3111	0.075	0.369	0.000	0.104
6.4000	0.075	0.371	0.000	0.104
6.4889	0.075	0.373	0.000	0.104
6.5778	0.075	0.375	0.000	0.104
6.6667	0.075	0.377	0.000	0.104
6.7556	0.075	0.379	0.000	0.104
6.8444	0.075	0.381	0.000	0.104
6.9333	0.075	0.383	0.000	0.104
7.0222	0.075	0.385	0.000	0.104
7.1111	0.075	0.387	0.000	0.104
7.2000	0.075	0.389	0.000	0.104
7.2889	0.075	0.391	0.000	0.104

7.3778	0.075	0.393	0.000	0.104
7.4667	0.075	0.396	0.000	0.104
7.5556	0.075	0.398	0.138	0.104
7.6444	0.075	0.400	0.572	0.104
7.7333	0.075	0.402	1.115	0.104
7.8222	0.075	0.404	1.627	0.104
7.9111	0.075	0.406	1.996	0.104
8.0000	0.075	0.408	2.203	0.104

DRYWELL 2

Bottom Length:	10.00 ft.
Bottom Width:	10.00 ft.
Trench bottom slope 1:	0 To 1
Trench Left side slope 0:	0 To 1
Trench right side slope 2:	0 To 1
Material thickness of first layer:	13
Pour Space of material for first layer:	0.45
Material thickness of second layer:	0
Pour Space of material for second layer:	0
Material thickness of third layer:	0
Pour Space of material for third layer:	0
Infiltration On	
Infiltration rate:	10.5
Infiltration safety factor:	0.1188
Total Volume Infiltrated (ac-ft.):	53.741
Total Volume Through Riser (ac-ft.):	369.643
Total Volume Through Facility (ac-ft.):	423.384
Percent Infiltrated:	12.69
Total Precip Applied to Facility:	0
Total Evap From Facility:	0
Discharge Structure	
Riser Height:	6 ft.
Riser Diameter:	10 in.
Element Outlets:	
Outlet 1	Outlet 2
Outlet Flows To:	
Gravel Trench Bed 2	

Gravel Trench Bed Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.002	0.000	0.000	0.000
0.1556	0.002	0.000	0.000	0.002
0.3111	0.002	0.000	0.000	0.002
0.4667	0.002	0.000	0.000	0.002
0.6222	0.002	0.000	0.000	0.002
0.7778	0.002	0.000	0.000	0.002
0.9333	0.002	0.001	0.000	0.002
1.0889	0.002	0.001	0.000	0.002
1.2444	0.002	0.001	0.000	0.002
1.4000	0.002	0.001	0.000	0.002
1.5556	0.002	0.001	0.000	0.002
1.7111	0.002	0.001	0.000	0.002
1.8667	0.002	0.001	0.000	0.002
2.0222	0.002	0.002	0.000	0.002
2.1778	0.002	0.002	0.000	0.002
2.3333	0.002	0.002	0.000	0.002
2.4889	0.002	0.002	0.000	0.002
2.6444	0.002	0.002	0.000	0.002
2.8000	0.002	0.002	0.000	0.002
2.9556	0.002	0.003	0.000	0.002
3.1111	0.002	0.003	0.000	0.002
3.2667	0.002	0.003	0.000	0.002
3.4222	0.002	0.003	0.000	0.002
3.5778	0.002	0.003	0.000	0.002
3.7333	0.002	0.003	0.000	0.002

3.8889	0.002	0.004	0.000	0.002
4.0444	0.002	0.004	0.000	0.002
4.2000	0.002	0.004	0.000	0.002
4.3556	0.002	0.004	0.000	0.002
4.5111	0.002	0.004	0.000	0.002
4.6667	0.002	0.004	0.000	0.002
4.8222	0.002	0.005	0.000	0.002
4.9778	0.002	0.005	0.000	0.002
5.1333	0.002	0.005	0.000	0.002
5.2889	0.002	0.005	0.000	0.002
5.4444	0.002	0.005	0.000	0.002
5.6000	0.002	0.005	0.000	0.002
5.7556	0.002	0.005	0.000	0.002
5.9111	0.002	0.006	0.000	0.002
6.0667	0.002	0.006	0.151	0.002
6.2222	0.002	0.006	0.835	0.002
6.3778	0.002	0.006	1.337	0.002
6.5333	0.002	0.006	1.597	0.002
6.6889	0.002	0.006	1.815	0.002
6.8444	0.002	0.007	2.009	0.002
7.0000	0.002	0.007	2.187	0.002
7.1556	0.002	0.007	2.351	0.002
7.3111	0.002	0.007	2.504	0.002
7.4667	0.002	0.007	2.648	0.002
7.6222	0.002	0.007	2.785	0.002
7.7778	0.002	0.008	2.916	0.002
7.9333	0.002	0.008	3.041	0.002
8.0889	0.002	0.008	3.161	0.002
8.2444	0.002	0.008	3.276	0.002
8.4000	0.002	0.008	3.388	0.002
8.5556	0.002	0.008	3.496	0.002
8.7111	0.002	0.009	3.601	0.002
8.8667	0.002	0.009	3.703	0.002
9.0222	0.002	0.009	3.802	0.002
9.1778	0.002	0.009	3.899	0.002
9.3333	0.002	0.009	3.993	0.002
9.4889	0.002	0.009	4.085	0.002
9.6444	0.002	0.010	4.175	0.002
9.8000	0.002	0.010	4.263	0.002
9.9556	0.002	0.010	4.350	0.002
10.111	0.002	0.010	4.434	0.002
10.267	0.002	0.010	4.517	0.002
10.422	0.002	0.010	4.599	0.002
10.578	0.002	0.010	4.679	0.002
10.733	0.002	0.011	4.758	0.002
10.889	0.002	0.011	4.836	0.002
11.044	0.002	0.011	4.912	0.002
11.200	0.002	0.011	4.987	0.002
11.356	0.002	0.011	5.061	0.002
11.511	0.002	0.011	5.134	0.002
11.667	0.002	0.012	5.206	0.002
11.822	0.002	0.012	5.277	0.002
11.978	0.002	0.012	5.347	0.002
12.133	0.002	0.012	5.416	0.002
12.289	0.002	0.012	5.485	0.002
12.444	0.002	0.012	5.552	0.002
12.600	0.002	0.013	5.619	0.002
12.756	0.002	0.013	5.685	0.002

12.911	0.002	0.013	5.750	0.002
13.067	0.002	0.013	5.814	0.002
13.222	0.002	0.014	5.878	0.002
13.378	0.002	0.014	5.941	0.002
13.533	0.002	0.014	6.003	0.002
13.689	0.002	0.015	6.065	0.002
13.844	0.002	0.015	6.126	0.002
14.000	0.002	0.015	6.186	0.002

Gravel Trench Bed 2

Bottom Length:	760.00 ft.
Bottom Width:	6.00 ft.
Trench bottom slope 1:	0 To 1
Trench Left side slope 0:	0 To 1
Trench right side slope 2:	0 To 1
Material thickness of first layer:	1
Pour Space of material for first layer:	0.3
Material thickness of second layer:	5
Pour Space of material for second layer:	0.9
Material thickness of third layer:	2
Pour Space of material for third layer:	0.3
Infiltration On	
Infiltration rate:	10.5
Infiltration safety factor:	0.118
Total Volume Infiltrated (ac-ft.):	369.306
Total Volume Through Riser (ac-ft.):	0.357
Total Volume Through Facility (ac-ft.):	369.663
Percent Infiltrated:	99.9
Total Precip Applied to Facility:	0
Total Evap From Facility:	0
Discharge Structure	
Riser Height:	7.5 ft.
Riser Diameter:	12 in.
Element Outlets:	
Outlet 1	Outlet 2
Outlet Flows To:	

Gravel Trench Bed Hydraulic Table

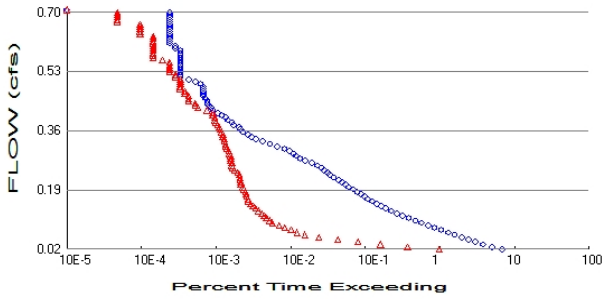
Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.104	0.000	0.000	0.000
0.0889	0.104	0.002	0.000	0.130
0.1778	0.104	0.005	0.000	0.130
0.2667	0.104	0.008	0.000	0.130
0.3556	0.104	0.011	0.000	0.130
0.4444	0.104	0.014	0.000	0.130
0.5333	0.104	0.016	0.000	0.130
0.6222	0.104	0.019	0.000	0.130
0.7111	0.104	0.022	0.000	0.130
0.8000	0.104	0.025	0.000	0.130
0.8889	0.104	0.027	0.000	0.130
0.9778	0.104	0.030	0.000	0.130
1.0667	0.104	0.039	0.000	0.130
1.1556	0.104	0.047	0.000	0.130
1.2444	0.104	0.055	0.000	0.130
1.3333	0.104	0.064	0.000	0.130
1.4222	0.104	0.072	0.000	0.130
1.5111	0.104	0.081	0.000	0.130
1.6000	0.104	0.089	0.000	0.130
1.6889	0.104	0.097	0.000	0.130
1.7778	0.104	0.106	0.000	0.130
1.8667	0.104	0.114	0.000	0.130
1.9556	0.104	0.122	0.000	0.130
2.0444	0.104	0.131	0.000	0.130
2.1333	0.104	0.139	0.000	0.130

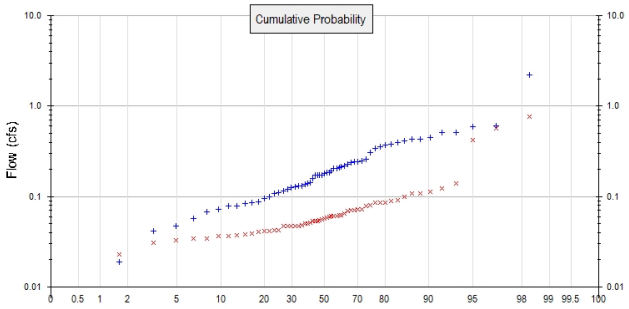
2.2222	0.104	0.148	0.000	0.130
2.3111	0.104	0.156	0.000	0.130
2.4000	0.104	0.164	0.000	0.130
2.4889	0.104	0.173	0.000	0.130
2.5778	0.104	0.181	0.000	0.130
2.6667	0.104	0.189	0.000	0.130
2.7556	0.104	0.198	0.000	0.130
2.8444	0.104	0.206	0.000	0.130
2.9333	0.104	0.214	0.000	0.130
3.0222	0.104	0.223	0.000	0.130
3.1111	0.104	0.231	0.000	0.130
3.2000	0.104	0.240	0.000	0.130
3.2889	0.104	0.248	0.000	0.130
3.3778	0.104	0.256	0.000	0.130
3.4667	0.104	0.265	0.000	0.130
3.5556	0.104	0.273	0.000	0.130
3.6444	0.104	0.281	0.000	0.130
3.7333	0.104	0.290	0.000	0.130
3.8222	0.104	0.298	0.000	0.130
3.9111	0.104	0.307	0.000	0.130
4.0000	0.104	0.315	0.000	0.130
4.0889	0.104	0.323	0.000	0.130
4.1778	0.104	0.332	0.000	0.130
4.2667	0.104	0.340	0.000	0.130
4.3556	0.104	0.348	0.000	0.130
4.4444	0.104	0.357	0.000	0.130
4.5333	0.104	0.365	0.000	0.130
4.6222	0.104	0.374	0.000	0.130
4.7111	0.104	0.382	0.000	0.130
4.8000	0.104	0.390	0.000	0.130
4.8889	0.104	0.399	0.000	0.130
4.9778	0.104	0.407	0.000	0.130
5.0667	0.104	0.415	0.000	0.130
5.1556	0.104	0.424	0.000	0.130
5.2444	0.104	0.432	0.000	0.130
5.3333	0.104	0.441	0.000	0.130
5.4222	0.104	0.449	0.000	0.130
5.5111	0.104	0.457	0.000	0.130
5.6000	0.104	0.466	0.000	0.130
5.6889	0.104	0.474	0.000	0.130
5.7778	0.104	0.482	0.000	0.130
5.8667	0.104	0.491	0.000	0.130
5.9556	0.104	0.499	0.000	0.130
6.0444	0.104	0.502	0.000	0.130
6.1333	0.104	0.505	0.000	0.130
6.2222	0.104	0.508	0.000	0.130
6.3111	0.104	0.510	0.000	0.130
6.4000	0.104	0.513	0.000	0.130
6.4889	0.104	0.516	0.000	0.130
6.5778	0.104	0.519	0.000	0.130
6.6667	0.104	0.522	0.000	0.130
6.7556	0.104	0.524	0.000	0.130
6.8444	0.104	0.527	0.000	0.130
6.9333	0.104	0.530	0.000	0.130
7.0222	0.104	0.533	0.000	0.130
7.1111	0.104	0.536	0.000	0.130
7.2000	0.104	0.538	0.000	0.130
7.2889	0.104	0.541	0.000	0.130

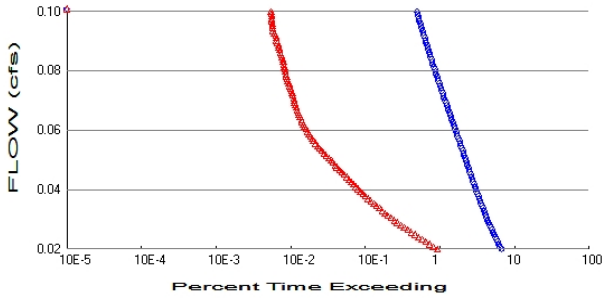
7.3778	0.104	0.544	0.000	0.130
7.4667	0.104	0.547	0.000	0.130
7.5556	0.104	0.549	0.138	0.130
7.6444	0.104	0.552	0.572	0.130
7.7333	0.104	0.555	1.115	0.130
7.8222	0.104	0.558	1.627	0.130
7.9111	0.104	0.561	1.996	0.130
8.0000	0.104	0.563	2.203	0.130

Analysis Results

POC 1







\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 4.69
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 2.027
Total Impervious Area: 1.313

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	0.192774
5 year	0.369829
10 year	0.484555
25 year	0.615957
50 year	0.701957
100 year	0.77776

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0.058024
5 year	0.104249
10 year	0.149067
25 year	0.227323
50 year	0.305475
100 year	0.404774

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.204	0.060
1950	0.194	0.047
1951	0.372	0.092
1952	0.131	0.047
1953	0.217	0.061
1954	0.431	0.112
1955	0.172	0.048
1956	0.513	0.109
1957	0.259	0.079
1958	0.143	0.065
1959	0.128	0.033
1960	0.100	0.035
1961	0.240	0.072
1962	0.088	0.037
1963	0.120	0.052
1964	0.183	0.053
1965	0.245	0.062
1966	0.207	0.062
1967	0.172	0.061
1968	0.213	0.070
1969	0.243	0.081
1970	2.231	0.422
1971	0.114	0.037
1972	0.203	0.054
1973	0.079	0.042
1974	0.378	0.085
1975	0.173	0.041
1976	0.355	0.085
1977	0.004	0.023
1978	0.507	0.122
1979	0.057	0.053
1980	0.184	0.043
1981	0.410	0.099
1982	0.308	0.073
1983	0.610	0.141
1984	0.138	0.038
1985	0.125	0.031
1986	0.096	0.047
1987	0.398	0.089
1988	0.085	0.037
1989	0.067	0.048
1990	0.084	0.042
1991	0.132	0.057
1992	0.158	0.059
1993	0.078	0.055
1994	0.181	0.050
1995	0.109	0.039
1996	0.595	0.769
1997	0.453	0.564
1998	0.135	0.071
1999	0.229	0.061
2000	0.173	0.050
2001	0.019	0.023
2002	0.431	0.109
2003	0.341	0.086
2004	0.047	0.041

2005	0.042	0.047
2006	0.243	0.054
2007	0.110	0.034
2008	0.072	0.071

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	2.2314	0.7689
2	0.6098	0.5644
3	0.5953	0.4218
4	0.5126	0.1406
5	0.5068	0.1217
6	0.4528	0.1124
7	0.4315	0.1090
8	0.4310	0.1089
9	0.4096	0.0991
10	0.3979	0.0921
11	0.3779	0.0892
12	0.3722	0.0860
13	0.3547	0.0855
14	0.3410	0.0846
15	0.3082	0.0806
16	0.2585	0.0786
17	0.2453	0.0729
18	0.2431	0.0720
19	0.2431	0.0710
20	0.2397	0.0706
21	0.2291	0.0696
22	0.2174	0.0651
23	0.2125	0.0618
24	0.2070	0.0616
25	0.2045	0.0613
26	0.2026	0.0612
27	0.1935	0.0607
28	0.1842	0.0598
29	0.1830	0.0588
30	0.1813	0.0569
31	0.1729	0.0554
32	0.1728	0.0544
33	0.1718	0.0536
34	0.1717	0.0534
35	0.1582	0.0533
36	0.1429	0.0516
37	0.1380	0.0504
38	0.1355	0.0497
39	0.1317	0.0479
40	0.1312	0.0475
41	0.1278	0.0471
42	0.1250	0.0468
43	0.1204	0.0468
44	0.1143	0.0466
45	0.1100	0.0428
46	0.1090	0.0425
47	0.0998	0.0419
48	0.0960	0.0415
49	0.0881	0.0409
50	0.0850	0.0388

51	0.0841	0.0377
52	0.0790	0.0372
53	0.0781	0.0367
54	0.0722	0.0367
55	0.0670	0.0346
56	0.0571	0.0344
57	0.0467	0.0328
58	0.0416	0.0310
59	0.0189	0.0227
60	0.0037	0.0226

LID Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0154	140200	19385	13	Pass
0.0162	134646	17184	12	Pass
0.0171	129302	15308	11	Pass
0.0179	124337	13580	10	Pass
0.0187	119645	12133	10	Pass
0.0195	115375	10795	9	Pass
0.0203	111335	9697	8	Pass
0.0211	107548	8699	8	Pass
0.0220	104056	7786	7	Pass
0.0228	100732	6981	6	Pass
0.0236	97576	6257	6	Pass
0.0244	94652	5668	5	Pass
0.0252	91770	5148	5	Pass
0.0261	88992	4643	5	Pass
0.0269	86363	4210	4	Pass
0.0277	83838	3846	4	Pass
0.0285	81419	3516	4	Pass
0.0293	79146	3242	4	Pass
0.0301	76916	2977	3	Pass
0.0310	74770	2729	3	Pass
0.0318	72709	2501	3	Pass
0.0326	70731	2289	3	Pass
0.0334	68753	2112	3	Pass
0.0342	66881	1958	2	Pass
0.0350	65135	1809	2	Pass
0.0359	63431	1689	2	Pass
0.0367	61769	1576	2	Pass
0.0375	60212	1451	2	Pass
0.0383	58676	1352	2	Pass
0.0391	57140	1268	2	Pass
0.0400	55647	1185	2	Pass
0.0408	54195	1091	2	Pass
0.0416	52869	1023	1	Pass
0.0424	51607	949	1	Pass
0.0432	50324	880	1	Pass
0.0440	49125	825	1	Pass
0.0449	47947	773	1	Pass
0.0457	46789	734	1	Pass
0.0465	45632	678	1	Pass
0.0473	44496	629	1	Pass
0.0481	43402	586	1	Pass
0.0490	42287	548	1	Pass
0.0498	41214	513	1	Pass
0.0506	40183	480	1	Pass
0.0514	39195	449	1	Pass
0.0522	38206	427	1	Pass
0.0530	37238	405	1	Pass
0.0539	36333	387	1	Pass
0.0547	35408	370	1	Pass
0.0555	34545	352	1	Pass
0.0563	33619	339	1	Pass
0.0571	32799	320	0	Pass
0.0579	31978	311	0	Pass

0.0588	31179	301	0	Pass
0.0596	30379	293	0	Pass
0.0604	29622	282	0	Pass
0.0612	28844	272	0	Pass
0.0620	28107	264	0	Pass
0.0629	27371	257	0	Pass
0.0637	26656	250	0	Pass
0.0645	25940	241	0	Pass
0.0653	25267	236	0	Pass
0.0661	24573	233	0	Pass
0.0669	23963	230	0	Pass
0.0678	23374	223	0	Pass
0.0686	22764	221	0	Pass
0.0694	22196	216	0	Pass
0.0702	21670	211	0	Pass
0.0710	21123	202	0	Pass
0.0719	20599	199	0	Pass
0.0727	20119	190	0	Pass
0.0735	19612	188	0	Pass
0.0743	19130	186	0	Pass
0.0751	18680	182	0	Pass
0.0759	18221	177	0	Pass
0.0768	17820	175	0	Pass
0.0776	17390	173	0	Pass
0.0784	16974	170	1	Pass
0.0792	16545	168	1	Pass
0.0800	16157	166	1	Pass
0.0808	15796	159	1	Pass
0.0817	15461	157	1	Pass
0.0825	15103	153	1	Pass
0.0833	14782	149	1	Pass
0.0841	14420	146	1	Pass
0.0849	14104	144	1	Pass
0.0858	13774	140	1	Pass
0.0866	13456	136	1	Pass
0.0874	13157	134	1	Pass
0.0882	12850	132	1	Pass
0.0890	12535	127	1	Pass
0.0898	12265	121	0	Pass
0.0907	12005	120	0	Pass
0.0915	11754	120	1	Pass
0.0923	11489	119	1	Pass
0.0931	11228	117	1	Pass
0.0939	10955	117	1	Pass
0.0948	10732	117	1	Pass
0.0956	10513	115	1	Pass
0.0964	10292	114	1	Pass

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0154	143229	20666	14	Pass
0.0224	103888	7757	7	Pass
0.0293	80051	3360	4	Pass
0.0362	63136	1672	2	Pass
0.0432	50660	894	1	Pass
0.0501	40920	500	1	Pass
0.0570	32925	324	0	Pass
0.0640	27245	255	0	Pass
0.0709	21796	212	0	Pass
0.0778	17687	175	0	Pass
0.0848	14472	147	1	Pass
0.0917	11899	120	1	Pass
0.0986	9817	111	1	Pass
0.1056	7992	100	1	Pass
0.1125	6598	93	1	Pass
0.1194	5527	86	1	Pass
0.1264	4643	77	1	Pass
0.1333	3934	71	1	Pass
0.1402	3396	66	1	Pass
0.1472	2990	61	2	Pass
0.1541	2596	57	2	Pass
0.1611	2291	56	2	Pass
0.1680	2060	54	2	Pass
0.1749	1829	53	2	Pass
0.1819	1628	52	3	Pass
0.1888	1433	50	3	Pass
0.1957	1257	48	3	Pass
0.2027	1127	45	3	Pass
0.2096	1023	45	4	Pass
0.2165	920	44	4	Pass
0.2235	787	44	5	Pass
0.2304	705	43	6	Pass
0.2373	648	41	6	Pass
0.2443	590	37	6	Pass
0.2512	542	35	6	Pass
0.2581	476	34	7	Pass
0.2651	399	34	8	Pass
0.2720	330	33	10	Pass
0.2789	282	33	11	Pass
0.2859	250	33	13	Pass
0.2928	229	32	13	Pass
0.2997	203	31	15	Pass
0.3067	172	29	16	Pass
0.3136	137	28	20	Pass
0.3205	111	28	25	Pass
0.3275	89	27	30	Pass
0.3344	72	27	37	Pass
0.3414	63	26	41	Pass
0.3483	56	26	46	Pass
0.3552	48	25	52	Pass
0.3622	44	24	54	Pass
0.3691	43	23	53	Pass
0.3760	36	22	61	Pass

0.3830	34	21	61	Pass
0.3899	30	20	66	Pass
0.3968	28	20	71	Pass
0.4038	25	19	76	Pass
0.4107	22	19	86	Pass
0.4176	19	16	84	Pass
0.4246	18	12	66	Pass
0.4315	17	11	64	Pass
0.4384	16	11	68	Pass
0.4454	16	9	56	Pass
0.4523	15	9	60	Pass
0.4592	14	9	64	Pass
0.4662	14	8	57	Pass
0.4731	14	8	57	Pass
0.4800	14	7	50	Pass
0.4870	14	7	50	Pass
0.4939	13	7	53	Pass
0.5009	11	7	63	Pass
0.5078	9	7	77	Pass
0.5147	7	6	85	Pass
0.5217	7	6	85	Pass
0.5286	7	5	71	Pass
0.5355	7	5	71	Pass
0.5425	7	5	71	Pass
0.5494	7	5	71	Pass
0.5563	7	5	71	Pass
0.5633	7	4	57	Pass
0.5702	7	3	42	Pass
0.5771	7	3	42	Pass
0.5841	7	3	42	Pass
0.5910	7	3	42	Pass
0.5979	6	3	50	Pass
0.6049	6	3	50	Pass
0.6118	5	3	60	Pass
0.6187	5	3	60	Pass
0.6257	5	3	60	Pass
0.6326	5	3	60	Pass
0.6395	5	2	40	Pass
0.6465	5	2	40	Pass
0.6534	5	2	40	Pass
0.6603	5	2	40	Pass
0.6673	5	2	40	Pass
0.6742	5	1	20	Pass
0.6812	5	1	20	Pass
0.6881	5	1	20	Pass
0.6950	5	1	20	Pass
0.7020	5	1	20	Pass

Water Quality

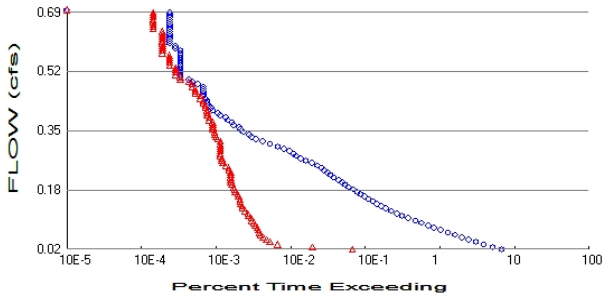
Water Quality BMP Flow and Volume for POC #1

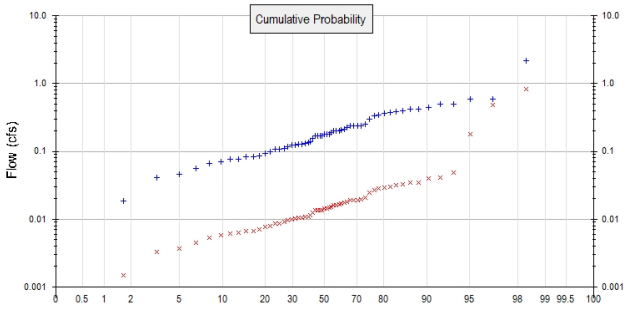
On-line facility volume:	0 acre-feet
On-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.
Off-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.

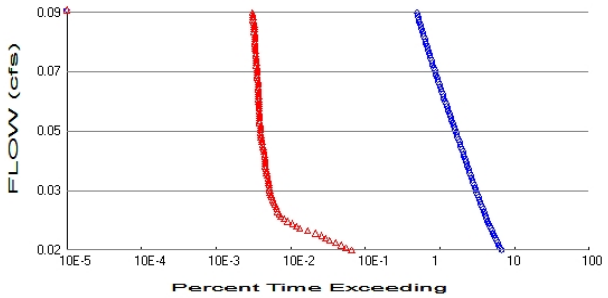
LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Gravel Trench Bed 1 POC	☐	253.78			☐	99.86			
DRYWELL 1	☐	304.76			☐	16.73			
Total Volume Infiltrated		558.54	0.00	0.00		54.50	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Passed

POC 2







\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #2
Total Pervious Area: 4.59
Total Impervious Area: 0

Mitigated Landuse Totals for POC #2
Total Pervious Area: 1.688
Total Impervious Area: 1.679

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #2

Return Period	**Flow(cfs)**
2 year	0.188664
5 year	0.361944
10 year	0.474223
25 year	0.602824
50 year	0.68699
100 year	0.761176

Flow Frequency Return Periods for Mitigated. POC #2

Return Period	**Flow(cfs)**
2 year	0.013542
5 year	0.037169
10 year	0.065869
25 year	0.125498
50 year	0.194015
100 year	0.29086

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #2

Year	**Predeveloped**	**Mitigated**

1949	0.200	0.016
1950	0.189	0.015
1951	0.364	0.030
1952	0.128	0.010
1953	0.213	0.017
1954	0.422	0.034
1955	0.168	0.014
1956	0.502	0.041
1957	0.253	0.021
1958	0.140	0.011
1959	0.125	0.010
1960	0.098	0.008
1961	0.235	0.019
1962	0.086	0.007
1963	0.118	0.010
1964	0.179	0.015
1965	0.240	0.019
1966	0.203	0.016
1967	0.168	0.014
1968	0.208	0.017
1969	0.238	0.019
1970	2.184	0.177
1971	0.112	0.009
1972	0.198	0.016
1973	0.077	0.006
1974	0.370	0.030
1975	0.169	0.014
1976	0.347	0.028
1977	0.004	0.000
1978	0.496	0.040
1979	0.056	0.005
1980	0.180	0.015
1981	0.401	0.032
1982	0.302	0.024
1983	0.597	0.048
1984	0.135	0.011
1985	0.122	0.010
1986	0.094	0.008
1987	0.389	0.032
1988	0.083	0.007
1989	0.066	0.005
1990	0.082	0.007
1991	0.129	0.010
1992	0.155	0.013
1993	0.076	0.006
1994	0.177	0.014
1995	0.107	0.009
1996	0.583	0.835
1997	0.443	0.485
1998	0.133	0.011
1999	0.224	0.018
2000	0.169	0.014
2001	0.018	0.001
2002	0.422	0.034
2003	0.334	0.027
2004	0.046	0.004
2005	0.041	0.003
2006	0.238	0.019

2007	0.108	0.009
2008	0.071	0.006

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #2

Rank	Predeveloped	Mitigated
1	2.1839	0.8352
2	0.5968	0.4846
3	0.5826	0.1770
4	0.5016	0.0484
5	0.4960	0.0407
6	0.4431	0.0402
7	0.4223	0.0342
8	0.4218	0.0342
9	0.4009	0.0325
10	0.3894	0.0316
11	0.3698	0.0300
12	0.3642	0.0295
13	0.3471	0.0281
14	0.3337	0.0270
15	0.3016	0.0244
16	0.2530	0.0205
17	0.2401	0.0195
18	0.2380	0.0193
19	0.2379	0.0193
20	0.2346	0.0190
21	0.2243	0.0182
22	0.2128	0.0172
23	0.2080	0.0169
24	0.2026	0.0164
25	0.2001	0.0162
26	0.1983	0.0161
27	0.1894	0.0154
28	0.1803	0.0146
29	0.1791	0.0145
30	0.1774	0.0144
31	0.1693	0.0137
32	0.1692	0.0137
33	0.1681	0.0136
34	0.1681	0.0136
35	0.1548	0.0125
36	0.1398	0.0113
37	0.1351	0.0109
38	0.1326	0.0107
39	0.1289	0.0104
40	0.1284	0.0104
41	0.1250	0.0101
42	0.1223	0.0099
43	0.1178	0.0096
44	0.1118	0.0091
45	0.1076	0.0087
46	0.1066	0.0086
47	0.0977	0.0079
48	0.0940	0.0076
49	0.0862	0.0070
50	0.0832	0.0067
51	0.0823	0.0067
52	0.0774	0.0063

53	0.0764	0.0062
54	0.0707	0.0057
55	0.0655	0.0053
56	0.0559	0.0045
57	0.0457	0.0037
58	0.0407	0.0033
59	0.0185	0.0015
60	0.0037	0.0003

LID Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0151	140200	1373	0	Pass
0.0159	134604	1155	0	Pass
0.0167	129281	1009	0	Pass
0.0175	124316	840	0	Pass
0.0183	119666	699	0	Pass
0.0191	115396	615	0	Pass
0.0199	111314	547	0	Pass
0.0207	107548	457	0	Pass
0.0215	104077	352	0	Pass
0.0223	100753	277	0	Pass
0.0231	97618	249	0	Pass
0.0239	94652	223	0	Pass
0.0247	91770	191	0	Pass
0.0255	88992	171	0	Pass
0.0263	86384	155	0	Pass
0.0271	83838	147	0	Pass
0.0279	81440	140	0	Pass
0.0287	79146	138	0	Pass
0.0295	76895	135	0	Pass
0.0303	74770	128	0	Pass
0.0311	72688	125	0	Pass
0.0319	70710	120	0	Pass
0.0327	68753	116	0	Pass
0.0335	66881	114	0	Pass
0.0343	65135	110	0	Pass
0.0351	63431	110	0	Pass
0.0359	61769	109	0	Pass
0.0367	60212	108	0	Pass
0.0375	58676	107	0	Pass
0.0383	57140	106	0	Pass
0.0391	55647	104	0	Pass
0.0399	54195	102	0	Pass
0.0407	52869	99	0	Pass
0.0415	51607	99	0	Pass
0.0423	50324	97	0	Pass
0.0431	49125	96	0	Pass
0.0439	47947	95	0	Pass
0.0447	46810	95	0	Pass
0.0455	45632	95	0	Pass
0.0463	44496	94	0	Pass
0.0471	43423	94	0	Pass
0.0479	42287	92	0	Pass
0.0487	41214	91	0	Pass
0.0495	40183	90	0	Pass
0.0503	39195	88	0	Pass
0.0511	38206	87	0	Pass
0.0519	37238	86	0	Pass
0.0527	36312	84	0	Pass
0.0535	35387	84	0	Pass
0.0543	34545	83	0	Pass
0.0551	33619	83	0	Pass
0.0559	32799	83	0	Pass
0.0567	31978	83	0	Pass

0.0575	31179	81	0	Pass
0.0583	30379	80	0	Pass
0.0591	29622	80	0	Pass
0.0599	28865	80	0	Pass
0.0607	28107	80	0	Pass
0.0615	27371	79	0	Pass
0.0623	26656	79	0	Pass
0.0631	25940	79	0	Pass
0.0639	25267	79	0	Pass
0.0647	24573	78	0	Pass
0.0655	23984	78	0	Pass
0.0663	23374	78	0	Pass
0.0671	22764	77	0	Pass
0.0679	22196	77	0	Pass
0.0687	21670	77	0	Pass
0.0695	21144	77	0	Pass
0.0703	20597	77	0	Pass
0.0711	20117	77	0	Pass
0.0719	19612	76	0	Pass
0.0727	19128	75	0	Pass
0.0735	18678	75	0	Pass
0.0743	18221	75	0	Pass
0.0751	17815	75	0	Pass
0.0759	17388	75	0	Pass
0.0767	16974	73	0	Pass
0.0775	16545	73	0	Pass
0.0783	16160	72	0	Pass
0.0791	15796	72	0	Pass
0.0799	15461	71	0	Pass
0.0807	15103	71	0	Pass
0.0815	14784	71	0	Pass
0.0823	14420	70	0	Pass
0.0831	14104	70	0	Pass
0.0839	13774	70	0	Pass
0.0847	13460	70	0	Pass
0.0855	13157	70	0	Pass
0.0863	12850	70	0	Pass
0.0871	12537	70	0	Pass
0.0879	12267	68	0	Pass
0.0887	12005	68	0	Pass
0.0895	11758	68	0	Pass
0.0903	11487	68	0	Pass
0.0911	11228	67	0	Pass
0.0919	10955	66	0	Pass
0.0927	10732	66	0	Pass
0.0935	10513	65	0	Pass
0.0943	10292	64	0	Pass

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0151	140852	1402	0	Pass
0.0219	106181	412	0	Pass
0.0287	81124	140	0	Pass
0.0355	63641	110	0	Pass
0.0422	50787	99	0	Pass
0.0490	40836	90	0	Pass
0.0558	33746	83	0	Pass
0.0626	26929	79	0	Pass
0.0694	21459	77	0	Pass
0.0762	17342	75	0	Pass
0.0830	14556	70	0	Pass
0.0897	11920	68	0	Pass
0.0965	9791	63	0	Pass
0.1033	7950	62	0	Pass
0.1101	6524	57	0	Pass
0.1169	5590	56	1	Pass
0.1237	4689	51	1	Pass
0.1305	3949	47	1	Pass
0.1373	3396	47	1	Pass
0.1440	2979	45	1	Pass
0.1508	2636	44	1	Pass
0.1576	2314	44	1	Pass
0.1644	2039	42	2	Pass
0.1712	1804	41	2	Pass
0.1780	1631	38	2	Pass
0.1848	1432	37	2	Pass
0.1916	1255	36	2	Pass
0.1983	1123	34	3	Pass
0.2051	1015	33	3	Pass
0.2119	928	33	3	Pass
0.2187	792	33	4	Pass
0.2255	709	33	4	Pass
0.2323	648	33	5	Pass
0.2391	590	31	5	Pass
0.2458	543	31	5	Pass
0.2526	481	28	5	Pass
0.2594	402	26	6	Pass
0.2662	335	25	7	Pass
0.2730	283	25	8	Pass
0.2798	250	24	9	Pass
0.2866	229	24	10	Pass
0.2934	202	24	11	Pass
0.3001	170	24	14	Pass
0.3069	141	24	17	Pass
0.3137	111	24	21	Pass
0.3205	89	24	26	Pass
0.3273	72	22	30	Pass
0.3341	63	21	33	Pass
0.3409	58	20	34	Pass
0.3476	49	20	40	Pass
0.3544	44	19	43	Pass
0.3612	43	19	44	Pass
0.3680	36	19	52	Pass

0.3748	34	19	55	Pass
0.3816	30	17	56	Pass
0.3884	28	17	60	Pass
0.3952	24	16	66	Pass
0.4019	22	16	72	Pass
0.4087	19	16	84	Pass
0.4155	18	15	83	Pass
0.4223	17	15	88	Pass
0.4291	16	14	87	Pass
0.4359	16	14	87	Pass
0.4427	15	13	86	Pass
0.4495	14	13	92	Pass
0.4562	14	11	78	Pass
0.4630	14	11	78	Pass
0.4698	14	11	78	Pass
0.4766	14	10	71	Pass
0.4834	12	10	83	Pass
0.4902	10	9	90	Pass
0.4970	9	7	77	Pass
0.5037	7	7	100	Pass
0.5105	7	6	85	Pass
0.5173	7	6	85	Pass
0.5241	7	6	85	Pass
0.5309	7	6	85	Pass
0.5377	7	5	71	Pass
0.5445	7	5	71	Pass
0.5513	7	5	71	Pass
0.5580	7	5	71	Pass
0.5648	7	5	71	Pass
0.5716	7	4	57	Pass
0.5784	7	4	57	Pass
0.5852	6	4	66	Pass
0.5920	6	4	66	Pass
0.5988	5	4	80	Pass
0.6055	5	4	80	Pass
0.6123	5	4	80	Pass
0.6191	5	4	80	Pass
0.6259	5	4	80	Pass
0.6327	5	4	80	Pass
0.6395	5	3	60	Pass
0.6463	5	3	60	Pass
0.6531	5	3	60	Pass
0.6598	5	3	60	Pass
0.6666	5	3	60	Pass
0.6734	5	3	60	Pass
0.6802	5	3	60	Pass
0.6870	5	3	60	Pass

Water Quality

Water Quality BMP Flow and Volume for POC #2

On-line facility volume:	0 acre-feet
On-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.
Off-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Gravel Trench Bed 2 POC	☐	336.39			☐	99.90			
DRYWELL 2	☐	385.28			☐	12.69			
Total Volume Infiltrated		721.67	0.00	0.00		53.34	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Passed

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

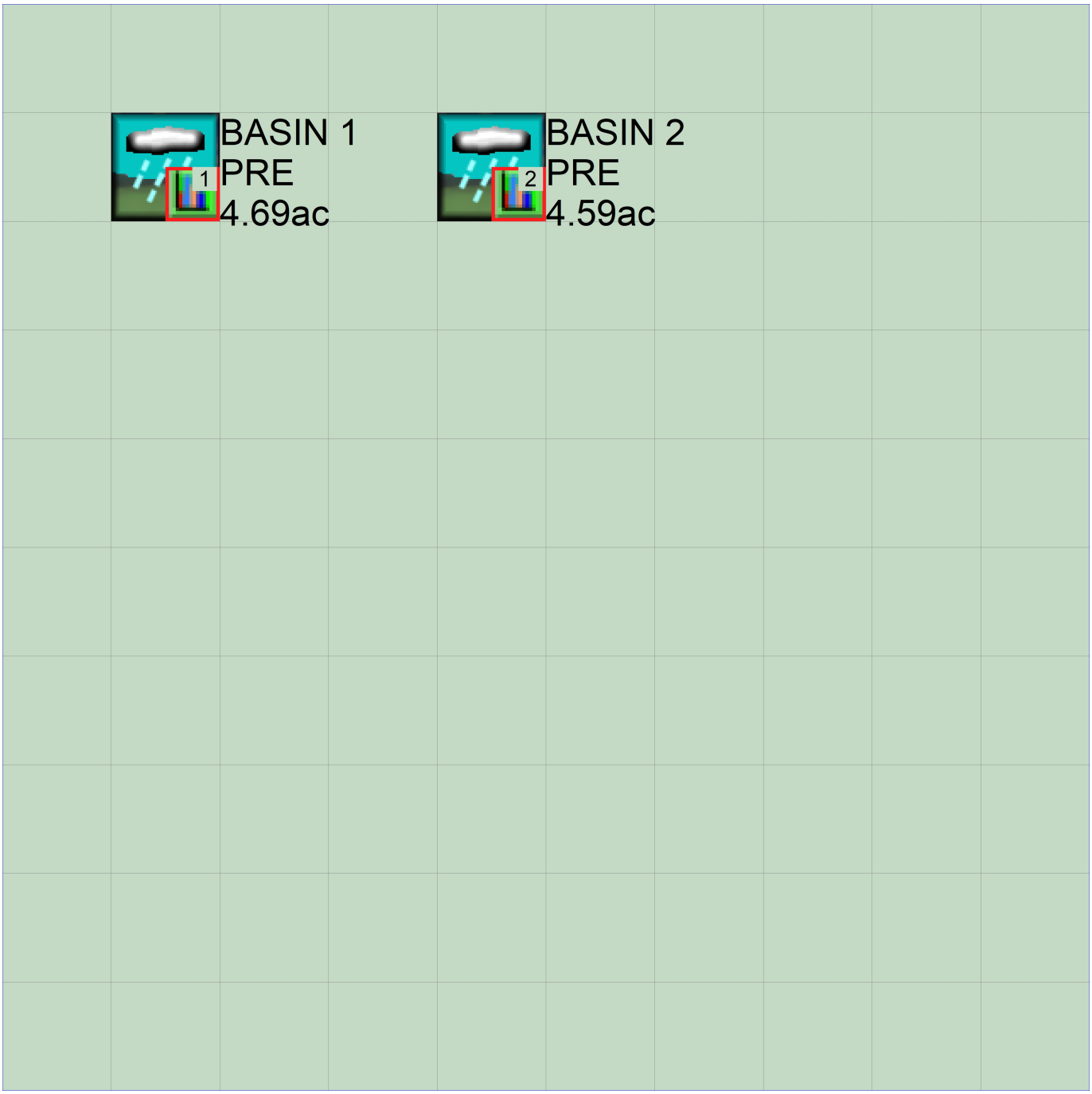
No PERLND changes have been made.

IMPLND Changes

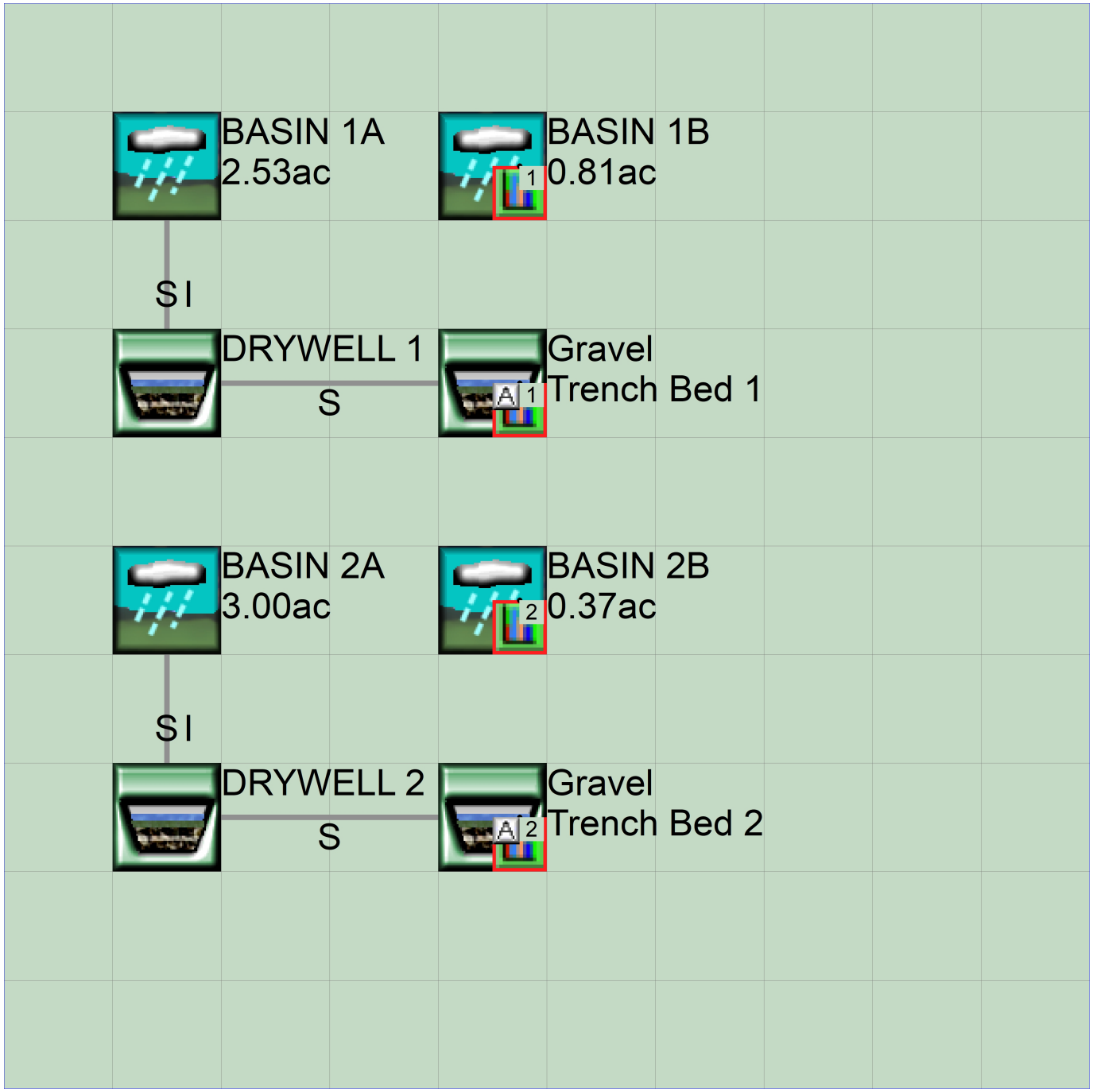
No IMPLND changes have been made.

Appendix

Predeveloped Schematic



Mitigated Schematic



Disclaimer

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WWHM2012

PROJECT REPORT

TDAs #1 AND #2 Water Quality for Basins #1 & #2 (Mechanical Filter Manhole)

General Model Information

WWHM2012 Project Name: 8397 WWHM WQ

Site Name:	Camas Woods III
Site Address:	Water Quality
City:	Camas
Report Date:	3/13/2025
Gage:	Lacamas
Data Start:	1948/10/01
Data End:	2008/09/30
Timestep:	15 Minute
Precip Scale:	1.300
Version Date:	2024/06/28
Version:	4.3.1

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year
Low Flow Threshold for POC2:	50 Percent of the 2 Year
High Flow Threshold for POC2:	50 Year

Landuse Basin Data

Predeveloped Land Use

BASIN 1 PRE WQ

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
SG3, Forest, Flat	2.06
Pervious Total	2.06
Impervious Land Use	acre
Impervious Total	0
Basin Total	2.06

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

POC 1	POC 1

BASIN 2 PRE WQ

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG3, Forest, Flat	2.555
Pervious Total	2.555

Impervious Land Use	acre
Impervious Total	0
Basin Total	2.555

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

POC 2	POC 2

Mitigated Land Use

BASIN 1 WQ

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG3, Lawn, Flat	0.817
Pervious Total	0.817

Impervious Land Use	acre
ROADS FLAT	0.537
DRIVEWAYS FLAT	0.428
SIDEWALKS FLAT	0.23
PARKING FLAT	0.048
Impervious Total	1.243
Basin Total	2.06

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

POC 1	POC 1

BASIN 2 WQ

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG3, Lawn, Flat	0.987
Pervious Total	0.987

Impervious Land Use	acre
ROADS FLAT	0.79
DRIVEWAYS FLAT	0.383
SIDEWALKS FLAT	0.289
PARKING FLAT	0.106
Impervious Total	1.568
Basin Total	2.555

Element Flow Componants:

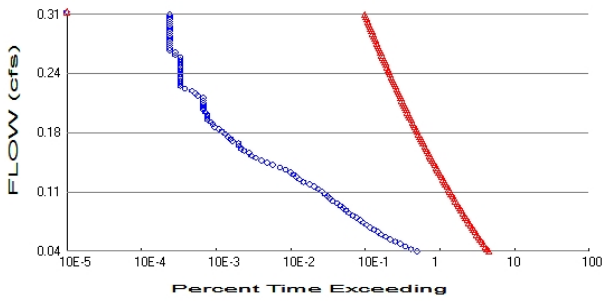
Surface	Interflow	Groundwater
Componant Flows To:		
POC 2	POC 2	

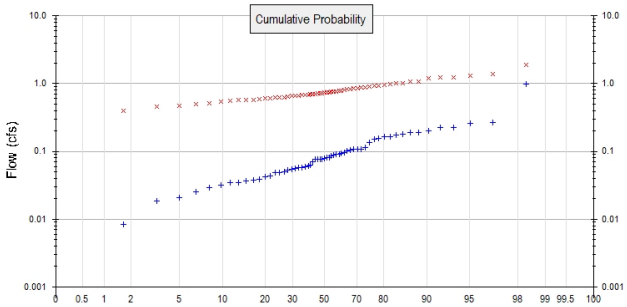
Routing Elements
Predeveloped Routing

Mitigated Routing

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 2.06
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.817
Total Impervious Area: 1.243

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	**Flow(cfs)**
2 year	0.084673
5 year	0.162441
10 year	0.212832
25 year	0.270548
50 year	0.308322
100 year	0.341617

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	**Flow(cfs)**
2 year	0.739423
5 year	0.962872
10 year	1.115074
25 year	1.312796
50 year	1.464271
100 year	1.6195

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	**Predeveloped**	**Mitigated**
1949	0.090	1.062
1950	0.085	0.624
1951	0.163	0.755
1952	0.058	0.698
1953	0.095	0.675
1954	0.189	0.978
1955	0.075	0.605
1956	0.225	0.794
1957	0.114	0.821
1958	0.063	0.914

1959	0.056	0.568
1960	0.044	0.554
1961	0.105	0.736
1962	0.039	0.611
1963	0.053	0.754
1964	0.080	0.545
1965	0.108	0.580
1966	0.091	0.677
1967	0.075	0.699
1968	0.093	1.245
1969	0.107	1.193
1970	0.980	1.868
1971	0.050	0.651
1972	0.089	0.885
1973	0.035	0.742
1974	0.166	0.728
1975	0.076	0.501
1976	0.156	0.626
1977	0.002	0.402
1978	0.223	0.937
1979	0.025	1.009
1980	0.081	0.517
1981	0.180	0.873
1982	0.135	0.774
1983	0.268	1.000
1984	0.061	0.458
1985	0.055	0.579
1986	0.042	0.842
1987	0.175	0.590
1988	0.037	0.669
1989	0.029	0.846
1990	0.037	0.755
1991	0.058	0.799
1992	0.069	0.728
1993	0.034	0.922
1994	0.080	0.659
1995	0.048	0.684
1996	0.261	1.075
1997	0.199	1.396
1998	0.060	1.301
1999	0.101	0.625
2000	0.076	0.473
2001	0.008	0.386
2002	0.190	0.946
2003	0.150	0.703
2004	0.021	0.725
2005	0.018	0.825
2006	0.107	0.743
2007	0.048	0.637
2008	0.032	1.239

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.9801	1.8676
2	0.2679	1.3964
3	0.2615	1.3007
4	0.2251	1.2453

5	0.2226	1.2392
6	0.1989	1.1933
7	0.1895	1.0753
8	0.1893	1.0621
9	0.1799	1.0089
10	0.1748	0.9996
11	0.1660	0.9781
12	0.1635	0.9462
13	0.1558	0.9369
14	0.1498	0.9219
15	0.1354	0.9144
16	0.1136	0.8854
17	0.1078	0.8731
18	0.1068	0.8461
19	0.1068	0.8416
20	0.1053	0.8246
21	0.1006	0.8209
22	0.0955	0.7992
23	0.0933	0.7942
24	0.0909	0.7742
25	0.0898	0.7553
26	0.0890	0.7553
27	0.0850	0.7538
28	0.0809	0.7425
29	0.0804	0.7417
30	0.0796	0.7362
31	0.0760	0.7284
32	0.0759	0.7276
33	0.0755	0.7247
34	0.0754	0.7027
35	0.0695	0.6987
36	0.0627	0.6976
37	0.0606	0.6839
38	0.0595	0.6769
39	0.0578	0.6748
40	0.0576	0.6687
41	0.0561	0.6586
42	0.0549	0.6514
43	0.0529	0.6368
44	0.0502	0.6259
45	0.0483	0.6252
46	0.0479	0.6240
47	0.0438	0.6108
48	0.0422	0.6050
49	0.0387	0.5899
50	0.0374	0.5802
51	0.0369	0.5788
52	0.0347	0.5679
53	0.0343	0.5539
54	0.0317	0.5446
55	0.0294	0.5174
56	0.0251	0.5008
57	0.0205	0.4733
58	0.0183	0.4576
59	0.0083	0.4021
60	0.0016	0.3864

Duration Flows

The Duration Matching Failed

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0423	10294	94610	919	Fail
0.0450	8563	89371	1043	Fail
0.0477	7237	84595	1168	Fail
0.0504	6156	80156	1302	Fail
0.0531	5272	75991	1441	Fail
0.0558	4540	72141	1589	Fail
0.0585	3928	68606	1746	Fail
0.0611	3459	65303	1887	Fail
0.0638	3088	62168	2013	Fail
0.0665	2733	59265	2168	Fail
0.0692	2426	56446	2326	Fail
0.0719	2190	53795	2456	Fail
0.0746	1967	51313	2608	Fail
0.0773	1770	48851	2759	Fail
0.0800	1594	46684	2928	Fail
0.0826	1427	44622	3126	Fail
0.0853	1268	42645	3363	Fail
0.0880	1155	40730	3526	Fail
0.0907	1054	38921	3692	Fail
0.0934	976	37196	3811	Fail
0.0961	874	35534	4065	Fail
0.0988	763	34040	4461	Fail
0.1014	696	32631	4688	Fail
0.1041	648	31221	4818	Fail
0.1068	597	29875	5004	Fail
0.1095	556	28549	5134	Fail
0.1122	500	27371	5474	Fail
0.1149	437	26214	5998	Fail
0.1176	372	25141	6758	Fail
0.1203	311	24131	7759	Fail
0.1229	274	23121	8438	Fail
0.1256	247	22111	8951	Fail
0.1283	229	21228	9269	Fail
0.1310	208	20416	9815	Fail
0.1337	180	19559	10866	Fail
0.1364	151	18682	12372	Fail
0.1391	119	17946	15080	Fail
0.1417	101	17220	17049	Fail
0.1444	85	16551	19471	Fail
0.1471	71	15895	22387	Fail
0.1498	63	15276	24247	Fail
0.1525	58	14664	25282	Fail
0.1552	50	14100	28200	Fail
0.1579	45	13559	30131	Fail
0.1606	43	13071	30397	Fail
0.1632	42	12573	29935	Fail
0.1659	35	12097	34562	Fail
0.1686	33	11657	35324	Fail
0.1713	30	11222	37406	Fail
0.1740	28	10801	38575	Fail
0.1767	25	10403	41612	Fail
0.1794	23	10025	43586	Fail
0.1820	20	9657	48285	Fail
0.1847	19	9305	48973	Fail

0.1874	18	8975	49861	Fail
0.1901	16	8651	54068	Fail
0.1928	16	8310	51937	Fail
0.1955	16	7988	49925	Fail
0.1982	15	7719	51459	Fail
0.2009	14	7435	53107	Fail
0.2035	14	7178	51271	Fail
0.2062	14	6943	49592	Fail
0.2089	14	6713	47950	Fail
0.2116	14	6507	46478	Fail
0.2143	14	6307	45050	Fail
0.2170	12	6114	50950	Fail
0.2197	11	5899	53627	Fail
0.2223	10	5710	57100	Fail
0.2250	8	5516	68950	Fail
0.2277	7	5333	76185	Fail
0.2304	7	5167	73814	Fail
0.2331	7	5011	71585	Fail
0.2358	7	4845	69214	Fail
0.2385	7	4677	66814	Fail
0.2412	7	4517	64528	Fail
0.2438	7	4357	62242	Fail
0.2465	7	4227	60385	Fail
0.2492	7	4100	58571	Fail
0.2519	7	3972	56742	Fail
0.2546	7	3854	55057	Fail
0.2573	7	3736	53371	Fail
0.2600	7	3617	51671	Fail
0.2626	6	3509	58483	Fail
0.2653	6	3387	56450	Fail
0.2680	5	3278	65560	Fail
0.2707	5	3185	63700	Fail
0.2734	5	3086	61720	Fail
0.2761	5	2996	59920	Fail
0.2788	5	2912	58240	Fail
0.2815	5	2817	56340	Fail
0.2841	5	2722	54440	Fail
0.2868	5	2642	52840	Fail
0.2895	5	2552	51040	Fail
0.2922	5	2474	49480	Fail
0.2949	5	2405	48100	Fail
0.2976	5	2335	46700	Fail
0.3003	5	2270	45400	Fail
0.3029	5	2209	44180	Fail
0.3056	5	2127	42540	Fail
0.3083	5	2063	41260	Fail

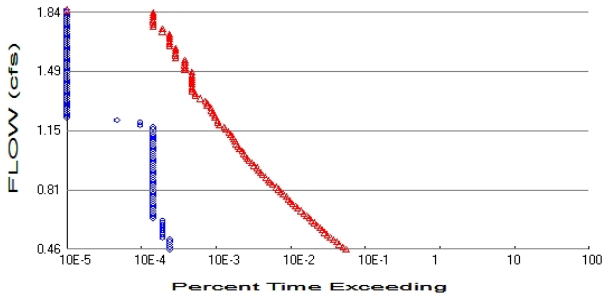
The development has an increase in flow durations from 1/2 Predeveloped 2 year flow to the 2 year flow or more than a 10% increase from the 2 year to the 50 year flow.
The development has an increase in flow durations for more than 50% of the flows for the range of the duration analysis.

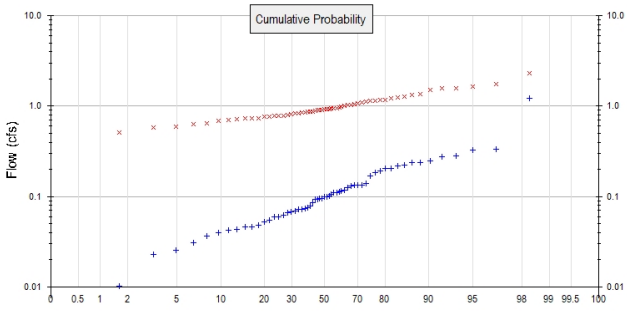
Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0.2144 acre-feet
On-line facility target flow:	0.2602 cfs.
Adjusted for 15 min:	0.2602 cfs.
Off-line facility target flow:	0.1453 cfs.
Adjusted for 15 min:	0.1453 cfs.

POC 2





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #2
Total Pervious Area: 2.555
Total Impervious Area: 0

Mitigated Landuse Totals for POC #2
Total Pervious Area: 0.987
Total Impervious Area: 1.568

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #2

Return Period	**Flow(cfs)**
2 year	0.105019
5 year	0.201474
10 year	0.263974
25 year	0.335559
50 year	0.38241
100 year	0.423705

Flow Frequency Return Periods for Mitigated. POC #2

Return Period	**Flow(cfs)**
2 year	0.928726
5 year	1.208342
10 year	1.398677
25 year	1.645812
50 year	1.83506
100 year	2.028932

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #2

Year	**Predeveloped**	**Mitigated**
1949	0.111	1.340
1950	0.105	0.784
1951	0.203	0.944
1952	0.071	0.876
1953	0.118	0.846
1954	0.235	1.223
1955	0.094	0.763
1956	0.279	0.991
1957	0.141	1.027
1958	0.078	1.145
1959	0.070	0.716

1960	0.054	0.699
1961	0.131	0.922
1962	0.048	0.767
1963	0.066	0.946
1964	0.100	0.686
1965	0.134	0.728
1966	0.113	0.849
1967	0.094	0.876
1968	0.116	1.570
1969	0.132	1.500
1970	1.216	2.327
1971	0.062	0.822
1972	0.110	1.117
1973	0.043	0.936
1974	0.206	0.910
1975	0.094	0.632
1976	0.193	0.783
1977	0.002	0.507
1978	0.276	1.171
1979	0.031	1.266
1980	0.100	0.650
1981	0.223	1.092
1982	0.168	0.975
1983	0.332	1.249
1984	0.075	0.575
1985	0.068	0.727
1986	0.052	1.060
1987	0.217	0.737
1988	0.046	0.842
1989	0.036	1.067
1990	0.046	0.953
1991	0.072	1.002
1992	0.086	0.913
1993	0.043	1.155
1994	0.099	0.831
1995	0.059	0.863
1996	0.324	1.346
1997	0.247	1.747
1998	0.074	1.637
1999	0.125	0.783
2000	0.094	0.593
2001	0.010	0.487
2002	0.235	1.184
2003	0.186	0.879
2004	0.025	0.914
2005	0.023	1.040
2006	0.132	0.937
2007	0.060	0.800
2008	0.039	1.563

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #2

Rank	Predeveloped	Mitigated
1	1.2156	2.3269
2	0.3322	1.7471
3	0.3243	1.6369
4	0.2792	1.5701
5	0.2761	1.5627

6	0.2467	1.5003
7	0.2351	1.3459
8	0.2348	1.3398
9	0.2232	1.2658
10	0.2167	1.2492
11	0.2059	1.2235
12	0.2028	1.1838
13	0.1932	1.1710
14	0.1858	1.1545
15	0.1679	1.1449
16	0.1408	1.1168
17	0.1336	1.0919
18	0.1325	1.0673
19	0.1324	1.0601
20	0.1306	1.0402
21	0.1248	1.0273
22	0.1184	1.0018
23	0.1158	0.9906
24	0.1128	0.9752
25	0.1114	0.9527
26	0.1104	0.9458
27	0.1054	0.9438
28	0.1004	0.9367
29	0.0997	0.9356
30	0.0988	0.9215
31	0.0942	0.9141
32	0.0942	0.9134
33	0.0936	0.9105
34	0.0936	0.8791
35	0.0862	0.8763
36	0.0778	0.8760
37	0.0752	0.8625
38	0.0738	0.8491
39	0.0717	0.8458
40	0.0715	0.8425
41	0.0696	0.8307
42	0.0681	0.8217
43	0.0656	0.7998
44	0.0622	0.7836
45	0.0599	0.7831
46	0.0594	0.7827
47	0.0544	0.7665
48	0.0523	0.7632
49	0.0480	0.7374
50	0.0463	0.7282
51	0.0458	0.7272
52	0.0431	0.7157
53	0.0426	0.6985
54	0.0394	0.6863
55	0.0365	0.6504
56	0.0311	0.6316
57	0.0254	0.5929
58	0.0227	0.5752
59	0.0103	0.5072
60	0.0020	0.4867

Duration Flows

The Duration Matching Failed

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0525	5	1156	23120	Fail
0.0558	5	1049	20980	Fail
0.0592	5	942	18840	Fail
0.0625	5	863	17260	Fail
0.0658	5	785	15700	Fail
0.0692	4	713	17825	Fail
0.0725	4	652	16300	Fail
0.0758	4	599	14975	Fail
0.0792	4	551	13775	Fail
0.0825	4	516	12900	Fail
0.0858	4	475	11875	Fail
0.0892	4	436	10900	Fail
0.0925	4	403	10075	Fail
0.0958	3	375	12500	Fail
0.0992	3	346	11533	Fail
0.1025	3	313	10433	Fail
0.1058	3	290	9666	Fail
0.1092	3	259	8633	Fail
0.1125	3	243	8100	Fail
0.1158	3	224	7466	Fail
0.1192	3	209	6966	Fail
0.1225	3	195	6500	Fail
0.1258	3	183	6100	Fail
0.1292	3	167	5566	Fail
0.1325	3	155	5166	Fail
0.1358	3	146	4866	Fail
0.1392	3	136	4533	Fail
0.1425	3	120	4000	Fail
0.1458	3	110	3666	Fail
0.1491	3	105	3500	Fail
0.1525	3	97	3233	Fail
0.1558	3	88	2933	Fail
0.1591	3	83	2766	Fail
0.1625	3	77	2566	Fail
0.1658	3	75	2500	Fail
0.1691	3	67	2233	Fail
0.1725	3	63	2100	Fail
0.1758	3	58	1933	Fail
0.1791	3	55	1833	Fail
0.1825	3	52	1733	Fail
0.1858	3	50	1666	Fail
0.1891	3	47	1566	Fail
0.1925	3	43	1433	Fail
0.1958	3	41	1366	Fail
0.1991	3	39	1300	Fail
0.2025	3	38	1266	Fail
0.2058	3	36	1200	Fail
0.2091	3	35	1166	Fail
0.2125	3	33	1100	Fail
0.2158	3	31	1033	Fail
0.2191	3	28	933	Fail
0.2225	3	27	900	Fail
0.2258	2	23	1150	Fail
0.2291	2	22	1100	Fail

0.2325	1	22	2200	Fail
0.2358	0	20	n/a	Fail
0.2391	0	20	n/a	Fail
0.2425	0	19	n/a	Fail
0.2458	0	18	n/a	Fail
0.2491	0	18	n/a	Fail
0.2524	0	16	n/a	Fail
0.2558	0	16	n/a	Fail
0.2591	0	15	n/a	Fail
0.2624	0	13	n/a	Fail
0.2658	0	11	n/a	Fail
0.2691	0	11	n/a	Fail
0.2724	0	10	n/a	Fail
0.2758	0	10	n/a	Fail
0.2791	0	10	n/a	Fail
0.2824	0	10	n/a	Fail
0.2858	0	10	n/a	Fail
0.2891	0	10	n/a	Fail
0.2924	0	10	n/a	Fail
0.2958	0	10	n/a	Fail
0.2991	0	10	n/a	Fail
0.3024	0	8	n/a	Fail
0.3058	0	8	n/a	Fail
0.3091	0	8	n/a	Fail
0.3124	0	8	n/a	Fail
0.3158	0	8	n/a	Fail
0.3191	0	6	n/a	Fail
0.3224	0	6	n/a	Fail
0.3258	0	6	n/a	Fail
0.3291	0	6	n/a	Fail
0.3324	0	6	n/a	Fail
0.3358	0	5	n/a	Fail
0.3391	0	5	n/a	Fail
0.3424	0	5	n/a	Fail
0.3458	0	5	n/a	Fail
0.3491	0	5	n/a	Fail
0.3524	0	5	n/a	Fail
0.3558	0	4	n/a	Fail
0.3591	0	4	n/a	Fail
0.3624	0	3	n/a	Fail
0.3657	0	3	n/a	Fail
0.3691	0	3	n/a	Fail
0.3724	0	3	n/a	Fail
0.3757	0	3	n/a	Fail
0.3791	0	3	n/a	Fail
0.3824	0	3	n/a	Fail

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 #2

On-line facility volume:	0.2684 acre-feet
On-line facility target flow:	0.3278 cfs.
Adjusted for 15 min:	0.3278 cfs.
Off-line facility target flow:	0.1832 cfs.
Adjusted for 15 min:	0.1832 cfs.

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

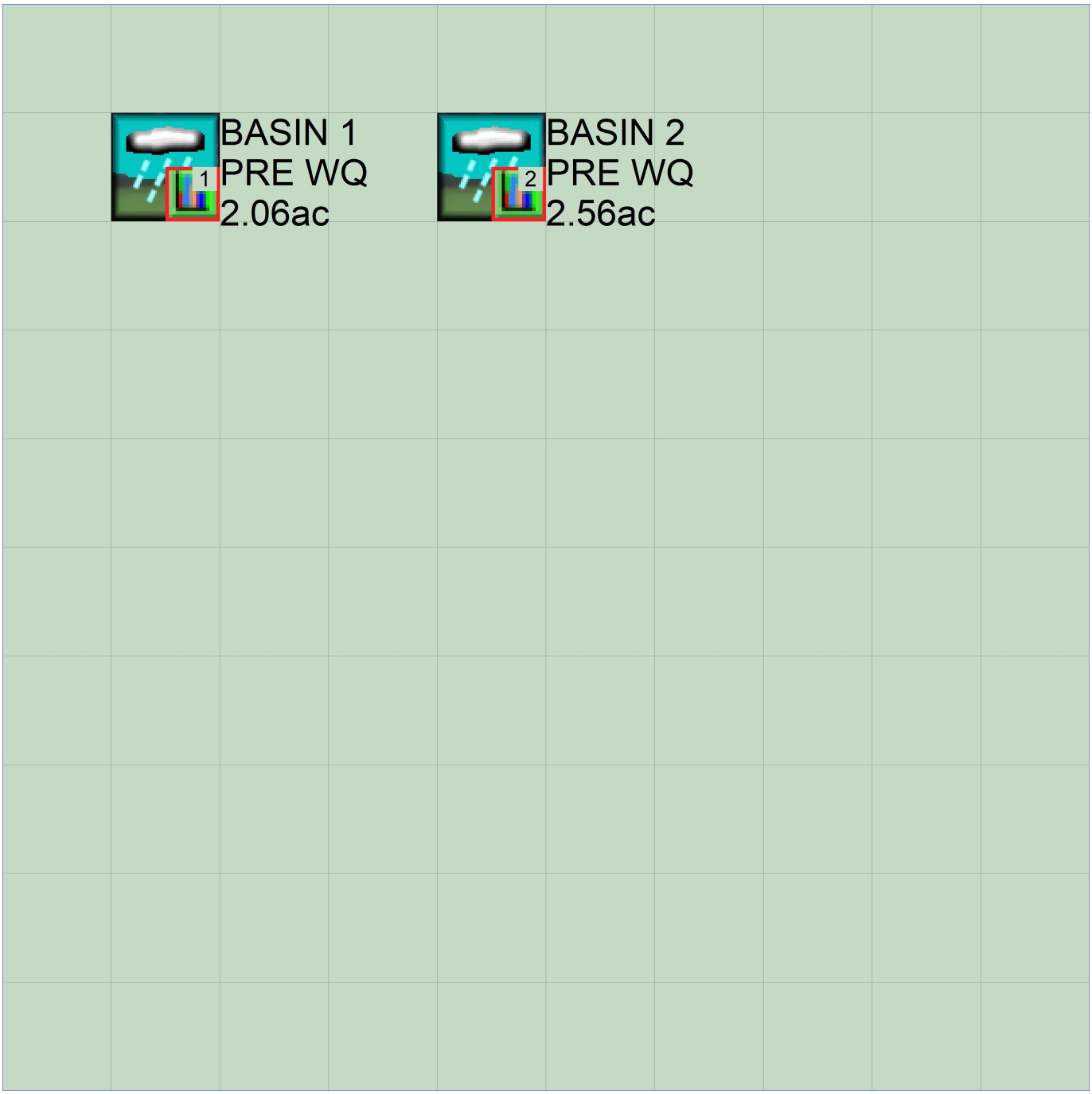
No PERLND changes have been made.

IMPLND Changes

No IMPLND changes have been made.

Appendix

Predeveloped Schematic



Mitigated Schematic



Disclaimer

Legal Notice

This program and accompanying documentation are provided 'as-is' without warranty of any kind. The entire risk regarding the performance and results of this program is assumed by End User. Clear Creek Solutions Inc. and the governmental licensee or sublicensees disclaim all warranties, either expressed or implied, including but not limited to implied warranties of program and accompanying documentation. In no event shall Clear Creek Solutions Inc. be liable for any damages whatsoever (including without limitation to damages for loss of business profits, loss of business information, business interruption, and the like) arising out of the use of, or inability to use this program even if Clear Creek Solutions Inc. or their authorized representatives have been advised of the possibility of such damages. Software Copyright © by : Clear Creek Solutions, Inc. 2005-2025; All Rights Reserved.

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Appendix G: Soils Report

Report of Geotechnical Engineering Services

Camas Woods Phase 3

Camas, Washington

February 18, 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

February 18, 2025

HSR Capital LLC
500 East Broadway, Suite 120
Vancouver, WA 98660

Attn: Kevin Miller

Re: Report of Geotechnical Engineering Services
Camas Woods Phase 3
26514 and 26416 SE 8th Street
Camas, Washington
CWE Project: HSR-4-01-1

Columbia West Engineering, Inc. (Columbia West) is pleased to present this geotechnical engineering report for the Camas Woods Phase 3 project located at 26514 and 26416 SE 8th Street (parcel numbers 178209000 and 178109000) in Camas, Washington. Our services were conducted in accordance with our proposal dated September 6, 2024.

We appreciate the opportunity to work on the project. Please contact us if you have any questions regarding this report.

Sincerely,

Michael A. Chacon, PE
Senior Staff Engineer

Daniel E. Lehto, PE, GE
Principal Engineer



Signed 02/18/2025

Expires 06/05/2025

cc: Bryce Hanson, AKS Engineering & Forestry

MAC:ASR:DEL:kat
Attachments
Document ID: HSR-4-01-1-021825-geor.docx

EXECUTIVE SUMMARY

This section provides a summary of the geotechnical considerations associated with the Camas Woods Phase 3 project 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 team. A detailed discussion of the geotechnical considerations summarized here is presented in respective sections of the report.

- The proposed lightly loaded residential structures can be supported by conventional spread footings bearing on firm soil as described in the report.

- 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.

- Cobbles and boulders were encountered in the explorations at the site. Cobbles and boulders will result in difficult excavation and trenches may be wider than anticipated, increasing the amount of backfill material required.

- Moisture conditioning will likely 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. It will be difficult, if not impossible, to adequately compact the on-site soil during the rainy season or during prolonged periods of rainfall.

- Groundwater was encountered at 12 feet BGS in test pit TP-6 during our subsurface exploration on December 31, 2024. Dewatering may be required for deeper utilities, particularly in areas of cut and in the wet season.

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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
CSZ	Cascadia subduction zone
g	gravitational acceleration (32.2 feet/second^2)
GIS	geographic information system
HMA	hot mix asphalt
H:V	horizontal to vertical
IBC	International Building Code
in/hr	inch(es) per hour
km	kilometers
MCE	maximum considered earthquake
M_W	moment magnitude
NAVD 88	North American Vertical Datum of 1988
OSHA	Occupational Safety and Health Administration
pcf	pounds per cubic foot
pci	pounds per cubic inch
PG	performance grade
psf	pounds per square foot
psi	pounds per square inch
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
WSS	Washington Standard Specifications for Road, Bridge, and Municipal Construction (2024)

REPORT OF GEOTECHNICAL ENGINEERING SERVICES
CAMAS WOODS PHASE 3
CAMAS, WASHINGTON

1.0 INTRODUCTION

Columbia West is pleased to submit this geotechnical engineering report for the Camas Woods Phase 3 project in Camas, Washington. The approximately 8.82-acre site is comprised of parcel numbers 178209000 and 178109000 and is located at 26514 and 26416 SE 8th Street in Camas, Washington. The site is shown relative to surrounding physical features on Figure 1. Figure 2 shows the existing conditions at the site and our exploration locations. Abbreviations and acronyms used herein are defined immediately following the Table of Contents.

Development plans include construction of a single-family residential subdivision with associated infrastructure. Infrastructure specifics and grading plans were not available for review at the time this report was prepared. Foundation loads were also unknown at the time this report was prepared; however, we estimate maximum column and wall loads will be less than 30 kips and 4 kips per lineal foot, respectively.

2.0 BACKGROUND

Based on historical aerial photographs, the site has been an undeveloped property since at least the 1950s, with single-family residences constructed in the 1970s. The site is bounded by a church to the west; single-family rural development to the north and south; and vacant, forested land to the east.

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 development. Specifically, we completed the following tasks:

- Reviewed information available in Columbia West's files from previous geological and geotechnical studies conducted in the site vicinity.
- Coordinated and managed the field exploration program, which included locating public utilities, coordinating site access, and scheduling subcontractors and Columbia West field staff.
- Explored subsurface conditions at the site by excavating six test pits to depths between 12.5 and 16 feet BGS.
- Collected soil samples from the explorations for laboratory testing and maintained a log of encountered soil and groundwater conditions in the explorations.
- Conducted infiltration testing in three of the test pits at depths of 3 and 6 feet BGS.
- Performed laboratory testing on select soil samples collected from the explorations, including the following:
  - Seven moisture content determinations in general accordance with ASTM D2216
  - Six particle-size analyses in general accordance with ASTM D1140
  - One particle-size analysis in general accordance with ASTM D6913
  - Two Atterberg limits tests in general accordance with ASTM D4318

- Prepared this geotechnical engineering report that includes the following:
  - Summary of subsurface conditions at the site
  - Results of research of existing geologic and seismic maps and literature to determine relevant seismic risks, including locations of faults and earthquake magnitudes
  - Assessment of seismic hazards
  - Laboratory testing results
  - Foundation support recommendations, including allowable bearing capacity, estimated foundation settlement, and lateral resistance parameters
  - 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
  - Stormwater disposal recommendations
  - Code-based seismic design parameters in accordance with the 2021 IBC

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 central portion of the Portland/Vancouver Basin, an open, somewhat elliptical, northwest-trending syncline approximately 60 miles wide.

The near-surface soil is expected to consist of Pleistocene- to Pliocene-aged, semi-consolidated, pebble- to cobble-sized sedimentary Conglomerate (QTc). The conglomerate is underlain by Oligocene aged Elkhorn Mountain basaltic andesite flows (Evarts and O'Connor 2008). Well logs for 26416 SE 8th Street indicate that the conglomerate extends to a depth of at least 160 feet BGS (Washington State Department of Ecology 2025).

The USDA Web Soil Survey identifies the surface soil as Hesson clay loam (USDA 2025). Hesson 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.

4.2 SEISMOLOGY

Recent research and subsurface mapping investigations in the Pacific Northwest appear to suggest the historical potential risk for a large earthquake event with strong localized ground movement may be underestimated. Past earthquakes in the Pacific Northwest appear to have caused landslides and ground subsidence, in addition to severe flooding near coastal areas. Earthquakes may also induce soil liquefaction, which occurs when elevated horizontal ground

acceleration and velocity cause soil particles to interact as a fluid as opposed to a solid. Liquefaction of soil can result in lateral spreading and temporary loss of bearing capacity and shear strength.

Three scenario earthquakes are possible with the local seismic setting. Two of the possible earthquake sources are associated with the CSZ, and the third event is a shallow, local crustal earthquake that could occur in the North American Plate. The three earthquake scenarios are discussed below.

4.2.1 CSZ

The CSZ is the region where the Juan de Fuca Plate is being subducted beneath the North American Plate. This subduction is occurring in the coastal region between Vancouver Island and northern California. Evidence has accumulated suggesting that this subduction zone has generated eight great earthquakes in the last 4,000 years, with the most recent event occurring approximately 300 years ago (Weaver and Shedlock 1991). The fault trace is mapped approximately 50 to 120 km off the Washington Coast.

Two types of subduction zone earthquakes are possible and considered in this report:

1. An interface event earthquake on the seismogenic part of the interface between the Juan de Fuca Plate and the North American Plate on the CSZ. This source is capable of generating earthquakes with a M_W of 9.0+.
2. A deep intraplate earthquake on the seismogenic part of the subducting Juan de Fuca Plate. These events typically occur at depths of between 30 and 60 km. This source is capable of generating an event with a M_W of up to 8.0.

4.2.2 Crustal Events

A significant earthquake could occur on a local fault near the site within the design life of the development. Such an event would cause ground shaking at the site that could be more intense than the CSZ events, although the duration would be shorter. Table 1 provides information on local faults close to the site.

Table 1. Faults within the Site Vicinity[1]

Fault Name	Proximity to Site (km)	Mapped Length (km)
Lacamas Lake fault	1	24
Portland Hills fault	22	49
East Bank fault	27	29

1. Reported by USGS (2025)

4.3 SURFACE CONDITIONS

The site is relatively undeveloped and flat. The site is primarily forested and contains two single-family residential structures. According to Clark County GIS, site elevations range from approximately 382 feet at the northwest area of the site to 390 feet in the southeast area of the site (NAVD 88).

4.4 SUBSURFACE CONDITIONS

Subsurface conditions at the site were explored by excavating six test pits (TP-1 through TP-6) to depths between 12.5 and 16 feet BGS. The exploration locations are shown on Figure 2. A description of our 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. Photograph taken during our subsurface explorations are presented in Appendix C. A summary of the subsurface conditions is presented below.

4.4.1 Root and Topsoil Zones

The topsoil zone is generally 6 to 12 inches thick and consists of sandy silt with trace organics. The topsoil zone generally contains a 3-inch-thick root zone. Areas covered by forest may have deeper root zones or thicker topsoil zones.

4.4.2 Near-Surface Soil

Beneath the topsoil, the soil generally consists of silty gravel with sand and cobbles or clayey sand to silty sand with gravel to the maximum depth explored of 16 feet BGS. Variable amounts boulders up to 24 inches in diameter were encountered in several locations. Based on laboratory testing, the moisture content varied from 23 to 30 percent at the time of exploration.

4.4.3 Groundwater

Groundwater seepage was observed in test pit TP-6 at a depth of 12 feet BGS on December 31, 2024. Based on our knowledge of the surrounding area, perched water could be present in isolated, discontinuous zones below the ground surface and particularly where higher infiltrating soil is present above lower infiltrating soil.

4.5 INFILTRATION TESTING

Infiltration testing was completed in three of the test pits in December 2024 to assist in the evaluation of stormwater infiltration facilities for the project. The infiltration testing was conducted in general accordance with the recommendations for the encased falling head method in general accordance with the Clark County Stormwater Manual (Clark County 2021). Table 2 summarizes our infiltration testing results.

Table 2. Infiltration Testing Results

Location	Depth (feet BGS)	Soil Type	Fines Content[1] (percent)	Coefficient of Permeability, k (in/hr)
TP-1	3	Silty GRAVEL with sand (GM)	35	4
	6	Silty GRAVEL with sand (GM)	21	19
TP-3	3	Silty GRAVEL with sand (GM)	32	5
	6	GRAVEL with silt and sand (GP-GM)	20	4
TP-6	3	Clayey SAND (SC)	43	5
	6	Silty GRAVEL with sand (GM)	14	20

1. Fines content: percent passing U.S. Standard No. 200 sieve

Recommendations for design of infiltration system are provided in Section 6.6.3 (Stormwater Infiltration Systems).

5.0 GEOLOGICALLY HAZARDOUS AREAS

Camas Municipal Code, Section 16.59 defines geologic hazard requirements for proposed development in areas subject to City of Camas jurisdiction. Three potential geologic hazards are identified: (1) erosion hazard areas, (2) landslide hazard areas, and (3) seismic hazard areas.

Columbia West conducted a geologic hazard review to assess whether these hazards are present at the site proposed for development and, if so, to provide mitigation recommendations. The geologic hazard review was based on physical and visual reconnaissance, subsurface exploration, laboratory testing of collected soil samples, and review of maps and other published technical literature. The results of the geologic hazard review are discussed in the following sections.

5.1 EROSION HAZARDS

Camas Municipal Code, Section 16.59.020.A defines an erosion hazard as areas where slope grades meet or exceed 40 percent. Based on review of slope grade mapping published by Clark County Maps Online, maximum slope grades of 15 percent are mapped in the northeast corner of the site. Therefore, site slopes do not meet the definition of an erosion hazard according to Camas Municipal Code.

5.2 LANDSLIDE HAZARDS

Columbia West conducted a review of available mapping and Clark County GIS data and conducted a site reconnaissance to evaluate the potential presence of a landslide hazard on or near the site. Due to the relatively flat topography, the site does not pose a significant landslide hazard.

5.3 SEISMIC HAZARD AREAS

Seismic hazards include areas subject to severe risk of earthquake-induced damage. Damage may occur due to soil liquefaction, dynamic settlement, ground shaking amplification, or surface faulting rupture. These seismic hazards are discussed below.

5.3.1 Soil Liquefaction and Dynamic Settlement

According to the Liquefaction Susceptibility Map of Clark County, Washington (Palmer et al. 2004), the site is mapped as very low susceptibility for liquefaction. Liquefaction, defined as the transformation of the behavior of a granular material from a solid to a liquid due to increased pore water pressure and reduced effective stress, may occur when granular materials quickly compact under cyclic stresses caused by a seismic event. The effects of liquefaction may include immediate ground settlement, lateral spreading, and differential compaction.

Soil most susceptible to liquefaction is recent geologic deposits, such as river and floodplain sediments. This soil is generally saturated, cohesionless, loose to medium dense sand within 50 feet of the ground surface. Potentially liquefiable soil located above the existing, historical, or expected groundwater levels do not generally pose a liquefaction hazard. It is important to note that changes in perched groundwater elevation may occur due to project development or other factors not observed at the time of investigation.

Based on the results of subsurface exploration, literature review, and laboratory testing, the above-mentioned criteria were not observed during the geotechnical site investigation. Therefore, the potential for soil liquefaction is considered to be very low.

5.3.2 Ground Shaking Amplification

Review of the Site Class Map of Clark County, Washington, (Palmer et al. 2004) indicates that site soil may be represented by Site Class C as defined in 2021 IBC Section 1613.3.2. A designation of Site Class C indicates that minor amplification of seismic energy may occur during a seismic event due to subsurface conditions. However, this is typical for many areas within Clark County, does not represent a geologic hazard in Columbia West's opinion, and will not prohibit development if properly accounted for during the design process. Additional seismic information is presented in Section 6.3 (Seismic Design Criteria).

5.3.3 Fault Rupture

Because there are no known geologic seismic faults within the site boundaries, fault rupture is unlikely.

6.0 DESIGN

Based on the results of our explorations, laboratory testing, and analysis, the proposed project is feasible, provided the recommendations presented in this report are incorporated into design and implemented during construction.

6.1 SHALLOW FOUNDATION SUPPORT

6.1.1 General

The proposed residential structures may be supported by conventional spread footings bearing on firm, native soil or engineered structural fill. Any loose or disturbed soil should be improved or removed and replaced with structural fill. If the moisture content of the footing subgrade soil is above optimum moisture content, we recommend that a minimum of 6 inches of compacted aggregate be placed over exposed subgrade soil. The aggregate pad should extend 6 inches

beyond the edges of the foundations and consist of imported granular material as described in Section 7.6.1 (Structural Fill). Columbia West should observe exposed subgrade conditions prior to placement of crushed aggregate to verify adequate subgrade support.

6.1.2 Footing Dimensions and 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 be 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.

6.1.3 Settlement

Provided the subgrade soil is prepared as described above and in Section 7.1 (Site Preparation), we anticipate that post-construction static foundation settlement will be less than approximately 1 inch. Differential settlement between comparably loaded foundations is not expected to exceed approximately 0.5 inch over a distance of 50 feet.

6.1.4 Resistance to Sliding

Lateral foundation loads can be resisted by passive earth pressure on the sides of footings and by friction at the bases of footings. Recommended passive earth pressure for footings confined by native soil or engineered structural fill is 250 pcf. The upper 6 inches of soil should be neglected when calculating passive pressure resistance. Adjacent floor slabs and pavement, if present, should also be neglected from the analysis. The recommended passive pressure resistance assumes that a minimum horizontal clearance of 10 feet is maintained between the footing face and adjacent down-gradient slopes.

The estimated coefficient of friction between in-situ native soil or engineered structural fill and in-place poured concrete is 0.35. The estimated coefficient of friction between compacted crushed aggregate and in-place poured concrete is 0.45.

6.2 FLOOR SLABS

Floor slabs can be supported on firm, competent, native soil or engineered structural fill prepared as described in this report. Disturbed soil and unsuitable fill in proposed slab locations, if encountered, should be removed and replaced with structural fill. Floor slabs with a maximum floor load of 100 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 7.6 (Materials).

6.3 SEISMIC DESIGN CRITERIA

The structures will likely be constructed in accordance with the 2021 IBC, which references ASCE 7-16 for design parameters. Based on our literature review of surrounding sites, the appropriate seismic site class for design is C. Seismic design parameters in accordance with ASCE 7-16 are provided in Table 3.

Table 3. ASCE 7-16 Seismic Design Parameters[1]

Parameter	Short Period (T_s)	1-Second Period (T_1)
MCE spectral response acceleration, S	S_s = 0.787 g	S_1 = 0.345 g
Site class	C	
Site coefficient, F	F_a = 1.2	F_v = 1.5
Adjusted spectral response acceleration, S_M	S_{MS} = 0.945 g	S_{M1} = 0.518 g
Design spectral response acceleration, S_D	S_{DS} = 0.630 g	S_{D1} = 0.345 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 C provided in Table 3 can be used for design or if a site-specific seismic hazard evaluation is required.

6.4 RETAINING STRUCTURES

Lateral earth pressures should be considered during design of retaining walls and below-grade structures. Hydrostatic pressure and additional surcharge loading should also be considered. Wall foundation construction and bearing capacity should adhere to the specifications in Section 6.1 (Shallow Foundation Support).

Permanent retaining walls that are not restrained from rotation and are retaining undisturbed, native soil should be designed for active earth pressures using an equivalent fluid pressure of 39 pcf. Walls retaining undisturbed, native soil that are restrained from rotation should be designed for an at-rest equivalent fluid pressure of 64 pcf. For walls with imported well-drained granular backfill meeting WSS 9-03.12(2) – Gravel Backfill for Walls, equivalent fluid pressures of 34 pcf and 60 pcf are applicable for active and at-rest earth pressures, respectively.

The recommended earth pressures assume a maximum wall height of 10 feet with 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 distributed load with the resultant located at 0.6H from the base of the wall.

6.4.1 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 material 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 7.6.1 (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.

6.5 PAVEMENT

We recommend that public roadways for the subdivision be constructed in accordance with City of Camas standards. For dry weather construction, pavement surface sections should bear on competent subgrade consisting of scarified and compacted native soil or engineered structural fill. Wet weather construction may require an increased thickness of aggregate base as discussed in Section 7.2 (Construction Traffic and Staging). Refer to Section 7.6.3.2 (Cold Weather Paving Considerations) for compaction requirements.

6.6 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 7.6 (Materials). Drains should be closely monitored after construction to assess their effectiveness. If additional surface or shallow subsurface seepage become evident, the drainage provisions may require modification or additional drains. We should be consulted to provide appropriate recommendations.

6.6.1 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.

6.6.2 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.

6.6.3 Stormwater Infiltration Systems

Based on the tested infiltration rates, on-site infiltration systems are viable in the native soil at the site. The rates in Table 2 are field infiltration rates and factors of safety have not been applied. Correction factors should be applied to the recommended infiltration rates to account for soil variations and the potential for long-term clogging due to siltation and buildup of organic material. Confirmation testing of infiltration systems should be completed as described below. In addition, the local jurisdiction may require a limit on the design infiltration rates. We recommend the stormwater system designer determine if a design rate limit is required.

We recommend a contingency be in place if tested rates do not meet design rates. Columbia West should be allowed to review the final design and provide comments, as necessary. The infiltration flow rate of disposal systems will diminish over time as suspended solids and precipitates in the stormwater slowly clog the void spaces between soil particles in the zone of infiltration. Accordingly, systems may eventually fail and need to be replaced.

7.0 CONSTRUCTION

7.1 SITE PREPARATION

7.1.1 General

Site grading should be performed in accordance with the requirements specified in the 2021 IBC, Chapter 18 and Appendix J, with exceptions noted in this report. Site preparation should be observed and documented by Columbia West.

7.1.2 Demolition

Where required, demolition includes removal of structural features that may be at the site. Abandoned foundations and utilities, if present, will need to be removed and the resulting excavations backfilled. Utility lines should be completely removed or, with prior approval, grouted full if left in place. Excavations left from demolition and removal of existing structures should be backfilled with compacted structural fill in accordance with the recommendations in Section 7.6 (Materials).

7.1.3 Stripping and Grubbing

The existing root zones should be stripped and removed from all areas to receive new structural improvements. A stripping depth of approximately 12 inches is anticipated in areas where the entire topsoil zone is removed. The actual stripping depth should be based on field observations at the time of construction and may increase in areas of heavy vegetation or deep tree roots. Stripped material should be transported offsite for disposal or used in landscaped areas on 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.

Trees and shrubs should be removed from fill areas. In addition, root balls should be grubbed out to the depth of the roots, which could exceed 3 feet BGS. Depending on the methods used to remove root balls, considerable disturbance and loosening of the subgrade could occur during site grubbing. We recommend that soil disturbed during grubbing operations be removed to expose firm, undisturbed subgrade. The resulting excavations should be backfilled with structural fill. Columbia West recommends removing undocumented fill completely and backfilling, as needed, with clean structural fill. Undocumented structural fill material should be evaluated by Columbia West prior to being reused as structural fill to determine suitability.

7.1.4 Test Pits

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.

7.1.5 Subgrade Evaluation

Upon completion of stripping and prior to the placement of structural fill or pavement improvements, 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, 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.

7.2 CONSTRUCTION TRAFFIC AND STAGING

The fine-grained soil present on this site is easily disturbed. If not carefully executed, site preparation, utility trench work, and roadway excavation can create extensive soft areas and significant repair costs can result. Earthwork planning, regardless of the time of year, should include considerations for minimizing subgrade disturbance.

If construction occurs during or extends into the wet season or if the moisture content of the surficial soil is more than a couple percentage points above optimum, site stripping and cutting may need to be accomplished using track-mounted equipment. Likewise, the use of granular haul roads and staging areas will be necessary for support of construction traffic during the rainy season or when the moisture content of the surficial soil is more than a few percentage points above optimum. The aggregate base thickness for pavement areas is intended to support post-

construction design traffic loads and is not designed to support construction traffic. Moreover, if construction is planned for periods when the subgrade soil is wet, staging areas and haul roads with increased thicknesses of base rock will be required. The amount of staging areas and haul roads, as well as the required thickness of granular material, will vary with the contractor's sequencing of a project and type/frequency of construction equipment and should, therefore, be the responsibility of the contractor. 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 haul roads. The contractor should also be responsible for selecting the type of material for construction of haul roads and staging areas. A geotextile fabric can be placed as a barrier between the subgrade and imported granular material in areas of repeated construction traffic to help prevent silt migration into the base rock. The imported granular material, stabilization material, and geotextile fabric should meet the specifications in Section 7.6 (Materials).

Cement amendment is an alternative to thickened crushed rock sections, haul roads, and utility work zones. Cement amendment recommendations are presented in Section 7.6.4 (Soil Amendment with Cement).

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.

7.3 CUT AND FILL SLOPES

Fill slopes should consist of structural fill material as discussed in Section 7.6.1 (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 the 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.

7.4 EXCAVATION

7.4.1 General

Conventional earthmoving equipment in proper working condition should be capable of making necessary site excavations. Temporary excavation sidewalls should maintain a vertical cut to a depth of approximately 4 feet BGS in the near-surface silt, 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 test pit TP-6 at a depth of 12 feet BGS on December 31, 2024. Recommendations as described in Section 7.5 (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.

7.4.2 Cobbles and Boulders

Cobbles and boulders were encountered in the explorations at the site. Construction considerations associated with cobbles and boulders include the following:

- Excavations can become difficult, if not impossible, with conventional equipment.
- Excavation volumes for utility trenches may be greater than anticipated due to sloughing and the need to remove oversized material.
- We recommend that project bid documents include a contingency for boulder removal, as well as the associated increased trench volumes for backfilling.

7.5 DEWATERING

Groundwater or perched water tables may be encountered at the site. Therefore, groundwater may be encountered in utility trench excavations and in areas of cut. General recommendations for temporary construction dewatering are presented in the following section.

7.5.1 Construction Dewatering

The contractor should be responsible for temporary drainage of surface water, perched water, and groundwater. Dewatering should be performed to the extent necessary to prevent standing water and/or erosion of 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. Depending on proposed utility depths, a site-specific dewatering plan may be necessary.

If groundwater is present at the bases of utility excavations, we recommend placing 18 to 24 inches of stabilization material at the base 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 7.6 (Materials).

7.6 MATERIALS

7.6.1 Structural Fill

7.6.1.1 General

Areas proposed for fill placement should be appropriately prepared as described in Section 7.1 (Site Preparation). Engineered fill placement should be observed by Columbia West. Compaction of engineered structural fill should be verified by proof rolling or 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, should have a maximum particle size of less than 6 inches, and should 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.

7.6.1.2 On-Site Soil

The near-surface soil at the site generally consists of fine-grained soil. The native surficial soil at the site is generally suitable for use as structural fill if adequately dried or moisture conditioned to achieve recommended compaction specifications. Based on laboratory testing, we anticipate the moisture content of the soil will generally be above the optimum moisture content required to meet compaction requirements and drying of the soil will be necessary. Accordingly, extended

dry weather will be required to adequately condition and place the soil as structural fill. It will be difficult, if not impossible, to adequately compact the on-site soil during the rainy season or during prolonged periods of rainfall.

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.

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.

7.6.1.3 Imported Granular Material

Imported granular material should consist of pit- or quarry-run rock, crushed rock, or crushed gravel and sand. 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.

7.6.1.4 Stabilization Material

Stabilization material should consist of durable, 4- or 6-inch-minus pit- or quarry-run rock, crushed rock, or crushed gravel and sand that is free of organic material and other deleterious material. The material should have a maximum particle size of 6 inches with less than 5 percent by dry weight passing the U.S. Standard No. 4 sieve. The material should have at least two mechanically fractured faces.

Stabilization material should be placed in loose lifts between 12 and 24 inches thick and compacted to a firm, unyielding condition. Equipment with vibratory action should not be used when compacting stabilization material over wet, fine-grained soil. If stabilization material is used to stabilize soft subgrade below pavement or construction haul roads, a subgrade geotextile should be placed as a separation barrier between the soil subgrade and the stabilization material.

7.6.1.5 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 the specifications in 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 material meeting the specifications in 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.

7.6.1.6 Pavement and Floor Slab Aggregate Base

Imported granular material used as base rock for building floor slabs and pavement should consist of 1¼-inch-minus crushed aggregate meeting the specifications in WSS 9-03.9(3) – Crushed Surfacing. Pavement and slab aggregate base should be compacted to at least 95 percent of maximum dry density as determined by ASTM D1557.

7.6.1.7 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.

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 (e.g., 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.

7.6.1.8 Retaining Wall Leveling Pad

Crushed aggregate used as a leveling pad for retaining wall footings should consist of ¾- or 1¼-inch-minus crushed rock and should have less than 7 percent fines by dry weight. The leveling pad material should be compacted to at least 95 percent of maximum dry density as determined by ASTM D1557.

7.6.1.9 Drain Rock

Drain rock should consist of angular, granular material with a maximum particle size of 2 inches. The material should be free of roots, organic material, and other unsuitable material; should have less than 2 percent fines by dry weight; and should have at least two mechanically fractured faces. Drain rock should be compacted to a well-keyed, firm condition.

7.6.2 Geotextile Fabric

7.6.2.1 Subgrade Geotextile

A geotextile separation fabric will be required at the interface of the existing soil and imported granular material beneath proposed walls. In addition, geotextile fabric may be required where

soft subgrade is encountered. The separation fabric should meet the specifications in WSS 9-33.2(1) – Geotextile Properties (Table 3) for soil separation. The geotextile should be installed in conformance with the specifications in WSS 2-12 – Construction Geosynthetic.

7.6.2.2 Drainage Geotextile

Drainage 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.

7.6.3 Pavement

7.6.3.1 AC

The AC should conform to the specifications in WSS 5-04 – Hot Mix Asphalt and WSS 9-03.8 – Aggregates for Hot Mix Asphalt. The asphalt cement binder should be PG 28-22 Performance Grade Asphalt Cement meeting WSS 9-02.1(4) – Performance Graded (PG) Asphalt Binder. The AC should be ½-inch HMA. The lift thickness should be 2 to 3 inches. The AC should be compacted to 92 percent of maximum specific gravity of the mix as determined by ASTM D2041.

7.6.3.2 Cold Weather Paving Considerations

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 thickness greater than 2.5 inches and at least 50 degrees Fahrenheit for lift thickness between 2 and 2.5 inches.

If AC paving activities must take place during cold weather construction as defined above, the contractor and design team should discuss options for minimizing risk of pavement serviceability.

7.6.4 Soil Amendment with Cement

The on-site soil can be amended with portland cement to obtain suitable properties for use as wet weather structural fill or subbase for pavement. The effectiveness of soil amendment is highly dependent on proper mixing techniques, soil moisture conditioning, and the quantity of cement. The quantity of cement applied during amendment should be based on an assumed dry unit weight of 100 pcf for the site soil.

7.6.4.1 Subbase Stabilization

Specific recommendations for soil amendment should be based on exposed site conditions at the time of construction. For preliminary design purposes, we recommend cement-amended subgrade for building pads and pavement subbase (below the aggregate base layer) achieve a

target strength of 100 psi. The quantity of cement required to achieve the target strength will vary with moisture content and soil type. Laboratory testing of cement-amended soil should be used to confirm design expectations.

Based on our experience, near-surface soil will require approximately 6 to 7 percent cement by weight to achieve the target strength of 100 psi. This cement percentage assumes that the soil moisture content does not exceed 20 percent at the time of amendment. If the soil moisture content is in the range of 25 to 35 percent, 7 to 8 percent cement by weight may be required to achieve the target strength. The amount of cement added to the soil at the time of construction should be based on observed field conditions and subgrade performance. During extended periods of dry weather, water may need to be applied during the amendment and tilling process to achieve the optimum moisture content required for compaction.

Cement-amendment equipment should have balloon tires to minimize softening, rutting, and disturbance of fine-grained site soil. A sheepsfoot or segmented pad roller with a minimum static weight of 40,000 pounds should be used for initial compaction. Rollers with vibratory action should not be used to compact fine-grained, cement-amended soil. Final compaction should be conducted with a smooth-drum roller with a minimum applied linear force of 700 pounds per inch. The amended soil should be compacted to at least 95 percent of maximum dry density as determined by ASTM D558.

Following cement amendment, a minimum curing time of four days is required prior to exposure to construction traffic. Construction traffic should not be allowed on unprotected, cement-amended subgrade. To protect cement-amended areas from damage, the finished surface should be covered with 4 to 6 inches of imported granular material. The protective layer of crushed rock often becomes contaminated with soil during construction, particularly in staging and haul road areas. Contaminated aggregate, where present, should be removed and replaced with clean crushed aggregate prior to construction of pavement or other permanent site improvements supported by aggregate base.

Cement amendment should not be attempted during moderate to heavy precipitation or when the ambient air temperature is below 40 degrees Fahrenheit. Cement should not be placed in areas of standing water or where saturated subgrade conditions exist.

7.6.4.2 Cement-Amended Structural Fill

If adequate compaction is not achievable with the on-site fine-grained soil due to moisture or weather conditions, the soil may be cement amended and placed as general structural fill. Prior to placement of cement-amended fill, subgrade soil should be prepared as described in Section 7.1 (Site Preparation). Where multiple lifts of cement-amended fill are necessary to meet finished grade, consecutive lifts may be placed immediately following amendment and compaction of the underlying lift. However, where the final lift of cement-amended fill will serve as building pad or pavement subbase material, the four-day cure period as discussed above is recommended.

7.6.4.3 QA/QC Testing and Inspection

Cement amendment of site soil should be observed and tested by Columbia West to document conformance with design recommendations. Cement spread rate should be verified with a pan

sample test conducted at one random location per lift per 20,000 square feet of cement-amended fill. Amendment depth should be verified through excavation of a small test pit and measurement at one random location per lift of cement-amended fill. Adequate compaction and moisture content should be verified by conducting nuclear gauge density testing at a frequency of approximately one test per 5,000 square feet of cement-amended fill in accordance with ASTM D6938. At least one representative sample should be collected per day of cement amendment, cured for seven days, and tested for unconfined compressive strength in accordance with ASTM D1633. The tested samples should have a minimum seven-day, unconfined compressive strength of 100 psi.

7.7 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.

8.0 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.

9.0 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 D.

♦ ♦ ♦

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,

Michael A. Chacon, PE
Senior Staff Engineer

Daniel E. Lehto, PE, GE
Principal Engineer

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FIGURES



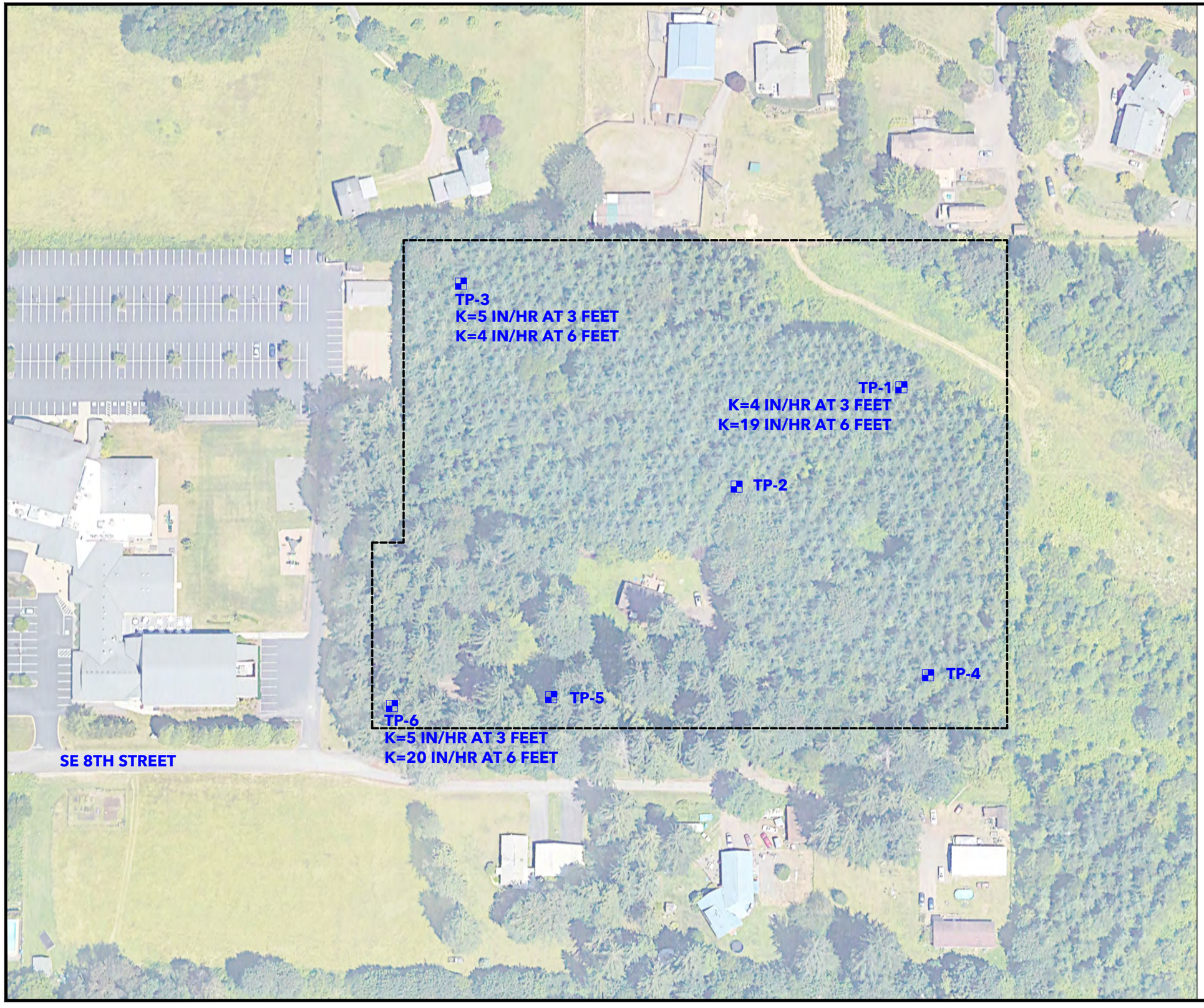
Geotechnical ▪ Environmental ▪ Special Inspections
Columbia West Engineering, Inc

PROJECT NO.: HSR-4-01-1

FEBRUARY 2025

VICINITY MAP
CAMAS WOODS PHASE 3
CAMAS, WASHINGTON

FIGURE 1



LEGEND

- SITE BOUNDARY
- TEST PIT
- K UNFACTORED COEFFICIENT OF PERMEABILITY

N

0 26 52 78 80 130 260

NOTES:
1. AERIAL PHOTO SOURCED FROM GOOGLE EARTH.
2. EXPLORATION LOCATIONS ARE APPROXIMATE AND NOT SURVEYED.
3. REFER TO REPORT TEXT FOR EXPLORATION DESCRIPTIONS.

Geotechnical ■ Environmental ■ Special Inspections
Columbia West Engineering, Inc

CAMAS WOODS PHASE 3
CAMAS, WASHINGTON
26514 AND 26416 SE 8TH STREET

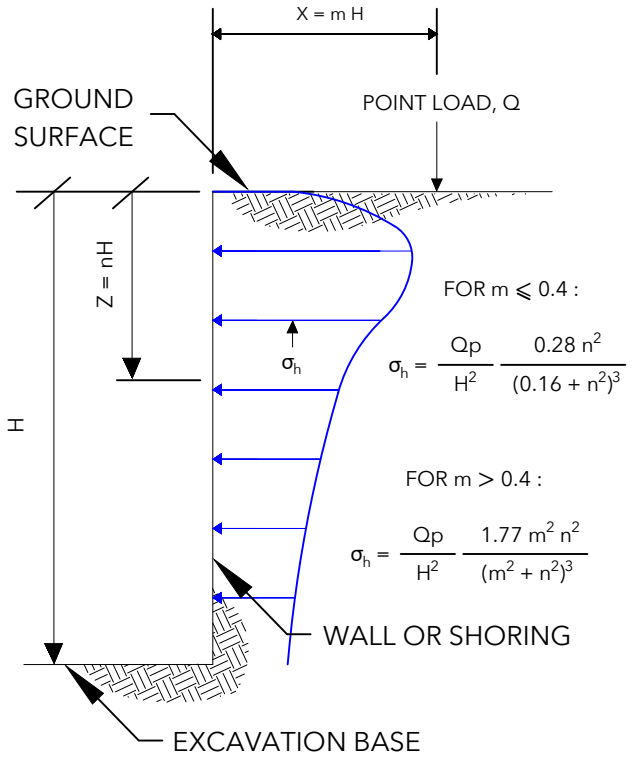
SITE PLAN

PROJECT NO:
HSR-4-01-1

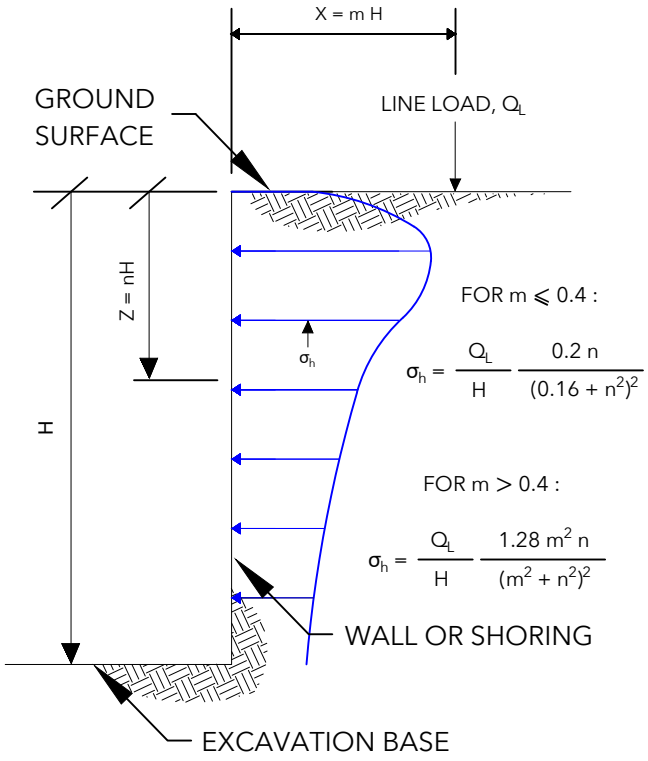
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FIGURE
2

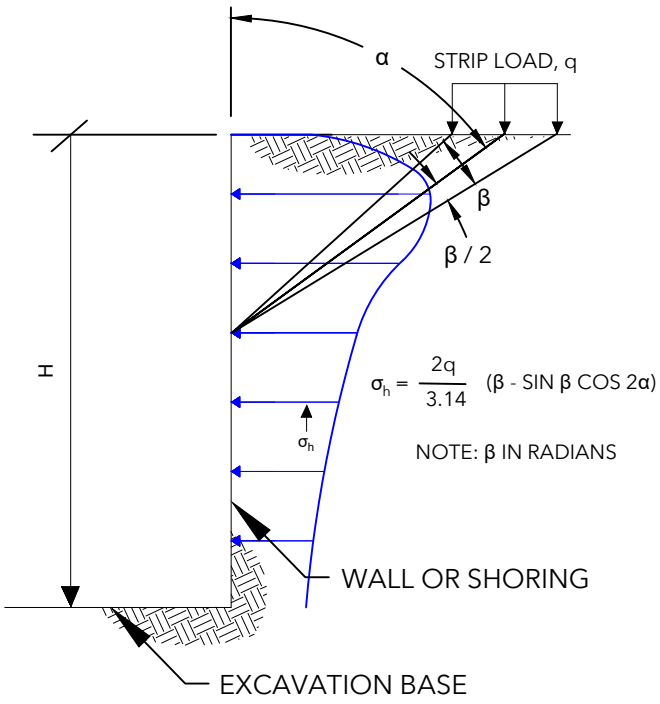
VERTICAL POINT LOAD



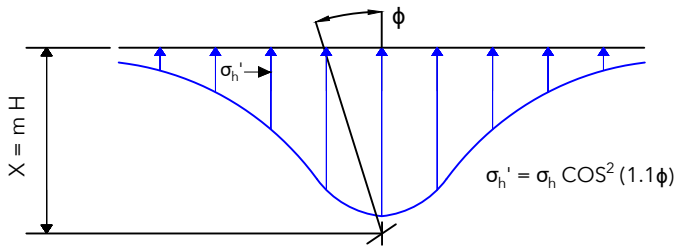
LINE LOAD PARALLEL TO WALL



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.

APPENDIX A

APPENDIX A
FIELD EXPLORATIONS

GENERAL

We explored subsurface conditions at the site by excavating six test pits (TP-1 through TP-6) to depths between 12.5 and 16 feet BGS. Excavation services were provided by L&S Contracting LLC of Yacolt, Washington, on December 31, 2024. The explorations were logged on a full-time basis by Columbia West personnel. The exploration logs are presented in this appendix.

The approximate exploration locations are shown on Figure 2. The exploration locations are approximate and were not surveyed.

SOIL SAMPLING

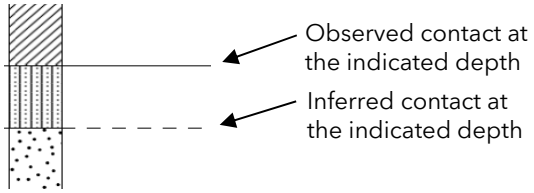
Representative disturbed samples of soil observed in the test pit explorations were collected from the test pit walls and base using the excavator bucket.

SOIL CLASSIFICATION

The soil samples were classified in accordance with the "Exploration Key," "Soil Classification System," and "AASHTO Soil Classification System," which are presented in this appendix. The exploration logs indicate the depths at which the soils or their characteristics change, although the change actually 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
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		

AASHTO SOIL CLASSIFICATION SYSTEM

TABLE 1. CLASSIFICATION OF SOILS AND SOIL-AGGREGATE MIXTURES

General Classification	Granular Materials (35 Percent or Less Passing No. 200 Sieve [0.075 mm])			Silty-Clay Materials (More Than 35 Percent Passing No. 200 Sieve [0.075 mm])			
Group Classification	A-1	A-3*	A-2	A-4	A-5	A-6	A-7
Sieve analysis, percent passing							
2.00 mm (No. 10)	--	--	--	--	--	--	--
0.425 mm (No. 40)	50 max.	51 min.	--	--	--	--	--
0.075 mm (No. 200)	25 max.	10 max.	35 max.	36 min.	36 min.	36 min.	36 min.
Characteristics of fraction passing 0.425 mm (No. 40)							
Liquid limit	--	--	**	40 max.	41 min.	40 max.	41 min.
Plasticity index	6 max.	Non-plastic	**	10 max.	10 max.	11 min.	11 min.
General rating as subgrade	Excellent to Good			Fair to Poor			

* The placing of A-3 before A-2 is necessary in the "left to right elimination process" and does not indicate superiority of A-3 over A-2.
** See Table 2 for values.

TABLE 2. CLASSIFICATION OF SOILS AND SOIL-AGGREGATE MIXTURES

General Classification	Granular Materials (35 Percent or Less Passing No. 200 Sieve [0.075 mm])							Silty-Clay Materials (More Than 35 Percent Passing No. 200 Sieve [0.075 mm])			
Group Classification	A-1		A-3	A-2				A-4	A-5	A-6	A-7
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6
Sieve analysis, percent passing											
2.00 mm (No. 10)	50 max.	--	--	--	--	--	--	--	--	--	--
0.425 mm (No. 40)	30 max.	50 max.	51 min.	--	--	--	--	--	--	--	--
0.075 mm (No. 200)	15 max.	25 max.	10 max.	35 max.	35 max.	35 max.	35 max.	36 min.	36 min.	36 min.	36 min.
Characteristics of fraction passing 0.425 mm (No. 40)											
Liquid limit	--	--	--	40 max.	41 min.	40 max.	41 min.	40 max.	41 min.	40 max.	41 min.
Plasticity index	6 max.		Non-plastic	10 max.	10 max.	11 min.	11 min.	10 max.	10 max.	11 min.	11 min.*
Usual types of significant constituent materials	Stone fragments Gravel and sand		Fine sand	Silty or clayey gravel and sand				Silty soil		Clayey soil	
General rating as subgrade	Excellent to Good							Fair to Poor			

*Plasticity index of A-7-5 subgroup is equal to or less than liquid limit minus 30 (i.e., plastic limit greater than 30 percent). Plasticity index of A-7-6 subgroup is greater than liquid limit minus 30 (i.e., plastic limit less than 30 percent).

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TEST PIT NUMBER: TP-1

PROJECT NAME Camas Woods Phase 3 **CLIENT** HSR Capital LLC
PROJECT NO. HSR-4-01-1 **LOGGED BY** S. Chandra **PROJECT LOCATION** Camas, Washington
CONTRACTOR L&S Contracting LLC **EQUIPMENT** CAT 307E2
CAVING Not observed **DATE COMPLETED** 12/31/2024
GROUNDWATER Not observed **TIME STARTED** 11:20 AM **TIME COMPLETED** 2:22 PM

DEPTH (ft)	SAMPLE ID	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (LL-PL-PI)	FINES (%)	REMARKS
				Medium stiff, brown sandy SILT, trace organics, moist (12 inches of topsoil, 3-inch-thick root zone). 1.0					
	TP1.1		GM	Medium dense, brown silty GRAVEL with sand and cobbles, moist, gravel is fine to coarse, sand is fine, cobbles are subrounded and up to 12 inches in diameter.					
	TP1.2					29	48-30-18	34	Infiltration test at 3 feet.
5									
	TP1.3					23		21	Infiltration test at 6 feet.
									Increase in cobbles at 6 feet.
									Decrease in fines at 9 feet.
10				With boulders at 11 feet.					
				15.0					
15	TP1.4		SM	Medium dense, brown-tan-orange silty SAND with gravel, moist, sand is fine to coarse, gravel is fine. 16.0					
				Exploration completed at 16 feet.					

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TEST PIT NUMBER: TP-2

PROJECT NAME Camas Woods Phase 3 **CLIENT** HSR Capital LLC

PROJECT NO. HSR-4-01-1 **LOGGED BY** S. Chandra **PROJECT LOCATION** Camas, Washington

CONTRACTOR L&S Contracting LLC **EQUIPMENT** CAT307E2

CAVING Not observed **DATE COMPLETED** 01/01/2025

GROUNDWATER Not observed **TIME STARTED** 11:32 AM **TIME COMPLETED** 12:07 PM

DEPTH (ft)	SAMPLE ID	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS (LL-PL-PI)	FINES (%)	REMARKS
				Medium stiff, brown sandy SILT, trace organics, moist (10 inches of topsoil, 4-inch-thick root zone). 0.8					
	TP2.1		GM	Medium dense, brown silty GRAVEL with sand and cobbles, moist, gravel is fine to coarse, sand is fine, cobbles are subrounded and up to 12 inches in diameter.		24	53-31-22	25	AASHTO soil classification: A-2-7(1)
5	TP2.2								
									Decrease in fines at 9 feet.
10	TP2.3			12.5					
				Exploration completed at 12.5 feet.					
15									

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TEST PIT NUMBER: TP-3

PROJECT NAME Camas Woods Phase 3 **CLIENT** HSR Capital LLC
PROJECT NO. HSR-4-01-1 **LOGGED BY** S. Chandra **PROJECT LOCATION** Camas, Washington
CONTRACTOR L&S Contracting LLC **EQUIPMENT** CAT307E2
CAVING Minor at 6.5 feet **DATE COMPLETED** 12/31/2024
GROUNDWATER Not observed **TIME STARTED** 9:49 AM **TIME COMPLETED** 10:50 AM

DEPTH (ft)	SAMPLE ID	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	FINES (%)	REMARKS
				Medium stiff, brown sandy SILT, trace organics, moist (12 inches of topsoil, 5-inch-thick root zone). 1.0				
	TP3.1		GM	Medium dense, brown silty GRAVEL with sand and cobbles, moist, gravel is fine to coarse, sand is fine, cobbles are subrounded and up to 12 inches in diameter.				
	TP3.2					27	32	Infiltration test at 3 feet.
5				6.0				
	TP3.3		GP-GM	Medium dense, brown GRAVEL with silt, sand, and cobbles, moist, gravel is fine to coarse, sand is fine, cobbles are subrounded to rounded and up to 12 inches in diameter.		25	20	Infiltration test at 6 feet. Minor caving at 6.5 feet.
10	TP3.4			13.5				
				Exploration completed at 13.5 feet.				
15								

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TEST PIT NUMBER: TP-4

PROJECT NAME Camas Woods Phase 3 **CLIENT** HSR Capital LLC
PROJECT NO. HSR-4-01-1 **LOGGED BY** S. Chandra **PROJECT LOCATION** Camas, Washington
CONTRACTOR L&S Contracting LLC **EQUIPMENT** CAT307E2
CAVING Not observed **DATE COMPLETED** 12/31/2024
GROUNDWATER Not observed **TIME STARTED** 12:33 PM **TIME COMPLETED** 1:05 PM

DEPTH (ft)	SAMPLE ID	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
				Medium stiff, brown sandy SILT, trace organics, moist (10 inches of topsoil, 3-inch-thick root zone). 0.8			
			GM	Medium dense, brown silty GRAVEL with sand and cobbles, moist, gravel is fine to coarse, sand is fine to medium, cobbles are subrounded and 3 to 12 inches in diameter.			
5	TP4.1						
	TP4.2						Decrease in fines at 9 feet.
10				With boulders, boulders are 18 to 24 inches in diameter at 13 feet. 14.0			
			SM	Medium dense, brown-orange-tan silty SAND with gravel, moist, sand is fine to medium, gravel is coarse.			
15	TP4.3			15.5			
				Exploration completed at 15.5 feet.			

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TEST PIT NUMBER: TP-5

PROJECT NAME Camas Woods Phase 3 **CLIENT** HSR Capital LLC
PROJECT NO. HSR-4-01-1 **LOGGED BY** S. Chandra **PROJECT LOCATION** Camas, Washington
CONTRACTOR L&S Contracting LLC **EQUIPMENT** CAT307E2
CAVING Not observed **DATE COMPLETED** 12/31/2024
GROUNDWATER Not observed **TIME STARTED** 9:10 AM **TIME COMPLETED** 9:40 AM

DEPTH (ft)	SAMPLE ID	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	REMARKS
			SC	Medium stiff, brown sandy SILT, trace organics, moist (6 inches of topsoil, 3-inch-thick root zone). 0.5			
	TP5.1			Medium dense, brown clayey SAND with gravel, moist, sand is fine, gravel is fine to coarse. 2.5			
			GM	Medium dense, brown silty GRAVEL with sand, cobbles, and boulders, moist, gravel is fine to coarse, sand is fine, cobbles are rounded to subrounded, boulders are subrounded and up to 16 inches in diameter.			
5	TP5.2						
10	TP5.3			13.5			
				Exploration completed at 13.5 feet.			
15							

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TEST PIT NUMBER: TP-6

PROJECT NAME Camas Woods Phase 3 **CLIENT** HSR Capital LLC
PROJECT NO. HSR-4-01-1 **LOGGED BY** S. Chandra **PROJECT LOCATION** Camas, Washington
CONTRACTOR L&S Contracting LLC **EQUIPMENT** CAT307E2
CAVING Minor from 12 to 13 feet. **DATE COMPLETED** 12/31/2024
GROUNDWATER Moderate seepage at 12 feet **TIME STARTED** 8:15 AM **TIME COMPLETED** 11:13 AM

DEPTH (ft)	SAMPLE ID	GRAPHIC LOG	USCS	MATERIAL DESCRIPTION	POCKET PEN (tsf)	MOISTURE CONTENT (%)	FINES (%)	REMARKS
				Medium stiff, brown sandy SILT, trace organics, moist (6 inches of topsoil, 3-inch-thick root zone). 0.5				
	TP6.1		SC	Medium dense, brown clayey SAND, trace gravel, moist, sand is fine to coarse.				
	TP6.2			4.0		30	43	Infiltration test at 3 feet.
5			GM	Medium dense, brown silty GRAVEL with sand and cobbles, moist, gravel is fine to coarse, sand is fine, cobbles are subrounded and up to 12 inches in diameter.				
	TP6.3					24	14	Infiltration test at 6 feet.
10	TP6.4			Wet at 12 feet.				Minor caving from 12 to 13 feet.
				13.0 Exploration completed at 13 feet.				
15								

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 D2216. 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 performed on a select soil sample in general accordance with ASTM D6913. This test is a quantitative determination of the soil particle size distribution expressed as a percentage of dry soil weight. Particle-size analysis was also performed 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.	
Camas Woods Phase 3 26514 and 26416 SE 8th Street Camas, Washington	HSR Capital LLC 500 East Broadway, Suite 120 Vancouver, WA 98660	HSR-4-01-1	
		ISSUE DATE: 01/21/25	PAGE: 1 of 1
		DATE SAMPLED: 12/31/24	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
S25-0073	777.12	3,002.92	2,505.70	1,907.74	TP1.2	3	29%	35%
S25-0074	772.20	4,644.63	3,912.20	3,259.20	TP1.3	6	23%	21%
S25-0075	579.10	4,256.49	3,550.51	sieved sample	TP2.1	2	24%	25%
S25-0076	780.04	4,041.64	3,338.44	2,519.96	TP3.2	3	27%	32%
S25-0077	787.34	5,353.00	4,449.88	3,714.65	TP3.3	6	25%	20%
S25-0078	771.52	2,452.58	2,069.49	1,514.03	TP6.2	3	30%	43%
S25-0079	752.77	4,771.61	3,983.45	3,517.80	TP6.3	6	24%	14%

NOTES:
Sample weights received for Lab ID: S25-0073, 0074, 0075, 0076, 0077, 0078, and 0079 did not meet the minimum size requirements; entire sample used for analysis.

DATE TESTED: 01/13/25
TESTED BY: M. Scherette

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ATTERBERG LIMITS REPORT

PROJECT	CLIENT	PROJECT NO.	
Camas Woods Phase 3 26514 and 26416 SE 8th Street Camas, Washington	HSR Capital LLC 500 East Broadway, Suite 120 Vancouver, WA 98660	HSR-4-01-1	
		ISSUE DATE: 01/21/25	PAGE: 1 of 1
		LAB ID: S25-0073	FIELD ID: TP1.2
		DATE SAMPLED: 12/31/24	SAMPLED BY: S. Chandra

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
Silty GRAVEL with Sand	Test Pit TP-1 depth = 3 feet	no data provided

LABORATORY TEST DATA

LABORATORY EQUIPMENT: Liquid Limit Machine, Hand Rolled

TEST PROCEDURE: ASTM D4318 - Method A

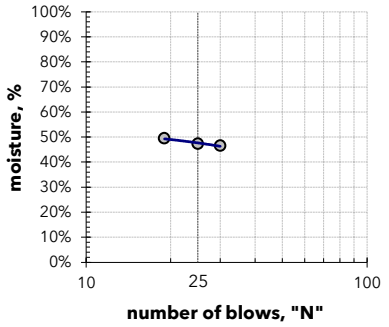
ATTERBERG LIMITS

liquid limit =	48
plastic limit =	30
plasticity index =	18

LIQUID LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	32.98	32.61	32.76	
dry soil + pan weight, g =	29.11	28.79	28.78	
pan weight, g =	20.79	20.71	20.73	
N (blows) =	30	25	19	
moisture, % =	46.5 %	47.3 %	49.4 %	

LIQUID LIMIT



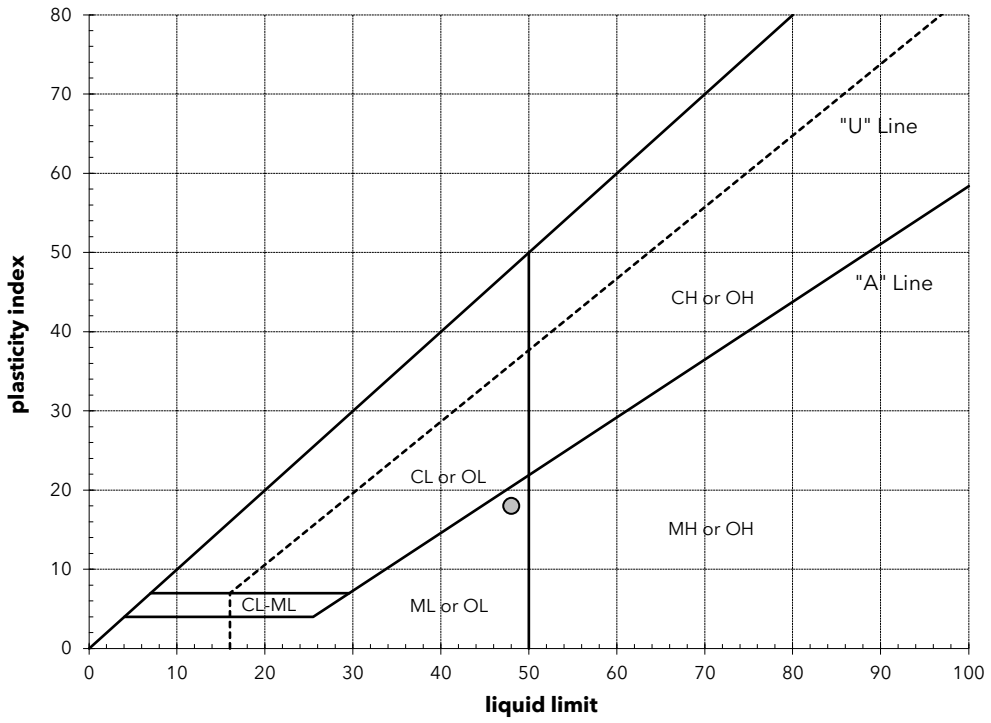
SHRINKAGE

shrinkage limit =	n/a
shrinkage ratio =	n/a

PLASTIC LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	28.05	27.97		
dry soil + pan weight, g =	26.40	26.32		
pan weight, g =	20.95	20.94		
moisture, % =	30.3 %	30.7 %		

PLASTICITY CHART



ADDITIONAL DATA

% gravel =	n/a
% sand =	n/a
% silt and clay =	n/a
% silt =	n/a
% clay =	n/a
moisture content =	29%

DATE TESTED	TESTED BY
01/15/25	B. Taylor

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PARTICLE-SIZE ANALYSIS REPORT

PROJECT	CLIENT	PROJECT NO.	
Camas Woods Phase 3 26514 and 26416 SE 8th Street Camas, Washington	HSR Capital LLC 500 East Broadway, Suite 120 Vancouver, WA 98660	HSR-4-01-1	
		ISSUE DATE: 01/21/25	PAGE: 1 of 2
		LAB ID: S25-0075	FIELD ID: TP2.1
		DATE SAMPLED: 12/31/24	SAMPLED BY: S. Chandra

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
Silty GRAVEL with Sand	Test Pit TP-2 depth = 2 feet	GM, Silty Gravel with Sand
SPECIFICATIONS		**AASHTO CLASSIFICATION**
none		A-2-7(1)

LABORATORY TEST DATA

LABORATORY EQUIPMENT	TEST PROCEDURE
Rainhart "Mary Ann" Sifter, air-dried prep, hand washed, composite sieve - #4 split	ASTM D6913, Method A

ADDITIONAL DATA

initial dry mass (g) =	2971.41		
as-received moisture content =	24%	coefficient of curvature, C_C =	n/a
liquid limit =	53	coefficient of uniformity, C_U =	n/a
plastic limit =	31	effective size, $D_{(10)}$ =	n/a
plasticity index =	22	$D_{(30)}$ =	0.138 mm
fineness modulus =	n/a	$D_{(60)}$ =	7.692 mm

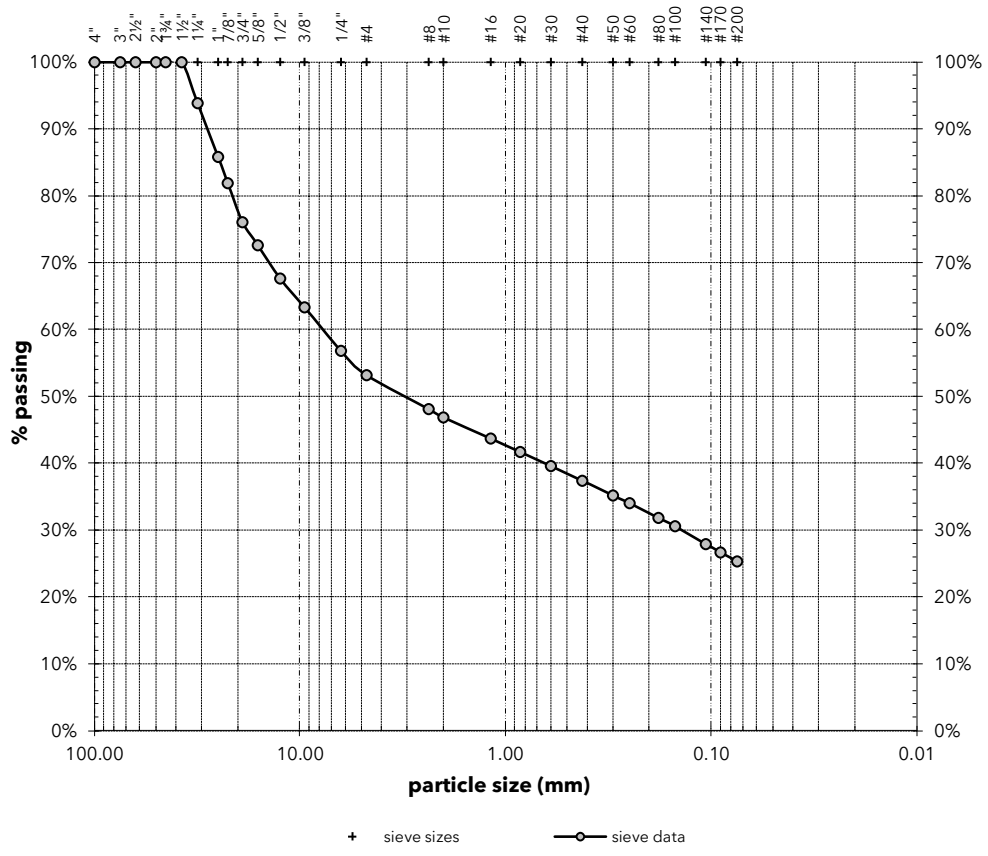
NOTE: Entire sample used for analysis; did not meet minimum size required.

SIEVE DATA

% gravel = 46.8%
% sand = 27.8%
% silt and clay = 25.3%

	SIEVE SIZE		PERCENT PASSING SIEVE		SPECS	
	US	mm	act.	interp.	max	min
GRAVEL	6.00"	150.0		100%		
	4.00"	100.0		100%		
	3.00"	75.0		100%		
	2.50"	63.0		100%		
	2.00"	50.0		100%		
	1.75"	45.0		100%		
	1.50"	37.5	100%			
	1.25"	31.5		94%		
	1.00"	25.0	86%			
	7/8"	22.4		82%		
	3/4"	19.0	76%			
	5/8"	16.0		73%		
	1/2"	12.5	68%			
	3/8"	9.50	63%			
	1/4"	6.30	57%			
	#4	4.75	53%			
SAND	#8	2.36		48%		
	#10	2.00	47%			
	#16	1.18		44%		
	#20	0.850	42%			
	#30	0.600		40%		
	#40	0.425	37%			
	#50	0.300		35%		
	#60	0.250	34%			
	#80	0.180		32%		
	#100	0.150	31%			
	#140	0.106		28%		
	#170	0.090		27%		
	#200	0.075	25%			

GRAIN SIZE DISTRIBUTION



DATE TESTED	TESTED BY
01/15/25	M. Scherette

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CWE-S12-021524

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Geotechnical ▪ Environmental ▪ Special Inspections
Columbia West Engineering, Inc

ATTERBERG LIMITS REPORT

PROJECT	CLIENT	PROJECT NO.	
Camas Woods Phase 3 26514 and 26416 SE 8th Street Camas, Washington	HSR Capital LLC 500 East Broadway, Suite 120 Vancouver, WA 98660	HSR-4-01-1	
		ISSUE DATE: 01/21/25	PAGE: 2 of 2
		LAB ID: S25-0075	FIELD ID: TP2.1
		DATE SAMPLED: 12/31/24	SAMPLED BY: S. Chandra

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
Silty GRAVEL with Sand	Test Pit TP-2 depth = 2 feet	GM, Silty Gravel with Sand

LABORATORY TEST DATA

LABORATORY EQUIPMENT: Liquid Limit Machine, Hand Rolled

TEST PROCEDURE: ASTM D4318 - Method A

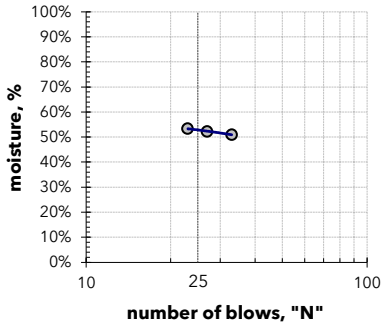
ATTERBERG LIMITS

liquid limit =	53
plastic limit =	31
plasticity index =	22

LIQUID LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	31.89	32.65	33.50	
dry soil + pan weight, g =	28.13	28.57	28.91	
pan weight, g =	20.75	20.76	20.31	
N (blows) =	33	27	23	
moisture, % =	51.0 %	52.2 %	53.4 %	

LIQUID LIMIT



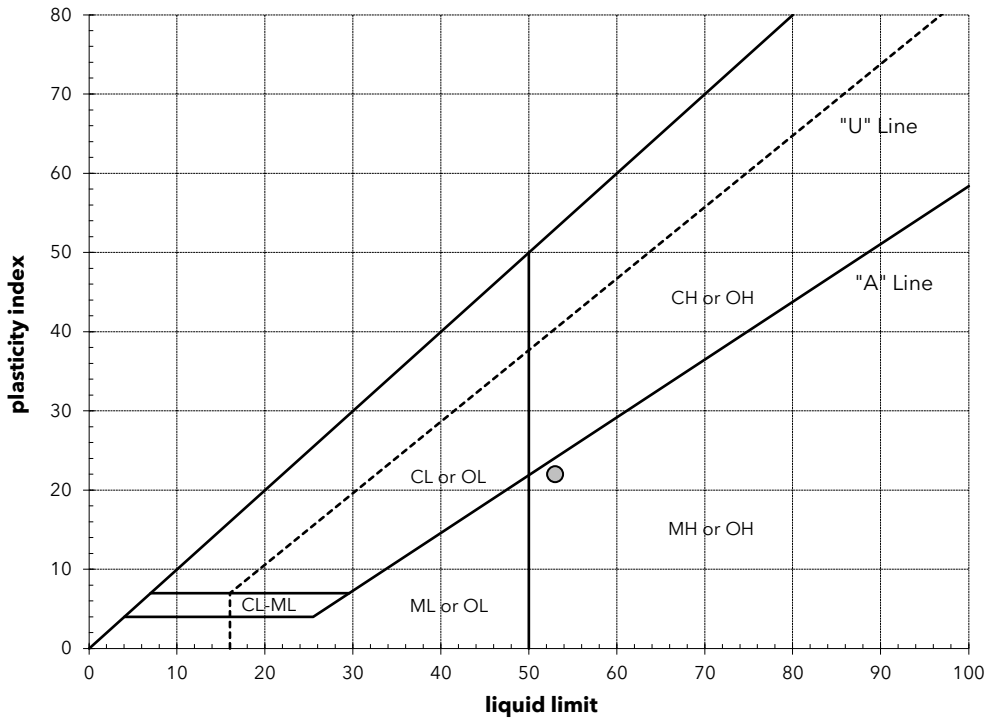
SHRINKAGE

shrinkage limit =	n/a
shrinkage ratio =	n/a

PLASTIC LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	27.99	29.51		
dry soil + pan weight, g =	26.32	27.47		
pan weight, g =	20.93	20.92		
moisture, % =	31.0 %	31.2 %		

PLASTICITY CHART



ADDITIONAL DATA

% gravel =	46.8%
% sand =	27.8%
% silt and clay =	25.3%
% silt =	n/a
% clay =	n/a
moisture content =	24%

DATE TESTED	TESTED BY
01/16/25	B. Taylor

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CWE-514-021524

APPENDIX C

APPENDIX C
PHOTO LOG

Photographs of the site are presented in this appendix.



Central portion of the site. Photograph taken facing south.



Test pit TP-1 profile.



Test pit TP-2 profile.



Test pit TP-3 profile.



Test pit TP-4 profile.



Test pit TP-5 profile.



Test pit TP-6 profile.

APPENDIX D

APPENDIX D
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 services 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. The 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.

11. Tree Report

Camas Woods II
Preliminary Tree Report

Date: April 2025

Prepared For:
Camas Woods P3
Contact: Andy Swanson
19120 SE 34th Street Suite #103
Vancouver, WA 98683

Prepared By:
Bennett Kocsis, Certified Arborist
Bryce Hanson, Certified Arborist

Site Information:
26514 SE 8th Street
Camas, WA 98607
Parcel #178109-000, 178209-000

AKS ENGINEERING & FORESTRY
9600 NE 126th Avenue, Suite 2520
Vancouver, WA 98682
(360) 882-0419

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Tree Report
CAMAS WOODS II
CAMAS, WASHINGTON

Location
The project site is located at 26514 SE 8th Street, (Parcel Serial No.178109-000, 178209-000) in the City of Camas, Clark County, Washington.

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 (7.18 acres) of the proposed residential subdivision. The existing site is relatively flat with two homes along SE 8th Street. A BPA powerline easement crosses the site in the northeast corner. A majority of the site consists of a Douglas-fir stand. The proposed development will result in 78 single-family residential lots with tracts set aside for alleyways, a stormwater facility and parking. 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 382 surveyed trees over 6 inches in diameter. Due to the planned site development and high potential for extensive root impacts from site grading, 322 on-site surveyed trees are proposed for removal & 60 on-site trees are planned for retention. The topographic survey excludes trees in the middle of the site, all of which are proposed for removal due to planned site development. Tree conditions in this area were determined based on cruise data as described below.

On-Site Tree Condition
A majority of the site, approximately 5 acres, consists of a planted Douglas-fir stand. A fixed-radius plot cruise was performed in this stand as an alternative to a topographic survey and detailed evaluation of these trees. Six plots were randomly located throughout the stand to determine the average density, size, and condition of the trees. The young Douglas-fir trees are planted in rows at a density of approximately 300 trees per acre. There are also some scattered Bigleaf Maples and Red Alders throughout the stand. The average size of the trees is approximately 9" DBH and the trees are generally in good condition. The southwestern portion of the site contains mature Douglas-fir and Bigleaf Maples around the existing homes. A small cluster of Bigleaf Maples and Sweet Cherry trees exists in the northeast corner of the site, adjacent to the transmission line easement. The health and structure of on-site trees range from poor to good based on conditions observed during a site visit on January 28th, 2025. Tree removal was recommended based on location, root impact from development activities 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. 10 trees located within Tract G can potentially be preserved and their preservation will be determined by the project arborist during final engineering design. For the purposes of this report, they are not being considered in the tree preservation count and their tree units are not being applied to the total.

Off-Site Trees
There is a stand of off-site trees south of the site that are proposed for removal due to direct conflict with right-of-way improvements along SE 8th Street. Additionally, several off-site trees border the western property line of the project site. These off-site trees will be protected with tree protection measures as further described in this report and on the Preliminary Tree Preservation Plans (Appendix B).

Tree Density Calculations

The total site area is 8.79 acres with 1.62 acres of open space for a net site area of 7.18 acres. Per Chapter 18.13.051 of the City of Camas municipal code, the City requires 30 tree units per acre for the North Shore Subarea, or a total of 215 tree units (30*7.18 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	7.18	215	1625	1252	373	81	454

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 of Hesson Clay Loam with slopes ranging from 0 to 8 percent. These soils are described as deep, well-drained soils per the USDA Natural Resources Conservation Service's Web Soil Survey.

Tree Protection Plan

See the plans found in Appendix B.

Planting Plan

78 street trees and 3 site trees are proposed to be planted to meet landscape requirements. The total number of trees to be planted will be 81, which, when added to the 373 tree units being retained, results in 454 tree units and meets the tree density requirement of 215 tree units. If later determined necessary, Per Section 18.13.050 of Chapter 18 of the City of Camas Municipal Code, replacement trees shall optimize tree diversity by including a minimum of 60% native species and at least 50% evergreen. For this site, the required deciduous tree needs to be 2" or greater while a conifer tree needs to be a minimum of 5' tall. See Appendix C for the Tree Planting Plan.

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 7.18-acre site proposes to remove 322 on-site trees. Of the existing on-site trees, 60 will be retained. 78 street trees and 3 site trees will be planted to meet landscape requirements. 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.

CERTIFIED ARBORIST
ISA

BENNETT R. KOCSIS
CERTIFICATE NUMBER: PN 8877A
EXPIRATION DATE: 12/31/2025



Appendix A: Detailed Tree Inventory Table

Detailed Tree Inventory for Camas Woods II

AKS Job No. 8397-01 - Evaluation Date: 01/28/2025 - Evaluated By: BRK

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
12973	12	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
12974	14	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
12975	14	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
12976	13	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
12977	13	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
12978	12	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
13001	13	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
13002	14	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
13009	18	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14445	8	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
14796	10	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14797	7	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14798	8	Conifer	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14799	11	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14800	8	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14801	12	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14851	9	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14869	22	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14870	10	Conifer	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14871	16	Conifer	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14973	8	Conifer	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
15528	23	Deodar Cedar (*Cedrus deodara*)	0	OFFSITE; Good condition	C	Preserve	0
15545	9	Port Orford Cedar (*Chamaecyparis lawsoniana*)	0	OFFSITE; Good condition	C	Preserve	0
15546	24,7	Port Orford Cedar (*Chamaecyparis lawsoniana*)	0	OFFSITE; Good condition	C	Preserve	0
15547	7	Port Orford Cedar (*Chamaecyparis lawsoniana*)	0	OFFSITE; Good condition	C	Preserve	0
15548	26	Port Orford Cedar (*Chamaecyparis lawsoniana*)	0	OFFSITE; Good condition	C	Preserve	0
15549	14	Port Orford Cedar (*Chamaecyparis lawsoniana*)	0	OFFSITE; Good condition	C	Preserve	0
15550	20	Port Orford Cedar (*Chamaecyparis lawsoniana*)	0	OFFSITE; Good condition	C	Preserve	0
15551	16	Port Orford Cedar (*Chamaecyparis lawsoniana*)	0	OFFSITE; Good condition	C	Preserve	0
15552	19	Port Orford Cedar (*Chamaecyparis lawsoniana*)	0	OFFSITE; Good condition	C	Preserve	0
15553	10	Port Orford Cedar (*Chamaecyparis lawsoniana*)	0	OFFSITE; Good condition	C	Preserve	0
15554	10	Port Orford Cedar (*Chamaecyparis lawsoniana*)	0	OFFSITE; Good condition	C	Preserve	0
15555	14,14	Port Orford Cedar (*Chamaecyparis lawsoniana*)	0	OFFSITE; Good condition	C	Preserve	0
15556	21	Port Orford Cedar (*Chamaecyparis lawsoniana*)	0	OFFSITE; Good condition	C	Preserve	0
15557	11	Port Orford Cedar (*Chamaecyparis lawsoniana*)	0	OFFSITE; Good condition	C	Preserve	0
15558	13	Western Redcedar (*Thuja plicata*)	0	OFFSITE; Good condition	C	Preserve	0
15559	13	Western Redcedar (*Thuja plicata*)	0	OFFSITE; Good condition	C	Preserve	0
15560	13	Western Redcedar (*Thuja plicata*)	0	OFFSITE; Good condition	C	Preserve	0
15561	11	Western Redcedar (*Thuja plicata*)	0	OFFSITE; Good condition	C	Preserve	0
15679	23	Port Orford Cedar (*Chamaecyparis lawsoniana*)	0	OFFSITE; Good condition	C	Preserve	0
15680	12	Port Orford Cedar (*Chamaecyparis lawsoniana*)	0	OFFSITE; Good condition	C	Preserve	0
15757	20,44	Douglas-fir (*Pseudotsuga menziesii*)	20	Good condition	C	Impacts 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
15758	34,26	Douglas-fir (*Pseudotsuga menziesii*)	18	Good condition	C	Preserve	18
15759	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Impacts from public road construction	0
15760	28	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Weak vertical leaders	B	Impacts from public road construction	0
15761	36	Douglas-fir (*Pseudotsuga menziesii*)	14	Good condition	C	Impacts from public road construction	0
15762	24	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Impacts from public road construction	0
15764	8	Cherry (*Prunus spp.*)	2	Good condition	C	Impacts from public road construction	0
15765	10	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Sweep; 1-sided canopy (S)	C	Impacts from public road construction	0
15766	16	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Broken at very top	B	Impacts from public road construction	0
15767	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Dead; Broken @ ~25'	A	Impacts from public road construction	0
15768	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
15770	9	Sweet Cherry (*Prunus avium*)	0	OFFSITE; Lean (S)	B	Impacts from public road construction	0
15771	35	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15772	40	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15773	37	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Pruned branches; Low vigor	B	Impacts from public road construction	0
15837	11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Broken top half	A	Impacts from public road construction	0
15838	21	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; High canopy	C	Impacts from public road construction	0
15839	22	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15840	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; 1-sided canopy (S)	C	Impacts from public road construction	0
15841	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15842	10,6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from public road construction	0
15843	10,11	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Impacts from public road construction	0
15851	24	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Impacts from lot construction	0
15852	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
15854	30	Douglas-fir (*Pseudotsuga menziesii*)	11	Good condition	C	Impacts from lot construction	0
15855	27	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15856	29	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Dead (~130')	A	Impacts from public road construction	0
15857	27	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15858	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15895	26	Western Hemlock (*Tsuga heterophylla*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15896	6	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from public road construction	0
15899	31	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Codominant top; Abnormal dead branches	B	Impacts from public road construction	0
15901	30	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15903	34	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Codominant top with included bark	B	Impacts from public road construction	0
15908	48	Douglas-fir (*Pseudotsuga menziesii*)	20	Codominant top with included bark	B	Impacts from public road construction	0
15909	9	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
15910	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Impacts from lot construction	0
15912	11,11,13	Bigleaf Maple (*Acer macrophyllum*)	6	Good condition	C	Impacts from lot construction	0
15915	9,6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
15917	10,9,9,9,8,7, 14	Bigleaf Maple (*Acer macrophyllum*)	9	Good condition	C	Impacts from lot construction	0
15922	7	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
15924	10,8	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead (~50')	A	Impacts 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
15925	13	Sweet Cherry (*Prunus avium*)	0	OFFSITE; Lean (S)	B	Impacts from public road construction	0
15926	8	Bigleaf Maple (*Acer macrophyllum*)	2	Broken @ ~15'	A	Impacts from lot construction	0
15927	10	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
15928	9	Sweet Cherry (*Prunus avium*)	2	Good condition	C	Impacts from lot construction	0
15929	15	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Impacts from lot construction	0
15930	23	Western Hemlock (*Tsuga heterophylla*)	8	Good condition	C	Impacts from public road construction	0
15940	19,6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Cavity with decay	B	Impacts from public road construction	0
15942	23	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15943	6	Sweet Cherry (*Prunus avium*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15944	21	Sweet Cherry (*Prunus avium*)	7	Dead and broken limbs; Decay	B	Impacts from lot construction	0
15948	8	Red Alder (*Alnus rubra*)	2	Good condition	C	Impacts from lot construction	0
15949	15	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15950	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Broken at very top	B	Impacts from public road construction	0
15951	28	Western Hemlock (*Tsuga heterophylla*)	0	OFFSITE; Dead (~90')	A	Impacts from public road construction	0
15952	32	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15953	25,14,9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; 1-sided canopy (S)	C	Impacts from public road construction	0
15956	10	Willow (*Salix spp.*)	0	OFFSITE; Broken limbs; Small cavities with decay	B	Impacts from public road construction	0
15957	38	Western Hemlock (*Tsuga heterophylla*)	0	OFFSITE; Codominant with included bark	B	Impacts from public road construction	0
15958	13	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15959	22	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Growing horizontal (S)	B	Impacts from public road construction	0
15960	9	Willow (*Salix spp.*)	0	OFFSITE; Dead nad broken codominant stem with decay	B	Impacts from public road construction	0
15994	7	Red Alder (*Alnus rubra*)	2	Good condition	C	Impacts from public road construction	0
15996	25	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15997	20	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15998	20	Grand Fir (*Abies grandis*)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
16020	17	Douglas-fir (*Pseudotsuga menziesii*)	5	LINE TREE; Good condition	C	Preserve	5
16021	14	Bigleaf Maple (*Acer macrophyllum*)	3	LINE TREE; Good condition	C	Preserve	3
16022	23,12,11,10,7	Bigleaf Maple (*Acer macrophyllum*)	12	LINE TREE; Good condition	C	Preserve	12
16023	10	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Preserve	2
16024	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16025	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16026	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16027	14	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16028	12	Willow (*Salix spp.*)	2	LINE TREE; Good condition	C	Impacts from lot construction	0
16029	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Impacts from lot construction	0
16030	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
16031	22	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16032	7	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16034	9	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
16035	10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16036	9,6	Douglas-fir (*Pseudotsuga menziesii*)	2	LINE TREE; Good condition	C	Preserve	2
16037	11	Black Cottonwood (*Populus trichocarpa*)	2	Broken at very top	B	Impacts from lot construction	0

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16038	6	Black Cottonwood (*Populus trichocarpa*)	0	OFFSITE; Good condition	C	Preserve	0
16041	8	Black Cottonwood (*Populus trichocarpa*)	2	Good condition	C	Impacts from lot construction	0
16042	10	Black Cottonwood (*Populus trichocarpa*)	0	OFFSITE; Good condition	C	Preserve	0
16043	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from lot construction	0
16044	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from lot construction	0
16045	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
16046	23	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Impacts from lot construction	0
16047	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from lot construction	0
30033	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30034	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30035	34	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30036	35	Douglas-fir (*Pseudotsuga menziesii*)	14	Good condition	C	Preserve	14
30038	25	Douglas-fir (*Pseudotsuga menziesii*)	9	Good condition	C	Preserve	9
30039	33	Douglas-fir (*Pseudotsuga menziesii*)	13	Good condition	C	Preserve	13
30040	29	Douglas-fir (*Pseudotsuga menziesii*)	11	Good condition	C	Preserve	11
30041	23	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Preserve	8
30042	20	Grand Fir (*Abies grandis*)	6	Good condition	C	Potential Preservation	0
30047	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
30075	40	Douglas-fir (*Pseudotsuga menziesii*)	16	Good condition	C	Impacts from stormwater facility construction	0
30076	16	Grand Fir (*Abies grandis*)	4	Good condition	C	Potential Preservation	0
30077	18,16,10	Bigleaf Maple (*Acer macrophyllum*)	9	Broken tops; Epicormic leaders; Cavities with decay; Broken limbs	A	Potential Preservation	0
30078	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Sweep (S); Some dead branches	B	Preserve	3
30079	37	Douglas-fir (*Pseudotsuga menziesii*)	15	Good condition	C	Potential Preservation	0
30080	24	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Potential Preservation	0
30081	23	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Potential Preservation	0
30082	22	Grand Fir (*Abies grandis*)	7	Good condition	C	Impacts from stormwater facility construction	0
30091	36	Douglas-fir (*Pseudotsuga menziesii*)	14	Good condition	C	Impacts from lot construction	0
30097	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from public road construction	0
30098	41	Douglas-fir (*Pseudotsuga menziesii*)	17	Good condition	C	Impacts from public road construction	0
30276	26	Douglas-fir (*Pseudotsuga menziesii*)	9	Good condition	C	Preserve	9
30277	23	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30278	20,18,17,15,1	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead codominant stem; Broken limbs; Asymmetrical canopy (W)	B	Preserve	0
30279	39	Douglas-fir (*Pseudotsuga menziesii*)	16	Codominant top with included bark	B	Preserve	16
30280	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
30281	27	Douglas-fir (*Pseudotsuga menziesii*)	10	Good condition	C	Preserve	10
30282	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Dead (~80')	A	Preserve	5
30283	17,13	Douglas-fir (*Pseudotsuga menziesii*)	7	Codominant base; Epicormic sprouts; Sparse canopy	B	Preserve	7
30284	29	Douglas-fir (*Pseudotsuga menziesii*)	11	Good condition	C	Preserve	11
30285	34	Douglas-fir (*Pseudotsuga menziesii*)	13	Good condition	C	Impacts from storm line construction	0
30286	35	Douglas-fir (*Pseudotsuga menziesii*)	14	Good condition	C	Potential Preservation	0

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30287	30	Douglas-fir (*Pseudotsuga menziesii*)	11	Good condition	C	Potential Preservation	0
30288	33	Grand Fir (*Abies grandis*)	13	Good condition	C	Potential Preservation	0
30289	28	Douglas-fir (*Pseudotsuga menziesii*)	10	Good condition	C	Impacts from storm line construction	0
30290	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
30291	24	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Preserve	8
30292	33	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30293	38	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30294	50	Douglas-fir (*Pseudotsuga menziesii*)	21	Codominant base with included bark	B	Preserve	21
30295	27	Douglas-fir (*Pseudotsuga menziesii*)	10	Good condition	C	Preserve	10
30296	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
30297	25	Douglas-fir (*Pseudotsuga menziesii*)	9	Good condition	C	Preserve	9
30298	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Preserve	7
30299	28	Bigleaf Maple (*Acer macrophyllum*)	10	Large scar at base; Some dead limbs	B	Impacts from parking lot construction	0
30300	28	Douglas-fir (*Pseudotsuga menziesii*)	10	Good condition	C	Impacts from public road construction	0
30301	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from parking lot construction	0
30302	28	Douglas-fir (*Pseudotsuga menziesii*)	10	Good condition	C	Impacts from parking lot construction	0
30303	24	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Impacts from storm line construction	0
30304	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from storm line construction	0
30305	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Impacts from storm line construction	0
30306	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
30307	29	Douglas-fir (*Pseudotsuga menziesii*)	11	Good condition	C	Preserve	11
30308	36	Douglas-fir (*Pseudotsuga menziesii*)	14	Good condition	C	Preserve	14
30309	16	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Preserve	4
30310	30	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30313	19	Bigleaf Maple (*Acer macrophyllum*)	6	Many broken limbs; Slight lean (W)	B	Preserve	6
30314	34	Douglas-fir (*Pseudotsuga menziesii*)	13	Good condition	C	Preserve	13
30315	28	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30335	28,16	Douglas-fir (*Pseudotsuga menziesii*)	12	Codominant base; Good condition	C	Impacts from storm line construction	0
30336	33,20,12	Douglas-fir (*Pseudotsuga menziesii*)	16	Codominant base; Good condition	C	Impacts from lot construction	0
30337	25	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30438	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30439	9,6	Bigleaf Maple (*Acer macrophyllum*)	2	Codominant base; Good condition	C	Impacts from lot construction	0
30440	28	Douglas-fir (*Pseudotsuga menziesii*)	10	Good condition	C	Impacts from lot construction	0
30441	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30442	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30443	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
30444	38	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30445	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Broken top; Suppressed	B	Preserve	0
30446	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30447	24	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30448	36	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30449	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot 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
30450	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30451	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30452	6	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30453	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30454	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30455	8	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition; Asymmetrical canopy (W)	C	Impacts from lot construction	0
30456	13,11	Bigleaf Maple (*Acer macrophyllum*)	5	Good condition; Asymmetrical canopy (W)	C	Impacts from lot construction	0
30457	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
30458	12	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition; Asymmetrical canopy (W)	C	Impacts from lot construction	0
30536	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30537	13,7	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition; Codominant base	C	Impacts from lot construction	0
30538	10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
30539	11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30540	8	Bigleaf Maple (*Acer macrophyllum*)	2	Suppressed; Some broken limbs	B	Impacts from lot construction	0
30541	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
30542	6	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30544	6	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Suppressed	B	Preserve	0
30545	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
30546	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30547	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30548	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
30549	10	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
30550	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30551	11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Sweep (S)	C	Preserve	0
30552	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30553	7	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
30554	6	Bigleaf Maple (*Acer macrophyllum*)	2	Lean (W)	B	Impacts from lot construction	0
30555	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30556	6	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30557	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
30558	6	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30559	10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30560	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30561	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
30562	6	Bigleaf Maple (*Acer macrophyllum*)	2	Lean (W)	B	Impacts from lot construction	0
30563	6	Bigleaf Maple (*Acer macrophyllum*)	2	Lean (W)	B	Impacts from lot construction	0
30564	13	Bigleaf Maple (*Acer macrophyllum*)	3	Good condition	C	Impacts from lot construction	0
30565	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
30572	7	Western Redcedar (*Thuja plicata*)	0	OFFSITE; Low vigor	B	Preserve	0
30601	17,6	Bigleaf Maple (*Acer macrophyllum*)	5	Sweep (N)	B	Impacts from lot construction	0
30602	11	Bigleaf Maple (*Acer macrophyllum*)	2	Asymmetrical canopy (N)	C	Impacts from lot construction	0
30603	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Impacts from lot 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
30604	12	Bigleaf Maple (*Acer macrophyllum*)	2	Lean (N)	B	Impacts from lot construction	0
30605	6	Sweet Cherry (*Prunus avium*)	2	Good condition	C	Impacts from lot construction	0
30606	10,7	Sweet Cherry (*Prunus avium*)	2	Codominant base with included bark; Asymmetrical canopy (N)	B	Impacts from lot construction	0
30607	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
30608	14,6	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Impacts from lot construction	0
30609	7	Sweet Cherry (*Prunus avium*)	0	OFFSITE; Good condition	C	Preserve	0
30610	7	Sweet Cherry (*Prunus avium*)	2	Good condition	C	Impacts from lot construction	0
30611	7	Sweet Cherry (*Prunus avium*)	0	OFFSITE; Good condition	C	Preserve	0
30612	12	Bigleaf Maple (*Acer macrophyllum*)	2	Sweep (N); Asymmetrical canopy (N)	B	Impacts from lot construction	0
30613	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Impacts from public road construction	0
30614	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from public road construction	0
30615	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from public road construction	0
30616	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
30617	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30618	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30619	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from public road construction	0
30620	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from public road construction	0
30621	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from public road construction	0
30622	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from parking lot construction	0
30623	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Dead; Lean (W)	A	Impacts from parking lot construction	0
30624	28	Douglas-fir (*Pseudotsuga menziesii*)	10	Good condition	C	Preserve	0
30625	23	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Preserve	0
30628	7	Bigleaf Maple (*Acer macrophyllum*)	2	Slight lean (SW)	C	Impacts from public road construction	0
30629	20,15,10,7	Bigleaf Maple (*Acer macrophyllum*)	10	Clustered base; Included bark	B	Impacts from public road construction	0
30646	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30647	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30648	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30649	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30650	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30651	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30652	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30653	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
30654	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30655	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30656	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
30657	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30658	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30659	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30660	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30661	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30662	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility 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
30663	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Dead	A	Impacts from stormwater facility construction	0
30664	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from stormwater facility construction	0
30665	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30666	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from parking lot construction	0
30667	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from parking lot construction	0
30668	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from stormwater facility construction	0
30669	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30670	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from stormwater facility construction	0
30671	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30672	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30673	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30674	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30676	6	Douglas-fir (*Pseudotsuga menziesii*)	2	Dead	A	Impacts from stormwater facility construction	0
30677	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30678	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30679	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from stormwater facility construction	0
30680	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30681	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from stormwater facility construction	0
30682	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	0
30703	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30704	6	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30705	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30706	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30707	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from lot construction	0
30708	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30709	26	Bigleaf Maple (*Acer macrophyllum*)	9	Several large cavities with decay	B	Impacts from lot construction	0
30710	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30711	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from stormwater facility construction	0
30712	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30713	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30714	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Low vigor; Some dead branches	B	Impacts from stormwater facility construction	0
30715	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from stormwater facility construction	0
30716	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30717	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30718	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30719	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30720	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30721	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Codominant with included bark	B	Impacts from stormwater facility construction	0
30722	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30723	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30724	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from stormwater facility construction	0
30725	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility 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
30726	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30727	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30728	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from stormwater facility construction	0
30729	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30730	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from stormwater facility construction	0
30731	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30732	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from stormwater facility construction	0
30733	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from stormwater facility construction	0
30734	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30741	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Sweep (W)	B	Impacts from lot construction	0
30742	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30743	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
30744	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30745	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
30746	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30747	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30748	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from lot construction	0
30749	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30750	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
30751	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30752	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
30753	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30754	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30755	6	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30756	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from lot construction	0
30757	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from lot construction	0
30758	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Impacts from lot construction	0
30759	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30761	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from stormwater facility construction	0
30762	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from stormwater facility construction	0
30763	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30764	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30765	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from stormwater facility construction	0
30766	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from stormwater facility construction	0
30767	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Low vigor	B	Impacts from stormwater facility construction	0
30768	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from stormwater facility construction	0
30798	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from parking lot construction	0
30799	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from parking lot construction	0
30800	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from parking lot construction	0
30801	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from parking lot construction	0
30802	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Impacts from parking lot construction	0
30803	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from parking lot 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
30804	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from parking lot construction	0
30805	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Impacts from site grading	0
30806	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from parking lot construction	0
30807	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from parking lot construction	0
30808	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from parking lot construction	0
30809	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from parking lot construction	0
30810	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from parking lot construction	0
30811	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Dead	A	Impacts from parking lot construction	0
30812	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from parking lot construction	0
30813	5	Douglas-fir (*Pseudotsuga menziesii*)	1	Dead	A	Impacts from public road construction	0
30814	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from public road construction	0
30815	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from public road construction	0
30816	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from public road construction	0
30817	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from public road construction	0
30818	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from public road construction	0
30819	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from public road construction	0
30820	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from public road construction	0
30821	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from site grading	0
30822	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from site grading	0
30823	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Impacts from site grading	0
30824	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from site grading	0
30825	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from site grading	0
30826	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Impacts from site grading	0
30827	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from site grading	0
30828	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from public road construction	0
30829	9	Red Alder (*Alnus rubra*)	2	Good condition	C	Impacts from public road construction	0
30830	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from public road construction	0
30831	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Dead	A	Impacts from public road construction	0
30845	8,8	Red Alder (*Alnus rubra*)	2	Codominant base with included bark; Several large cavities with decay	B	Preserve	2
30847	9,9,10	Bigleaf Maple (*Acer macrophyllum*)	4	Stems leaning; Actively failing; Decay in base	A	Preserve	4
30849	10,6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Preserve	2
30850	12	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Preserve	2
30851	14,6	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Preserve	4
30852	10	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Preserve	2
30853	9,6	Bigleaf Maple (*Acer macrophyllum*)	2	Lean (S); Asymmetrical canopy (S)	B	Preserve	2
30854	14,12,9,9,8,8	Bigleaf Maple (*Acer macrophyllum*)	9	Clustered base; Included bark	B	Preserve	9
30856	12,6	Willow (*Salix spp.*)	3	Good condition	C	Preserve	3
30858	12	Sweet Cherry (*Prunus avium*)	2	Good condition	C	Preserve	2
30859	9,6	Willow (*Salix spp.*)	2	Lean (S); Dead branches	B	Preserve	2
30860	7	Sweet Cherry (*Prunus avium*)	2	Good condition	C	Preserve	2
30861	9,8	Sweet Cherry (*Prunus avium*)	2	Codominant base	B	Preserve	2

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30862	6,6	Bigleaf Maple (*Acer macrophyllum*)	2	Dead; Failed south	A	Preserve	2
30863	12,10	Bigleaf Maple (*Acer macrophyllum*)	4	Large cavity; Asymmetrical canopy (S)	B	Preserve	4
30864	7	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Preserve	2
30865	15,14,7	Bigleaf Maple (*Acer macrophyllum*)	7	Sluffing bark and dead wood in two stems	A	Preserve	7
30866	31,16	Bigleaf Maple (*Acer macrophyllum*)	14	Several cavities; Large broken limbs; Dead limbs; Low vigor	B	Preserve	14
30867	10,10	Bigleaf Maple (*Acer macrophyllum*)	3	Good condition	C	Preserve	3
30883	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30884	9	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30886	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30889	10	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30890	6	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30891	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
30971	0,8,8,7,7,7,6,	Bigleaf Maple (*Acer macrophyllum*)	7	Some dead limbs	B	Impacts from public road construction	0
30972	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Dead	A	Impacts from site grading	0
30973	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
30974	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from site grading	0
30975	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
30976	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Dead	A	Impacts from public road construction	0
30977	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from public road construction	0
30978	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from public road construction	0
30979	6,6	Bigleaf Maple (*Acer macrophyllum*)	2	Broken and dead tops	B	Impacts from site grading	0
30980	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from public road construction	0
30981	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30982	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
30983	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from lot construction	0
30984	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
30985	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Impacts from lot construction	0
30986	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from lot construction	0
30987	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Preserve	2
30988	7,6	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
30989	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Impacts from site grading	0
30990	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from site grading	0
30991	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from site grading	0
30992	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from public road construction	0
30993	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
30997	8	Red Alder (*Alnus rubra*)	2	Good condition	C	Impacts from lot construction	0
30998	9	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
30999	7	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
31002	6	Douglas-fir (*Pseudotsuga menziesii*)	2	Many epicormic sprouts; Dead branches	B	Impacts from lot construction	0
31010	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
31011	7	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0

Detailed Tree Inventory for Camas Woods II

AKS Job No. 8397-01 - Evaluation Date: 01/28/2025 - Evaluated By: BRK

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
31012	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
31014	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
31015	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
31017	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Many epicormic sprouts; Dead branches	B	Impacts from lot construction	0
31019	6	Red Alder (*Alnus rubra*)	2	Dead	A	Impacts from lot construction	0
31020	8,7	Bigleaf Maple (*Acer macrophyllum*)	2	Asymmetrical canopy (E)	C	Preserve	2
31021	10	Bigleaf Maple (*Acer macrophyllum*)	2	Asymmetrical canopy (E)	C	Preserve	2
31022	7	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
31023	7	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
31025	9	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
31026	8	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
31027	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
31028	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
31029	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
31037	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Impacts from lot construction	0
31041	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Impacts from lot construction	0
31075	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
31077	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
31079	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
31080	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
31088	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Impacts from lot construction	0
31150	17	Deciduous	5	Not evaluated by an arborist	-	Impacts from lot construction	0
31151	17	Deciduous	5	Not evaluated by an arborist	-	Impacts from lot construction	0
31152	16	Deciduous	4	Not evaluated by an arborist	-	Impacts from parking lot construction	0
31153	6	Douglas-fir (*Pseudotsuga menziesii*)	2	Not evaluated by an arborist	-	Impacts from lot construction	0
31154	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Not evaluated by an arborist	-	Impacts from lot construction	0
31155	23	Douglas-fir (*Pseudotsuga menziesii*)	8	Not evaluated by an arborist	-	Impacts from lot construction	0
31156	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Not evaluated by an arborist	-	Impacts from public road construction	0
31157	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Not evaluated by an arborist	-	Impacts from public road construction	0
31158	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Not evaluated by an arborist	-	Impacts from public road construction	0
31159	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Not evaluated by an arborist	-	Impacts from public road construction	0
31161	25	Douglas-fir (*Pseudotsuga menziesii*)	9	Not evaluated by an arborist	-	Impacts from public road construction	0
31162	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Not evaluated by an arborist	-	Impacts from public road construction	0
31163	28	Douglas-fir (*Pseudotsuga menziesii*)	10	Not evaluated by an arborist	-	Impacts from public road construction	0
31164	14	Deciduous	3	Not evaluated by an arborist	-	Impacts from public road construction	0
31165	23	Deciduous	8	Not evaluated by an arborist	-	Impacts from public road construction	0
31166	26	Douglas-fir (*Pseudotsuga menziesii*)	9	Not evaluated by an arborist	-	Impacts from public road construction	0
31167	21	Deciduous	7	Not evaluated by an arborist	-	Impacts from public road construction	0
31168	32	Douglas-fir (*Pseudotsuga menziesii*)	12	Not evaluated by an arborist	-	Impacts from public road construction	0
31169	16	Deciduous	4	Not evaluated by an arborist	-	Impacts from lot construction	0
31170	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Not evaluated by an arborist	-	Impacts from lot construction	0
31171	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Not evaluated by an arborist	-	Impacts from public road construction	0

Detailed Tree Inventory for Camas Woods II

AKS Job No. 8397-01 - Evaluation Date: 01/28/2025 - Evaluated By: BRK

Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
31172	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Not evaluated by an arborist	-	Impacts from public road construction	0
31173	23	Douglas-fir (*Pseudotsuga menziesii*)	8	Not evaluated by an arborist	-	Impacts from public road construction	0
31174	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Not evaluated by an arborist	-	Impacts from public road construction	0
31175	23	Douglas-fir (*Pseudotsuga menziesii*)	8	Not evaluated by an arborist	-	Impacts from public road construction	0
31176	32	Douglas-fir (*Pseudotsuga menziesii*)	12	Not evaluated by an arborist	-	Impacts from public road construction	0
31177	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Not evaluated by an arborist	-	Impacts from public road construction	0
31178	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Not evaluated by an arborist	-	Impacts from public road construction	0
31179	22	Deciduous	7	Not evaluated by an arborist	-	Impacts from public road construction	0
31182	6	Douglas-fir (*Pseudotsuga menziesii*)	2	Not evaluated by an arborist	-	Impacts from lot construction	0
31183	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Not evaluated by an arborist	-	Impacts from lot construction	0
31184	28,6	Deciduous	11	Not evaluated by an arborist	-	Impacts from lot construction	0
31185	23	Douglas-fir (*Pseudotsuga menziesii*)	8	Not evaluated by an arborist	-	Impacts from lot construction	0

Total # of Existing Trees Inventoried = 510

Site Area = 7.18

Total # of Existing Onsite Trees = 382
Total Onsite Existing Tree Units = 1625
Total # of Onsite Trees Retained = 60
Total # of Tree Units Retained = 373

Total # of Existing Trees Removed = 362
Total Existing Tree Units Removed = 1252

Minimum Tree Units Required per City Code = 215.4
*(7.18 acres * 30 trees/acre)*
Minimum # Trees to Replant = -229.4

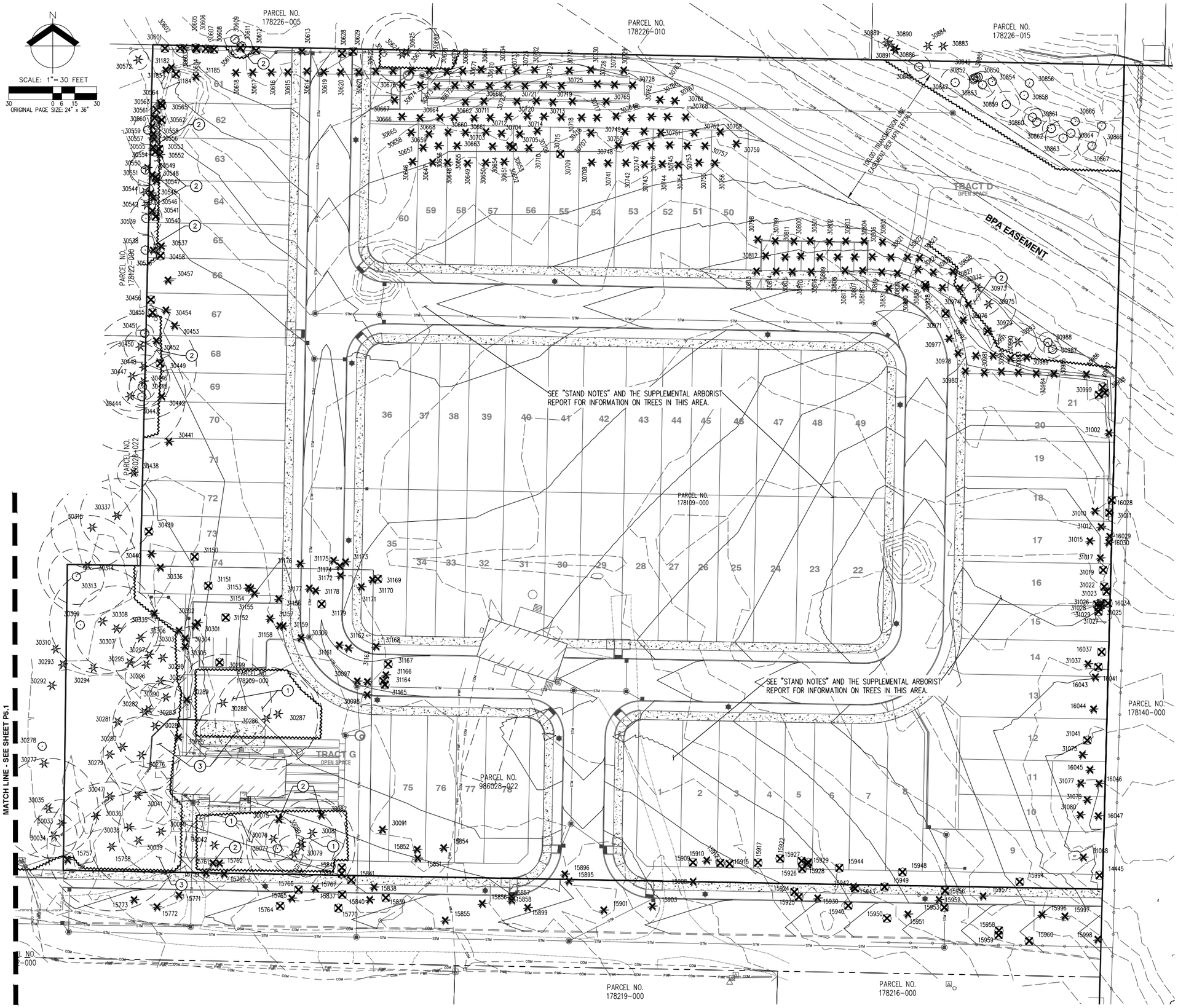
Windthrow Rating
A=Least windthrow resistant
B=Moderate windthrow resistant
C=Most windthrow resistant

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



LEGEND

- EXISTING GROUND CONTOUR (1 FT) — 149
- EXISTING GROUND CONTOUR (5 FT) — 150
- FINISHED GRADE CONTOUR (1 FT) — 149
- FINISHED GRADE CONTOUR (5 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)

TREE PLAN

SITE AREA:	8.79 AC
SITE AREA EXCLUDING OPEN SPACE:	7.18 AC
TOTAL TREE UNITS REQUIRED (7.18 AC X 30):	216
EXISTING TREES RETAINED/(TREE UNITS):	60/(373)
PROPOSED SITE TREES/(TREE UNITS):	81/(81)
TOTAL TREE UNITS: (RETAINED AND PROPOSED)	454

NOTE: SEE LANDSCAPE PLAN (P11.0) FOR PROPOSED TREE PLANTING PLAN

GENERAL NOTES

1. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO DEMOLITION AND SITE GRADING ACTIVITIES. SEE DETAIL ON SHEET 5.1.
2. SEE SHEETS 5.2–5.4 FOR TREE INVENTORY.
3. SEE SHEET 5.1 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 (SHEETS 5.2–5.4), THAT CURRENTLY PRESENT MINIMAL CONCERNS; 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.

STAND NOTES

TREES ON THE INTERIOR OF THE SITE WERE NOT INCLUDED IN THE TOPOGRAPHIC SURVEY. A FIXED RADIUS PLOT CRUISE WAS CONDUCTED TO DETERMINE GENERAL STAND CONDITIONS AND CALCULATE AN APPROXIMATE TREE COUNT.

THE STAND IS DOMINATED BY DOUGLAS-FIRS PLANTED IN ROWS WITH A DENSITY OF ±300 TREES PER ACRE. THE TREE ROWS ARE SPACED ±12' APART AND EACH TREE IS SPACED AT ±10' WITHIN THE ROWS. SOME SCATTERED BIGLEAF MAPLES AND RED ALDERS WERE FOUND IN THE STAND. THE TREES ARE GENERALLY IN GOOD CONDITION.

TREE PROTECTION KEYED NOTES:

1. PRESERVATION OF TREES IN THIS AREA TO BE DETERMINED BY THE PROJECT ARBORIST DURING FINAL ENGINEERING DESIGN.
2. ARBORIST OBSERVATION REQUIRED DURING TREE REMOVAL BEHIND TREE PROTECTION FENCE.
3. TREE PROTECTION FENCING MAY NEED TO BE TEMPORARILY ADJUSTED TO CONDUCT DEMOLITION ACTIVITIES IN THIS AREA. ARBORIST OBSERVATION REQUIRED DURING ANY DEMOLITION ACTIVITIES WITHIN THE TREE PROTECTION AREA

BENNETT R. KOCSIS
CERTIFICATE NUMBER: PN-88726
EXPIRATION DATE: 12/31/2025

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VANCOUVER, WA 98682
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ENGINEERING • SURVEYING • NATURAL RESOURCES
FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN

CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	8397-01
DATE:	4/8/2025
DESIGNED BY:	MA
DRAWN BY:	SAG
CHECKED BY:	BDH

P5.0

AKS DRAWING FILE: 8397-01 PX TREEDWG | 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 PRACTICES SHALL BE IMPLEMENTED PURSUANT TO VMC CHAPTER 14.24 AND 14.25.

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 FOLLOWNG 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 URBAN FORESTER 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.

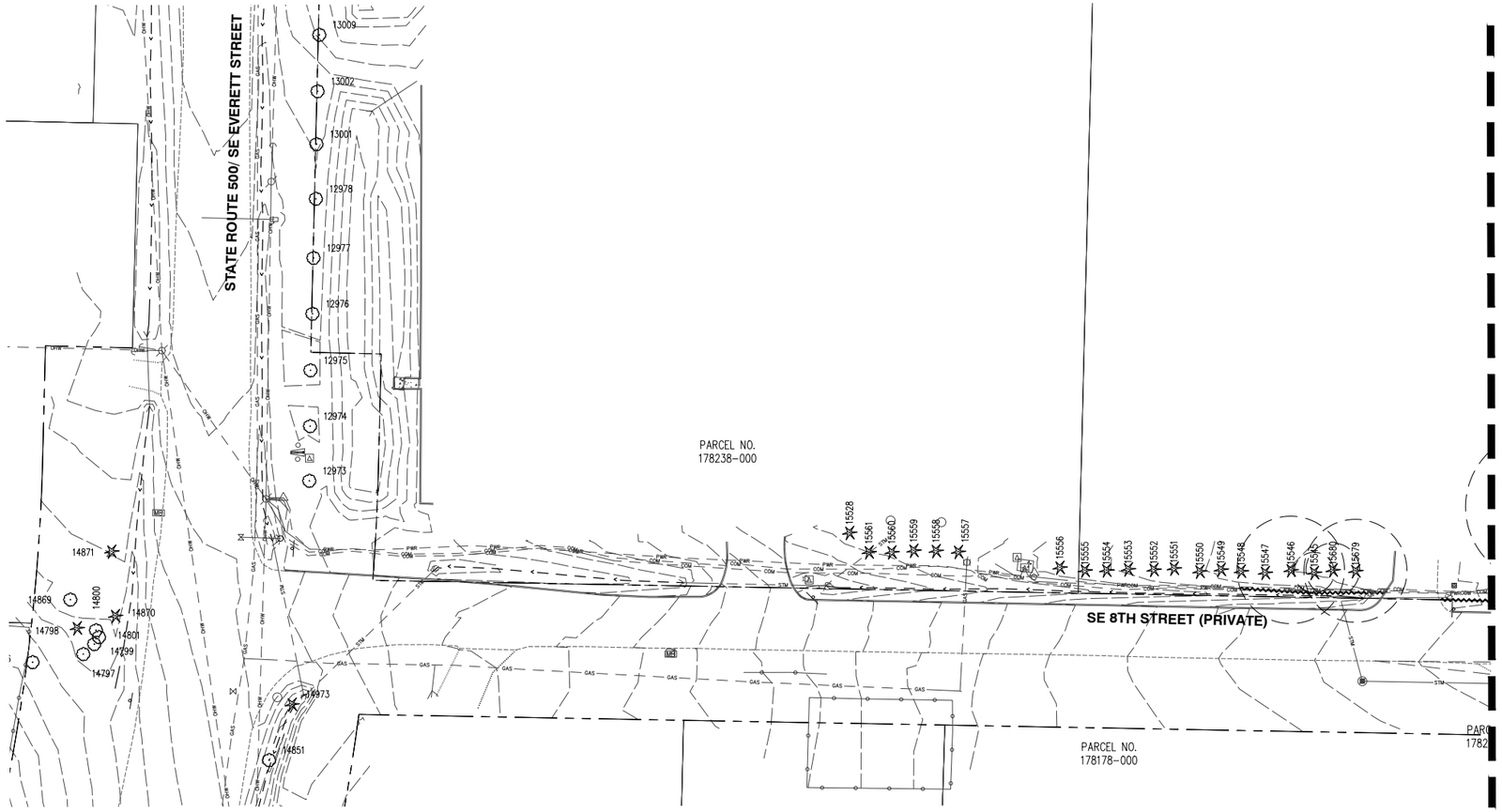
J.I. ANY BRUSH CLEARING REQUIRED WITHIN THE TREE PROTECTION ZONE SHALL BE ACCOMPLISHED WITH HAND OPERATED EQUIPMENT.

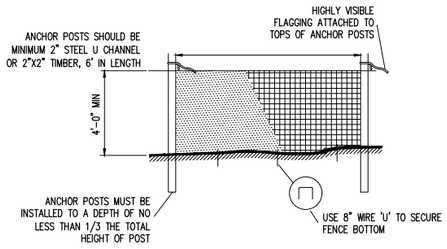
J.J. TREES TO BE REMOVED SHALL BE FELLED SO AS TO FALL AWAY FROM TREE ROOT PROTECTION ZONES AND TO AVOID PULLING AND BREAKING OF ROOTS TO REMAIN.

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.





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.

LEGEND

- EXISTING GROUND CONTOUR (1 FT) —— 149 ——
- EXISTING GROUND CONTOUR (5 FT) —— 150 ——
- FINISHED GRADE CONTOUR (1 FT) —— 149 ——
- FINISHED GRADE CONTOUR (5 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)

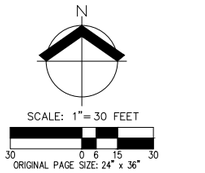
TREE PLAN

SITE AREA:	8.79 AC
SITE AREA EXCLUDING OPEN SPACE:	7.18 AC
TOTAL TREE UNITS REQUIRED (7.18 AC X 30):	216
EXISTING TREES RETAINED/(TREE UNITS):	60/(373)
PROPOSED SITE TREES/(TREE UNITS):	81/(81)
TOTAL TREE UNITS: (RETAINED AND PROPOSED)	454

NOTE: SEE LANDSCAPE PLAN (P11.0) FOR PROPOSED TREE PLANTING PLAN

GENERAL NOTES

1. TREE PROTECTION FENCING SHALL BE INSTALLED PRIOR TO DEMOLITION AND SITE GRADING ACTIVITIES. SEE DETAIL ON SHEET 5.1.
2. SEE SHEETS 5.2–5.4 FOR TREE INVENTORY.
3. SEE SHEET 5.1 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 (SHEETS 5.2–5.4), THAT CURRENTLY PRESENT MINIMAL CONCERNS; 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.





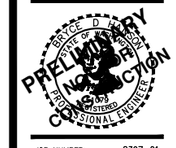
BENNETT R. KOCSIS
CERTIFICATE NUMBER: PN 8677A
EXPIRATION DATE: 12/31/2025

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ENGINEERING • SURVEYING • NATURAL RESOURCES
FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN

CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON



JOB NUMBER:	8397–01
DATE:	4/8/2025
DESIGNED BY:	MA
DRAWN BY:	SAC
CHECKED BY:	BDH

P5.1

AKS DRAWING FILE: 8397-01 PX TREEDWG | LAYOUT: P5.1

Detailed Tree Inventory for Camas Woods II

AKS Job No. 8397-01 - Evaluation Date: 01/28/2025 - Evaluated By: BRK

Tree #	DBH (in.)	Tree Species Common Name (Scientific name)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
12973	12	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
12974	14	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
12975	14	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
12976	13	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
12977	13	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
12978	12	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
13001	13	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
13002	14	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
13009	18	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14445	8	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
14796	10	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14797	7	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14798	8	Conifer	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14799	11	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14800	8	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14801	12	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14851	9	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14869	22	Deciduous	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14870	10	Conifer	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14871	16	Conifer	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
14973	8	Conifer	0	OFFSITE; Not evaluated by an arborist	-	Preserve	0
15528	23	Deodar Cedar (Cedrus deodara)	0	OFFSITE; Good condition	C	Preserve	0
15545	9	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15546	24,7	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15547	7	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15548	26	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15549	14	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15550	20	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15551	16	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15552	19	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15553	10	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15554	10	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15555	14,14	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15556	21	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15557	11	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15558	13	Western Redcedar (Thuja plicata)	0	OFFSITE; Good condition	C	Preserve	0
15559	13	Western Redcedar (Thuja plicata)	0	OFFSITE; Good condition	C	Preserve	0
15560	13	Western Redcedar (Thuja plicata)	0	OFFSITE; Good condition	C	Preserve	0
15561	11	Western Redcedar (Thuja plicata)	0	OFFSITE; Good condition	C	Preserve	0
15679	23	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15680	12	Port Orford Cedar (Chamaecyparis lawsoniana)	0	OFFSITE; Good condition	C	Preserve	0
15757	20,44	Douglas-fir (Pseudotsuga menziesii)	20	Good condition	C	Impacts from public road construction	0
15758	34,26	Douglas-fir (Pseudotsuga menziesii)	18	Good condition	C	Preserve	18
15759	17	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from public road construction	0
15760	28	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Weak vertical leaders	B	Impacts from public road construction	0
15761	36	Douglas-fir (Pseudotsuga menziesii)	14	Good condition	C	Impacts from public road construction	0
15762	24	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Impacts from public road construction	0
15764	8	Cherry (Prunus spp.)	2	Good condition	C	Impacts from public road construction	0
15765	10	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Sweep; 1-sided canopy (S)	C	Impacts from public road construction	0
15766	16	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Broken at very top	B	Impacts from public road construction	0
15767	19	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Dead; Broken @ ~25'	A	Impacts from public road construction	0
15768	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Preserve	3
15770	9	Sweet Cherry (Prunus avium)	0	OFFSITE; Lean (S)	B	Impacts from public road construction	0
15771	35	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15772	40	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15773	37	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Pruned branches; Low vigor	B	Impacts from public road construction	0
15837	11	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Broken top half	A	Impacts from public road construction	0
15838	21	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; High canopy	C	Impacts from public road construction	0
15839	22	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15840	16	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; 1-sided canopy (S)	C	Impacts from public road construction	0
15841	8	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15842	10,6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from public road construction	0
15843	10,11	Bigleaf Maple (Acer macrophyllum)	4	Good condition	C	Impacts from public road construction	0
15851	24	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Impacts from lot construction	0
15852	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
15854	30	Douglas-fir (Pseudotsuga menziesii)	11	Good condition	C	Impacts from lot construction	0
15855	27	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15856	29	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Dead (~130')	A	Impacts from public road construction	0
15857	27	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15858	18	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15895	26	Western Hemlock (Tsuga heterophylla)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15896	6	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
15899	31	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Codominant top; Abnormal dead branches	B	Impacts from public road construction	0
15901	30	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15903	34	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Codominant top with included bark	B	Impacts from public road construction	0
15908	48	Douglas-fir (Pseudotsuga menziesii)	20	Codominant top with included bark	B	Impacts from public road construction	0
15909	9	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
15910	17	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from lot construction	0
15912	11,11,13	Bigleaf Maple (Acer macrophyllum)	6	Good condition	C	Impacts from lot construction	0
15915	9,6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
15917	10,9,9,9,8,7,14	Bigleaf Maple (Acer macrophyllum)	9	Good condition	C	Impacts from lot construction	0
15922	7	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
15924	10,8	Red Alder (Alnus rubra)	0	OFFSITE; Dead (~50')	A	Impacts from public road construction	0
15925	13	Sweet Cherry (Prunus avium)	0	OFFSITE; Lean (S)	B	Impacts from public road construction	0
15926	8	Bigleaf Maple (Acer macrophyllum)	2	Broken @ ~15'	A	Impacts from lot construction	0
15927	10	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
15928	9	Sweet Cherry (Prunus avium)	2	Good condition	C	Impacts from lot construction	0
15929	15	Bigleaf Maple (Acer macrophyllum)	4	Good condition	C	Impacts from lot construction	0
15930	23	Western Hemlock (Tsuga heterophylla)	8	Good condition	C	Impacts from public road construction	0
15940	19,6	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Cavity with decay	B	Impacts from public road construction	0
15942	23	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15943	6	Sweet Cherry (Prunus avium)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15944	21	Sweet Cherry (Prunus avium)	7	Dead and broken limbs; Decay	B	Impacts from lot construction	0

Detailed Tree Inventory for Camas Woods II

AKS Job No. 8397-01 - Evaluation Date: 01/28/2025 - Evaluated By: BRK

Tree #	DBH (in.)	Tree Species Common Name (Scientific name)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
15948	8	Red Alder (Alnus rubra)	2	Good condition	C	Impacts from lot construction	0
15949	15	Red Alder (Alnus rubra)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15950	10	Red Alder (Alnus rubra)	0	OFFSITE; Broken at very top	B	Impacts from public road construction	0
15951	28	Western Hemlock (Tsuga heterophylla)	0	OFFSITE; Dead (~90')	A	Impacts from public road construction	0
15952	32	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15953	25,14,9	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; 1-sided canopy (S)	C	Impacts from public road construction	0
15956	10	Willow (Salix spp.)	0	OFFSITE; Broken limbs; Small cavities with decay	B	Impacts from public road construction	0
15957	38	Western Hemlock (Tsuga heterophylla)	0	OFFSITE; Codominant with included bark	B	Impacts from public road construction	0
15958	13	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15959	22	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Growing horizontal (S)	B	Impacts from public road construction	0
15960	9	Willow (Salix spp.)	0	OFFSITE; Dead nad broken codominant stem with decay	B	Impacts from public road construction	0
15994	7	Red Alder (Alnus rubra)	2	Good condition	C	Impacts from public road construction	0
15996	25	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15997	20	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
15998	20	Grand Fir (Abies grandis)	0	OFFSITE; Good condition	C	Impacts from public road construction	0
16020	17	Douglas-fir (Pseudotsuga menziesii)	5	LINE TREE; Good condition	C	Preserve	5
16021	14	Bigleaf Maple (Acer macrophyllum)	3	LINE TREE; Good condition	C	Preserve	3
16022	23,12,11,10,7	Bigleaf Maple (Acer macrophyllum)	12	LINE TREE; Good condition	C	Preserve	12
16023	10	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Preserve	2
16024	12	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Preserve	0
16025	12	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Preserve	0
16026	12	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
16027	14	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Preserve	0
16028	12	Willow (Salix spp.)	2	LINE TREE; Good condition	C	Impacts from lot construction	0
16029	18	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from lot construction	0
16030	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
16031	22	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
16032	7	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
16034	9	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
16035	10	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Preserve	0
16036	9,6	Douglas-fir (Pseudotsuga menziesii)	2	LINE TREE; Good condition	C	Preserve	2
16037	11	Black Cottonwood (Populus trichocarpa)	2	Broken at very top	B	Impacts from lot construction	0
16038	6	Black Cottonwood (Populus trichocarpa)	0	OFFSITE; Good condition	C	Preserve	0
16041	8	Black Cottonwood (Populus trichocarpa)	2	Good condition	C	Impacts from lot construction	0
16042	10	Black Cottonwood (Populus trichocarpa)	0	OFFSITE; Good condition	C	Preserve	0
16043	16	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
16044	16	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
16045	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
16046	23	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Impacts from lot construction	0
16047	16	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
30033	16	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30034	16	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30035	34	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30036	35	Douglas-fir (Pseudotsuga menziesii)	14	Good condition	C	Preserve	14
30038	25	Douglas-fir (Pseudotsuga menziesii)	9	Good condition	C	Preserve	9
30039	33	Douglas-fir (Pseudotsuga menziesii)	13	Good condition	C	Preserve	13
30040	29	Douglas-fir (Pseudotsuga menziesii)	11	Good condition	C	Preserve	11
30041	23	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Preserve	8
30042	20	Grand Fir (Abies grandis)	6	Good condition	C	Potential Preservation	0
30047	18	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Preserve	5
30075	40	Douglas-fir (Pseudotsuga menziesii)	16	Good condition	C	Impacts from stormwater facility construction	0
30076	16	Grand Fir (Abies grandis)	4	Good condition	C	Potential Preservation	0
30077	18,16,10	Bigleaf Maple (Acer macrophyllum)	9	Broken tops; Epicormic leaders; Cavities with decay; Broken limbs	A	Potential Preservation	0
30078	14	Douglas-fir (Pseudotsuga menziesii)	3	Sweep (S); Some dead branches	B	Preserve	3
30079	37	Douglas-fir (Pseudotsuga menziesii)	15	Good condition	C	Potential Preservation	0
30080	24	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Potential Preservation	0
30081	23	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Potential Preservation	0
30082	22	Grand Fir (Abies grandis)	7	Good condition	C	Impacts from stormwater facility construction	0
30091	36	Douglas-fir (Pseudotsuga menziesii)	14	Good condition	C	Impacts from lot construction	0
30097	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from public road construction	0
30098	41	Douglas-fir (Pseudotsuga menziesii)	17	Good condition	C	Impacts from public road construction	0
30276	26	Douglas-fir (Pseudotsuga menziesii)	9	Good condition	C	Preserve	9
30277	23	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30278	20,18,17,15,12	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Dead codominant stem; Broken limbs; Asymmetrical canopy (W)	B	Preserve	0
30279	39	Douglas-fir (Pseudotsuga menziesii)	16	Codominant top with included bark	B	Preserve	16
30280	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Preserve	3
30281	27	Douglas-fir (Pseudotsuga menziesii)	10	Good condition	C	Preserve	10
30282	17	Douglas-fir (Pseudotsuga menziesii)	5	Dead (~80')	A	Preserve	5
30283	17,13	Douglas-fir (Pseudotsuga menziesii)	7	Codominant base; Epicormic sprouts; Sparse canopy	B	Preserve	7
30284	29	Douglas-fir (Pseudotsuga menziesii)	11	Good condition	C	Preserve	11
30285	34	Douglas-fir (Pseudotsuga menziesii)	13	Good condition	C	Impacts from storm line construction	0
30286	35	Douglas-fir (Pseudotsuga menziesii)	14	Good condition	C	Potential Preservation	0
30287	30	Douglas-fir (Pseudotsuga menziesii)	11	Good condition	C	Potential Preservation	0
30288	33	Grand Fir (Abies grandis)	13	Good condition	C	Potential Preservation	0
30289	28	Douglas-fir (Pseudotsuga menziesii)	10	Good condition	C	Impacts from storm line construction	0
30290	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Preserve	2
30291	24	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Preserve	8
30292	33	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30293	38	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30294	50	Douglas-fir (Pseudotsuga menziesii)	21	Codominant base with included bark	B	Preserve	21
30295	27	Douglas-fir (Pseudotsuga menziesii)	10	Good condition	C	Preserve	10
30296	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Preserve	2
30297	25	Douglas-fir (Pseudotsuga menziesii)	9	Good condition	C	Preserve	9
30298	21	Douglas-fir (Pseudotsuga menziesii)	7	Good condition	C	Preserve	7
30299	28	Bigleaf Maple (Acer macrophyllum)	10	Large scar at base; Some dead limbs	B	Impacts from parking lot construction	0
30300	28	Douglas-fir (Pseudotsuga menziesii)	10	Good condition	C	Impacts from public road construction	0
30301	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from parking lot construction	0
30302	28	Douglas-fir (Pseudotsuga menziesii)	10	Good condition	C	Impacts from parking lot construction	0
30303	24	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Impacts from storm line construction	0
30304	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from storm line construction	0
30305	18	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from storm line construction	0
30306	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Preserve	3

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ENGINEERING • SURVEYING • NATURAL RESOURCES
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TREE INVENTORY
CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

BRYCE D. HAMMOND
STATE OF WASHINGTON
21983
REGISTERED PROFESSIONAL ENGINEER

PRELIMINARY NOT FOR CONSTRUCTION

BENNETT R. KOCSIS
CERTIFICATE NUMBER: PN 8877A
EXPIRATION DATE: 12/31/2025

JOB NUMBER:	8397-01
DATE:	4/8/2025
DESIGNED BY:	MA
DRAWN BY:	SAG
CHECKED BY:	BDH

P5.2

AKS DRAWING FILE: 8397-01 PX TREEINVS | LAYOUT: P5.2

Detailed Tree Inventory for Camas Woods II

AKS Job No. 8397-01 - Evaluation Date: 01/28/2025 - Evaluated By: BRK

Tree #	DBH (in.)	Tree Species Common Name (Scientific name)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
30307	29	Douglas-fir (Pseudotsuga menziesii)	11	Good condition	C	Preserve	11
30308	36	Douglas-fir (Pseudotsuga menziesii)	14	Good condition	C	Preserve	14
30309	16	Bigleaf Maple (Acer macrophyllum)	4	Good condition	C	Preserve	4
30310	30	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30313	19	Bigleaf Maple (Acer macrophyllum)	6	Many broken limbs; Slight lean (W)	B	Preserve	6
30314	34	Douglas-fir (Pseudotsuga menziesii)	13	Good condition	C	Preserve	13
30315	28	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30335	28,16	Douglas-fir (Pseudotsuga menziesii)	12	Codominant base; Good condition	C	Impacts from storm line construction	0
30336	33,20,12	Douglas-fir (Pseudotsuga menziesii)	16	Codominant base; Good condition	C	Impacts from lot construction	0
30337	25	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30438	11	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30439	9,6	Bigleaf Maple (Acer macrophyllum)	2	Codominant base; Good condition	C	Impacts from lot construction	0
30440	28	Douglas-fir (Pseudotsuga menziesii)	10	Good condition	C	Impacts from lot construction	0
30441	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30442	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30443	6	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Preserve	0
30444	38	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30445	9	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Broken top; Suppressed	B	Preserve	0
30446	18	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30447	24	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30448	36	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30449	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30450	11	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30451	6	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30452	6	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30453	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30454	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30455	8	Bigleaf Maple (Acer macrophyllum)	2	Good condition; Asymmetrical canopy (W)	C	Impacts from lot construction	0
30456	13,11	Bigleaf Maple (Acer macrophyllum)	5	Good condition; Asymmetrical canopy (W)	C	Impacts from lot construction	0
30457	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30458	12	Bigleaf Maple (Acer macrophyllum)	2	Good condition; Asymmetrical canopy (W)	C	Impacts from lot construction	0
30536	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30537	13,7	Douglas-fir (Pseudotsuga menziesii)	4	Good condition; Codominant base	C	Impacts from lot construction	0
30538	10	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition	C	Preserve	0
30539	11	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30540	8	Bigleaf Maple (Acer macrophyllum)	2	Suppressed; Some broken limbs	B	Impacts from lot construction	0
30541	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30542	6	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30544	6	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Suppressed	B	Preserve	0
30545	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30546	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30547	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30548	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30549	10	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30550	12	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30551	11	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Sweep (S)	C	Preserve	0
30552	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30553	7	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30554	6	Bigleaf Maple (Acer macrophyllum)	2	Lean (W)	B	Impacts from lot construction	0
30555	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30556	6	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30557	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30558	6	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30559	10	Bigleaf Maple (Acer macrophyllum)	0	OFFSITE; Good condition; Asymmetrical canopy (W)	C	Preserve	0
30560	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30561	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30562	6	Bigleaf Maple (Acer macrophyllum)	2	Lean (W)	B	Impacts from lot construction	0
30563	6	Bigleaf Maple (Acer macrophyllum)	2	Lean (W)	B	Impacts from lot construction	0
30564	13	Bigleaf Maple (Acer macrophyllum)	3	Good condition	C	Impacts from lot construction	0
30565	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30572	7	Western Redcedar (Thuja plicata)	0	OFFSITE; Low vigor	B	Preserve	0
30601	17,6	Bigleaf Maple (Acer macrophyllum)	5	Sweep (N)	B	Impacts from lot construction	0
30602	11	Bigleaf Maple (Acer macrophyllum)	2	Asymmetrical canopy (N)	C	Impacts from lot construction	0
30603	21	Douglas-fir (Pseudotsuga menziesii)	7	Good condition	C	Impacts from lot construction	0
30604	12	Bigleaf Maple (Acer macrophyllum)	2	Lean (N)	B	Impacts from lot construction	0
30605	6	Sweet Cherry (Prunus avium)	2	Good condition	C	Impacts from lot construction	0
30606	10,7	Sweet Cherry (Prunus avium)	2	Codominant base with included bark; Asymmetrical canopy (N)	B	Impacts from lot construction	0
30607	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30608	14,6	Bigleaf Maple (Acer macrophyllum)	4	Good condition	C	Impacts from lot construction	0
30609	7	Sweet Cherry (Prunus avium)	0	OFFSITE; Good condition	C	Preserve	0
30610	7	Sweet Cherry (Prunus avium)	2	Good condition	C	Impacts from lot construction	0
30611	7	Sweet Cherry (Prunus avium)	0	OFFSITE; Good condition	C	Preserve	0
30612	12	Bigleaf Maple (Acer macrophyllum)	2	Sweep (N); Asymmetrical canopy (N)	B	Impacts from lot construction	0
30613	20	Douglas-fir (Pseudotsuga menziesii)	6	Good condition	C	Impacts from public road construction	0
30614	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30615	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30616	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30617	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30618	7	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30619	7	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30620	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30621	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30622	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30623	8	Douglas-fir (Pseudotsuga menziesii)	2	Dead; Lean (W)	A	Impacts from parking lot construction	0
30624	28	Douglas-fir (Pseudotsuga menziesii)	10	Good condition	C	Preserve	0
30625	23	Douglas-fir (Pseudotsuga menziesii)	8	Good condition	C	Preserve	0
30628	7	Bigleaf Maple (Acer macrophyllum)	2	Slight lean (SW)	C	Impacts from public road construction	0
30629	20,15,10,7	Bigleaf Maple (Acer macrophyllum)	10	Clustered base; Included bark	B	Impacts from public road construction	0
30646	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30647	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30648	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30649	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0

Detailed Tree Inventory for Camas Woods II

AKS Job No. 8397-01 - Evaluation Date: 01/28/2025 - Evaluated By: BRK

Tree #	DBH (in.)	Tree Species Common Name (Scientific name)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
30650	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30651	7	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30652	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30653	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30654	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30655	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30656	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30657	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30658	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30659	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30660	7	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30661	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30662	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30663	8	Douglas-fir (Pseudotsuga menziesii)	2	Dead	A	Impacts from stormwater facility construction	0
30664	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30665	7	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30666	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from parking lot construction	0
30667	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30668	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30669	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30670	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from stormwater facility construction	0
30671	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30672	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30673	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30674	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30676	6	Douglas-fir (Pseudotsuga menziesii)	2	Dead	A	Impacts from stormwater facility construction	0
30677	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30678	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30679	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from stormwater facility construction	0
30680	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30681	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30682	17	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Preserve	0
30703	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30704	6	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30705	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30706	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30707	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
30708	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30709	26	Bigleaf Maple (Acer macrophyllum)	9	Several large cavities with decay	B	Impacts from lot construction	0
30710	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30711	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30712	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30713	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30714	10	Douglas-fir (Pseudotsuga menziesii)	2	Low vigor; Some dead branches	B	Impacts from stormwater facility construction	0
30715	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from stormwater facility construction	0
30716	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30717	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30718	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30719	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30720	7	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30721	12	Douglas-fir (Pseudotsuga menziesii)	2	Codominant with included bark	B	Impacts from stormwater facility construction	0
30722	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30723	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30724	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from stormwater facility construction	0
30725	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30726	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30727	7	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30728	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30729	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30730	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30731	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30732	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30733	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30734	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30741	10	Douglas-fir (Pseudotsuga menziesii)	2	Sweep (W)	B	Impacts from lot construction	0
30742	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30743	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30744	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30745	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30746	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30747	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30748	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
30749	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30750	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30751	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30752	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30753	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30754	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30755	6	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30756	16	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
30757	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
30758	20	Douglas-fir (Pseudotsuga menziesii)	6	Good condition	C	Impacts from lot construction	0
30759	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30761	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30762	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30763	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30764	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30765	16	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from stormwater facility construction	0
30766	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from stormwater facility construction	0
30767	13	Douglas-fir (Pseudotsuga menziesii)	3	Low vigor	B	Impacts from stormwater facility construction	0
30768	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from stormwater facility construction	0
30798	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0

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BRYCE D. HENRY — STATE OF WASHINGTON — 24842 — REGISTERED PROFESSIONAL ENGINEER

JOB NUMBER: 8397-01
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DESIGNED BY: MA
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CHECKED BY: BDH

P5.3

AKS DRAWING FILE: 8397-01 PX TREEDWG | LAYOUT: P5.3

Detailed Tree Inventory for Camas Woods II

AKS Job No. 8397-01 - Evaluation Date: 01/28/2025 - Evaluated By: BRK

Tree #	DBH (in.)	Tree Species Common Name (Scientific name)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
30799	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from parking lot construction	0
30800	16	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from parking lot construction	0
30801	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from parking lot construction	0
30802	17	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from parking lot construction	0
30803	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from parking lot construction	0
30804	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from parking lot construction	0
30805	19	Douglas-fir (Pseudotsuga menziesii)	6	Good condition	C	Impacts from site grading	0
30806	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30807	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30808	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30809	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30810	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30811	9	Douglas-fir (Pseudotsuga menziesii)	2	Dead	A	Impacts from parking lot construction	0
30812	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from parking lot construction	0
30813	5	Douglas-fir (Pseudotsuga menziesii)	1	Dead	A	Impacts from public road construction	0
30814	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from public road construction	0
30815	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from public road construction	0
30816	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30817	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30818	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from public road construction	0
30819	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30820	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30821	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from site grading	0
30822	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from site grading	0
30823	17	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from site grading	0
30824	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from site grading	0
30825	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from site grading	0
30826	18	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from site grading	0
30827	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from site grading	0
30828	8	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30829	9	Red Alder (Alnus rubra)	2	Good condition	C	Impacts from public road construction	0
30830	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from public road construction	0
30831	7	Douglas-fir (Pseudotsuga menziesii)	2	Dead	A	Impacts from public road construction	0
30845	8,8	Red Alder (Alnus rubra)	2	Codominant base with included bark; Several large cavities with decay	B	Preserve	2
30847	9,9,10	Bigleaf Maple (Acer macrophyllum)	4	Stems leaning; Actively failing; Decay in base	A	Preserve	4
30849	10,6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Preserve	2
30850	12	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Preserve	2
30851	14,6	Bigleaf Maple (Acer macrophyllum)	4	Good condition	C	Preserve	4
30852	10	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Preserve	2
30853	9,6	Bigleaf Maple (Acer macrophyllum)	2	Lean (S); Asymmetrical canopy (S)	B	Preserve	2
30854	14,12,9,9,8,8	Bigleaf Maple (Acer macrophyllum)	9	Clustered base; Included bark	B	Preserve	9
30856	12,6	Willow (Salix spp.)	3	Good condition	C	Preserve	3
30858	12	Sweet Cherry (Prunus avium)	2	Good condition	C	Preserve	2
30859	9,6	Willow (Salix spp.)	2	Lean (S); Dead branches	B	Preserve	2
30860	7	Sweet Cherry (Prunus avium)	2	Good condition	C	Preserve	2
30861	9,8	Sweet Cherry (Prunus avium)	2	Codominant base	B	Preserve	2
30862	6,6	Bigleaf Maple (Acer macrophyllum)	2	Dead; Failed south	A	Preserve	2
30863	12,10	Bigleaf Maple (Acer macrophyllum)	4	Large cavity; Asymmetrical canopy (S)	B	Preserve	4
30864	7	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Preserve	2
30865	15,14,7	Bigleaf Maple (Acer macrophyllum)	7	Sluffing bark and dead wood in two stems	A	Preserve	7
30866	31,16	Bigleaf Maple (Acer macrophyllum)	14	Several cavities; Large broken limbs; Dead limbs; Low vigor	B	Preserve	14
30867	10,10	Bigleaf Maple (Acer macrophyllum)	3	Good condition	C	Preserve	3
30883	17	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30884	9	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30886	19	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30889	10	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30890	6	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30891	17	Douglas-fir (Pseudotsuga menziesii)	0	OFFSITE; Good condition	C	Preserve	0
30971	10,8,8,7,7,7,6,6	Bigleaf Maple (Acer macrophyllum)	7	Some dead limbs	B	Impacts from public road construction	0
30972	7	Douglas-fir (Pseudotsuga menziesii)	2	Dead	A	Impacts from site grading	0
30973	20	Douglas-fir (Pseudotsuga menziesii)	6	Good condition	C	Preserve	6
30974	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from site grading	0
30975	19	Douglas-fir (Pseudotsuga menziesii)	6	Good condition	C	Preserve	6
30976	7	Douglas-fir (Pseudotsuga menziesii)	2	Dead	A	Impacts from public road construction	0
30977	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from public road construction	0
30978	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30979	6,6	Bigleaf Maple (Acer macrophyllum)	2	Broken and dead tops	B	Impacts from site grading	0
30980	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30981	11	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30982	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
30983	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
30984	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
30985	18	Douglas-fir (Pseudotsuga menziesii)	5	Good condition	C	Impacts from lot construction	0
30986	16	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from lot construction	0
30987	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Preserve	2
30988	7,6	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Preserve	2
30989	15	Douglas-fir (Pseudotsuga menziesii)	4	Good condition	C	Impacts from site grading	0
30990	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from site grading	0
30991	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from site grading	0
30992	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from public road construction	0
30993	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Preserve	2
30997	8	Red Alder (Alnus rubra)	2	Good condition	C	Impacts from lot construction	0
30998	9	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
30999	7	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31002	6	Douglas-fir (Pseudotsuga menziesii)	2	Many epicormic sprouts; Dead branches	B	Impacts from lot construction	0
31010	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
31011	7	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31012	12	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
31014	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Preserve	2
31015	10	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
31017	7	Douglas-fir (Pseudotsuga menziesii)	2	Many epicormic sprouts; Dead branches	B	Impacts from lot construction	0
31019	6	Red Alder (Alnus rubra)	2	Dead	A	Impacts from lot construction	0

Detailed Tree Inventory for Camas Woods II

AKS Job No. 8397-01 - Evaluation Date: 01/28/2025 - Evaluated By: BRK

Tree #	DBH (in.)	Tree Species Common Name (Scientific name)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
31020	8,7	Bigleaf Maple (Acer macrophyllum)	2	Asymmetrical canopy (E)	C	Preserve	2
31021	10	Bigleaf Maple (Acer macrophyllum)	2	Asymmetrical canopy (E)	C	Preserve	2
31022	7	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31023	7	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31025	9	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31026	8	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31027	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31028	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31029	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31037	9	Douglas-fir (Pseudotsuga menziesii)	2	Good condition	C	Impacts from lot construction	0
31041	6	Bigleaf Maple (Acer macrophyllum)	2	Good condition	C	Impacts from lot construction	0
31075	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
31077	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
31079	13	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
31080	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
31088	14	Douglas-fir (Pseudotsuga menziesii)	3	Good condition	C	Impacts from lot construction	0
31150	17	Deciduous	5	Not evaluated by an arborist	-	Impacts from lot construction	0
31151	17	Deciduous	5	Not evaluated by an arborist	-	Impacts from lot construction	0
31152	16	Deciduous	4	Not evaluated by an arborist	-	Impacts from parking lot construction	0
31153	6	Douglas-fir (Pseudotsuga menziesii)	2	Not evaluated by an arborist	-	Impacts from lot construction	0
31154	15	Douglas-fir (Pseudotsuga menziesii)	4	Not evaluated by an arborist	-	Impacts from lot construction	0
31155	23	Douglas-fir (Pseudotsuga menziesii)	8	Not evaluated by an arborist	-	Impacts from lot construction	0
31156	17	Douglas-fir (Pseudotsuga menziesii)	5	Not evaluated by an arborist	-	Impacts from public road construction	0
31157	21	Douglas-fir (Pseudotsuga menziesii)	7	Not evaluated by an arborist	-	Impacts from public road construction	0
31158	12	Douglas-fir (Pseudotsuga menziesii)	2	Not evaluated by an arborist	-	Impacts from public road construction	0
31159	20	Douglas-fir (Pseudotsuga menziesii)	6	Not evaluated by an arborist	-	Impacts from public road construction	0
31161	25	Douglas-fir (Pseudotsuga menziesii)	9	Not evaluated by an arborist	-	Impacts from public road construction	0
31162	15	Douglas-fir (Pseudotsuga menziesii)	4	Not evaluated by an arborist	-	Impacts from public road construction	0
31163	28	Douglas-fir (Pseudotsuga menziesii)	10	Not evaluated by an arborist	-	Impacts from public road construction	0
31164	14	Deciduous	3	Not evaluated by an arborist	-	Impacts from public road construction	0
31165	23	Deciduous	8	Not evaluated by an arborist	-	Impacts from public road construction	0
31166	26	Douglas-fir (Pseudotsuga menziesii)	9	Not evaluated by an arborist	-	Impacts from public road construction	0
31167	21	Deciduous	7	Not evaluated by an arborist	-	Impacts from public road construction	0
31168	32	Douglas-fir (Pseudotsuga menziesii)	12	Not evaluated by an arborist	-	Impacts from public road construction	0
31169	16	Deciduous	4	Not evaluated by an arborist	-	Impacts from lot construction	0
31170	21	Douglas-fir (Pseudotsuga menziesii)	7	Not evaluated by an arborist	-	Impacts from lot construction	0
31171	15	Douglas-fir (Pseudotsuga menziesii)	4	Not evaluated by an arborist	-	Impacts from public road construction	0
31172	14	Douglas-fir (Pseudotsuga menziesii)	3	Not evaluated by an arborist	-	Impacts from public road construction	0
31173	23	Douglas-fir (Pseudotsuga menziesii)	8	Not evaluated by an arborist	-	Impacts from public road construction	0
31174	11	Douglas-fir (Pseudotsuga menziesii)	2	Not evaluated by an arborist	-	Impacts from public road construction	0
31175	23	Douglas-fir (Pseudotsuga menziesii)	8	Not evaluated by an arborist	-	Impacts from public road construction	0
31176	32	Douglas-fir (Pseudotsuga menziesii)	12	Not evaluated by an arborist	-	Impacts from public road construction	0
31177	10	Douglas-fir (Pseudotsuga menziesii)	2	Not evaluated by an arborist	-	Impacts from public road construction	0
31178	18	Douglas-fir (Pseudotsuga menziesii)	5	Not evaluated by an arborist	-	Impacts from public road construction	0
31179	22	Deciduous	7	Not evaluated by an arborist	-	Impacts from public road construction	0
31182	6	Douglas-fir (Pseudotsuga menziesii)	2	Not evaluated by an arborist	-	Impacts from lot construction	0
31183	7	Douglas-fir (Pseudotsuga menziesii)	2	Not evaluated by an arborist	-	Impacts from lot construction	0
31184	28,6	Deciduous	11	Not evaluated by an arborist	-	Impacts from lot construction	0
31185	23	Douglas-fir (Pseudotsuga menziesii)	8	Not evaluated by an arborist	-	Impacts from lot construction	0

Total # of Existing Trees Inventoried = 510

Site Area = 7.18

Total # of Existing Onsite Trees = 382
Total Onsite Existing Tree Units = 1625
Total # of Onsite Trees Retained = 60
Total # of Tree Units Retained = 373
Minimum Tree Units Required per City Code = 215.4
*(7.18 acres * 30 trees/acre)*
Minimum # Trees to Replant = -229.4

Total # of Existing Trees Removed = 362
Total Existing Tree Units Removed = 1252

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 NOT FOR CONSTRUCTION

BENNETT R. KOCSIS
CERTIFICATE NUMBER: PN 8877A
EXPIRATION DATE: 12/31/2025

TREE INVENTORY
CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

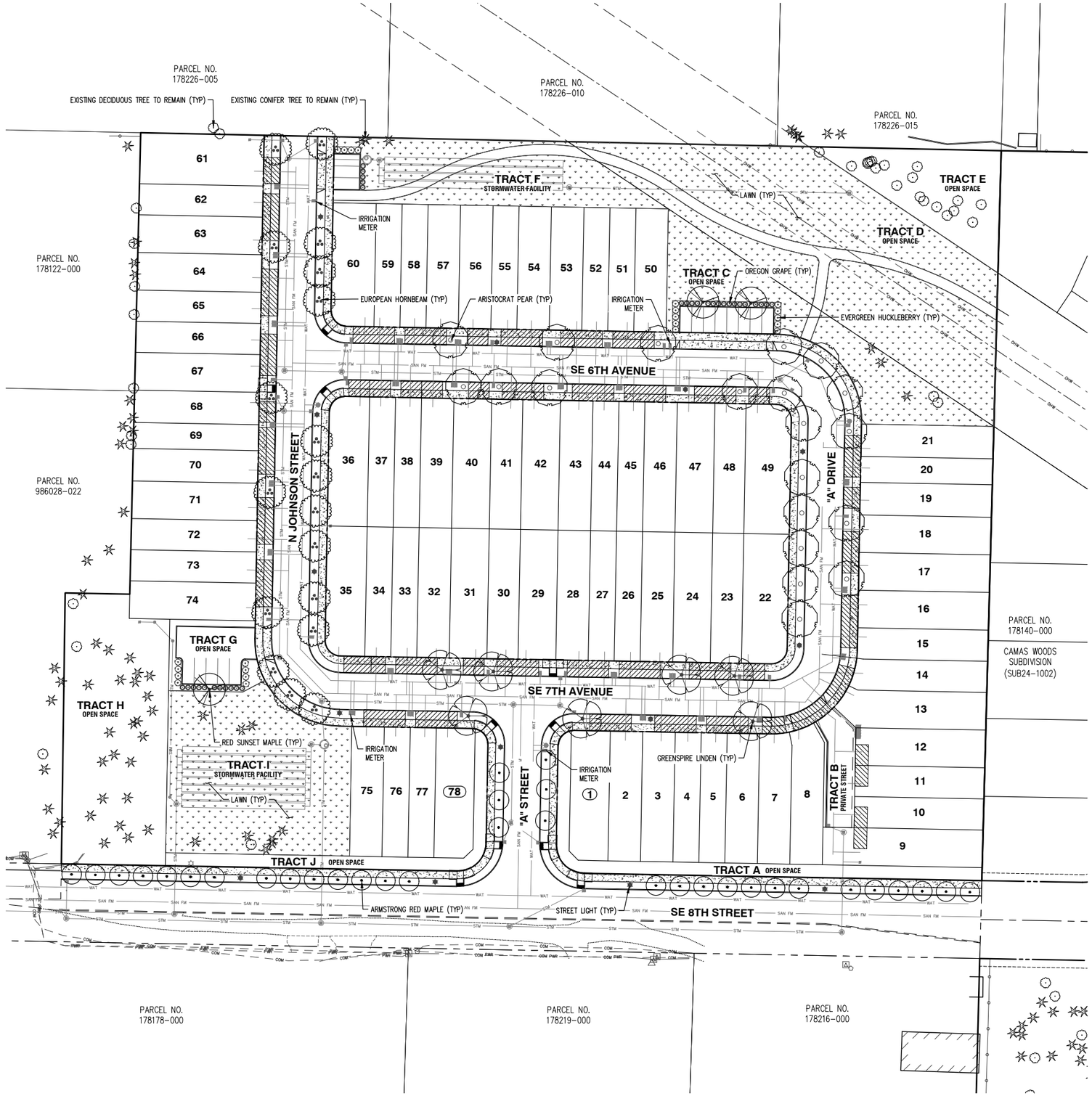
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	8397-01
DATE:	4/8/2025
DESIGNED BY:	MA
DRAWN BY:	SAG
CHECKED BY:	BDH

P5.4

AKS DRAWING FILE: 8397-01 PX TREEDWG | LAYOUT: P5.4

Appendix C: Tree Planting Plan



PRELIMINARY PLANT SCHEDULE

SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
TREES					
	3	ACER RUBRUM 'FRANKSRED'	RED SUNSET MAPLE	2" CAL MIN./B&B	AS SHOWN
STREET TREES					
	33	ACER RUBRUM 'ARMSTRONG'	ARMSTRONG RED MAPLE	2" CAL MIN./B&B	AS SHOWN
	18	CARPINUS BETULUS	EUROPEAN HORNBEAM	2" CAL MIN./B&B	AS SHOWN
	20	PYRUS CALLERYANA 'ARISTOCRAT'	ARISTOCRAT PEAR	2" CAL MIN./B&B	AS SHOWN
	7	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	2" CAL MIN./B&B	AS SHOWN
SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
SHRUBS					
	32	MAHONIA AQUIFOLIUM	OREGON GRAPE	3 GAL. CONT.	48" o.c.
	22	VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	3 GAL. CONT.	60" o.c.
GROUND COVERS					
	59,877 SF±	LAWN: NORTHWEST SUPREME LAWN SEED MIX – SUNMARK SEEDS (OR APPROVED EQUAL) DASHER 3 PERENNIAL RYEGRASS (LOLIUM PERENNE VAR. DASHER 3) 35%; CUTTER II PERENNIAL RYEGRASS (LOLIUM PERENNE VAR. CUTTER II) 35%; GARNET CREEPING RED FESCUE (FESTUCA RUBRA VAR. GARNET) 15%; WINDWARD CHEWINGS FESCUE (FESTUCA RUBRA SPP FALLAX VAR. WINDWARD) 15% APPLY AT A RATE OF 8 LBS. PER 1,000 SF OR AS RECOMMENDED BY SUPPLIER.			

PRELIMINARY LANDSCAPE NOTES

1. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PLANT AND MATERIAL QUANTITIES. IF DISCREPANCIES OCCUR, DESIGN INTENT PREVAILS OVER QUANTITIES LISTED.
2. ALL PLANTS AND PLANTINGS SHALL CONFORM TO CITY OF CAMAS DESIGN STANDARDS AND TO AMERICAN STANDARDS FOR NURSERY STOCK ANSI Z60.1. PLANT IN ACCORDANCE WITH BEST PRACTICE INDUSTRY STANDARDS SUCH AS THOSE ADOPTED BY THE WESTERN WASHINGTON ASSOCIATION OF LANDSCAPE PROFESSIONALS (WALP).
3. REVISIONS OR SUBSTITUTIONS TO PLANTING, INCLUDING CHANGES AND LOCATION, QUANTITIES, SPECIES, SIZES, SPACING, ETC. DUE TO UNFORESEEN SITE CONDITIONS, PLANT AVAILABILITY, ETC. MAY BE MADE WITH APPROVAL WHERE ALLOWED BY THE CITY OF CAMAS DESIGN STANDARDS PRIOR TO FINAL INSTALLATION.
4. CENTER TREES IN LANDSCAPE STRIP WHERE POSSIBLE UNLESS OTHERWISE SHOWN. KEEP THE TRUNKS 3' O.C. MINIMUM FROM CURBS, SIDEWALKS, AND OTHER PAVING. 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 CONFLICTS WITH UTILITIES, HYDRANTS, LIGHT POLES, METERS, ETC.
5. HATCHED AREAS ARE MEANT TO CONVEY GENERAL PLANT LOCATION. PLANT COVERAGE, SPACING, AND LAYOUT SHALL BE CONSISTENT WITH THE SPACING LISTED IN THE PLANT SCHEDULE FOR FULL COVERAGE.
6. MULCH: APPLY 3" DEEP WELL-AGED MEDIUM GRIND OR SHREDDED DARK HEMLOCK OR FIR BARK MULCH UNDER AND AROUND ALL PLANTINGS. AVOID COVERING FOLIAGE OR ROOT CROWN OF PLANTS WITH BARK MULCH. PLANTS SHALL BE SET TO A DEPTH TO ACCOMMODATE MULCH APPLICATION.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING STREET TREES AND GROUNDCOVER ALONG THE FRONTAGE OF OPEN SPACE TRACTS AND SIDE LOTS. HOME OWNERS SHALL BE RESPONSIBLE FOR INSTALLING STREET TREES AND GROUNDCOVER ALONG LOT FRONTAGE AT TIME OF HOME CONSTRUCTION.
8. SOIL PREPARATION: GROWING MEDIUM IN ALL NEW PLANTING BEDS SHALL BE A MINIMUM OF 12" DEEP (6" OVER LAWN AREAS) OVER NON-COMPACTED, FREE-DRAINING SUBSOIL. EXISTING, NON-COMPACTED, NATIVE SOIL MAY COUNT TOWARDS THIS REQUIREMENT. REUSE SURFACE SOIL STOCKPILED ON THE SITE AND/OR IMPORT NEW TOPSOIL TO MAKE UP REQUIRED AMOUNTS FOR INSTALLATION. TOPSOIL SHALL BE FREE OF ROOTS, PLANTS, SOD, STONES (3/4" OR LARGER), CLAY LUMPS, DEBRIS, ALKALI SALTS, AND OTHER EXTRANEOUS MATERIALS HARMFUL TO PLANT GROWTH. SOIL PLACEMENT AND PLANTING SHALL OCCUR IN CONDITIONS THAT DO NOT RESULT IN OVER-COMPACTION OR EROSION, SATURATED SOIL OR OTHER CONDITIONS SUCH AS FREEZING OR ABOVE AVERAGE TEMPERATURES, RAINY CONDITIONS, ETC. SOIL SHALL BE IN FRIABLE (WORKABLE) CONDITION WHEN PLACED. FINISH GRADE OF NEW PLANTING AREAS SHALL SEAMLESSLY MEET FINISH GRADE SET IN GRADING PLANS.
9. ALL PLANTING AREAS SHALL BE AUTOMATICALLY IRRIGATED. LANDSCAPE CONTRACTOR TO 'DESIGN-BUILD' IRRIGATION SYSTEM AND SUBMIT PLANS TO CITY OF CAMAS AND THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO BEGINNING INSTALLATION. REFER TO CAMAS DESIGN STANDARDS MANUAL FOR IRRIGATION DETAILS.
10. ALL STREET TREE LOCATIONS ARE SUBJECT TO CHANGE DUE TO DRIVEWAY, UTILITIES, STREET LIGHTS, FIRE HYDRANTS, CATCH BASIN, ETC.
11. BENCH LOCATIONS SHOWN ARE CONCEPTUAL. FINAL LOCATIONS TO BE DETERMINED WITH FINAL LANDSCAPE PLAN.

TREE PLAN

GROSS SITE AREA:	382,892 SF (8.79 AC)
NET SITE AREA:	312,761 SF (7.18 AC)
TOTAL TREE UNITS REQUIRED (7.18 AC X 30):	216
EXISTING TREES RETAINED/(TREE UNITS):	373
PROPOSED SITE TREES/(TREE UNITS):	81/(81)
TOTAL TREE UNITS:	454
(RETAINED AND PROPOSED)	

*** NET AREA EXCLUDES OPEN SPACE AND CRITICAL AREA**

STREET TREES REQUIRED:	78
STREET TREES PROPOSED:	78

N

SCALE: 1"= 40 FEET

40 0 8 20 40

ORIGINAL PAGE SIZE: 24" x 36"

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ENGINEERING • SURVEYING • NATURAL RESOURCES
FORESTRY • PLANNING • LANDSCAPE ARCHITECTURE

PRELIMINARY LANDSCAPE PLAN
CAMAS WOODS II
CAMAS WOODS 3, LLC
CAMAS, WASHINGTON

STATE OF WASHINGTON
TIMOTHY E. BERTHOLF
2024
REGISTERED LANDSCAPE ARCHITECT
EXP. 12/12/2026

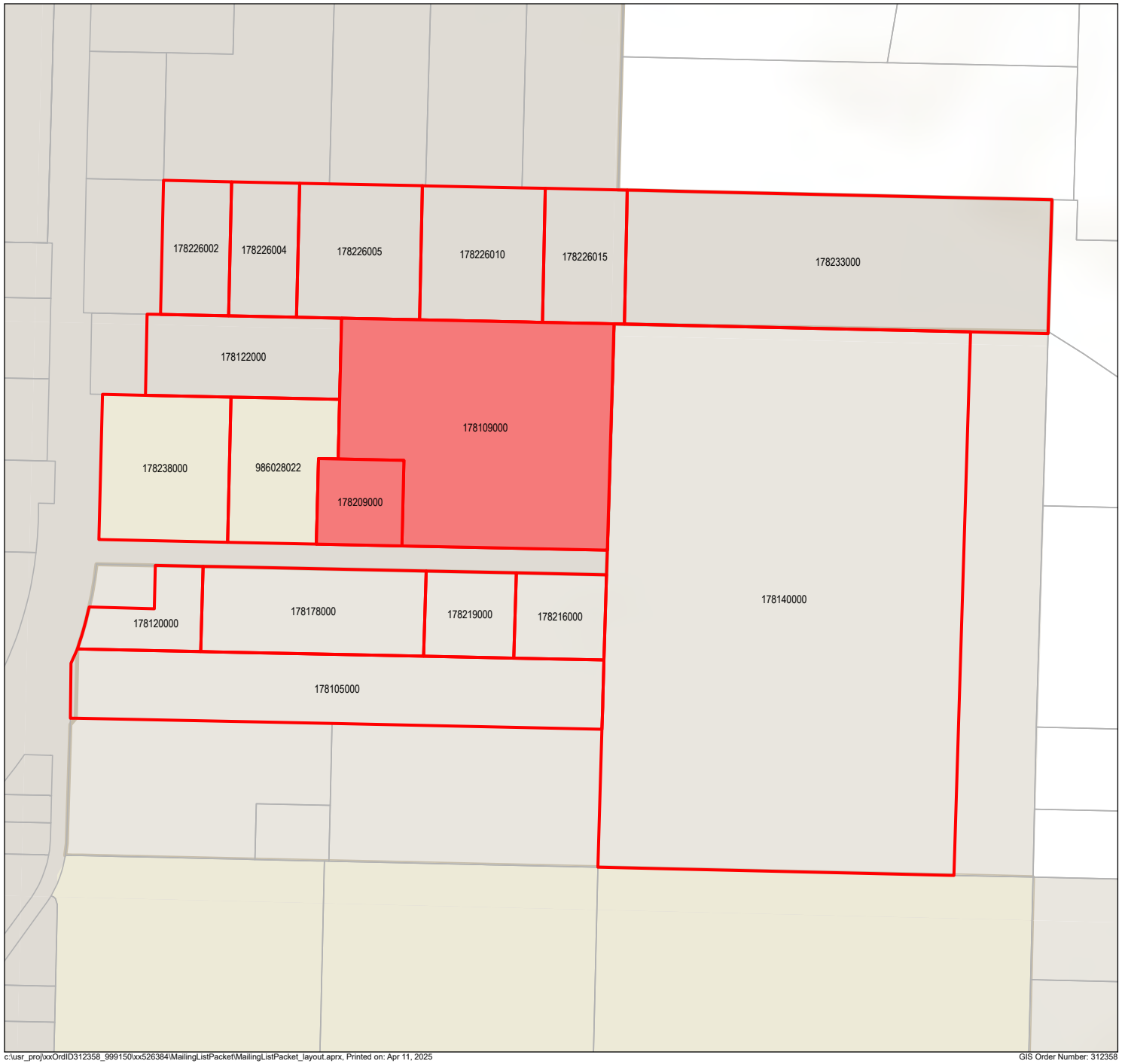
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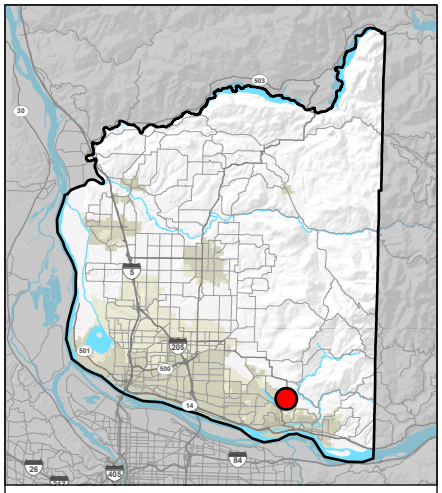
JOB NUMBER:	8397-01
DATE:	4/8/2025
DESIGNED BY:	MA
DRAWN BY:	EM
CHECKED BY:	TEB

P11.0

AKS DRAWING FILE: 8397-01 P11.0 LANDSCAPE PLAN.DWG | LAYOUT: P11.0

12. Mailing Labels





PID(s): 178109000, 178209000, 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.*

0 175 350 525 Feet

c:\usr_proj\xxOrdID312358_999150\xx526384\MailingListPacket\MailingListPacket_layout.aprx, Printed on: Apr 11, 2025

GIS Order Number: 312358

Owner Name	Mailing Address
CAMAS FOURSQUARE CHURCH	717 SE EVERETT RD, CAMAS, WA, 98607
CAMAS WOODS LLC	19120 SE 34TH ST STE 103, VANCOUVER, WA, 98683
CORPORATION OF THE PRESIDING BISHOP OF THE CHURCH OF JESUS	50 E NORTH TEMPLE RM 2225, SALT LAKE CITY, UT, 84150
ENVISION GROUP LLC	19408 NE 22ND CIR, VANCOUVER, WA, 98684
FOURSQUARE GOSPEL CHURCH INTERNATIONAL	1910 W SUNSET BLVD #200, LOS ANGELES, CA, 90026
HANSEN WESLEY B TRUSTEE	12909 SW 68TH PARKWAY STE 150, PORTLAND, OR, 97223
JOHNSTON LARRY K & JOHNSTON MELINDA S	5616 NE 399TH ST, LACENTER, WA, 98629
MASUOKA CAROLYN LEE & MASUOKA JASON KURTIS BENNETT	26519 SE 8TH ST, CAMAS, WA, 98607
MCCLURE DEBRA J	21320 NE DOLE VALLEY RD, YACOLT, WA, 98675
MEYER BRUCE A & MEYER CARMEN M	26601 SE 5TH ST, CAMAS, WA, 98607
ODELL ROBERT C & ODELL STEPHANIE	26703 SE 5TH ST, CAMAS, WA, 98607
PLACE BURTON F	26503 SE 8TH ST, CAMAS, WA, 98607
RAY MARIYA	26403 SE 5TH ST, CAMAS, WA, 98607
WALLER MARK	817 SE EVERETT RD, CAMAS, WA, 98607
WINDFALL HOLDINGS LLC	5616 NE 399TH ST, LACENTER, WA, 98629

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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:
Camas Woods II

2. Name of applicant:
Camas Woods 3, LLC

3. Address and phone number of applicant and contact person:

Applicant:	Contact:
Camas Woods 3, LLC	AKS Engineering & Forestry
Attn: Andy Swanson	Attn: Michael Andreotti
19120 SE 34th Street, Suite 103	9600 NE 126th Avenue, Suite 2520
Vancouver, WA 98683	Vancouver, WA 98682
andy@hsr-capital.com	andreottim@aks-eng.com
(503) 936-8514	(360) 882-0419

4. Date checklist prepared:
April 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, in the Spring of 2026. This project is not expected to include any phases and is anticipated to be completed in Fall of 2026. Full build out of homes will be based on market demands for the proposed housing type and potential timing of any required off-site improvements.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.
There is potential for future off-site roadway improvements related to this project. The improvements are already identified in City plans, but may be necessary as a result of this project. These off-site improvements would occur as separate projects.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.
- Geotechnical Engineering Report (Columbia West)
- Preliminary Stormwater Technical Information Report (AKS Engineering & Forestry (AKS))
- Transportation Impact Study (Kittleson & Associates)
- This SEPA Checklist (AKS)
- Archaeological Pre-Determination Report (Applied Archaeological Research, Inc. (AAR))
- Critical Areas Determination (Ecological Land Services (ELS))
- WSDOT Intersection Control Evaluation (ICE) Report for intersection improvements on state routes. (AKS)
- Class IV-G Forest Practices Permit (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.

The parcels to the east and south are currently under review for preliminary subdivision approval with the City of Camas under SUB24-1002 (Camas Woods). This subdivision will provide utility and roadway connections to this project. However, approval of SUB21-1002 is not necessary for the approval of this project.

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
- Class IV-G Forest Practices 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 proposes to subdivide two parcels into 78 attached townhome lots. The proposed subdivision will also include tracts for stormwater and open space. The site is ±8.79 acres and is currently used as single family residential.

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 26514 & 26416 SE 8th Street, Camas, WA 98607

Tax Lots: 178109-000 & 178209-000 in the NE ¼, S35, T2N, 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)?

The property is mostly flat aside from a single high point that runs from the termination of SE 8th Street right-of-way to the northwest corner of Parcel 178109-000. The site slopes gently, generally ±5 percent, to the northeast and to the southwest, with slopes up to ±15 percent near the northeast corner.

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 completed by Columbia West, the subject site contains fine-grained clays and silts along with pebble to cobble sized gravel. According to Clark County GIS, the majority of the site is mapped as having prime agricultural soils with areas of poor agricultural soil in the northern portion of Parcel 178140-000. However, by zoning the property for residential uses, the City determined that the subject site is better suited for residential uses other than agricultural uses. Soils will be moved or removed as necessary during site grading activities.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

There are no surface indications or history of unstable soils. Refer to the Geotechnical Engineering Study, prepared by Columbia West, dated February 18, 2025, for more information.

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 ±8.32 acres with estimated grading quantities of ±2,500 cubic yards of cut and ±4,700 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)?

Approximately 5.5 acres of the site, ±62.5 percent, of the gross 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

a. 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, employee, 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.

b. 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 include exhaust emissions from vehicles traveling along the adjacent streets, but these are not anticipated to impact this project. There are no other known sources or emissions or odors that will impact the site.

c. 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.

Ecological Land Services (ELS) completed a Critical Areas Report, on October 7, 2024, for Parcels 178109-000 & 178209-000. According to the assessment, there are no wetlands or streams present on-site. According to Clark County GIS, there are no wetlands in the immediate vicinity 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.

The proposed development will not occur within 200 feet of any described waters.

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.

No fill or dredge material will be placed or removed from any wetland as part of this project.

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.

No, this project does not involve the withdrawal of groundwater for any purpose.

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.

The project will decommission the existing on-site septic systems and existing on-site water well. No waste materials from septic tanks or other sources will be discharged into the ground 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.

Stormwater runoff will be produced from roadways, sidewalks, driveways, and homes. The runoff will contain material washed from those surfaces. Pollution generating stormwater runoff will be conveyed to two drainage basins. Stormwater runoff generated from the south half of the site will be collected on-site and conveyed to stormwater vaults for treatment, underground detention, and infiltration. An emergency overflow is provided to the existing ditch in SE 8th Street. Stormwater runoff generated by the north half of the site will be collected on-site and conveyed to stormwater vaults for treatment, underground detention, and infiltration. An emergency overflow is provided in open space Tract D . All stormwater will be discharged as allowed by the City of Camas Municipal Code (CMC). The planned stormwater system is designed to meet the Washington State Department of Ecology (ECY) 2024 Stormwater Management Manual for Western Washington (SWMMWW). Refer to the Preliminary Stormwater Design Report (TIR) and Preliminary Engineering Plans included with this application for more information.

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.

3) 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.

d. 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 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 to the greatest extent practicable.

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 multiple open space tracts that will retain existing native landscape and have new landscaping 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, Herb Robert, English Holly, burdock, and old man's beard exist on or 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.

Examples include:

birds: hawk, heron, eagle, songbirds, other:

Hawks and songbirds were observed on or near the site.

mammals: deer, bear, elk, beaver, other:

There are small mammals, such as mice and rabbits located on and near the site.

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.

Yes, the site lies within the boundary of the Pacific Flyway. The Pacific Flyway is a general migratory route for various ducks, geese, and other migratory waterfowl species.

d. Proposed measures to preserve or enhance wildlife, if any:

The proposed development will include multiple open space tracts for the protection of existing native landscapes. Additionally, landscaping will be installed on each lot, including the future single-family residential lots. The existing and proposed landscaping will provide habitat for animals.

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 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. Environmental hazards are limited to standard risks associated with site grading and construction.

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. There are existing septic systems and an existing well on site that will be decommissioned during construction.

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.

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 development, church, and schools. 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, 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 CMC.

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 current use of the site is single family residential. The surrounding properties are in use as residential to the north, east, and south, and a church is to the west. 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 normal business operations.

c. Describe any structures on the site.

There are multiple existing structures on-site, including two homes, and various outbuildings.

d. Will any structures be demolished? If so, what?

All existing structures on-site will be demolished for the proposed development.

e. What is the current zoning classification of the site?

The project site is zoned North Shore Higher Density (HD-NS).

f. What is the current comprehensive plan designation of the site?

The current comprehensive plan designation is HD-NS.

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable, the project site is not in a shoreline master program designation.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Ecological Land Services (ELS) performed a Critical Areas Determination on the subject site and determined that no wetlands or other critical areas were identified onsite. According to Clark County GIS, there are no critical areas or wetlands within the site boundary.

i. Approximately how many people would reside or work in the completed project?

The proposed development includes 78 single family units. Assuming 2.7 people per unit, ±211 people will reside in the completed project.

j. Approximately how many people would the completed project displace?

The exact number of people residing in the existing residences is unknown. Assuming 2.7 people per residence, ±6 people will be displaced by the completed project.

k. Proposed measures to avoid or reduce displacement impacts, if any:

More residential units are proposed than being removed with this project.

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. Additionally, the project will go through the City application review processes.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

Proposed measures include approval through the City of Camas Type III Subdivision Review and Final Engineering review process.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

The proposed development includes 78 single family units. The proposed units will be middle income housing.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

The project will remove two middle-income dwellings units.

c. Proposed measures to reduce or control housing impacts, if any:

The proposed project will provide a net increase of 76 middle-income housing units.

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 HD-NS 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. 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.

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

- Camas High School (ball fields and tennis courts) is located ±0.15 miles to the south.
- Lacamas Park is located ±0.95 miles to the south.
- Fallen Leaf Park is located ±1.2 miles to the south.
- Lacamas Lake is located ±0.9 miles to the west.
- A trail network around Lacamas Lake and Lacamas Park is located ±0.9 miles to the west and 0.95 miles to the south.

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 multiple open spaces with various amenities for residents. 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 Report, completed by Applied Archaeological Research (AAR) on November 5, 2024, a structure exists on-site that is over 45 years old; however, the structure does not meet the requirements to be eligible for listing in a national, state, or local preservation register.

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.

An Archaeological Predeterminations Report was completed by AAR on November 5, 2024. No artifacts were observed on the surface or subsurface of the site. AAR does not recommend any additional archaeological work within the project area.

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 Predeterminations Report, 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 10 test pits.

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.

No archaeological resources were found during the predetermination study done by AAR. Should any archaeological, cultural, or historic resource be found on the project site, excavation will stop, and written permits will be obtained from Washington State Department of Archaeology and Historic Preservation (DAHP) before any activities resume.

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 SE 8th Street. The proposed development will construct "A" Street along the south property frontage with SE 8th Street to provide access to the site. Half street improvements will be performed on SE 8th Street east to SE Everett Street (SR 500). At the intersection of SE 8th Street and SR 500, right of way improvements will occur.

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?

No, this site is not served by public transit. The nearest transit stop is about ±2 miles south of the site near the intersection of NE Everett Street and NE 3rd Avenue.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

The proposed project includes single-family units. Each single-family lot will be provided with a minimum of two parking spaces (1 driveway space and 1 garage space). Sixteen (16) additional stalls located in tracts throughout the development will be installed.

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 5 new roadways to provide access to all the lots within the development. SE 8th Street is identified as a North Shore Collector Street with an existing 60-foot right-of-way. Half-width frontage improvements will be constructed along the site frontage including a 28-foot paved width, 7-foot planter strip and 6-foot sidewalk. SE 7th Avenue, "A" Drive, SE 6th Avenue, and N Johnson Street are identified as North Shore Local Street and will be constructed with a 54-foot right-of-way, 28-foot paved width, 7-foot planter strips and 6-foot sidewalks.

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 water, air , or rail transportation 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). The TIS used a subdivision with up to 78 attached single-family lots. Trip generation was calculated using the *ITE Trip Generation Manual 11th Edition*. The TIS states the proposed development will generate 544 average daily trips (ADT) with 35 a.m. peak hour trips and 43 p.m. peak hour trips

The site contains two existing single-family residences. These existing residences generate 20 ADT with two a.m. peak hour trips and two p.m. peak hour trips. Therefore, the proposed development will generate a net of 524 new ADT with 33 new a.m. peak hour trips and 41 new p.m. peak hour 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:

The TIS identifies off-site intersection improvements to mitigate transportation impacts. Proportionate share fees and transportation impact fees will also be paid with the project.

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 76 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:

The project will decommission the existing septic systems and water well on-site and extend electrical, water, communication, and sanitary sewer into the property to serve the development.

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 a water main in SE 8th Street from the Camas Woods subdivision to the east and connect to the existing water main in SE Everett Street. Water will be extended into the site from the main in SE 8th Street and loop the development to provide service to the lots. Sanitary sewer for the site will be through individual grinder pumps for each lot, with connections to a force main installed in SE 8th Street. That force main will continue west to SE Everett Street and WSDOT right of way, then head south along SE Everett Street and connect to a pressure lateral that will be installed with the Camas Woods subdivision. The development will also extend three-phase power lines into the development to provide electrical service to each lot.

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: 4/15/25

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

May 6, 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: Camas Woods Phase II (SUB25-1003) Application Completeness Review

Dear Michael Andreotti,

Thank you for your application submittal for Camas Woods Phase II. 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 4/15/2025 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:

- Development Sign per CMC 18.55.110.H
    - Please provide photo proof of posted sign

Additional items not necessary for completeness:

- Proof of Archaeological Predetermination Report mailed to tribes

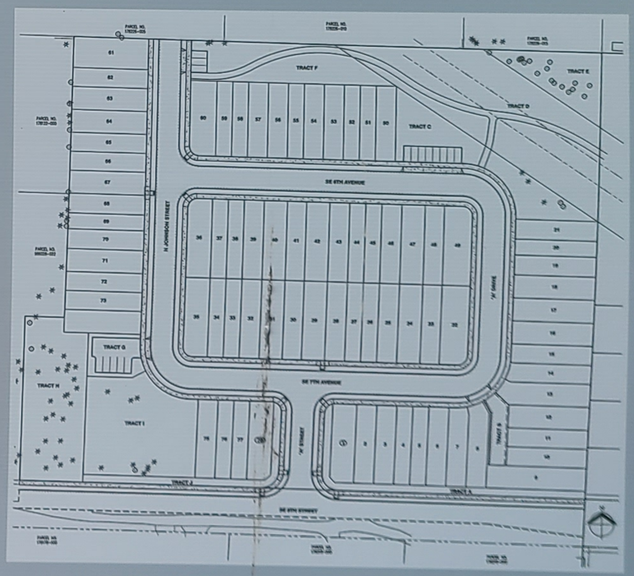
If you have any questions, please contact me at mcoulter@cityofcamas.us
Respectfully,

Madeline Coulter, AICP
Planner

PROPOSED DEVELOPMENT

Camas Woods II

8.79 Acres
78 Lot Subdivision



FOR MORE INFORMATION: Madeline Coulter, City of Camas (360) 817-1568

PUBLIC HEARING REQUIRED:

July 31, 2025, at 5:00 p.m.

PERMITS: Type III Subdivision; SEPA; Critical Areas

APPLICANT: Camas Woods 3, LLC
CONTACT NO: (503) 936-8514

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

May 9, 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: Camas Woods Phase II (SUB25-1003) Application Completeness Review

Dear Michael Andreotti,

The purpose of this letter is to inform you that the above application submitted on 4/15/2025, and resubmitted on 5/8/2025, 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.

If you have any questions, please email me: mcoulter@cityofcamas.us

Respectfully,

Madeline Coulter, AICP
Planner

In re: Camas Wood Subdivision Phase II

) NO. SUB25-1003
)
) AFFIDAVIT OF MAILING
)
)
)
)
)
Respondent.)

STATE OF WASHINGTON)
) ss.
CLARK COUNTY)

I, Carey Certo, on oath says:

I, Carey Certo, on May 21, 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 22nd day of May, 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, WA
My appointment expires: 10/1/2028

ENVISION GROUP LLC
19408 NE 22ND CIR
VANCOUVER, WA 98684

JOHNSTON LARRY K & JOHNSTON MELINDA S
5616 NE 399TH ST
LACENTER, WA 98629

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1910 W SUNSET BLVD #200
LOS ANGELES, CA 90026

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NOTICE OF APPLICATION
Camas Woods Subdivision Phase II

(File no. SUB25-1003)

Consolidated Files: State Environmental Policy Act and Archaeological Review

NOTICE IS HEREBY GIVEN that an application for the "Camas Woods Subdivision Phase II", a 78-lot subdivision was received on April 15, 2025, resubmitted on May 8, 2025, and deemed technically complete on May 9, 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.

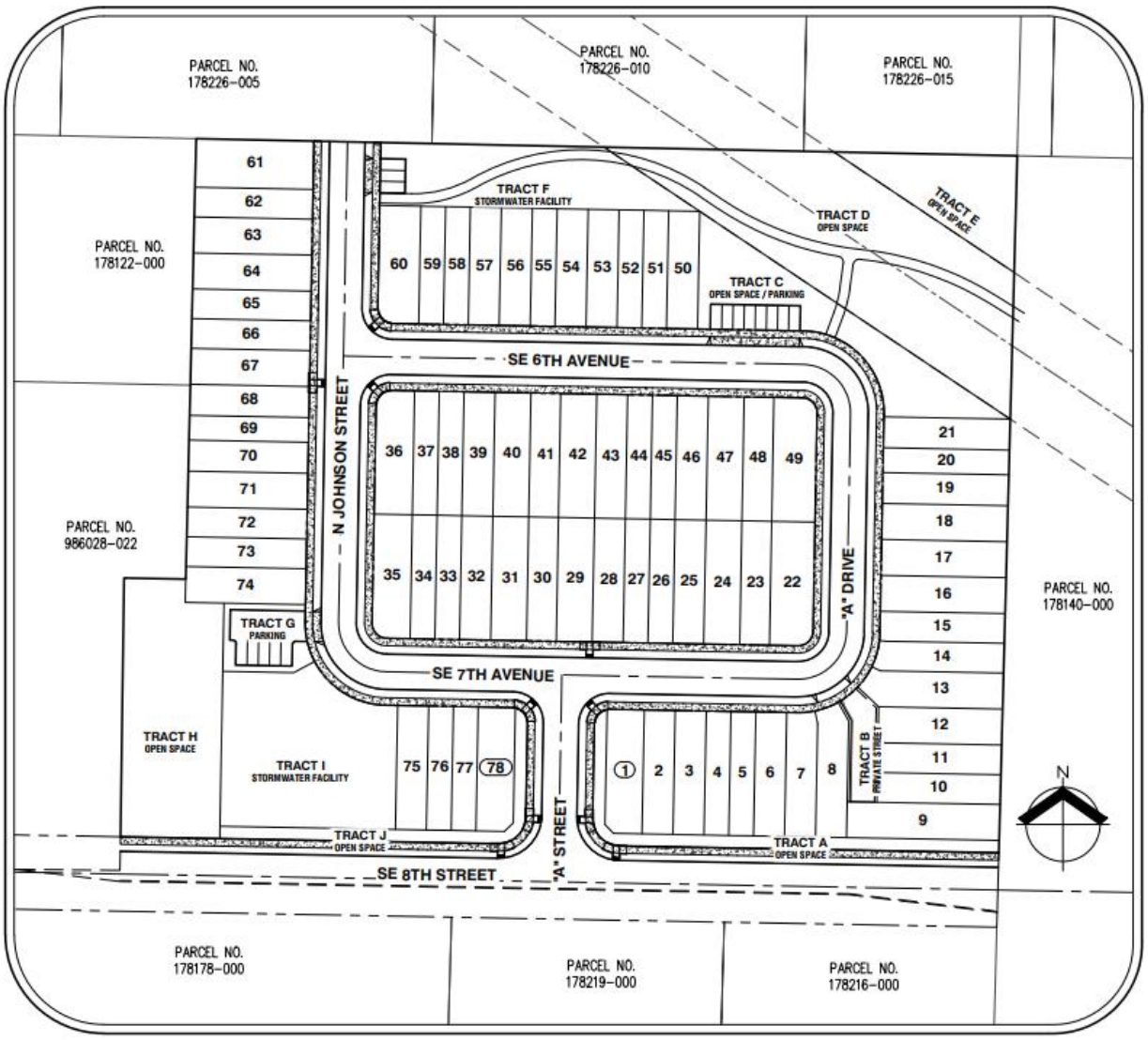
Location: The +/-8.79-acre site is zoned North Shore Higher Density Residential (HD-NS) in the City of Camas. The site is located at 26416 & 26514 SE 8th Street in the NE ¼ of Section 35 Township 2 North, Range 3 East, Camas, WA, Parcel Numbers: 178209000 & 178109000

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 Sutherland, Planner, at (360) 817-1568 or by email at communitydevelopment@cityofcamas.us.

Published in the Post Record on May 22, 2025 Legal Publication #1009030
Posted at Camas City Hall, Camas Library, City of Camas website at: http://www.cityofcamas.us
Mailed to property owners within 300-feet on May 21, 2025

Preliminary Plat for Camas Woods Phase II (SUB25-1003)



NOTICE OF APPLICATION
Camas Woods Subdivision Phase II

(File no. SUB25-1003)

Consolidated Files: State Environmental Policy Act and Archaeological Review

NOTICE IS HEREBY GIVEN that an application for the "Camas Woods Subdivision Phase II", a 78-lot subdivision was received on April 15, 2025, resubmitted on May 8, 2025, and deemed technically complete on May 9, 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.

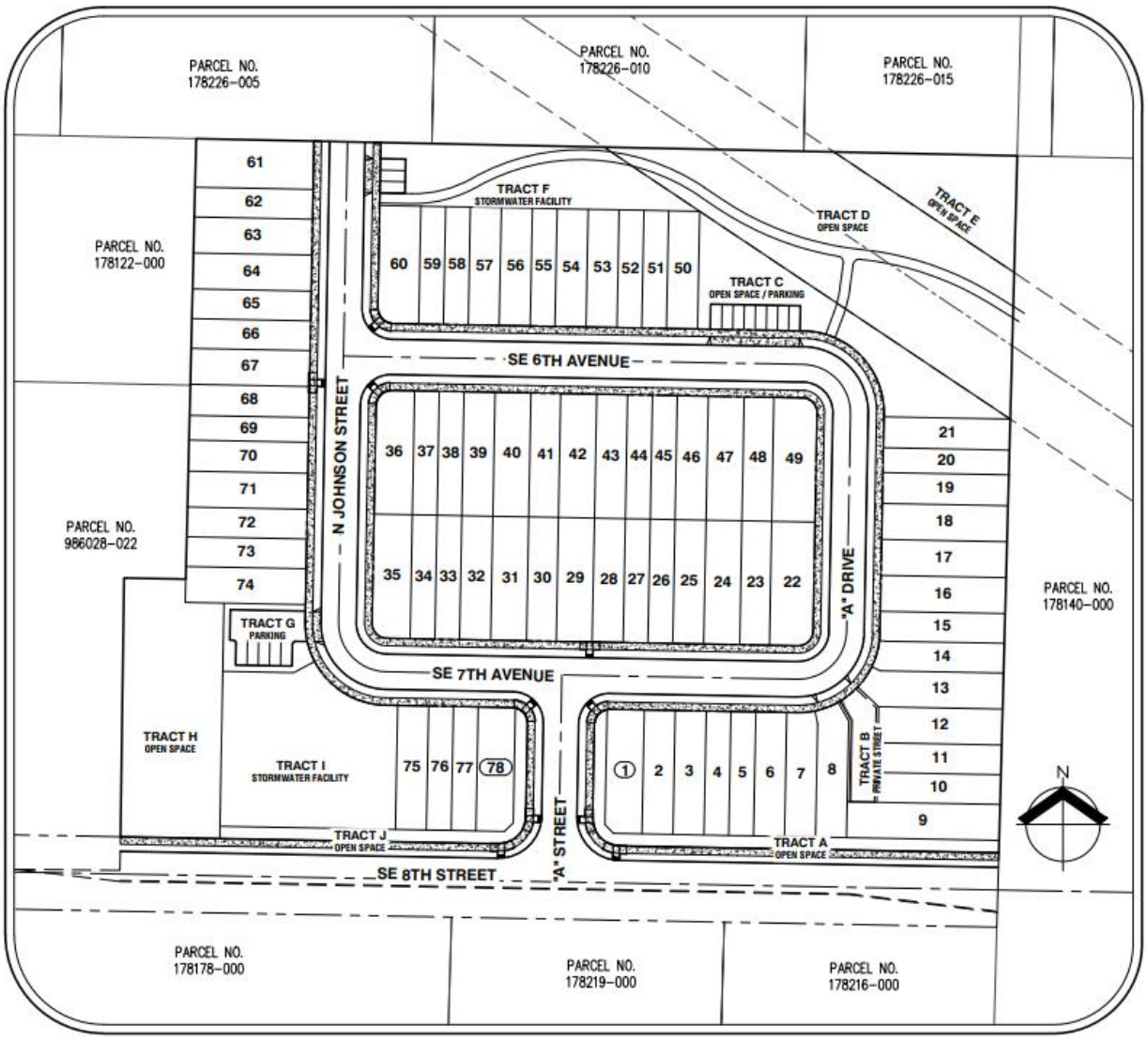
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Preliminary Plat for Camas Woods Phase II (SUB25-1003)



In re: Camas Woods II

) NO. SUB25-1003
)
) AFFIDAVIT OF MAILING
)
)
)
)
)
Respondent.)

STATE OF WASHINGTON)
) ss.
CLARK COUNTY)

I, Carey Certo, on oath says:

I, Carey Certo, on June 11, 2025, I directed a true and correct copy of the SEPA Mitigated Determination of Non-Significance 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 12th day of June, 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: 10/1/28

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State Environmental Policy Act
Mitigated Determination of Non-Significance

CASE NO: SUB25-1003 Camas Woods Phase II

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 78-lot subdivision.

Location: 26416 & 26514 SE 8th Street Camas, WA 98607
Tax Parcels 178209000 & 178109000

Legal Description: THE PROJECT IS LOCATED IN THE CITY OF CAMAS IN THE NE ¼ of Section 35, Township 2 North, Range 3 EAST OF THE WILLAMETTE MERIDIAN

SEPA Determination: Mitigated Determination of Non-Significance (MDNS)

Comment Deadline: **June 26, 2025, 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 June 12, 2025 Legal Publication #1013130
Mailed to property owners within 300-feet on June 11, 2025
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:

A. Background

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

The applicant's SEPA checklist was submitted with the land-use application in April 2025. WSDOT requires an Intersection Control Evaluation (ICE) Report for intersection improvements on state routes (SRs).

The applicant listed the WSDOT required ICE Report in the list of prepared or to be prepared environmental information, however, the ICE Report was not submitted with the application.

Condition: Prior to engineering construction plan application, the applicant shall submit the Intersection Control Evaluation (ICE) Report for intersection improvements on state routes to the Washington State Department of Transportation (WSDOT) and the City of Camas (COC).

Condition: Prior to final engineering plan approval, the applicant shall address all comments from WSDOT and COC after said reviews of the ICE Report.

Date of Publication & Comment Period:

Publication date of this MDNS is **June 12, 2025**, 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 **June 26, 2025**. Comments may be sent by email to communitydevelopment@cityofcamas.us or regular mail to:

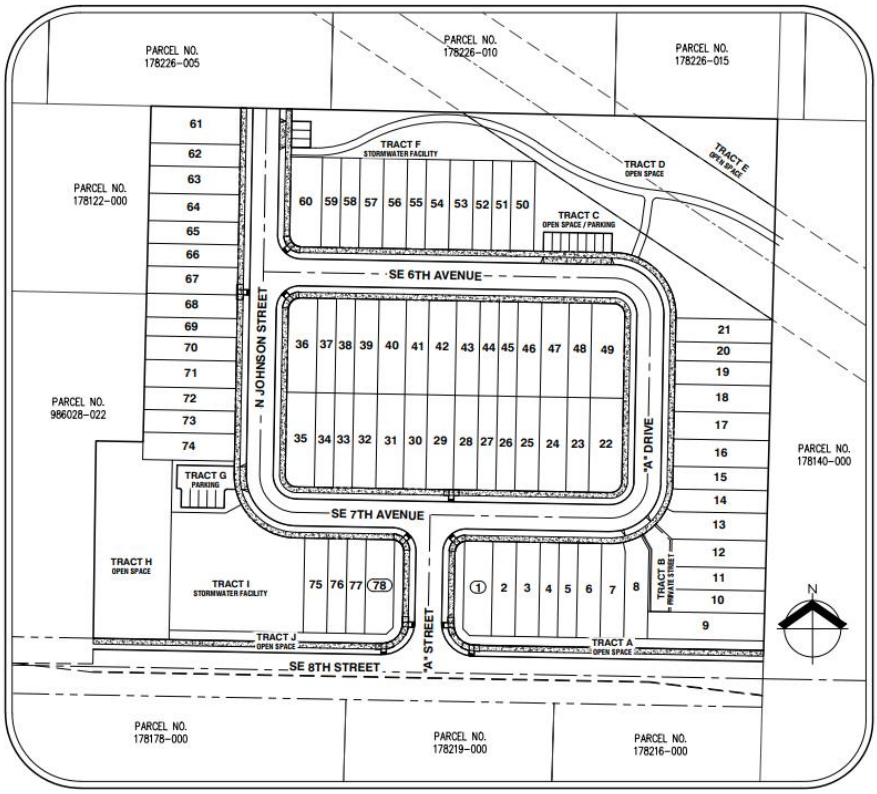
City of Camas SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607

Responsible Official: Robert Maul (360) 817-1568

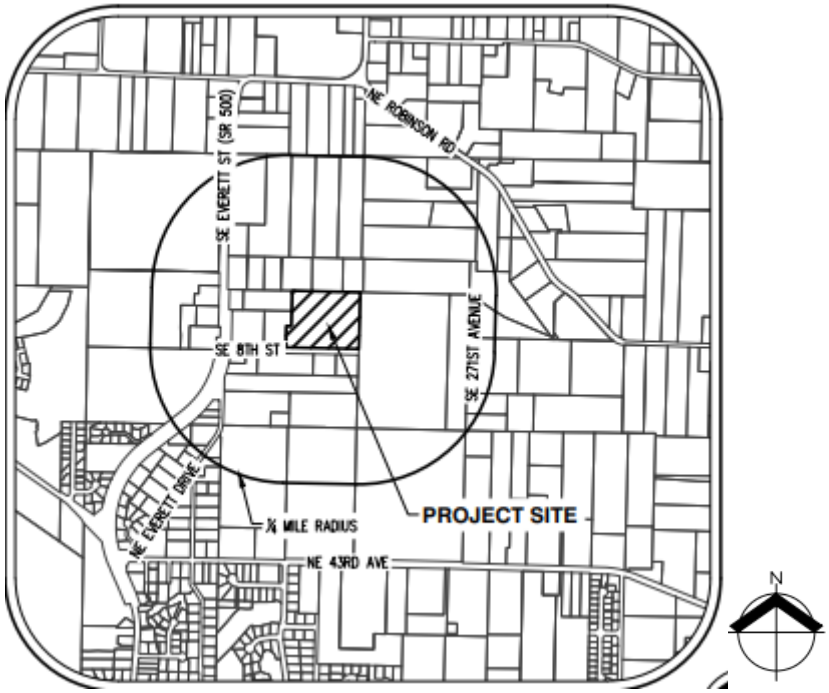
Robert Maul, Planning Manager and Responsible Official

June 12, 2025
Date of publication

Preliminary Site Plan (SUB25-1003)



Vicinity Map



State Environmental Policy Act
Mitigated Determination of Non-Significance

CASE NO: SUB25-1003 Camas Woods Phase II

APPLICANT: AKS Engineering
Attn: Michael Andreotti
9600 NE 126th Ave Suite 2520
Vancouver, WA 98682

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SEPA Determination: Mitigated Determination of Non-Significance (MDNS)

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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.

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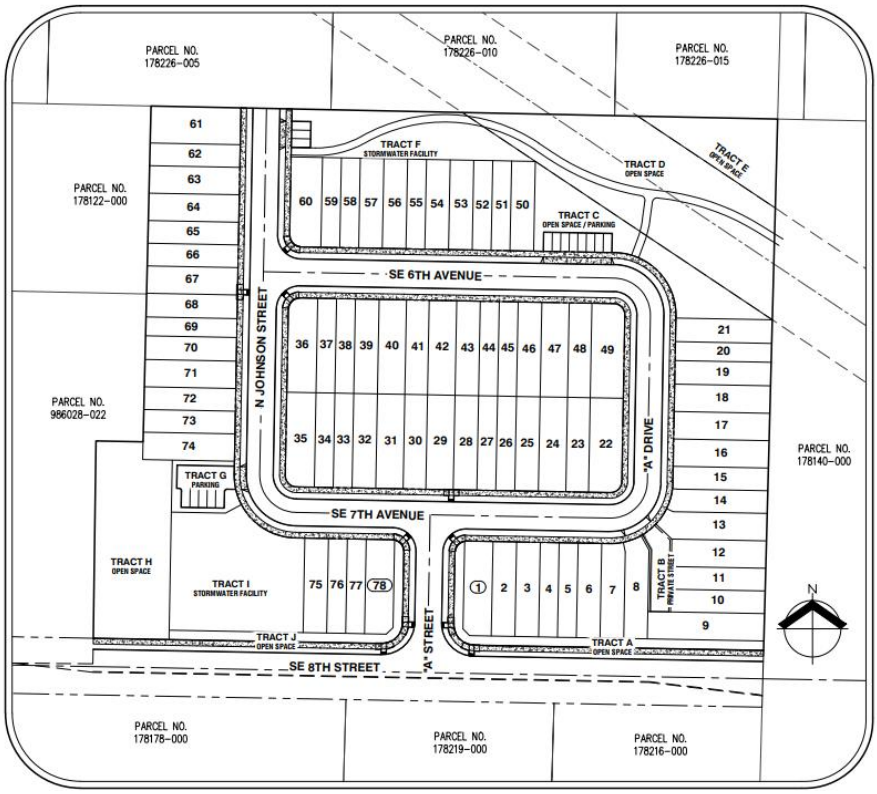
City of Camas SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607

Responsible Official: Robert Maul (360) 817-1568

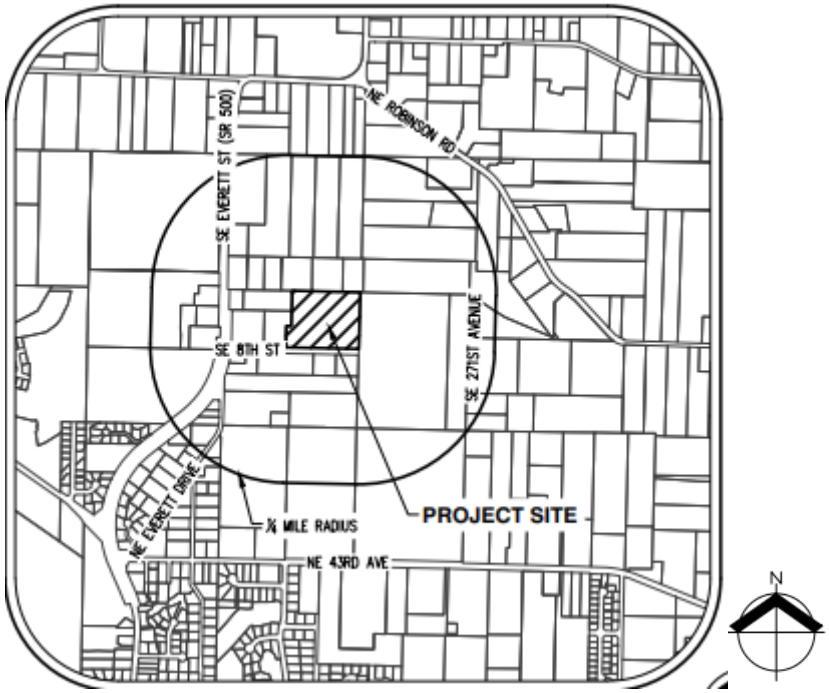
Robert Maul, Planning Manager and Responsible Official

June 12, 2025
Date of publication

Preliminary Site Plan (SUB25-1003)



Vicinity Map



COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

Date Published: June 12, 2025

To Whom It May Concern:

Please find enclosed a Mitigated Determination of Non-Significance (MDNS) for **Camas Woods Phase II (SUB25-1003)** 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 Interim Director, Rob Charles
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: SUB25-1003 Camas Woods Phase II

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 78-lot subdivision.

Location: 26416 & 26514 SE 8th Street Camas, WA 98607
Tax Parcels 178209000 & 178109000

Legal Description: THE PROJECT IS LOCATED IN THE CITY OF CAMAS IN THE NE ¼ of Section 35, Township 2 North, Range 3 EAST OF THE WILLAMETTE MERIDIAN

SEPA Determination: Mitigated Determination of Non-Significance (MDNS)

Comment Deadline: **June 26, 2025, 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).

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:

A. Background

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

The applicant's SEPA checklist was submitted with the land-use application in April 2025. WSDOT requires an Intersection Control Evaluation (ICE) Report for intersection improvements on state routes (SRs).

The applicant listed the WSDOT required ICE Report in the list of prepared or to be prepared environmental information, however, the ICE Report was not submitted with the application.

Condition: Prior to engineering construction plan application, the applicant shall submit the Intersection Control Evaluation (ICE) Report for intersection improvements on state routes to the Washington State Department of Transportation (WSDOT) and the City of Camas (COC).

Condition: Prior to final engineering plan approval, the applicant shall address all comments from WSDOT and COC after said reviews of the ICE Report.

Date of Publication & Comment Period:

Publication date of this MDNS is **June 12, 2025**, 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 **June 26, 2025**. Comments may be sent by email to communitydevelopment@cityofcamas.us or regular mail to:

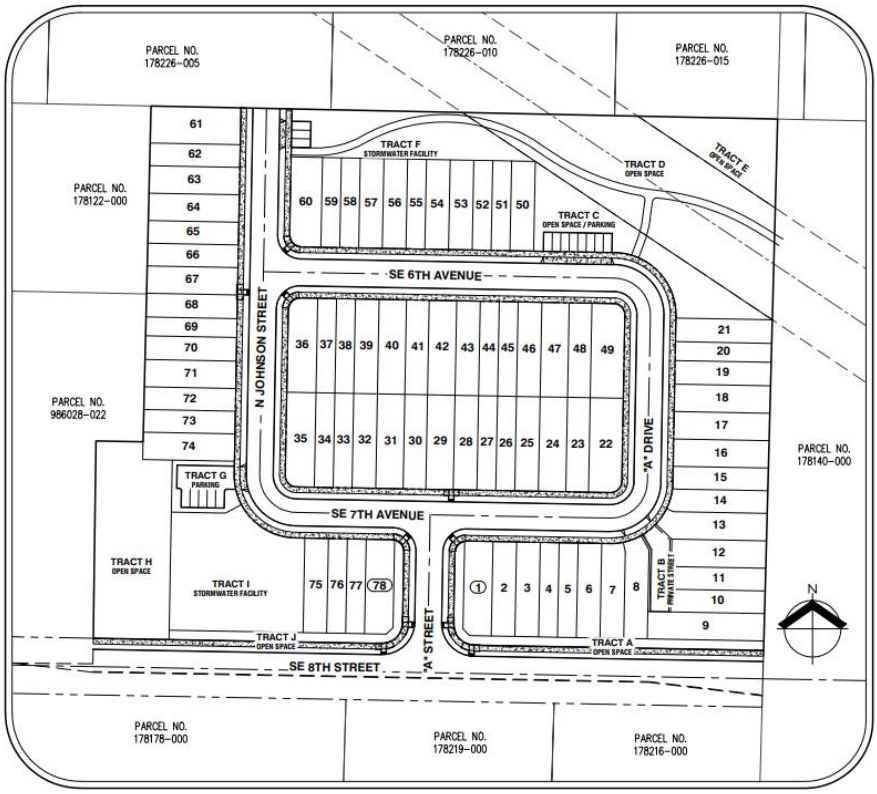
City of Camas SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607

Responsible Official: Robert Maul (360) 817-1568

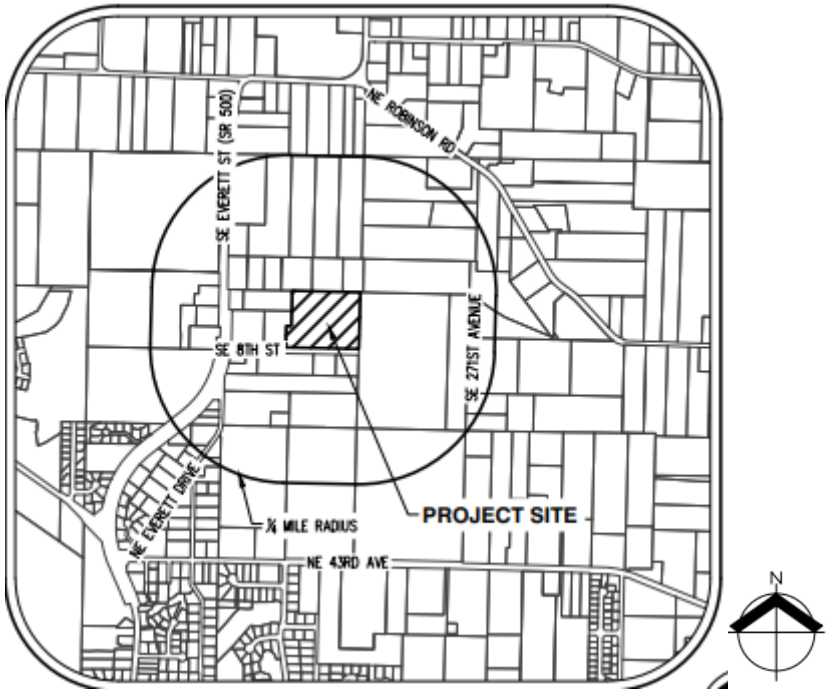
Robert Maul, Planning Manager and Responsible Official

June 12, 2025
Date of publication

Preliminary Site Plan (SUB25-1003)



Vicinity Map



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:
Camas Woods II

2. Name of applicant:
Camas Woods 3, LLC

3. Address and phone number of applicant and contact person:

Applicant:	Contact:
Camas Woods 3, LLC	AKS Engineering & Forestry
Attn: Andy Swanson	Attn: Michael Andreotti
19120 SE 34th Street, Suite 103	9600 NE 126th Avenue, Suite 2520
Vancouver, WA 98683	Vancouver, WA 98682
andy@hsr-capital.com	andreottim@aks-eng.com
(503) 936-8514	(360) 882-0419

4. Date checklist prepared:
April 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, in the Spring of 2026. This project is not expected to include any phases and is anticipated to be completed in Fall of 2026. Full build out of homes will be based on market demands for the proposed housing type and potential timing of any required off-site improvements.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.
There is potential for future off-site roadway improvements related to this project. The improvements are already identified in City plans, but may be necessary as a result of this project. These off-site improvements would occur as separate projects.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.
- Geotechnical Engineering Report (Columbia West)
- Preliminary Stormwater Technical Information Report (AKS Engineering & Forestry (AKS))
- Transportation Impact Study (Kittleson & Associates)
- This SEPA Checklist (AKS)
- Archaeological Pre-Determination Report (Applied Archaeological Research, Inc. (AAR))
- Critical Areas Determination (Ecological Land Services (ELS))
- WSDOT Intersection Control Evaluation (ICE) Report for intersection improvements on state routes. (AKS)
- Class IV-G Forest Practices Permit (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.

The parcels to the east and south are currently under review for preliminary subdivision approval with the City of Camas under SUB24-1002 (Camas Woods). This subdivision will provide utility and roadway connections to this project. However, approval of SUB21-1002 is not necessary for the approval of this project.

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
- Class IV-G Forest Practices 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 proposes to subdivide two parcels into 78 attached townhome lots. The proposed subdivision will also include tracts for stormwater and open space. The site is ±8.79 acres and is currently used as single family residential.

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 26514 & 26416 SE 8th Street, Camas, WA 98607

Tax Lots: 178109-000 & 178209-000 in the NE ¼, S35, T2N, 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)?

The property is mostly flat aside from a single high point that runs from the termination of SE 8th Street right-of-way to the northwest corner of Parcel 178109-000. The site slopes gently, generally ±5 percent, to the northeast and to the southwest, with slopes up to ±15 percent near the northeast corner.

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 completed by Columbia West, the subject site contains fine-grained clays and silts along with pebble to cobble sized gravel. According to Clark County GIS, the majority of the site is mapped as having prime agricultural soils with areas of poor agricultural soil in the northern portion of Parcel 178140-000. However, by zoning the property for residential uses, the City determined that the subject site is better suited for residential uses other than agricultural uses. Soils will be moved or removed as necessary during site grading activities.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

There are no surface indications or history of unstable soils. Refer to the Geotechnical Engineering Study, prepared by Columbia West, dated February 18, 2025, for more information.

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 ±8.32 acres with estimated grading quantities of ±2,500 cubic yards of cut and ±4,700 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)?

Approximately 5.5 acres of the site, ±62.5 percent, of the gross 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

a. 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, employee, 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.

b. 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 include exhaust emissions from vehicles traveling along the adjacent streets, but these are not anticipated to impact this project. There are no other known sources or emissions or odors that will impact the site.

c. 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.

Ecological Land Services (ELS) completed a Critical Areas Report, on October 7, 2024, for Parcels 178109-000 & 178209-000. According to the assessment, there are no wetlands or streams present on-site. According to Clark County GIS, there are no wetlands in the immediate vicinity 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.

The proposed development will not occur within 200 feet of any described waters.

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.

No fill or dredge material will be placed or removed from any wetland as part of this project.

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.

No, this project does not involve the withdrawal of groundwater for any purpose.

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.

The project will decommission the existing on-site septic systems and existing on-site water well. No waste materials from septic tanks or other sources will be discharged into the ground 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.

Stormwater runoff will be produced from roadways, sidewalks, driveways, and homes. The runoff will contain material washed from those surfaces. Pollution generating stormwater runoff will be conveyed to two drainage basins. Stormwater runoff generated from the south half of the site will be collected on-site and conveyed to stormwater vaults for treatment, underground detention, and infiltration. An emergency overflow is provided to the existing ditch in SE 8th Street. Stormwater runoff generated by the north half of the site will be collected on-site and conveyed to stormwater vaults for treatment, underground detention, and infiltration. An emergency overflow is provided in open space Tract D . All stormwater will be discharged as allowed by the City of Camas Municipal Code (CMC). The planned stormwater system is designed to meet the Washington State Department of Ecology (ECY) 2024 Stormwater Management Manual for Western Washington (SWMMWW). Refer to the Preliminary Stormwater Design Report (TIR) and Preliminary Engineering Plans included with this application for more information.

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.

3) 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.

d. 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 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 to the greatest extent practicable.

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 multiple open space tracts that will retain existing native landscape and have new landscaping 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, Herb Robert, English Holly, burdock, and old man's beard exist on or 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.

Examples include:

birds: hawk, heron, eagle, songbirds, other:

Hawks and songbirds were observed on or near the site.

mammals: deer, bear, elk, beaver, other:

There are small mammals, such as mice and rabbits located on and near the site.

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.

Yes, the site lies within the boundary of the Pacific Flyway. The Pacific Flyway is a general migratory route for various ducks, geese, and other migratory waterfowl species.

d. Proposed measures to preserve or enhance wildlife, if any:

The proposed development will include multiple open space tracts for the protection of existing native landscapes. Additionally, landscaping will be installed on each lot, including the future single-family residential lots. The existing and proposed landscaping will provide habitat for animals.

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 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. Environmental hazards are limited to standard risks associated with site grading and construction.

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. There are existing septic systems and an existing well on site that will be decommissioned during construction.

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.

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 development, church, and schools. 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, 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 CMC.

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 current use of the site is single family residential. The surrounding properties are in use as residential to the north, east, and south, and a church is to the west. 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 normal business operations.

c. Describe any structures on the site.

There are multiple existing structures on-site, including two homes, and various outbuildings.

d. Will any structures be demolished? If so, what?

All existing structures on-site will be demolished for the proposed development.

e. What is the current zoning classification of the site?

The project site is zoned North Shore Higher Density (HD-NS).

f. What is the current comprehensive plan designation of the site?

The current comprehensive plan designation is HD-NS.

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable, the project site is not in a shoreline master program designation.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Ecological Land Services (ELS) performed a Critical Areas Determination on the subject site and determined that no wetlands or other critical areas were identified onsite. According to Clark County GIS, there are no critical areas or wetlands within the site boundary.

i. Approximately how many people would reside or work in the completed project?

The proposed development includes 78 single family units. Assuming 2.7 people per unit, ±211 people will reside in the completed project.

j. Approximately how many people would the completed project displace?

The exact number of people residing in the existing residences is unknown. Assuming 2.7 people per residence, ±6 people will be displaced by the completed project.

k. Proposed measures to avoid or reduce displacement impacts, if any:

More residential units are proposed than being removed with this project.

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. Additionally, the project will go through the City application review processes.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

Proposed measures include approval through the City of Camas Type III Subdivision Review and Final Engineering review process.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

The proposed development includes 78 single family units. The proposed units will be middle income housing.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

The project will remove two middle-income dwellings units.

c. Proposed measures to reduce or control housing impacts, if any:

The proposed project will provide a net increase of 76 middle-income housing units.

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 HD-NS 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. 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.

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

- Camas High School (ball fields and tennis courts) is located ±0.15 miles to the south.
- Lacamas Park is located ±0.95 miles to the south.
- Fallen Leaf Park is located ±1.2 miles to the south.
- Lacamas Lake is located ±0.9 miles to the west.
- A trail network around Lacamas Lake and Lacamas Park is located ±0.9 miles to the west and 0.95 miles to the south.

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 multiple open spaces with various amenities for residents. 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 Report, completed by Applied Archaeological Research (AAR) on November 5, 2024, a structure exists on-site that is over 45 years old; however, the structure does not meet the requirements to be eligible for listing in a national, state, or local preservation register.

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.

An Archaeological Predeterminations Report was completed by AAR on November 5, 2024. No artifacts were observed on the surface or subsurface of the site. AAR does not recommend any additional archaeological work within the project area.

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 Predeterminations Report, 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 10 test pits.

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.

No archaeological resources were found during the predetermination study done by AAR. Should any archaeological, cultural, or historic resource be found on the project site, excavation will stop, and written permits will be obtained from Washington State Department of Archaeology and Historic Preservation (DAHP) before any activities resume.

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 SE 8th Street. The proposed development will construct "A" Street along the south property frontage with SE 8th Street to provide access to the site. Half street improvements will be performed on SE 8th Street east to SE Everett Street (SR 500). At the intersection of SE 8th Street and SR 500, right of way improvements will occur.

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?

No, this site is not served by public transit. The nearest transit stop is about ±2 miles south of the site near the intersection of NE Everett Street and NE 3rd Avenue.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

The proposed project includes single-family units. Each single-family lot will be provided with a minimum of two parking spaces (1 driveway space and 1 garage space). Sixteen (16) additional stalls located in tracts throughout the development will be installed.

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 5 new roadways to provide access to all the lots within the development. SE 8th Street is identified as a North Shore Collector Street with an existing 60-foot right-of-way. Half-width frontage improvements will be constructed along the site frontage including a 28-foot paved width, 7-foot planter strip and 6-foot sidewalk. SE 7th Avenue, "A" Drive, SE 6th Avenue, and N Johnson Street are identified as North Shore Local Street and will be constructed with a 54-foot right-of-way, 28-foot paved width, 7-foot planter strips and 6-foot sidewalks.

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 water, air , or rail transportation 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). The TIS used a subdivision with up to 78 attached single-family lots. Trip generation was calculated using the *ITE Trip Generation Manual 11th Edition*. The TIS states the proposed development will generate 544 average daily trips (ADT) with 35 a.m. peak hour trips and 43 p.m. peak hour trips

The site contains two existing single-family residences. These existing residences generate 20 ADT with two a.m. peak hour trips and two p.m. peak hour trips. Therefore, the proposed development will generate a net of 524 new ADT with 33 new a.m. peak hour trips and 41 new p.m. peak hour 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:

The TIS identifies off-site intersection improvements to mitigate transportation impacts. Proportionate share fees and transportation impact fees will also be paid with the project.

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 76 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:

The project will decommission the existing septic systems and water well on-site and extend electrical, water, communication, and sanitary sewer into the property to serve the development.

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 a water main in SE 8th Street from the Camas Woods subdivision to the east and connect to the existing water main in SE Everett Street. Water will be extended into the site from the main in SE 8th Street and loop the development to provide service to the lots. Sanitary sewer for the site will be through individual grinder pumps for each lot, with connections to a force main installed in SE 8th Street. That force main will continue west to SE Everett Street and WSDOT right of way, then head south along SE Everett Street and connect to a pressure lateral that will be installed with the Camas Woods subdivision. The development will also extend three-phase power lines into the development to provide electrical service to each lot.

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: 4/15/25

Carey Certo

From: Community Development Email
Sent: Friday, June 13, 2025 10:11 AM
To: Madeline Coulter
Subject: FW: SUB25-1003 Camas Woods Phase II - SEPA MDNS

From: R5 Planning (DFW) <R5.Planning@dfw.wa.gov>
Sent: Friday, June 13, 2025 9:31 AM
To: Community Development Email <communitydevelopment@cityofcamas.us>
Cc: Peplinski, Joy (DFW) <Joy.Peplinski@dfw.wa.gov>
Subject: RE: SUB25-1003 Camas Woods Phase II - SEPA MDNS

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Hi Carey,

Thank you so much for sending the link with the project files. Upon review of the site plans, Critical Areas Report and Tree Survey, WDFW has no comments to submit for this project.

Happy Friday,
Val

Valentina London
Assistant Habitat Biologist – Region 5
Washington Department of Fish & Wildlife

5525 S 11th St, Ridgefield, WA 98642
Valentina.London@dfw.wa.gov
(360) 742-9157

From: Community Development Email <communitydevelopment@cityofcamas.us>
Sent: Thursday, June 12, 2025 3:38 PM
To: R5 Planning (DFW) <R5.Planning@dfw.wa.gov>; Community Development Email <communitydevelopment@cityofcamas.us>
Cc: Peplinski, Joy (DFW) <Joy.Peplinski@dfw.wa.gov>
Subject: RE: SUB25-1003 Camas Woods Phase II - SEPA MDNS

External Email

Hi Val,

You can view these documents in our online portal here:
https://cityofcamaswa-energovweb.tylerhost.net/apps/selfservice#/plan/8212c652-c2e8-4c17-9330-ea2c7bc24f4c?tab=attachments

Carey Certo

From: Stone, Jessica (DAHP) <jessica.stone@dahp.wa.gov>
Sent: Wednesday, June 25, 2025 8:46 AM
To: Community Development Email
Cc: Cowlitz Indian Tribe, Cultural Resources; Chinook Indian Nation; THPO@grandronde.org (THPO@grandronde.org); 106review@ctwsbnr.org; Casey Barney; Jerry Meninick (Yakama); Jessica.lally@yakama.com
Subject: RE: SUB25-1003 Camas Woods Phase II - SEPA MDNS (DAHP 2024-09-06763)

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Dear City of Camas SEPA Official,

Thank you for contacting the DAHP regarding the above-referenced project. Because a portion of the project location is in an area marked “Very High Risk” for encountering archaeology by our Archaeological Risk Assessment model, we recommend that an Inadvertent Discovery Plan (IDP) be created and kept on site.

Thanks again, and please let me know if you have any questions,
Jessica

Jessica Stone, Ph.D (she/her)
Assistant State Archaeologist

Email: jessica.stone@dahp.wa.gov| www.dahp.wa.gov
Cell: (360) 890-2633 | Main Office: (360) 586-3065
Hours: 7:30-4:00 PST Monday-Friday
Physical Address: 1110 S. Capitol Way, Suite 30, Olympia, WA 98501
Mailing Address: PO Box 48343, Olympia, WA 98504-8343

In re: Camas Woods Subdivision Ph II

) NO. SUB25-1003
)
) AFFIDAVIT OF MAILING
)
)
)
)
)
Respondent.)

STATE OF WASHINGTON)
) ss.
CLARK COUNTY)

I, Carey Certo, on oath says:

I, Carey Certo, on July 2, 2025, I directed a true and correct copy of the Notice of 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 2nd day of July, 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: 10/01/2028

ENVISION GROUP LLC
19408 NE 22ND CIR
VANCOUVER, WA 98684

JOHNSTON LARRY K & JOHNSTON MELINDA S
5616 NE 399TH ST
LACENTER, WA 98629

WALLER MARK
817 SE EVERETT RD
CAMAS, WA 98607

CAMAS FOURSQUARE CHURCH
717 SE EVERETT RD
CAMAS, WA 98607

CAMAS WOODS LLC
19120 SE 34TH ST STE 103
VANCOUVER, WA 98683

PLACE BURTON F
26503 SE 8TH ST
CAMAS, WA 98607

WINDFALL HOLDINGS LLC
5616 NE 399TH ST
LACENTER, WA 98629

MCCLURE DEBRA J
21320 NE DOLE VALLEY RD
YACOLT, WA 98675

MASUOKA CAROLYN LEE & MASUOKA JASON KURTIS BENNETT
26519 SE 8TH ST
CAMAS, WA 98607

CORPORATION OF THE PRESIDING BISHOP OF THE CHURCH OF JESUS CHRIST
50 E NORTH TEMPLE RM 2225
SALT LAKE CITY, UT 84150

CORPORATION OF THE PRESIDING BISHOP OF THE CHURCH OF JESUS CHRIST
50 E NORTH TEMPLE RM 2225
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RAY MARIYA
26403 SE 5TH ST
CAMAS, WA 98607

MEYER BRUCE A & MEYER CARMEN M
26601 SE 5TH ST
CAMAS, WA 98607

HANSEN WESLEY B TRUSTEE
12909 SW 68TH PARKWAY STE 150
PORTLAND, OR 97223

ODELL ROBERT C & ODELL STEPHANIE
26703 SE 5TH ST
CAMAS, WA 98607

FOURSQUARE GOSPEL CHURCH INTERNATIONAL
1910 W SUNSET BLVD #200
LOS ANGELES, CA 90026

FOURSQUARE GOSPEL CHURCH INTERNATIONAL
1910 W SUNSET BLVD #200
LOS ANGELES, CA 90026

NOTICE OF PUBLIC HEARING
Camas Woods Subdivision Phase II
(File no. SUB25-1003)

A public hearing will be held on **July 31, 2025, at 5 p.m.** or soon thereafter, before the City's Hearings Examiner to consider the Preliminary Plat application for the Camas Woods Subdivision Phase II. The public hearing will be held remotely and in person at city hall. The applicant proposes to subdivide the subject site into 78 lots for the future construction of 78 attached single-family homes. The +/-8.79-acre site is zoned North Shore Higher Density Residential (HD-NS) in the City of Camas. The site is located at 26416 & 26514 SE 8th Street in the NE ¼ of Section 35 Township 2 North, Range 3 East, Camas, WA, Parcel Numbers: 178209000 & 178109000. The application was determined technically complete on May 9, 2025.

Questions/Comments: 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 Community Development Department staff, Madeline Sutherland, Planner, at Camas City Hall, 616 Northeast Fourth Avenue, Camas, WA 98607; (3) by phone at (360) 817-1568; or (4) by email to: communitydevelopment@cityofcamas.us. It is preferable that written comments be received at least five working days prior to the public hearing, in order to be available with the online agenda and materials. After the agenda has been posted online, all other written comments must be received no later than noon (12:00 p.m.) the day of the hearing, in order for those comments to be handed to the Hearings Examiner by Staff. Written and oral comments may also be submitted in person during the hearing.

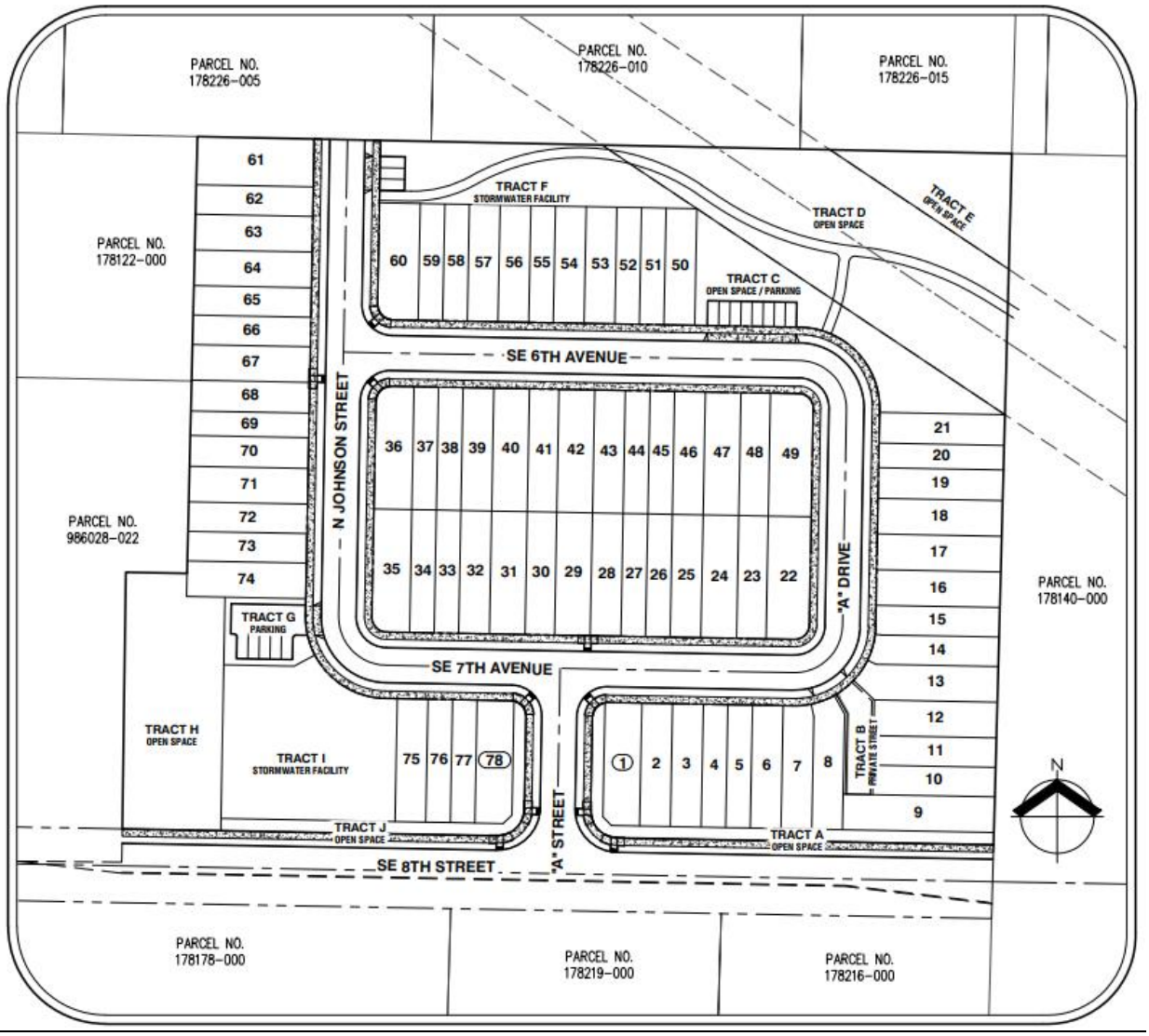
Application Materials: The application included the following: project narrative, SEPA checklist, preliminary development plans, tree report, preliminary stormwater report, critical areas report, preliminary geotechnical report, archeological pre-determination report, mailing labels, title report and 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) 817-1591 for special accommodations 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 or hearing.

More Information: The public hearing agenda and supporting documents will be available for review on the City's website at the "Minutes, Agendas & Videos" link within the drop-down menu that is labeled "Your Government" or follow this link: http://www.cityofcamas.us/yourgovernment/minuteagendavideo.

Published in the Post Record on July 3, 2025 Legal Publication #1016970
Posted at Camas City Hall, Camas Library, City of Camas website at: http://www.cityofcamas.us
Mailed to property owners within 300-feet on July 2, 2025

Preliminary Plat for Camas Woods Phase II (SUB25-1003)



NOTICE OF PUBLIC HEARING
Camas Woods Subdivision Phase II
(File no. SUB25-1003)

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Questions/Comments: 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 Community Development Department staff, Madeline Sutherland, Planner, at Camas City Hall, 616 Northeast Fourth Avenue, Camas, WA 98607; (3) by phone at (360) 817-1568; or (4) by email to: communitydevelopment@cityofcamas.us. It is preferable that written comments be received at least five working days prior to the public hearing, in order to be available with the online agenda and materials. After the agenda has been posted online, all other written comments must be received no later than noon (12:00 p.m.) the day of the hearing, in order for those comments to be handed to the Hearings Examiner by Staff. Written and oral comments may also be submitted in person during the hearing.

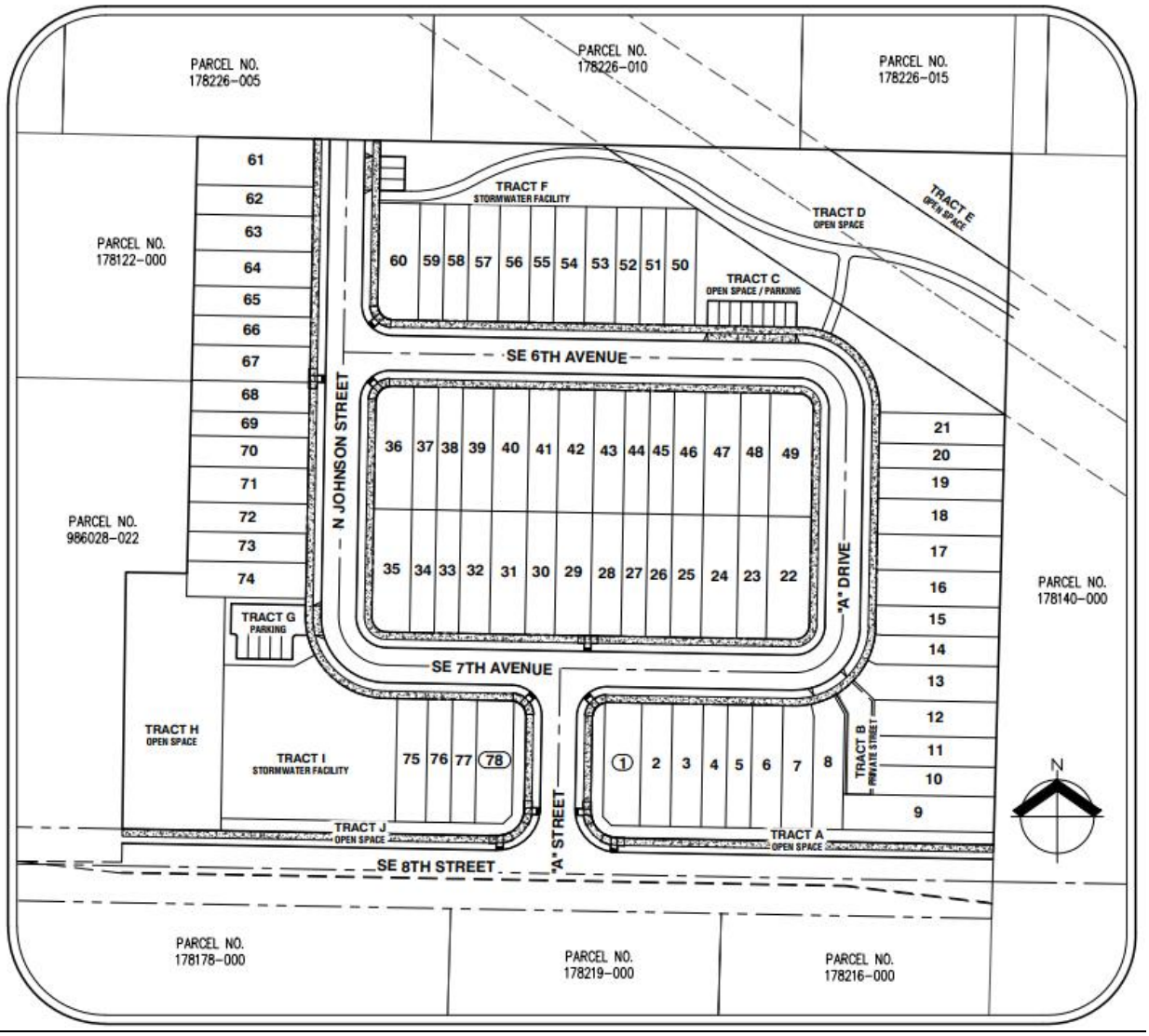
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Participate: All citizens are entitled to have equal access to the services, benefits and programs of the City of Camas. Please contact the City Clerk at (360) 817-1591 for special accommodations if needed. The City will provide translators for non-English speaking persons who request assistance at least three working days prior to a public meeting or hearing.

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Published in the Post Record on July 3, 2025 Legal Publication #1016970
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Mailed to property owners within 300-feet on July 2, 2025

Preliminary Plat for Camas Woods Phase II (SUB25-1003)



WWW.AKS-ENG.COM

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVENUE, SUITE 2520
VANCOUVER, WA 98682
(360) 882-0419

July 29, 2025

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

RE: Camas Woods II Subdivision Staff Report Response

Dear Madeline:

Below is a list of comments and requested revisions regarding the findings and conditions for the Saff Report for Camas Wood II Subdivision (SUB25-1003) (Staff Report), dated July 25, 2025. The modifications to the findings and conditions are identified followed by a reasoning for the request.

FINDINGS

Page 10 – Proposed Plat Notes (First Bullet)

- *Lots 1 – 8 and Lots 13 – 78: ~~A minimum 15-foot-wide~~* **If shared stormwater conveyance systems cross lots lines, a** *stormwater easement* **will be required and will be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA).** *~~over the r~~* **R***oof drain dry well system***s** *~~and drainage swales~~ located at rear of the lots are to be owned and maintained by the ~~adjacent~~ property owner~~s and/or the Homeowners' Association (HOA)~~. Construction of permanent structures with the stormwater easements are not permitted. Permanent structures include but are not limited to retaining walls, patios, play structures, trees, shrubs, etc.*

Request: Revise the finding as edited above. As noted on Page 8, in the second to last paragraph, Staff does not support the rear yard drainage swales; therefore, they will be removed from the design and the design will be modified accordingly. If the final stormwater design does still require an easement, the final width of any necessary easement can be determined during final engineering. The proposed rear yard drywells are not shared and serve only the lot that they are on, therefore, they do not require an easement and will be owned and maintained by the individual property owners.

Page 10 – Proposed Plat Notes (Second Bullet)

- *Lot 9: ~~A minimum 10-foot-wide~~* **If shared stormwater conveyance systems cross lots lines, a** *stormwater easement* **will be required and will** *~~over the drainage swale located along the southern property line is to~~ be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA).*

Request: Revise the finding as edited above. As noted on Page 8, in the second to last paragraph, Staff does not support the rear yard drainage swales, which connect to the drainage swale on Lot 9; therefore, the swale will be removed from the design and the design will be modified accordingly. If the final stormwater design does still require an easement, the final width of any necessary easement can be determined during final engineering.

Page 16 – First Bullet

*Remove the existing gravel road at the end of SE 8th Street and the three gravel driveways on the south side of SE 8th Street***, within the existing right-of-way***.*

Request: Revise the finding as edited above. The requested modification simply adds clarity that work will not be required outside of the right-of-way as the driveways continue outside of the right-of-way.

Page 16 – Third Bullet

The new driveways are to be perpendicular to the SE 8th Street improvements and are to be paved a minimum of 20-feet south, **or to the edge of the right-of-way, whichever is less,** *from the edge of the new pavement.*

Request: Revise the finding as edited above. The requested modification simply adds clarity that work will not be required outside of the right-of-way in the event the new edge of pavement is within 20 feet of the south right-of-way line.

Page 17 – Street Trees (Second to Last Paragraph)

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. As not all required street trees can be placed within the planter strip in front of each lot, staff finds that **the applicant shall provide a minimum of one street tree pert lot (78 street trees) and, where feasible,** *lots without a street tree in the planter strip directly adjacent to their frontage shall be required to plant one tree within the front yard.*

Request: Revise the finding as edited above. Given the nature of narrow lot development, there are many driveway and utility conflicts that occur in the planter strips that prevent tree planting. These conflicts also carry into the lots when driveways and utility services are extended to the house. The requested modification will allow flexibility to meet the required number of street trees utilizing side yard planter strips and also require planting in front yards when it is feasible.

Page 18 –ROW Dedication (Third Paragraph)

The applicant will be required to dedicate sufficient right-of-way for construction of the following proposed public roads: 'A' Street; N Johnson Street; 'A' Drive; **SE 7th Avenue, and** *SE 6th Avenue~~; and SE 8th Street. Additional right-of-way dedication may be required for construction of left and/or right turn lanes at the intersection of SE 8th Street and SE Everett Street (SR 500).~~*

Request: Revise the finding as edited above. SE 8th Street has an existing 60-foot right-of-way, which meets the requirement for the North Shore Collector Street section. The applicant is also unable to obtain additional right-of-way from other private property owners, and construction of left and/or right turn lanes were not identified as a mitigation measure on SE 8th Street in the traffic study.

Page 18 – Easements (Sixth Bullet)

- *Lots 1 – 8 and Lots 13 – 78: ~~A minimum 15-foot-wide~~* **If shared stormwater conveyance systems cross lot lines, a** *stormwater easement* **will be required and will be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA).** *~~over the r~~* **R***oof drain dry well system***s** *~~and drainage swales~~ located at rear of the lots, noted on the preliminary stormwater plan (Exhibit 7, P10) for the benefit of Lots 1 through 78, are to be owned and maintained by the ~~adjacent~~ property owners ~~and/or the Homeowners' Association (HOA)~~. Construction of permanent structures with the stormwater easements are not permitted. Permanent structures include but are not limited to retaining walls, patios, play structures, trees, shrubs, etc.*

Request: Revise the finding as edited above. As noted on Page 8, in the second to last paragraph, Staff does not support the rear yard drainage swales; therefore, they will be removed from the design and the design will be modified accordingly. If the final stormwater design does still require an easement, the final width of any necessary easement can be determined during final engineering. The proposed rear yard drywells are not shared and serve only the lot that they are on, therefore, they do not require an easement and will be owned and maintained by the individual property owners.

Page 18 – Easements (Seventh Bullet)

- *Lot 9: ~~A minimum 10-foot-wide~~* **If shared stormwater conveyance systems cross lots lines, a** *stormwater easement* **will be required and will** *~~over the drainage swale located along the southern property line is to~~ be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA).*

Request: Revise the finding as edited above. As noted on Page 8, in the second to last paragraph, Staff does not support the rear yard drainage swales, which connect to the drainage swale on Lot 9; therefore, the swale will be removed from the design and the design will be modified accordingly. If the final stormwater design does still require an easement, the final width of any necessary easement can be determined during final engineering.

Page 19/20 – Landscaping (Last/First Paragraph)

[General Landscaping]: Per CMC 18.13.055 Table 1, landscape buffering is not required for single family homes. Per CMC 17.19.030.F.6 stormwater facilities 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. The storm facility is **underground and** *approximately 35 feet from SE 7th Avenue. Staff finds if* **the storm facility, or elements of** *the storm facility* **are above ground and** *~~is~~ within 30 feet of the street or an accessory structure, then a ten-foot L2 landscaped buffer is required.*

Request: Revise the finding as edited above. The proposed stormwater facility is underground, so if it is within 30 feet of a street or accessory structure, it will still not require screening. The adjusted finding does still require screening in the event the facility design changes, and a portion of the facility is located above ground.

CONDITIONS

Condition 23 – Page 29

If **the storm facility, or elements of** *the storm facility* **are above ground and** ~~*is*~~ *within 30 feet of the street or an accessory structure, then a ten-foot L2 landscaped buffer shall be required.*

Request: Revise the condition as edited above. The proposed stormwater facility is underground, so if it is within 30 feet of a street or accessory structure, it will still not require screening. The adjusted condition does still require screening in the event the facility design changes, and a portion of the facility is located above ground.

Condition 37 – Page 30

MR #5: Prior to engineering plan approval, the applicant shall submit a revised stormwater plan **to remove the rear yard drainage swales.** ~~*the rear yard drainage system, locating a separate rear yard drainage system for Lots 22 through 35 and a separate system for Lots 36 through 49.*~~ *Additionally,* ~~*rear yard drainage systems and roof drain dry wells are to be placed in a stormwater easement across all applicable lots, with*~~ *a note on the stormwater plans stating that the* ~~*rear yard drainage system*~~ **roof drain drywells** *on Lots 1 through 78 are to be owned and maintained by the property owners of the individual Lots.*

Request: Revise the condition as edited above. As noted on Page 8, in the second to last paragraph, Staff does not support the rear yard drainage swales; therefore, they will be removed from the design and the design will be modified accordingly.

Condition 39 – Page 31

MR #7: Prior to engineering plan approval, the stormwater utility plans are to be submitted with specific design information for the proposed underground infiltration galleries on Tracts F and I, **and** *individual downspout dry wells for Lots 1 through 78*~~*, and the rear yard shallow drainage swales for Lots 9 through 74*~~*.*

Request: Revise the condition as edited above. As noted on Page 8, in the second to last paragraph, Staff does not support the rear yard drainage swales; therefore, they will be removed from the design and the design will be modified accordingly.

Condition 46.a – Page 32

Remove the existing gravel road at the end of SE 8th Street and the three gravel driveways on the south side of SE 8th Street, **within the existing right-of-way***.*

Request: Revise the condition as edited above. The requested modification simply adds clarity that work will not be required outside of the right-of-way as the driveways continue outside of the right-of-way.

Condition 46.c – Page 32

The new driveways are to be perpendicular to the SE 8th Street improvements and are to be paved a minimum of 20-feet south, **or to the edge of the right-of-way, whichever is less,** *from the edge of the new pavement.*

Request: Revise the condition as edited above. The requested modification simply adds clarity that work will not be required outside of the right-of-way in the event the new edge of pavement is within 20 feet of the south right-of-way line.

Condition 50 – Page 32

The applicant shall provide a minimum of one street tree pert lot (78 street trees) and, where feasible, ~~*L*~~ *lots without a street tree in the planter strip directly adjacent to their frontage shall be required to plant one tree within the front yard.*

Request: Revise the finding as edited above. Given the nature of narrow lot development, there are many driveway and utility conflicts that occur in the planter strips that prevent tree planting. These conflicts also carry into the lots when driveways and utility services are extended to the house. The requested modification will allow flexibility to meet the required number of street trees utilizing side yard planter strips and also require planting in front yards when it is feasible.

Condition 67.f – Page 34/35

Lots 1 – 8 and Lots 13 – 78: ~~*A minimum 15 foot wide*~~ **If shared stormwater conveyance systems cross lot lines, a** *stormwater easement* **will be required and will be owned and maintained by the adjacent property owners and/or the Homeowners' Association (HOA).** ~~*over the r*~~ **R***oof drain dry well system***s** ~~*and drainage swales*~~ *located at rear of the lots, noted on the preliminary stormwater plan (Exhibit 7, P10) for the benefit of Lots 1 through 78, are to be owned and maintained by the* ~~*adjacent*~~ *property owners* ~~*and/or the Homeowners' Association (HOA)*~~*. Construction of permanent structures with the stormwater easements are not permitted. Permanent structures include but are not limited to retaining walls, patios, play structures, trees, shrubs, etc.*

Request: Revise the condition as edited above. As noted on Page 8, in the second to last paragraph, Staff does not support the rear yard drainage swales; therefore, they will be removed from the design and the design will be modified accordingly. If the final stormwater design does still require an easement, the final width of any necessary easement can be determined during final engineering. The proposed rear yard drywells are not shared and serve only the lot that they are on, therefore, they do not require an easement and will be owned and maintained by the individual property owners.

Sincerely,

AKS ENGINEERING & FORESTRY, LLC



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Camas Woods Subdivision Ph II
(SUB25-1003)
Index of Exhibits

Exhibit No.	Title/Description	Document Date
1	Pre-application Notes	11/7/24
2	Title Report	8/14/24
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4	Narrative	4/2025
5	Preliminary Geotechnical Report	2/18/25
6	Transportation Impact Study	3/14/25
7	Preliminary Site Plans	4/15/25
8	Tree Survey	4/2025
9	Preliminary Stormwater Technical Information Report	4/2025
10	Mailing Labels	4/11/25
11	SEPA Checklist	4/15/25
12	Incomplete Letter	3/6/25
13	Development Sign Posting	7/15/25
14	Technically Complete Letter	5/9/25
15	Affidavit of Mailing Notice of Application	5/21/25
16	Notice of Application	5/22/25
17	Affidavit of Mailing SEPA Mitigated Determination of Non-Significance	6/11/25
18	SEPA Mitigated Determination of Non-Significance	6/12/25
19	SEPA Distribution Packet	6/12/25
20	WA Department of Fish and Wildlife Public Comment	6/13/25
21	Department of Archaeology & Historic Preservation Comment	6/25/25
22	Affidavit of Mailing Notice of Public Hearing	7/2/25
23	Notice of Public Hearing	7/3/25
24	Applicant's Response to Staff Report7/29/25	