Hearings Examiner Meeting Agenda
Tuesday, October 13, 2026, 4:00 PM
Council Chambers, 616 NE 4th AVE

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OPTION 1 -

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CALL TO ORDER

INTRODUCTIONS AND INSTRUCTIONS

HEARING ITEM

1. Village at North Shore (File No. SUB25-1008)
   Presenter: Madeline Coulter, Planner

CLOSE OF MEETING

LAND USE DECISION

STAFF REPORT
Village at North Shore

File No. SUB25-1008

(Consolidated files: Shoreline Substantial Development and Conditional Use Permit, Preliminary Plat Review, Site Plan Review, Critical Area Review, SEPA Review, and Archaeological Review)

Report Date: October 8, 2026

TO	Hearings Examiner	**HEARING DATE**	October 13, 2026 at 4:00 PM
PROPOSAL	To construct 102 attached and detached single-family residential lots and six mixed-use lots containing buildings with apartment units and commercial space.		
LOCATION	The site is located at 313 SE Leadbetter Road in the Northwest Quarter of Section 35, Township 2 North, Range 3 East of the Willamette Meridian; and described as tax parcel 177885000.		
APPLICANT/ OWNER	AKS Engineering & Forestry, LLC Attn: Michael Andreotti 9600 NE 126th Ave Suite 2520 Vancouver, WA 98682	**OWNER**	HSR Dev - Mills, LLC 19120 SE 34th St Suite 103 Vancouver, WA 98683
APPLICATION SUBMITTED	July 23, 2025	**APPLICATION COMPLETE**	August 25, 2025
SEPA	The City issued a SEPA Determination of Non-Significnace (DNS) on 11/6/2025, with a comment period that ended on 11/20/2025. The SEPA DNS was mailed to property owners and published in the Post Record on 11/6/2025. Legal publication #1046870.		
PUBLIC NOTICES	A Notice of Application and Public Hearing was mailed to property owners within 300 feet of the site and published in the Post Record on 10/7/2025. Legal publication #1037190.		

APPLICABLE LAW: The application was submitted on 7/23/2025, and the applicable codes are those codes that were in effect at the date of the application's first submittal. Shoreline Master Program (SMP) and 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 18.18 - Site Plan Review, Chapter 18.19 - Design Review, 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 construct 102 attached and detached single-family residential lots and six mixed-use lots containing buildings with apartment units and commercial spaces. The subject site is zoned North Shore Mixed Use (MX-NS), North Shore High Density (HD-NS), North Shore Low Density (LD-NS), and North Shore Commercial (C-NS). The site contains wetlands, habitat and geological hazardous area. The proposal includes critical area, open space, stormwater, utility, parking, and landscape tracts.

The subject site is bordered to the north by undeveloped High Density – North Shore (HD-NS) and Low Density – North Shore (LD-NS) zoning. To the east is undeveloped LD-NS zoning. To the south is Park and Open Space zoning. To the west is undeveloped HD-NS zoning. The site also consists of trees, groundcover, a stream, and wetlands.

There was a Development Agreement approved on September 21, 2026, that includes an approved Master Plan and regulations for this site.

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

SHORELINE MASTER PROGRAM

APPLICABLE LAW:

The application was deemed complete on Augst 25, 2025, and the applicable codes are those codes that were in effect on the date of application, to include Camas Municipal Code (CMC) Titles 16, 17 and 18; The Camas Shoreline Master Program (Ord. 21-003) consolidated with Critical Area Review within Appendix C (SMP); and The Shoreline Management Act (RCW90-58) (WAC 173-27).

SMP STANDARDS AND EVALUATION:

Shoreline Substantial Development and Conditional Use Permits must be consistent with approved Shoreline Master Program (SMP) element goals, objectives and general policies of the designated environment; policy statements for shoreline use activities; and with use activity regulations.

BACKGROUND**:**

The proposed utilities and pedestrian pathway that connect at Leadbetter Road requires a Shoreline Substantial Development Permit. In addition, a Shoreline Conditional Use Permit is required for the utilities per SMP Table 6-1. All other portions of the development do not require a shoreline permit as they are outside of the shoreline jurisdiction.

The Camas Shoreline Master Program (SMP) classifies the shoreline management areas as "Medium Intensity". The development is subject to review and approval of the following permits: Shoreline Substantial Development Permit (SDP), and Shoreline Conditional Use Permit (CUP). This report includes the criteria for review for these permit types.

MASTER PROGRAM GOALS AND POLICIES (CHAPTER 3):

At page 3-1 of the SMP, the general goals of the program are to use the full potential of the shorelines in accordance with the surrounding areas, the natural resource values, and the unique aesthetic qualities; and develop an ordered and diversified physical environment that integrates water, and shoreline uses while achieving a net gain of ecological function. The pedestrian path and utilities support the following shoreline goals such as:

SMP, Section 3.2 Shorelines of Statewide Significance, *"Development should be focused in already pre-developed shoreline areas to reduce adverse environmental impacts and to preserve undeveloped shorelines."*

SMP, Section 3.7 Public Access and Recreation *"The goal of public access and recreation is to increase the ability of the general public to enjoy the water's edge, travel on the waters of the state, and to view the water and the shoreline from adjacent locations."*

> **FINDING: Staff finds that the general goals and policies of Chapter 3 are met as this project will increase the public access to view the water, is in an area that already has an existing gravel driveway and street and is designed to not adversely impact shoreline ecological functions.**

MEDIUM INTENSITY SHORELINE DESIGNATION (CHAPTER 4)

The management policies of the Medium Intensity Shoreline Designation at SMP Section 4.3.4.4 are as follows:

1) *The scale and density of new uses and development should be compatible with sustaining shoreline ecological functions and processes, and the existing residential character of the area.*

FINDING: The proposed utility and pedestrian pathway will be within the existing gravel path to the site and within SE Leadbetter Road, therefore the scale of the new use will not affect the ecological functions or surrounding area.

2) *Public access and joint use (rather than individual) of recreational facilities should be promoted.*

FINDING: There will be a public access easement recorded along the proposed pedestrian pathway that connects from SE Leadbetter Road to the proposed development to the north that is part of this application.

3) *Access, utilities, and public services to serve proposed development within shorelines should be constructed outside shorelines to the extent feasible and be the minimum necessary to adequately serve existing needs and planned future development.*

FINDING: Access, utilities, and public services are proposed to be located within existing pathways and streets and are the minimum amount of services necessary to provide for the new development located to the north.

4) *Public or private outdoor recreation facilities should be provided with proposals for subdivision development and encouraged with all shoreline development if compatible with the character of the area. Priority should be given first to water-dependent and then to water-enjoyment recreation facilities.*

FINDING: There is no outdoor recreation facilities included within the shoreline jurisdiction.

5) *Commercial development should be limited to water oriented uses. Non-water oriented commercial uses should only be allowed as part of mixed-use developments where the primary use is residential and where there is a substantial public benefit with respect to the goals and policies of this Program such as providing public access or restoring degraded shorelines.*

FINDING: There is no commercial development proposed within the shoreline jurisdiction.

GENERAL SHORELINE USE AND DEVELOPMENT REGULATIONS (CHAPTER 5)

The following general regulations of Chapter 5 Section 5.1 (beginning on page 39) are as follows:

1. Shoreline uses and developments that are water-dependent shall be given priority.

FINDING: **The utility connections and pedestrian pathway are not water dependent; however, they are required as part of the proposed development to the north.**

2. Shoreline uses and developments shall not cause impacts that require remedial action or loss of shoreline functions on other properties.

FINDING: **The proposed work will not affect shoreline functions on other properties or require remedial action.**

3. Shoreline uses and developments shall be located and designed in a manner such that shoreline stabilization is not necessary at the time of development and will not be necessary in the future for the subject property or other nearby shoreline properties unless it can be demonstrated that stabilization is the only alternative to protecting public safety and existing primary structures.

FINDING: **All of the work will be conducted within existing pathways and streets; therefore, no shoreline stabilization is necessary.**

4. Land shall not be cleared, graded, filled, excavated or otherwise altered prior to issuance of the necessary permits and approvals for a proposed shoreline use or development to determine if

environmental impacts have been avoided, minimized and mitigated to result in no net loss of ecological functions.

FINDING: **The applicant has applied for proper permits and has not requested to begin work prior to receiving approvals.**

5. Single family residential development shall be allowed on all shorelines except the Aquatic and Natural shoreline designation, and shall be located, designed and used in accordance with applicable policies and regulations of this Program.

FINDING: **Single-family residential is not proposed within the shoreline jurisdiction.**

6. Unless otherwise stated, no development shall be constructed, located, extended, modified, converted, or altered or land divided without full compliance with CMC Title 17 Land Development and CMC Title 18 Zoning.

FINDING: **The proposed development requires compliance with the applicable regulations from CMC Title 17 Land Development and CMC Title 18 Zoning.**

7. On navigable waters or their beds, all uses and developments should be located and designed to: (a) minimize interference with surface navigation; (b) consider impacts to public views; and (c) allow for the safe, unobstructed passage of fish and wildlife, particularly species dependent on migration.

FINDING: **There are no impacts proposed to navigable waters, therefore, this criteria does not apply.**

8. Hazardous materials shall be disposed of and other steps be taken to protect the ecological integrity of the shoreline area in accordance with the other policies and regulations of this Program as amended and all other applicable federal, state, and local statutes, codes, and ordinances.

FINDING: **No hazardous materials are expected as part of this development. If there are hazardous materials, they will be disposed of properly.**

9. In-water work shall be scheduled to protect biological productivity (including but not limited to fish runs, spawning, and benthic productivity). In-water work shall not occur in areas used for commercial fishing during a fishing season unless specifically addressed and mitigated for in the permit.

FINDING: **There is no in-water work proposed, therefore, this criterion is not applicable.**

10. The applicant shall demonstrate all reasonable efforts have been taken to avoid, and where unavoidable, minimize and mitigate impacts such that no net loss of critical area and shoreline function is achieved. Applicants must comply with the provisions of Appendix C with a particular focus on mitigation sequencing per Appendix C, Section 16.51.160 Mitigation Sequencing. Mitigation Plans must comply with the requirements of Appendix C, Section 16.51.170 Mitigation Plan Requirements, to achieve no net loss of ecological functions.

FINDING: **The application includes critical areas within the residential and commercial development to the north. However, there are no critical area impacts within the shoreline jurisdiction near the utility and pedestrian pathway. A critical area and mitigation plan were submitted with the application.**

11. The effect of proposed in-stream structures on bank margin habitat, channel migration, and floodplain processes should be evaluated during permit review.

FINDING: **There are no in-stream structures proposed, therefore, this criterion is not applicable.**

12. Within urban growth areas, Ecology may grant relief from use and development regulations in accordance with RCW 90.58.580 and requested with a shoreline permit application.

FINDING: **The activity is in city limits and therefore this criterion is not applicable.**

CRITICAL AREAS PROTECTION (Section 5.3)

There are no critical areas or impacts within the shoreline portion of this application. All critical areas are located north within the residential and commercial development that are outside of shoreline jurisdiction and are addressed separately in the Critical Area section of this report.

SPECIFIC SHORELINE USE REGULATIONS (Chapter 6)

SMP Section 6.3.11 Recreational Development

The specific use regulations for recreational uses begins at page 66 of the SMP. Not all the regulations are applicable to this proposal.

1. Water-oriented recreational uses and developments are preferred.

FINDING: The pedestrian path will terminate on the north side of SE Leadbetter Road and provide visual access to the shoreline.

2. Trails shall be designed and constructed in substantial compliance with the standards of the Camas Park, Recreation and Open Space Comprehensive Plan, Design & Development Guidelines (2007, Appendix A), with the constructed width varying by trail type and critical area protection

FINDING: Although the trail is not in the City of Camas PROS plan, the trail will be designed to allow for pedestrian connectivity between Leadbetter Road and the proposed development to the north.

3. Recreation areas or facilities on the shoreline shall provide physical or visual public access in accordance with Section 5.5.

FINDING: The pedestrian pathway will provide visual public access to the shoreline.

4. Parking areas that are accessory to recreational uses shall be located upland a minimum of one hundred and fifty (150) feet away from the immediate shoreline, with pedestrian trails or walkways providing access to the water.

FINDING: There is no parking areas proposed within 150 feet of the shoreline.

5. All permanent, substantial, recreational structures and facilities shall be located outside officially mapped floodways. The Administrator may grant exceptions for non-intensive Camas Shoreline Master Program 67 minor accessory uses (including but not limited to, picnic tables or playground equipment).

FINDING: There are no structures proposed with this shoreline application.

6. Parks and trailheads shall be provided with restrooms with hand washing facilities in accordance with public health standards and without adversely altering the natural features attractive for recreational uses.

FINDING: There are no restrooms provided as the pedestrian pathway is not a trailhead.

7. Recreational facilities shall make adequate provisions, such as densely vegetated buffer strips, screening, fences, and signs, to protect the value and enjoyment of adjacent or nearby private properties and natural areas from trespass, overflow and other possible adverse impacts.

FINDING: The pedestrian pathway will run through the City of Camas park land and will be surrounded by trees. The existing trees will provide a buffer to screen the adjacent properties.

8. Provisions shall be made for the protection of water areas from drainage and surface runoff in all recreational developments requiring the use of fertilizers and pesticides in areas adjacent to shorelines, such as in play fields and golf courses.

FINDING: The project will collect and treat surface runoff on site. A preliminary erosion control plan was submitted with the application.

9. Golf course structures (clubhouses and maintenance buildings) that are non-water oriented shall be located no closer than one hundred (100) feet from the OHWM.

10. Tees, greens, fairways, golf cart routes, and other site development features shall be located no closer than two hundred (200) feet from the OHWM to the extent practicable. If golf cart routing is combined with public access trails, it may be located one hundred (100) feet from OHWM.

11. Golf course water hazards and stormwater drainage basins shall be managed for wildlife through appropriate plantings and measures to maintain or enhance water quality.

FINDING: There is no golf course included with this application, therefore, criteria 9-11 are not applicable.

SMP Section 6.3.15 Utilities Use

The specific use regulations for utility use begins at page 69 of the SMP. Not all the regulations are applicable to this proposal.

1. Whenever feasible, all utility facilities shall be located outside shoreline jurisdiction. Where distribution and transmission lines (except electrical transmission lines) must be located in the shoreline jurisdiction they shall be located underground or within the footprint of an existing, built roadway.

FINDING: All utilities will be located outside of shoreline jurisdiction except for the connection in SE Leadbetter Road.

2. Where overhead electrical transmission lines must parallel the shoreline, they shall be no closer than one hundred (100) feet from OHWM unless topography or safety factors would make it unfeasible, then a shoreline conditional use permit shall be required.

FINDING: No proposed overhead transmission lines paralleling the shoreline are proposed. This standard does not apply.

3. Utilities shall be designed, located and installed in such a way as to preserve the natural landscape, minimize impacts to scenic views, and minimize conflicts with present and planned land and shoreline uses.

FINDING: The utilities will be located in a utility easement that will run along the existing gravel path that connects to the southwest portion of the development site.

4. Transmission, distribution, and conveyance facilities shall be located in existing rights-of-way and corridors or shall cross shoreline jurisdictional areas by the shortest, most direct route feasible, unless such route would cause significant environmental damage.

FINDING: Not applicable to this project as there are no transmission, distribution, or conveyance facilities.

5. Utility production and processing facilities, such as power plants and wastewater treatment facilities, or parts of those facilities that are nonwater-oriented shall not be allowed in the shoreline jurisdiction unless it can be demonstrated that no other feasible option is available and will be subject to a shoreline conditional use permit.

> **FINDING: There is no utility production such as power plants or wastewater treatment facilities that are part of this project.**

6. Stormwater control facilities, limited to detention, retention, treatment ponds, media filtration facilities, and lagoons or infiltration basins, within the shoreline jurisdiction shall only be permitted when the following provisions are met:

> *a. The stormwater facility is designed to mimic and resemble natural wetlands and meets the standards of CMC 14.02 Stormwater, and the discharge water meets state water quality standards;*
>
> *b. Low impact development approaches have been considered and implemented to the maximum extent feasible.*
>
> **FINDING: A stormwater control facility is not proposed within the shoreline jurisdiction. Therefore, this criterion is not applicable.**

7. New and modifications to existing outfalls shall be designed and constructed to avoid impacts to existing native aquatic vegetation attached to or rooted in substrate. Diffusers or discharge points must be located offshore at a distance beyond the nearshore area to avoid impacts to those habitats.

> **FINDING: There are no new or modified outfalls associated with the project. Therefore, this criterion is not applicable.**

8. Water reclamation discharge facilities (e.g. injection wells) are prohibited in the shoreline jurisdiction, unless the discharge water meets State Department of Ecology Class A reclaimed water standards. Proponents for discharge of Class A reclaimed water in the shoreline jurisdiction shall demonstrate habitat benefits of such discharge.

> **FINDING: This criterion is not applicable as no water reclamation facilities are proposed.**

9. Where allowed under this program, construction of underwater utilities or those within the wetland perimeter shall be scheduled to avoid major fish migratory runs or use construction methods that do not cause disturbance to the habitat or migration.

> **FINDING: This criterion is not applicable as the construction of underwater utilities or those within the wetland perimeter are not proposed.**

10. All underwater pipelines transporting liquids intrinsically harmful to aquatic life or potentially detrimental to water quality shall provide automatic shut off valves.

> **FINDING: This criterion is not applicable as no underwater pipelines transporting liquids are proposed.**

11. Upon completion of utility installation/maintenance projects on shorelines, banks shall, at a minimum, be restored to pre-project configuration, replanted and provided with maintenance care until the newly planted vegetation is fully established. Plantings at installation shall be at least 2" minimum caliper at breast height if trees, five-gallon size if shrubs, and ground cover shall be planted from flats at 12" spacing, unless other mitigation planting is recommended by a qualified biologist and approved by the Administrator.

FINDING: Impacts to the bank are not proposed as all project work will occur above the top of bank of Lacamas Lake. This criterion is not applicable.

CONDITIONAL USE PERMIT - APPENDIX B SECTION IX

Utilities are a conditional use within the Medium Intensity shoreline designation. Pursuant to SMP, Appendix B, "*Conditional use approval may be granted only if the applicant can demonstrate all of the following":*

1. *The proposed use is consistent with the general intent of the Program, and the policies of the Act (RCW 90.58.020).*

   FINDING: The proposed utilities in the shoreline jurisdiction are designed to minimize impacts by being located within existing SE Leadbetter Road and the gravel pathway leading north to the project site. In addition, there will be no impacts to critical areas within the shoreline jurisdiction. The project is in conformance with the general intent of the SMP.

2. *The proposed use will not interfere with normal public use of public shorelines;*

   FINDING: No interference with the public use of the shoreline will occur as the conditional use permit is for the utilities which will be underground.

3. *The proposed use of the site and design of the development will be compatible with the surrounding authorized uses, the Program, and the comprehensive plan;*

   FINDING: The proposed utilities are compatible with the site as they provide services to the proposed residential and commercial uses to the north.

4. *The proposed use will cause no significant adverse effects on the shoreline environment or other uses; and*

   FINDING: No adverse effects are anticipated from the utilities as there will be no impact to critical areas or significant tree removal within the shoreline jurisdiction.

5. *That the public interest would suffer no substantial detrimental effect;*

   FINDING: The public interest would suffer no substantial detrimental effects as there is an existing pathway and street that the utilities will be located in.

CHAPTER 16.07 STATE ENVIRONMENTAL POLICY ACT

A SEPA checklist was submitted, and a Determination of Non-Significance (DNS) was issued on November 6, 2025 (Exhibit 21), as the proposed development includes more than nine residential dwelling units and contains critical areas per CMC 16.07.020.A.1. The comment period ended November 20, 2025, and four comments received from the Department of Natural Resources regarding forest practices, the Department of Ecology regarding hazardous waste, the Department of Archaeology and Historic Preservation regarding an archaeological survey, and the Department of Fish and Wildlife regarding impacts and mitigation recommendations. These comments are discussed further in this report.

A Development Agreement (DA) was approved on September 21, 2026, and addressed the intent for this SEPA to cover the entire development to prevent piecemealing SEPA reviews for each phase per Section 4.1. Staff finds this SEPA encompasses the entire development and individual SEPA review for each phase will not be required.

FINDING: Staff finds the applicant shall work with state agencies to address comments provided through SEPA review and obtain any required permits as necessary.

CHAPTER 16.31 ARCHAEOLOGICAL PRESERVATION

An archaeological predetermination report dated July 1, 2022, was prepared by Archaeological Investigations Northwest, 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.

The public comment from Department of Archaeology and Historic Preservation recommended that an archaeological survey be conducted due to the high probability of artifacts located on site. However, the applicant has an archaeological pre-determination report dated 2022 that covered the entire two parcels and recommended no additional survey was required. Staff does recommend a condition of approval that an inadvertent discovery plan be created.

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

CHAPTER 16.51 CRITICAL AREAS

General Provisions for Critical Areas – CMC 16.53 Wetlands, CMC 16.59 Geological Hazardous Areas, and CMC 16.61 Fish and Wildlife Habitat Conservation Areas.

[GENERAL]: Clark County GIS mapping identified the subject property with critical areas; therefore, the applicant submitted a two Critical Area Reports dated May 19, 2025, prepared by Ecological Land Services. Each report covers each of the two parcels that are included in this development application.

The Critical Area Reports includes a wetland delineation and identified two wetlands: Wetland A and Wetland B. Both are Category III wetlands with a habitat score of 7. Wetland A consists of 2.26 acres onsite while Wetland B has .78 acres located on site. Both wetlands include a high land use intensities, therefore, per CMC 16.53.040, the buffers required is 150 feet.

In addition to the two wetlands, there is a stream on site identified as Stream A. Stream A is a Type F, non-anadromous and per CMC 16.61.040, requires a 75-foot buffer. There was a ditch identified on site, however, per CMC 16.53.010.C.2., a ditch is exempt if it is considered “artificial”. Staff finds the ditch meets the definition of artificial in the CMC.

There are two Oregon White Oaks (OWO) clusters identified on site. Cluster 1 includes a total of 16 OWO with 3 OWO’s onsite. The dripline for Cluster 1 is approximately .10 acres. Cluster 2 includes four OWO that are all on site. The dripline for Cluster 2 is approximately .05 acres. Both clusters do not meet the woodland size requirements, therefore the OWO will be treated as individual oaks.

There are two herbaceous bald identified on site that included Camas Lily which is considered a habitat of local importance per CMC 16.61.010.3.b. However, the Camas Lily comprised of less than .25 acres, therefore, they are not considered a habitat of local importance. Herbaceous Bald 1 is approximately .15 acres and Herbaceous Bald 2 is approximately .06 acres.

Lastly, a Geotechnical Report by Columbia West Engineering, Inc. dated November 17, 2023, was submitted and identified geological hazardous areas on site. The report concluded that the site is generally compatible with the proposed development provided the recommendations in the report are followed. Staff recommends a condition of approval to this effect.

[IMPACTS]: The applicant is proposing the removal of 11 OWO from Cluster 1 which will impact .048 acres of the dripline. Each of the OWOW have a diameter at breast height (DBH) of less than 10 inches. In addition, there will be .184 acres of impact to Wetland B's buffer and .088-acre impact to herbaceous bald habitat. There are no impacts proposed to Stream A as the entire stream and buffer are within Wetland A's buffer.

[SEQUENCING]: The applicant is required to address the mitigation sequence of avoidance and minimization per CMC 16.51.170. The proposed subdivision has been designed to completely avoid direct impacts to Wetland A, Oak Cluster 2, and Herbaceous Bald 2, by utilizing lower impact development strategies, buffer enhancements, and grading adjustments. While some buffer impacts to Wetland B, Oak Cluster 1, and HB-1 were unavoidable due to street requirements and site constraints, the applicant proposes to minimize them through buffer reductions, habitat protection, establishment of vegetated corridors, and implementation of best management practices. Staff finds this criteria is met.

[BUFFER REDUCTION]: The applicant submitted a Wetland Buffer Modification and Mitigation Plan by Ecological Land Services, Inc. dated July 8, 2025.

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

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

FINDING: Wetland A extends onto the adjacent parcel to the east which is permitted for Enclave at North Shore Short Plat. There is a vegetated corridor that ranges between 141 and 491 feet into the adjacent parcel to connect to the critical areas within the Enclave at North Shore Development.

Wetland B has a vegetated corridor that ranges between 66 and 260 feet, which is less than the 100-foot buffer. However, the wetland is larger in size compared to the size of the oak and herbaceous bald habitat nearby, therefore it is not feasible to maintain a 100-foot-wide corridor as the habitat area itself does not meet this width. Therefore, staff finds this criteria is met.

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

FINDING: The applicant is proposing to collect stormwater for detention and treatment prior to regulated discharge toward the wetlands to maintain hydrologic input to the wetlands. The applicant will also restore disturbed vegetation where possible and minimize cut slopes which will decrease the land use intensity. Staff finds this criteria is met.

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

wetlands professional demonstrates, as part of a critical area report, that all of the following criteria are met:

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

FINDING: There is a .015 acres decrease in the southwestern portion of Wetland A and correspondingly increased in the northwest portion. Wetland B will include .216 acres of a buffer decrease along the northeast and west portion and correspondingly increased in the southeast portion.

The areas proposed to be decreased provides less ecological function than what was existing, therefore there is no net loss. The widths are proposed to be 62-feet which does not exceed the 75% reduction allowed. The onsite mitigation is not anticipated to result in a change to the wetland ratings.

Staff finds this criteria is met.

[MITIGATION]: In addition to buffer reduction and averaging, the applicant is proposing to enhance .184 acres of the buffer of Wetland A to mitigate for the buffer impacts. Many of the wetland impacts are to Wetland B, however, Wetland B is heavily forested. Therefore, Wetland A will provide a more ideal environment for mitigation plantings. In addition, the vegetation corridor near both wetlands will be enhanced, temporary impacts will be restored to pre-project conditions, and the herbaceous bald impacts will be mitigated at a 1:1 ratio.

As all the impacts to the oaks cannot be mitigated on site due to the limited space and heavily forested nature of the critical areas, the remaining impacts to the oaks will be mitigated by purchasing 1.063 credits from the Terrace Mitigation Bank.

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

Staff also recommends a condition of approval that the mitigation credits of 1.063 be purchased prior to final plat approval.

[PUBLIC COMMENT]: The Department of Fish and Wildlife submitted a public comment regarding recommendations for mitigation to herbaceous bald, wetlands, and oaks. Their comment recommended complete avoidance to the herbaceous bald habitat. However, due to the North Shore Blvd construction and location, there is not an option to completely avoid the impacts to the herbaceous bald habitat. WDFW also stated a 1:1 mitigation ratio would not ensure there is no net loss of habitat function.

Therefore, staff finds the applicant shall work with state agencies to address WDFW's comments and update the mitigation plan as necessary.

The secondary comment was that the riparian buffer for Stream A should be based on Site Potential Tree Height and not simply stream type alone. However, per CMC 16.61.4040, buffers are based on stream types which is how the buffers were determined on site. Therefore, staff finds the applicant meets the city's buffer requirements.

WDFW's final recommendation was following the mitigation sequencing in the WFW guidance. However, the applicant has followed the mitigation sequencing requirements in CMC 16.51.170. The city's sequencing requirements requires the applicant to first look at avoidance, then minimizing, then reducing the impact. The applicant has shown that they meet the mitigation sequencing requirements in the "SEQUENCING" section of this staff report.

[TEMPORARY/PERMANENT FENCING]: Staff recommends a condition of approval for the installation of temporary construction fencing prior to construction that clearly marks in the field critical area buffers (i.e., wetlands and habitat conservation areas) and fencing should remain throughout permitted construction activities. In addition, prior to final acceptance, permanent signs and fencing should be installed at the edge of the critical area buffers per CMC 16.51.210.B and C. Sign and fencing specifications should be submitted to the City for review and approval prior to installation. Once installed, photos shall be sent to the city for final approval.

[CONSERVATION COVENANT]: Prior to final acceptance, a conservation covenant shall be recorded with the County to ensure the long-term preservation of all the critical areas and any associated buffers, including maintenance of any mitigation actions, per CMC 16.51.240 and conditioned as such. The applicant will be required to post a mitigation bond in an amount deemed acceptable by the city to ensure the wetland mitigation is fully functional per CMC 16.51.250.

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

CHAPTER 17.11 SUBDIVISIONS

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

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

Comprehensive Plan

The subject property is designated as North Shore Commercial, North Shore Single-Family Low, and North Shore Multifamily High in the City's Comprehensive Plan, which includes the North Shore Mixed Use (MX-NS), North Shore Commercial (C-NS), North Shore Low Density Residential (LD-NS), and North Shore High Density Residential (HD-NS) 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-2.4: Encourage mixed-use developments (residential and commercial) in order to support adjacent uses and reduce car trips, but not at the expense of job creation
- 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-1.5: Ensure that housing in mixed-use buildings (or developments) will complement the commercial and retail portion of the development and increase local family-wage jobs.
- 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 development includes a variety of housing types and commercial space. There are proposed detached and attached single family homes, apartment units, and a mixed-use building. The variety of housing will help accommodate the projected growth through the utilization of existing land. The proposed houses, when built, will provide housing opportunities to meet the needs of the community in accordance with the Housing Element of the Comprehensive Plan.

Parks and Open Space Plan:
The 2022 Parks, Recreation and Open Space (PROS) Comprehensive Plan does not identify that a trail or park improvements adjacent to the subject parcel are required. 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 June 30, 2025, was prepared by Kittelson & Associates (Exhibit 6). Per Table 5 *Estimated Site Trip Generation*, page 23 of the TIS, the proposed development is composed of the following:

- Detached Single-Family Homes, ITE 210: 41 units which will generate 444 average daily trips (ADTs), for a total of 35 AM Peak Hour trips (8 in, 25 out) and a total of 43 PM Peak Hour trips (27 in, 16 out).
- Multi-Family Low-Rise, ITE 220: 140 units which will generate 973 average daily trips (ADTS), for a total of 66 AM Peak Hour trips (16 in, 50 out) and a total of 81 PM Peak Hour trips (51 in, 30 out).
- Attached Single-Family Homes, ITE 215: 61 units which will generate 414 average daily trips (ADTs), for a total of 26 AM Peak Hour trips (7 in, 19 out) and a total of 33 PM Peak Hour trips (19 in, 14 out).

The total number of average daily trips are greater than 700 ADTs. Phases 1 and 2 of the proposed development will be accessible from NE 252nd Avenue until such time as the future North Shore Blvd. is extended from the east side of the proposed development. Off-site traffic calming features are not required.

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).

The proposed development is located west of the Enclave at North Shore development and on the north side of a 43 acre park open space that is owned by the City of Camas. SE Leadbetter Road runs southeast to northwest along the south side of the park open space. Additionally, there is a creek and wetlands on the parcels between the proposed development and Enclave at North Shore.

[Existing 12-inch Water Main]
The Enclave at North Shore extended the existing 12-inch DI transmission main from the Lacamas Hills development to the northernmost end of N Benton Drive. Additionally, the Enclave at North Shore development was conditioned to install a 12" x 12" tee at the intersection of N Benton Drive and North Shore Blvd. and to stub the 12-inch DI transmission main to the west edge of the intersection of N Benton Drive and the future North Shore Blvd. for the benefit of any future north shore developments to the west. Additionally, there is an existing 12-inch DI water main that is located in SE Leadbetter Drive that runs from the intersection with NE Everett Street and northwest for the length of SE Leadbetter Drive and beyond.

[Proposed 12-inch Water Transmission Main]
Until the future North Shore Blvd. is extended from the Enclave at North Shore development to the easternmost property line of Parcel No. 178175000, the 12-inch transmission main to be extended from SE Leadbetter Drive will be the primary source of domestic water to serve the proposed development.

The 12-inch DI transmission main will be located within a minimum 30-foot-wide utility/public access easement that will extend north from SE Leadbetter Road to the proposed development. The applicant will be required to construct the 12-inch water transmission main and dedicate the water main and utility easement to the City of Camas.

The preliminary utility plans dated July 22, 2025 (Exhibit 12, Sheets P9.0-P9.4) show the following:

- A 12-inch tap off the existing 12-inch water main in SE Leadbetter Drive and extending the new 12-inch transmission main north through the city's park open space to the southeast corner of the proposed development at the intersection of N 54th Avenue and N Mills Street.
- The 12-inch transmission main is then shown to be extended east via N 54th Avenue to the intersection of N 54th Avenue and North Shore Blvd.
- The 12-inch transmission main is then shown to extend from the intersection of N 54th Avenue and North Shore Blvd. to the easternmost property line of the proposed development for the future connection to the existing 12-inch transmission from the Enclave at North Shore.
- The 12-inch transmission main is then shown to extend from the intersection of N 54th Avenue and North Shore Blvd. to the northern westernmost corner of the proposed North Shore Blvd.

improvement that abuts Parcel No. 177884000, which will allow for the 12-inch transmission main to be extended west for future developments.

- Dead-end blowoffs are required at both ends of the proposed 12-inch water transmission main.

Staff recommends a condition of approval that prior to engineering plan approval the applicant should submit final utility plans for the extension of the 12-inch water transmission main from SE Leadbetter Road north to serve the proposed development, east to the easternmost property line of the proposed development (Parcel No. 178175000), which abuts Enclave at North Shore, and the north westernmost property line of the proposed development abutting Parcel No. 177884000 for the benefit of future developments to the west. Both ends of the 12-inch transmission main are to provide a dead-end blow off.

[Proposed 8-inch Water Main]
The preliminary utility plans dated July 22, 2025 (Exhibit #12, Sheets P9.0-P9.4) show the following:

- An 8-inch water main is tapped off the future 12-inch transmission main at the intersection of N 54th Avenue and N Mills Street to serve the proposed development.
- Lots 23 through 95 are shown to be served by the 8-inch water main within proposed public roads N 54th Avenue, N 55th Avenue, and N 56th Avenue to serve the single-family residences on Lots 23 through 95.
- Lots 1 through 22 are shown to be served by the 8-inch water main that is extended from the intersection of N 56th Avenue and the private road located in Tract P to serve the single-family residences.
- Lots 103 through 108 are shown to be served by the 8-inch water main for the multi-family and commercial developments. A separate fire line is not shown on the preliminary utility plans.

In addition to serving the proposed development, the 8-inch water mains are to include an 8”x8” cross and dead-end blowoffs at the intersections of N Mills Street and N 54th Avenue; N Mills Street and N 55th Avenue; N Mills Street and N 56th Avenue for the future developments to the west; and a dead-end blowoff at the north easternmost end of N 56th Avenue where it abuts the southern end of SE 252nd Avenue in Clark County.

Staff recommends a condition of approval that prior to engineering plan approval the applicant should submit final utility plans providing for an 8”x8” cross and dead-end blowoff on the 8-inch water mains at the intersections of N Mills Street and N 54th Avenue; N Mills Street and N 55th Avenue; N Mills Street and N 56th Avenue for future developments to the west; and a dead-end blowoff at the north easternmost end of N 56th Avenue where it abuts the southern end of SE 252nd Avenue in Clark County.

[Single-Family Lots]
Per the Camas Design Standard Manual (CDSM), individual water services are to be a minimum 1-inch service to each single-family lot with meter boxes located in planter strips or at 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 within the private road tract.

The preliminary utility plans do not show the locations of the domestic water services to each of the proposed single-family lots. The water services and meter boxes for Lots 23 through 95 access via the public streets are to be shown within the right-of-way per the CDSM and outside of the future right-of-way on the private streets in Tract P and Tract G. A water utility easement is to be recorded over and under the 8-inch water main, the water meters, and the meter boxes for the proposed single-family lots accessed by the private roads on Tract P, Lots 1 through 22; and Tract G, Lots 96 through 102.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should submit revised water utility plans that include the locations of all water services and water meter boxes on both the public streets and the private streets located in Tracts P and G. Additionally, the revised utility plans are to show the water utility easement over and under the 8-inch water main, the water meters, and meter boxes located in Tract P for Lots 1 through 22; and Tract G for Lots 96 through 102.

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 P for Lots 1 through 22; and Tract G for Lots 96 through 102.

[Multi-family, Mixed Use, Commercial]
Per CMC 17.19.040.C.4 multi-family, mixed use, and commercial buildings shall have one service for each building. The preliminary utility plans do not show the locations for the water services to any of the proposed multi-family, mixed use, or commercial buildings on proposed Lots 103 through 108.

Commercial buildings require an above-ground reduced pressure backflow assembly (RPBA) to be installed behind the commercial water meter service on the applicant's property and is to be accessible for inspections and testing.

Per the utility sizing notes on the preliminary utility plans, each multi-family, mixed use, and commercial building will be provided with a minimum 1-inch water service.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should provide the following:

- Verification that a minimum 1-inch domestic water service will supply sufficient flow to the proposed multi-family, mixed-use, and the commercial buildings.
- The water utility plans are to include the size of the domestic water meters for the multi-family, mixed-use, and commercial buildings.
- Domestic water meters over 2-inches are special orders by city staff and owned and maintained by the property owner.
- The domestic water supply from the water meter to the multi-family, mixed-use, and commercial structures shall be sized by the fire sprinkler contractor's design calculations.
- Provide separate water services to the mixed-use building, one for the multi-family units and one for the commercial building with an above-ground reduced pressure backflow assembly (RPBA).

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.

The preliminary utility plans do not show an on-site fire line for the proposed multi-family, mixed-use, or commercial buildings. Fire lines, double-check valve vaults, and FTPs are to be shown on the water utility plans for informational purposes. If any on-site private hydrants are required for the proposed multi-family, mixed-use, or commercial lots, this will be determined by the Fire Marshal during engineering plan review. Private hydrants are factory ordered red and are to be owned and maintained by the property owner.

Staff recommends a condition of approval that prior to engineering plan approval, the water utility plans should be revised with the following revisions to the onsite water plans:

- The fire line is to be tapped off the proposed 8-inch public water main and extended from the public water main to the double check detector assembly (DCDA) vault. Neither the domestic water service nor the irrigation service is to be tapped off the fire line.
- The fire line is to be shown on the water utility plans for informational purposes.
- A fire permit application is to be submitted to the Fire Marshal's Office via the FMOs online portal.
- Private fire hydrants are to be ordered from the factory and painted red.
- Private fire hydrants are to be owned and maintained by the property owner.

[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 preliminary site plans show open space on Tracts B, F, N, and S. Tracts N and S are adjacent to N 56th Avenue and are proposed as landscape buffer areas. Tracts B and F contain wetlands and wetland buffers. The size of proposed irrigation meters is to be determined in advance and shown on the water utility plans and landscape plans. The owner of open space tracts with irrigation 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. Open space landscaping water services and meters and irrigation meters for single-family residences, multi-family, mixed-use, and commercial lots 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 water utility plans should be revised with the following revisions to the onsite water plans:

- The locations and size of irrigation meters is to be determined in advance and shown on the water utility plans and landscape plans.

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, and Ecology's latest Stormwater Management Manual for Western Washington (2024 SWMMWW).

The Preliminary Stormwater Technical Report (PTIR), dated July 2025, was prepared by AKS Environmental & Forestry (Exhibit 9). The proposed development is composed of two parcels (177855000 and 178175000) for a total of approximately 36.04 acres (1,569,902.40 sf). The total land-disturbing activities per the preliminary stormwater report is approximately 27.763 acres (1,209,356.28 sf).

Per the PTIR, the site consists of two threshold discharge areas (TDAs) that are separated by an existing ridgeline that runs through the center of the site. Runoff from the two separate TDAs will be treated and detained separately. As the proposed development is located in the Lacamas watershed area and drains to Lacamas Lake, therefore phosphorous treatment is required.

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

will result in approximately 27.763 acres (1,209,356.28 SF) of land-disturbing activities, 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.

MR #1 – Preparation of Stormwater Site Plans: The preliminary stormwater plans, included in Appendix C as shown on the preliminary utility plans (Exhibit #12) were incomplete.

The 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 plans are to include sizes of storm mains, laterals, and manholes. Plans and profiles are required for the storm mains and catch basins. Design plans and details for stormwater treatment and detention are to be included.

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.

There are required improvements in Clark County to NE 3rd Street and NE 252nd Avenue. Based on the Clark County Staff Concurrency review the developer shall obtain Clark County approval of a final stormwater plan and final Stormwater Report (TIR).

Clark County Staff recommends a condition of approval that prior to engineering plan approval the applicant should be required to submit the following:

- The developer shall obtain County approval of a final stormwater plan designed in conformance with CCC Ch. 40.386.
- The developer shall submit final construction plan and a final Technical Information Report (TIR) that addresses Minimum Requirements 1 through 9, prepared in accordance with the Clark County Stormwater Manual.
- This development shall not materially increase or concentrate stormwater runoff onto an adjacent property or block existing drainage from adjacent lots.
- The developer shall submit documentation from the stormwater treatment system manufacturer indicating that any proprietary stormwater treatment devices were sited and sized appropriately.
- The developer shall identify on the final construction plans ownership responsibilities for each of the proposed stormwater facilities.
- A stormwater easement shall be shown on all private/joint stormwater facilities not in the public right-of-way.
- Stormwater facility setbacks shall be met and shown on the final construction plans, unless a reduced setback is recommended by a geotechnical engineer.
- The required minimum separation from the bottom of any infiltration facility to the seasonal high-groundwater elevation shall be identified on the final construction plans, if infiltration is proposed.
- The County stormwater plans and the TIR are to be submitted via the City's online portal as a component of the city's required construction plan application submittal. City staff will send the documents to Clark County for review and approval.

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.

There are required improvements in Clark County to NE 3rd Street and NE 252nd Avenue. Based on the Clark County Staff Concurrency review the developer shall obtain Clark County approval of a final stormwater plan and final Stormwater Report (TIR).

Clark County Staff recommends a condition of approval that prior to land-disturbing activities the applicant should be required to:

- Submit and obtain approval from Clark County of the final erosion control plan designed in accordance with CCC Ch. 40.386.
- The erosion control plans required by the County are to be submitted via the City's online portal as a component of the city's required construction plan application submittal. City staff will send the documents to Clark County for review and approval.

Clark County Staff recommends a condition of approval that prior to land-disturbing activities the applicant should be required to:

- Perform all excavation and grading in the county right-of-way shall be performed in compliance with CCC Ch. 14.07.

MR #4 – Preservation of Natural Drainage Systems and Outfalls: The preliminary TIR discusses the preservation of natural drainage systems and outfalls in Section A.7, General Project Stormwater Description. The proposed development will maintain existing drainage patterns and discharge locations to the maximum extent possible.

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 List #2 of the SWMMWW to satisfy MR#5. Table 1-3.2, Lawn and landscaped areas will meet post contraction soil quality and quantity requirements per BMP T5.13. Roofs and other hard surfaces cannot utilize full dispersion, downspout infiltration, or permeable pavement due to the lack of infiltration of the existing soils. The site's topography, space limitations and lack to infiltration prevent the use of surface bioretention facilities.

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 composite utility plans (Exhibit 12, Sheets P9.0-P9-4), do not show any proposed private onsite surface water collection systems.

Staff recommends a condition of approval that prior to engineering plan approval, if private onsite surface water collections systems are proposed on the revised stormwater plans submittal, that said private systems are to include notes stating that the property owners of said systems are responsible for ownership and maintenance of said stormwater easement.

MR #6 – Runoff Treatment Analysis and Design: 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 a mechanical filter cartridge system prior to conveyance to either an underground detention system or to a stormwater facility.

Staff recommends a condition of approval that prior to engineering plan approval the stormwater plans are to include a note that states that the stormwater treatment and detention facilities located in the multi-family, mixed-use, and commercial lots are to be owned and maintained by the property owners; and the stormwater treatment and detention facilities located in Tracts C, D, and E, are 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 following plat notes are required:

- The stormwater treatment and detention facilities located in the multi-family, mixed-use, and commercial lots are to be owned and maintained by the property owner and/or Homeowners' Association (HOA).
- 'Tracts C, D, and E' stormwater treatment and detention facilities are to be owned and maintained by the property owner and/or Homeowners' Association (HOA).

MR #7 – Flow Control Analysis and Design: Section G of the preliminary stormwater report (PTIR), sufficiently addresses the requirement for flow control. Per the PTIR the project proposes to construct detention ponds, BMP D.1 with overflow outlets that will release runoff from the system during high flow events and maintain pre-development release rates to at or below the required flows.

MR #8 – Wetlands Protection: Section H of the preliminary TIR addresses the proposed wetland protections for the existing on-site wetlands. The wetlands will be protected by wetland buffers and from pollutants from stormwater runoff that will be treated prior to stormwater being released into the wetlands. Discharge into the wetlands will also meet the requirements for MR #8 by '*not altering flow to the wetlands by more than 20% on a monthly basis for the months of October, November, and December, and 15% for the remaining months. Additionally, discharges to the wetland will meet the requirements by not altering flow to the wetlands by more than 20% on a daily basis.'*

MR #9 – Operation and Maintenance (O&M): The preliminary TIR did not provide an O&M manual for the either the underground stormwater detention system, the above-ground stormwater detention facility, or the stormwater treatment vaults aka water quality/filter media facilities.

Staff recommends a condition of approval that prior to engineering plan approval the final stormwater TIR is to be submitted with both the City of Camas June 2022 *Stormwater Sewer System*

Operations & Maintenance Manual and the maintenance requirements for the treatment vaults aka water quality/filter media facilities.

[Stormwater Facilities]
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 located on Tracts C, D, and E will be owned and maintained by the Homeowner's Association/homeowners.

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, CMC 17.19.040.C.3 Storm Drainage, and Ecology's SWMMWW.

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 (177855000 and 178175000) for a total of approximately 36.04 acres (1,569,902.40 sf). The total land-disturbing activities per the preliminary stormwater report is approximately 27.763 acres (1,209,356.28 sf).

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

The preliminary grading and erosion prevention plans (Exhibit #7, Sheets P6.0 – P6.2) are not a complete set of erosion prevention and sediment control plans. A complete set of plans are required to be submitted for review and approval prior to any land-disturbing activities.

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.

There are required improvements in Clark County to NE 3rd Street and NE 252nd Avenue. Based on the Clark County Staff Concurrency review the developer shall obtain Clark County approval of a final stormwater plan and final Stormwater Report (TIR).

Clark County Staff recommends a condition of approval that prior to engineering plan approval the following items are to be addressed by the applicant:

- Submit and obtain approval from Clark County of the final erosion control plan designed in accordance with CCC Ch. 40.386.
- The erosion control plans required by the County are to be submitted via the City's online portal as a component of the city's required construction plan application submittal. City staff will send the documents to Clark County for review and approval.
- All excavation and grading in the county right-of-way shall be performed in compliance with CCC Ch. 14.07.

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, which includes tree felling, tree removal, clearing and grading. 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 felling, tree removal, 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.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.

Construction of temporary storm drainage facilities will be required that are to bypass and protect the permanent facilities until such time as the rest of the project is complete and ready for the permanent facilities to be brought online. The ESC plans are 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.

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.

Per CMC 17.21.030.D Implementation of erosion prevention/sediment control measures in addition to those measure approved on the erosion prevention/sediment control (ESC) 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.

A Stormwater Pollution Prevention Plan (SWPPP) is required per Ecology's NPDES Permit. The SWPPP is a living document that is to be updated by the contractor as site conditions change, and ESC measures are revised. Said document is required to be on-site at all times and available for staff and/or Ecology to review.

Staff recommends a condition of approval that prior to any land-disturbing activities, the contractor is to have a hard copy of the SWPPP on site at all times during construction of the site improvements. Said copy is to be updated as ESC measures are revised and is to be available for review by staff and Ecology.

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 are two existing sanitary sewer mains located in SE Leadbetter Road. The existing 6-inch and 8-inch pressure sewer mains are located on the south side of SE Leadbetter. The existing Leadbetter Lift Station (LS) is located east of the proposed sanitary sewer main connection to SE Leadbetter Road and the existing lift station.

The existing lift station currently has several existing single-family developments to the east that discharge to the lift station and future single-family, multi-family, and mixed use commercial developments that are approved to discharge to the existing lift station.

The applicant for this proposed single-family, multi-family, and mixed use commercial development will need to conduct an analysis of the Leadbetter LS to verify that there is capacity for the proposed development. The are two existing pumps that handle the current flows. Additional flows may require installation of an additional pump and any upgrades required for an additional pump.

> Staff recommends a condition of approval that prior to engineering plan submittal, the applicant is to do an analysis of the current and future capacity of the Leadbetter Lift Station, submit said analysis to the city for review and approval, and if the existing pumps are not sufficient to handle the flow from the proposed development. Based on the analysis the applicant will be required to provide any upgrades to the existing LS required for the proposed development, which could include the addition of another pump and assorted components.

The preliminary composite utility plans (Exhibit #12, Sheets P9.0 – P9.4) dated July 22, 2025, propose to construct a minimum 2-inch sanitary sewer pressure system to serve the on-site development which would discharge to a minimum 6-inch sanitary sewer pressure main that will be extended south in the utility easement and emergency access road to SE Leadbetter Road and then east to tie into the Leadbetter Lift Station.

Per CMC 17.19.040.C.2 Sanitary Sewers:

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.

Staff recommends a condition of approval that prior to engineering plan approval, the sanitary sewer utility plans are to be revised and submitted with a separate sewer lateral shown to each of the single-family residences and a separate sewer lateral to each of the multi-family, mixed use, and commercial buildings.

All Lots 1 through 108, which are comprised of single-family, multi-family, mixed use, and commercial are shown to have grinder pumps that will discharge to a sewer lateral and then to the on-site sewer pressure main, the off-site sewer pressure main, and ultimately the Leadbetter Lift Station.

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

- The grinder pumps for the single-family residential lots are to be EOne grinder pumps per the City's requirements.
- Grinder pumps for the single-family residences are to be owned and maintained by the individual homeowners.
- The grinder pumps for the multi-family and mixed-use commercial developments are to be EOne grinder pumps which are to submitted to the city for review and approval.
- The grinder pumps for the multi-family residential units are to be owned and maintained by the property owners of the multi-family residential units.
- The grinder pumps for the mixed-use commercial development are to be owned and maintained by the property owners of the mixed-use commercial developments.

Staff recommends a condition of approval that prior to engineering plan approval, the applicant should include the following with the revised sanitary sewer utility plans:

- The grinder pumps for the single-family residential lots are to be EOne grinder pumps per the Camas Design Standards Manual (CDSM).
- The grinder pumps for the multi-family and the mixed-use commercial developments are to be EOne grinder pumps which are to submitted to the city for review and approval.

The following notes are to be added to the utility plans:

- The grinder pumps for the single-family residences are to be owned and maintained by the individual homeowners.
- The grinder pumps for the multi-family residential units are to be owned and maintained by the property owners of the multi-family residential units.
- The grinder pumps for the mixed-use commercial development are to be owned and maintained by the property owners of the mixed-use commercial developments.

Staff recommends a condition of approval is warranted that prior to final plat approval; the applicant should include the following notes on the final plat:

- The grinder pumps for the single-family residences are owned and maintained by the individual homeowners.
- The grinder pumps for the multi-family residential units are owned and maintained by the property owners of the multi-family residential units on Lots 103 and 108.
- The grinder pumps for the mixed-use commercial development are to be owned and maintained by the property owners of the mixed-use commercial developments on Lots 104-107.

<u>Proposed Plat Notes:</u>

- The grinder pumps for the single-family residences are owned and maintained by the individual homeowners.
- The grinder pumps for the multi-family residential units are owned and maintained by the property owners of the multi-family residential units on Lots 103 and 108.

- The grinder pumps for the mixed-use commercial development are to be owned and maintained by the property owners of the mixed-use commercial developments on Lots 104-107.

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.

[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, the North Shore Design Standards (NSDS), 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 engineering site plans (Exhibit #7) dated July 22, 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 and the NSDS. Street improvements are to consist of the full-depth road section.

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.

Per CDSM, Section IV Engineering Design Standards, Table 2 General Guidelines for Geometry of a Roadway (Public), the minimum centerline radius of a 3-lane collector/arterial is 300-feet, and the minimum centerline radius of a 2-lane local road is 70-feet.

Proposed Public Roads:
All the public roads for the proposed development are located in the North Shore area and are to be designed in accordance with the Camas Design Standards Manual (CDSM), Section III, North Shore Subarea Plan, North Shore Design Manual for North Shore Local Streets and North Shore Boulevard standards. The Development Agreement (Exhibit 38) and the North Shore Master Plan (Exhibit 37) were approved on September 21, 2026. The approved North Shore Master Plan (Exhibit 37) provides revisions to the North Shore Blvd. street sections.

[North Shore Blvd. (NSB)]
The original North Shore Blvd street sections consisted of the following:

- An 88-foot right-of-way width, a 62-foot-wide paved surface, with a 10-foot-wide raised center curb/pedestrian refuge island.
- Each side of the 10-foot raised center curb consists of a 5-foot-wide bike lane, a 2-foot-wide buffer striping, and an 11-foot-wide travel lane.
    - An 8-foot-wide on-street parking lane is required along commercial uses.
- The boulevard also consists of a minimum 5-foot-wide planter strip/curb zone, and an 8-foot-wide sidewalk on each side of the road.

The preliminary engineering site plans (Exhibit #12) show the future North Shore Blvd. alignment from the easternmost property line of Parcel No. 178175000 and heading in a northwesterly direction across Parcel Nos. 178175000 and 177885000 to the northwesternmost corner of Parcel No. 177885000 to allow the future extension of North Shore Blvd. (NSB) to the west for future developments.

The applicant has proposed to construct the full length of North Shore Blvd. from the eastern property line to the western property line with the proposed development. Construction of all or any portions of North Shore Blvd. are TIF credit eligible both in the current and the proposed updated TIF Study.

The approved North Shore Development Agreement Master Plan (DA MP) (Exhibit 37) revises the North Shore Blvd. (NSB) street sections for the proposed development as follows:

- Section 3 (orange western portion) – Approximate Sta 10+04 to Sta 20+51.24, with a 68-foot-wide right-of-way width and no on-street parking permitted
- Section 2 (green center portion) – Approximate Sta 20+51.24 to Sta 26+77.72, with a 75-foot-wide right-of-way width and on-street parking permitted on one side only
- Section 3 (orange eastern portion) – Approximate Sta 26+77.72 to Sta 32+06.30, with a 68-foot-wide right-of-way width and no on-street parking permitted

Sections 1 and 4, as shown on the North Shore Development Agreement (DA) Master Plan (Exhibit 37), will be improved by others and are not part of the proposed development.

- Section 1, 80-foot right-of-way width, will be determined by separate project design and will be improved by others.
- Section 4, 110-foot right-of-way width and stream crossing, will be determined by separate project design and will be improved by others.

Staff recommends a condition of approval that If the City, or a third party authorized by the City, elects to construct any portion of North Shore Boulevard at their own cost and expense without any latecomer fees being charged to the applicant in advance of the applicant's construction of said portions, the applicant shall dedicate at no cost the necessary right-of-way for said advanced construction. The City will work with the applicant to ensure that the roadway and associated grades are compatible with the applicant's preliminary development approval.

The applicant did not submit revised civil plans, prior to or after approval, of the North Shore Development Agreement to reflect the changes to North Shore Blvd. for the proposed development.

Staff recommends a condition of approval that prior to engineering plan approval the applicant should submit a revised set of plans with the approved right-of-way widths for North Shore Blvd. as shown on the North Shore Development Agreement Master Plan (Exhibit 37).

Per the approved Development Agreement (Exhibit 38), North Shore Blvd. and applicable utilities will be constructed in Phases. The Phases are discussed in Section 4.2.1 Phasing, on pages 5 and 6.

Staff recommends a condition of approval that prior to engineering plan approval the applicant should submit a revised set of plans that clearly identify the various phases proposed for construction as discussed in the North Shore Development Agreement (Exhibit 38).

DA MP Section 3 - NSB Sta 10+04 to Sta 20+51.24

The section of North Shore Blvd. from the easternmost property line of Parcel No. 177884000, has been revised to be a 68-foot right-of-way width, consisting of two 12-foot-wide travel lanes, a 10-foot-wide center raised planter medium, 5-foot-wide planter strips and 12-foot-wide multi-modal pedestrian/bike lanes on both sides of the road, with no on-street parking permitted (Exhibit 37, Sheet MP-04). The Section 3 street section is shown to be part of Phase 6 of the proposed development (Exhibit 37, Sheet MP-02).

Staff recommends a condition of approval that prior to engineering plan approval the applicant should submit revised street plans showing construction of the full width of the approved Section 3 of the North Shore Development Agreement Master Plan for North Shore Blvd. from Sta 10+04, that abuts the Enclave at North Shore subdivision (Parcel No. 178171000), to approximate Sta 20+51.24.

DA MP Section 2 - NSB Sta 20+51.24 to Sta 26+77.72

The section of North Shore Blvd. from approximate Sta 20+51.24 to Sta 26+77.72, has been revised to be a 75-foot right-of-way width, consisting of two 12-foot-wide travel lanes, a 10-foot-wide center raised planter medium, 7-foot-wide on-street parking on one side only, 5-foot-wide planter strips and 12-foot-wide multi-modal pedestrian/bike lanes on both sides of the road (Exhibit 37, Sheet MP-04). The Section 2 street section is shown to be part of Phases 4A and 3A of the proposed development (Exhibit 37, Sheet MP-02).

Staff recommends a condition of approval that prior to engineering plan approval the applicant should submit revised street plans showing construction of the full width of the approved Section 2 of the North Shore Development Agreement Master Plan for North Shore Blvd. from approximate Sta 20+51.24 to Sta 26+77.72 that is referenced as Phase 4A and Phase 3A (Exhibit 37, Sheet MP-02 & MP-04).

DA MP Section 3 - NSB Sta 26+77.72 to Sta 32+06.30

The section of North Shore Blvd. from southeast of the future roundabout to the northwest property line of Parcel No. 177885-000 and abutting the southern property line of Parcel No. 177891-000, has been revised to be a 68-foot right-of-way width, consisting of two 12-foot-wide travel lanes, a 10-foot-wide center raised planter medium, 5-foot-wide planter strips and 12-foot-wide multi-modal

pedestrian/bike lanes on both sides of the road, with no on-street parking permitted (Exhibit 37, Sheet MP-04).

Per the DA, Section 4.4.1 Streetscape (page 7), the section of NSB north of the intersection with N 56th Avenue may result in a curb tight multi-use sidewalk with the planter strip located behind the curb tight multi-use sidewalk.

These segments of the Section 3 street sections are shown to be constructed with Phase 3A, Phase 1, which includes the future roundabout, and Phase 2A (Exhibit 37, Sheet MP-02).

> Staff recommends a condition of approval that prior to engineering plan approval the applicant should submit revised street plans showing construction of the full width of the approved Section 3 of the North Shore Development Agreement Master Plan for North Shore Blvd. from approximate Sta 26+77.72 to Sta 32+06.30 that is referenced as Phase 3A, Phase 1, which includes the future roundabout, and Phase 2A (Exhibit 37, Sheet MP-02 & MP-04).

[Roundabout at NSB and NE 56th Avenue]
Per the CDSM, Table 2 – General Guidelines for Geometry of a Public Road requires that the centerline radius on a 3 lane collector/arterial is to be a minimum of 300-feet.

Per the approved DA, Section 4.4.1(3) the minimum centerline radius of North Shore Boulevard at the intersection with N 56th Avenue shall be reduced to 200-feet or less to accommodate the roundabout. The applicant is required to install the roundabout if the roundabout is adopted into the proposed updated Transportation Impact Fee (TIF) Study. If the applicant is not required to install and elects to not install said roundabout, a deviation from the minimum centerline radius of 300-feet would not be supported by the city engineer.

<u>Tract B – Critical Areas</u>
Segments of North Shore Blvd. will be constructed along the future Tract B, Critical Areas, from the northwest corner of Phase 5 to the future roundabout. The two segments will be per Section 2 and Section 3 of the approved North Shore Development Agreement Master Plan (Exhibit 37). The majority of the frontage improvements will be per Section 3, which consists of a 68-foot right-of-way width, two 12-foot-wide travel lanes, a 10-foot-wide center raised planter medium, 5-foot-wide planter strips and 12-foot-wide multi-modal pedestrian/bike lanes on both sides of the road, with no on-street parking permitted (Exhibit 37, Sheet MP-04).

Staff received SEPA comments from the Department of Fish and Wildlife (WDFW) (Exhibit #26) dated November 20, 2025. WDFW concerns were regarding the *impacts to the critical areas onsite, specifically the riparian area, the herbaceous bald habitat, and the Oregon White Oak (OWO) trees proposed for removal*.

WDFW would prefer to see complete avoidance of impacts to the herbaceous bald habitat and the OWO. If complete avoidance is not attainable, WDFW will have further discussions with the applicant regarding compensatory mitigation for impacts.

Staff received comments from the applicant (Exhibit #27) proposing some measures to limit the impacts to the herbaceous bald habitat and the OWO trees. The applicant proposed eliminating the 8-foot-wide sidewalk on the south side of North Shore Blvd. stating that it's '*not necessarily needed for pedestrian circulation*'. Staff finds that the applicants' comments (Exhibit 27), regarding WDFW's SEPA comments (Exhibit 26), have been addressed, as the segment of North Shore Blvd. with the biggest impacts to Tract B Critical Areas has been narrowed from a 74-foot right-of-way width to a 68-foot right-of-way width with the approved North Shore Blvd. DA Master Plan (Exhibit 37).

North Shore Local Public Streets

The preliminary engineering site plans (Exhibit 12) show the following North Shore Local public roads:

- N 54th Avenue; N 55th Avenue; N 56th Avenue; and N Mills Street

The North Shore Local street standard consists of the following:

- A 54-foot right-of-way width, 28-foot-wide paved surface with two 10-foot drive lanes, and an 8-foot-wide on-street parking lane on one side only.
- Each side of the road consists of a 7-foot planter strip/curb zone and a 6-foot sidewalk.

Per the preliminary engineering site plans, N 54th Avenue, N 55th Avenue, and N 56th Avenue are shown to meet the minimum North Shore Local street sections.

[N Mills Street]

N Mills Street is shown with a 45-foot right-of-way width, 24-foot-wide paved surface, and a 7-foot planter strip and 6-foot sidewalk on one side only. The proposed N Mills Street abuts the westernmost property line between the proposed development and Parcel No. 177884000, also known as the Mills property. The minimum 24-foot paved width allows for two-way vehicular movements from N 54th Avenue north to N 56th Avenue. The developer of the adjacent parcel to the west, upon development of said parcel, will be required to complete the remaining west side of the road section alignment of N Mills Street and extend N 54th Avenue, N 55th Avenue, and N 56th Avenue.

[N 54th Avenue]

The westernmost portion of N 54th Avenue is shown to be constructed with the Phase 1 improvements that includes access to Lots 62 through 95. The Phase 1 improvements will result in a dead-end road that exceeds 150-feet from the centerline of N Mills Street and N 54th Avenue. A dead-end turnaround will be required until such time as the adjacent phase to the east is constructed.

> Staff recommends a condition of approval that prior to engineering plan approval for the Phase 1 improvements that the plans should be revised to include a dead-end turnaround at the eastern end of N 54th Avenue at future Lots 94 and 95 until such time as Phase 2 is constructed.

The curb return radii are not referenced at the intersection of N 54th Avenue and N Mills Street. Said radii is to be a minimum of 25-feet on both sides of the road, which includes the curb radii at the access to Track K, which is a private off-street parking lot and the emergency access from the south.

> Staff recommends a condition of approval that prior to engineering plan approval the curb radii on N 54th Avenue at the intersection with N Mills Street is to be a minimum 25-feet, which includes the curb radii at the access to Track K, which is a private off-street parking lot and the emergency access from the south.

Per CDSM, Section IV Design Standards, Table 3 Access Spacing Standards, the minimum access spacing on a local roadway is 110-feet and the maximum spacing is 600-feet.

There are three access drives on N 54th Avenue to future Lots 106, 107, and 108. The access drive to Lot 108 is located approximately 415-feet east of the intersection with N Mills Street. The access drives to Lots 106 and 107 are on opposite sides of the road and are approximately 220-feet east of the Lot 108 access. Additionally, the drive access to Lots 106 and 107 are located approximately 320-feet from the intersection of N 54th Avenue and North Shore Blvd.

> The proposed drive access locations on N 54th Avenue to Lots 106, 107, and 108 meet the access spacing standards for a local road.

[N 55th Avenue]

N 55th Avenue is shown to be constructed with the Phase 1 improvements that includes access to Lots 35 through 61. The Phase 1 improvements of N 55th Avenue will result in a dead-end road that exceeds 150-feet from the centerline of N Mills Street and N 55th Avenue. Additionally, the westernmost end of N 55th Avenue is shown as connecting to N 54th Avenue via Phase 2, Tract L of the future multi-family buildings on Lot 8 and the mixed-use multi-family and commercial buildings.

Per CMC 17.19.040.A.4 a private street cannot connect to two public streets. Therefore, due to CMC 17.19.040.A.4 and that N 55th Avenue exceeds the maximum allowable 150-feet that a dead-end turnaround be constructed as either a hammerhead or a cul-de-sac at future Lots 35 and 36 and Lots 60 and 61.

> Staff recommends a condition of approval that prior to engineering plan approval for the Phase 1 improvements, which includes N 55th Avenue that the plans should be revised to include a dead-end turnaround in the form of either a hammerhead or a cul-de-sac at future Lots 35 and 36 and Lots 60 and 61 and the pass-through access easement to Tract L is to be as an access between N 55th Avenue and N 54th Avenue removed.

The curb return radii are not referenced at the intersection of N 55th Avenue and N Mills Street. Said radii is to be a minimum of 25-feet on both sides of the road.

> Staff recommends a condition of approval that prior to engineering plan approval the curb radii on both sides of N 55th Avenue at the intersection with N Mills Street is to be a minimum 25-feet.

[N 56th Avenue]
The proposed development will be accessed from the north via NE Everett Road (SR 500) to NE 3rd Street and then to NE 252nd Avenue, which are located in Clark County. The N 56th Avenue improvements, which will be constructed with Phase 1, beginning at the northeastern corner of Parcel No. 177885000 where it abuts the southernmost end of NE 252 Street and continues southwesterly and west to the westernmost property line of Parcel No. 177884000.

N 56th Avenue is designated as a North Shore Local road, which will intersect the future North Shore Blvd. Both northeast and southwest of the intersection, N 56th Avenue is shown to meet the North Shore Local road section. However, design information relating to the curb radii at all four corners of the intersection and the centerline radius were not provided for the proposed intersection.

Per CDSM, Section IV Design Standards, Table 2 General Guidelines for Geometry of a Roadway, the minimum centerline radius on a local roadway is 200-feet and on a 3-lane collector/arterial is 300-feet. Additionally, the minimum curb radii on a local roadway is 25-feet and the minimum curb radii on an arterial is 35-feet.

Per the approved DA (Exhibit 38), Section 4.4.1.(3) The minimum centerline radius of North Shore Boulevard shall be reduced to 200' or less near the intersection with N 56th Ave to accommodate the roundabout.

> Staff recommends a condition of approval that prior to engineering plan approval the applicant should submit revised preliminary plat and street plans providing the design information for the intersection of N 56th Avenue and North Shore Blvd. that meet the minimum design criteria per the Camas Design Standards Manual (CDSM.)

Per CDSM, Access Spacing Standards Table 3: The Access Spacing Standards, the minimum intersection & driveway setback from a roadway classified as an arterial is 300-feet.

Per the approved DA (Exhibit 38), Section 4.4.1.(8) The 300-foot minimum driveway setback from arterial roadways set forth in Table 3 of the Camas design shall be reduced to 200 feet from the

North Shore Boulevard intersection with N 56th Ave.

The preliminary site plans (Exhibit #12) show a private parking area, Tract R, located on the north side of N 56th Avenue, approximately 140-feet from the intersection with North Shore Blvd. Additionally, this location poses a site distance issue for vehicles turning right onto N 56th Avenue from North Shore Blvd. and vehicles backing up onto N 56th Ave. ***Staff is not in support of the proposed private parking lot on Tract R.***

Staff recommends a condition of approval that prior to engineering plan approval, the preliminary plat and the street plans should be revised to eliminate Tract R off-street parking spaces.

[NE 3rd Street – Clark County]
NE 3rd Street is an unimproved local road. NE 3rd Street consists of approximately 45-feet of right-of-way width from the intersection with NE Everett Road (SR 500) west to the intersection with NE 252nd Avenue; and a paved surface that is approximately 17-feet-wide from NE Everett Road (SR 500) to NE 257th Avenue and narrows to approximately 15-feet of paved surface from the intersection at NE 257th Avenue to NE 252nd Avenue.

[NE 252nd Avenue – Clark County]
NE 252nd Avenue is an unimproved local road. NE 252nd Avenue consists of approximately 40-feet of right-of-way width and a paved surface width that varies from approximately 14-feet to 13-feet-wide at the southern end where if abuts the proposed development and the future N 56th Avenue.

Clark County Rural Local Access Standard, Drawing 21, which consists of the following:

- 50-foot right-of-way, minimum 20-foot paved surface to allow for two 10-foot travel lanes, 2-foot shoulders on each side.

The Traffic Impact Study (Exhibit #7) was sent to Clark County for review and comments. Based on the Clark County Staff Concurrency review:

- The applicant shall submit construction plans for the construction of all public roads under county jurisdiction to the county for review and approval. These roadways include NE 252nd Avenue and NE 3rd Street. These roadways should be constructed to comply with the Rural Local Access road cross section in Clark County Standard Drawing 21, but in no case shall the paved surface be less than 20 feet with 1-foot gravel shoulders.
- The applicant shall submit a signing and striping plan for review and approval. This plan shall show signing and striping and all installation or modifications to traffic control devices in the public right-of-way required for frontage improvements and any off-site improvements. The applicant shall obtain a work order with Clark County to reimburse the County for required signing, striping and all installation or modifications to traffic control devices in the public right-of-way. The final traffic control plans (signing, striping, signals, ITS, etc.) can be approved only after the developer provides signed reimbursable work order(s) to the county's traffic engineer reviewing the plans.
- The applicant shall consider the WSDOT Design Manual – Roadside Safety Mitigation Guidance (Section 1600) in the final engineering design of all proposed roadways and frontage improvements.

Based on Clark County Staff review, staff recommends the following conditions of approval that prior to engineering plan approval the applicant should submit the following for NE 3rd Street and NE 252nd Avenue:

- The applicant shall submit construction plans for the construction of all public roads under county jurisdiction to the county for review and approval. These roadways

include NE 252nd Avenue and NE 3rd Street. These roadways should be constructed to comply with the Rural Local Access road cross section in Clark County Standard Drawing 21, but in no case shall the paved surface be less than 20 feet with 1-foot gravel shoulders.

- The applicant shall submit a signing and striping plan for review and approval. This plan shall show signing and striping and all installation or modifications to traffic control devices in the public right-of-way required for frontage improvements and any off-site improvements. The applicant shall obtain a work order with Clark County to reimburse the County for required signing, striping and all installation or modifications to traffic control devices in the public right-of-way. The final traffic control plans (signing, striping, signals, ITS, etc.) can be approved only after the developer provides signed reimbursable work order(s) to the county's traffic engineer reviewing the plans.
- The applicant shall consider the WSDOT Design Manual – Roadside Safety Mitigation Guidance (Section 1600) in the final engineering design of all proposed roadways and frontage improvements.
- The plans required for Clark County review and approval are to be submitted via the city's online 'Construction Permit Application' portal as a component of the proposed development improvements.

[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 block lengths as shown on the preliminary plat do not exceed the maximum 600-feet for a local roadway classification.

[Private Roads]
Per the CDSM Table 1 – Guidelines for Geometry of a Private Roadway, Private Street D, a private road greater that 300-feet, as measured from the centerline of the adjacent road, with access to five or more dwelling units is to consist of a 48-foot-wide tract, with a 28-foot paved surface, 5-foot sidewalk and 4.5-foot planter strip on both sides of the road, and on-street parking permitted on one side only.

Tract P – Proposed N Mills Court and N 57th Place:

As shown on the preliminary plat (Exhibit #12, Sheet P3.1) proposed Tract P – N Mills Court and N 57th Place meets the minimum requirement for the Private Street D road section.

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.

The minimum curb radii of 25-feet is required on both sides of the road at the intersection of N Mills Court and N 56th Avenue; and the intersection of N Mills Court and N 57th Place.

Staff recommends a condition of approval that prior to engineering plan approval, the preliminary plat and the street plans should be revised with the minimum curb radii of 25-feet on both sides of the road at the intersection of N Mills Court and N 56th Avenue; and the intersection of N Mills Court and N 57th Place.

Per the preliminary plat, Lot 15 is shown as requiring an access and utility easement across Lot 16 for access to N 57th Place. ***Staff is not in support of the configuration of Lot 16 as shown.***

Per the preliminary plat, Lot 18 and 19 are shown as requiring an access and utility easement across Lot 17 for access to N 57th Place. ***Staff is not in support of the configuration of Lot 17 as shown.***

Staff recommends a condition of approval that prior to engineering plan approval, the preliminary plat and the street plans should be revised with private road N 57th Place extended to the east property line of Lot 15 and the east property line of Lot 18, which will eliminate the need for an access and utility easement across Lots 16 and 17 respectively.

Tract G – Proposed N Bear Lane and N 54th Place:

As shown on the preliminary plat (Exhibit #12, Sheet P3.3) proposed Tract G – N Bear Lane and N 54th Place does not meet the Private Street D road section for a private greater that 300-feet, as measured from the centerline of the adjacent road, with access to five or more dwelling units.

Staff recommends a condition of approval that prior to engineering plan approval, the preliminary plat and the street plans are to be revised providing the required tract width and paved surface in accordance with Private Street Section D. The city engineer would be in support of a deviation from the standard requiring a sidewalk on both sides of the streets.

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.

The minimum curb radii of 35-feet is required on both sides of the road at the intersection of North Shore Blvd. and N Bear Lane. The minimum curb radii of 25-feet is required on both sides of the road at the intersection of N Bear Lane and N 54th Place.

Staff recommends a condition of approval that prior to engineering plan approval, the preliminary plat and the street plans should be revised with the minimum curb radii of 35-feet is required on both sides of the road at the intersection of North Shore Blvd. and N Bear Lane. The minimum curb radii of 25-feet is required on both sides of the road at the intersection of N Bear Lane and N 54th Place.

Tract K – Parking and Access to N 54th Avenue:

As shown on the preliminary plat (Exhibit #12, Sheet P3.1), Tract K is providing off-street parking on the south side of N 54th Avenue for pedestrian access to the public access trail through the city's park open space to Lacamas Lake. Additionally, this is to be used as access to N 54th Avenue for emergency vehicles only. The preliminary street plans provide for a minimum 20-foot-wide paved surface from the back of the parking spaces to the curb along the western property line abutting Parcel No. 177884000.

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.

The minimum curb radii of 25-feet is required on the east side of Tract K onto N 54th Avenue.

Staff recommends a condition of approval that prior to engineering plan approval, the preliminary plat and the street plans should be revised with the minimum curb radii of 25-feet on the east side of Tract K onto N 54th Avenue.

Tract P and Tract G – Private Roads:

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 the preliminary site plans, Tract P and Tract G are dead-end roads that are in excess of 150-feet as measured from the adjacent roadways. Tract P is measured from the centerline of N 56th Avenue and Tract G is measured from the centerline of North Shore Blvd.

The Fire Marshall would support eliminating the dead-end turnarounds on both Tract P and Tract G as the streets as shown, N Mills Court and N 57th Place; and N Bear Lane and N 54th Place will provide a turnaround that mimics the vehicular movements provided by a hammerhead turnaround. No Parking signs with towing information will be required on both Tract P and Tract G as the city does not tow vehicles on private streets.

Staff recommends a condition of approval that prior to engineering plan approval, the signing and striping plans are to include 'No Parking' signs with information for a private towing company is to be included on the 'No Parking' signs on the private streets located in Tract P and Tract G.

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.

Staff recommends a condition of approval that prior to final plat approval, an access and utility easement is to be recorded of the private streets located in Tract P and Tract G, stating that the HOA/Homeowners taking access off the private streets will be responsible for ownership and maintenance of said private streets.

The following plat notes to this effect is warranted:

- Tract P, a private street, shall be owned and maintained by the Homeowners Association (HOA) and/or individual homeowners.
- Tract G, a private street, shall be owned and maintained by the Homeowners Association (HOA) and/or individual homeowners.

<u>Lots 103, 104, 105, 106, 107, and 108</u>

Per the preliminary site plans (Exhibit #12), these lots are proposed as multi-family, mixed use, and commercial.

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.

Curb radii information at the drive access locations to Lots 106, 107, and 108 on N 54th Avenue are shown on the preliminary plat (Sheets P3.1 and P3.2) to be the minimum 25-feet radius which is required on both sides and meets the minimum standard for a local road. The curb radii for the drive access to Lots 104 and 105 on North Shore Blvd. show the curb radii as 25-feet. The curb radii on a collector and an arterial is to be a minimum 35-feet curb return.

Staff recommends a condition of approval that prior to engineering plan approval, the preliminary plat and street plans are to be revised with the curb return radius on both sides of the drive access to Lots 104 and 105 to be a minimum 35-feet.

Per the CDSM Table 1 – Guidelines for Geometry of a Private Roadway, Off-street Parking, note 2.c Aisle dimensions: one-way aisle minimums is 15-feet-wide; two-way aisle minimums is 24-feet-wide.

Per the preliminary plat and street plans (Exhibit #12) the two-way drive aisle widths vary from 24-feet to 26-feet which meets the minimum aisle width standard for two-way vehicular movements.

Per the CDSM Table 1 – Guidelines for Geometry of a Private Roadway, Off-street Parking, note 2.d Ingress aisles setback from back of sidewalk: collectors are a minimum 40-feet; arterials are a minimum 50-feet.

The off-street parking stalls on both sides of the access drive to Lots 104 and 105 are located approximately 15-feet from the back of sidewalk on North Shore Blvd. The parking stalls do not meet the minimum setback standard for an arterial which is 50-feet from the back of sidewalk.

Staff recommends a condition of approval that prior to engineering plan approval, the preliminary site plans are to be revised with the proposed parking stalls located a minimum of 50-feet from the back of the sidewalk on an arterial street.

[Pedestrian & Utility Access Easement, Emergency Access]

The preliminary street plans (Exhibit #12, Sheets P7.1 and P7.5) shows a variable width utility and public access easement over and under the paved emergency access road from SE Leadbetter Road to the Tract K parking area and access to N 54th Avenue.

The easement over said road is to be a minimum 30-foot-wide easement to allow for the minimum separations required between the water transmission main, the stormwater main, and the sanitary sewer main. As this road will also act as an emergency access road for fire, life, safety, the road is to be constructed with a minimum 12-foot-wide paved surface with 20-feet of overall clearance.

The preliminary street plans show a pair of removable bollards at the north and south ends of the emergency access road. Fire Marshal's Office is not in support of the removable bollards as these will add unnecessary delays to responses.

Staff recommends a condition of approval that prior to engineering plan approval, the street plans are to be submitted with the following revisions:

- A sign is to be installed on both the gates stating, Emergency Vehicle Access Only'.
- A note is to be added to the final plat and street plans stating that 'All vehicular access is prohibit except for emergency vehicles.'
- An Opticom activated gate is to be installed on the north end of the emergency access road at Tract K, and on the south end of the emergency access road, north of the existing boat launch parking lot. The applicant is to work with staff to determine the best location for the south gate.
- The applicant is responsible for providing and installing the gates at both locations and for obtaining the gate permits in accordance with CMC 12.36.
- The applicant and/or Homeowners Association (HOA) is responsible for ownership and maintenance of the gate located on the north end of emergency access road at Tract K, for parking and access to N 54h Avenue of the proposed development
- The city will be responsible for ownership and maintenance of the gate located on the south end of the emergency access road adjacent to the boat launch parking lot on the city's park open space.

<u>Utilities, Street Lighting, Street Trees, and Other Improvements</u>:

[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:

- Streetlights are required on the private streets located in Tract P, per CDSM, Standards for Street Lighting.
- A minimum of one streetlight is required on the private streets located in Tract G, per CDSM, Standards for Street Lighting.
- Any proposed streetlights for private streets are required to be metered separately and are to be owned and maintained by the Homeowners Association (HOA) and/or homeowners.
- 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.

[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.

FINDING: Staff recommends a condition of approval that the applicant provide a minimum of one street tree per lot. 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.

[Other Improvements]:
Block retaining wall plans that are to be reviewed, approved, and inspected 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.

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.

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: North Shore Blvd.; N 54th Avenue; N 55th Avenue; and N 56th Avenue.

Street naming is the responsibility of the Building Official. Therefore, the proposed public and private road names, as shown on the preliminary plat, may 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 water mains and sanitary sewer system in private street Tract P and Tract G.
- A utility access and maintenance easement to the city for the water transmission main, the sanitary sewer main, and the stormwater main located within the emergency access road from SE Leadbetter Road to N 56th Avenue.
- A right-of-entry is to be granted to the city for stormwater inspection purposes of any and all stormwater facilities, including those located in Tracts C, D, E.
- A public pedestrian access easement over the emergency access road from SE Leadbetter Road to N 56th Avenue.
- All storm facilities 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.

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.

Density and Dimensional Standards – North Shore Mixed Use (MX-NS) Zone

The MX-NS zone encompasses 6.5 acres of the total site area with 1.54 acres of open space or critical area tracts for a net acreage of 4.96 acres. The standards discussed below are from CMC 18.09.030 Table 1.

[DENSITY]: The MX-NS zone allows for a minimum of 50 units and a maximum of 119 units. There is no building elevations proposed at this time; therefore, the applicant has proposed a general footprint and unit count for future buildings.

The applicant is proposing a total of 52 units within one 24-unit apartment building, one 12-unit mixed use building, and one 16-unit mixed use building. The mixed-use buildings will provide commercial space on the first floor along with the 2,250 square foot commercial building on Lot 104.

Staff finds the density requirements are met.

[DIMENSIONAL STANDARDS]: The MX-NS requires a minimum lot size of 1,800 square feet with no minimum lot width or depth. The proposed lots exceed 1,800 square feet; therefore, staff finds the lot dimensional standards are met.

[LOT COVERAGE]: A maximum lot coverage of 65% is permitted. Staff finds the future buildings shall meet the lot coverage requirements and recommend a condition of approval.

[HEIGHT]: There is no building proposed at this time; therefore, staff recommends a condition of approval that the building height of 100 feet with compliance of footnote 6: *"Building heights shall "step-down" and provide compatible scale and privacy between developments. See the North Shore Design Manual"* be complied with at the time of design review submittal. Due to there not being a proposed building, only an envelope, staff finds design review will be required prior to building permit issuance.

[SETBACKS]: The setbacks for the mixed-use building are as follows:

- Maximum Front Yard: 10 feet
- Minimum Side Yard: 10 feet
- Minimum Rear Yard: 10 feet

The applicant is proposing to meet all setbacks, except the 12-unit mixed use building along North Shore Blvd. Due to the curved nature of the street, the building cannot maintain a maximum 10-foot setback along the entire frontage. Staff finds the setbacks are met as it is not possible for a building to be curved along the street frontage to follow the street curve.

[OPEN SPACE]: A minimum open space of 100 square feet per dwelling unit is required. The applicant has not provided open space for these future 16 units. Usable open space is "*areas that provide opportunities for active and passive uses and encourage community interaction. These spaces are accessible to the general public or to residents, employees, or customers and can include, but are not limited to plazas, courtyards, sports courts, and viewpoints (see 18.03.040 "Definitions for development terms")"* per footnote 5. Staff finds that the applicant shall provide 100 square feet of usable open space for each unit in the mixed-use zone.

Density and Dimensional Standards – North Shore Low Density Zone

The LD-NS zone encompasses a total of 10.27 acres with 6.95 acres of open space and critical area tracts which leaves 3.32 net acreage. The applicant is proposing to follow density transfer provisions per CMC 18.09.040.B Table 1 as they have preserved critical areas and open space in a tract per CMC 18.09.060.

[DENSITY]: The density transfer provisions allow between 13 and 19 units. The applicant has proposed 31 units which includes seven single family lots and 24 apartment units. Both single family detached, and apartment units are permitted in the LD-NS zone per CMC 18.07.040 Table 2, Footnote 2.

Although CMC 18.07.040 does not permit a higher density, per Section 4.10.1 of the Development Agreement (DA), "*the density shall be calculated for the North Shore Property as a whole based on the area of each individual zone, but the density may be allocated to any portion of the Property."* In the LD-NS zone, there are an additional 12 units proposed.

Since the North Shore Mixed Use area of this development allows up to 119 units and the applicant is only proposing 52 units in this area, the additional density may be allocated to the North Shore Low Density area permitting the additional 12 units. Therefore, staff finds the density for the overall site is met.

[DIMENSIONAL STANDARDS]: The density transfer provisions allow lot between 5,250 and 9,000 with no average lot size requirement. The lots sizes proposed range between 5,250 and 8,004 square feet. Staff finds the lot size requirements are met.

[LOT COVERAGE]: The lot are intended for single family homes which are not proposed at this time; therefore, staff recommends a condition of approval that the homes comply with the maximum lot coverage of 60%.

[HEIGHT]: The lots are intended for single family homes which are not proposed at this time; therefore, staff recommends a condition of approval that the homes comply with the maximum building height of 35 feet.

[SETBACKS]: The required setbacks for lots for the LD-NS zone are as follows:

- Minimum Front Yard: 10-25 feet (*LD-NS subarea developments are encouraged to vary the front yard building setbacks to provide visual interest along a residential block. Garage faces shall maintain a minimum setback of twenty feet. Lots with alley-access garages may have a minimum front yard building setback of ten feet. Per footnote 3)*
- Minimum Side Yard: 5 feet
- Minimum Street Side Yard and Corner Lot Rear Yard: 10 feet
- Minimum Rear Yard: 10-25 feet (*LD-NS subarea developments with street-access garages may have a minimum rear yard setback of ten feet. LD-NS developments with alley-access garages must maintain a twenty-foot rear-yard building setback from the alley. Per footnote 4)*

Staff recommends a condition of approval that all setbacks be written and shown on the plat prior to final plat approval. Staff also recommends that footnote 3 and 4 be complied with prior to building permit approval.

Density and Dimensional Standards – North Shore High Density (HD-NS) Zone

The HD-NS zone encompasses a total of 17.14 acres with 3.95 as open space and critical area tracts which leaves 13.19 net acreage.

[DENSITY]: The density allows for a minimum of 132 and up to 237 units total. The applicant is proposing a total of 143 units. These units will include two 24-unit apartment buildings and 95 single family lots. Staff finds the density is met in the HD-NS zone.

[DIMENSIONAL STANDARDS]: The zoning allows for a minimum lot size of 1,800 square feet with a minimum lot depth of 60 and lot width of 20 feet. The applicant is proposing two apartment buildings on Lot 108 which exceeds 1,800 square feet and 143 single family lots that with the smallest lot totaling approximately 2,200 square feet. Staff finds the dimensional standards are met.

[LOT COVERAGE]: There are no buildings proposed at this time; therefore, staff recommends a condition of approval that prior to building permit approval, the 65% lot coverage is met.

[HEIGHT]: There are no buildings proposed at this time. However, the building height requirement is 50 feet and shall comply with the following footnotes:

- Footnote 5: *"Maximum four stories but not to exceed height listed"*
- Footnote 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."*

Therefore, staff recommends a condition of approval that prior to building permit approval, the building height with footnotes 5 and 9 are met.

[SETBACKS]: The setbacks for the HD-NS zoning are as follows:

- Minimum Front Yard: 10 feet
- Minimum Garage Front Yard: 20 feet
- Minimum Side Yard: 3 feet (Footnote 1: The non-attached side of a dwelling unit shall be three feet, otherwise a zero-lot line is assumed.)

- Minimum Street Side Yard: 15 feet (Footnote 8: Minimum side yard flanking street shall be 10 feet for cottage-style and rowhouse developments.)
- Minimum Rear Yard: 10 feet

The applicant has shown setbacks on the preliminary plat. Staff recommends a condition of approval that all setbacks be written and shown on the plat prior to final plat approval.

[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 HD-NS zoned area of the subject site abuts HD-NS and LD-NS residential zones. Since there are not lots that abut the different residential zoning, staff finds beveling is not required for the HD-NS zone of the subject site.

The LD-NS zoned area of the subject site does not abut any other residential zoning other that LD-NS, therefore beveling is not required. The other two zones in the development (MX-NS and C-NS) are not considered residential zonings.

> **FINDING:** Staff finds the proposed lot sizes can conform to the requirements of the LD-NS and HD-NS zone of the density transfer provisions as conditioned.

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

<u>Landscaping</u>

[General Landscaping]: Landscape buffering is not required for single family homes. However, landscape buffering is required for multi-family and commercial uses. The apartments, mixed use and commercial buildings in the MX-NS and C-NS zone are required to be landscape at the perimeter per CMC 18.13.055. Staff recommends a condition of approval to this effect.

[Tree Density]: A minimum of 30 tree units (TU) per net developable acre is required for developments in the North Shore Area. 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 36.37 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 12.44 acres; therefore, the net developable acreage is 23.60 acres, requiring 708 TUs. The tree plan indicates that there will be 2,236 TUs retained and 322 TUs planted for a total of 2,558 TUs. Footnote 1 of Table 1 requires at least 50% of the minimum tree density be achieved through retention. The applicant is retaining 2,236 TUs out of the 708 required, therefore staff finds the proposal meets the minimum tree density.

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 for 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]: Landscaping shall be located along the perimeter of all landscaping, including the off-street parking tracts per CMC 18.13.060 and shall be conditioned as such.

Double Frontage Lots

Per CMC 17.19.030.D.6 lots that have two frontages shall have a 10-foot landscape tract with trees and shrubs. Lots 1-22 are considered double frontage lots. The applicant has proposed a double frontage tracts (Tract N, S, and Q) to comply with this standard.

Lots 97-99 are considered double frontage lots and require a landscape tract per CMC 17.19.030.D.6. A condition is recommended to this effect.

Parking

Per CMC 18.11.130, two parking spaces per single family dwelling or row house is required. The proposal includes 206 single family lots. (The mixed use and apartment buildings parking requirements are discussed in the site plan review section of this staff report). There are no elevations at this time for the attached and detached single family homes. However, the single-family homes will have a minimum of a one car garage which allows for one parking space in the garage and one in the driveway. Staff finds there shall be two parking spaces for each single-family lot.

Per CMC 17.19.040.B.10.e., when the average lot size is less than 7,400 or less, on additional off-street parking space is required for every five units and placed in a common tract. There are 102 lots that average to less than 7,400 square feet. Therefore, 20 off street parking spaces are required. The applicant is proposing several tracts through the development to accommodate these spaces to accommodate 19 parking spaces. Staff finds the parking tracts shall include 20 off street parking spaces.

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 to this effect is recommended.

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.

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.

Staff finds a condition of approval is warranted that prior to engineering plan approval, the applicant should be required to submit with the civil construction application all block retaining walls 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.

Signage

All signage must comply with CMC 18.15 and will require a permit. A condition to this effect is recommended.

FINDINGS: Staff finds that, as conditioned, the proposed development complies with the relevant requirements of the Camas land development and zoning codes, and all other relevant local regulations.

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

Traffic Impact Analysis/Study

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

Based on the Transportation Impact Study (TIS) (Exhibit 7), dated June 30, 2025, and prepared by Kittelson & Associates, the proposed development's residential phases 1 through 5 will generate approximately 1,831 ADTs, which triggered the requirement for a TIS. The number of ADTs are based on Land-Use Code (LUC) 210 for detached single-family homes, LUC 215 for single-family attached homes, and LUC 220 for multi-family low-rise apartments.

[Trip Generation and Distribution]:
As shown on Table 5 – Estimated Site Trip Generation (page 23) 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 210 – detached single-family homes, 41 units = average 444 ADTs, for a total of 33 AM Peak Hour Trips, (8 in/25 out); and a total of 43 PM Hour Trips (27 in/16 out).
- Land-Use Code 215 – single-family attached, 61 units = average 414 ADTs, for a total of 26 AM Peak Hour Trips (7 in / 19 out); and a total of 33 PM Peak Hour Trips (19 in / 14 out).
- Land-Use Code 220 – multi-family low-rise, 140 units = average 973 ADTs, for a total of 66 AM Peak Hour Trips (16 in / 50 out); and a total of 81 PM Peak Hour Trips (51 in / 30 out).

Per the approved DA (Exhibit 38), the estimated residential Trip Generation numbers noted above are vested for the proposed development. If the cumulative number of trips for the proposed residential units exceeds the vested amount, an updated Traffic Memo will be required.

A Traffic Study (TIS) will be required for each proposed commercial use at the time of application.

[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 6 - Projected Weekday

AM Peak Hour Study Intersection Operations Summary (Exhibit 7, page 30) and in Table 7 – Projected Weekday PM Peak Hour Study Intersection Operations Summary (Exhibit 7, page 32).

The intersections were evaluated at Year 2025 without Project, Year 2030 Background (without Project), and Year 2030 Total Traffic (with Project). The following projects do not meet the applicable Level of Service (LOS) standard in the 2030 total traffic scenario:

1. NE 232nd Avenue & NE 28th Street (AM Peak) (LOS F) – Clark County Jurisdiction
2. SR500 at NE 242nd Avenue & NE 28th Street (PM Peak) (LOS E) – State Route/Jurisdiction
3. NE Everett Street (SR 500) & NE 14th Avenue (PM Peak) (LOS F) – State Route/Camas Jurisdiction
4. NW Lake Road & NW Sierra Street (AM Peak) (LOS E) – Camas Jurisdiction
5. NW Lake Road & NW Sierra Street (PM Peak) (LOS F) – Camas Jurisdiction

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) E (failure) in the Village at North Shore buildout year (2030). While the intersection is currently in the Transportation Impact Fee (TIF) South District, the Village at North Shore 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 Village at North Shore buildout year.

Staff finds a condition of approval is warranted that prior to final acceptance of any phase of the Village at North Shore, 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 Share]:
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 #28) = 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 = 32 (per Kittelson TIS)
- Village at North Shore Proportionate Share Contribution = $1,423 x 32 = $45,536.00.

Staff finds a condition of approval is warranted that prior to final acceptance of the first phase that is constructed for the Village at North Shore the applicant should be required to pay the full amount of the Village at North Shore proportionate share amount that is calculated at $45,536.00 for the NW Lake Road and NW Sierra Street Intersection improvements. Alternatively, the applicant may provide the PM Peak Hour Trip breakdown from the Traffic Engineer based on construction of each phase and pay the proportionate share amount prior to final acceptance of said phase.

[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 8, page 39, City of Vancouver Proportionate Share Fee Summary, the proposed Village at North Shore projected

Based on the TIS, the proportionate share amounts 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	23	$9,200
NE 172nd Avenue & NE 18th Street	$300 per PM peak hour trip	7	$2,100
NE 179th Place & NE 18th Street	$900 per PM peak hour trip	7	$5,600
NE 187th Avenue & NE 18th Street	$1,200 per PM peak hour trip	7	$8,400
Total Proportionate Share Cost			**$25,300**

Staff recommends a condition of approval that prior to final acceptance of the first phase that is constructed for the Village at North Shore the applicant should be required to pay the full amount of the proportionate share amount of $25,300.00 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 #7), "*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 by the city to assess whether further analyses are warranted)".*

For all intersections in the study area:
"No safety-based mitigation needs were identified for implementation in conjunction with the proposed development based on the crash data review."

[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:

- N Bear Lane and North Shore Boulevard
- N 54th Avenue and North Shore Boulevard
- N 54th Avenue and N Mills Street
- N 55th Avenue and N Mills Street
- N 56th Avenue and N Mills Street
- N 56th Avenue and N Mills Court
- N 56th Avenue and North Shore Boulevard

The Summary of Findings and Recommendations are addressed on pages 40 through 42 of the Traffic Impact Study (Exhibit #7) and as noted below:

SUMMARY OF FINDINGS:

- Two study intersections experience performance levels that don't satisfy the applicable operating parameters today (NE Everett Street/NE 14th Avenue and NW Sierra Street/NW Lake Road).
- 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 =0.79;
    - SR 500 (NE 242nd Avenue)/NE 28th Street (Intersection #2): PM peak hour LOS E operations with a
    - V/C = 0.80;
    - SR 500 (NE Everett Street)/NE 14th Avenue (Intersection #13): PM peak hour LOS F operations with a
    - V/C = 0.78;
    - NW Sierra Street/NW Lake Road (Intersection #16): AM and PM peak hour LOS E operations with a
    - V/C = 0.52 during the AM peak hour, and a V/C = 0.47 during the PM peak hour.
- 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 =0.79.
        - 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 two (2) weekday AM peak hour trips to the stop controlled northbound approach when the Clark County LOS standard is not met.
    - SR 500 (NE 242nd Avenue)/NE 28th Street (Intersection #2): PM peak hour LOS E operations with a V/C = 0.80.
        - The City of Camas, Clark County and WSDOT are coordinating regarding the potential to collect proportional share mitigation towards a future roundabout from development projects that impact the intersection; however, WSDOT does not currently have a planned/funded project for the intersection.

        - 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 C with a V/C ratio of 0.65, overall intersection LOS B).
    - SR 500 (NE Everett Street)/NE 14th Avenue (Intersection #13): PM peak hour LOS F operations with a V/C = 0.78
        - 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 a route alternative (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 #16): AM and PM peak hour LOS E operations with a V/C = 0.52 during the AM peak hour, and a V/C = 0.47 during the PM peak hour.
        - 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.
        - The city is currently assessing a fee of $1,423 per PM peak hour trip added to this intersection but may switch to a future TIF as part of the on-going TIF Update program which is anticipated to be completed in 2025. Assuming the $1,423 per PM peak trip remains in effect for this development application, the resulting fee for this development is $45,536 (based on 32 PM peak hour trips added) through the intersection.
    - The proposed site development is projected to add weekday PM peak hour trips to the following intersections where the City of Vancouver assesses proportional share mitigation payments:
        - NE 192nd Avenue/NE 13th Street mitigation: 23 trips
        - NE 179th Place/NE 18th Street mitigation: 7 trips
        - NE 187th Avenue/NE 18th Street mitigation: 7 trips

*Staff notes that *NE 172nd Avenue/NE 18th Street: 7 trips* is missing from the findings section.

RECOMMENDATIONS:
Based on the traffic operations analysis findings, we recommend the following traffic control changes in conjunction with the proposed Village at North Shore site development.

- Make a proportional financial mitigation contribution to the City of Camas planned NW Sierra Street/NW Lake Road roundabout project.
    - The city is currently assessing a fee of $1,423 per PM peak hour trip added to this intersection but may switch to a future TIF as part of the on-going TIF Update program which is anticipated to be completed in 2025. Should the $1,423 per PM peak trip remain in effect for this development application, the resulting fee estimate for this development is $45,536 (based on 32 PM peak hour trips added). The City will determine the final contribution amount. ***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 SR 500 (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 payment of a proportional share financial contribution to a future intersection capacity improvement. ***Staff concurs. A condition of approval prior to final acceptance is warranted.***

- Collaborate with Clark County to define and, if needed, construct an appropriate paved section along NE 252nd Avenue and NE 3rd Street to serve as the interim primary access to the proposed development. ***Staff concurs. A condition of approval prior to final acceptance is warranted.***

- Collaborate with Clark County to re-sign and restripe the NE 252nd Avenue/NE 3rd Street intersection in conjunction with the proposed development in accordance with the *Manual on Uniform Traffic Control Devices* (refer to Exhibit 1, a conceptual illustration of suggested curve warning signs, striping revisions along with suggested STOP sign and STOP bar relocation/replacement that could be implemented with the proposed site development, subject to Clark County direction). ***Staff Concurs. A condition of approval prior to final acceptance is warranted.***

- Subject to City of Vancouver concurrence and final residential unit count confirmation, payment of the following proportional share intersection fees as identified per City of Vancouver requirements:
    - $9,200 towards NE 192nd Avenue/NE 13th Street mitigation June 2025 Page 42
    - North Shore Village Residential Transportation Impact Study Kittelson & Associates, Inc.
    - $2,100 towards NE 172nd Avenue/NE 18th Street mitigation
    - $5,600 towards NE 179th Place/NE 18th Street mitigation
    - $8,400 towards NE 187th Avenue/NE 18th Street mitigation

  Staff Concurs. A condition of approval prior to final acceptance is warranted.

  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;

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 18.18 SITE PLAN REVIEW

18.18.060 - Criteria for approval. The city shall consider approval of the site plans with specific attention to the following:

A. Compatibility with the city's comprehensive plan;

Comprehensive Plan

The subject property is designated as NS-Commercial, NS-Multifamily High, and NS Single-Family Low in the City's Comprehensive Plan, which includes the North Shore Mixed Use (MX-NS), North Shore High Density (HD-NS), North Shore Low Density (LD-NS), and North Shore Commercial (C-NS) zoning designations.

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-2.2: Support village-style employment and retail development in the North Shore area to serve the growing population. Discourage strip developments.
- LU-2.4: Encourage mixed-use developments (residential and commercial) in order to support adjacent uses and reduce car trips, but not at the expense of job creation
- 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-1.5: Ensure that housing in mixed-use buildings (or developments) will complement the commercial and retail portion of the development and increase local family-wage jobs.
- ED-1.5: Ensure adequate infrastructure is planned or in place to nurture and incubate new businesses.
- ED-1.8: Ensure that development standards are balanced in order to promote high-quality building and site design and encourage businesses to operate in an environmentally responsible manner.

The proposed development includes a variety of housing types and commercial space. There are proposed detached and attached single family homes, apartment units, and mixed-use buildings. The variety of housing will help accommodate the projected growth through the utilization of existing land. The proposed houses, when built, will provide housing opportunities to meet the needs of the

community in accordance with the Housing Element of the Comprehensive Plan. The commercial element in the development will meet the economic development policies by providing jobs within the city near housing. The commercial spaces will have adequate infrastructure for future commercial uses. The infrastructure will support pedestrian and vehicle connectivity to comply with the economic development policies of the Comprehensive Plan.

FINDINGS: Staff finds that the proposed project is compatible with and complements the Comprehensive Plan.

B. Compliance with all applicable design and development regulations;

Density and Dimensional Standards – North Shore Commercial (C-NS) Zone

The C-NS zone encompasses 2.12 of the total site area with no open space or critical area tracts. The standards discussed below are from CMC 18.09.030 Table 1.

[USE, DENSITY, AND SETBACKS]: The applicant is proposing a mixed-use building with a 10-foot front yard setback and 16 apartment units on the upper floors. The mixed-use building is proposed to have 10,000 square feet of commercial space on the first floor.

Per CMC 18.07.030 Table 1, the C-NS zone does not allow for apartment units and requires a minimum 15-foot front yard setback which allows for public seating within the front yard setback. However, per Section 4.10.2 of the Development Agreement (DA) "*Residential dwelling units shall be allowed over the ground floor commercial use in the North Shore Commercial (C-NS) zone of the North Shore Property. Ground floor residential uses shall be limited to an entry lobby*." Therefore, apartment units are permitted and shall comply with the density requirements in the DA.

In addition, the Master Plan in the DA shows a 10-foot front yard setback instead of a 15-foot setback. Therefore, staff finds the front yard setback is met.

[DIMENSIONAL STANDARDS AND LOT COVERAGE]: There is no minimum lot size or lot coverage requirements in the C-NS zone, therefore the lots size and coverage requirements are not applicable.

[HEIGHT]: Buildings within the C-NS zone are limited to 100 feet. Therefore, staff recommends a condition of approval that the building height of 100 feet with compliance of footnote 6: *"Building heights shall "step-down" and provide compatible scale and privacy between developments. See the North Shore Design Manual"* be complied with at the time of design review submittal. Due to there not being a proposed building, only an envelope, staff finds design review will be required prior to building permit issuance.

[OPEN SPACE]: A minimum usable open space of 5% of net acreage in the C-NS zone is required. This calculates to .1 acres of usable open space. The applicant is not proposing a usable open space are within the C-NS zone, therefore staff recommends a condition of approval that .1 acres of usable open space per CMC 18.09.030 Footnote 5 be complied with.

Landscaping

General Landscaping: The C-NS zone includes a commercial use on site and has a residential zone abutting the site to the west and commercial buildings across the street to the north and east. Per CMC 18.13.055 Table 1 a 10-foot L3 buffer is required when abutting a residential use without street separation. For commercial uses across the street, a 5-foot L2 buffer is required. Staff recommends a condition that the proposal complies with the landscape buffer requirements.

[Street Trees]: CMC 17.19.030(F)(1) requires least one 2-inch caliper tree in the planter strip of the right-of-way unless driveways or vision clearance prohibits a tree. Staff recommends a condition to this effect.

[Tree Density]: Tree density is discussed in the subdivision section of this staff report.

[Parking]: Per CMC 18.13.060 parking must be landscaped at the perimeters, include a minimum ratio of one tree per six parking spaces, and no more than 15 parking spaces are allowed in a tow without a landscaped divider strip. Staff recommends a condition that the parking landscaping be complied with.

Signage

All signage must comply with CMC 18.15 and may require a separate permit.

Parking

The development includes a 10,000 square feet commercial building. There is no commercial use proposed at this time; therefore, staff will use the "multi-use retail space" to determine the general amount of parking required as this requires one space per 250 square feet which is on the conservative side of parking requirements for the other commercial uses in the table.

Using this multi-use retail use, 40 spaces are required. The applicant is proposing more than 40 parking spaces; therefore, staff finds the parking is met.

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 of approval is recommended that the proposal follows the retaining wall requirements.

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.

Staff finds a condition of approval is warranted that prior to engineering plan approval, the applicant should be required to submit with the civil construction application all block retaining walls 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.

FINDING: As discussed throughout this staff report, and as conditioned, this proposal can or will meet all relevant codes, regulations, ordinances and other requirements as identified herein.

C. Availability and accessibility of adequate public services such as roads, sanitary and storm sewer, and water to serve the site at the time development is to occur, unless otherwise provided for by the applicable regulations;

Availability and accessibility of adequate public services, such as roads, sanitary sewer, storm sewer, and water to serve the site are discussed in detail in ***Chapter 17.11 Subdivisions, Criterion 2 and 3*** above in this staff report.

FINDING: As discussed throughout this staff report, and as conditioned, the proposed development can or will make adequate provisions for roads, sanitary sewer, storm sewer, water, and erosion control improvements that will be consistent with City requirements.

Appropriated provisions addressing traffic and transportation impacts relating to the proposed development are discussed in detail in ***Chapter 17.11 Subdivisions, Criterion 7*** above in this staff report.

FINDING: As discussed throughout this staff report, and as conditioned, the proposed development can or will make adequate provisions to address any impacts identified by the transportation impact study.

D. Adequate provisions are made for other public and private services and utilities, parks and trails;

Adequate provisions for maintenance of other public and privately owned facilities are discussed in detail under ***Chapter 17.11 Subdivisions, Criterion 8*** above in this staff report.

FINDING: As discussed throughout this staff report, and as conditioned, the proposed development can or will make adequate provisions for public and private utilities, parks and trails.

E. Adequate provisions are made for maintenance of public utilities;

Adequate provisions for maintenance of the public utilities are discussed under ***Chapter 17.11 Subdivisions, Criterion 2 and 3*** above in this staff report.

FINDING: As discussed throughout this staff report, and as conditioned, the proposed development can or will make adequate provisions for maintenance of public utilities.

F. All relevant statutory codes, regulations, ordinances and compliance with the same. The review and decision of the city shall be in accordance with the provisions of CMC Chapter 18.55;

FINDING: As discussed throughout this staff report, and as conditioned, this proposal can or will meet all relevant codes, regulations, ordinances and other requirements as identified herein.

CHATPER 18.19 DESIGN REVIEW

Per the North Shore Design Review Manual, design review is required for development in 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.

Additionally, *"design review for North Shore residential shall be processed as a Type I decision to be rendered by the City's Community Development Director or designee and be approved consistent with the design standards set forth in the Master Plan. The application shall be substantially similar to the Master Plan. Any aspects of a land use application relating to the North Shore Property that are not substantially similar to the Master Plan shall be reviewed under the applicable regulations as if no Master Plan had been approved."* per Section 5 of the Development Agreement.

Per Section 4.4.4 of the Development Agreement (DA), the developer agrees to dedicate land for a permanent public art installation in the general location depicted in the Master Plan. The Master Plan indicates that Tract A will be designated for public art. Staff finds the applicant shall submit drawings or renderings of the proposed public art for approval prior to engineering plan approval for the phase which the art will be located.

PUBLIC COMMENTS

As of the writing of this staff report, staff four (4) written public comments from the Department of Ecology, Department of Natural Resources, Department of Archaeology and Historic Preservation, and Department of Fish and Wildlife. These comments are addressed throughout the staff report.

CONCLUSION

Based on the above findings and discussion provided in this staff report, staff concludes that Village at North Shore (SUB25-1008) 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 Village at North Shore (SUB25-1008) 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.
    a. This includes any existing overhead utilities when applicable.
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. 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.
22. The recommendations in the Geotechnical Report shall be followed.
23. The applicant shall coordinate with state agencies to address comments provided through SEPA review.
24. Retaining walls must meet CMC 18.17.060.

25. Signage must meet CMC 18.15 and may require separate permitting.

Engineering:

26. If the City, or a third party authorized by the City, elects to construct any portion of North Shore Boulevard at their own cost and expense without any latecomer fees being charged to the applicant in advance of the applicant's construction of said portions, the applicant shall dedicate at no cost the necessary right-of-way for said advanced construction. The City will work with the applicant to ensure that the roadway and associated grades are compatible with the applicant's preliminary development approval.
27. Per the approved DA (Exhibit 38), the estimated residential Trip Generation numbers of 1,831 ADTs are vested for the proposed development. If the cumulative number of trips for the proposed residential units exceeds the vested amount, an updated Traffic Memo will be required.

Prior to Engineering Plan Approval:

Planning:

28. An inadvertent discovery plan shall be submitted to the city for review and approval.
29. A plan sheet with the mitigation planting table shall be submitted to the city for review and approval.
30. The applicant shall coordinate with WDFW to address their comments and update the mitigation plan as necessary.
31. 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.
32. The installation of temporary construction fencing prior to construction that clearly marks in the field critical area buffers (i.e., wetlands and habitat conservation areas) and fencing shall remain throughout permitted construction activities and shall be shown on final landscape plan.
33. The applicant shall provide a minimum of one street tree per lot. 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.
34. The setbacks for each zone shall be shown on each lot and in table format on the plat.
35. The applicant shall include landscape buffers per CMC 18.13.055 for each zone on the final landscape plan.
36. The landscape plan shall include parking perimeter landscaping.
37. Lots 97-99 are considered double frontage lots and require a landscape tract.
38. The applicant shall submit drawings or renderings of the proposed public art prior to engineering plan approval for the phase in which the art will be located.

Engineering:

[Water]

39. The applicant shall submit final utility plans for the extension of the 12-inch water transmission main from SE Leadbetter Road north to serve the proposed development, east to the easternmost

property line of the proposed development (Parcel No. 178175000), which abuts Enclave at North Shore, and the north westernmost property line of the proposed development abutting Parcel No. 177884000 for the benefit of future developments to the west. Both ends of the 12-inch transmission main are to provide a dead-end blow off.

40. The applicant shall submit final utility plans providing for an 8"x8" cross and dead-end blowoff on the 8-inch water mains at the intersections of N Mills Street and N 54th Avenue; N Mills Street and N 55th Avenue; N Mills Street and N 56th Avenue for future developments to the west; and a dead-end blowoff at the north easternmost end of N 56th Avenue where it abuts the southern end of SE 252nd Avenue in Clark County.

41. The applicant shall submit revised water utility plans that include the locations of all water services and water meter boxes on both the public streets and the private streets located in Tracts P and G. Additionally, the revised utility plans are to show the water utility easement over and under the 8-inch water main, the water meters, and meter boxes located in Tract P for Lots 1 through 22; and Tract G for Lots 96 through 102.

42. The applicant shall provide the following:
    a. Verification that a minimum 1-inch domestic water service will supply sufficient flow to the proposed multi-family, mixed-use, and the commercial buildings.
    b. The water utility plans are to include the size of the domestic water meters for the multi-family, mixed-use, and commercial buildings.
    c. Domestic water meters over 2-inches are special orders by city staff and owned and maintained by the property owner.
    d. The domestic water supply from the water meter to the multi-family, mixed-use, and commercial structures shall be sized by the fire sprinkler contractor's design calculations.
    e. Provide separate water services to the mixed-use building, one for the multi-family units and one for the commercial building with an above-ground reduced pressure backflow assembly (RPBA).

43. The water utility plans shall be revised with the following revisions to the onsite water plans:
    a. The fire line is to be tapped off the proposed 8-inch public water main and extended from the public water main to the double check detector assembly (DCDA) vault. Neither the domestic water service nor the irrigation service is to be tapped off the fire line.
    b. The fire line is to be shown on the water utility plans for informational purposes.
    c. A fire permit application is to be submitted to the Fire Marshal's Office via the FMOs online portal.
    d. Private fire hydrants are to be ordered from the factory and painted red.
    e. Private fire hydrants are to be owned and maintained by the property owner.

[Irrigation]

44. The water utility plans shall be revised with the following:
    a. The locations and size of irrigation meters is to be determined in advance and shown on the water utility plans and landscape plans.

[Storm Drainage]

45. The applicant shall submit a complete set of stormwater plans for review and approval, per MR #1 of the TIR.

46. The applicant shall be required to submit the following:

a. The developer shall obtain County approval of a final stormwater plan designed in conformance with CCC Ch. 40.386.
b. The developer shall submit final construction plan and a final Technical Information Report (TIR) that addresses Minimum Requirements 1 through 9, prepared in accordance with the Clark County Stormwater Manual.
c. This development shall not materially increase or concentrate stormwater runoff onto an adjacent property or block existing drainage from adjacent lots.
d. The developer shall submit documentation from the stormwater treatment system manufacturer indicating that any proprietary stormwater treatment devices were sited and sized appropriately.
e. The developer shall identify on the final construction plans ownership responsibilities for each of the proposed stormwater facilities.
f. A stormwater easement shall be shown on all private/joint stormwater facilities not in the public right-of-way.
g. Stormwater facility setbacks shall be met and shown on the final construction plans, unless a reduced setback is recommended by a geotechnical engineer.
h. The required minimum separation from the bottom of any infiltration facility to the seasonal high-groundwater elevation shall be identified on the final construction plans, if infiltration is proposed.

47. Per Clark County Staff, the County stormwater plans and the TIR are to be submitted via the City's online portal as a component of the city's required construction plan application submittal. City staff will send the documents to Clark County for review and approval.

48. 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.

49. If private onsite surface water collections systems are proposed on the revised stormwater plans submittal, that said private systems are to include notes stating that the property owners of said systems are responsible for ownership and maintenance of said stormwater easement.

50. The stormwater plans are to include a note that states that the stormwater treatment and detention facilities located in the multi-family, mixed-use, and commercial lots are to be owned and maintained by the property owners; and the stormwater treatment and detention facilities located in Tracts C, D, and E, are to be owned and maintained by the property owner and/or Homeowners' Association (HOA).

51. The final stormwater TIR is to be submitted with both the City of Camas June 2022 *Stormwater Sewer System Operations & Maintenance Manual* and the maintenance requirements for the treatment vaults aka water quality/filter media facilities.

52. 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.

53. The applicant shall 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.

[Erosion Control]

54. 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.

NE 3rd Street & NE 252nd Avenue - Clark County

55. Per Clark County Staff, the following items are to be addressed by the applicant:
    a. Submit and obtain approval from Clark County of the final erosion control plan designed in accordance with CCC Ch. 40.386.
    b. The erosion control plans required by the County are to be submitted via the City's online portal as a component of the city's required construction plan application submittal. City staff will send the documents to Clark County for review and approval.
    c. All excavation and grading in the county right-of-way shall be performed in compliance with CCC Ch. 14.07.

[Sanitary Sewage Disposal]

56. The applicant is to do an analysis of the current and future capacity of the Leadbetter Lift Station, submit said analysis to the city for review and approval, and if the existing pumps are not sufficient to handle the flow from the proposed development. Based on the analysis the applicant will be required to provide any upgrades to the existing LS required for the proposed development, which could include the addition of another pump and assorted components.

57. The sanitary sewer utility plans are to be revised and submitted with a separate sewer lateral shown to each of the single-family residences and a separate sewer lateral to each of the multi-family, mixed use, and commercial buildings.

58. The applicant shall include the following with the revised sanitary sewer utility plans:
    a. The grinder pumps for the single-family residential lots are to be EOne grinder pumps per the Camas Design Standards Manual (CDSM).
    b. The grinder pumps for the multi-family and the mixed-use commercial developments are to be EOne grinder pumps which are to submitted to the city for review and approval.

59. The following notes are to be added to the utility plans:
    a. The grinder pumps for the single-family residences are to be owned and maintained by the individual homeowners.
    b. The grinder pumps for the multi-family residential units are to be owned and maintained by the property owners of the multi-family residential units.
    c. The grinder pumps for the mixed-use commercial development are to be owned and maintained by the property owners of the mixed-use commercial developments.

[Roads]

60. 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.

61. Prior to engineering plan approval, the applicant should submit a revised set of plans with the approved right-of-way widths for North Shore Blvd. as shown on the North Shore Development Agreement Master Plan (Exhibit 37).

62. Prior to engineering plan approval, the applicant should submit a revised set of plans that clearly identify the various phases proposed for construction as discussed in the North Shore Development Agreement (Exhibit 38).

[North Shore Blvd. (NSB)]

DA MP Section 3 - NSB Sta 10+04 to Sta 20+51.24

63. Prior to engineering plan approval, the applicant should submit revised street plans showing construction of the full width of the approved Section 3 of the North Shore Development Agreement

Master Plan for North Shore Blvd. from Sta 10+04, that abuts the Enclave at North Shore subdivision (Parcel No. 178171000), to approximate Sta 20+51.24.

DA MP Section 2 - NSB Sta 20+51.24 to Sta 26+77.72

64. Prior to engineering plan approval, the applicant should submit revised street plans showing construction of the full width of the approved Section 2 of the North Shore Development Agreement Master Plan for North Shore Blvd. from approximate Sta 20+51.24 to Sta 26+77.72 that is referenced as Phase 4A and Phase 3A (Exhibit 37, Sheet MP-02 & MP-04).

DA MP Section 3 - NSB Sta 26+77.72 to Sta 32+06.30

65. Prior to engineering plan approval, the applicant should submit revised street plans showing construction of the full width of the approved Section 3 of the North Shore Development Agreement Master Plan for North Shore Blvd. from approximate Sta 26+77.72 to Sta 32+06.30 that is referenced as Phase 3A, Phase 1, which includes the future roundabout, and Phase 2A (Exhibit 37, Sheet MP-02 & MP-04).

[North Shore Local Public Streets]

N 54th Avenue

66. Prior to engineering plan approval for the Phase 1 improvements that the plans should be revised to include a dead-end turnaround at the eastern end of N 54th Avenue at future Lots 94 and 95 until such time as Phase 2 is constructed.

67. The curb radii on N 54th Avenue at the intersection with N Mills Street is to be a minimum 25-feet, which includes the curb radii at the access to Track K, which is a private off-street parking lot and the emergency access from the south.

N 55th Avenue

68. Prior to engineering plan approval for the Phase 1 improvements, which includes N 55th Avenue, that the plans shall be revised to include a dead-end turnaround in the form of either a hammerhead or a cul-de-sac at future Lots 35 and 36 and Lots 60 and 61 and the pass-through access easement to Tract L is to be as an access between N 55th Avenue and N 54th Avenue removed.

69. The curb radii on both sides of N 55th Avenue at the intersection with N Mills Street is to be a minimum 25-feet.

N 56th Avenue

70. The applicant shall submit revised preliminary plat and street plans providing the design information for the intersection of N 56th Avenue and North Shore Blvd. that meet the minimum design criteria per the Camas Design Standards Manual (CDSM.)

71. The preliminary plat and the street plans should be revised to eliminate Tract R off-street parking spaces.

[Clark County – NE 3rd Street/NE 252nd Avenue]

72. Per Clark County Staff, the applicant shall submit the following for NE 3rd Street and NE 252nd Avenue:
    a. The applicant shall submit construction plans for the construction of all public roads under county jurisdiction to the county for review and approval. These roadways include NE 252nd Avenue and NE 3rd Street. These roadways should be constructed to comply with the Rural Local Access road cross section in Clark County Standard Drawing 21, but in no case shall the paved surface be less than 20 feet with 1-foot gravel shoulders.

b. The applicant shall submit a signing and striping plan for review and approval. This plan shall show signing and striping and all installation or modifications to traffic control devices in the public right-of-way required for frontage improvements and any off-site improvements. The applicant shall obtain a work order with Clark County to reimburse the County for required signing, striping and all installation or modifications to traffic control devices in the public right-of-way. The final traffic control plans (signing, striping, signals, ITS, etc.) can be approved only after the developer provides signed reimbursable work order(s) to the county's traffic engineer reviewing the plans.

c. The applicant shall consider the WSDOT Design Manual – Roadside Safety Mitigation Guidance (Section 1600) in the final engineering design of all proposed roadways and frontage improvements.

d. The plans required for Clark County review and approval are to be submitted via the city's online 'Construction Permit Application' portal as a component of the proposed development improvements.

[Private Local Roads]

Tract P – Proposed N Mills Court and N 57th Place

73. The preliminary plat and the street plans shall be revised with the minimum curb radii of 25-feet on both sides of the road at the intersection of N Mills Court and N 56th Avenue; and the intersection of N Mills Court and N 57th Place.

74. The preliminary plat and the street plans shall be revised with private road N 57th Place extended to the east property line of Lot 15 and the east property line of Lot 18, which will eliminate the need for an access and utility easement across Lots 16 and 17 respectively.

Tract G – Proposed N Bear Lane and N 54th Place

75. The preliminary plat and the street plans are to be revised providing the required tract width and paved surface in accordance with Private Street Section D. The city engineer would be in support of a deviation from the standard requiring a sidewalk on both sides of the streets.

76. The preliminary plat and the street plans shall be revised with the minimum curb radii of 35-feet is required on both sides of the road at the intersection of North Shore Blvd. and N Bear Lane. The minimum curb radii of 25-feet is required on both sides of the road at the intersection of N Bear Lane and N 54th Place.

Tract K – Parking and Access to N 54th Avenue

77. The preliminary plat and the street plans shall be revised with the minimum curb radii of 25-feet on the east side of Tract K onto N 56th Avenue.

Tract P and Tract G – Private Roads

78. The signing and striping plans are to include 'No Parking' signs with information for a private towing company is to be included on the 'No Parking' signs on the private streets located in Tract P and Tract G.

Lots 103, 104, 105, 106, 107, and 108

79. The preliminary plat and street plans are to be revised with the curb return radius on both sides of the drive access to Lots 104 and 105 to be a minimum 35-feet.

80. Prior to engineering plan approval, the preliminary site plans are to be revised with the proposed parking stalls located a minimum of 50-feet from the back of the sidewalk on an arterial street.

[Pedestrian & Utility Access Easement, Emergency Access]

81. The street plans are to be submitted with the following revisions:
    a. A sign is to be installed on both the gates stating, Emergency Vehicle Access Only'.
    b. A note is to be added to the final plat and street plans stating that 'All vehicular access is prohibit except for emergency vehicles.'
    c. An Opticom activated gate is to be installed at the north end of the emergency access road to Tract K south of the parking stalls, and on the south end of the emergency access road north of the existing boat launch parking lot. The applicant is to work with staff to determine the best location for the south gate.
    d. The applicant is responsible for providing and installing the gates at both locations and for obtaining the gate permits in accordance with CMC 12.36.
    e. The applicant is responsible for ownership and maintenance of the gate located on Tract K, for parking and access to N 54th Avenue of the proposed development
    f. The city will be responsible for ownership and maintenance of the gate located adjacent to the boat launch parking lot on the city's park open space.

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

[Street lighting]:

82. All streetlight locations shall be required to be shown on the engineering plans, the utility plans, and landscape plans. Additionally:
    a. Streetlights are required on the private streets located in Tract P, per CDSM, Standards for Street Lighting.
    b. A minimum of one streetlight is required on the private streets located in Tract G, per CDSM, Standards for Street Lighting.
    c. Any proposed streetlights for private streets are required to be metered separately and are to be owned and maintained by the Homeowners Association (HOA) and/or homeowners.
    d. 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.

[Other Improvements - Retaining Walls]

83. 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 (TIA/S]

Site Distance Triangles

84. 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. N Bear Lane and North Shore Boulevard
    b. N 54th Avenue and North Shore Boulevard
    c. N 54th Avenue and N Mills Street
    d. N 55th Avenue and N Mills Street
    e. N 56th Avenue and N Mills Street
    f. N 56th Avenue and N Mills Court
    g. N 56th Avenue and North Shore Boulevard

Prior to Land-Disturbing Activities:

85. The applicant shall submit an approved form of financial security for erosion and sediment control. Staff will provide documentation with the financial security amount.

86. The applicant shall have approved engineering plans, which include tree felling, tree removal, clearing and grading, an approved set of engineering plans, including the erosion prevention and sediment control measures is required.

87. 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.

88. The contractor is to have a hard copy of the SWPPP on site at all times during construction of the site improvements. Said copy is to be updated as ESC measures are revised and is to be available for review by staff and Ecology.

Prior to Final Plat Approval:

Planning:

89. Proof of the purchased mitigation credits of 1.063 shall be submitted to the city.

Engineering:

90. The applicant shall include the following notes on the final plat:
    a. The grinder pumps for the single-family residences are owned and maintained by the individual homeowners.
    b. The grinder pumps for the multi-family residential units are owned and maintained by the property owners of the multi-family residential units on Lots 103 and 108.
    c. The grinder pumps for the mixed-use commercial development are to be owned and maintained by the property owners of the mixed-use commercial developments on Lots 104-107.

91. An access and utility easement is to be recorded of the private streets located in Tract P and Tract G, stating that the HOA/Homeowners taking access off the private streets will be responsible for ownership and maintenance of said private streets. The following plat notes to this effect is warranted:
    a. Tract P, a private street, shall be owned and maintained by the Homeowners Association (HOA) and/or individual homeowners.
    b. Tract G, a private street, shall be owned and maintained by the Homeowners Association (HOA) and/or individual homeowners.

[Easements]

92. Prior to final plat approval, the following easements are to be shown 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 water mains and sanitary sewer system in private street Tract P and Tract G.
    c. A utility access and maintenance easement to the city for the water transmission main, the sanitary sewer main, and the stormwater main located within the emergency access road from SE Leadbetter Road to N 54th Avenue.

d. A right-of-entry is to be granted to the city for stormwater inspection purposes of the stormwater facilities located in Tracts C, D, and E.
e. A public pedestrian access easement over the emergency access road from SE Leadbetter Road to N 56th Avenue.
f. The storm facilities located in Tracts C, D, and E, 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.

Prior to Final Acceptance:

Planning:

93. Irrigation and landscaping should be installed or bonded for prior to final acceptance per CMC 17.19.030.F.3.

94. Permanent signs and fencing should be installed at the edge of the critical area buffers per CMC 16.51.210.B and C. Sign and fencing specifications should be submitted to the City for review and approval prior to installation. Once installed, photos shall be sent to the city for final approval.

95. A conservation covenant shall be recorded with the County to ensure the long-term preservation of all the critical areas and any associated buffers, including maintenance of any mitigation actions, per CMC 16.51.240 and conditioned as such.

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

Engineering:

97. The Village at North Shore 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.

[City of Camas Proportionate Share]
NW Lake Road & NW Sierra Street

98. Prior to final acceptance of the first phase that is constructed for the Village at North Shore the applicant should be required to pay the full amount of the Village at North Shore proportionate share amount that is calculated at $45,536.00 for the NW Lake Road and NW Sierra Street Intersection improvements. Alternatively, the applicant may provide the PM Peak Hour Trip breakdown from the Traffic Engineer based on construction of each phase and pay the proportionate share amount prior to final acceptance of said phase.

[City of Vancouver Proportionate Shares]

99. Prior to final acceptance of the first phase that is constructed for the Village at North Shore the applicant should be required to pay the full amount of the proportionate share amount of $25,300.00 to the City of Vancouver. The applicant is to provide Camas staff with documentation of payment of said proportionate share amount.

[WSDOT]

100. The applicant shall collaborate with WSDOT to identify and implement (if construction is required) capacity mitigation at the SR 500 (NE 242nd Avenue)/NE 28th Street intersection in conjunction with site development.
a. Potential options identified to explore with WSDOT include but are not limited to payment of a proportional share financial contribution to a future intersection capacity improvement.

101. The applicant shall collaborate with WSDOT to identify and implement (if construction is required) capacity mitigation at the SR 500 (NE 242nd Avenue)/NE 28th Street intersection in conjunction with site development.
    a. Potential options identified to explore with WSDOT include but are not limited to payment of a proportional share financial contribution to a future intersection capacity improvement.

[Clark County]

102. The applicant shall collaborate with Clark County to re-sign and restripe the NE 257th Avenue/NE 3rd Street intersection in conjunction with the proposed development in accordance with the *Manual on Uniform Traffic Control Devices* (refer to Exhibit 1, a conceptual illustration of suggested curve warning signs, striping revisions along with suggested STOP sign and STOP bar relocation/replacement that could be implemented with the proposed site development, subject to Clark County direction).

Prior to Building Permit Issuance:

Planning:

103. Design review approval is required prior to building permit issuance.

104. Future buildings shall meet the underlying zoning's lot coverage requirements.

105. Future buildings shall meet the underlying zoning's height requirements.

106. The Mixed Use - North Shore and Commercial - North Shore zoned buildings shall meet the minimum "usable open space" requirements. A plan sheet shall be submitted with the design review application for review and approval.

107. There shall be two parking spaces for each single-family lot.

108. Apartment units are not permitted in the Commercial - North Shore zone and the application shall be updated to reflect this.

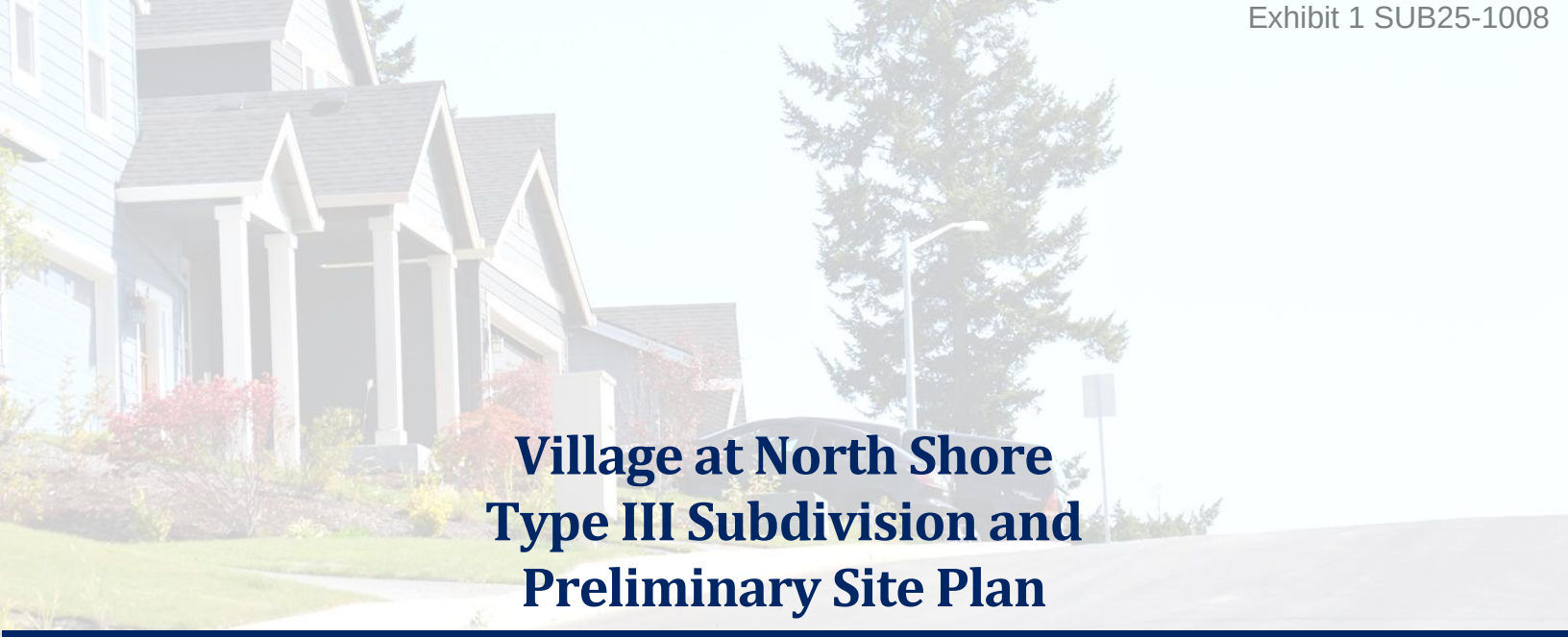
Prior to Final Occupancy:

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

Proposed Plat Notes

1. The grinder pumps for the single-family residences are owned and maintained by the individual homeowners.
2. The grinder pumps for the multi-family residential units are owned and maintained by the property owners of the multi-family residential units on Lots 103 and 108.
3. The grinder pumps for the mixed-use commercial development are to be owned and maintained by the property owners of the mixed-use commercial developments on Lots 104-107.
4. Tract P, a private street, shall be owned and maintained by the Homeowners Association (HOA) and/or individual homeowners.
5. Tract G, a private street, shall be owned and maintained by the Homeowners Association (HOA) and/or individual homeowners.

2. Land Use Narrative



Village at North Shore
Type III Subdivision and Preliminary Site Plan

Date: July 2025

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

Applicant:
HSR Dev — Mills, LLC
19120 SE 34th Street, Suite 103
Vancouver, WA 98683
Andy Swanson
(503) 936-8514
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AKS Job Number: 9095

AKS ENGINEERING & FORESTRY

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Village at North Shore
Type III Subdivision and Preliminary Site Plan

Submitted to:

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616 NE 4th Avenue
Camas, WA 98607

Applicant:

HSR Dev — Mills, LLC
19120 SE 34th Street, Suite 103
Vancouver, WA 98683
Andy Swanson
(503) 936-8514
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Property Owners:

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19120 SE 34th Street, Suite 103
Vancouver, WA 98683

ICG Camas 252nd LLC
19120 SE 34th Street, Suite 103
Vancouver, WA 98683

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:

313 SE Leadbetter Road & 303 SE 252nd Avenue
Camas, WA 98607

Clark County Parcels:

177885-000 and 178175-000

Site Size:

±36.04 acres (±1,569,697 square feet)

Land Use Districts:

North Shore Mixed Use (MX-NS), North Shore Higher Density Residential (HD-NS), North Shore Lower Density Residential (LD-NS), and North Shore Commercial (C-NS)

I. Executive Summary

Through this application, HSR Dev — Mills, LLC (Applicant), requests approval from the City of Camas (City) to subdivide the subject site (described below) into a 108-lot subdivision (Villages at North Shore). The planned subdivision will include 102 single-family residential lots for the future construction of attached and detached single-family homes. Six lots within the subdivision are site plans for the construction of mixed use buildings and apartment buildings. The mixed used buildings will have commercial on the ground floor with multifamily units on the floors above. The project will gain access from NE 252nd Avenue. An internal street network is planned to be constructed to serve the subdivision. The project will also provide future circulation opportunities to the west with the creation of N 54th Avenue, N 55th Avenue, N 56th Avenue, and N 57th Avenue. The right-of-way for North Shore Boulevard will also be dedicated with this project. N Mills Street, a planned local road, will be constructed with half-width improvements along the site's western boundary. Two private streets will also be constructed with this project. Each lot will be served with sanitary sewer, water, storm sewer, and other dry utility services. In addition to this narrative, this application package includes the materials necessary for the City to review and approve this submittal, including Preliminary Engineering Plans, Stormwater Technical Information Report (TIR), Geotechnical Site Investigation Report, Transportation Impact Study, Road Deviation Request, Archaeological Predetermination, Critical Areas Reports, and State Environmental Policy Act (SEPA) checklist.

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

- Subdivision with 102 single-family lots
  - 61 attached lots
  - 41 detached lots
- Creation of six mixed-use lots containing 140 multifamily apartment units and ±30,250 of commercial space.
- Construction of an internal public street network to serve the site and provide future circulation to adjacent properties
- Construction of all necessary utilities to serve the site

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 ±36.04 acres in size. The site is addressed as 313 SE Leadbetter Road and 305 SE 252nd Avenue, Camas, WA 98607. The parcels are identified as 177885-000 of the Northeast Quarter of Section 34, Township 2 North, Range 3 East, Willamette Meridian and 178175-000 of Northwest Quarter of Section 35, Township 2 North, Range 3 East, Willamette Meridian. The site is split-zoned North Shore Mixed Use (MX-NS), North Shore Higher Density Residential (HD-NS), North Shore Lower Density Residential (LD-NS), and North Shore Commercial (C-NS). Both parcels have the Airport Zone C overlay. The properties north and east of Parcel 178175-000 are zoned LD-NS. To the south are properties zoned North Shore Park/Open Space (POS-NS). The properties west and north of Parcel 178885-000 are zoned HD-NS. Parcels to the south are forested and used as a public park owned by the

City. The properties to the west, north, and east are used as single-family residences, farmland, and undeveloped forest land.

Both parcels currently gain access from NE 252nd Avenue, which terminates at the northeast corner of Parcel 177885-000. NE 252nd Avenue is an existing rural local access county road.

The site is undulating and characterized by grades of 0 to 15 percent, with some steeper areas with slopes up to 25 percent. Oregon white oaks, streams, and priority habitat areas are mapped and present on-site. One Type-F stream and wetlands have also been identified on-site. Wetlands, critical areas, and priority habitat areas are discussed later in this narrative. The site is wooded, and the existing vegetation consists of evergreen and deciduous trees, shrubs, and field grass. The archaeological predictive for the site is moderate to high and there are mapping indicators for archaeological site buffers.

III. Applicable Review Criteria

Camas Municipal Code

Title 5 – Business Taxes, Licenses and Regulations

Chapter 5.45 Telecommunications

Article VII. – Conditions of Telecommunications Right-of-Way Use Authorizations, Telecommunications Franchises, and Facilities Leases

(…)

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 installed with 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 have been or will be named according to the City of Camas *Street Naming Manual* (October 2010). Street names depicted on the Preliminary Engineering Plans are placeholders and final road names will be determined prior to final platting.

Title 14 – Stormwater Provisions

Chapter 14.02 Stormwater Control

Response: The subject site has two drainage basins for stormwater. Stormwater runoff generated in the southwest portion of the site will be collected and conveyed to stormwater vaults for mechanical treatment. Treated stormwater will be transported to a planned stormwater main, that will be located in the off-site utility and pedestrian access easement and Tract K. Treated stormwater will be discharged directly into Lacamas Lake at existing discharge points using the large water body exemption for stormwater discharge.

Stormwater runoff generated by the northeast portion of the site will be collected on-site and conveyed to stormwater vaults for mechanical treatment. Treated stormwater will be transferred to detention ponds for flow control, prior to being discharged to an existing

stream and natural area in the northeast corner of the site and wetland in the center of the site. All stormwaters will be discharged at rates allowed by City of Camas. The stormwater system is designed per the Washington State Department of Ecology (ECY) 2024 *Stormwater Management Manual for Western Washington* (SWMMWW). Refer to the Preliminary Stormwater Technical Information Report (TIR) and Preliminary 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 existing fire hydrant along SE Leadbetter Road, however, the existing hydrant cannot serve the site. Fire hydrants are planned throughout the site and will be installed during construction. All planned fire hydrants within the subdivision will meet spacing requirements and all future homes in the development will be provided with fire sprinklers, as required by the City of Camas. Emergency access for all lots in the site will be from the existing and planned public streets. This project will comply with all other requirements of the International Fire Code (IFC) as adopted and amended by the City of Camas.

Chapter 15.40 Blasting

Response: A blasting permit is needed to construct the site. Per Camas Municipal Code (CMC) 15.40.040(B), blasting permits are only valid for 12 months. For this reason, the Applicant intends to apply for a blasting permit nearer to the planned site construction date. Blasting plans will be addressed during the appropriate review process.

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 108-lot subdivision, including 41 detached single-family residential lots, 61 attached single-family residential lots, and six mixed use lots containing 140-multifamily apartment units, ±30,250 square feet of commercial space and associated parking; therefore, this project is not exempt from SEPA review. A State Environmental Policy Act (SEPA) checklist has been prepared and is included in 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: Two Archaeological Predetermination Reports have been performed by Applied Archaeological Research, Inc. (AAR). The first report was performed in July 2022 and looked at parcels 177885-000 and 177884-000. The second report was performed in November 2024 and looked primarily at parcels 178175-000 and 178180-000. Both reports are included in this application. Neither report identified historic artifacts within the site, and neither report identified historic buildings within the site which would meet the requirements for listing in the National Register of Historic Places (NRHP). For those reasons, AAR does not recommend further archaeological work within the project area. Refer to the Archaeologic Predetermination Reports included in 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 and Preliminary Site Plan review. Ecological Land Services, Inc. (ELS), has prepared two Critical Areas Reports and a Wetland Buffer Modification & Mitigation for the site. Both reports were completed in May 2025, and collectively, the reports cover the entirety of the site. The reports identified multiple wetlands, Oregon white oaks, a stream, and two herbaceous balds within the project area. Those Critical Areas Reports are included in this application package. Wetland buffer modifications and critical area mitigation plans are identified in the Wetland Buffer Modification & Mitigation Plan. Refer to the Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan for additional information.

(…)

16.51.130 Review required.

A. Review and evaluate the critical area report;

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

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

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

Response: Critical Areas Reports and a Wetland Buffer Modification & Mitigation Plan were completed by ELS for the subject site. These reports include details on the protection, impacts, and mitigation of impacts for the on-site critical areas Refer to the Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan for additional information.

16.51.160 Mitigation requirements.

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

(…)

Response: Wetland buffer and Oregon white oak impacts will occur with this project. The impacts are unavoidable due to City requirements for site access, grading, minimum lot dimensions, required density, and circulation. Wetland buffer modification and critical area mitigation, as identified in the Wetland Buffer Modification & Mitigation Plan, will occur based on WDFW recommendations and the CMC. Impacts to Oregon white oaks will be mitigated as outlined in the Wetland Buffer Modification & Mitigation Plan. Refer to the Preliminary Engineering Plans, Critical Areas Reports, and Wetland Buffer Modification & Mitigation Plan for additional information.

Chapter 16.53 Wetlands

(…)

16.53.030 Critical area report—Additional requirements for wetlands.

Response: ELS has prepared multiple Critical Areas Reports, which meet the requirements of this section. Those reports are included in this application. Impacts to critical areas on site will occur with this project. ELS has prepared a Wetland Buffer Modification & Mitigation Plan, which the Applicant will follow. Refer to the Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan included with this application for additional information.

16.53.040 Standards.

(…)

B. Wetland Buffers.

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

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

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

Response: According to the Critical Areas Reports prepared by ELS, there are two wetland areas within the subject site, both are Depressional Category III wetlands, with a Habitat Score of seven and a high intensity land use buffer of 150 feet. Wetland buffer impacts will occur with this project due to City requirements for site access, grading, minimum lot dimensions, required density, and circulation. Wetland buffer mitigation, as identified in the Wetland Buffer Modification & Mitigation Plan, will occur based on WDFW recommendations and the CMC. Refer to the Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan for additional information.

16.53.050 Wetland permits.

A. General.

(…)

Response: Future roads and structures are planned within portions of the wetland buffers present on-site; therefore, a wetland permit is required. Refer to the Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan for additional information.

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

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

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

Response: ELS has prepared a Wetland Buffer Modification & Mitigation Plan that is designed to satisfy the requirements of this section. Future roads and structures are planned within portions of the wetland buffers; therefore, a wetland permit is required. As allowed by CMC 16.53.050 and to avoid impacts to the existing wetlands, buffer averaging is planned with this project. Refer to the Preliminary Engineering Plans, Critical Areas Reports, and Wetland Buffer Modification & Mitigation Plan for additional information.

C. Buffer Standards and Authorized Activities. The following additional standards apply for regulated activities in a wetland buffer to ensure no net loss of ecological functions and values:

(…)

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

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

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

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

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

Response: North Shore Boulevard improvements are planned to cross an existing wetland buffer. This cannot be avoided due to City requirements for site access and circulation. Wetland buffer averaging will occur with this project along with wetland buffer enhancement and restoration. Wetland buffer averaging has been designed to meet or exceed CMC requirements. Overall, on-site wetland buffer function will not be reduced, and the buffer width will not be reduced below 75 percent of the required buffer width. Refer to the Preliminary Engineering Plans, Critical Areas Reports, and Wetland Buffer Modification & Mitigation Plan for additional information.

(…)

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

Response: Both wetlands on site have a habitat rating of seven; therefore, stormwater facilities are not allowed within the wetland buffers. Buffer averaging will be used for the area where the stormwater facilities encroach into the buffer. Refer to the Preliminary Engineering Plans, Critical Areas Reports, and Wetland Buffer Modification & Mitigation Plan for additional information.

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

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

b. **Impacts to the buffer and wetland are minimized.**

(…)

Response: Two planned roads, North Shore Boulevard and N 56th Avenue, are planned to cross wetland buffer areas. Buffer averaging will be used where these roads encroach into the wetland buffer. Refer to the Preliminary Engineering Plans, Critical Areas Reports, and Wetland Buffer Modification & Mitigation Plan for additional information.

Chapter 16.59 Geologically Hazardous Areas

Response: A Geotechnical Engineering Report was completed by Columbia West, in November 2023. In that Geotechnical Engineering Report, Columbia West noted that site slopes do not meet the definition of landslide hazard per CMC 16.59. More information regarding the site's geotechnical properties are included in the Geotechnical Report, which is included in this application package.

Chapter 16.61 Fish and Wildlife Habitat Conservation Areas

16.61.010 Designation of fish and wildlife habitat conservation areas.

A. **Fish and wildlife habitat conservation areas include:**

(…)

3. **Habitats of local importance as identified by the city's parks and open space plan as natural open space, or as listed below:**

a. **Oregon White Oaks.**

i. **Individual Oregon White Oak trees with a twenty-inch diameter at breast height (twenty inches dbh).**

Response: As previously discussed in this narrative, ELS identified Oregon white oaks on both parcels within the subject site. The clusters of Oregon white oaks do not have a contiguous dripline that meets the size requirements for oak woodland habitat designation; therefore, the oaks are considered as individuals. Specific details regarding the oak trees are included in the Critical Areas Report, Wetland Buffer Modification & Mitigation Plan, and Tree Report, which are included in this application package.

ii. **Stands of Oregon White Oak trees greater than one acre, when they are found to be valuable to fish and wildlife (i.e., may include trees with cavities, large diameter breast height (twelve inches dbh), are used by priority species, or have a large canopy.**

Response: No stands of Oregon white oak greater than 1 acre in size are present on-site. ELS has identified several trees that meet WDFW priority habitat criteria for individual oaks. Specific information regarding oak impacts is included in the Wetland Buffer Modification & Mitigation Plan and Critical Areas Reports. Refer to the Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan for additional information.

iii. All Oregon White Oak snags unless determined by an arborist to be a hazard.

(…)

Response: No Oregon white oak snags exist on-site. Refer to the Critical Areas Reports included with this application for more information.

5. Waters of the State. Waters of the state includes lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington, as classified in WAC 222-16-031, or its successor. This does not include man-made ditches or bio-swales that have been created from areas not meeting the definition of waters of the state. Furthermore, wetlands designation and protection are regulated under CMC Chapter 16.53.

Response: ELS identified one Type-F (fish-bearing) stream, which has a 75-foot buffer. No impacts to the stream or stream buffer are planned with this project. Refer to the Critical Areas Report included in this application for additional information.

16.61.020 Critical area report—Requirements for habitat conservation areas.

A. Prepared by a Qualified Professional. A critical areas report for a habitat conservation area shall be prepared by a qualified professional who is a biologist with experience preparing reports for the relevant type of habitat.

(…)

Response: Impacts to critical areas and critical area buffers are proposed with this project. Two Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan prepared by ELS are included in this application. Refer to the Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan for more information.

C. Habitat Assessment. A habitat assessment is an investigation of the project area to evaluate the presence or absence of a potential critical fish or wildlife species or habitat. A critical area report for a habitat conservation area shall contain an assessment of habitats, including the following site- and proposal-related information at a minimum:

(…)

Response: Wetlands, streams, Oregon white oaks, and herbaceous balds exist on-site. Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan prepared by ELS are included in this application. Refer to the Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan for additional information.

16.61.030 Performance standards—General requirements.

A. Mitigation Standards.

(…)

Response: The Applicant is proposing the removal of 11 Oregon white oak trees with this project. As identified in the Critical Areas Reports Wetland Buffer Modification & Mitigation Plan, removal of these trees is unavoidable due to transportation and circulation requirements, topographical features, and stormwater management requirements. Details regarding removal and mitigation efforts to offset the impact are identified in the Wetland Buffer

Modification & Mitigation Plan. Refer to the Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan for additional information.

Title 17 – Land Development

Chapter 17.11 Subdivisions

(…)

17.11.030 Preliminary subdivision plat approval.

A. Preapplication.

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

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

Response: A pre-application conference was held on June 6, 2024. The meeting notes for the pre-application conference were issued on July 11, 2024.

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 and Preliminary Site Plan approval. The application package contains, a completed SEPA checklist, a vicinity map on the cover sheet of the Preliminary Engineering Plans, a survey of existing significant trees included in the Preliminary Engineering Plans, and an existing conditions and site development plan are included in the Preliminary Engineering Plans.

C. Review Procedures.

(…)

Response: This application is to divide two parcels into 108-lots. The planned subdivision will include 102 single-family residential lots for the future construction of attached and detached single-family homes. Six lots within the subdivision are planned for the future construction of mixed use and apartment buildings. There are 242 total dwelling units planned for this project, split between 41 single family residential lots, 61 townhome lots, and 140 apartment units.

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 development meets all applicable goals of the Camas Comprehensive Plan by providing a variety housing types, space for commercial uses, protection of critical areas, circulation for vehicles and pedestrians, providing future connections to the surrounding parcels, and providing development of vacant and underutilized parcels. The project will also create a utility and public access easement that will provide access to public parks outside of the site boundary. Existing trees on-site will be protected to the greatest extent practicable and new street trees will be planted with this project. The right-of-way dedication for North Shore Boulevard is a planned with this project. North Shore Boulevard will be constructed in the future by the City of Camas. However, if necessary, portions of North Shore Boulevard for individual phases will be constructed if the City has not completed the project.

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: Water, stormwater, and sanitary sewer facilities will be provided to the site. The subject site has two drainage basins for stormwater. Stormwater runoff generated in the southwest portion of the site will be collected and conveyed to stormwater vaults for mechanical treatment. Treated stormwater will be transported to a planned stormwater main, that will be located in the off-site utility and pedestrian access easement and Tract K. Treated stormwater will be discharged directly into Lacamas Lake at existing discharge points using the large water body exemption for stormwater discharge. Stormwater runoff generated by the northeast portion of the site will be collected on-site and conveyed to stormwater vaults for mechanical treatment. Treated stormwater will be transferred to detention ponds for flow control, prior to being discharged to an existing stream and natural area in the northeast corner of the site and wetland in the center of the site. All stormwaters will be discharged at rates allowed by City of Camas. The stormwater system is designed per the Washington State Department of Ecology (ECY) 2024 Stormwater Management Manual for Western Washington (SWMMWW). Refer to the Preliminary Stormwater Technical Information Report (TIR) and Preliminary Engineering Plans included with this application for more information.

Water will be provided to the site by connecting to an existing water main in SE Leadbetter Road. The water main will be brought to the site through the planned utility and public access easement and Tract K. That water main will then be extended into the site and stubbed at the intersection of N 54th Avenue and North Shore Boulevard. Service laterals will be taken from the water main, and each lot will have its own service lateral connection.

All lots will be served with public sanitary sewer provided by the City of Camas. A sewer force main is planned throughout the site. Each lot will have its own service lateral and grinder pump. The planned force main will connect to the existing force main in SE Leadbetter Road through the planned utility and public access easement and Tract K, before being conveyed to the Leadbetter Pump Station to the east.

A detailed and site-specific erosion control plan will be provided with final construction plans.

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 Plan, *North Shore Subarea Design Manual* (2023), and the Camas Design Standards Manual. Planting 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: Six public roads and three private road tracts are planned within the subject site. One of the planned public roads, North Shore Boulevard, will not be constructed with this project, but the right-of-way for North Shore Boulevard will be dedicated with this project. However, if necessary, portions of North Shore Boulevard for individual phases will be constructed if the City has not completed the project. A 6-foot private utility easement (PUE) will be provided along the frontage of each planned 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 shown on the plans submitted with this application, all lots are oriented to front a public or private street and are shaped appropriately to allow for home, apartment, or mixed use building 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 shown on the plans and documents submitted with this application, the project complies with all requirements of the 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 an assumed subdivision with up to 41 detached single-family lots, 61 attached single-family lots, and 140 multifamily apartment units. Future commercial buildings are planned; however, the TIS focused only on the planned residential units. The TIS states that the planned project will generate 1,831 ADT with 125 a.m. peak hour trips and 157 p.m. peak hour trips.

The TIS provides recommended transportation improvements for the planned project and identifies the specific triggers that will prompt their implementation. 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: The tracts included in 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 project 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 is located to the south and southeast. Open space tracts will be provided within the site, and existing trees on-site will be protected to the greatest extent practicable. New street trees will be planted, critical areas and wetlands will be protected where feasible, and mitigation efforts will be made for the project's impact. A street network will be constructed to provide for vehicle and pedestrian circulation and provide safe walking routes to schools east of the site following the completion of North Shore Boulevard. 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.

17.11.040 Phasing.

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

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

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

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

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

E. Specific improvements necessary for the entire development may be required to be completed with the first phase, regardless of phase design or completion schedule of future phases, e.g., storm pond must be completed regardless of area where storm pond is located.

Response: The project is planned to be constructed in up to six phases. The phases have been numbered in the Preliminary Engineering Plans for reference and are not for intended construction sequencing. Depending on market conditions and potential timing of necessary off-site improvements, it may be necessary to combine phases, or construct phases out of the sequence shown on the plans. Each phase will be designed and constructed to stand alone with all necessary services and connections.

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: Parcel 178175-000 is currently used as a single-family residence and Parcel 178885-000 is currently vacant. A septic system and water well are present on Parcel 178175-000 and will be abandoned in accordance with state and City guidelines. According to Clark County GIS, an unclassified water system exists on Parcel 178885-000. That water system will be abandoned in accordance with state and City guidelines. Paved streets with curbs, gutters, and sidewalks will be constructed with this project. All required utilities will be provided, 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.

A. Environmental Considerations.

(…)

Response: Critical areas on-site will be protected in open space tracts and existing trees on-site will be protected to the greatest extent practicable. All vegetation outside of the project area will be protected. After the initial tree removal during site grading, trees that are to remain will be reevaluated to determine if additional hazard trees need to be removed. Street trees and parking lot trees will be installed to help replace some of the tree canopy that will be removed. ±13.51 acres of open space areas are planned for the protection

with this project. Refer to the Preliminary Engineering Plans included with this application for more information.

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

Response: The planned project includes two-tiered blocks where feasible. The portions of the project abutting the site boundary are single tier blocks due to restrictions of the abutting elements, an arterial street, and City park land. Refer to the Preliminary Engineering Plans included with this application for more information.

> **C. Compatibility with Existing Land Use and Plans.**
>
> **(…)**

Response: The planned project is surrounded by public park space to the south and properties zoned HD-NS to the north, west, and east. The planned single-family residential uses are compatible with the surrounding uses. The 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 1 through 22, and Lots 96 through 102 are planned to front a private road tract. All other lots in the development are designed to front planned public roads. 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. Planned lots are designed with setbacks that allow for homes ranging from 24 feet wide to 42.5 feet wide. All lots also allow for homes 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 development 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 1 through 22 are designed to front a private road tract, with their rear backing up to N 56th Avenue or North Shore Boulevard. A 10-foot landscape tract has been provided between the rear of the lots and N 56th Avenue or North Shore Boulevard. A 6-foot-tall wood fence will be constructed along the rear lot lines. 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: Planned corner lots have been designed to 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 planned 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: No trails are planned with this project site. An offsite paved trail and utility access will be provided from the southwest corner of the site connection to SE Leadbetter Road through City park property. An easement will be granted to the City utility and public access. Refer to the Preliminary Engineering Plans included with this application for more information.

> **F. Landscaping.**
>
> **(…)**

Response: One street tree is proposed 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; however, the total number of required street trees are proposed. The Applicant will retain as many existing trees as feasible. Street trees will be installed within the designated timeframe. 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 will be provided on the final plat.

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

Response: Street lighting and parking lot lighting will be provided with this project. All lighting will be installed in conformance with City of Camas and Clark Public Utility standards. Street lighting is shown on the Preliminary Engineering Plans. Lighting for the parking lots associated with the mixed use lots will be provided with final site plan submittal. 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: Two private street tracts are planned with this project. The private streets are labeled as Tract P and Tract G in the Preliminary Engineering Plans and provide access to private roads that are known as N Mills Court, N 57th Place, N Bear Lane, and N 54th Place. Tract P, will gain access from N 56th Avenue, and Tract G will gain access from North Shore Boulevard. The planned private streets will not affect 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: All planned private street tracts will be owned and maintained by the HOA.

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

Response: The planned private streets will provide access to 29 single-family residential lots. The private streets have been designed to accommodate full development on the lots. 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: All planned private street tracts only connect to one public street. No Alleys are planned with this project. Refer to the Preliminary Engineering Plans included with this application for more information.

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

Response: There are two planned private street tracts that are designed to serve lots. The two private street tracts are labeled as Tract P and Tract G in the Preliminary Engineering Plans and the private streets provide access to private roads that are known as N Mills Court, N 57th Place, N Bear Lane, and N 54th Place. Tract P will gain access from N 56th Avenue, and Tract G will gain access from North Shore Boulevard. Both private street tracts are designed to serve more than five lots and be less than 300 feet in length.

Tract P contains N Mills Court and N 57th Place. N Mills Court has been designed with a 28-foot-wide paved surface, and a 48-foot-wide right-of-way width with five-foot-wide planter strips and detached sidewalks on both sides of the road. N 57th Place has been designed with a 28-foot-wide paved surface, a 42-foot-right-of-way width and a five-foot-wide planter strip and sidewalk on one side of the road.

Tract G contains N Bear Lane and N 54th Place. N Bear Place has been designed with a 28-foot-wide paved surface, a 42-foot-right-of-way width and a five-foot-wide planter strip and sidewalk on one side of the road. N 54th Place has been designed with a 20-foot-wide paved surface, with a 24-foot-wide right of way.

These private street tracts have been designed to meet City of Camas Private Street C standards. Refer to the Preliminary Engineering Plans included with this application for more information.

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

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

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

Response: Garbage and recycling for the planned lots accessing from the private street tract will be placed at the front of the lot, within the private street tract.

Emergency vehicle access to the private street tracts is planned from North Shore Boulevard and N 56th Avenue. 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 covenant providing provisions for parking enforcement will be recorded and will be noted on the final plat.

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

Response: Half-width improvements are planned for N Mills Street. These improvements include a 45-foot-wide right-of-way dedication, a 24-foot-wide paved half-width road, and a 7-foot-wide planter strip and 6-foot-wide detached sidewalk on the east side of the road. 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 street improvements are designed to meet applicable sections of the CMC and the North Shore Subarea Design Manual. 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.

Response: NE 252nd Avenue is currently stubbed to the northeast corner of the site. The project will extend N 56th Avenue into the site from the termination of NE 252nd Avenue. The extension will have greater width and pavement section than existing NE 252nd Avenue. Refer to the Preliminary Engineering Plans included with the application for more information.

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: In addition to extending NE 56th Avenue into the site, the application will extend North Shore Boulevard to the northwest and southeast corners for future extension to the east and west. N Mills Street will also be constructed as a half-width along the west boundary for circulation to the west. Circulation to the south is limited due to City park land, and critical areas limit additional circulation to the north and east. North Shore Boulevard will not be constructed with this project, but the right-of-way for North Shore Boulevard will be dedicated with this project. However, if necessary, portions of North Shore Boulevard for individual phases will be constructed if the City has not completed the project.

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 and all planned public streets within the project are designed to meet the North Shore Subarea Design Manual standards. Five public streets are planned with this project (North Shore Boulevard, N 57th Avenue, N 56th Avenue, N 55th Avenue, N 54th Avenue, and N Mills Street).N 57th Avenue, N 56th Avenue, N 55th Avenue, and N 54th Avenue will be constructed with a 54-foot-wide right-of-way, a 28-foot-wide paved surface, and a 6-foot-wide planter strip and 6-foot-wide sidewalk on both sides of the road. The right-of-way dedication for North Shore Boulevard will also occur with this project, but North Shore Boulevard will be constructed at a later date by the City of Camas. However, if necessary, portions of North Shore Boulevard for individual phases will be constructed if the City has not completed the project. The dedicated right-of-way for North Shore Boulevard will vary between 67 feet and 88 feet. In the southeast of the site, closer to the mixed use buildings, the right-of-way for North Shore Boulevard

will be dedicated to 88-feet-wide. As North Shore Boulevard travels northwesterly, its right-of-way shrinks down to 67 feet. This reduction in size is needed to avoid wetland and Oregon white oak impacts, and to avoid an off-site barn that is approximately eight feet north of the northern property line. The planned right-of-way deviation for North Shore Boulevard is being worked through as part of a Development Agreement between the City of Camas, the Applicant, and surrounding property owners. No other road deviations or road modifications are planned with this project.

Off-site road improvements to NE 252nd Avenue and NE 3rd Street are also planned with this project. Per Clark County Code (CCC) 40.350.030(B)(6)(b)(2), rural access roads must be constructed with a 20-foot-wide all-weather driving surface, except where a preexisting road is 18 feet wide or wider. In those cases, widening to 20 feet is not necessary. The drivable surface of NE 252nd Avenue is less than 18 feet wide in some locations; therefore, NE 252nd Avenue will be widened to 20 feet. The drivable surface of NE 3rd Street is at least 20 feet wide; therefore, NE 3rd Street will not be improved. Off-site intersection improvements at the intersection of NE 3rd Street and NE 257th Avenue, as recommended by the Applicant's traffic consultant Kittelson will also be completed with this project.

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

Response: All planned intersections are at right angles, or as close to right angles as possible. Offset intersections are not planned with this project. Refer to the Preliminary 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: Preliminary street and circulation plans meeting these standards is provided in the Preliminary Engineering Plans that are included in this application. The planned street network provides internal circulation and connections to existing infrastructure along with street stubs, and half-width streets for the future expansion of the circulation network. Pedestrian paths outside of the planned street network are provided for additional circulation. Pedestrian circulation will be provided through the off-site utility and public access easement. This easement will provide pedestrian access to Leadbetter Road from the subdivision with a 20-foot-wide paved section. 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: Most of the planned block lengths are less than 600 feet long. The block length between N Mills Street and North Shore Boulevard is greater than 600 feet long. Pedestrian access will be provided in Tract L and Lot 108. Refer to the Preliminary Engineering Plans included with the application for more information.

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

Response: One dead-end street that is over 300 feet is planned with this project. Due to grading restrictions and adjacent critical areas, the Applicant is not proposing a pedestrian connection. Pedestrian access will be provided in Tract L and Lot 108. 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: One dead-end street that is over 300 feet is planned with this project. Due to grading restrictions and adjacent critical areas, pedestrian access will be provided in Tract L and Lot 108. 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: Public rights-of-way are planned within critical area buffers. Detailed information on all critical areas is included in the Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan that are included in this application package. Refer to the Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan 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. 102 single-family residential lots are planned with this project; therefore, a total of 19 additional parking spaces are required. Nineteen additional parking spaces are planned with this project. Those parking spaces are distributed throughout the site in common tracts. 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 and all planned public streets within the project are designed to meet the North Shore Subarea Design Manual standards. Five public streets are planned with this project (North Shore Boulevard, N 57th Avenue, N 56th Avenue, N 55th Avenue, N 54th Avenue, and N Mills Street).N 57th Avenue, N 56th Avenue, N 55th Avenue, and N 54th Avenue will be constructed with a 54-foot-wide right-of-way, a 28-foot-wide paved surface, and a 6-foot-wide planter strip and 6-foot-wide sidewalk on both sides of the road. The right-of-way dedication for North Shore Boulevard will also occur with this project, but North Shore Boulevard will be constructed at a later date by the City of Camas. However, if necessary, portions of North Shore Boulevard for individual phases will be constructed if the City has not completed the project. The dedicated right-of-way for North Shore Boulevard will vary between 67 feet and 88 feet. In the southeast of the site, closer to the mixed use buildings, the right-of-way for North Shore Boulevard will be dedicated to 88-feet-wide. As North Shore Boulevard travels northwesterly, its right-of-way shrinks down to 67 feet. This reduction in size is needed to avoid wetland and Oregon white oak impacts, and to avoid an off-site barn that is approximately eight feet north of the northern property line. The planned right-of-way deviation for North Shore Boulevard is being worked through as part of a Development Agreement between

the City of Camas, the Applicant, and surrounding property owners. No other road deviations or road modifications are planned with this project.

Off-site road improvements to NE 252nd Avenue and NE 3rd Street are also planned with this project. Per Clark County Code (CCC) 40.350.030(B)(6)(b)(2), rural access roads must be constructed with a 20-foot-wide all-weather driving surface, except where a preexisting road is 18 feet wide or wider. In those cases, widening to 20 feet is not necessary. The drivable surface of NE 252nd Avenue is less than 18 feet wide in some locations; therefore, NE 252nd Avenue will be widened to 20 feet. The drivable surface of NE 3rd Street is at least 20 feet wide; therefore, NE 3rd Street will not be improved. Off-site intersection improvements at the intersection of NE 3rd Street and NE 257th Avenue, as recommended by the Applicant's traffic consultant Kittelson will also be completed with this project.

The planned right-of-way deviation for North Shore Boulevard is being worked through as part of a Development Agreement between the City of Camas, the Applicant, and surrounding property owners. No other road deviations or road modifications are planned with this project.

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

Response: All planned sidewalks meet the standards of Table 17.19.040-1 and 17.09.040-2 and the North Shore Subarea Design Manual 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 provided by the City of Camas. A sewer force main is planned throughout the site. Each lot will have its own service lateral and grinder pump. The planned force main will connect to the existing force main in SE Leadbetter Road through the planned utility and public access easement and Tract K, before being conveyed to the Leadbetter Pump Station to the east. 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: Stormwater facilities will be provided for the site. The subject site has two drainage basins for stormwater. Stormwater runoff generated in the southwest portion of the site will be collected and conveyed to stormwater vaults for mechanical treatment. Treated stormwater will be transported to a planned stormwater main, that will be located in the off-site utility and public access easement and Tract K. Treated stormwater will be discharged directly into Lacamas Lake at existing discharge points using the large water body exemption for stormwater discharge. Stormwater runoff generated by the northeast portion of the site will be collected on-site and conveyed to stormwater vaults for mechanical treatment. Treated stormwater will be transferred to detention ponds for flow control, prior to being discharged to an existing stream and natural area in the northeast corner of the site and wetland in the center of the site. All stormwaters will be discharged at rates allowed by City of Camas. The stormwater system is designed per the Washington State Department of Ecology (ECY) 2024 Stormwater Management Manual for Western Washington (SWMMWW). Refer to the Preliminary Stormwater Technical Information Report (TIR) and Preliminary Engineering Plans included with this application for more information.

> 4. Water System.
>
> (…)

Response: All lots will be served with public water by the City of Camas. Water will be provided to the site by connecting to an existing water main in SE Leadbetter Road. The water main will be brought to the site through the planned utility and public access easement and Tract K. That water main will then be extended into the site and stubbed at the intersection of N 54th Avenue and North Shore Boulevard. Service laterals will be taken from the water main, and each lot will have its own service lateral connection. 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 sediment and pollution control. Refer to the Preliminary Engineering Plans included with this application for more information.

Title 18 – Zoning

Chapter 18.09 Density and Dimensions

Response: The subject site consists of four different zoning districts, C-NS, MX-NS, LD-NS, and HD-NS. The density of the project has been determined by calculating the required minimum and allowed maximum density for each zoning district and adding them together. The total required minimum density for the site is 195 units and the total allowed maximum density for the site is 375 units. The project will provide 242 total units, including apartments, attached single-family lots, and detached single-family lots. The densities and requirements for the individual zoning districts are discussed below.

(…)

18.09.030 Density and dimensions—Commercial and industrial zones.

Table 1 – Density and Dimensions for Commercial and Industrial Zones		
	MX-NS	C-NS
Bulk Regulations		
Maximum Density (dwelling units/net acre)	24[8]	n/a
Minimum lot area (square feet)	1,800	None
Minimum lot width (feet)	None	None
Minimum lot depth (feet)	None	None
Setbacks: Commercial and industrial development setbacks shall be as follows, unless along a flanking street of a corner lot. If along flanking street, then the setback must be treated like a front, and provide safe sight distance.		
Minimum front yard (feet)	Note 3, Note 7	15[9]
Minimum side yard (feet)	10'	100' for building; 25' for parking
Minimum rear yard (feet)	10'	100' for building; 25' for parking area
Lot coverage (percentage)	65%	None
Minimum Usable Open Space[5]	100 sf/du	5% (net acreage)
Maximum building height (feet)	100[6]	100[6]

Note: Example notes text.
3. Maximum setback at front building line is ten feet.
5. Areas that provide opportunities for active and passive uses and encourage community interaction. These spaces are accessible to the general public or to residents, employees, or customers and can include, but are not limited to plazas, courtyards, sports courts, and viewpoints (see 18.03.040 "Definitions for development terms").
6. Building heights shall "step-down" and provide compatible scale and privacy between developments. See the North Shore Design Manual.
7. If buildings are rear loaded from an alley, the rear yard setback shall be twenty feet.
8. Does not apply to cottage-style development.
9. Passive pedestrian space, as identified in the North Shore Design Manual and including elements such as seating and building overhangs, is allowed within the fifteen foot front yard setback.

Response: The portions of the site that are in the MX-NS and C-NS zoning districts are required to meet the dimensional and setback standards of the MX-NS and C-NS zoning districts. There are no open space tracts located within the C-NS portion of the site; therefore, the net area of the C-NS zoned portion site is ±2.12 acres. The Applicant is proposing one mixed use building in the C-NS zoned area of the site. The planned mixed use building contains ±10,000 square feet of commercial space on the ground floor and 16 apartment units on the upper floors of the building. Dwelling units are not permitted in the C-NS zoning district; however, the Applicant requests an exception to portions of the C-NS standards. The ±10,000 square feet of commercial space that will be provided in the C-NS zoning district meets the intent of the C-NS zoning district and is of similar size to space that would be provided with a commercial only building. The Applicant is also proposing a 10-foot front yard setback to match the planned mixed use buildings on the other side of N 54th Avenue. The planned residential dwelling units above the mixed-use building on Lot 106 will provide a similar feel to the mixed-use building across N 54th Avenue and help create a uniform street frontage of N 54th Avenue.

There are ±6.50 acres of gross area in the MX-NS zoning district and ±1.54 acres of planned open space in MX-NS portion of the site; therefore, the net area of the MX-NS zoning district is ±4.96 acres. Per CMC 18.05.050(L), the minimum density required is 10 units per acre, and the maximum density allowed is 24 units per acre. The minimum density for the MX-NS zoned area is 50 units (4.96 AC X 10 DU/AC) and the maximum density for the MX-NS zoned area is 119 units (4.96 AC X 24 DU/AC). Fifty-two units are planned in the MX-NS zoning district. Units will be provided with one 24-unit apartment building, one 12-unit mixed use building, and one 16-unit mixed use building. All buildings in the MX-NS zoning district have been designed to comply with CMC setback requirements, except the 12-unit mixed use building which cannot comply with the 10-foot maximum setback due to North Shore Boulevard reducing in size and shifting away from the building. These features result in a setback line that cannot be parallelled. The 12-unit mixed use building has been designed to be setback 10-feet on one corner, and as North Shore Boulevard right-of-way reduces, the building setback becomes ±13 feet.

18.09.040 Density and dimensions—Single-family residential zones.

Table 1 – Density and Dimensions for Single-family Residential Zones	
	LD-NS
A. Standard New Lots	
Maximum density (dwelling units/net acre)	5.8[7]
Minimum density (dwelling units/net acres)	4
B. Density Transfer Lots[1]	
Maximum density (dwelling units/net acre)	5.8
Minimum lot size (square feet)	5,250
Maximum lot size (square feet)[3]	9,000
Minimum lot width (feet)[1]	40
Minimum lot depth (feet)[1]	80
Maximum building lot coverage	60%
Maximum building height (feet)[2]	35

Notes:

1. For additional density and dimension provisions, see CMC Sections 18.09.060 through 18.09.180.
2. Maximum building height: three stories and a basement, not to exceed height listed.
3. For parcels with an existing dwelling, a one-time exception may be allowed to partition from the parent parcel a lot that exceeds the maximum lot size permitted in the underlying zone. Any further partitioning of the parent parcel or the oversized lot must comply with the lot size requirements of the underlying zone.
4. Average lot area is based on the square footage of all lots within the development or plat. The average lot size may vary from the stated standard by no more than five hundred square feet.
5. The maximum building lot coverage for single-story homes may be up to forty-five percent in R-6, R-7.5, and LD-NS zones, and forty percent in R-10 and R-12 zones. To qualify for increased lot coverage, a single-story home cannot include a basement or additional levels.
6. Average building lot coverage is based on the square footage of all lots within the development or plat with an LD-NS zoning designation. The average building lot coverage may increase to fifty-five for single-story development and/or lots below five thousand square feet.
7. Does not apply to cottage-style development.
8. Minimum lot size for cottage-style development shall be two thousand four hundred square feet and rowhouse developments shall be one thousand eight hundred square feet.
9. Minimum lot width for cottage-style development shall be thirty feet and rowhouse developments shall be twenty feet.
10. Minimum lot depth for cottage-style and rowhouse development shall be fifty feet.
11. Maximum building height for cottage-style development shall be twenty-five feet.

Table 2 – Building Setbacks for Single-Family Residential Zones	
Lot Area	LD-NS
Minimum front yard (feet)	10-25[3]
Minimum side yard (feet)	5
Minimum side yard flanking a street and corner lot rear yard (feet)	10
Minimum rear yard (feet)	10-20[4]
Minimum lot frontage on a cul-de-sac or curve (feet)	25

Notes:

1. Setbacks may be reduced to be consistent with the lot sizes of the development in which it is located. Notwithstanding the setbacks requirements of this chapter, setbacks and/or building envelopes clearly established on an approved plat or development shall be applicable. In the LD-NS zone, cottage-style development setbacks are identified in the North Shore Design Manual.
2. Garage setback is five feet behind the front of the dwelling.
3. LD-NS subarea developments are encouraged to vary the front yard building setbacks to provide visual interest along a residential block. Garage faces shall maintain a minimum setback of twenty feet. Lots with alley-access garages may have a minimum front yard building setback of ten feet.
4. LD-NS subarea developments with street-access garages may have a minimum rear yard setback of ten feet. LD-NS developments with alley-access garages must maintain a twenty foot rear-yard building setback from the alley.

Response:

The portion of the site that is in the LD-NS zoning district is required to meet the dimensional and setback standards of the LD-NS zoning district. The portion of the site in the LD-NS zoning district has a gross area of ±10.27 acres with ±6.95 acres of open space, creating a net area of ±3.32 acres. Critical areas on-site will be protected; therefore, density transfer standards are applied. Table 1 of CMC 18.09.040 permits a minimum of 4 new dwellings per acre and a maximum of 5.8 new dwellings per net acre on density transfer lots; therefore, the minimum required density for the LD-NS zoned area is 13 units (3.32 AC X 4 DU/AC) and the maximum allowable density for the LD-NS zoned area is 19 units (3.32 AC X 5.8 DU/AC). Thirty-one dwelling units are planned in the LD-NS zoning district, including seven single family residential lots and one 24-unit apartment building. The Applicant requests an exception to the maximum allowable density in the LD-NS zone given the overall density for the whole project is met. More than 66 percent of the site in the LD-NS zoning district is open space for critical area protection, and most of the units being provided in the LD-NS zoning district come from a single apartment building that has 24-units that connects with the units provide in the MX-NS zoning district. For these reasons, the Applicant believes they are meeting the intent of the LD-NS zoning district and keeping the intended character of the LD-NS zoning district and North Shore Subarea by protecting critical areas and providing transitions from larger, higher density buildings to lower density housing. The proposed lots in the LD-NS zoning district have been designed to allow for building construction within the required setbacks for each lot.

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 portion of the site that is in the HD-NS zoning district is required to meet the dimensional and setback standards of the HD-NS zoning district. The portion of the site in the HD-NS zoning district has a gross area of ±17.14 acres with ±3.95 acres of open space, creating a net area of ±13.19 acres. Table 1 of CMC 18.09.050 permits a minimum of 10 new dwellings per acre and a maximum of 18 new dwellings per net acre in the HD-NS zoning district; therefore, the minimum required density for the HD-NS zone area is 132 units (13.19 AC X 4 DU/AC) and the maximum allowable density for the HD-NS zoned area is 237 units (13.19 AC X 18 DU/AC). One hundred forty-three residential units are planned in the HD-NS zoning district. Units will be provided with two 24-unit apartment buildings and 95 single family residential lots. The proposed lots in the HD-NS zoning district have been designed to allow for building construction within the required setbacks for each lot.

18.09.060 Density transfers.

(…)

C. Where a land division proposes to set aside a tract for the protection of a critical area, natural open space network, or network connector (identified in the city of Camas parks plan), or approved as a recreational area, lots

proposed within the development may utilize the density transfer standards under CMC Section 18.09.040.B Table-1.

Response: Due to the presence and protection of critical areas on-site, density transfer is planned with this project. To protect the on-site critical areas, ±13.51 acres of open space areas are planned for protection with this project. Density transfer standards under CMC Section 18.09 will be used single-family lots in the LD-NS zoning district. Refer to the Preliminary Engineering Plans included with this application for more information.

Chapter 18.11 Parking

(…)

18.11.020 Design.

The design of off-street parking shall be as follows:

A. Ingress and Egress. The location of all points of ingress and egress to parking areas shall be subject to the review and approval of the city.

Response: All parking areas for the mixed use and multifamily buildings have drive aisles that are a minimum of 24 feet wide, with the majority of the drive aisles at 26 feet wide. The planned ingress and egress points are shown in the Preliminary Engineering Plans for review and approval by the City. Refer to the Preliminary Engineering Plans included with this application for more information.

B. Backout Prohibited. In all commercial and industrial developments and in all residential buildings containing five or more dwelling units, parking areas shall be so arranged as to make it unnecessary for a vehicle to back out into any street or public right-of-way.

Response: The parking lots that serve the mixed-use and multifamily buildings have been designed so that vehicles will not be required to back into the street or any public right-of-way. Refer to the Preliminary Engineering Plans included with this application for more information.

C. Parking Spaces—Access and Dimensions. Adequate provisions shall be made for individual ingress and egress by vehicles to all parking stalls at all times by means of unobstructed maneuvering aisles.

1. Off-street parking space dimensions shall be as follows or as otherwise approved by the director:

   a. Standard spaces shall be a minimum of nine feet in width;

   b. Standard spaces shall be a minimum of eighteen feet in length.

2. Aisle width dimensions shall be as follows or as otherwise approved by the director:

   a. One-way aisle width shall be fifteen feet;

   b. Two-way aisle width shall be twenty-four feet.

Response: A total of 461 parking spaces are provided with the project. Nineteen of the planned parking stalls are small car parking spaces, with the remaining 442 parking stalls being standard stalls. The standard stalls have been designed to be 9 feet wide and 18 feet deep. The small car spaces have been designed to be 8 feet wide and 15 feet deep. All planned

drive aisles have been designed to be at least 24 feet wide and be two-way drive aisles. Refer to the Preliminary Engineering Plans included with this application for more information.

> **D.** Small Car Parking Spaces. A maximum of thirty percent of the total required parking spaces may be reduced in size for the use of small cars, provided these spaces shall be clearly identified with a sign permanently affixed immediately in front of each space containing the notation "compacts only." Spaces designed for small cars may be reduced in size to a minimum of eight feet in width and fifteen feet in length. Where feasible, all small car spaces shall be located in one or more contiguous areas and/or adjacent to ingress/egress points within parking facilities. Location of compact car parking spaces shall not create traffic congestion or impede traffic flows.

Response: A total of 415 parking spaces are required to serve the site. Nineteen of the planned parking stalls are small car parking spaces, which is 4.6 percent of the required parking stalls. The small car parking spaces have been designed to be 8 feet wide and at least 15 feet deep and will be appropriately labeled. 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: All required parking for the single-family residential lots are located on the same lot as the residence. All parking spaces for the mixed-use and multifamily buildings are located on the same lot as the buildings and within 200 feet of the buildings they serve. 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 future detached and attached single-family homes and will consist of garage and driveway spaces. Additional off-street parking will be provided in three common parking areas to serve residential parking needs. 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: For the residential portion of the project, 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, 19 off-street parking spaces are provided in common parking areas to meet the requirements of CMC 17.19.040.B.10.e.

A mixed-use building with 10,000 square feet of commercial space and 16 apartment units above the commercial space is planned on lot 106. The Applicant assumed that half of the planned apartment units will be one bedroom units and that half of the units will be two bedroom units. This results in 28 parking spaces being required for the apartment portion of the mixed-use building. The Applicant assumed one parking space for every 200 square feet of commercial space, resulting in 50 parking spaces being required for the commercial portion of the mixed use building. This means that Lot 106 is required to have 78 parking spaces. Seventy-eight parking spaces are provided on Lot 106.

Two 24-unit apartment buildings, one 2,250 square foot commercial building, and one mixed-use building with 8,000square feet of commercial space and 12 apartment units above the commercial space are planned on lots 103, 104, and 105.. The Applicant assumed that half of the planned apartment units will be one bedroom units and that half of the units will be two bedroom units. This results in 105 parking spaces being required for the apartment buildings and apartment portion of the mixed-use building. The Applicant assumed one parking space for every 200 square feet of commercial space, resulting in 51 parking spaces being required for the commercial building and the commercial portion of the mixed use building. This means that 156 parking spaces are required for Lots 103, 104, and 105. The Applicant is providing 175 parking spaces for Lots 103, 104, and 105. The planned parking area has been designed to be shared amongst the three lots.

Two 24-unit apartment buildings and one mixed-use building with 10,000 square feet of commercial space and 16 apartment units above the commercial space is planned on lots 107 and 108.. The Applicant assumed that half of the planned apartment units will be one bedroom units and that half of the units will be two bedroom units. This results in 112 parking spaces being required for the apartment buildings and apartment portion of the mixed-use building. The Applicant assumed one parking space for every 200 square feet of commercial space, resulting in 50 parking spaces being required for the commercial portion of the mixed use building. This means that 156 parking spaces are required for Lots 107 and 108. The Applicant is providing 189 parking spaces for Lots 107 and 108.The planned parking area has been designed to be shared amongst the two lots.

Overall, 415 parking spaces are required for the project and 461 parking spaces are planned for the project. 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 project will create 41 detached single-family residential lots, 61 attached single-family residential lots, 116 multifamily apartment units, and ±30,250 square feet of commercial space; 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 Preliminary Tree Preservation and Removal Plans, which are included with this application. A Preliminary Landscape Plan is also included in the Preliminary Engineering Plans. Refer to the Preliminary 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 Preliminary Tree Preservation and Removal Plans) has been prepared by a certified arborist with AKS and is included with this application.

B. A tree survey must contain the following:

1. Inventory.

a. Map of the site, with tree locations numbered

b. Include all significant trees that will be impacted by the proposed development, which may include trees off-site if canopies overhang the subject property. Open space tracts to be set aside for conservation purposes do not need to be included in survey.

c. Provide the common and scientific name of inventoried trees.

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

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

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

> 18.13.050 Standards for landscape, tree and vegetation plans.
>
> (…)
>
> B. Landscaping and trees shall be selected and located to deter sound, filter air contaminants, curtail erosion, minimize stormwater run-off, contribute to living privacy, reduce the visual impacts of large buildings and paved areas, screen, and emphasize or separate outdoor spaces of different uses or character.

Response: The Applicant is proposing to protect critical areas and protect as many existing trees as is practicable in open space tracts. The development will also provide street trees along all public streets within the development and landscaping in the parking lot for multifamily and mixed-use buildings. Landscaping will also 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 landscaping plants planned for use in this project are either native or adapted to the northwest climate. All plant materials will meet the requirements of this section. Refer to the Preliminary 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 are planned along all public streets within the project. Trees are designed to be spaced a minimum of 30 feet in the center where feasible. Due to driveways and utilities, there are areas where street trees cannot be installed at 30 feet on center, however, one street tree is provided per single-family residential lot. Refer to the Preliminary 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: None of the planned vegetation for the project is an invasive species. 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 planned plant materials and planting sizes are shown on the Preliminary Tree Preservation and Removal Plans in the Preliminary Engineering Plans. Planting size is selected to provide the best opportunity for plant survival and integration into the overall site. 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 systems. All irrigation in common landscaped areas will be installed with the landscaping at the time of neighborhood construction and maintained by the HOA. All irrigation in planting strips adjacent to private lots and on the mixed-use and commercial lots will be installed with the home or site construction on that lot and be maintained by the property owner. All irrigation will be design-build by a landscape contractor.

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

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

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

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

K. Vision clearance hazards shall be prohibited.

(…)

Response: No vision clearance hazards will be created with the planned landscape. 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 ±36.04 acres with ±12.44 acres planned for open space. This results in a net area of ±23.60 acres for tree density calculations. Thirty tree units per acre are required; therefore 708 tree units are required (±23.60 acres x 30 trees per acre). A total of 2,558 tree units are planned with this project. The total tree units include 558 existing trees, totaling 2,236 tree units and 322 proposed trees, totaling 322

tree units; therefore, more than 50 percent of the tree density is obtained through the retention of existing trees. Refer to the Preliminary Engineering Plans and Preliminary Tree Preservation and Removal 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 were within the critical areas and where larger, mature trees were grouped together. Due to the site topography, shallow soils with underlain bedrock, roadway design and site grading constraints, tree preservation in alternative site areas was not feasible. There is significant native understory vegetation on the site in the disturbed areas and preserved critical areas. Invasive species will be removed with the development through site clearing or with the proposed preliminary critical area mitigation plan prepared by ELS with the preserved critical areas. Refer to the Preliminary Tree Preservation and Removal 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: Trees within the critical areas and buffers have been protected and it is not anticipated that tree removal will result in trees on adjacent properties becoming hazardous. Refer to the Preliminary Tree Preservation and Removal Plans 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, and tree density requirements will be met with a combination of existing trees and planned trees. Planned trees include a combination of street trees and on-site landscape trees. Refer to the Preliminary Engineering Plans included with this application for more information.

18.13.055 Landscape buffering standards.

Table 1 – Landscape Buffers				
Abutting Zone ▶	Residential		Commercial	
Uses on Site ▼	Not Separated by a Street	Separated by a Street	Not Separated by a Street	Separated by a Street
Multifamily Residential	5' L1	5' L1	10' L3	10' L2
Commercial	10' L3	5' L2	5' L1	5' L2

(…)

Response: Single family residences and open space tracts abut most of the exterior of the project site's boundary. Single family residences and open space tracts are not required to provide a landscape buffer. A planned mixed-use commercial building has been designed to abut a portion of the site's southern boundary. The required landscape buffer for a commercial use adjacent to a residential use is a 10-foot L3 buffer. The commercial use has been designed with a 10-foot L3 buffer. 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: Interior landscaping is provided in multiple landscape islands that include trees and shrubs. Perimeter landscaping areas are designed to provide shade and visual relief and have been designed to meet CMC standards. 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: Four hundred sixty-one parking spaces are planned with this project. These parking spaces are split amongst the multifamily and mixed-use buildings and single-family residential parking areas. The parking area located on lot 106 contains 78 parking spaces, which requires 13 trees, and 13 trees are provided. The parking area located on lots 107, 108, and Tract N contains 189 parking spaces, which requires 32 trees, and 32 trees are provided. The parking area located on lots 103, 104, and 105 contains 175 parking spaces, which requires 29 trees, and 29 trees are provided. 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: Planter islands are planned within the parking lots of the multifamily and mixed-use buildings. Perimeter landscape areas are also planned around multifamily and mixed-use parking areas. 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 designed to be 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 adjacent to planting areas to prevent vehicles from overhanging and damaging the 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: Curbed planting areas are provided at the end of each parking aisle 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 without a landscape divider strip provided. Refer to the Preliminary Engineering Plans included with this application for more information.

Chapter 18.15 Signs

Response: No signs are planned with 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 future fences for the residential lots will not exceed 6 feet in height. Therefore, permits will not be required for fences.

18.17.060 Retaining walls.

Response: Retaining walls may be necessary to complete the project. Wall locations will be determined with final engineering if necessary. If walls over six feet tall are required, the Applicant will request approval from the engineer. 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 planned landscaping will be done with a purpose and will be used to integrate the planned subdivision and site plans into the surrounding area. This will be achieved through retention of critical areas and associated landscape and proposed site and right-of-way landscaping. 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: Multiple open spaces are planned throughout the project area to protect critical areas and existing groves of trees to the greatest extent practicable. Open spaces will be integrated into the community and, except for the protected critical areas, open for use of the future residents to enjoy. 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: The mixed use and apartment buildings will be constructed to have a finished look and have been designed to meet the standards of CMC title 15 and title 18. The mixed use and apartment buildings will go through the final site plan review process, where this standard will be reviewed again. These elements will also be reviewed during the building permit process for the single family residential lots.

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

Response: No known historic or heritage elements exist within the site. On-site critical areas will be protected and provide large open space tracts for tree protection and sidewalks and an off-site pedestrian pathway will be integrated in the project. 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 due to impacts of the project.

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: Generally, all on-site parking areas that serve the mixed-use and multifamily buildings are placed to the interior of the site. Due to the shape and grades of the site, the need to meet parking quantity requirements. There are some areas where parking is adjacent to the street. Parking areas adjacent to the streets will be screened with Landscaping. Refer to the Preliminary Engineering Plans included with this application for more information.

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

Response: Planned building locations are shown for the mixed-use and multifamily buildings. To help define the streetscape, these planned buildings are located along the street frontages to the greatest extent practicable, while considering site grades and parking requirements. Refer to the Preliminary Engineering Plans included with this application for more information.

c. Structures abutting, located in, or located near less intensive uses or zoned areas (such as commercial developments next to residential areas) shall be designed to mitigate size and scale differences.

Response: Multifamily apartment buildings have been designed to abut the HD-NS and LD-NS zoning district. The planned attached single family lots adjacent to the multifamily buildings will

generally be of similar scale to the multifamily buildings. A planned parking area for the multifamily buildings will provide additional separation between the multifamily buildings and the attached townhomes. The larger single family lots in the southeast corner of the site are separated from the mixed use and multi-family buildings with a large open space tract.

d. Developments containing a multiple of uses/activities shall integrate each use/activity in a manner that achieves a seamless appearance, or creates a cohesive development.

Response: Higher intensity uses will occur on the interior of the project area. The planned mixed-use and commercial buildings have been designed to front North Shore Boulevard and N 54th Avenue. Attached and detached single-family homes are planned around the exterior of the project area to transition to the neighboring residential zoned properties. . Landscaping and open space areas exist throughout the project area and will be used to help provide a more seamless appearance between varying uses and the natural area.

e. Mixed-use developments that place uses throughout the site (horizontal development) shall organize elements in a manner that minimizes their impact on adjacent lower intensity uses.

Response: Uses throughout the site are arranged so that the higher intensity uses are adjacent to rights-of-way and the MX-NS and C-NC zoned areas of the site. Lower density residential lots are placed around the exterior of the site, adjacent to similarly zoned residential parcels off-site. Refer to the Preliminary Engineering Plans included with this application for more information.

f. Walls shall be broken up to avoid a blank look and to provide a sense of scale.

Response: Walls will be broken up and a blank look will be avoided. These elements will be reviewed during the building permit review.

g. Outdoor lighting shall not be directed off-site.

Response: No outdoor lighting will be directed off-site and all requirements of the CMC for lighting will be met. The lighting for the site plans will be reviewed with the final site plan application.

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 planned townhomes will be in driveways and garages; therefore, no screening is required. 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: Planned building locations are shown for the mixed-use and multifamily buildings. To help define the streetscape, these planned buildings are located along the street frontages to the greatest extent practicable, while considering site grades and parking requirements. 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: The planned townhomes will be two-story and range from two to four units per structure, making them similarly scaled to the detached single-family buildings within the project.

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

Response: Walls will be broken up and have articulation and a 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 project; 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: The mixed use and apartment buildings will be constructed to have a finished look and will be designed to meet the standards of CMC title 15 and title 18. The mixed use, apartment, and commercial buildings will go through the final site plan review process, where this standard will be reviewed again. These elements will also be reviewed during the building permit process for the single-family residential lots.

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: The planned project will provide apartment units in mixed-use buildings, multifamily apartments, attached townhome single-family homes, and detached single-family homes. All multifamily buildings are greater than 20 feet away from the planned single family lots; therefore, a stepped transition is not necessary. The planned single-family attached lots range from ±24 feet wide to ±29 feet wide. The detached single-family lots range from ±32 feet wide to ±62 feet wide. Single-family lots in the HD-NS and LD-NS zoning districts will meet setback requirements. Additionally, multiple open spaces are planned throughout the project to help break up the project. 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: Structured or tuck-under parking is not planned with this project. The number of parking stalls required does not justify structured parking and tuck-under parking is generally not feasible due to site grade and ensuring adequate commercial space is provided in the mixed-use building. 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: 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: Multiple entries will be provided for the mixed-use buildings. Access to the buildings can be gained from North Shore Boulevard and N 54th Avenue, and the planned parking areas within the lots. Sidewalks and pedestrian access points to the mixed-use buildings connect to the public right-of-way along North Shore Boulevard and N 54th Avenue. Refer to the Preliminary Engineering Plans included with this application for more information.

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: The single family homes and mixed use and apartment buildings will be constructed to have a finished look and will be designed to meet the standards of CMC title 15 and title 18. The mixed use and apartment buildings will go through the final site plan review process, where this standard will be reviewed again. These elements will also be reviewed during the building permit process for the single-family residential lots.

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

Response: Preliminary Lighting Plans for public rights-of-way are included in the Preliminary Engineering Plans and show the location of planned street lighting. Lighting for the mixed-use and multifamily site plans will be included in the final site plan review. All lighting will meet the requirements of the CMC.

Chapter 18.47 Temporary Use Permits

Response: The Applicant intends to apply for a temporary use permit (TUP) for blasting and rock crushing to assist in site development. A TUP is only valid for 180 days. For this reason, the Applicant intends to apply for a TUP nearer to the planned site construction date. All materials necessary to obtain approval for the TUP will be addressed during the appropriate review process.

Chapter 18.55 Administration and Procedures

Article II. – Pre-Filing Requirements

(…)

18.55.060 Preapplication conference meeting—Type II, Type III.

Response: This application requires a pre-application conference meeting, which was held on June 6, 2024.

Article III. – Application Requirements

(…)

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 a Preliminary Subdivision Plat and Preliminary Site Plan approval and contains all the required information listed in this section.

North Shore Subarea Design Manual

Section 2 – Land Use and Development Standards

2.1 North Shore Lower Density Residential (LD-NS)

Intent and Character

The North Shore – Lower Density (LD-NS) district is intended for low density residential developments, including the following types of housing.

- Detached single-family homes
- Duplexes
- Cottage cluster developments
- Accessory dwelling units (ADUs)

Response: Single-family homes and one apartment building are planned in the LD-NS zoning district. Detached single-family homes and apartments are permitted outright in the LD-NS zoning

district per CMC 18.07.040, subject to the approval of applicable permits. The planned uses are appropriate for the zoning district.

Design Standards and Guidelines

Dimensional Standards

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

Table 1: Dimensions and Standards for Standard Lots in LD-NS	
Item	Standard
Density range (min-max dwelling units/acre)	4-5.8
Average lot area (square feet)	7,500
Minimum lot size (square feet)	5,400
Maximum lot size (square feet)	12,000
Minimum lot width	40
Minimum lot depth	90
Average building lot coverage	45%
Average lot area (square feet)	7,500
Maximum building height (feet)	35
Setbacks, Street loaded (feet):	
Front yard	10-25
Side yard	5 / 10 if flanking a street and corner lot rear
Rear yard	10-20
Setbacks, Ally loaded (feet)	
Front yard	10
Side yard	5
Rear yard	10-20
Maximum building height (feet)	35

Response: The portion of the site that is in the LD-NS zoning district is required to meet the dimensional and setback standards of the LD-NS zoning district. The portion of the site in the LD-NS zoning district has a gross area of ±10.27 acres with ±6.95 acres of open space, creating a net area of ±3.32 acres. Critical areas on-site will be protected; therefore, density transfer standards are applied. Table 1 of CMC 18.09.040 permits a minimum of 4 new dwellings per acre and a maximum of 5.8 new dwellings per net acre on density transfer lots; therefore, the minimum required density for the LD-NS zoned area is 13 units (3.32 AC X 4 DU/AC) and the maximum allowable density for the LD-NS zoned area is 19 units (3.32 AC X 5.8 DU/AC). Thirty-one dwelling units are planned in the LD-NS zoning district, including seven single family residential lots and one 24-unit apartment building. The Applicant requests an exception to the maximum allowable density in the LD-NS zone given the overall density for the whole project is met. More than 66 percent of the site in the LD-NS zoning district is open space for critical area protection, and most of the units being provided in the LD-NS zoning district come from a single apartment building that has 24-units that connects with the units provide in the MX-NS zoning district. For these reasons, the Applicant believes they are meeting the intent of the LD-NS zoning district and keeping the intended character of the LD-NS zoning district and North Shore Subarea by protecting critical areas and providing transitions from larger, higher density buildings to lower density housing. The proposed lots in the LD-NS zoning

district have been designed to allow for building construction within the required setbacks for each lot.

The subject site consists of four different zoning districts, C-NS, MX-NS, LD-NS, and HD-NS. The density of the project has been determined by calculating the required minimum and allowed maximum density for each zoning district and adding them together. The total required minimum density for the site is 195 units and the total allowed maximum density for the site is 375 units. The project will provide 242 total units, including apartments, attached single-family lots, and detached single-family lots. Refer to the Preliminary Engineering Plans included with this application for more information.

Site Development Guidelines

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

- **Lot sized should be varied to avoid "cookie cutter" and predictable suburban development patterns, and to better reflect the natural geography.**

Response: The planned single-family lots in the LD-NS zoning district range from ±52 feet wide to ±69 feet wide. A large open space tract will also be provided adjacent to the LD-NS zoning district to help provide a natural feel. Refer to the Preliminary Engineering Plans included with this application for more information.

- **Porches should be located on the street-facing façade and can be linear or wrapping.**

Response: This application is for a 108-lot subdivision. No structures are proposed as part of this application; however, porches will be considered for residences within the LD-NS zoning district. If proposed, these elements will be reviewed during the building permit process.

- **Attached garages are encourages over detached garages. If detached, the garage should be located behind the primary structure.**

Response: Attached garages will be provided with the project and no detached garages are proposed.

- **ADUs are encouraged to support housing variety. ADUs should be designed to complement the primary residence.**

Response: The proposed lots in the development are not large enough to support accessory dwelling units (ADUs); therefore, none are proposed.

- **The form and layout of building should be oriented to retain or integrate with the existing topography, natural habitat and respond to climatic or solar conditions.**

Response: All lots in the planned project have been designed to work with the existing grades to the greatest extent practicable. Refer to the Preliminary Engineering Plans included with this application for more information.

- **Developments should integrate appropriate sustainable design features, such as passive building design, green roofs, permeable surfaces, stormwater management, and naturescaping (see Section 4).**

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

> **Site Development Principles**
>
> **The following principles apply to all development in the LD-NS district.**
>
> - **Residential development shall provide roof variation and detail through the use of dormers and other design elements of the Pacific Northwest style as described in Section 2.**
> - **A pedestrian pathway shall be provided from the main entrance of the dwelling to the sidewalk.**
> - **All garages shall include similar architectural features as the primary structures (e.g., windows, siding) to blend in with the residence.**
> - **Fences shall not block views to or from the street.**

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

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: Attached single-family homes (townhomes or rowhouses), detached single-family homes, and multifamily buildings are planned within the HD-NS zoning district. Townhomes, detached single-family homes, and multifamily buildings are permitted outright, per CMC 18.07.040, and are subject to the approval of applicable permits, in the HD-NS zoning district. The proposed 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 portion of the site that is in the HD-NS zoning district is required to meet the dimensional and setback standards of the HD-NS zoning district. The portion of the site in the HD-NS zoning district has a gross area of ±17.14 acres with ±3.95 acres of open space, creating a net area of ±13.19 acres. Table 1 of CMC 18.09.050 permits a minimum of 10 new dwellings per acre and a maximum of 18 new dwellings per net acre in the HD-NS zoning district; therefore, the minimum required density for the HD-NS zone area is 132 units (13.19 AC X 4 DU/AC) and the maximum allowable density for the HD-NS zoned area is 237 units (13.19 AC X 18 DU/AC). One hundred forty-three residential units are planned in the HD-NS zoning district. Units will be provided with two 24-unit apartment buildings and 95 single family residential lots. The proposed lots in the HD-NS zoning district have been designed to allow for building construction within the required setbacks for each lot.

The subject site consists of four different zoning districts, C-NS, MX-NS, LD-NS, and HD-NS. The density of the project has been determined by calculating the required minimum and allowed maximum density for each zoning district and adding them together. The total required minimum density for the site is 195 units and the total allowed maximum density for the site is 375 units. The project will provide 242 total units, including apartments, attached single-family lots, and detached single-family lots. 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 critical areas 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: Generally, all on-site parking areas that serve the mixed-use and multifamily buildings are placed to the interior of the site and screened by the planned buildings. Due to the shape and grades of the site, and the need to meet parking quantity requirements, there are some areas where parking is adjacent to the street. Parking areas adjacent to the street will be screened. 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: This application is for a 108-lot subdivision. No structures are proposed as part of this application; however, 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 project for the protection of existing trees and critical areas 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 for the multifamily buildings will be screened with landscaping and the planned buildings. 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: Multiple entries will be provided for the multifamily residential buildings. Access to the buildings can be gained from North Shore Boulevard, N 54th Avenue, and the planned parking areas within the lots. Sidewalks and pedestrian access points to the buildings connect to the public right-of-way along North Shore Boulevard and N 54th Avenue. Attached and detached single-family buildings will have entries facing the public streets. 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: Multifamily apartment buildings are planned in the HD-NS portion of this project. All planned buildings are designed to abut North Shore Boulevard and N 54th Avenue. North Shore Boulevard is a planned arterial road and N 54th Avenue is a planned local access road. All multifamily buildings are greater than 20 feet away from the planned single family lots; therefore, a stepped transition is not necessary. The planned multifamily apartment buildings in the HD-NS zoning district will be screened by open spaces, roads,

and landscape buffers. Attached single-family townhomes abut the multifamily apartment buildings to the west. The multifamily apartment buildings will be three stories tall and similar in scale and height to the attached single-family townhomes that they abut. 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 planned as part of this application; however, the Applicant will include weather protection for public facing facades and building entries. These elements will be reviewed during the building permit process.

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

Response: Preliminary Lighting Plans for the public rights-of-way are included in the Preliminary Engineering Plans and show the locations of proposed street lighting. Lighting for the multifamily buildings will be addressed in the final site plan. All lighting will meet the requirements of the CMC.

- **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. These elements will be reviewed during the building permit process.

2.3 North Shore Commercial (C-NS)

Intent and Character

The North Shore Commercial (C-NS) district is intended to allow for a range of commercial activities providing goods and services in the subarea. Public-facing commercial buildings should add to the pedestrian-level environment by including ground-level windows and entrances.

Response: The portions of the site that are in the MX-NS and C-NS zoning districts are required to meet the dimensional and setback standards of the MX-NS and C-NS zoning districts. There are no open space tracts located within the C-NS portion of the site; therefore, the net area of the C-NS zoned portion site is ±2.12 acres. The Applicant is proposing one mixed use building in the C-NS zoned area of the site. The planned mixed use building contains ±10,000 square feet of commercial space on the ground floor and 16 apartment units on the upper floors of the building. Dwelling units are not permitted in the C-NS zoning district; however, the Applicant requests an exception to portions of the C-NS standards. The ±10,000 square feet of commercial space that will be provided in the C-NS zoning district meets the intent of the C-NS zoning district and is of similar size to space that would be provided with a commercial only building. The Applicant is also proposing a 10-foot front yard setback to match the planned mixed use buildings on the other side of N 54th Avenue. The planned residential dwelling units above the mixed-use building on Lot 106 will provide a similar feel to the mixed-use building across N 54th Avenue and help create a homogeneous use of N 54th Avenue.

Design Standards and Guidelines

Dimensional Standards

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

Table 5: Dimensions and Standards in C-NS	
Item	Standard
Minimum lot size (square feet)	None
Minimum lot width	None
Minimum lot depth	None
Maximum building lot coverage	None
Maximum building height (feet)	100
Minimum usable open space[1]	5% of net acreage
Setbacks (feet):	
Front yard	15
Side yard	None
Rear yard	None

1. "Usable Open Space" means areas planned and improved to provide opportunities for active recreation, passive relaxation, or community interaction, and that are accessible to the public or to residents, employees, or customers in common. Examples include plazas, courtyards, private parks, sport fields and courts, and viewpoints overlooking natural resource areas. Usable Open Space does not include public parks unless the parks were approved as Usable Open Space and conveyed to the City (CMC 18.03).

Response:

The portions of the site that are in the MX-NS and C-NS zoning districts are required to meet the dimensional and setback standards of the MX-NS and C-NS zoning districts. There are no open space tracts located within the C-NS portion of the site; therefore, the net area of the C-NS zoned portion site is ±2.12 acres. The Applicant is proposing one mixed use building in the C-NS zoned area of the site. The planned mixed use building contains ±10,000 square feet of commercial space on the ground floor and 16 apartment units on the upper floors of the building. Dwelling units are not permitted in the C-NS zoning district; however, the Applicant requests an exception to portions of the C-NS standards. The ±10,000 square feet of commercial space that will be provided in the C-NS zoning district meets the intent of the C-NS zoning district and is of similar size to space that would be provided with a commercial only building. The Applicant is also proposing a 10-foot front yard setback to match the planned mixed use buildings on the other side of N 54th Avenue. The planned residential dwelling units above the mixed-use building on Lot 106 will provide a similar feel to the mixed-use building across N 54th Avenue and help create a homogeneous use of N 54th Avenue.

The subject site consists of four different zoning districts, C-NS, MX-NS, LD-NS, and HD-NS. The density of the project has been determined by calculating the required minimum and allowed maximum density for each zoning district and adding them together. The total required minimum density for the site is 195 units and the total allowed maximum density for the site is 375 units. The project will provide 242 total units, including apartments, attached single-family lots, and detached single-family lots. Refer to the Preliminary Engineering Plans included with this application for more information.

Site Development Guidelines

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

- **Encourage small, local businesses, such as restaurants, cafes, and grocers that serve North Shore residents and businesses, while complementing downtown Camas.**

Response: The Applicant does not know what commercial businesses will occupy the planned mixed use building; however, the businesses will provide services to serve the residents of the North Shore subarea. Refer to the Preliminary Engineering Plans included with this application for more information.

- **Buildings should be oriented to enhance the natural topography.**

Response: The planned mixed use buildings will be constructed with multiple entries and will be oriented to align with the existing site grades and try to limit the amount of grading necessary for building construction. Refer to the Preliminary Engineering Plans included with this application for more information.

- **All new developments should provide multimodal connections throughout the development, as well as to adjacent developments.**

Response: Pedestrian sidewalks are planned throughout the site. Additionally, an off-site utility and public access easement will provide connection to the existing City of Camas parks and recreation opportunities to the south. Refer to the Preliminary Engineering Plans included with this application for more information.

- **The visibility of off-street surface parking should be minimized by locating parking in buildings or locating surface parking behind buildings.**

- **Response: Generally, all on-site parking areas that serve the mixed-use and multifamily buildings are placed to the interior of the site. Due to the shape and grades of the site, the need to meet parking quantity requirements. There are some areas where parking is adjacent to the street. Parking areas adjacent to the streets will be screened with Landscaping. Refer to the Preliminary Engineering Plans included with this application for more information. Public plazas are encouraged in the C-NS district and should incorporate similar design features to the established central plaza to add to the sense of place. See Section 2.4, MX-NS district for a description of the design features recommended for the central plaza.**

Response: Public plazas have not been proposed in the commercial zone. To provide a commercial space of adequate size and provide required parking, space will generally not be available to provide a public plaza. Landscaping consistent with the North Shore subarea district requirements will be provided in the C-NS portion of the site. Additionally, pedestrian access to the Legacy Lands and City of Camas public park to the south can be achieved through use of planned access easement. Refer to the Preliminary Engineering Plans included with this application for more information.

- **Sustainable design features are encouraged, such as passive building design, green roofs, permeable surfaces, stormwater management, and naturescaping (see Section 4).**

Response: No structures are proposed as part of this application; however, sustainable design features will be considered for buildings. These elements will be reviewed during the building permit process.

Site Development Principles

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

- **Commercial buildings shall include multiple points of entry and ground-floor windows to facilities access, visual interests, and promote safety.**

Response: No structures are proposed as part of this application; however, the planned mixed use building will contain multiple points of entry and ground-floor windows. Landscaped setbacks and entry points will have design aspects similar to the landscaped areas provided in the multifamily and single-family portion of the project.

- **Public-facing facades shall provide weather protection through deep overhangs, which are allowed within the front yard setback.**

Response: No structures are proposed as part of this application; however, design features will be considered for the buildings. These elements will be reviewed during the building permit process.

- **Developments shall avoid large blank wall surfaces.**

Response: No structures are proposed as part of this application; however, design features will be considered for the buildings. These elements will be reviewed during the building permit process.

- **Outdoor storage, loading, and equipment areas shall be located and designed to blend in with the surroundings.**

Response: No loading or storage areas are planned with the mixed use buildings. It is anticipated that future deliveries will occur with small trucks and will occur outside of business hours.

- **Setbacks and landscaping shall include multimodal amenities where possible, such as bike racks and benches.**

Response: All planned landscaping will have design aspects similar to the landscaped areas provided in the multifamily and single-family portion of the project. Refer to the Preliminary Engineering Plans included with this application for more information.

- **Parking areas available to the general public shall be clearly identified and connected to the building entry and/or sidewalk with a pedestrian path.**

Response: Parking stalls are planned all around the planned multi use building. Additionally, sidewalks leading to the planned building exist throughout the lot. Parking spaces abut that planned sidewalk, providing a clearly identified path from the parking area to the multi-use building. Refer to the Preliminary Engineering Plans included with this application for more information.

2.4 North Shore Mixed Use (MX-NS)

Intent and Character

The North Shore Mixed Use (MX-NS) district is intended to provide for a wide range of commercial and residential uses. Compact development is encouraged to support transit and pedestrian travel. Developments in this zone should create spaces for community gathering, waiting, discussion and outdoor commercial activities. Cottage-style and rowhouse developments are allowed residential uses within the MX-NS zone and are to follow the design standards and guidelines describes in Section 2.1 and 2.2.

Response: Mixed Use, commercial, and multifamily apartment buildings are planned in the portion of the site located in the MX-NS zoning district. The variety of uses meet the intent of the MX-NS zoning district, by providing commercial and residential uses that promote pedestrian travel. For these reasons, the proposed 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 MX-NS district. All standards should be confirmed in CMC 18.09. Parking requirements are determined by CMC 18.11.

Table 6: Dimensions and Standards for Standard Lots in MX-NS	
Item	Standard
Density range (min-max dwelling units/acre)	24
Minimum lot size (square feet)	1,800
Maximum gross floor area	None
Minimum lot width	None
Minimum lot depth	None
Average building lot coverage	65%
Maximum building height (feet)	100
Setbacks (feet):	
Front yard (maximum setback at front building line)	10
Side yard	10
Rear yard / alley-loaded	10/20

Response: The portions of the site that are in the MX-NS are required to meet the dimensional and setback standards of the MX-NS zoning districts. There are ±6.50 acres of gross area in the MX-NS zoning district and ±1.54 acres of planned open space in MX-NS portion of the site; therefore, the net area of the MX-NS zoning district is ±4.96 acres. Per CMC 18.05.050(L), the minimum density required is 10 units per acre, and the maximum density allowed is 24 units per acre. The minimum density for the MX-NS zoned area is 50 units (4.96 AC X 10 DU/AC) and the maximum density for the MX-NS zoned area is 119 units (4.96 AC X 24 DU/AC). Fifty-two units are planned in the MX-NS zoning district. Units will be provided with one 24-unit apartment building, one 12-unit mixed use building, and one 16-unit mixed use building. All buildings in the MX-NS zoning district have been designed to comply with CMC setback requirements, except the 12-unit mixed use building which cannot comply with the 10-foot maximum setback due to North Shore Boulevard reducing in size and shifting away from the building. These features result in a setback line that cannot be parallelled. The 12-unit mixed use building has been designed

to be setback 10-feet on one corner, and as North Shore Boulevard right-of-way reduces, the building setback becomes ±13 feet.

The subject site consists of four different zoning districts, C-NS, MX-NS, LD-NS, and HD-NS. The density of the project has been determined by calculating the required minimum and allowed maximum density for each zoning district and adding them together. The total required minimum density for the site is 195 units and the total allowed maximum density for the site is 375 units. The project will provide 242 total units, including apartments, attached single-family lots, and detached single-family lots. 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.

- **Shared parking is encouraged between adjacent or vertically mixes uses.**

Response: The parking areas for the mixed-use buildings will also be shared with the multifamily buildings. Refer to the Preliminary Engineering Plans included with this application for more information.

- **All development should provide multimodal connections throughout the development, as well as to adjacent development.**

Response: Multiple entries will be provided for the mixed use and multifamily residential buildings. Access to the buildings can be gained from North Shore Boulevard, N 54th Avenue, and the planned parking areas within the lots. Sidewalks and pedestrian access points to the mixed-use buildings connect to the public right-of-way along North Shore Boulevard and N 54th Avenue. North Shore Boulevard is a planned arterial, which provides multimodal connection opportunities to future developments. Refer to the Preliminary Engineering Plans included with this application for more information.

- **Parking areas available to the general public should be clearly identified.**

Response: Parking areas available to the general public will be identified in the completed project.

- **Sustainable design features are encouraged, such as passive building design, green roofs, permeable surfaces, stormwater management, and naturescaping (see Section 4)**

Response: No structures are proposed as part of this application; however, sustainable design features will be considered for buildings. These elements will be reviewed during the building permit process.

Site Development Principles

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

- **Landscaped setbacks and entry-points shall incorporate aspects from landscaping or nearby residential developments.**

Response: Landscaped setbacks and entry points will have design aspects similar to the landscaped areas provided in the multifamily and single-family portion of the project.

- **For ground-floor residential spaces in this zone, landscaping shall provide adequate privacy from the public view.**

Response: Ground-floor residential units are planned in the MX-NS zoning district; therefore, this standard applies. Landscaping or other design measures will be installed around the planned apartment buildings to provide adequate privacy.

- **Wayfinding and interpretative signage shall be provided to direct people to historic, cultural, and natural resources throughout the area.**

Response: Currently, no wayfinding or interpretive signs are proposed. Wetland buffer demarcation signs will be provided to identify and protect critical areas.

- **Ground-floor commercial space shall include pedestrian amenities fronting the right-of-way. This may include adequate down-facing lighting, public seating or resting facilities, bicycle racks, small-scale landscaping consistent with the natural environment, and signage consistent with this design manual.**

Response: Final pedestrian amenities will be determined with final building design, based on the site grades, final architectural design, and surrounding site design. These elements will be reviewed during the final site plan and building permit processes.

- **Mixed-use developments that front the central plaza shall include ground-floor retail/commercial space to encourage pedestrian-level activity.**

Response: The planned mixed-use building does not front the central plaza identified in the *North Short Subarea Plan*; therefore, this standard does not apply.

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: Multiple open spaces will be provided for the protection of existing on-site trees and critical areas, as well as providing recreational opportunities for residents. Open spaces and a planned public access easement will provide connections to existing public parks.

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: No Development Agreement related to parks or open spaces is planned with this project. A utility and pedestrian access path with easement will be created on City of Camas park land to the south of the site.

- 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 for the protection of existing on-site trees and critical areas will be preserved with this project. Soil within the open space tracts will be protected. The planned 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: The planned project is protecting existing trees and critical areas to the greatest extent practicable. Planned landscaping will include native and naturalized plant material selection 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: Trails will be constructed to the 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: The planned off-site utility and public access easement will not include any lighting. No trails and paths separate from the sidewalk are proposed within the development. Refer to the Preliminary Engineering Plans included with this application for more information.

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: Streetlighting is designed to illuminate the streets and appropriately blend with the North Shore Subarea Design Manual standards. The details of the streetlighting will be determined and reviewed during final engineering.

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. Any proposed street furniture will be reviewed with the final site plan review of the multifamily and commercial site plans.

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 requirements.

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 are planned with this project. Street landscaping in front of private residential lots and the multifamily and commercial lots will be provided during home and site 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. Any proposed grates that may be proposed in the future will be reviewed with the final review of the multifamily and commercial site plans.

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 and all planned public streets within the project are designed to meet the North Shore Subarea Design Manual standards. Five public streets are planned with this project (North Shore Boulevard, N 57th Avenue, N 56th Avenue, N 55th Avenue, N 54th Avenue, and N Mills Street).N 57th Avenue, N 56th Avenue, N 55th Avenue, and N 54th Avenue will be constructed with a 54-foot-wide right-of-way, a 28-foot-wide paved surface, and a 6-foot-wide planter strip and 6-foot-wide sidewalk on both sides of the road.

Off-site road improvements to NE 252nd Avenue and NE 3rd Street are also planned with this project. Per Clark County Code (CCC) 40.350.030(B)(6)(b)(2), rural access roads must be constructed with a 20-foot-wide all-weather driving surface, except where a preexisting road is 18 feet wide or wider. In those cases, widening to 20 feet is not necessary. The drivable surface of NE 252nd Avenue is less than 18 feet wide in some locations; therefore, NE 252nd Avenue will be widened to 20 feet. The drivable surface of NE 3rd Street is at least 20 feet wide; therefore, NE 3rd Street will not be improved. Off-site intersection improvements at the intersection of NE 3rd Street and NE 257th Avenue, as recommended by the Applicant's traffic consultant Kittelson will also be completed with this project.

North Shore Boulevard

The North Shore Boulevard is an arterial road that serves as the main thoroughfare through the downtown center of North Shore and may include roundabouts at key intersections as designated by the City. The figure below identifies some of the key elements of the rights-of way. Street dimensions are represented as minimum requirements and will be subject to review by the City engineer. Enhanced crosswalks are required in commercial nodes, subject to review by the City engineer.

Response: The subject site is within the North Shore Subarea and all planned public streets within the project are designed to meet the North Shore Subarea Design Manual standards. The right-of-way dedication for North Shore Boulevard will occur with this project, but North Shore Boulevard will be constructed at a later date by the City of Camas. However, if necessary, portions of North Shore Boulevard for individual phases will be constructed if the City has not completed the project. The dedicated right-of-way for North Shore

Boulevard will vary between 67 feet and 88 feet. In the southeast of the site, closer to the mixed use buildings, the right-of-way for North Shore Boulevard will be dedicated to 88-feet-wide. As North Shore Boulevard travels northwesterly, its right-of-way shrinks down to 67 feet. This reduction in size is needed to avoid wetland and Oregon white oak impacts, and to avoid an off-site barn that is approximately eight feet north of the northern property line. The planned right-of-way deviation for North Shore Boulevard is being worked through as part of a Development Agreement between the City of Camas, the Applicant, and surrounding property owners. No other road deviations or road modifications are planned with this project.

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 North Shore Boulevard the only higher classification street. No arterial street crossings are proposed with this development and enhanced crossings are not typically used for local streets; therefore, no enhanced crossings are proposed. Pedestrian crossing are provided where N 56th Avenue and North Shore Boulevard intersect. 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: Where feasible, street trees are planned with this project. The planned roadway sections require planter strips; therefore, no tree grates are proposed. Refer to Preliminary Engineering Plans included with this application for more information.

IV. Conclusion

The Applicant is proposing a subdivision and preliminary site plan that will create 61 attached single-family residential lots, 41 detached single-family residential lots, and six mixed-use lots which will contain three mixed use buildings and four apartment buildings, containing 140 apartment units and ±30,250 square feet of commercial space. Open space tracts, private street tracts, public utility, and road improvements are also planned with this project. The proposed development meets the requirements of the City of Camas HD-NS, LD-NS, POS-NS, and MX-NS zoning districts and other applicable portions of the City of Camas Municipal Code.

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

13. Shoreline Permit

A Shoreline Substantial Development Permit Narrative for Village at North Shore

Date: July 2025

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

Applicant:
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AKS Job Number: 9095



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A Shoreline Substantial Development Permit Narrative for Village at North Shore

Submitted to:

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

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Applicant's Consultant:

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Phone: (360)-882-0419

Site Location:

313 SE Leadbetter Road and 305 SE 252nd Avenue
Camas, WA 98607

Clark County Parcels

177885-000 and 178175-000

Site Size:

36.04 acres (±1,569,697 square feet)

Land Use Districts:

North Shore Mixed Use (MX-NS), North Shore Higher Density Residential (HD-NS), North Shore Lower Density Residential (LD-NS), and North Shore Commercial (C-NS)

I. Executive Summary

Through this application, HSR Dev — Mills, LLC (Applicant), requests approval from the City of Camas (City) to subdivide the subject site (described below) into a 108-lot subdivision (Villages at North Shore). The planned subdivision will include 102 single-family residential lots for the future construction of attached and detached single-family homes. Six lots within the subdivision are planned for the construction of mixed use buildings and apartment buildings. The mixed used buildings will have commercial on the ground floor with multifamily units on the floors above. The project will gain access from NE 252nd Avenue. An internal street network is planned to be constructed to serve the subdivision. The project will also provide future circulation opportunities to the west with the creation of N 54th Avenue, N 55th Avenue, N 56th Avenue, and N 57th Avenue. The right-of-way for North Shore Boulevard will also be dedicated with this project. N Mills Street, a planned local road, will be constructed with half-width improvements along the site's western boundary. The project will also provide sanitary sewer, water, and stormwater utility connections and a pedestrian path from the subject site to SE Leadbetter Road. While the subject site is outside of the shoreline, construction of the utilities and pedestrian pathway will occur within the Medium Intensity Shoreline Designation for Lacamas Lake.

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

- Subdivision with 108 lots
  - 61 single-family attached lots
  - 41 single-family detached lots
- Creation of six mixed-use lots containing 140 multifamily apartment units and ±30,250 of commercial space.
- Construction of an internal public street network to serve the site and provide future circulation to adjacent properties
- Construction of all necessary utilities to serve the site
- Off-site utility connections and pedestrian pathway, portion of which are in the shoreline

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 ±36.04 acres in size. The site is addressed as 313 SE Leadbetter Road and 305 SE 252nd Avenue, Camas, WA 98607. The parcels are identified as 177885-000 of the Northeast Quarter of Section 34, Township 2 North, Range 3 East, Willamette Meridian and 178175-000 of Northwest Quarter of Section 35, Township 2 North, Range 3 East, Willamette Meridian. The site is split-zoned North Shore Mixed Use (MX-NS), North Shore Higher Density Residential (HD-NS), North Shore Lower Density Residential (LD-NS), and North Shore Commercial (C-NS). Both parcels have the Airport overlay Zone C overlay. The properties north and east of Parcel 178175-000 are zoned LD-NS. To the south are properties zoned North Shore Park/Open Space (POS-NS). The properties west and north of Parcel 178885-000 are zoned HD-NS. Parcels to the south are forested and used as a public park owned by the City. The properties to the west, north, and east are used as single-family residences, farmland, and undeveloped forest land.

The site fronts NE 252nd Avenue to the north and both parcels currently gain access from NE 252nd Avenue. NE 252nd Avenue is an existing rural local access county road.

The site is undulating and characterized by grades of 0 to 15 percent, with some steeper areas with slopes up to 25 percent. According to Clark County Geographic Information Systems (GIS), there are potential wetlands present on site. Oregon white oaks, streams, and priority habitat areas are mapped and present on-site. One Type-F stream has also been identified on-site. Wetlands, critical areas, and priority habitat areas are discussed later in this narrative. The site is heavily wooded, and the existing vegetation consists of evergreen and deciduous trees, shrubs, and field grass. The archaeological predictive for the site is moderate to high and there are mapping indicators for archaeological site buffers.

III. Applicable Review Criteria

CITY OF CAMAS SHORELINE MASTER PROGRAM

CHAPTER 2 APPLICABILITY, SHORELINE PERMITS AND EXEMPTIONS

To be authorized, all uses and development activities in shorelines shall be carried out in a manner consistent with this Program and the policy of the Act as required by RCW 90.58.140(1), regardless of whether a shoreline permit, statement of exemption, shoreline variance, or shoreline conditional use is required.

2.1 Applicability

1. This Program shall apply to all of the shorelands and waters within the City of Camas that fall under the jurisdiction of RCW 90.58. Such shorelands shall include those lands extending two hundred (200) feet in all directions as measured on a horizontal plane from the ordinary high water mark (OHWM), floodways and contiguous floodplain areas landward two hundred feet from such floodways, associated wetlands, critical areas with associated buffer areas, river deltas associated with the streams, and lakes and tidal waters that are subject to the provisions of this program, as may be amended; the same to be designated as to location by Ecology, as defined by RCW 90.58.

Within the City of Camas the following waters are considered "shorelines" and are subject to the provisions of this Program: Lacamas Creek; Fallen Leaf Lake; Lacamas Lake; and Round Lake. The Columbia and Washougal Rivers are further identified as shorelines of statewide significance. A copy of the *Camas Shoreline Designations Map* and its UGA is shown in Appendix A.

The City is pre-designating shorelines within its adopted UGA. Until annexation occurs, all development in these areas will continue to be regulated by the Clark County Shoreline Master Program. The City's SMP will apply concurrent with annexation and no additional procedures are required by Ecology at the time of annexation (WAC 173-26-150) unless a re-designation is occurring as specified per Table 4-1 of this Program.

Response: The subject site is located north of SE Leadbetter Road and north of the Legacy Lands area. The site is outside of the designated shoreline area, but a portion of a pedestrian path and utilities to service the site will be extended up from SE Leadbetter Road, which is within a shoreline of the state, and falls within the 200-foot Medium Intensity shoreline. Therefore, the Shoreline Master Program applies.

2.2 Shoreline Substantial Development Permit Required

Response: This application is for a 108-lot subdivision and site plan with a pedestrian pathway and utilities to be constructed within the Medium Intensity shoreline designation. A Shoreline Substantial Development Permit and Shoreline Conditional Use Permit are required.

CHAPTER 3 SHORELINE MASTER PROGRAM GOALS AND POLICIES

3.1 General Shoreline Goals

The general goals of this Program are to:

- **Use the full potential of shorelines in accordance with the opportunities presented by their relationship to the surrounding area, their natural resource values, and their unique aesthetic qualities offered by water, topography, and views; and**

Response: This application is for a 108-lot subdivision and site plan with a pedestrian pathway and utilities to be constructed within the Medium Intensity shoreline designation for Lacamas Lake. T The site is ±917 feet north of Lacamas Lake, creating a physical separation of the site from the lake. However, the project will provide sanitary sewer, water, and stormwater utility connections and a pedestrian path from the subject site to SE Leadbetter Road. The shoreline does provide unique aesthetic qualities and views. All planned work within the shoreline jurisdiction area will be done within SE Leadbetter Road and within the existing gravel driveway serving Parcel 177898-000. A utility and public access easement will be recorded over the pedestrian pathway and utilities. The planned pedestrian path will be used for utility maintenance and pedestrian trail and connect with existing trails in the City of Camas's public parks at parcels 177905-000 and 177898-000. The utilities and pedestrian path will be constructed in a manner that will protect as many trees as practicable within the shoreline jurisdiction, as well as limit the visual impact of the construction to maintain the aesthetic qualities of the shoreline.

- **Develop a physical environment that is both ordered and diversified and which integrates water and shoreline uses while achieving a net gain of ecological function.**

Response: All planned work within the shoreline jurisdiction area will be done within SE Leadbetter Road and within the existing gravel driveway serving Parcel 177898-000. A utility and public access easement will be recorded over the pedestrian pathway and utilities. The planned pedestrian path will be used for utility maintenance and pedestrian trail and connect with existing trails in the City of Camas's public parks at parcels 177905-000 and 177898-000. The utilities and pedestrian path will be constructed in a manner that will protect as many trees as practicable within the shoreline jurisdiction, as well as limit the visual impact of the construction to maintain the aesthetic qualities of the shoreline. The planned pedestrian path and utilities have been designed to create minimal disturbance to the shoreline's ecological functions.

3.2 Shorelines of Statewide Significance

Within the City of Camas, the Columbia River and the Washougal River are designated shorelines of statewide significance (SSWS). Shorelines of statewide significance are of value to the entire state. In accordance with RCW 90.58.020, SSWS will be managed as follows:

Response: The site is not within the shoreline jurisdiction for the Columbia River or Washougal River; therefore, this section does not apply.

3.3 Archaeological, Historic, and Cultural Resources

3.3.1 Goal

The goal for archaeological, historic, and cultural resources is to preserve and prevent the destruction of or damage to any site having historic, cultural, scientific, or educational value. Such sites include those identified by affected Indian tribes, the Department of Archaeology and Historic Preservation, Clark County Historic Preservation Commission, and other appropriate authorities.

Response: Two Archaeological Predetermination Reports have been performed by Applied Archaeological Research, Inc. (AAR). The first report was performed in July 2022 and looked at parcels 177885-000 and 177884-000. The second report was performed in November 2024 and looked primarily at parcels 178175-000 and 178180-000. Neither report identified historic artifacts within the site, and neither report identified historic buildings within the site which would meet the requirements for listing in the National Register of Historic Places (NRHP). For those reasons, AAR does not recommend further archaeological work within the project area. If additional archaeological materials are discovered during construction, appropriate measures to protect these resources will be taken.

3.4 Conservation

3.4.1 Goal

The goal of conservation is to protect shoreline resources, vegetation, important shoreline features, shoreline ecological functions and the processes that sustain them to the maximum extent practicable.

Response: As previously stated, the only work occurring for the project within the shoreline area is a pedestrian pathway and utility connections in SE Leadbetter Road. All planned work within the shoreline jurisdiction area will be done within SE Leadbetter Road and within the existing gravel driveway serving Parcel 177898-000. A utility and public access easement will be recorded over the pedestrian pathway and utilities. The planned pedestrian path will be used for utility maintenance and pedestrian trail and connect with existing trails in the City of Camas's public parks at parcels 177905-000 and 177898-000. The utilities and pedestrian path will be constructed in a manner that will protect as many trees as practicable within the shoreline jurisdiction, as well as limit the visual impact of the construction to maintain the aesthetic qualities of the shoreline. The planned pedestrian path and utilities have been designed to create minimal disturbance to the shoreline's ecological functions.

3.5 Economic Development

3.5.1 Goal

The goal for economic development is to create and maintain an economic environment that is balanced with the natural and human environment.

Response: The planned project will allow for the economic development of the site while providing tracts to protect critical areas and native mature vegetation on-site. The pedestrian pathway and utilities will provide necessary connection for the project to SE Leadbetter Road and the City's park and recreation system along the shoreline. The utilities and pedestrian path will be constructed in a manner that will protect as many trees as

practicable within the shoreline jurisdiction, as well as limit the visual impact of the construction to maintain the aesthetic qualities of the shoreline. The planned pedestrian path and utilities have been designed to create minimal disturbance to the shoreline's ecological functions.

3.6 Flood Prevention and Flood Damage Minimization

3.6.1 Goal

The goal for flood hazards is to promote public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas.

Response: All planned construction will occur within SE Leadbetter Road or the existing driveway serving Parcel 177898-000. The existing elevations within the flood plain will not be changed.

3.7 Public Access and Recreation

3.7.1 Goal

The goal of public access and recreation is to increase the ability of the general public to enjoy the water's edge, travel on the waters of the state, and to view the water and the shoreline from adjacent locations.

Response: A pedestrian pathway within a utility and public access easement is planned with this project. The pedestrian path will connect the planned project with the existing trails and recreation opportunities adjacent to and within the shoreline area.

3.8 Restoration

3.8.1 Goal

The goal of restoration is to re-establish, rehabilitate and/or otherwise improve impaired shoreline ecological functions and/or processes through voluntary and incentive-based public and private programs and actions that are consistent with the SMP Restoration Plan and other approved restoration plans.

Response: Restoration of the shoreline is not planned with this project. This project will provide multiple large open space tracts within the site and outside of the shoreline area. A pedestrian pathway within a utility and public access easement will be constructed with this project, which will provide additional access to the shoreline and it's aesthetic value.

3.9 Shoreline Modification and Stabilization

3.9.1 Goal

The goal for shoreline modification and stabilization is to avoid or minimize the need for shoreline armoring along shorelines of the state, and when it is necessary, achieve it in a way that best protects ecosystem processes, shoreline functions, and downstream properties. Shoreline stabilization activities should also be reviewed in balance with the provisions of Section 3.6 - Flood Prevention and Flood Damage Minimization of this Program.

Response: Restoration, modification, or stailization of the shoreline is not planned with this project.

3.10 Shoreline Use and Development

3.10.1 Goal

The goal for shoreline use and development is to balance the preservation and development of shorelines in a manner that allows for mutually compatible uses.

Resulting land use patterns will be compatible with shoreline designations and sensitive to and compatible with ecological systems and other shoreline resources. To help with this balance, shoreline and water areas with unique attributes for specific long term uses such as commercial, residential, industrial, water, wildlife, fisheries, recreational and open space shall be identified and reserved.

Response: All planned work within the shoreline jurisdiction area will be done within SE Leadbetter Road and within the existing gravel driveway serving Parcel 177898-000. A utility and public access easement will be recorded over the pedestrian pathway and utilities. The planned pedestrian path will be used for utility maintenance and pedestrian trail and connect with existing trails in the City of Camas's public parks at parcels 177905-000 and 177898-000. The utilities and pedestrian path will be constructed in a manner that will protect as many trees as practicable within the shoreline jurisdiction, as well as limit the visual impact of the construction to maintain the aesthetic qualities of the shoreline. The planned access/utility tract will provide additional access to the shoreline's aesthetic value and increase the ability of the public to enjoy the lake and its amenities.

3.11 Transportation, Utilities, and Essential Public Facilities

3.11.1 Goal

The goal for transportation, utilities, and essential public facilities is to provide for these facilities in shoreline areas without adverse effects on existing shoreline use and development or shoreline ecological functions and/or processes.

Response: SE Leadbetter Road runs through the Lacamas Lake shoreline jurisdiction. There are existing utility services in SE Leadbetter Road and the planned subdivision will connect to those utility services. A pedestrian path connecting the planned subdivision to SE Leadbetter Road will also be constructed within the shoreline area. The planned subdivision is outside the shoreline jurisdiction area. Improvements to SE Leadbetter are not planned with this project, but SE Leadbetter will be repaired to full service levels where connections to the utilities are made.

3.12 Views and Aesthetics

3.12.1 Goal

The goal for views and aesthetics is to assure that the public's opportunity to enjoy the physical and aesthetic qualities of shorelines of the state, including views of the water, is protected to the greatest extent feasible.

Response: All planned work within the shoreline jurisdiction area will be done within SE Leadbetter Road and within the existing gravel driveway serving Parcel 177898-000. A utility and public access easement will be recorded over the pedestrian pathway and utilities. The planned pedestrian path will be used for utility maintenance and pedestrian trail and connect with existing trails in the City of Camas's public parks at parcels 177905-000 and 177898-000. The utilities and pedestrian path will be constructed in a manner that will protect as many trees as practicable within the shoreline jurisdiction, as well as limit the visual impact of the construction to maintain the aesthetic qualities of the shoreline. The planned access/utility tract will provide additional access to the shoreline's aesthetic value and increase the ability of the public to enjoy the lake and its amenities.

3.13 Water Quality and Quantity

3.13.1 Goal

> The goal for water quality and quantity is to protect and enhance the quality and quantity of the region's water resources to ensure there is safe, clean water for the public's needs and enjoyment; and protect wildlife habitat.

Response: All planned improvements within the shoreline will not have pollution generation runoff. Stormwater runoff from the subdivision will be collect and treated on-site to ensure that no polluted runoff enters the water from the project. The utilities and pedestrian path have also been designed to protect as many existing trees as practicable and limit the impact to the habitat within the shoreline.

CHAPTER 4 SHORELINE DESIGNATIONS

4.3 Shoreline Designations

The City classification system consists of shoreline designations that are consistent with and implement the Act (RCW 90.58), the Shoreline Master Program Guidelines (WAC 173-26) and the City of Camas Comprehensive Plan. These designations have been assigned consistent with the corresponding criteria provided for each shoreline designation. In delineating shoreline designations, the City aims to ensure that existing shoreline ecological functions are protected with the proposed pattern and intensity of development. Such designations should be consistent with the policies for restoration of degraded shorelines. The five shoreline designations are:

- Aquatic;
- Natural;
- Urban Conservancy;
- Medium Intensity; and
- High Intensity

4.3.4 Medium Intensity Shoreline Designation

Response: According to the Camas Shoreline Designations Map dated August 24, 2012, the area where the proposed work will occur along SE Leadbetter Road is within the Medium Intensity shoreline designation.

4.3.4.1 Purpose

> The purpose of the "Medium Intensity" shoreline designation is to accommodate primarily residential development and appurtenant structures, but to also allow other types of development that are consistent with this chapter. An additional purpose is to provide appropriate public access and recreational uses.

Response: This application is for a 108-lot subdivision and site plan. Utility services to the site will be served by connecting water, sanitary sewer, and stormwater utilities to utilities located in SE Leadbetter Road, which is in a shoreline of the state, and falls within the 200-foot Medium Intensity shoreline designation of Lacamas Lake. A pedestrian pathway, which will also be used to provide access to the utilities, will be constructed to connect the site to SE Leadbetter Road. The site is ±917 feet north of Lacamas Lake, creating a physical separation of the site from the lake. However, the utility connections and a portion of the

pedestrian path from the subject site to SE Leadbetter Road will be constructed within the shoreline area. The shoreline does provide unique aesthetic qualities and views. All planned work within the shoreline jurisdiction area will be done within SE Leadbetter Road and within the existing gravel driveway serving Parcel 177898-000. A utility and public access easement will be recorded over the pedestrian pathway and utilities. The planned pedestrian path will be used for utility maintenance and pedestrian trail and connect with existing trails in the City of Camas's public parks at parcels 177905-000 and 177898-000. The utilities and pedestrian path will be constructed in a manner that will protect as many trees as practicable within the shoreline jurisdiction, as well as limit the visual impact of the construction to maintain the aesthetic qualities of the shoreline.

CHAPTER 5 GENERAL SHORELINE USE AND DEVELOPMENT REGULATIONS

5.1 General Shoreline Use and Development Regulations

1. Shoreline uses and developments that are water-dependent shall be given priority.

Response: The proposed work within the shoreline area include utility connections and construction of a pedestrian pathway. No water dependent uses are planned with this project.

2. Shoreline uses and developments shall not cause impacts that require remedial action or loss of shoreline functions on other properties.

Response: All planned work within the shoreline jurisdiction area will be done within SE Leadbetter Road and within the existing gravel driveway serving Parcel 177898-000. A utility and public access easement will be recorded over the pedestrian pathway and utilities. The planned pedestrian path will be used for utility maintenance and pedestrian trail and connect with existing trails in the City of Camas's public parks at parcels 177905-000 and 177898-000. The utilities and pedestrian path will be constructed in a manner that will protect as many trees as practicable within the shoreline jurisdiction, as well as limit the visual impact of the construction to maintain the aesthetic qualities of the shoreline.

3. Shoreline uses and developments shall be located and designed in a manner such that shoreline stabilization is not necessary at the time of development and will not be necessary in the future for the subject property or other nearby shoreline properties unless it can be demonstrated that stabilization is the only alternative to protecting public safety and existing primary structures.

Response: The shoreline is located on the south side of SE Leadbetter Road and all work will occur within the roadway of SE Leadbetter Road or on the north site of the road.. No shoreline stabilization will be required with this project.

4. Land shall not be cleared, graded, filled, excavated or otherwise altered prior to issuance of the necessary permits and approvals for a proposed shoreline use or development to determine if environmental impacts have been avoided, minimized and mitigated to result in no net loss of ecological functions.

Response: No work will be done within the shoreline jurisdiction prior to approval of this shoreline substantial development permit and shoreline conditional use permit.

5. Single family residential development shall be allowed on all shorelines except the Aquatic and Natural shoreline designation, and shall be located, designed and used in accordance with applicable policies and regulations of this Program.

Response: While this project is for a 108-lot subdivision and site plan, only utility connection and a pedestrian path are planned within the shoreline designation. The planned project will meet the requirements of the City of Camas's Shoreline Master Program.

6. Unless otherwise stated, no development shall be constructed, located, extended, modified, converted, or altered or land divided without full compliance with CMC Title 17 Land Development and CMC Title 18 Zoning.

Response: This project will be reviewed and approved by the City following the Type III Subdivision and Site Plan review process to determine that the planned project will meet the requirements of CMC Titles 17 and 18.

7. On navigable waters or their beds, all uses and developments should be located and designed to: (a) minimize interference with surface navigation; (b) consider impacts to public views; and (c) allow for the safe, unobstructed passage of fish and wildlife, particularly species dependent on migration.

Response: No impacts to Lacamas Lake or the shoreline are planned with this project; therefore, this standard does not apply.

8. Hazardous materials shall be disposed of and other steps be taken to protect the ecological integrity of the shoreline area in accordance with the other policies and regulations of this Program as amended and all other applicable federal, state, and local statutes, codes, and ordinances.

Response: No known hazardous materials are contained on-site. Any hazardous materials found on site during construction will be disposed of properly. Grading for this project will require blasting of bed, which will follow all local, state, or federal regulations to ensure that no hazardous material leaves the site and is disposed of appropriately.

9. In-water work shall be scheduled to protect biological productivity (including but not limited to fish runs, spawning, and benthic productivity). In-water work shall not occur in areas used for commercial fishing during a fishing season unless specifically addressed and mitigated for in the permit.

Response: No in-water work is planned with this project.

10. The applicant shall demonstrate all reasonable efforts have been taken to avoid, and where unavoidable, minimize and mitigate impacts such that no net loss of critical area and shoreline function is achieved. Applicants must comply with the provisions of Appendix C with a particular focus on mitigation sequencing per Appendix C, Section 16.51.160 *Mitigation Sequencing*. Mitigation Plans must comply with the requirements of Appendix C, Section 16.51.170 *Mitigation Plan Requirements*, to achieve no net loss of ecological functions.

Response: The subject site is entirely out of the shoreline jurisdiction, off-site work for utility connections and a pedestrian path is planned within the shoreline jurisdiction. A Critical Areas Report and Archaeological Report have been prepared for this site and no impact to the shoreline will occur with this project.

11. The effect of proposed in-stream structures on bank margin habitat, channel migration, and floodplain processes should be evaluated during permit review.

Response: No in-stream structures are planned with this project.

12. Within urban growth areas, Ecology may grant relief from use and development regulations in accordance with RCW 90.58.580, and requested with a shoreline permit application.

Response: No relief from development regulations are requested with this application.

5.2 Archaeological, Cultural and Historic Resources

When a shoreline use or development is in an area known or likely to contain archaeological artifacts as indicated on the *City of Camas Archaeological Probability* map, or as recorded at the state or county historical offices, then the applicant shall provide for a site inspection and evaluation by a professional archaeologist. Development permits may not be issued until the inspection and evaluation have been completed and the city has issued approval. If an item of possible archeological interest is discovered on site, all work shall immediately cease and notification of such a find will be sent to the City, the Office of Archaeology and Historic Preservation, and affected Native American tribes. Activities on site may resume only upon receipt of the City's approval.

Response: The planned work within the shoreline area will occur within and existing driveway. As the area is previously disturbed, no archaeological work was done for this area. The project will have an inadvertent discovery plan in place during construction in the even that anything is found.

5.3 Critical Areas Protection

Critical Areas Regulations are found in Appendix C of this program, and are specifically at Chapters 16.51 through 16.61. Provisions of the Critical Areas Regulations that are not consistent with the Shoreline Management Act, RCW Chapter 90.58, and supporting Washington Administrative Code chapters shall not apply in shoreline jurisdiction. These regulations are integral and applicable to this Program, except that:

Response: The planned work within the shoreline area will occur within and existing driveway. As the area is previously disturbed and constructed with impervious surface, no critical areas exist where the work will occur..

5.4 Flood Prevention and Flood Damage Minimization

Response: All planned construction will occur within SE Leadbetter Road or the existing driveway serving Parcel 177898-000. The existing elevations within the flood plain will not be changed.

5.5 Public Access

1. Provisions for adequate public access shall be incorporated into all shoreline development proposals that involve public funding unless the proponent demonstrates public access is not feasible due to one or more of the provisions of Section 5.5 Regulation 2.a-e.

Response: No public funding is involved with the project, however, a pedestrian path is being construct within a utility and public access easement from the subject site to SE Leadbetter Road. This trail will provide public access to the shoreline.

2. Provisions for adequate public access shall be incorporated into all land divisions and other shoreline development proposals, unless this requirement is clearly inappropriate to the total proposal. The nexus, proportionality, need and support for such a connection shall be based on the policies of this Program. Public access will not be required where the proponent demonstrates one or more of the following:

Response: The proposed land division is outside of the shoreline area; however, a pedestrian path is being construct within a utility and public access easement from the subject site to SE Leadbetter Road. This trail will provide public access to the shoreline.

3. Public access sites shall be connected to a barrier free route of travel and shall include facilities based on criteria within the Americans with Disabilities Act Accessibility Guidelines.

Response: The portion of the pedestrian trail within the shoreline area will match existing grade to the greatest extent practicable to limit the impact to the surrounding vegetation in the shoreline area.

4. Public access shall include provisions for protecting adjacent properties from trespass and other possible adverse impacts to neighboring properties.

Response: The planned pedestrian trail will be located within an easement through City of Camas park property and not located near directly adjacent to any privately owned parcels.

5. A sign indicating the public's right of access to shoreline areas shall be installed and maintained in conspicuous locations.

Response: Direct public access cannot be provided to the shoreline due to the site being separated from the shoreline by SE Leadbetter Road; therefore, signs will not be installed.

6. Required public access shall be developed at the time of occupancy of the use or activity.

Response: The planned pedestrian pathway will be constructed concurrent with the subdivision construction.

7. Public access shall consist of a dedication of land or a physical improvement in the form of a walkway, trail, bikeway, corridor, viewpoint, park, deck, observation tower, pier, boat launching ramp, dock or pier area, or other area serving as a means of view and/or physical approach to public waters and may include interpretive centers and displays.

Response: The planned pedestrian trail will terminate on the north side of SE Leadbetter Road where views of the shoreline and water will be available. Direct access to the water is available just west of the trail at the public boat launch.

8. Public access easements and permit conditions shall be recorded on the deed of title and/or on the face of a plat or short plat as a condition running contemporaneous with the authorized land use, as a minimum. Said recording with the County Auditor's Office shall occur at the time of permit approval.

Response: A planned utility and public access easement will be recorded over the pedestrian trail and utilities where they cross City of Camas Park property.

9. Future actions by the applicant, successors in interest, or other parties shall not diminish the usefulness or value of the public access provided.

Response: The planned utility and public access easement will be recorded over the pedestrian trail and utilities where they cross City of Camas Park property.. The easement will protect the usefulness or value of the pedestrian trail.

10. Maintenance of the public access facility shall be the responsibility of the owner unless otherwise accepted by a public or non-profit agency through a formal agreement approved by the Shoreline Administrator and recorded with the County Auditor's Office.

Response: The planned pedestrian trail will be located within the City park land and will owned and maintained by the City.

5.6 Restoration

Response: The planned subdivision will not impact the existing shoreline; therefore, there will be no restoration required related to the project.

5.7 Site Planning and Development

5.7.1 General

1. **Land disturbing activities such as grading and cut/fill shall be conducted in such a way as to minimize impacts to soils and native vegetation.**

Response: The Applicant will submit an Erosion Control plan for approval by the City and install approved erosion control best management practices (BMPs) prior to beginning site grading. Grading near the shoreline jurisdiction will be kept as minimal as possible and generally be limited to grading for pedestrian trail and the utility extensions from SE Leadbetter Road.

2. **Impervious surfaces shall be minimized to the extent feasible so as not to jeopardize public safety.**

Response: Impervious surfaces created by the project within the shoreline will be limited to the pedestrian trail, that will be constructed to allow for maintenance access to the utilities that will extend from SE Leadbetter road to the subject site. No widening of SE Leadbetter road will occur with the utility connections.

3. **When feasible, existing transportation corridors shall be utilized.**

Response: No road improvements will occur within any shoreline jurisdiction. Utilities will connect to existing utilities in SE Leadbetter Road the pedestrian trail will be limited to the extended needed for maintenance access for the utilities.

4. **Vehicle and pedestrian circulation systems shall be designed to minimize clearing, grading, alteration of topography and natural features, and designed to accommodate wildlife movement.**

Response: The portion of the pedestrian trail within the shoreline area will match existing grade to the greatest extent practicable to limit the impact to the surrounding vegetation in the shoreline area.

5. **Parking, storage, and non-water dependent accessory structures and areas shall be located landward from the OHWM and landward of the water-oriented portions of the principle use.**

Response: No accessory structures, parking, or storage a planned in the shoreline area with this application.

6. **Trails and uses near the shoreline shall be landscaped or screened to provide visual and noise buffering between adjacent dissimilar uses or scenic areas, without blocking visual access to the water.**

Response: The planned trail is within existing City park land and is not adjacent to dissimilar uses or scenic areas.

7. **Elevated walkways shall be utilized, as appropriate, to cross sensitive areas such as wetlands.**

Response: No elevated walkways are proposed with this application.

8. **Fencing, walls, hedges, and similar features shall be designed in a manner that does not significantly interfere with wildlife movement.**

Response: No fencing, walls, hedges, or other similar features are proposed in the shoreline area with this application.

9. **Exterior lighting shall be designed, shielded and operated to: a) avoid illuminating nearby properties or public areas; b) prevent glare on adjacent properties, public areas or roadways; c) prevent land and water traffic hazards; and d) reduce night sky effects to avoid impacts to fish and wildlife.**

Response: No new lighting is planned within the shoreline area with this application.

10. **Utilities shall be located within roadway and driveway corridors and rights-of-way wherever feasible.**

Response: All planned utilities within the shoreline jurisdiction will be located within the roadway and the planned utility and public access tract under the pedestrian trail.

11. **A use locating near a legally established aquaculture enterprise, including an authorized experimental project, shall demonstrate that such use would not result in damage to or destruction of the aquaculture enterprise, or compromise its monitoring or data collection.**

Response: The subject site is not located adjacent to an aquaculture.

5.7.2 Clearing, Grading, Fill and Excavation

1. **Clearing and grading shall be scheduled to minimize adverse impacts, including but not limited to, damage to water quality and aquatic life.**

Response: Grading in the shoreline area will be limited to the area needed for utility installation and construction of the pedestrian pathway. Appropriate erosion control BMPs will be provided with this project. BMPs will be in place during site grading.

2. **Clearing and grading shall not result in substantial changes to surface water drainage patterns off the project site and onto adjacent properties.**

Response: Grading work of the pedestrian path installation will not modify the drainage patters off-site and onto adjacent properties.

3. **Developments shall include provisions to control erosion during construction and to ensure preservation of native vegetation for bank stability.**

Response: The Applicant will submit an Erosion Control plan for approval by the City and install approved erosion control BMPs prior to beginning site grading. Erosion control BMPs will remain in place until site construction is complete.

4. **Grading and grubbed areas shall be planted with a cover crop of native grasses until construction activities are completed.**

Response: All grading areas will be seeded with native grass seed mix.

5. **Clearing, filling, or excavation shall not be conducted where shoreline stabilization will be necessary to protect materials placed or removed. Disturbed areas shall be stabilized immediately and revegetated with native vegetation.**

Response: No grading will occur in a location where shoreline stabilization will be necessary.

6. Fills shall be permitted only in conjunction with a permitted use, and shall be of the minimum size necessary to support that use. Speculative fills are prohibited.

Response: No fill is anticipated within the shoreline area.

7. Soil, gravel or other substrate transported to the site for fill shall be screened and documented that it is uncontaminated. Use of polluted dredge material or materials normally disposed of at a solid waste facility is prohibited.

Response: No fill is anticipated within the shoreline area.

8. Fills shall be designed and placed to allow surface water penetration into groundwater supplies where such conditions existed prior to filling.

Response: No fill is anticipated within the shoreline area.

9. Fills must protect shoreline ecological functions, including channel migration processes.

Response: No fill is anticipated within the shoreline area.

10. Fill waterward of OHWM shall only be allowed as a conditional use (except for beach nourishment or enhancement projects) and then only when necessary for the following activities: to support a water-dependent or public access use; cleanup and disposal of contaminated sediments as part of an interagency environmental clean-up plan; expansion or alteration of transportation facilities of statewide significance under specific circumstances; mitigation action; and environmental restoration.

Response: No fill is anticipated within the shoreline area.

11. Fills for beach nourishment or enhancement projects are subject to a substantial development permit. In the Columbia River, fills shall be prohibited between the OHWM and minus fifteen (-15) feet CRD, unless shallow water habitat will be created as mitigation.

Response: No fill for beach nourishment or enhancement are proposed with this project.

12. Excavation below the OHWM is considered dredging and subject to provisions under that section in Chapter 6.

Response: No excavation will occur below the OHWM.

13. Upon completion of construction, remaining cleared areas shall be replanted with native species as approved by the city. Replanted areas shall be maintained such that within three (3) years' time the vegetation is fully re-established.

Response: All cleared areas with be replanted with native species and maintained to ensure vegetation is established within three years.

14. For the purposes of this Program, preparatory work associated with the conversion of land to non-forestry uses and/or developments shall not be considered a forest practice and shall be reviewed in accordance with the provisions for the proposed non-forestry use, the general provisions of this Program, and shall be limited to the minimum necessary to accommodate an approved use.

Response: No land within the shoreline area is being converted to non-forestry use.

5.7.3 Building Design

1. Structures shall be designed to conform to natural contours and minimize disturbance to soils and native vegetation

Response: The planned pedestrian trail will generally follow existing grades to minimize disturbance to soils and impacts to vegetation. No other structures are proposed in the shoreline area.

2. Non-single family structures shall incorporate architectural features that provide compatibility with adjacent properties, enhance views of the landscape from the water, and reduce scale to the extent possible.

Response: No structures are proposed within the shoreline area with this application.

3. Building surfaces on or adjacent to the water shall employ materials that minimize reflected light.

Response: No buildings are proposed to be on or adjacent to the water.

4. Façade treatments, mechanical equipment and windows in structures taller than two (2) stories, shall be designed and arranged to prevent bird collisions using the best available technology. Single-family residential structures shall be exempt from this provision.

Response: No structures are proposed within the shoreline area with this application.

5.8 Vegetation Conservation

1. Removal of native vegetation shall be avoided. Where removal of native vegetation cannot be avoided, it shall be minimized to protect ecological functions.

2. If native vegetation removal cannot be avoided it shall be minimized and mitigated as recommended by a qualified biologist within a Critical Area Report and shall result in no net loss of shoreline functions. Lost functions may be replaced by enhancing other functions provided that no net loss in overall functions is demonstrated and habitat connectivity is maintained. Mitigation shall be provided consistent with an approved mitigation plan per Appendix C.

Response: The planned utility and pedestrian trail construction in the shoreline are will generally be within existing paved and gravel areas, limiting the removal of vegetation within the shoreline area.

3. Clearing by hand-held equipment of invasive or non-native shoreline vegetation or plants listed on the State Noxious Weed List is permitted in shoreline locations if native vegetation is promptly re-established in the disturbed area.

Response: Vegetation removal within the shoreline area will be limited and any disturbed areas will be re-established promptly following construction.

4. If non-native vegetation is to be removed, then it shall be replaced with native vegetation within the shoreline jurisdiction.

Response: Native vegetation will be used for replanting and disturbed areas following construction of the utilities and public trail.

5 Pruning of trees is allowed in compliance with the National Arborist Association pruning standards. Pruning must meet the following criteria:

6. Topping trees is prohibited.

Response: No trees to be protected during construction are planned to be pruned within the shoreline jurisdiction and no trees will be topped.

7. If the city determines that a tree is hazardous as verified by an arborist report, then only the hazardous portion shall be removed. Complete removal should be avoided to the extent possible. The remainder of the tree shall remain to provide habitat functions and slope stability. Mitigation may be required to compensate for reduced tree surface area coverage.

Response: AKS Engineering and Forestry has completed a Tree Report and Tree Plan as part of this application. Tree removal will be necessary within the shoreline area to complete construction of the utility lines and pedestrian tail. Removal will be limited to only those trees impacted by construction. Tree will be protected to the greatest extent practicable.

8. Natural features such as snags, stumps, logs or uprooted trees, which do not intrude on the navigational channel or threaten or public safety, and existing structures and facilities, shall be left undisturbed.

Response: Any natural features within the shoreline jurisdiction that do not threaten public safety will be left in place.

9. Natural in-stream features such as snags, uprooted trees, or stumps should be left in place unless it can be demonstrated that they are not enhancing shoreline function or are a threat to public safety.

Response: Removal of features within the on-site streams or Lacamas Lake is not planned with this project.

10 Aquatic weed control shall only occur to protect native plant communities and associated habitats or where an existing water-dependent use is restricted by the presence of weeds. Aquatic weed control shall occur in compliance with all other applicable laws and standards and shall be done by a qualified professional.

Response: No aquatic weed control is planned with application.

5.9 Visual Access

Visual access shall be maintained, enhanced, and preserved as appropriate on shoreline street-ends, public utility rights-of-way above and below the ordinary high water mark. Any new or expanded building or structure over thirty-five (35) feet in height above average grade level that obstructs the shoreline view of a substantial number of residences that are adjoining shorelines shall not be allowed in accordance with RCW 90.58.320.

Response: The planned project will construct a pedestrian trail from the subject site to SE Leadbetter road. This will increase visual access to the shoreline within the pedestrian trail corridor.

5.10 Water Quality and Quantity

1. The location, design, construction, and management of all shoreline uses and activities shall protect the quality and quantity of surface and ground water adjacent to the site.

2. All shoreline development shall comply with the applicable requirements of CMC Chapter 14.02 Stormwater Control. 3. Best management practices (BMPs) for control of erosion and sedimentation shall be implemented for all shoreline development in substantial compliance with CMC Chapter 14.06 Erosion and Sediment Control.

Response: The planned project will collect and treat surface runoff on site. Treated stormwater will be released to on-site wetlands or directly to Lacamas Lake under a large water body exemption as allowed by CMC. Stormwater management has been designed to maintain the general predevelopment drainage pattern. All stormwater will be released at rates permitted by Camas Municipal Code (CMC). The stormwater system is designed per the

Stormwater Management Manual for Western Washington. Preliminary erosion control plans are included with this application. A more detailed and site-specific erosion control plan will be provided with final construction plans for sediment and pollution control.

4. Potentially harmful materials, including but not limited to oil, chemicals, tires, or hazardous materials, shall not be allowed to enter any body of water or wetland, or to be discharged onto the land except in accordance with CMC Chapter 14.04 Illicit Discharges, dumping and Illicit Connections. Potentially harmful materials shall be maintained in a safe and leak-proof condition

Response: No potentially harmful materials will enter any water body as a result of this project.

5 Herbicides, fungicides, fertilizers, and pesticides shall not be applied within twenty-five (25) feet of a waterbody, except by a qualified professional in accordance with state and federal laws. Further, pesticides subject to the final ruling in *Washington Toxics Coalition, et al., v. EPA* shall not be applied within sixty (60) feet for ground applications or within three hundred (300) feet for aerial applications of the subject water bodies and shall be applied by a qualified professional in accordance with state and federal law.

Response: Use of herbicides, pesticides, fungicides, or fertilizers within 25 feet of a water are not planned with this project.

6. Any structure or feature in the Aquatic shoreline designation shall be constructed and/or maintained with materials that will not adversely affect water quality or aquatic plants or animals. Materials used for decking or other structural components shall be approved by applicable state agencies for contact with water to avoid discharge of pollutants.

Response: No structure or feature are planned in the Aquatic shoreline.

7 Conveyance of any substance not composed entirely of surface and stormwater directly to water resources shall be in accordance with CMC Chapter 14.02.

Response: Only treated stormwater will be directly discharged to Lacamas Lake, as allowed by CMC.

8. Septic systems should be located as far landward of the shoreline and floodway as possible. Where permitted, new on-site septic systems shall be located, designed, operated, and maintained to meet all applicable water quality, utility, and health standards.

Response: No septic systems are planned with this application.

Table 6-1 Shoreline Use, Modification and Development Standards

Abbreviations: X = Prohibited P = Permitted N/A = Not Applicable C = Conditional Use	**AQ**	**NT**	**US**	**MI**	**HI**
Shoreline Designation	**Aquatic**	**Natural**	**Urban Conservancy**	**Medium Intensity**	**High Intensity**
Shoreline Uses					
Recreational Uses					
Water-related/enjoyment (trails, accessory buildings)	C	P[4]	P	P	P
• Building Setback	0'	20' (Buildings 100' [2])	20' (Buildings 100' [2])	50' [2]	5' [2]
• Building Height	15'	15'	15'	45'	60'
Utility Uses					
Underground Utilities (perpendicular to shoreline)	C	X	C	C	C
• Right-of-Way Setback	0'	N/A	100'	50'	50'

6.3 Use-specific Development Regulations

Response: The planned construction within the shoreline area is construction of utilities perpendicular to the shore to connect to existing utilities in SE Leadbetter Road and construction of a pedestrian trail with access from the subject site to the shoreline area within the Medium Intensity shoreline jurisdiction. Per Table 6-1, the planned trail is a permitted use and the utilities are a conditional use.

6.3.11 Recreational Development

1. **Water-oriented recreational uses and developments are preferred.**

Response: The pedestrian trail will terminate on the north side of SE Leadbetter Road and provide visual access to the shoreline. The trail is not a water orient use, but does provide access to the shoreline.

2 **Trails shall be designed and constructed in substantial compliance with the standards of the Camas Park, Recreation and Open Space Comprehensive Plan, Design & Development Guidelines (2007, Appendix A), with the constructed width varying by trail type and critical area protection.**

Response: The pedestrian trail will be designed to allow for vehicular access for maintenance of the utilities that will be installed under the trail.

3. **Recreation areas or facilities on the shoreline shall provide physical or visual public access in accordance with Section 5.5.**

Response: The planned pedestrian trail will provide visual access to the shoreline.

4. **Parking areas that are accessory to recreational uses shall be located upland a minimum of one hundred and fifty (150) feet away from the immediate shoreline, with pedestrian trails or walkways providing access to the water.**

Response: No parking areas are proposed with this application.

5. All permanent, substantial, recreational structures and facilities shall be located outside officially mapped floodways. The Administrator may grant exceptions for non-intensive minor accessory uses (including but not limited to, picnic tables or playground equipment).

Response: No structures are proposed with this application.

6. Parks and trailheads shall be provided with restrooms with hand washing facilities in accordance with public health standards and without adversely altering the natural features attractive for recreational uses.

Response: The planned trail is not anticipated to be a trail head. No restrooms are proposed.

7. Recreational facilities shall make adequate provisions, such as densely vegetated buffer strips, screening, fences, and signs, to protect the value and enjoyment of adjacent or nearby private properties and natural areas from trespass, overflow and other possible adverse impacts.

Response: The pedestrian trail will run through City of Camas park land and be surround by City of Camas park land. The existing forested land will provide a buffer to nearby private properties.

8. Provisions shall be made for the protection of water areas from drainage and surface runoff in all recreational developments requiring the use of fertilizers and pesticides in areas adjacent to shorelines, such as in play fields and golf courses.

Response: The planned project will collect and treat surface runoff on site. Treated stormwater will be released to on-site wetlands or directly to Lacamas Lake under a large water body exemption as allowed by CMC. Stormwater management has been designed to maintain the general predevelopment drainage pattern. All stormwater will be released at rates permitted by Camas Municipal Code (CMC). The stormwater system is designed per the Stormwater Management Manual for Western Washington. Preliminary erosion control plans are included with this application. A more detailed and site-specific erosion control plan will be provided with final construction plans for sediment and pollution control. No use of fertilizers or pesticides are planned with this project.

9. Golf course structures (clubhouses and maintenance buildings) that are non-wateroriented shall be located no closer than one hundred (100) feet from the OHWM.

10. Tees, greens, fairways, golf cart routes, and other site development features shall be located no closer than two hundred (200) feet from the OHWM to the extent practicable. If golf cart routing is combined with public access trails, it may be located one hundred (100) feet from OHWM.

11. Golf course water hazards and stormwater drainage basins shall be managed for wildlife through appropriate plantings and measures to maintain or enhance water quality.

Response: No golf courses are planned with this application.

6.3.15 Utilities Uses

Response: The planned project will provide underground utilities that will generally be within the road rights-of-way and the planned utility and public access easement. Proposed utilities will connect to the existing utilities in SE Leadbetter Road and connect at the southwest

corner of the project. All utilities will be constructed outside of the shoreline jurisdiction with the exception of the connections in SE Leadbetter Road, and where the planned utility and public access easement crosses through the shoreline jurisdiction.

V. Conclusion

The required findings have been made and this written narrative and accompanying documentation demonstrate that the application is consistent with the applicable provisions of the Camas Municipal Code and Shoreline Master Program. The evidence in the record is substantial and supports approval of the application. Therefore, the Applicant respectfully requests that the City approve this Shoreline Substantial Development Permit and Conditional Use Permit application.

9. 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. 21-285087

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

EIGHTH COMMITMENT

THE COMMITMENT HAS BEEN SUPPLEMENTED AS TO THE FOLLOWING:
Added Exception #20

For Informational Purposes Only:

Seller(s):	Mills Family, LLC
Buyer(s):	HSR DEV - MILLS, LLC
Address:	313 SE Leadbetter Road, Camas, WA 98607
County:	Clark
Tax Account No.:	177885-000
Abbreviated Legal:	TL 8, NE 1/4, SEC 34 T2NR3EWM

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

SCHEDULE A

Transaction Identification Data for reference only:

Issuing Agent:	**WFG National Title Company of Clark County WA, LLC**
Issuing Office:	**2004 SE 192nd Avenue Suite 100, Vancouver, WA 98683**
ALTA Universal ID:	
Loan ID Number:	**Not Available**
Commitment Number:	**21-285087**
Issuing Office File Number:	**21-285087**
Property Address:	**313 SE Leadbetter Road, Camas, WA 98607**
Revision Number:	**8**

1. Commitment Date: **April 25, 2022 at 8:00 a.m.**
2. Policy or Policies to be issued:

ALTA® Ext Loan Policy (06-17-06)	**Amount:**	**$1,750,000.00**
	Premium:	**$1,679.00**
	Tax:	**$142.72**
	Total:	**$1,821.72**

Proposed Insured: **Capital Preservation 200, LLC, its successors and/or assigns**

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:

   Mills Family, LLC, an Oregon 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

This page is only a part of a 2016 ALTA® Commitment for Title Insurance issued by WFG National Title Insurance Company. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I—Requirements; and]Schedule B, Part II—Exceptions; and a counter-signature by the Company or its issuing agent that may be in electronic form.

EXHIBIT "A"
LEGAL DESCRIPTION

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 2 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN, CITY OF CAMAS, CLARK COUNTY, WASHINGTON DESCRIBED AS FOLLOWS:

COMMENCING AT A CONCRETE MONUMENT WITH A BRASS CAP MARKING THE NORTHEAST CORNER OF SAID SECTION 34;
THENCE SOUTH 01°02'11" WEST, ALONG THE EAST LINE OF SAID NORTHEAST QUARTER OF SECTION 34, FOR A DISTANCE OF 300.00 FEET TO THE SOUTHEAST CORNER OF THE "LACAMAS HERITAGE PROPERTIES LLC TRACT" AS DESCRIBED UNDER CLARK COUNTY AUDITOR'S FILE NO. 5023969, RECORDED OCTOBER 18, 2013 AND THE TRUE POINT OF BEGINNING;
THENCE LEAVING SAID EAST LINE NORTH 88°55'50" WEST, ALONG THE SOUTH LINE OF SAID "LACAMAS HERITAGE PROPERTIES LLC TRACT" AND THE WESTERLY EXTENSION THEREOF, FOR A DISTANCE OF 898.04 FEET;
THENCE SOUTH 01°02'11" WEST, PARALLEL WITH THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 34, FOR A DISTANCE OF 1,019.66 FEET TO THE NORTH LINE OF THE "CJ DENS LACAMAS I, LLC TRACT" AS DESCRIBED UNDER CLARK COUNTY AUDITOR'S FILE NUMBER 4864265, RECORDED JUNE 18, 2012;
THENCE SOUTH 88°56'20" EAST, ALONG SAID NORTH LINE, FOR A DISTANCE OF 898.04 FEET TO A 3/4 INCH IRON PIPE ON THE EAST LINE OF THE NORTHEAST QUARTER OF SECTION 34;
THENCE NORTH 01°02'11" EAST, ALONG SAID EAST LINE FOR A DISTANCE OF 1,019.52 FEET TO THE TRUE POINT OF BEGINNING.

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

Order No. 21-285087

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. Instruments necessary to create the estate or interest to be properly executed, delivered and duly filed for record.
2. Payment of all premiums, fees and charges for the policy.
3. Payment of the full consideration to, or for the account of, the grantors or mortgagors.

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 REQUIREMENTS

Order No. 21-285087

COMMITMENT FOR TITLE INSURANCE
Issued By
WFG NATIONAL TITLE INSURANCE COMPANY

SCHEDULE B, PART II

EXCEPTIONS

THIS COMMITMENT DOES NOT REPUBLISH ANY COVENANT, CONDITION, RESTRICTION, OR LIMITATION CONTAINED IN ANY DOCUMENT REFERRED TO IN THIS COMMITMENT TO THE EXTENT THAT THE SPECIFIC COVENANT, CONDITION, RESTRICTION, OR LIMITATION VIOLATES STATE OR FEDERAL LAW BASED ON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, GENDER IDENTITY, HANDICAP, FAMILIAL STATUS, OR NATIONAL ORIGIN.

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. Defects, liens, encumbrances, adverse claims or other matters, if any, created, first appearing in the public records or attaching subsequent to the effective date hereof but prior to the date the proposed insured acquires for value of record the estate or interest or mortgage thereon covered by this Commitment.

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. Development Agreement Lacamas Northshore Properties Agreement and the terms and conditions thereof, recorded as 4704846, of Official Records.

13. Development Agreement Lacamas Northshore Properties Agreement and the terms and conditions thereof, recorded as 5032256, of Official Records.

14. INTENTIONALLY DELETED

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 1/1/2020 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 $500,000 or less;
    1.78% on any portion of the sale price above $500,000, up to $1,500,000;
    3.25% on any portion of the sale price above $1,500,000, up to $3,000,000;
    3.50% on any portion of the sale price above $3,000,000;

    Levy Code: 117048

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

Tax Year:	2022
Tax Type:	County
Tax ID No.:	177885-000
Taxing Entity:	Clark County Treasurer
Total Annual Tax:	$698.42
First Installment:	$349.28
First Installment Status:	Paid
Second Installment:	$349.14
Second Installment Status:	Paid
Notes:	View Statement

17. The lands described herein have been classified Open Space as disclosed by Clark County Assessor's records.

    Subject to the provisions of RCW 84.34, which include the requirement of a continuation of restricted use in order to continue the present assessment rate. A change in use can cause an increased assessment rate for present and past years. Any sale or transfer of all or a portion of said land requires execution of a notice of compliance form attached to the excise tax affidavit.

18. Any unpaid assessments or charges, and liability for further assessments or charges by:
    City of Camas. (none due at time of policy)

19. In accordance with the information provided, the Company will accept documents executed on behalf of Mills Family LLC, an Oregon limited liabiltiy company by all of the following parties:

    Edward L. Mills, Member
    Lewis L. Mills, Member
    John A. Mills, Member
    Michael Pl Mills, Member

20. Possible driveway encroachment as disclosed by Clark County GIS map records.

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

Note 2: In accordance with the information provided, the Company will accept documents executed on behalf of HSR Dev - Mills, LLC, a Washington limited liability company by the following party:

Andy Swanson, Manager

Note 3: 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 4: 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 9-06 or WLTA 100 Endorsement, as appropriate for the policy form.

Note 5: 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:
313 SE Leadbetter Road
Camas, WA 98607

Note 6: The county tax rolls disclose the current assessed valuations as follows:

Land:	$1,115,926.00
Improved:	
Total:	$1,115,926.00
Levy Code:	117048

Note 7: 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 8: 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 8, NE 1/4, SEC 34 T2NR3EWM

Note 9: 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
5101 NE 82nd Avenue
Suite 102
Vancouver, WA 98662
Attn: Recording Dept.

End of Schedule B-II

This page is only a part of a 2016 ALTA® Commitment for Title Insurance issued by WFG National Title Insurance Company. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I—Requirements; and]Schedule B, Part II—Exceptions; and a counter-signature by the Company or its issuing agent that may be in electronic form.

Order No. 21-285087

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 South Carolina 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 Policy Amount 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.

In Witness Whereof, WFG National Title Insurance Company has caused this commitment to be signed and sealed by its duly authorized officers as of Date of Commitment shown in Schedule A.

WFG NATIONAL TITLE INSURANCE COMPANY

By: _____
Steve Ozonian, President/CEO

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



This page is only a part of a 2016 ALTA® Commitment for Title Insurance issued by WFG National Title Insurance Company. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I—Requirements; and]Schedule B, Part II—Exceptions; and a counter-signature by the Company or its issuing agent that may be in electronic form.

COMMITMENT CONDITIONS

1. DEFINITIONS
   a. “Knowledge” or “Known”: Actual or imputed knowledge, but not constructive notice imparted by the Public Records.
   b. “Land”: The land described in Schedule A, and affixed improvements that by law constitute real property. The term “Land” does not include any property beyond the lines of the area described in Schedule A, nor any right, title, interest, estate, or easement in abutting streets, roads, avenues, alleys, lanes, ways, or waterways, but this does not modify or limit the extent that a right of access to and from the Land is to be insured by the Policy.
   c. “Mortgage”: A mortgage, deed of trust, or other security instrument, including one evidenced by electronic means authorized by law.
   d. “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.
   e. “Proposed Insured”: Each person identified in Schedule A as the Proposed Insured of each Policy to be issued pursuant to this Commitment.
   f. “Proposed Policy Amount”: Each dollar amount specified in Schedule A as the Proposed Policy Amount of each Policy to be issued pursuant to this Commitment.
   g. “Public Records”: Records established under state statutes at the Commitment Date for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without Knowledge.
   h. “Title”: The estate or interest described in 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 shall not be 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 will only have liability 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 shall not exceed the lesser of the Proposed Insured's actual expense incurred in good faith and described in Commitment Conditions 5(a)(i) through 5(a)(iii) or the Proposed Policy Amount.

e. The Company shall not be liable for the content of the Transaction Identification Data, if any.

f. In no event shall the Company be 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. In any event, the Company's liability is limited by the terms and provisions of the Policy.

6. LIABILITY OF THE COMPANY MUST BE BASED ON THIS COMMITMENT

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 and must be restricted solely to the terms and provisions of this commitment.

c. Until the Policy is issued, 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 HAS BEEN 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 the purpose of providing closing or settlement services.

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. ARBITRATION – INTENTIONALLY DELETED



Plain English Privacy Statement
for Appraisal, Title & Escrow Customers

WFG believes 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 Policy provides that explanation. We reserve the right to change this Privacy Policy from time to time.

Williston Financial Group, LLC, WFG National Title Insurance Co. and each of the affiliates listed below (collectively "WFG" or the "WFG Family") are obligated to comply with Federal and state privacy laws. While there are some common requirements to those laws, the definitions and duties differ significantly from law-to-law and state-to-state. A privacy statement drafted to comply with all of the applicable privacy laws and their differing definitions would likely be confusing. Therefore, in an attempt to better communicate our privacy policies, WFG designed this "Plain English" explanation, followed by the Gramm-Leach-Bliley Act model form and website links to State-Specific Privacy Notices in order to provide you with the complete, legal privacy notices and disclosures required under Federal and applicable State Laws.

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; 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 records, 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, others working to facilitate your transaction. We also may receive information from public, private or governmental databases including credit bureaus, 'no-fly' lists, and terrorist 'watch lists' , as well as from your lenders and credit bureaus.

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:

- 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, condominium and, homeowners' association information and payoff 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.
- Various government agencies get involved. The law requires us to provide certain information to the IRS, the US Treasury, local and state tax authorities and other governmental agencies.

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 express 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.
- Coordinate and manage the appraisal process.
- Handle a claim or provide other services relating to your title insurance policies.
- Create and manage 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; and
- Provide you with information about products, services, and promotions, from WFG or third parties that may interest you.

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 sites 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 site 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 Web site, assess how our advertisements on other sites 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.

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 or DNT), 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 additional information from or about you, such as your screen names, profile picture, contact information, contact list, and the profile pictures of your contacts, through the social media platform. 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 plugin 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. In reviewing these, you will find that these notices incorporate the definitions and terminology used in the respective privacy laws which can often be somewhat convoluted and may even seem inconsistent with the descriptions above. The state-specific statutes 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 policy 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
- In-person: 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
WILLISTON ENTERPRISE SOLUTIONS & TECHNOLOGY, LLC
WFG NATIONAL TITLE COMPANY OF CLARK COUNTY, WA, LLC D/B/A WFG NATIONAL TITLE

Revised 6.12.20

Order No. 21-285087

Rev. 12/2019

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. 24-140328

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

SECOND COMMITMENT

THE COMMITMENT HAS BEEN SUPPLEMENTED AS TO THE FOLLOWING:
Updated Note 3 and Date down report

For Informational Purposes Only:

Borrower(s):	ICG Camas 252nd LLC and HSR Dev - Mills, LLC
Address:	305 SE 252nd Avenue, Camas, WA 98607
313 SE Leadbetter Road, Camas, WA 98607	
County:	Clark
Tax Account No.:	177885-000,178175-000
Abbreviated Legal:	TL #83 & #8 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:	**24-140328**
Issuing Office File Number:	**24-140328**
Property Address:	**305 SE 252nd Avenue, Camas, WA 98607**
Revision Number:	**2**

1. Commitment Date: **June 19, 2024 at 8:00 a.m.**
2. Policy or Policies to be issued:

   ALTA® Ext Loan Policy (07-01-21) **Amount:** **$4,000,000.00**

   Premium: **$2,589.00**
   Tax: **$225.24**
   Total: **$2,814.24**

   Proposed Insured: Northwest Bank, its successors and/or assigns

   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:

   ICG Camas 252nd LLC, a Washington limited liability company as to Parcel I and HSR DEV - MILLS, LLC, a Washington limited liability company as to Parcel II
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

PARCEL I

A TRACT OF LAND LOCATED IN THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 35, TOWNSHIP 2 NORTH, RANGE 3 EAST, WILLAMETTE MERIDIAN, CITY OF CAMAS, CLARK COUNTY, WASHINGTON, DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SECTION 35; THENCE ALONG THE WEST LINE OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 35 SOUTH 01°04'03" WEST 528.00 FEET TO THE SOUTHWEST CORNER OF THE TRACT PER AUDITOR'S FILE NUMBER 5521439, CLARK COUNTY DEED RECORDS AND THE POINT OF BEGINNING; THENCE ALONG THE SOUTH LINE OF THE TRACT PER AUDITOR'S FILE NUMBER 5521439 SOUTH 88°54'43" EAST 825.00 FEET TO THE SOUTHEAST CORNER THEREOF; THENCE PARALLEL WITH THE WEST LINE OF THE NORTHWEST QUARTER OF SECTION 35 SOUTH 01°04'03" WEST 792.86 FEET TO THE SOUTH LINE OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 35; THENCE ALONG SAID SOUTH LINE OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 35 NORTH 88°51'08" WEST 825.00 FEET TO THE SOUTHWEST CORNER THEREOF; THENCE ALONG THE WEST LINE OF THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 35 NORTH 01°04'03" EAST 792.00 FEET TO THE POINT OF BEGINNING.

PARCEL II

A PORTION OF THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 2 NORTH, RANGE 3 EAST OF THE WILLAMETTE MERIDIAN, CITY OF CAMAS, CLARK COUNTY, WASHINGTON DESCRIBED AS FOLLOWS:

COMMENCING AT A CONCRETE MONUMENT WITH A BRASS CAP MARKING THE NORTHEAST CORNER OF SAID SECTION 34; THENCE SOUTH 01°02'11" WEST, ALONG THE EAST LINE OF SAID NORTHEAST QUARTER OF SECTION 34, FOR A DISTANCE OF 300.00 FEET TO THE SOUTHEAST CORNER OF THE "LACAMAS HERITAGE PROPERTIES LLC TRACT" AS DESCRIBED UNDER CLARK COUNTY AUDITOR'S FILE NO. 5023969, RECORDED OCTOBER 18, 2013 AND THE TRUE POINT OF BEGINNING; THENCE LEAVING SAID EAST LINE NORTH 88°55'50" WEST, ALONG THE SOUTH LINE OF SAID "LACAMAS HERITAGE PROPERTIES LLC TRACT" AND THE WESTERLY EXTENSION THEREOF, FOR A DISTANCE OF 898.04 FEET; THENCE SOUTH 01°02'11" WEST, PARALLEL WITH THE EAST LINE OF THE NORTHEAST QUARTER OF SAID SECTION 34, FOR A DISTANCE OF 1,019.66 FEET TO THE NORTH LINE OF THE "CJ DENS LACAMAS I, LLC TRACT" AS DESCRIBED UNDER CLARK COUNTY AUDITOR'S FILE NUMBER 4864265, RECORDED JUNE 18, 2012; THENCE SOUTH 88°56'20" EAST, ALONG SAID NORTH LINE, FOR A DISTANCE OF 898.04 FEET TO A 3/4 INCH IRON PIPE ON THE EAST LINE OF THE NORTHEAST QUARTER OF SECTION 34; THENCE NORTH 01°02'11" EAST, ALONG SAID EAST LINE FOR A DISTANCE OF 1,019.52 FEET TO THE TRUE POINT OF BEGINNING.

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

File No. 24-140328

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. Easement and the terms, conditions and provisions thereof, as disclosed by that certain instrument recorded as G213165, of Official Records.
    For: Ingress and egress and Road Maintenance
    In favor of: Adjacent property owners

13. Terms, provisions, covenants, conditions, restrictions, easements, charges, assessments and liens provided in the Covenants, Conditions and Restrictions recorded on October 3, 1995, in 9510030166, of Official Records.

14. Matters set forth by survey recorded on February 1, 1996, in Book 39, Page 31, of Official Records.

15. Easement and the terms, conditions and provisions thereof, as disclosed by that certain instrument recorded as 3225308, of Official Records.
    For: Ingress, egress and utilities
    In favor of: Adjacent property owners

16. Easement and the terms, conditions and provisions thereof, as disclosed by that certain instrument recorded as 3494323, of Official Records.
    For: Ingress, egress and utilities
    In favor of: Adjacent property owners

17. Development Agreement and the terms and conditions thereof, recorded as 4458438, of Official Records.

18. Development Agreement and the terms and conditions thereof, recorded as 4704846, of Official Records.

19. Development Agreement and the terms and conditions thereof, recorded as 5032256, of Official Records.

20. Well Agreement and the terms and conditions thereof, recorded as 5505104, of Official Records.

21. Easement and the terms, conditions and provisions thereof, as disclosed by that certain instrument recorded as 5521438, of Official Records.
    For: Ingress, egress and utilities
    In favor of: Adjacent property owners

22. Easement and the terms, conditions and provisions thereof, as disclosed by that certain instrument recorded as 5521439, of Official Records.
    For: Well site and pump house and waterline
    In favor of: Adjacent property owners

23. Possible driveway encroachment as disclosed by Clark County GIS map records.

24. Taxes and charges, together with interest, penalty and statutory foreclosure costs, if any, after delinquency:
    Tax Year: 2024
    Tax Type: County
    Tax ID No.: 178175-000
    Taxing Entity: Clark County Treasurer
    Total Annual Tax: $2,647.66
    First Installment: $1,323.88
    First Installment Status: Paid
    Second Installment: $1,323.78
    Second Installment Status: Due
    Second Installment Due/Paid Date: October 31, 2024
    Notes: TL# 83

    Taxes and charges, together with interest, penalty and statutory foreclosure costs, if any, after delinquency:
    Tax Year: 2024
    Tax Type: County
    Tax ID No.: 177885-000
    Taxing Entity: Clark County Treasurer
    Total Annual Tax: $749.44
    First Installment: $374.77
    First Installment Status: Paid
    Second Installment: $374.67

Second Installment Status:	Due
Second Installment Due/Paid Date:	October 31, 2024
Notes:	TL# 8

25. Liability for supplemental taxes for improvements which have recently been constructed on the land. Land improvements are not presently assessed, but may appear on future tax rolls.

26. The lands described herein have been classified Timber Land as disclosed by Clark County Tax Rolls.

    Subject to the provisions of RCW 84.34, which include the requirement of a continuation of restricted use in order to continue the present assessment rate. A change in use can cause an increased assessment rate for present and past years. Any sale or transfer of all or a portion of said land requires execution of a notice of compliance form attached to the excise tax affidavit.

    (Affects Parcel I)

27. The lands described herein have been classified Open Space Land as disclosed by Clark County Tax Rolls.

    Subject to the provisions of RCW 84.34, which include the requirement of a continuation of restricted use in order to continue the present assessment rate. A change in use can cause an increased assessment rate for present and past years. Any sale or transfer of all or a portion of said land requires execution of a notice of compliance form attached to the excise tax affidavit.

    (Affects Parcel II)

28. Any unpaid assessments or charges, and liability for further assessments or charges by:
    City of Camas. (none due at time of policy)

29. Deed of Trust and the terms and conditions thereof:

Grantor:	HSR Dev-Mills, LLC, a Washington limited liability company and ICG Camas 252nd, LLC, a Washington limited liability company
Trustee:	Fidelity National Title Company
Lender/Beneficiary:	Capital Preservation 200 LLC, a Washington limited liability company
Original Amount:	$3,500,000.00
Dated:	May 2, 2022
Recorded:	May 9, 2022
Recording No.:	6044923

    (Includes other property)

30. If construction work has commenced, or materials have been delivered, or if this is expected to occur previous to recording of the forthcoming instrument, then a question arises as to possible prior lien rights. Please contact this company to review this question. The forthcoming policy will not insure against unrecorded labor and material liens unless these questions are answered or indemnified to the satisfaction of the company.

31. In accordance with the information provided, the Company will accept documents executed on behalf of ICG Camas 252nd, LLC, a Washington limited liability company by all of the following parties:
    Steve Rementeria, Manager/Member
    Dustin Ho, Member
    Andy Swanson, Member

32. In accordance with the information provided, the Company will accept documents executed on behalf of HSR Dev - Mills, LLC, a Washington limited liability company by the following party:
    Andy Swanson, Manager

Note 1: According to the application for title insurance, the proposed insured(s) is/are: ICG Camas 252nd LLC and HSR Mills, LLC.
We find no pertinent matters of record against the name(s) of said party(ies).

Note 2: 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:

Quit Claim Deed
Grantee(s): ICG Camas 252nd LLC, a Washington limited liability company
Grantor(s): Robert A. Cisne, Karen L. Cisney, and Elizabeth A. Fillion, Successor Co-Trustees of the Cisney Living Trust dated October 16, 1997
Dated: February 5, 2024
Recorded Date: April 9, 2024
Recording No: (instrument) 6175749, of Official Records
COMMENTS: View Image

Note 3: 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 8.1-06, ALTA 9, ALTA 6 and ALTA 22-06 Endorsements.

Note 4: 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:
305 SE 252nd Avenue
Camas, WA 98607

Note 5: The county tax rolls disclose the current assessed valuations as follows:

Parcel: 178175-000
Land: $508,313.00
Improved: $219,736.00
Total: $728,049.00
Levy Code: 117048

Parcel: 177885-000
Land: $1,539,978.00
Improved: $0.00
Total: $1,539,978.00
Levy Code: 117048

Note 6: 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 7: 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 #83 & #8 SEC 35 T2N R3E WM

Note 8: 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
5101 NE 82nd Avenue
Suite 102
Vancouver, WA 98662
Attn: Recording Dept.

End of Schedule B, Part II

File No. 24-140328

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

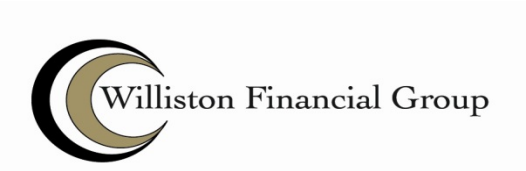
This Commitment incorporates by reference all Conditions for making a claim in the Policy to be issued to the Proposed Insured. Commitment Condition 9 does not modify the limitations of liability in Commitment Conditions 5 and 6.

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. 24-140328



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. 24-140328

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	
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4. Geotechnical Soil Analysis Report (Includes Geologic Hazard Study)

Geotechnical Site Investigation

Mills Property

Camas, Washington

November 17, 2023

Geotechnical ■ Environmental ■ Special Inspections

Columbia West
Engineering, Inc



Geotechnical ■ Environmental ■ Special Inspections
Columbia West Engineering, Inc

November 17, 2023

HSR Development
500 E. Broadway, Suite 120
Vancouver, Washington 98660

Attn: Steven Waugh

Geotechnical Site Investigation
Mills Property
Camas, Washington
Columbia West Project: HSR-1-01-1

Columbia West is pleased to present this geotechnical site investigation report for the Mills Property in Camas, Washington. Our services were conducted in accordance with our proposal dated August 14, 2023.

We appreciate the opportunity to work on the project. Please contact us if you have any questions regarding this document.

Sincerely,

Columbia West

Daniel Lehto, PE, GE
Principal Engineer

DEL:ASR
Attachments
Document ID:Mills Property Geotechnical Report.docx

EXECUTIVE SUMMARY

This executive summary presents the primary geotechnical considerations associated with the proposed Mills Property project located in Camas, Washington. Our conclusions and recommendations are based upon the subsurface information presented in this report and proposed development information provided by the design team. Detailed discussion of the geotechnical considerations summarized here is presented in respective sections of the report.

- The site is characterized by pinnacled basalt and basalt outcrops. Thin soil profiles were observed in some areas. Based on subsurface exploration, infiltration of concentrated stormwater is infeasible due to the presence of shallow bedrock and clayey residual soils.

- Although site reconnaissance and Clark County GIS Mapping indicate the presence of slopes greater than 15 percent in the southern boundary of the parcel, site slopes do not meet the definition of a landslide hazard according to *Camas Municipal Code, Section 16.59*.

- Excavator refusal was encountered in all test pits in the proposed development area at depths ranging from 0 to 10 Below Ground Surface (BGS). Excavations at the site will require rock excavation techniques to install necessary elements. Though not specifically encountered, seeps and springs within the basalt formation have been observed on surrounding sites and have been associated with regional rain events. Therefore, drainage design may need to be altered during the course of construction as seeps and springs become evident over time.

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GEOTECHNICAL SITE INVESTIGATION
MILLS PROPERTY
CAMAS, WASHINGTON

1.0 INTRODUCTION

Columbia West Engineering, Inc. (Columbia West) was retained by HSR Development to conduct a geotechnical site investigation for the proposed Mills Property project located in Camas, Washington. The purpose of the investigation was to provide geotechnical engineering recommendations for use in design and construction of the proposed development. This report summarizes the investigation and provides field assessment documentation and laboratory analytical test reports. This report is subject to the limitations expressed in Section 11.0, *Conclusion and Limitations*, and Appendix C.

1.1 GENERAL SITE INFORMATION

As indicated on Figures 1 and 2, the subject site is located north of Lacamas Lake with an address of 313 SE Leadbetter Road in Camas, Washington. The site is accessed via SE 252nd Avenue, as there is no access to the site directly from SE Leadbetter Road. The site is comprised of tax parcel 177885000 totaling approximately 21 acres. The approximate latitude and longitude are N 45° 37' 09" and W 122° 24' 57", and the legal description is a portion of the NE ¼ of Section 34, T2N, R3E, Willamette Meridian. The regulatory jurisdictional agency is the City of Camas.

1.2 PROJECT UNDERSTANDING

Based on design team correspondence, proposed development is likely to include construction of a residential subdivision. A layout of the planned infrastructure was not available at the time of this writing. Proposed development will likely include paved neighborhood access roads, essential underground utilities, and stormwater management facilities.

We anticipate maximum loads for the residential buildings will be less than 20 kips per column and 3 kips per foot for perimeter footings. Allowable total and differential static settlement tolerances for the structures are 1 inch and 0.5 inch over a 50-foot span, respectively. We also anticipate that proposed structures will be Risk Category II with a fundamental period less than 0.5 second. We should be contacted to revise our recommendations if the assumptions stated above are incorrect.

2.0 SCOPE OF SERVICES

Columbia West's scope of services was outlined in a proposal dated August 14, 2023. In accordance with our proposal, we performed the following geotechnical services:

- Reviewed information available in our files from previous geological and geotechnical studies conducted at and in the vicinity of the site.
- Reviewed preliminary site plans and structural information provided by the design team.
- Conducted subsurface exploration at the site, to include:
  - Excavated 13 test pits to depths ranging from 4 to 10 feet BGS due to excavator refusal. Two shovel pits were also explored in an area proposed for the off-site sewer alignment.
- Collected disturbed soil samples from test pits for laboratory analysis.
- Classified and logged observed soil and groundwater conditions.
- Prepared this geotechnical site investigation report for the proposed development, which includes:

- Summary of soil index properties, regional geology, soil conditions, and observed groundwater conditions.
- Summary of geologic and seismic literature research used to evaluate relevant seismic risks, including locations of faults, earthquake magnitudes, and seismic factors from the *2018 IBC* and *ASCE 7-16*
- Summary of City of Camas Code Chapter 16.59 – Geologically Hazardous Areas research
- Liquefaction potential
- Fill- and load-induced settlement potential
- Geotechnical design and construction recommendations for:
  - Shallow foundations
  - Lateral earth pressures
  - Site preparation and grading, organic stripping, fill placement and compaction, over-excavation, and construction monitoring and testing.
  - Structural fill materials, onsite soil suitability, and import aggregate specifications.
  - Utility trench excavation and backfill.
  - Drainage and management of groundwater conditions
  - Asphaltic concrete pavement construction for access roads and parking lots
  - Seismic design parameters in accordance with *ASCE 7-16*

3.0 REGIONAL GEOLOGY AND SOIL CONDITIONS

The subject 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-eastern portion of the Portland/Vancouver Basin, an open, somewhat elliptical, northwest-trending syncline approximately 60 miles wide.

According to the *Geologic Map of the Camas Quadrangle, Clark County, Washington, and Multnomah County, Oregon* (US Geological Survey, Scientific Investigations Map 3017, 2008), near-surface geology is expected to primarily consist of upper-Oligocene basaltic-andesite of Elkhorn Mountain (Tbem). The Elkhorn Mountain Formation is comprised of a series of lava flows and flow breccia consisting of dark grey basalt and andesite.

The *Web Soil Survey* (United States Department of Agriculture, Natural Resource Conservation Service [USDA NRCS], 2022 Website) identifies surface soils as primarily Lauren very gravelly loam, Olympic Stoney Clay Loam, Vader Silt Loam, and a small pocket of Lauren loam along the north property boundary. Although soil conditions may vary from the broad USDA descriptions, Lauren soils are generally coarse-textured sands and gravels with moderate permeability, moderate shear strength, and low shrink-swell potential. Olympic and Vader series soils are more fine textured silt and clay with variable amounts of gravel. Olympic and Vader soils are typically fine-textured, poorly drained soils that develop over bedrock and exhibit slow permeability and have low shear strength.

4.0 REGIONAL SEISMOLOGY

Recent research and subsurface mapping investigations within the Pacific Northwest appear to suggest the historic 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. Liquefaction is discussed later in Section 7.0, *Geologic Hazards*

Three scenario earthquakes are possible with the local seismic setting. Two of the possible earthquake sources are associated with the Cascadia Subduction Zone (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.

Cascadia Subduction Zone

The Cascadia Subduction Zone is a potential source of strong earthquake activity in the Portland/Vancouver Basin. This phenomenon is the result of the earth's large tectonic plate movement. Geologic evidence indicates that volcanic ocean floor activity along the Juan de Fuca ridge in the Pacific Ocean causes the Juan de Fuca Plate to perpetually move east and subduct under the North American Continental Plate. The subduction zone results in historic volcanic and potential earthquake activity in proximity to the plate interface, believed to lie approximately 20 to 50 miles west of the general location of the Oregon and Washington coast (Geomatrix Consultants, 1995).

Evidence suggests 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).

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 moment magnitude 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 moment magnitude of up to 8.0.

Crustal Events

There are at least six major known fault zones in the vicinity of the site that may be capable of generating potentially destructive horizontal accelerations. These fault zones are described briefly in Table 1.

Table 1. Faults Within the Site Vicinity

Fault Name	Proximity to Site (km) per USGS	Mapped Length (km) per USGS
Beaverton fault zone	26	15
Helvetia fault zone	24	7
Oatfield fault zone	18	29
Portland Hills fault zone	13	49
East Bank fault	13	29
Lacamas Lake fault	1	24

5.0 GEOTECHNICAL AND GEOLOGIC FIELD INVESTIGATION

Subsurface conditions were explored by excavating thirteen test pits (TP-1 through TP-13) using a track-mounted excavator at the approximate locations shown on Figure 2. The test pits were excavated on October 13, 2023 to a maximum depth of 10 feet BGS. Two supplemental excavations (S-1 and S-2) were explored by shovel in an area proposed for sanitary sewer alignment which will connect the subdivision sewer to SE Leadbetter Road. No soil logs were produced for explorations S-1 and S-2, as bedrock was encountered within a few inches of the surface.

Subsurface conditions were logged in accordance with the Unified Soil Classification System (USCS). Disturbed soil samples were collected at representative depth intervals. Test pit logs are presented in Appendix A. Soil descriptions and classification information are also provided in Appendix A. Analytical laboratory test results are presented in Appendix B.

5.1 SURFACE INVESTIGATION AND SITE DESCRIPTION

The site is located north of Lacamas Lake with address 313 SE Leadbetter Road in Camas, Washington and consists of tax parcel 177885000 which totals approximately 21 acres. The site is accessed via SE 252nd Avenue and is bound by a dairy farm to the north, wooded private and public land to the west and south, and residential acreage parcels to the east. The site is currently undeveloped and heavily wooded. Site terrain is undulating and characterized by grades of 0 to 15 percent with some steeper areas existing where basalt outcrops create short slopes of up to 25 percent. A gravel access road has been constructed into the site and remnant overgrown logging trails were observed in a few locations.

5.2 SUBSURFACE CONDITIONS

The test pits were excavated through up to 10 inches of forest duff and organic topsoil zone. Underlying the surface vegetation, residual soils and basalt bedrock were encountered. Subsurface lithology may generally be described by the soil units identified in the following text.

5.2.1 Silty and Clayey Gravel Residual Soils

Underlying the surface vegetation, medium dense to dense silty SAND with gravel, clayey GRAVEL or SILT with minor gravel was observed to a maximum depth of 10 feet BGS. The moisture content of the residual soils ranged from 20 to 41 percent at the time of exploration. Atterberg limits analysis indicates a range of plasticity index from 8 to 15, indicating minor to moderate plasticity.

5.2.2 Weathered to Bright Basalt Bedrock

Underlying the residual soils, dense to very dense weathered basalt or intact basalt was encountered and caused excavator refusal at depths ranging from ground surface to 10 feet BGS. Digging was extremely slow, and the formation will likely require blasting to move significant quantities of the material.

5.2.3 Groundwater

Groundwater was not observed in the test pits at the time of exploration. However, our experience on adjacent sites underlain by the Elkhorn Mountain Basalt has shown that significant seeps and springs may manifest during rain events, sometimes several days after a rain. The formation may have connectivity to a more regional aquifer.

6.0 INFILTRATION INFEASIBILITY

Infiltration testing was not conducted due to the minor amount of clayey gravel soil encountered at the stie. Due to the relatively impermeable nature of the basalt bedrock and residual soils, infiltration of concentrated stormwater onsite is not recommended, as this would likely result in uncontrolled runoff as the water travels along the undulated surface of the bedrock and finds new places to discharge.

7.0 GEOLOGIC HAZARDS

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 have been identified: (1) erosion hazard areas, (2) landslide hazard areas, and (3) seismic hazard areas. Hazard mapping provided by *Clark County Maps Online* indicates potential landslide hazard areas (slopes greater than 15 percent) in a few areas, primarily in the central portion of the property.

Columbia West conducted a geologic hazard review to assess whether these hazards are present at the subject property proposed for development, and if so, to provide mitigation recommendations. The geologic hazard review was based upon physical and visual reconnaissance, subsurface exploration, laboratory analysis 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.

7.1 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 upon review of slope grade mapping published by *Clark County Maps Online,* maximum slope grades of 15 to 25 percent are mapped at the site. Therefore, site slopes do not meet the definition of an erosion hazard according to *Camas Municipal Code*. However, implementation of proper erosion control BMPs are recommended for the site during construction and in the finished grade condition.

7.2 LANDSLIDE HAZARDS

Columbia West conducted a review of available mapping, *Clark County GIS data*, and site reconnaissance to evaluate the potential presence of a landslide hazard on or near the subject site.

7.2.1 Geologic Literature Review

Columbia West reviewed *Slope Stability, Clark County, Washington* (Fiksdal, 1975) to assess site slope characteristics. The Fiksdal report identifies four levels of potential instability within Clark County: (1) stable areas – no slides or unstable slopes, (2) areas of potential instability because of underlying geologic conditions and physical characteristics associated with steepness, (3) areas of historical or still active landslides, and (4) older landslide debris. The site is mapped as (1) stable – no slides or unstable slopes.

Columbia West also reviewed the *Geologic Map of the Camas Quadrangle, Clark County, Washington, and Multnomah County, Oregon (US Geological Survey, Scientific Investigations Map 3017, 2008)* which indicates that no active landslides or historic landslide deposits are mapped at the subject site or in the surrounding vicinity.

7.2.1 Slope Reconnaissance and Slope Stability Assessment

To observe geomorphic conditions, Columbia West personnel conducted visual and physical reconnaissance of slopes on the property. Subsurface native soils at the locations observed generally consisted of clayey gravel or silty SAND with gravel. Soil horizons appeared firm and well developed. Shallow and surficial basalt bedrock was observed throughout the site.

Site reconnaissance and review of topographic mapping published by *Clark County Maps Online* indicates that site topography is undulated and characterized by pinnacled basalt flows. Short slopes between 15 and 25 percent are present in a few areas throughout the site. Slopes appear planar with no observed evidence of instability. Most bedrock encountered was slightly to moderately weathered or intact. There was no observed direct evidence of large-scale, mass slope movements or historic landslides. No landslide debris was observed within explored site soils and groundwater seeps or springs within the face of the slopes were not observed.

Camas Municipal Code defines a landslide hazard as slopes mapped by Fiksdal as 'areas of potential instability' or areas meeting all three of the following characteristics: 1) slopes steeper than 15 percent; 2) hillsides intersecting geologic contacts with permeable sediment overlying low permeability sediment or bedrock, and; 3) any springs or groundwater seepage. The above-mentioned criteria were not observed during our field investigation or site research. Based upon the results of slope reconnaissance, subsurface exploration, and site research, in Columbia West's opinion slopes on the subject site do not meet the definition of a landslide hazard according to *Camas Municipal Code*.

7.3 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.

7.3.1 Soil Liquefaction and Dynamic Settlement

According to *the Liquefaction Susceptibility Map of Clark County, Washington* (Washington State Department of Natural Resources, 2004), the site is mapped as very low susceptibility for liquefaction due to basalt bedrock. 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.

Soils most susceptible to liquefaction are recent geologic deposits, such as river and floodplain sediments. These soils are generally saturated, cohesionless, loose to medium dense sands within 50 feet of ground surface. Potentially liquefiable soils located above the existing, historic, or expected ground water levels do not generally pose a liquefaction hazard. It is important to note that changes in perched ground water elevation may occur due to project development or other factors not observed at the time of investigation.

Based upon the results of subsurface exploration, literature review, and laboratory analysis, the above-mentioned criteria were not observed during the geotechnical site investigation. Therefore, the potential for soil liquefaction is considered to be very low.

7.3.2 Ground Shaking Amplification

Review of the *Site Class Map of Clark County, Washington* (Washington State Department of Natural Resources, 2004), indicates that site soils may be represented by Site Class B as defined in *2018 IBC Section 1613.3.2*. A designation of Site Class B indicates that minimal amplification of seismic energy may occur during a seismic event due to subsurface conditions. This designation 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 8.2, *Seismic Design Considerations*.

7.3.3 Fault Rupture

Because there are no known geologic seismic faults within the site boundaries, fault rupture is unlikely.

8.0 DESIGN RECOMMENDATIONS

The geotechnical site investigation suggests the proposed development is generally compatible with surface and subsurface soils, provided the recommendations presented in this report are incorporated in design and implemented during construction. Design and construction recommendations are presented in the following sections.

8.1 Shallow Foundation Support

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 footing subgrade soils are above their optimum moisture content, we recommend that a minimum of 6 inches of compacted aggregate be placed over exposed subgrade soils. The aggregate pad should extend 6 inches beyond the edge of the foundations and consist of imported granular material as described in Section 9.6.1, *Structural Fill*. Columbia West should observe exposed subgrade conditions prior to placement of crushed aggregate to verify adequate subgrade support.

8.1.1 Footing Dimensions and Bearing Capacity

Continuous perimeter wall and isolated spread footings should have minimum width dimensions of 18 and 24 inches, respectively. The base of exterior footings should bear at least 18 inches below the lowest adjacent exterior grade. The base of interior footings should bear at least 12 inches below the base of the floor.

Footings bearing on subgrade prepared as recommended above should be sized based on an allowable bearing pressure of 2,500 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.

8.1.2 Shallow Foundation Settlement

Foundation settlement is a significant structural design consideration. Provided subgrade soils are prepared as described above and in Section 9.1, *Site Preparation and Grading*, 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. The risk of differential settlement may increase where structural elements are founded upon both bedrock and soil beneath the same linear footing. Therefore, Columbia West recommends foundations be constructed on a uniform material whenever possible.

8.1.3 Resistance to Sliding

Lateral foundation loads can be resisted by passive earth pressure on the sides of the footing and by friction at the base of the 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 downgradient 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.

8.1.4 Subgrade Observation

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 tire 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.

8.1.5 Floor Slabs

Floor slabs can be supported on firm, competent, native soil or engineered structural fill prepared as described in this report. Disturbed soils and unsuitable fills in proposed slab locations, if encountered, should be removed and replaced with structural fill.

To provide a capillary break, slabs should be underlain by at least 6 inches of compacted crushed aggregate that contains less than 5 percent by weight passing the No. 200 Sieve. Geotextile may be used below the crushed aggregate layer to increase subgrade support. Recommendations for floor slab base aggregate and subgrade geotextile are discussed in Section 9.6, *Materials*.

Floor slabs with maximum floor load of 150 psf may be designed assuming a modulus of subgrade reaction, k, of 125 pci.

8.2 SEISMIC DESIGN CONSIDERATIONS

Seismic design for proposed structures is prescribed by *ASCE 7-16*. Based on literature review and results of subsurface exploration conducted by Columbia West, site soils meet the criteria for Site Class B. Seismic design parameters for Site Class B are presented in Table 2.

Table 2. ASCE 7-16 Seismic Design Parameters[1]

	Short Period	1 Second Period
MCE Spectral Acceleration	0.795	0.348
Site Class	B	
Site Coefficient	Fa = 1.0	Fv = 1.0
Adjusted Spectral Response Acceleration	S_{MS} = 0.795	S_{M1} = 0.348
Design Spectral Response Acceleration	S_{DS} = 0.53	S_{D1} = 0.232

1. *The structural engineer should evaluate ASCE 7-16 code requirements and exceptions to determine if these parameters are valid for design.*

As discussed in Section 7.3, *Seismic Hazards Area*, liquefaction and lateral spreading are not design considerations for the site.

8.3 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 specifications provided previously in Section 8.1, *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 soils 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 WSDOT 9.03.12(2), an equivalent fluid pressure of 34 pcf is applicable for active and 60 pcf for at rest is applicable.

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 pressures 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 $10H^2$ 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.

8.3.1 Wall Drainage and Backfill

A minimum 6-inch-diameter, perforated collector pipe should be placed at the base 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 provided in Section 9.6, *Materials*. The perforated collector pipes should discharge at an appropriate location away from the base of the wall. The discharge pipe(s) 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 the walls and extending a horizontal distance of ½ H, where H is the height of the retaining wall, should consist of select granular material placed and compacted as described in Section 9.6.1, *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.

8.4 PAVEMENT RECOMMENDATIONS

We understand that public roadways for the subdivision will be constructed in accordance with City of Camas standards. For dry weather construction, pavement surface sections should bear upon competent subgrade consisting of scarified and compacted native soil or engineered structural fill. Wet weather construction may require an increased thickness of base aggregate as discussed later in Section 9.2, *Construction Traffic and Staging*.

In general, AC paving is not recommended during cold weather (temperatures less than 40 degrees Fahrenheit). Compacting under these conditions can result in low compaction and premature pavement distress. Each AC mix design has a recommended compaction temperature range that is specific for the particular AC binder used. In colder temperatures, it is more difficult to maintain the temperature of the AC mix, as it can lose heat while stored in the delivery truck, as it is placed, and in the time between placement and compaction.

If AC paving must take place during cold-weather construction as defined in this section, the contractor and design team should discuss options for minimizing risk to pavement serviceability.

8.5 DRAINAGE

At a minimum, site drainage should include surface water collection and conveyance to properly designed stormwater management structures and facilities. Drainage design in general 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 presented in Section 9.6, *Materials*. Drains should be closely monitored after construction to assess their effectiveness. If additional surface or shallow subsurface seeps become evident, the drainage provisions may require modification or additional drains. We should be consulted to provide appropriate recommendations.

8.5.1 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 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 ½ percent. The drainpipe's invert elevation should be at least 18 inches below the elevation of the floor slab. Figure 4 presents a typical foundation drain detail.

8.5.2 Subdrains

Subdrains should be considered if portions of the site are cut below surrounding grades. Shallow groundwater or seeps should be conveyed via 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 sub-surface drainage may result in soil slumping or unanticipated settlement of structures exceeding tolerable limits. A typical perforated drainpipe trench detail is presented in Figure 5.

8.5.2 Drainage Mat

Site improvements construction in some areas may occur at or near the shallow groundwater table, particularly if work is conducted during wet-weather conditions. A drainage mat is typically required in areas that require structural fill placed on top of a natural drainage swale or known seep or spring area. Dewatering may be necessary, and a drainage mat may be required to achieve sufficient elevation for fill placement. A typical drainage mat is shown on Figure 6. Columbia West should determine drainage mat location, extent, and thickness when subsurface conditions are exposed. Drainage mats may need to be constructed in conjunction with subdrains to convey captured water to an approved discharge location

9.0 CONSTRUCTION RECOMMENDATIONS

9.1 SITE PREPARATION AND GRADING

Site vegetation primarily consisted of up to 10 inches of forest duff at the time of our exploration. Thicker root zones may be present in areas of mature trees and shrub growth. Where encountered, pavement, vegetation, organic material, unsuitable fill, and deleterious material should be cleared from areas identified for structures and site grading. Vegetation, root zones, organic material, and debris should be removed from the site. Stripped topsoil should also be removed or used only as landscape fill in nonstructural areas with slopes less than 25 percent. The post-construction maximum depth of landscape fill placed or spread at any location onsite should not exceed one foot. Actual stripping depths should be determined based upon visual observations made during construction when soil conditions are exposed.

9.1.1 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 tire 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.

9.2 CONSTRUCTION TRAFFIC AND STAGING

Where encountered, near-surface fine-textured soils will be easily disturbed during construction. This includes native clayey soils, as well as potential imported fine-textured soils. If not carefully executed, site preparation, excavation, and grading can create extensive soft areas resulting in significant repair costs. Earthwork planning should include considerations for minimizing subgrade disturbance, particularly during wet-weather conditions.

If construction occurs during wet-weather conditions, or if the moisture content of the surficial soil is more than a few percentage points above optimum, site stripping and cutting may need to be accomplished using track-mounted equipment. Under these conditions, granular haul roads and staging areas will also be necessary to provide a firm support base and sustain construction equipment.

The recommended base aggregate thickness for pavement sections is intended to support post-construction design traffic loads and will not provide adequate support for construction traffic. Staging areas and haul roads will require an increased base thickness during wet weather conditions. The configuration of staging and haul road areas, as well as the required thickness of granular material, will vary with the contractor's means and methods. Therefore, design and construction of staging areas and haul roads should be the responsibility of the contractor. Based on our experience, between 12 and 18 inches of imported granular material is generally required in staging areas and between 18 and 24 inches in haul road areas. In areas of heavy construction traffic, geotextile separation fabric may be placed between the subgrade soil and imported granular material to increase subgrade support and minimize fines migration into the base aggregate layer.

Project stakeholders should understand that wet weather construction is risky and costly. Proper construction methods and techniques are critical to overall project integrity and should be observed and documented by Columbia West.

9.3 CUT AND FILL SLOPES

Fill slopes should consist of structural fill material as discussed in Section 9.6.1, *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 six feet in height should be vertically keyed into existing subsurface soil. A typical fill slope cross-section is shown in Figure 7. 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. 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 top of cut or fill slope face or overall slope height divided by three (H/3), whichever is greater. A minimum slope setback detail for structures is presented in Figure 8.

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 two 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.

9.4 EXCAVATION

The site was explored to a maximum depth of 10 feet BGS with an excavator. Weathered and competent basalt bedrock was encountered as shallow as 1.5 feet BGS onsite (TP-11) and at the ground surface in the off-site sewer alignment (S-1 and S-2) and all test pits terminated by refusal on competent bedrock. Intact basalt was observed at or near the surface throughout the site. Excavation at the site will require blasting or special rock excavation techniques to alter the surface.

Groundwater was not encountered, however the basalt formation is known to have seeps and springs show themselves after periods of wet weather, sometimes several days after an event. Recommendations as described in Section 9.5, *Dewatering*, should be considered where subsurface construction activities intersect shallow groundwater table.

Temporary excavation sidewalls should maintain a vertical cut to a depth of approximately 4 feet in the near-surface clay, provided groundwater seepage is not present in the sidewalls. In sandy soil, excavations will likely slough and cave, even at shallow depths. Open-cut excavation techniques may be used to excavate trenches between 4 and 8 feet deep, provided the walls of the excavation are cut at a maximum slope of 1H:1V and groundwater seepage is not present. Excavation slopes should be reduced to 1.5H:1V or 2H:1V if excessive sloughing or raveling occurs.

Shoring may be required if open-cut excavations are infeasible or if excavations are proposed adjacent to existing infrastructure. Typical methods for stabilizing excavations consist of solider piles and timber lagging, sheet pile walls, tiebacks and shotcrete, or prefabricated hydraulic shoring. 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.

The contractor should be held responsible for site safety, sloping, and shoring. All excavation activity should be conducted in accordance with applicable OSHA requirements. Columbia West is not responsible for contractor activities and in no case should excavation be conducted in excess of applicable local, state, and federal laws.

9.5 DEWATERING

Groundwater was not observed at the time of our investigation. Seeps and springs are likely to be encountered during periods of wet weather. Generalized recommendations for temporary construction dewatering are presented in the following section.

9.5.1 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 soils. During rough and finished grading of building pad areas, the contractor should keep all footing excavations and slab subgrade soils free of standing water.

The contractor's proposed dewatering plan should be capable of maintaining groundwater levels at least two feet below the base 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 base 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 soils 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 presented in Section 9.6, *Materials*.

9.6 MATERIALS

9.6.1 Structural Fill

Areas proposed for fill placement should be appropriately prepared as described in Section 9.1, *Site Preparation and Grading*. Engineered fill placement should be observed by Columbia West. Compaction of engineered structural fill should be verified by nuclear gauge field compaction testing performed in accordance with *ASTM D6938*. Field compaction testing should be performed for each vertical foot of engineered fill placed.

Various materials may be acceptable for use as structural fill. Structural fill should be free of organic material or other unsuitable material and meet specifications provided in the following sections. Representative samples of proposed engineered structural fill should be submitted for laboratory analysis and approval by Columbia West prior to placement.

9.6.1.1 Onsite Soil

Minimal residual soil was encountered during the site investigation. Most onsite soil will be suitable for use as structural fill if adequately dried or moisture-conditioned to achieve recommended compaction specifications. Native clay soil with a plasticity index greater than 25, if encountered, should be evaluated and approved by Columbia West prior to use as structural fill. Laboratory analysis indicated that the moisture content of the near-surface clay was above optimum at the time of exploration. Moisture conditioning will likely be necessary to dry the soil prior to applying compaction effort. In addition, the near-surface clay will be moisture sensitive and difficult, if not impossible, to compact during wet weather conditions. Therefore, structural fill placement using onsite soil should be performed during dry summer months if possible. Onsite soil may also require addition of moisture during extended periods of dry weather.

If significant grading is proposed, blasting or specialized rock excavation techniques will be required in areas of shallow bedrock. Due to the minor weathering of much of the basalt encountered, blast

spoils will likely require further crushing to reduce particle size and produce a well-graded product suitable for reuse as structural fill.

Onsite soil used as structural fill should be placed in loose lifts not exceeding 8 inches in depth 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 the modified Proctor moisture-density relationship test *(ASTM D1557).* Compacted onsite fill soils should be covered shortly after placement.

9.6.1.2 Imported Granular Material

Imported granular material should consist of pit- or quarry-run rock, crushed rock, or crushed gravel and sand. The imported granular material should also be durable, angular, and fairly well graded between coarse and fine material; should have less than 5 percent fines (material passing the U.S. Standard No. 200 sieve) by dry weight; and should have at least two mechanically fractured faces. Imported granular material should be placed in loose lifts not exceeding 12 inches in depth and compacted to at least 95 percent of maximum dry density as determined by the modified Proctor moisture-density relationship test *(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.

9.6.1.3 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 organics 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 be compacted to a firm, unyielding condition. Equipment with vibratory action should not be used when compacting stabilization material over wet, fine-textured soils. 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.

9.6.1.4 Trench Backfill

Trench backfill placed below, adjacent to, and up to at least 12 inches above utility lines (i.e., the pipe zone) should consist of well-graded granular material meeting *WSDOT 9-03.12(3)* specifications for *Gravel Backfill for Pipe Zone Bedding*. Pipe zone backfill should be compacted to at least 90 percent of maximum dry density, as determined by the modified Proctor moisture-density relationship test *(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 *WSDOT 9-03.19 Bank Run Gravel for Trench Backfill* or *WSDOT 9-03.14(2) Select Borrow* with a maximum particle size of 2 ½-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 the maximum dry density as

determined by the modified Proctor moisture-density relationship test *(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 the maximum dry density as determined by the modified Proctor moisture-density relationship test *(ASTM D1557),* or as required by the local jurisdictional agency or pipe manufacturer.

9.6.1.5 Floor Slab Base Aggregate

Base aggregate for building floor slabs should consist of 1 ¼"-minus crushed aggregate meeting *WSDOT 9-03.9(3)* specifications for *Crushed Surfacing*. Slab base aggregate should be compacted to at least at least 95 percent of the maximum dry density as determined by the modified Proctor moisture-density relationship test *(ASTM D1557).*

9.6.2 Pavement Base Aggregate

Base aggregate for pavement should consist of 1 ¼"-minus crushed aggregate meeting *WSDOT 9-03.9(3)* specifications for *Crushed Surfacing*. Pavement base aggregate should be compacted to at least at least 95 percent of the maximum dry density as determined by the modified Proctor moisture-density relationship test *(ASTM D1557).*

9.6.2.1 Retaining Wall Backfill

Backfill material placed behind retaining walls and extending a horizontal distance of ½ H, where H is the height of the retaining wall, should consist of free-draining granular material meeting *WSDOT 9-03.12(2)* specifications for *Gravel Backfill for Walls*. The wall backfill should be separated from structural fill, native soil, and/or topsoil using a geotextile fabric that meets the specifications provided below for drainage geotextiles.

Wall backfill located within a horizontal distance of 3 feet from the face of a retaining wall should be compacted to 90 percent of the maximum dry density, as determined by *ASTM D1557*. Backfill placed within 3 feet of the wall should be compacted in loose lifts less than 6 inches thick using hand-operated tamping equipment (such as a jumping jack or vibratory plate compactor). Remaining wall backfill should be compacted to at least 95 percent of the maximum dry density, as determined by *ASTM D1557*.

9.6.2.2 Retaining Wall Leveling Pad

Crushed aggregate used as a leveling pad for retaining wall footings should consist of 1 ¼"-minus crushed aggregate meeting *WSDOT 9-03.9(3)* specifications for *Crushed Surfacing*. The leveling pad material should be compacted to at least 95 percent of the maximum dry density as determined by the modified Proctor moisture-density relationship test *(ASTM D1557).*

9.6.2.3 Drain Rock

Drain rock should consist of angular, granular material with a maximum particle size of 2 inches and less than 2 percent by weight passing the No. 200 sieve. Drain rock should be free of roots, organic debris, and other unsuitable material and should have at least two mechanically fractured faces. Drain rock should be compacted to a firm, unyielding condition. Drain rock should be completely wrapped in a geotextile drainage fabric meeting the requirements presented below.

9.6.3 Geotextile Fabric

9.6.3.1 Subgrade Geotextile

Subgrade geotextile should meet the specifications provided in *WSDOT 9-33.2(1), Table 3, Geotextile for Separation or Soil Stabilization*. The geotextile should be installed in accordance with the manufacturer's recommendations. A minimum initial aggregate base lift of 6 inches is required over geotextiles. All stabilization material should be underlain by a subgrade geotextile.

9.6.3.2 Drainage Geotextile

Subgrade geotextile should meet the specifications provided in *WSDOT 9-33.2(1), Table 2, Geotextile for Underground Drainage Filtration Properties*. The AOS should be between the No. 70 and No. 100 sieve. 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.

9.6.4 Geotextile Fabric

9.6.4.1 Subgrade Geotextile

Subgrade geotextile should meet the specifications provided in *WSDOT 9-33.2(1), Table 3, Geotextile for Separation or Soil Stabilization*. The geotextile should be installed in accordance with the manufacturer's recommendations. A minimum initial aggregate base lift of 6 inches is required over geotextiles. All stabilization material should be underlain by a subgrade geotextile.

9.6.4.2 Drainage Geotextile

Subgrade geotextile should meet the specifications provided in *WSDOT 9-33.2(1), Table 2, Geotextile for Underground Drainage Filtration Properties*. The AOS should be between the No. 70 and No. 100 sieve. 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.

9.6.5 Pavement

9.6.5.1 Asphaltic Concrete

Asphaltic concrete should consist of HMA Class ½" adhering to *WSDOT 9-03.8(6), HMA Proportions of Materials*. The asphalt binder should consist of PG 58-22 meeting *WSDOT 9-02.1(4), Performance Graded (PG) Asphalt Binder*. Asphalt should be compacted to 91 percent of the theoretical maximum density as determined by *ASTM D2041*. Minimum and maximum asphalt lift thicknesses should be 2 and 3 inches, respectively. Nuclear gauge density testing should be conducted to verify adherence to recommended specifications. Testing frequency should be in accordance with WSDOT and City of Camas specifications.

9.7 EROSION CONTROL MEASURES

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.

10.0 OBSERVATION OF CONSTRUCTION

Satisfactory earthwork and foundation performance depends to a large degree on the quality of construction. Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations. Recognition of changed conditions often requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated. In addition, 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.

11.0 CONCLUSIONS AND LIMITATIONS

This geotechnical site investigation report was prepared in accordance with accepted standard conventional principles and practices of geotechnical engineering. This investigation pertains only to material tested and observed as of the date of this report and is based upon proposed site development as described in the text herein. This report is a professional opinion containing recommendations established by engineering interpretations of subsurface soils based upon conditions observed during site exploration. Soil conditions may differ between tested locations or over time. Slight variations may produce impacts to the performance of structural facilities if not adequately addressed. This underscores the importance of diligent QA/QC construction observation and testing to verify soil conditions are as anticipated in this report.

Therefore, this report contains several recommendations for field observation and testing by Columbia West personnel during construction activities. Columbia West cannot accept responsibility for deviations from recommendations described in this report. Future performance of structural facilities is often related to the degree of construction observation by qualified personnel. These services should be performed to the full extent recommended.

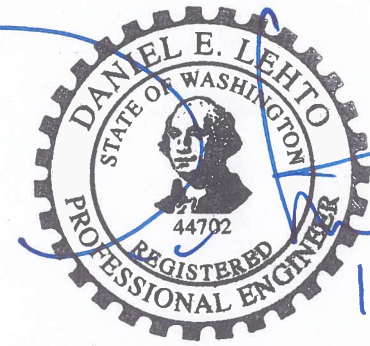
This report is not an environmental assessment and should not be construed as a representative warranty of site subsurface conditions. The discovery of adverse environmental conditions, or subsurface soils that deviate from those described in this report, should immediately prompt further investigation. The above statements are in lieu of all other statements expressed or implied.

♦ ♦ ♦

Sincerely,
Columbia West Engineering, Inc.

Daniel E. Lehto, PE, GE
Principal

DEL:ASR
Document ID: Mills Property Geotechnical Report.docx



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Expires: 6-5-25

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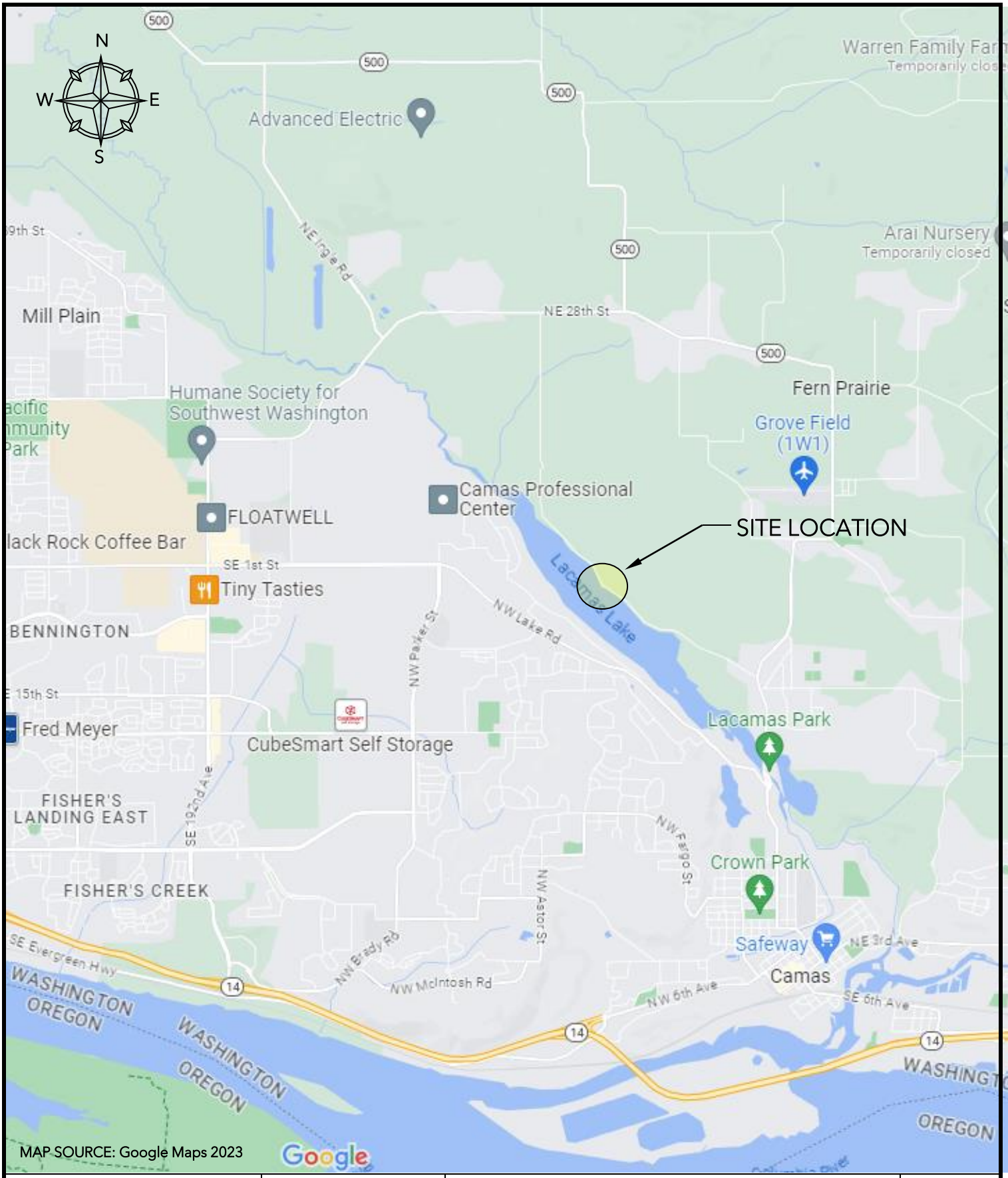
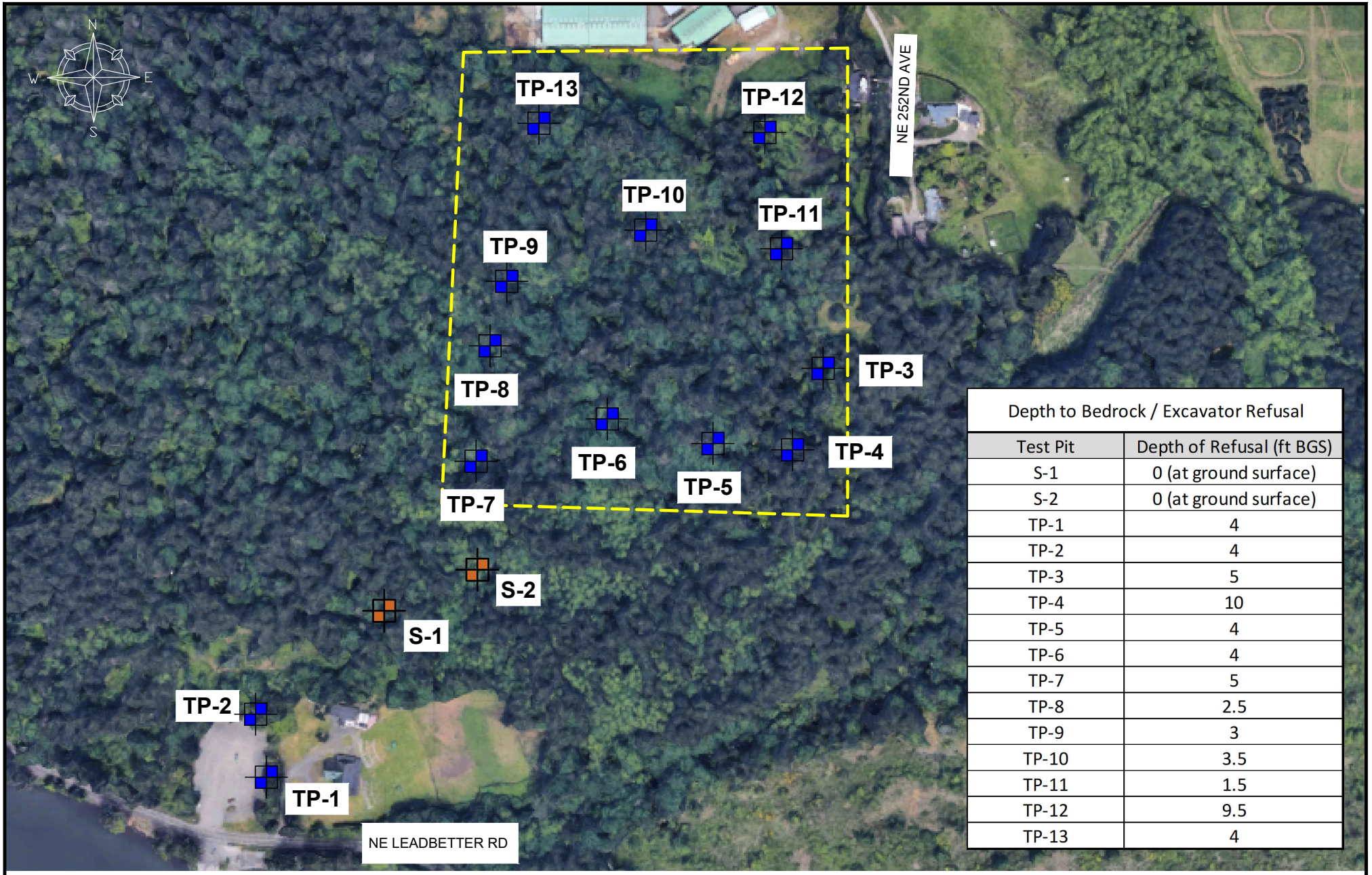
FIGURES



Geotechnical ▪ Environmental ▪ Special Inspections Columbia West Engineering, Inc	Job No: HSR-1-01-1 Date: 10/16/2023 Drawn: SMF/SSC Checked: ASR	SITE LOCATION MAP MILLS CAMAS CAMAS, WASHINGTON	FIGURE 1



Depth to Bedrock / Excavator Refusal	
Test Pit	Depth of Refusal (ft BGS)
S-1	0 (at ground surface)
S-2	0 (at ground surface)
TP-1	4
TP-2	4
TP-3	5
TP-4	10
TP-5	4
TP-6	4
TP-7	5
TP-8	2.5
TP-9	3
TP-10	3.5
TP-11	1.5
TP-12	9.5
TP-13	4

SCALE BAR 1:5000

0 100 200 300 400 500 1000

APPROXIMATE SITE BOUNDARY

APPROXIMATE TEST PIT LOCATION

APPROXIMATE SUPPLEMENTAL SHOVEL PIT

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Job No: HSR-1-01-1
Date: 10/19/23
Drawn: SMF/SSC
Checked: ASR

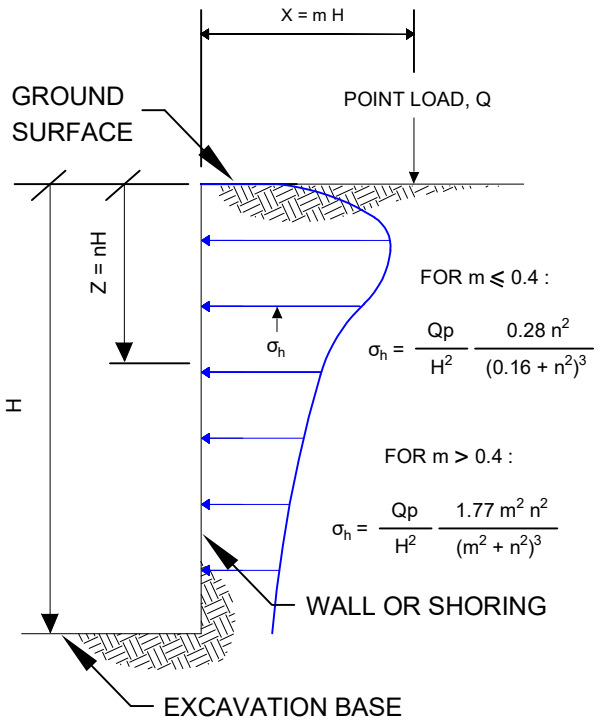
EXPLORATION LOCATION MAP

MILLS PROPERTY

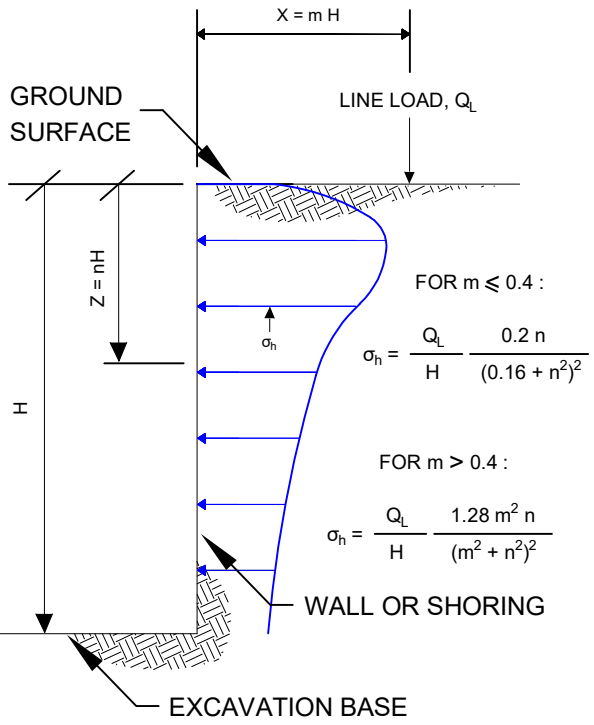
NOTES:
1. APPROXIMATE SITE LOCATION: 313 SE LEADBETTER ROAD IN CAMAS, WASHINGTON.
2. AERIAL PHOTO SOURCED FROM GOOGLE EARTH.
3. EXPLORATION LOCATIONS ARE APPROXIMATE AND NOT SURVEYED.
4. TEST PITS BACKFILLED WITH LOOSELY ONSITE SOILS ON OCTOBER 13, 2023.

FIGURE
223

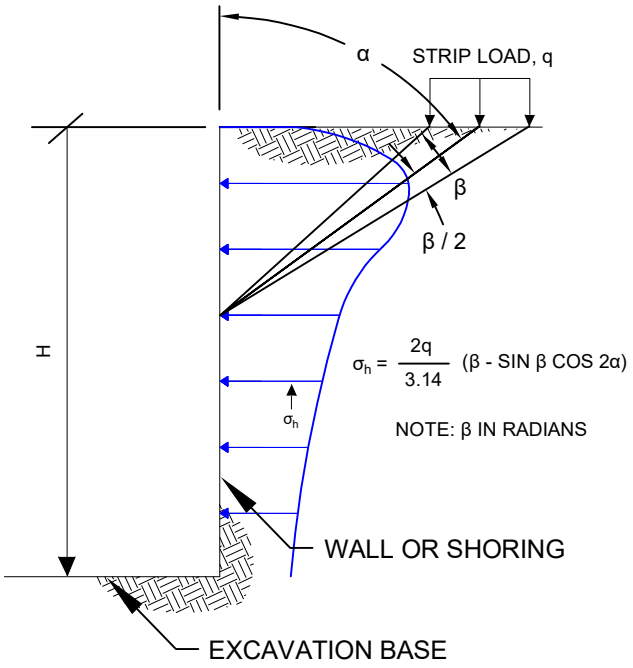
VERTICAL POINT LOAD



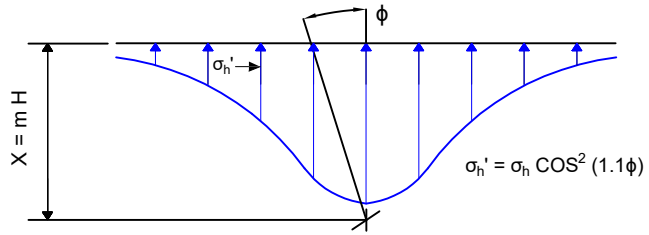
LINE LOAD PARALLEL TO WALL



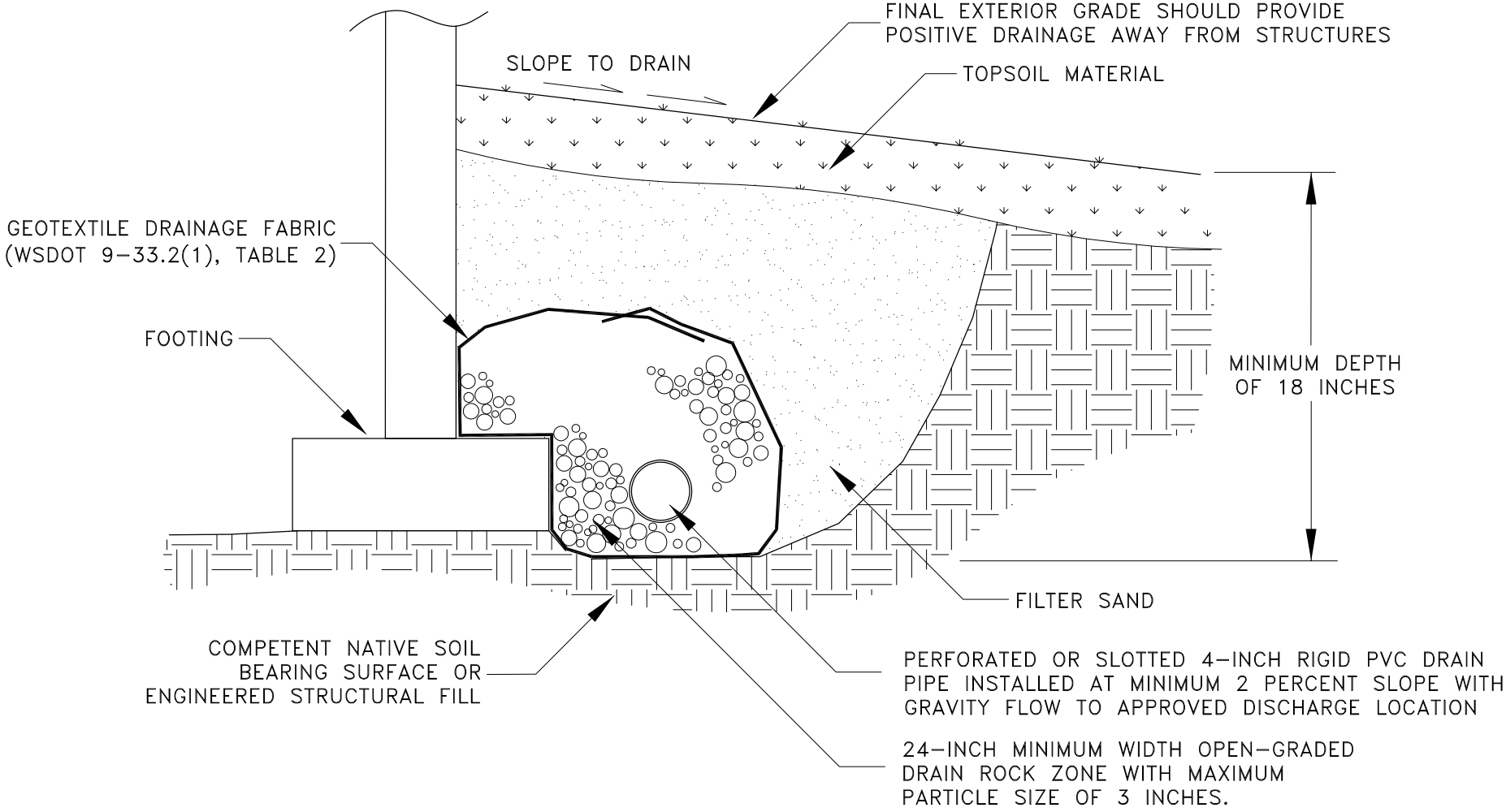
STRIP LOAD PARALLEL TO WALL



VERTICAL POINT LOAD HORIZONTAL PRESSURE DISTRIBUTION



NOTES:
1. FIGURE SHOULD BE USED JOINTLY WITH RECOMMENDATIONS PRESENTED IN THE REPORT TEXT.
2. LATERAL EARTH PRESSURES ASSUME RIGID WALLS WITH BACKFILL MATERIALS HAVING A POISSON'S RATIO OF 0.5.
3. TOTAL LATERAL EARTH PRESSURES RESULTING FROM COMBINED LOADS MAY BE CALCULATED USING SUPERPOSITION.
4. DRAWING IS NOT TO SCALE.



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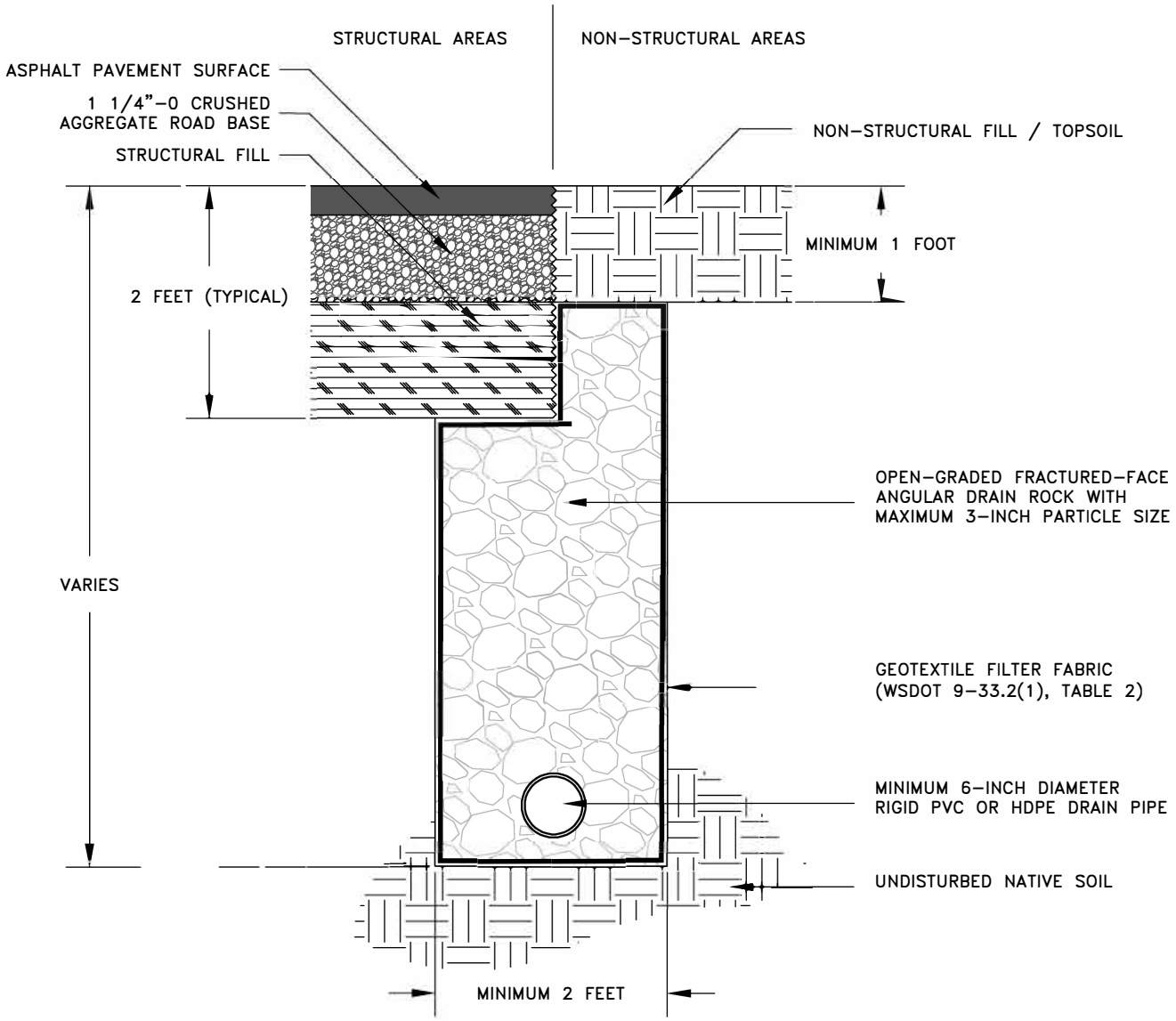
TYPICAL PERIMETER FOOTING
DRAIN DETAIL

NOTES:
1. DRAWING IS NOT TO SCALE.
2. DRAWING REPRESENTS TYPICAL PERIMETER FOOTING DRAIN DETAIL AND MAY NOT BE SITE-SPECIFIC.

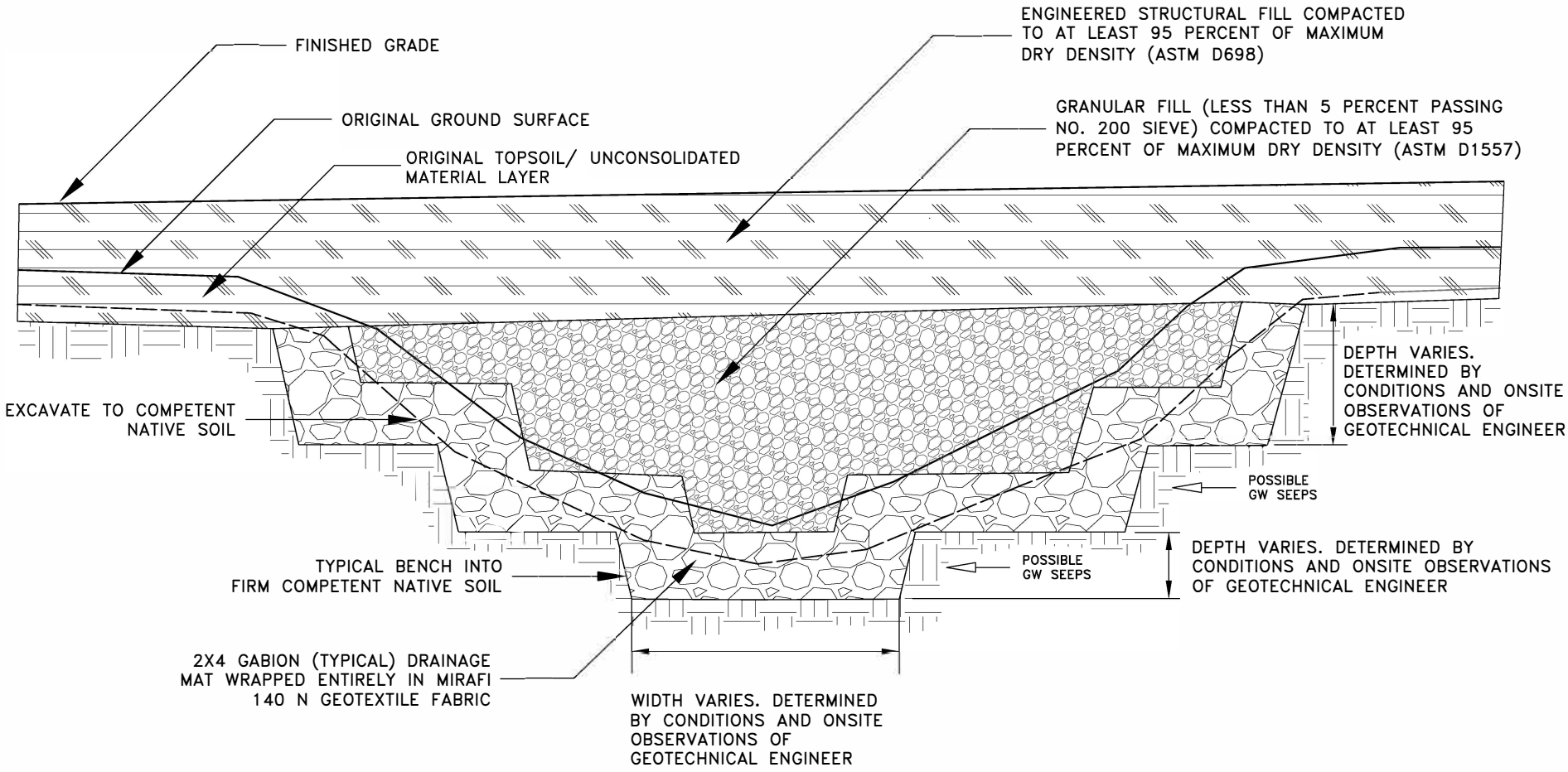
FIGURE
4



NOTE: LOCATION, INVERT ELEVATION, DEPTH OF TRENCH, AND EXTENT OF PERFORATED PIPE REQUIRED MAY BE MODIFIED BY THE GEOTECHNICAL ENGINEER DURING CONSTRUCTION BASED UPON FIELD OBSERVATION AND SITE–SPECIFIC SOIL CONDITIONS.

Geotechnical ▪ Environmental ▪ Special Inspections Columbia West Engineering, Inc	TYPICAL PERFORATED DRAINPIPE TRENCH DETAIL	NOTES: 1. DRAWING IS NOT TO SCALE. 2. DRAWING REPRESENTS TYPICAL PERFORATED DRAIN PIPE TRENCH DETAIL AND MAY NOT BE SITE–SPECIFIC.	FIGURE 5

TYPICAL DRAINAGE MAT CROSS-SECTION



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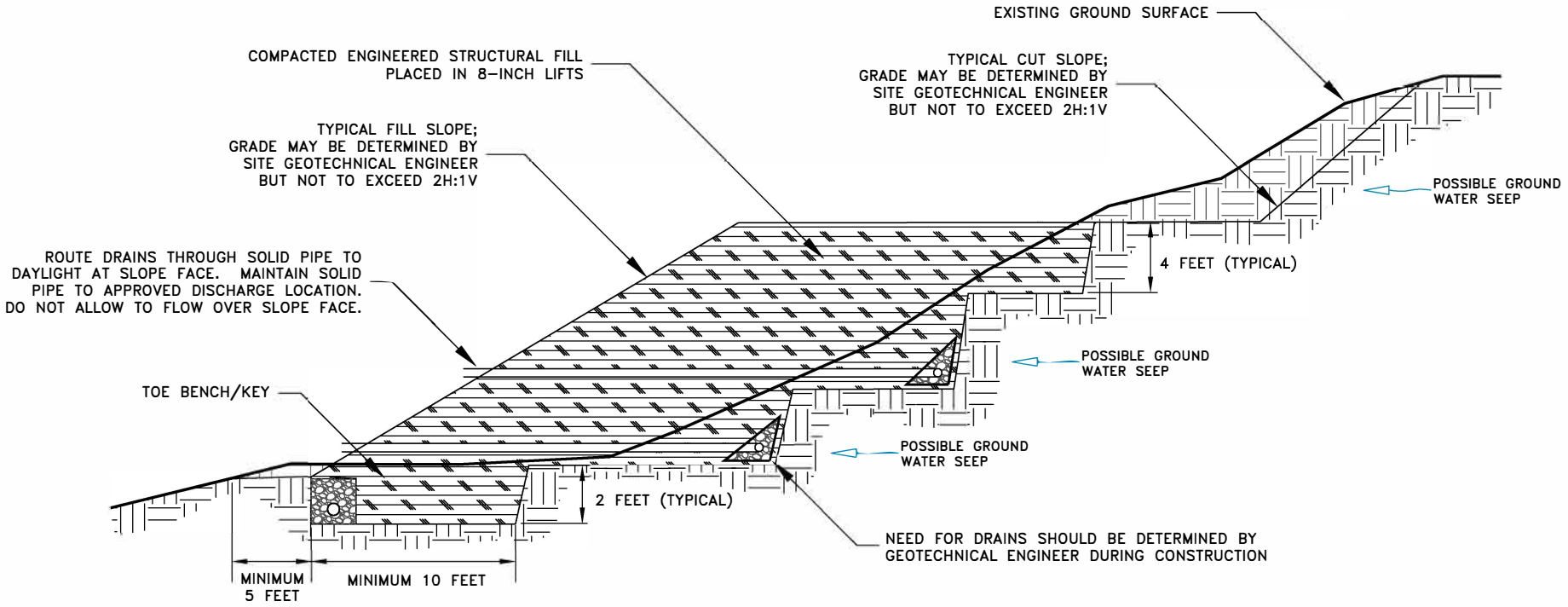
TYPICAL DRAINAGE MAT CROSS SECTION

NOTES:
1. DRAWING IS NOT TO SCALE.
2. DRAWING REPRESENTS TYPICAL DRAINAGE MAT SECTION AND MAY NOT BE SITE-SPECIFIC.

FIGURE 227

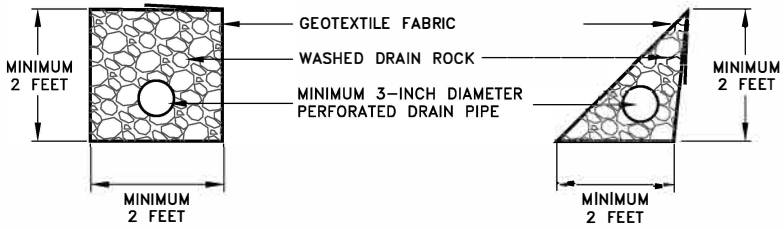


DRAIN SPECIFICATIONS

GEOTEXTILE FABRIC SHALL MEET WSDOT 9-33.2(1), TABLE 2, GEOTEXTILE FOR UNDERGROUND DRAINAGE FILTRATION PROPERTIES WITH AOS BETWEEN No. 70 AND No. 100 SIEVE. WATER PERMITIVITY SHOULD BE GREATER THAN 1.5/SEC.

WASHED DRAIN ROCK SHALL BE OPEN-GRADED ANGULAR DRAIN ROCK WITH LESS THAN 2 PERCENT PASSING THE No. 200 SIEVE AND A MAXIMUM PARTICLE SIZE OF 2 INCHES.

TYPICAL DRAIN SECTION DETAIL



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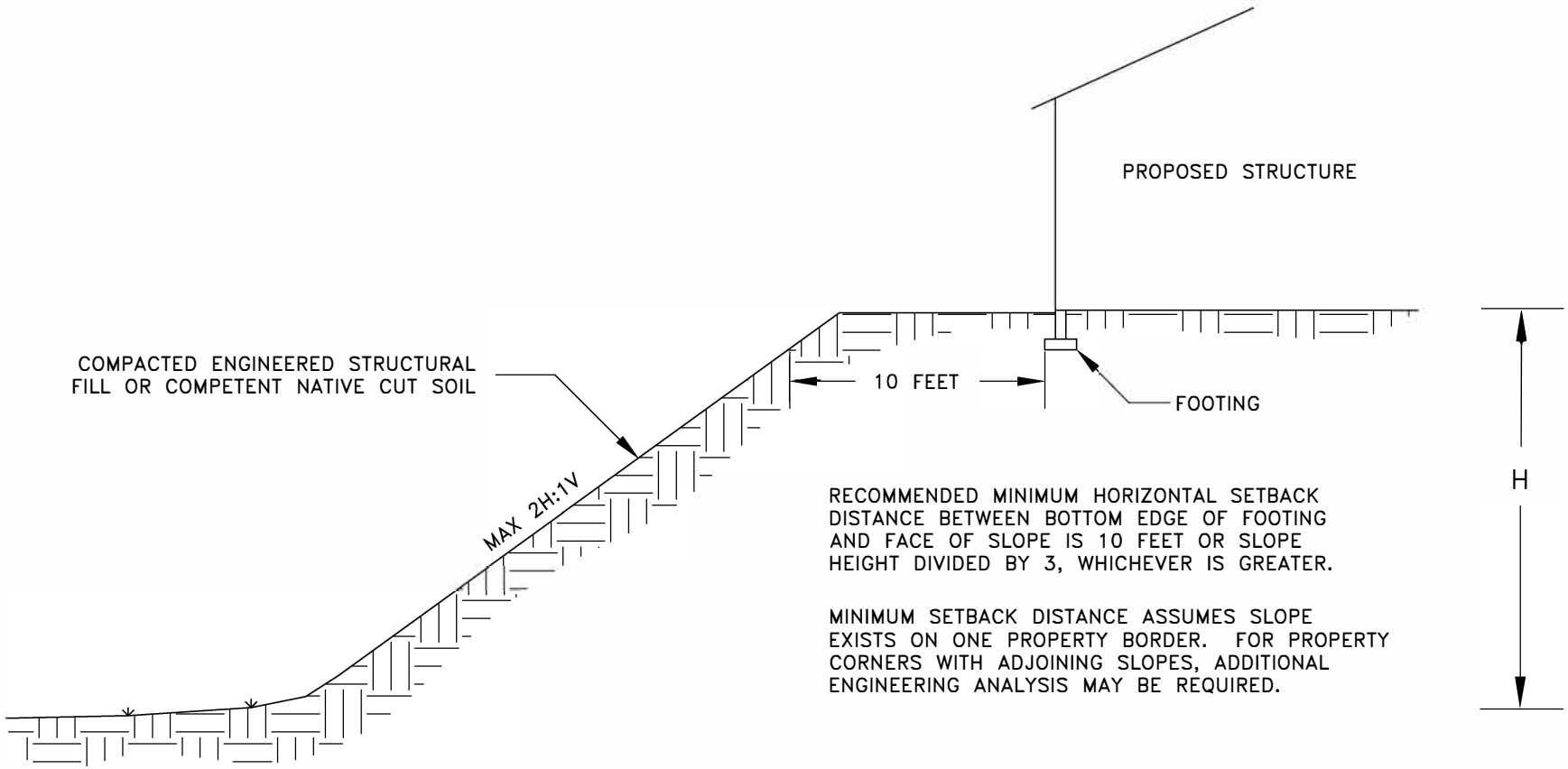
TYPICAL CUT AND FILL SLOPE CROSS SECTION

NOTES:
1. DRAWING IS NOT TO SCALE.
2. DRAWING REPRESENTS TYPICAL CUT AND FILL SLOPE CROSS SECTION AND MAY NOT BE SITE-SPECIFIC.

FIGURE 7



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TYPICAL MINIMUM FOUNDATION SLOPE SETBACK DETAIL

NOTES:
1. DRAWING IS NOT TO SCALE.
2. SLOPES AND PROFILES SHOWN ARE APPROXIMATE.
3. DRAWING REPRESENTS TYPICAL FOUNDATION SETBACK DETAIL AND MAY NOT BE SITE-SPECIFIC.

FIGURE 8

APPENDIX A
SUBSURFACE EXPLORATION PROGRAM
FIELD EXPLORATIONS

GENERAL

We explored subsurface conditions at the site by excavating thirteen test pits (TP-1 through TP-13) to depths between 1.5 and 10 feet BGS. Excavation services were provided by L&S Contractors of Battle Ground, Washington on October 13, 2023. The test pit locations are shown in Figures 2. The test pit logs are presented in this appendix.

SOIL SAMPLING

Representative grab samples of the soil observed in the test pit explorations were obtained from the walls and/or base of the test pits using the excavator bucket.

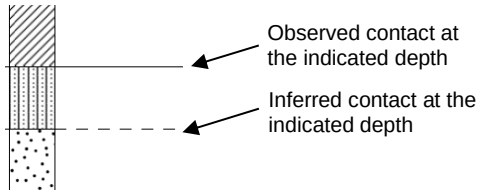
SOIL CLASSIFICATION

The soil samples were classified in accordance with the Unified Soil Classification System presented in Appendix A. The exploration log indicates 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 log.

EXPLORATION LEGEND

Symbol	Description
SPT	Sample obtained from the indicated depth in general accordance with ASTM D1586, *Standard Penetration Test and Split-Barrel Sampling of Soils*
SHELBY	Sample obtained from the indicated depth using thin-wall Shelby tube in general accordance with ASTM D1587, *Thin-Walled Tube Sampling of Fine-Grained Soils*
D&M 300	Sample obtained from the indicated depth using Dames & Moore sampler and 300-pound hammer or pushed
D&M 140	Sample obtained from the indicated depth using Dames & Moore sampler and 140-pound hammer or pushed
CSS	Sample obtained from the indicated depth using 3-inch-outer-diameter California split-spoon sampler and 140-pound hammer
GRAB	Grab sample obtained from the indicated depth
CORE	Rock core interval at the indicated depth
▼	Water level observed during exploration

Graphical Log of Subsurface Lithology



Geotechnical Acronyms			
AASHTO	American Association of State Highway and Transportation Officials	P	Push Sample
ASTM	American Society for Testing and Materials	PP	Pocket Penetrometer
ATT	Atterberg Limits	PSF	Pounds Per Square Foot
BGS	Below Ground Surface	P200	Percent Passing No. 200 Sieve
CBR	California Bearing Ratio	RES	Resilient Modulus
CON	Consolidation Test	SIEV	Sieve Analysis
DCPT	Dynamic Cone Penetration Test	SPT	Standard Penetration Test
DD	Dry Density	TS	Torvane Shear
DS	Direct Shear	UC	Unconfined Compressive Strength
HYD	Hydrometer	UU	Unconsolidated Undrained Triaxial Test
IR	Infiltration Rate	USCS	United Soil Classification System
MC	Moisture Content	VS	Vane Shear
MD	Moisture-Density Relationship	WD	Wet Density
OC	Organic Content		

SOIL DESCRIPTION AND CLASSIFICATION

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	Less than 2	Less than 3	Less than 0.25
Soft	2 to 4	3 to 6	0.25 to 0.50
Medium Stiff	4 to 8	6 to 12	0.50 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	30 to 60	65 to 145	Greater than 4.0
Very Hard	Greater than 60	Greater than 145	-

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	No moisture. Dusty or dry.
Damp	Some moisture. Cohesive soils are usually below plastic limit and are moldable.
Moist	Grains appear darkened, but no visible water is present. Cohesive soils will clump. Sand will bulk. Soils are often at or near plastic limit.
Wet	Visible water on larger grains. Sand and silt exhibit dilatancy. Cohesive soil can be readily remolded. Soil leaves wetness on the hand when squeezed. Soil is much wetter than optimum moisture content and is above plastic limit.

Additional Constituents

Percent	Silt and Clay In:		Percent	Sand and Gravel In:	
	Fine-Grained Soil	Coarse-Grained Soil		Fine-Grained Soil	Coarse-Grained Soil
< 5	trace	trace	< 5	trace	trace
5 – 12	minor	with	5 – 15	minor	minor
> 12	some	silty/clayey	15 – 30	with	with
			> 30	sandy/gravelly	with (approx. percentage)

AASHTO SOIL CLASSIFICATION SYSTEM

TABLE 1. Classification of Soils and Soil-Aggregate Mixtures

General Classification	Granular Materials (35 Percent or Less Passing .075 mm)			Silt-Clay Materials (More than 35 Percent Passing 0.075)			
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	N.P.		10 max	10 max	11 min	11 min
General rating as subgrade	Excellent to good			Fair to poor			

Note: 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.

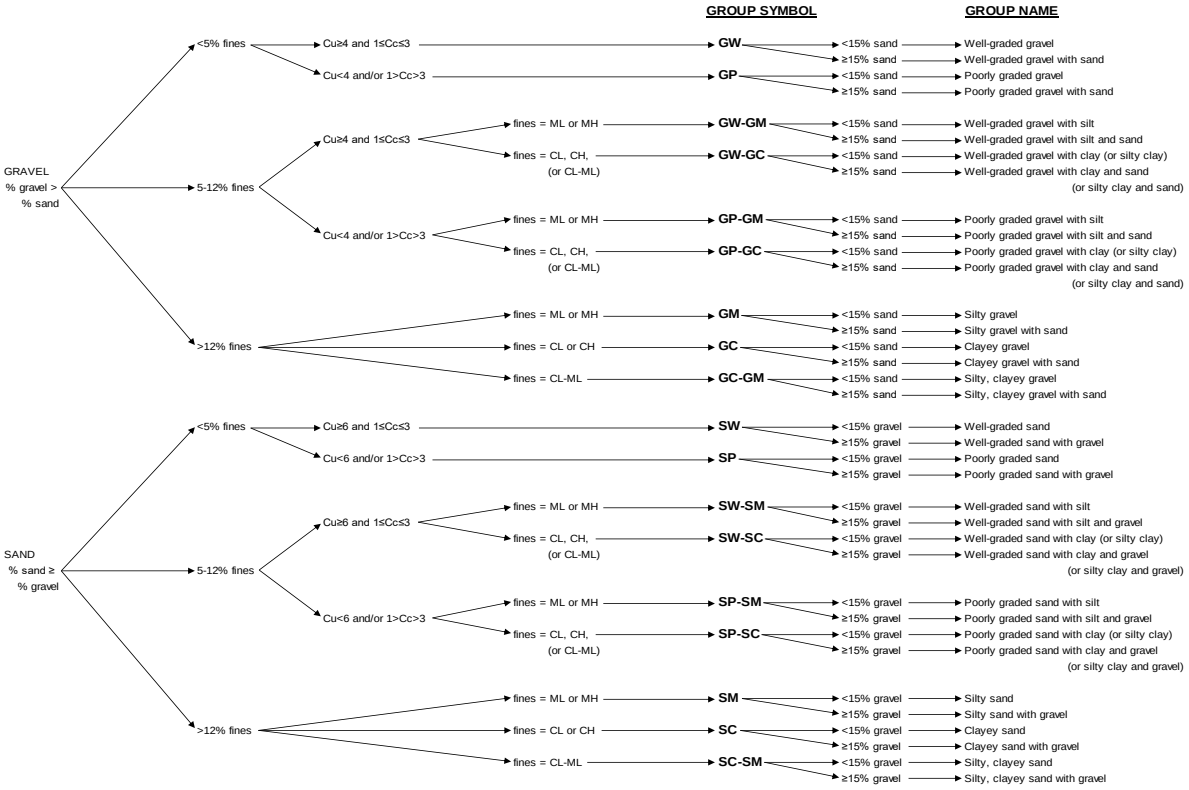
TABLE 2. Classification of Soils and Soil-Aggregate Mixtures

General Classification	Granular Materials (35 Percent or Less Passing 0.075 mm)							Silt-Clay Materials (More than 35 Percent Passing 0.075 mm)			
	A-1			A-2							A-7
Group Classification	A-1-a	A-1-b	A-3	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	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		N.P.	10 max	10 max	11 min	11 min	10 max	10 max	11 min	11min
Usual types of significant constituent materials	Stone fragments, gravel and sand		Fine sand	Silty or clayey gravel and sand				Silty soils		Clayey soils	
General ratings as subgrade	Excellent to Good							Fair to poor			

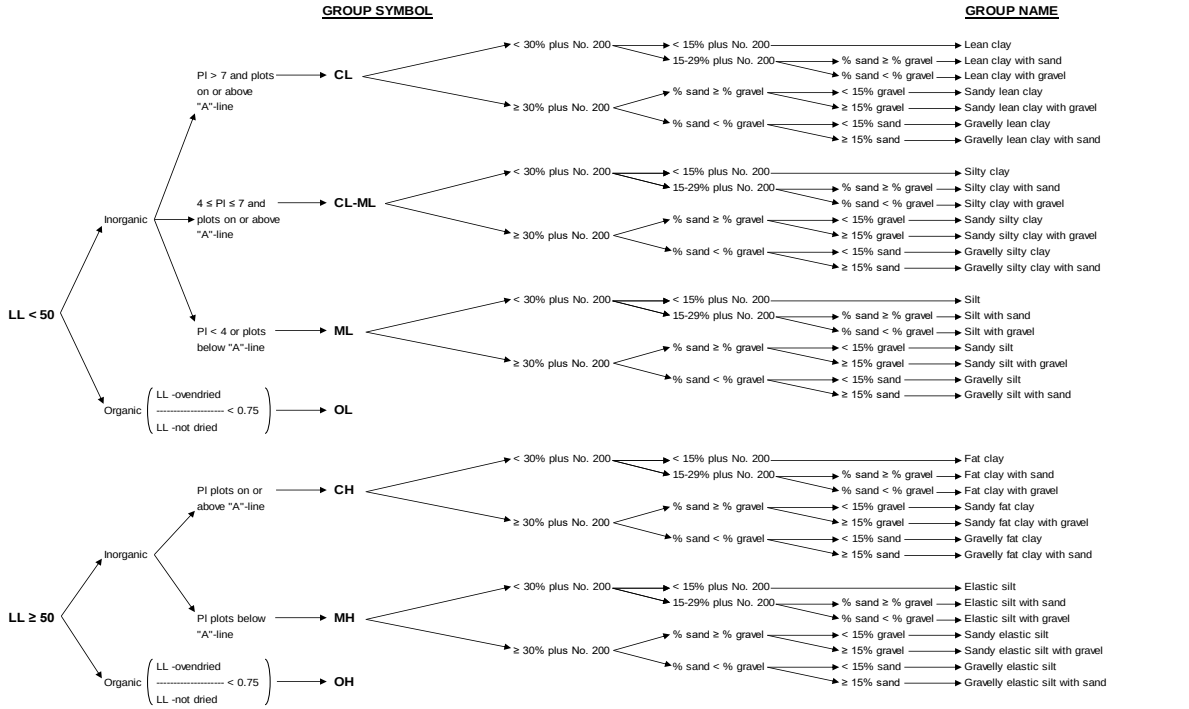
Note: Plasticity index of A-7-5 subgroup is equal to or less than LL minus 30. Plasticity index of A-7-6 subgroup is greater than LL minus 30 (see Figure 2).

AASHTO = American Association of State Highway and Transportation Officials

UNIFIED SOIL CLASSIFICATION SYSTEM



Flow Chart for Classifying Coarse-Grained Soils (More Than 50% Retained on No. 200 Sieve)



Flow Chart for Classifying Fine-Grained Soil (50% or More Passes No. 200 Sieve)

ROCK CLASSIFICATION SYSTEM

STRENGTH	DESCRIPTION	UNCONFINED COMPRESSIVE STRENGTH (PSI)
Extremely Weak (R0)	Easily indented by thumbnail	35 to 150
Very Weak (R1)	Scratched with fingernail, peeled by knife, indented by rock pick	150 to 275
Weak (R2)	Peeled by knife, indented by rock pick	725 to 3,500
Medium Strong (R3)	Cannot be peeled or scraped with a knife	3,500 to 7,250
Strong (R4)	Requires more than one blow with a rock hammer to fracture it	7,250 to 14,500
Very Strong (R5)	Requires many blows with a rock hammer to fracture it	14,500 to 36,250
Extremely Strong (R6)	Can only be chipped with a rock hammer	Greater than 36,250

WEATHERING	DESCRIPTION
Decomposed	A soil formed in place with original texture of rock destroyed
Completely Weathered	Rock wholly weathered but rock texture preserved
Highly Weathered	Rock weakened so that large pieces can be broken by hand
Moderately Weathered	Rock mass is decomposed locally
Slightly Weathered	Discoloration along discontinuities
Fresh	No visible signs of weathering or discoloring

JOINT SPACING	DESCRIPTION
Very Close	Less than 0.2 foot
Close	0.2 foot to 1 foot
Moderately Close	1 foot to 3 feet
Wide	3 feet to 10 feet
Very Wide	Greater than 10 feet

FRACTURING	FRACTURE SPACING
Very Intensely Fractured	Chips, fragments, with scattered short core lengths
Intensely Fractured	0.1 foot to 0.3 foot with scattered fragments
Moderately Fractured	0.3 foot to 1 foot
Slightly Fractured	1 foot to 3 feet
Very Slightly Fractured	Greater than 3 feet
Unfractured	No fractures observed

HEALING	DESCRIPTION
Not Healed	Discontinued surface, fractured zone, sheared material, filling is not cemented
Partly Healed	Less than 50% of fractures or sheared zone bonding
Moderately Healed	Greater than 50% fractures or sheared zone bonding
Totally Healed	All fragments are bonded

QUALITY	RQD (%)
Very poor	Less than 25%
Poor	25 to 50%
Fair	51 to 75%
Good	76 to 90%

Rock Quality Designation (RQD) is a measure of quality of rock core taken from a borehole. The length of core pieces is measured along center line of the pieces. All pieces of intact rock core equal to or greater than 100 mm (4 in.) long are summed and divided by the total length of the core run to obtain RQD value

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-1
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		0755	0820

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0	TP1.1			GW		Grey GRAVEL and cobbles, moist, dense, angular aggregate (0.25 to 10 inches). Shoulder of haul road built for site access.					
				GW-GM		Brown GRAVEL with silt, moist, medium dense to dense, fine angular aggregate (0.1 to 0.25 inch).					
5						Bottom of test pit at 4 feet due to practical refusal on bedrock.					
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-2
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		0822	0835

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						2 to 3 inches forest duff (topsoil). Fine tree roots extend to 8 inches in depth.					
				GW-GM		Brown GRAVEL with silt, moist, dense, fine angular aggregate (0.1 to 0.25 inch).					
				GC		Decomposed/weathered bedrock, very dense clayey gravel.					
5						Bottom of test pit at 4 feet due to practical refusal on bedrock.					
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-3
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		0909	0917

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						6 to 8 inches forest duff with fine tree roots.					
				GC		Grey weathered bedrock, moist, dense to very dense clayey gravel.					
						Difficult digging from 1 to 5 feet.					
5						Bottom of test pit at 5 feet due to practical refusal on bedrock.					
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-4
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		0918	0935

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						6 to 8 inches forest duff with fine tree roots.					
				ML		Brown SILT with trace gravel (0.1 to 0.25 inch), moist, medium stiff to stiff.					
	TP4.1										
5						Difficult digging from 8 to 10 feet. Intermixed weathered bedrock gravel and boulders at 8 feet.					
	TP4.2		A-7-6(4)	SM		Brown silty SAND with gravel, moist, medium dense.	41	45	41	15	
10						Bottom of test pit at 10 feet due to practical refusal on bedrock.					
15											

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PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-5
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		0950	1005

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						8 to 10 inches forest duff with tree roots.					
				GC		Grey weathered bedrock, moist, dense to very dense clayey gravel. Fine tree roots extend to 2 feet in depth. Difficult digging from 2 to 4 feet.					
5						Bottom of test pit at 4 feet due to practical refusal on bedrock.					
10											
15											

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PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-6
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1007	1015

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						8 to 10 inches forest duff with tree roots. Fine tree roots extend to 1.5 feet in depth.					
				GC		Grey weathered bedrock, moist, dense to very dense clayey gravel. Difficult digging from 1.5 to 4 feet.					
5						Bottom of test pit at 4 feet due to practical refusal on bedrock.					
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-7
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1020	1033

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						8 to 10 inches forest duff with tree roots. Fine tree roots extend to 1.5 feet in depth.					
				GC		Grey weathered bedrock, moist, dense to very dense clayey gravel. Difficult digging from 3 to 5 feet.					
5						Bottom of test pit at 5 feet due to practical refusal on bedrock.					
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-8
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1040	1045

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						8 to 10 inches forest duff with tree roots. Fine tree roots extend to 1.5 feet in depth.					
				GC		Grey weathered bedrock, moist, dense to very dense clayey gravel.					
						Bottom of test pit at 2.5 feet due to practical refusal on bedrock.					
5											
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-9
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1100	1108

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						8 to 10 inches forest duff with tree roots. Fine tree roots extend to 1.5 feet in depth.					
	TP9.1		A-4(1)	SM		Brownish red silty SAND with gravel (0.1 to 0.25 inch), moist, dense to very dense, low to medium plasticity.	20	44	39	8	
						Bottom of test pit at 3 feet due to practical refusal on bedrock.					
5											
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-10
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1130	1146

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						8 to 10 inches forest duff with tree roots.					
						Fine tree roots extend to 1.5 feet in depth.					
				GC		Grey-brown weathered bedrock, moist, dense to very dense clayey gravel.					
						Difficult digging from 1.5 to 3.5 feet.					
						Bottom of test pit at 3.5 feet due to practical refusal on bedrock.					
5											
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-11
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1150	1155

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						8 inches forest duff with tree roots.					
				GC		Grey weathered bedrock, moist, dense to very dense clayey gravel.					
						Bottom of test pit at 1.5 feet due to practical refusal on bedrock.					
5											
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-12
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1210	1230

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						2 to 3 inches root zone underlain by 6 inches topsoil.					
				ML		Brown SILT with gravel (0.1 to 3 inches), moist, medium stiff, low plasticity.					
	TP12.1										
5						Increase in gravel and weathered bedrock at 6 feet.					
						Difficult digging from 6 feet to 9.5 feet.					
	TP12.2					Weathered bedrock boulders at 9 feet.					
10						Bottom of test pit at 9.5 feet due to practical refusal on bedrock.					
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-13
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1245	1300

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0	TP13.1					8 to 10 inches forest duff with tree roots. Tree roots extend to 1.5 feet in depth.					
				ML		Brown SILT intermixed with weathered bedrock, moist, stiff, low plasticity.					
				GC		Grey weathered bedrock, moist, dense to very dense clayey gravel. Difficult digging from 2.5 feet to 4 feet.					
5						Bottom of test pit at 4 feet due to practical refusal on bedrock.					
10											
15											

APPENDIX B
LABORATORY TESTING

CLASSIFICATION

The soil samples were classified in the laboratory to confirm field classifications. The laboratory classifications are shown on the exploration log if those classifications differed from the field classifications.

ATTERBERG LIMITS

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. The test results are presented in this appendix.

MOISTURE CONTENT

We determined the natural moisture content of select soil samples in general accordance with ASTM D2216. The natural moisture content is a ratio of the weight of the water to soil in a test sample and is expressed as a percentage. The test results are presented in this appendix.

PARTICLE-SIZE ANALYSIS

We completed particle-size analysis on select soil samples 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.

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PARTICLE-SIZE ANALYSIS REPORT

PROJECT	CLIENT	PROJECT NO.	LAB ID
Mills Camas 313 SE Leadbetter Road Camas, Washington 98607	HSR Development 500 E. Broadway, Suite 120 Vancouver, Washington 98660	HSR-1-01-1	S23-1356
		REPORT DATE: 10/30/23	FIELD ID: TP4.2
		DATE SAMPLED: 10/13/23	SAMPLED BY: SSC

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
brown Silty SAND with Gravel	Test Pit TP-04 depth = 8 feet	SM, Silty Sand with Gravel
SPECIFICATIONS none		**AASHTO CLASSIFICATION** A-7-6(4)

LABORATORY TEST DATA

LABORATORY EQUIPMENT
Rainhart "Mary Ann" Sifter, air-dried prep, hand washed, composite sieve - #4 split

TEST PROCEDURE
ASTM D6913, Method A

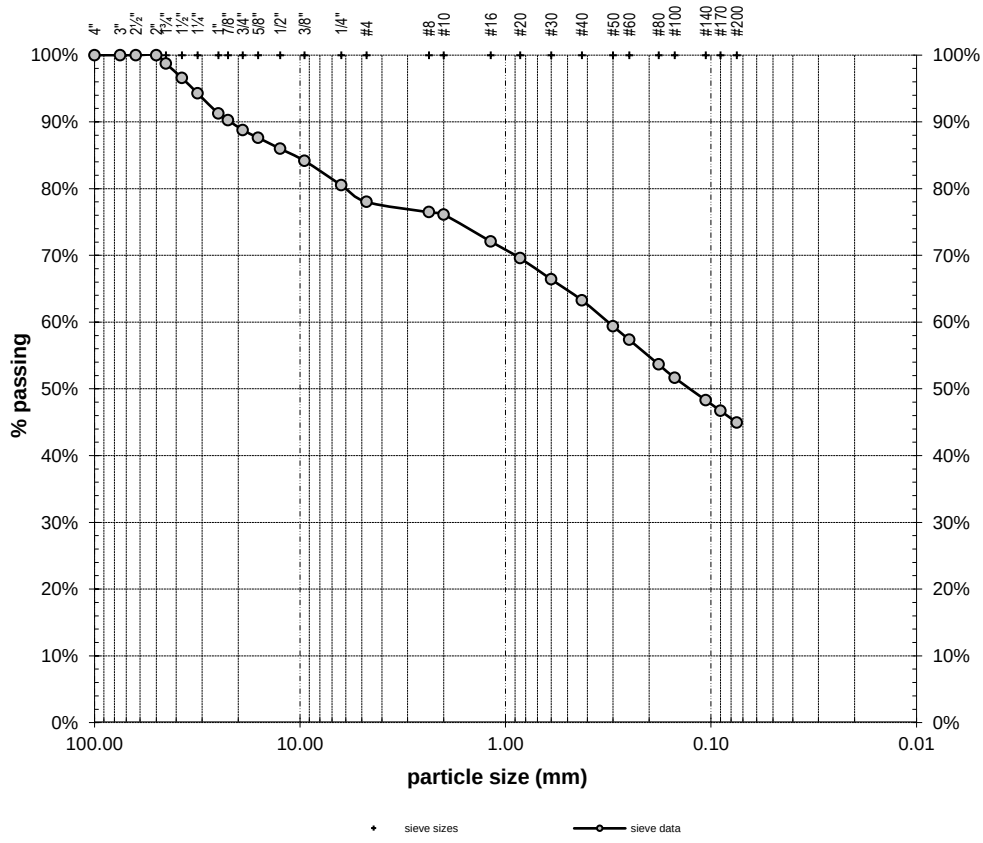
ADDITIONAL DATA

initial dry mass (g) =	1842.3		
as-received moisture content =	41%	coefficient of curvature, C_C =	n/a
liquid limit =	41	coefficient of uniformity, C_U =	n/a
plastic limit =	26	effective size, $D_{(10)}$ =	n/a
plasticity index =	15	$D_{(30)}$ =	n/a
fineness modulus =	n/a	$D_{(60)}$ =	0.317 mm

NOTE: Entire sample used for analysis; did not meet minimum size required.

SIEVE DATA

% gravel = 22.0%
% sand = 33.1%
% silt and clay = 45.0%



	SIEVE SIZE US	SIEVE SIZE mm	PERCENT PASSING SIEVE act.	SIEVE interp.	SPECS max	SPECS 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		99%		
	1.50"	37.5	97%			
	1.25"	31.5		94%		
	1.00"	25.0	91%			
	7/8"	22.4		90%		
	3/4"	19.0	89%			
	5/8"	16.0		88%		
	1/2"	12.5		86%		
	3/8"	9.50	84%			
	1/4"	6.30		81%		
	#4	4.75	78%			
SAND	#8	2.36		76%		
	#10	2.00	76%			
	#16	1.18		72%		
	#20	0.850	70%			
	#30	0.600		66%		
	#40	0.425	63%			
	#50	0.300		59%		
	#60	0.250	57%			
	#80	0.180		54%		
	#100	0.150	52%			
	#140	0.106		48%		
	#170	0.090		47%		
	#200	0.075	45%			

DATE TESTED	TESTED BY
10/26/23	MRS

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ATTERBERG LIMITS REPORT

PROJECT	CLIENT	PROJECT NO.	LAB ID
Mills Camas 313 SE Leadbetter Road Camas, Washington 98607	HSR Development 500 E. Broadway, Suite 120 Vancouver, Washington 98660	HSR-1-01-1	S23-1356
		REPORT DATE: 10/30/23	FIELD ID: TP4.2
		DATE SAMPLED: 10/13/23	SAMPLED BY: SSC

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
brown Silty SAND with Gravel	Test Pit TP-04 depth = 8 feet	SM, Silty Sand with Gravel

LABORATORY TEST DATA

LABORATORY EQUIPMENT: Liquid Limit Machine, Hand Rolled

TEST PROCEDURE: ASTM D4318

ATTERBERG LIMITS

liquid limit =	41
plastic limit =	26
plasticity index =	15

LIQUID LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	32.63	33.85	33.77	33.71
dry soil + pan weight, g =	29.16	29.98	29.91	29.83
pan weight, g =	20.42	20.56	20.67	20.77
N (blows) =	33	26	22	16
moisture, % =	39.7 %	41.1 %	41.8 %	42.8 %

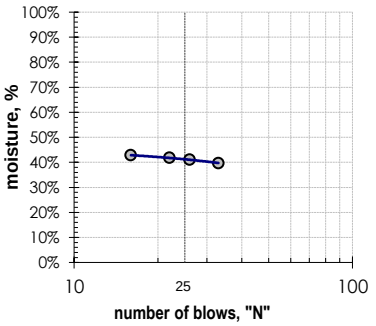
SHRINKAGE

shrinkage limit =	n/a
shrinkage ratio =	n/a

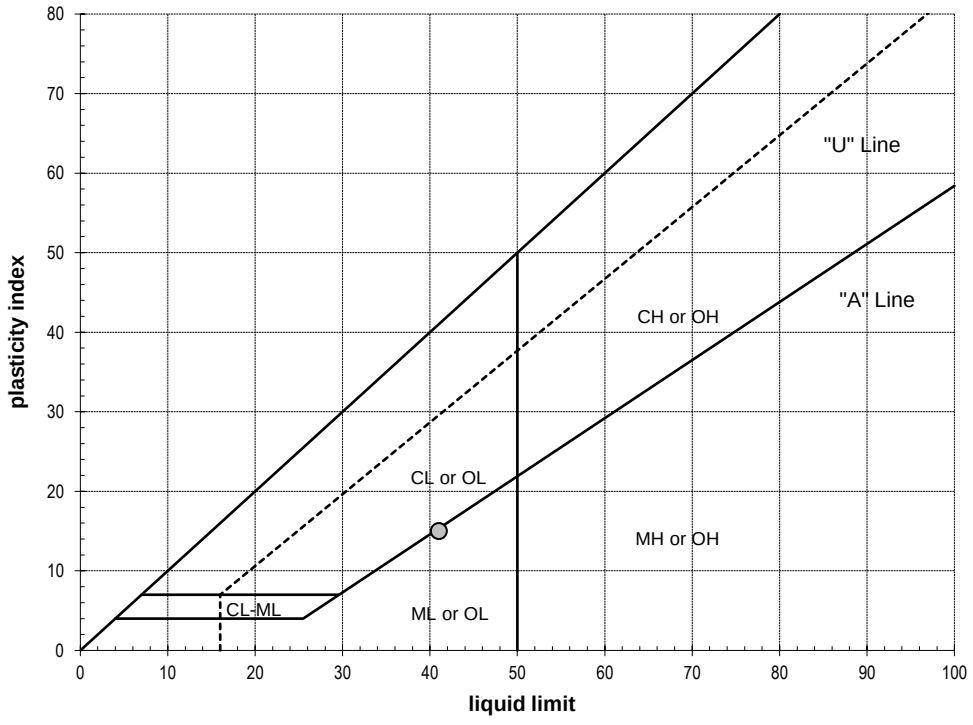
PLASTIC LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	27.58	27.20		
dry soil + pan weight, g =	26.23	25.81		
pan weight, g =	20.93	20.42		
moisture, % =	25.5 %	25.8 %		

LIQUID LIMIT



PLASTICITY CHART



ADDITIONAL DATA

% gravel =	22.0%
% sand =	33.1%
% silt and clay =	45.0%
% silt =	n/a
% clay =	n/a
moisture content =	41%

DATE TESTED	TESTED BY
10/27/23	MRS

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PARTICLE-SIZE ANALYSIS REPORT

PROJECT	CLIENT	PROJECT NO.	LAB ID
Mills Camas 313 SE Leadbetter Road Camas, Washington 98607	HSR Development 500 E. Broadway, Suite 120 Vancouver, Washington 98660	HSR-1-01-1	S23-1357
		REPORT DATE: 10/30/23	FIELD ID: TP9.1
		DATE SAMPLED: 10/13/23	SAMPLED BY: SSC

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
brownish red Silty SAND with Gravel	Test Pit TP-09 depth = 2 feet	SM, Silty Sand with Gravel
SPECIFICATIONS none		**AASHTO CLASSIFICATION** A-4(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

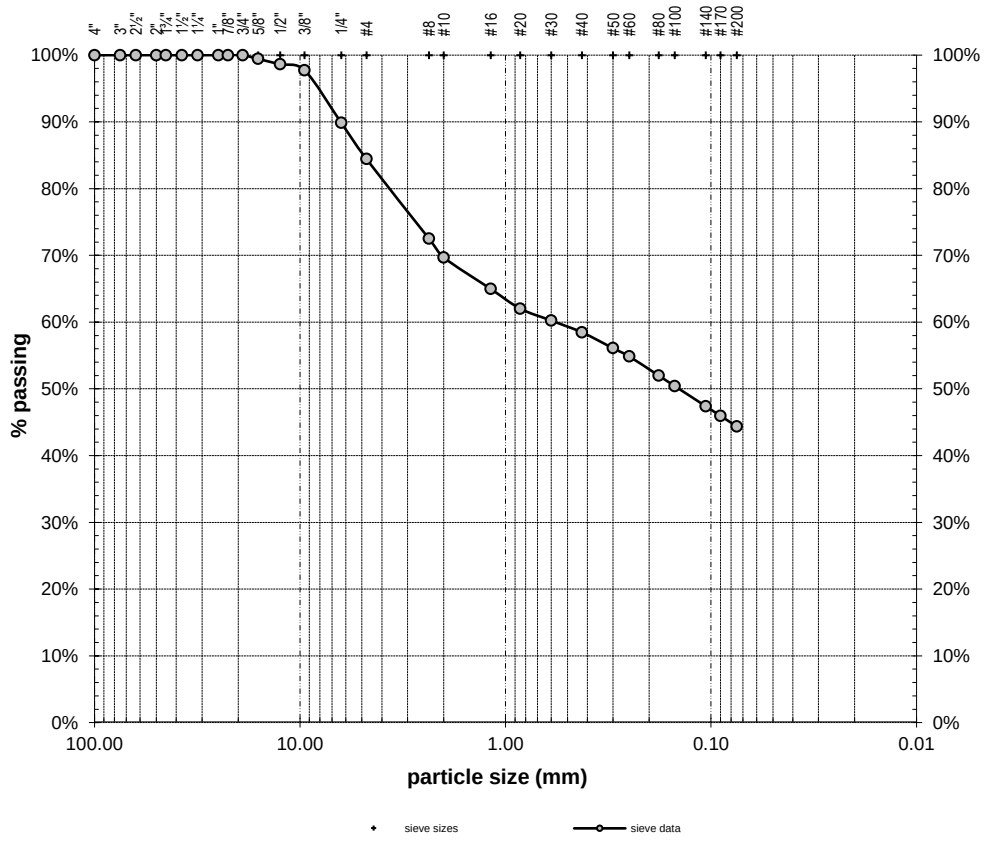
ADDITIONAL DATA

initial dry mass (g) =	1551.4		
as-received moisture content =	20%	coefficient of curvature, C_C =	n/a
liquid limit =	39	coefficient of uniformity, C_U =	n/a
plastic limit =	31	effective size, $D_{(10)}$ =	n/a
plasticity index =	8	$D_{(30)}$ =	n/a
fineness modulus =	n/a	$D_{(60)}$ =	0.573 mm

SIEVE DATA

% gravel = 15.6%
% sand = 40.1%
% silt and clay = 44.4%

GRAIN SIZE DISTRIBUTION



	SIEVE SIZE US	SIEVE SIZE mm	PERCENT PASSING SIEVE act.	SIEVE interp.	SPECS max	SPECS 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		100%		
	1.00"	25.0		100%		
	7/8"	22.4		100%		
	3/4"	19.0	100%			
	5/8"	16.0		99%		
	1/2"	12.5		99%		
	3/8"	9.50	98%			
	1/4"	6.30		90%		
	#4	4.75	84%			
SAND	#8	2.36		73%		
	#10	2.00	70%			
	#16	1.18		65%		
	#20	0.850	62%			
	#30	0.600		60%		
	#40	0.425	58%			
	#50	0.300		56%		
	#60	0.250	55%			
	#80	0.180		52%		
	#100	0.150	50%			
	#140	0.106		47%		
	#170	0.090		46%		
	#200	0.075	44%			

DATE TESTED	TESTED BY
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ATTERBERG LIMITS REPORT

PROJECT	CLIENT	PROJECT NO.	LAB ID
Mills Camas 313 SE Leadbetter Road Camas, Washington 98607	HSR Development 500 E. Broadway, Suite 120 Vancouver, Washington 98660	HSR-1-01-1	S23-1357
		REPORT DATE: 10/30/23	FIELD ID: TP9.1
		DATE SAMPLED: 10/13/23	SAMPLED BY: SSC

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
brownish red Silty SAND with Gravel	Test Pit TP-09 depth = 2 feet	SM, Silty Sand with Gravel

LABORATORY TEST DATA

LABORATORY EQUIPMENT: Liquid Limit Machine, Hand Rolled

TEST PROCEDURE: ASTM D4318

ATTERBERG LIMITS

liquid limit =	39
plastic limit =	31
plasticity index =	8

LIQUID LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	35.74	32.23	34.46	32.25
dry soil + pan weight, g =	31.59	29.05	30.61	28.96
pan weight, g =	20.66	20.76	20.76	20.82
N (blows) =	35	28	21	17
moisture, % =	38.0 %	38.4 %	39.1 %	40.4 %

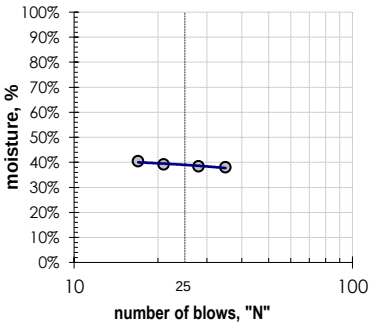
SHRINKAGE

shrinkage limit =	n/a
shrinkage ratio =	n/a

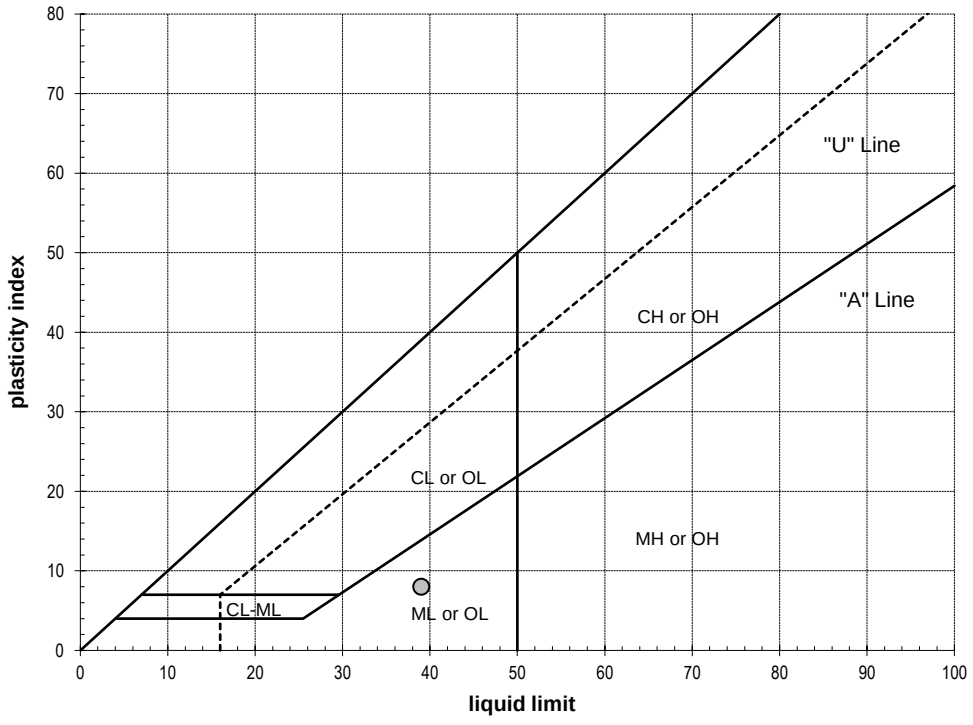
PLASTIC LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	27.76	27.39		
dry soil + pan weight, g =	26.10	25.87		
pan weight, g =	20.78	20.94		
moisture, % =	31.2 %	30.8 %		

LIQUID LIMIT



PLASTICITY CHART



ADDITIONAL DATA

% gravel =	15.6%
% sand =	40.1%
% silt and clay =	44.4%
% silt =	n/a
% clay =	n/a
moisture content =	20%

DATE TESTED	TESTED BY
10/27/23	MRS

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APPENDIX C
REPORT LIMITATIONS AND IMPORTANT INFORMATION

Geotechnical and Environmental 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 QA/QC

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 QA/QC construction observation and testing to verify soil conditions do not differ materially or significantly from the interpreted conditions utilized for preparation of this report.

Therefore, this report contains several recommendations for field observation and testing by Columbia West personnel during construction activities. Actual subsurface conditions are more readily observed and discerned during the earthwork phase of construction when soils are exposed. Columbia West cannot accept responsibility for deviations from recommendations described in this

report or future performance of structural facilities if another consultant is retained during the construction phase or Columbia West is not engaged to provide construction observation to the full extent recommended.

Collected Samples

Uncontaminated samples of soil or rock collected in connection with this report will be retained for thirty days. Retention of such samples beyond thirty days will occur only at client's request and in return for payment of storage charges incurred. All contaminated or environmentally impacted materials or samples are the sole property of the client. Client maintains responsibility for proper disposal.

Report Contents

This geotechnical or environmental report should not be copied or duplicated unless in full, and even then only under prior written consent by Columbia West, as indicated in further detail in the following text section entitled *Report Ownership*. The recommendations, interpretations, and suggestions presented in this report are only understandable in context of reference to the whole report. Under no circumstances should the soil boring or test pit excavation logs, monitor well logs, or laboratory analytical reports be separated from the remainder of the report. The logs or reports should not be redrawn or summarized by other entities for inclusion in architectural or civil drawings, or other relevant applications.

Report Limitations for Contractors

Geotechnical or environmental reports, unless otherwise specifically noted, are not prepared for the purpose of developing cost estimates or bids by contractors. The extent of exploration or investigation conducted as part of this report is usually less than that necessary for contractor's needs. Contractors should be advised of these report limitations, particularly as they relate to development of cost estimates. Contractors may gain valuable information from this report, but should rely upon their own interpretations as to how subsurface conditions may affect cost, feasibility, accessibility and other components of the project work. If believed necessary or relevant, contractors should conduct additional exploratory investigation to obtain satisfactory data for the purposes of developing adequate cost estimates. Clients or developers cannot insulate themselves from attendant liability by disclaiming accuracy for subsurface ground conditions without advising contractors appropriately and providing the best information possible to limit potential for cost overruns, construction problems, or misunderstandings.

Report Ownership

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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.

7. Critical Areas Reports

CRITICAL AREAS REPORT

May 19, 2025







ICG 252nd Property

Camas, Washington

Prepared for

HSR Capital, LLC

19120 SE 34th St. Suite #103

Vancouver, WA 98683

(360) 798-6458

Prepared by

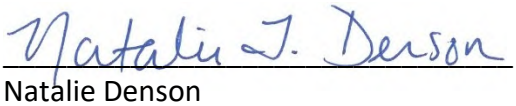
Ecological Land Services

1157 3rd Avenue, Suite 220A • Longview, WA 98632

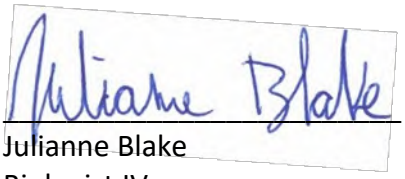
(360) 578-1371 • Project Number 3341.03

SIGNATURE PAGE

The information and data in this report was compiled and prepared under the supervision and direction of the undersigned.



Natalie Denson
Biologist



Julianne Blake
Biologist IV

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INTRODUCTION

Ecological Land Services, Inc. (ELS) was contracted by HSR Capital, LLC to complete a critical areas report for Clark County Tax Parcel Number 178175000, located at 305 SE 252nd Avenue in Camas, Washington. The site is approximately 15 acres and is located within Section 35, Township 2 North, Range 3 East of the Willamette Meridian (Figure 1). ELS biologists conducted a site visit on August 15, 2024 to determine the presence and extent of wetlands and fish and wildlife habitat conservation areas onsite. This critical areas report summarizes ELS findings in accordance with *City of Camas Municipal Code (CMC) Chapter 16.53 Wetlands* and *Chapter 16.61 Fish and Wildlife Habitat Conservation Areas* (March 2025).

SITE DESCRIPTION

The approximately 15-acre site consists of Clark County Tax Parcel Number 178175000 and is accessed by a gravel road off SE 252nd Avenue from the north. The site is zoned as North Shore Lower Density Residential (LD-NS), Mixed Use (MX-NS), and North Shore Commercial (C-NS). The properties surrounding the site consist of single-family homes, farmland, and undeveloped forested land. The northwest portion of the site has a single-family residence and fenced area for livestock. Two wetlands (Wetland A and Wetland B) and one stream (Stream A) were located onsite. A cluster of 16 Oregon white oak trees (*Quercus garryana*, FACU) is present in the central western portion, with 3 of the oaks existing onsite and the remaining 13 located on the western adjacent parcel (Figure 2). One wetland is located in the northeastern portion of the site and continues offsite to the north, east, and south. A small portion of a second wetland is located in the northwest corner of the site and continues offsite to the southwest. The southern portion of the site consists of undeveloped forested land. Topography varies, as it is generally level in the north and northeast portions with a depression in the northwest corner corresponding to the location of Wetland B. Topography in the remainder of the site consists of moderate to steep slopes that descend towards the onsite portions of Wetland A and Stream A. General vegetation consists of grasses, weedy herbs, and forbs in the northwest portion, and the remainder of the site consists of forested canopy containing a mix of coniferous and deciduous trees and an herbaceous layer.

METHODOLOGY

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 Appendix 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. The ordinary high water mark (OHWM) delineation was conducted following *RCW 90.58.030* and *Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State* (Ecology 2016).

ELS biologists evaluated the property on August 15, 2024, for the presence of critical areas including streams, wetlands, and other fish and wildlife habitat conservation areas within or near the site. Two wetlands (Wetlands A and B) were delineated onsite. The onsite boundaries of Wetlands A and B were determined through changes in topography, vegetation, and evidence of wetland hydrology. Vegetation, soil, and hydrology data were collected from test plots to determine the location and extent of wetlands onsite. The offsite portion of Wetland A's boundaries on parcel 178171000 to the east were delineated by ELS biologists in November 2023 and are described in the *Revised Critical Areas Report for Enclave Property* (ELS 2025). The offsite portion of Wetland B's boundaries that extend onto parcel 177885000 to the west were delineated by ELS biologists on November 11, 2022, and are described in the *Critical Areas Report for Mills Property* (ELS 2025). The remaining offsite portions of Wetlands A and B were approximated using aerial images, topographic maps, and visual observations.

One stream (Stream A) was delineated onsite. The OHWM of Stream A was demarcated with orange flagging based on obvious changes in topography, vegetation, and indicators of seasonal flow. Both sides of the stream onsite were delineated, and the stream centerline was mapped. An agricultural ditch (Ditch A) was also delineated in the northeast corner of the site and its centerline was mapped. The locations of test plots, wetland flags, and OHWM flagging were recorded using a hand-held GPS unit capable of sub-meter accuracy under ideal conditions (Figure 2).

VEGETATION

General vegetation in the northwest portion of the property consists of weedy herbs and forbs. The remainder of the site consists of deciduous and coniferous trees and shrubs with a multi-layered subcanopy. Himalayan blackberry (*Rubus armeniacus*, FAC) was very dense in some portions of the site. 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 Appendix A.

WETLANDS

Dominant vegetation consists of **trees:** Oregon Ash (*Fraxinus latifolia*, FACW) and black cottonwood (*Populus balsamifera*, FAC); **shrubs:** Scouler's willow (*Salix scouleriana,* FAC) and Nootka rose (*Rosa nutkana,* FAC) and **herbs:** reed canarygrass (*Phalaris arundinacea,* FACW), common rush (*Juncus effusus,* FACW), water smartweed (*Polygonum amphibium,* OBL), and creeping buttercup (*Ranunculus repens*, FAC).

UPLANDS

Dominant vegetation consists of **trees:** Douglas fir (*Pseudotsuga menzeisii*, FACU); **shrubs:** osoberry (*Oemleria cerasiformis*, FACU), snowberry (*Symphoricarpos albus,* FACU), and thimbleberry (*Rubus parviflorus*, FAC); and **herbs:** perennial ryegrass (*Lolium perenne*, FAC), trailing blackberry (*Rubus ursinus,* FACU), and western sword fern (*Polystichum munitum*, FACU).

SOILS

Soils onsite are mapped as Tisch silt loam, 0 to 3 percent slopes (ThA), Olympic stony clay loam, 3 to 30 percent slopes (OmE), Vader silt loam, 3 to 8 percent slopes (VaB), and Lauren very gravelly loam, 0 to 8 percent slopes (LIB) as referenced on the Natural Resources Conservation Service (NRCS) Web Soil Survey website (2025a; Figure 3). Appendix B contains the Wetland Determination Data Forms with soil descriptions.

Tisch silt loam, 0 to 3 percent slopes is characterized as very poorly drained with a depth to water table of about 0 to 12 inches below ground surface (BGS). ThA is formed within depressions with a parent material of volcanic ash, alluvium and diatomaceous earth. A typical profile of ThA consists of 0 to 31 inches of medial silt loam and 31 to 60 inches of muck BGS (NRCS, 2025a). ThA is rated as hydric by the NRCS (NRCS 2025b).[1]

Olympic stony clay loam, 3 to 30 percent slopes is characterized as well drained with a depth to water table of more than 80 inches BGS. OmE is formed on mountain slopes with parent material consisting of residuum and colluvium from igneous rock. A typical profile of OmE consists of 0 to 13 inches of stony clay loam, 13 to 44 inches of clay loam, and 44 to 60 inches of gravelly clay loam BGS (NRCS 2025a). OmE is not rated as hydric by the NRCS (NRCS 2025b).

Vader silt loam, 3 to 8 percent slopes is characterized as well drained with a depth to water table of more than 80 inches BGS. VaB has parent material consisting of residuum and colluvium from sandstone with a mixture of volcanic ash in the upper part. A typical profile of VaB consists of 0 to 6 inches of ashy silt loam, 6 to 30 inches of ashy loam, and 30 to 34 inches of weathered bedrock BGS (NRCS 2025a). VaB is not rated as hydric by the NRCS (NRCS 2025b).

Lauren very gravelly loam, 0 to 8 percent slopes is characterized as well drained with a depth to water table of more than 80 inches BGS. LIB is formed on terraces with parent material consisting of alluvium with volcanic ash. A typical profile of LIB consists of 0 to 27 inches of very gravelly medial loam, 27 to 30 inches of very gravelly coarse sandy loam, and 30 to 60 inches of very gravelly loamy coarse sand BGS (NRCS 2025a). LIB is not rated as hydric by the NRCS (NRCS 2025b).

Table 1. Mapped Soils

Soil Series[1]	Percent Slope[1]	Landform[1]	Drainage Class[1]	Hydric Soil[2]	Test Plots per Soil Series
Tisch silt loam (ThA)	0 to 3	Depressions	Very poorly drained	Yes	A1, A2, A5, A6
Olympic stony clay loam (OmE)	3 to 30	Mountain Slopes	Well drained	No	A3, A4
Vader silt loam (VaB)	3 to 8	--	Well drained	No	--
Lauren very gravelly loam (LIB)	0 to 8	Terraces	Well drained	No	--

[1]NRCS 2025a; [2]NRCS 2025b.

[1]Areas mapped with hydric soils do not necessarily mean that an area is or is not a wetland—hydrology, hydrophytic vegetation, and hydric soils must all be present to classify an area as a wetland.

Wetland Soils

Evaluated wetland soils consist of mucky clays and silty clay loams with very dark brown, very dark gray, dark gray, and gray (10YR 2/2, 3/1, 4/1, 5/1) matrix colors. Redoximorphic features were observed as concentrations in the matrix with dark brown, reddish yellow, and yellowish brown (7.5YR 3/4, 7/6; 10YR 5/4) matrix colors. Primary hydric soil indicators Depleted Matrix (F3), and Depleted Below Dark Surface (A11) were observed within Wetland A (Appendix B). Test plot data for Wetland B are in the *Critical Areas Report for Mills Property* (ELS 2025).

Upland Soils

Evaluated upland soils consist of silty loams and clays with very dark gray, very dark grayish brown, dark brown, brown, and grayish brown (10YR 3/1, 3/2, 3/3, 4/3, 5/2) matrix colors. Evaluated upland soils did not meet any hydric soil indicators.

Hydrology

Wetland A

Wetland A is a large, depressional, seasonally flooded, saturated only wetland with a seasonally flowing stream (Stream A) within the wetland. Observed wetland hydrology consisted of primary hydrology indicators High Water Table (A2) and Saturation (A3) and secondary hydrology indicators Geomorphic Position (D2) and FAC Neutral Test (D5). Hydrology is supported by precipitation, surface runoff, a shallow groundwater table, and seasonal overbank flooding from Stream A, which serves as Wetland A's outlet.

Wetland B

Wetland B is a seasonally flooded wetland located primarily offsite to the west in a topographical depression. Surface water was observed in Wetland B during site visits that took place between November 2022 and January 2023, however, it should be noted that no surface hydrology was observed during the September 2022 site visits. During the November 11, 2022 site visit, 12 to 18 inches of surface water was documented in the wetland. Wetland B provides flood storage and delay and groundwater recharge functions. Hydrology is supported by a shallow groundwater table, precipitation, and runoff from adjacent uplands, and the wetland does not have an outlet.

Stream A

The onsite portion of Stream A is mapped by WDNR as a Type-U stream (unknown; WDNR 2025). Stream A originates and enters Wetland A near the central portion of the site and flows approximately 560 feet northeasterly to the site boundary. Offsite, Stream A mapping changes to a Type-N (non-fish-bearing) water and flows south for approximately 0.20 miles and then southwesterly for approximately 0.42 miles before discharging into Lacamas Lake (WDNR 2025; Figure 2). According to WAC 222-16-031, Stream A meets the definition of a Type 3 water based on having a defined channel of 2 feet or greater within the bankfull width, a gradient of 16 percent or less, and the absence of any fish passage barriers. As such, Stream A is considered a Type-F (fish-bearing) stream. Onsite hydrology is supported by precipitation, a shallow groundwater table, and runoff from upslope areas. According to the Washington State

Department of Ecology's Water Quality Atlas, the site is in the Lacamas Creek 12-digit hydrologic unit code (HUC) 170800050305 and Watershed Resource Inventory Area (WRIA) 28 Salmon – Washougal.

Precipitation

Precipitation data were gathered from the NOAA Regional Climate Centers *Multnomah County, Oregon, WETS Station: Troutdale*, which is the closest station to the project site with the most complete set of precipitation data. Precipitation two weeks prior to the site visit in August 2024 totaled 0.00 inches. While June and August precipitation levels were normal, July precipitation was below normal levels. Furthermore, the Corps Antecedent Precipitation Tool (APT) indicates rainfall two months prior to the site visit was normal (Corps 2024). A copy of the APT data is provided in Appendix D and precipitation data is summarized in Table 2. Precipitation data surrounding the November 2022 offsite delineation of Wetland B are described in the *Critical Areas Report for Mills Property* (ELS 2025).

Table 2. Precipitation Data

Precipitation (inches)								
Date of Visit	Two Weeks Prior	30 Days Ending	Observed	30%	70%	DAREM[1]		
						Value	Weight	Total
08/15/2024 0.00	0.00	08/2024	0.15	0.08	0.56	2	3	6
		07/2024	0.10	0.37	0.10	1	2	2
		06/2024	3.55	1.98	3.95	2	1	2
Rainfall 3 months prior was: drier than normal (sum 6-9), **normal** (sum 10-14), wetter than normal (sum 15-18).								10
Year to Date Mean Rainfall[2,3]: 38.24 inches								
Year to Date Actual Rainfall[3]: 40.71 inches								

[1]Direct Antecedent Rainfall Evaluation Methods (Sumner et al 2009); [2]Based on 2004-2024 precipitation data; [3]Based on a water year, which starts on October 1.

Critical Areas Inventories

National Wetlands Inventory

The National Wetlands Inventory (NWI; USFWS 2025) mapping indicates the presence of one R4SBC[2] riverine waterbody offsite to the east (Figure 4). ELS partially agrees with the NWI, as mapping of the R4SBC waterbody corresponds with the location of a portion of Stream A; however, ELS delineated two wetlands onsite, which NWI mapping does not identify. Critical area inventory maps are typically used to gather information about a region and due to the large scale necessary for regional mapping, are limited in accuracy for localized analyses.

Clark County Critical Areas

The Clark County Critical Areas (CCCA) map indicates potential and permitted wetland presence and hydric soils onsite (Figure 5). ELS partially agrees with the mapping of permitted and potential

[2]Riverine, intermittent, streambed, seasonally flooded.

wetlands as they generally correspond with the location of Wetland A; however, hydric soils are not mapped in the northwest corner of the site where Wetland B is located.

Priority Habitats and Species

The Washington Department of Fish and Wildlife (WDFW) Priority Habitat and Species (PHS) maps indicate an oak woodland is present onsite along the central-western boundary of the parcel (WDFW 2025a; Figure 6). ELS generally agrees with the PHS mapping, as a cluster of 16 oak trees were observed in the central-western portion of the parcel extending offsite to the west in the general vicinity of the PHS mapped oaks.

WDNR Forest Practices

The Washington Department of Natural Resources (WDNR) Forest Practices Application Mapping Tool (FPAMT) indicates a Type-U stream at the location of Stream A onsite and a Type-U stream offsite to the northeast flowing into the Type-N stream that runs along the eastern site boundary (Figure 7). ELS investigations generally agree with the location of the mapped streams as they generally correspond to the location of Stream A. However, ELS does not agree with the stream typing as Stream A meets the criteria of a Type-F water according to WAC 222-16-031.

Critical Areas Summary

Wetland A

Wetland A is Category III, depressional, emergent (EM), forested (FO), seasonally flooded (SF) and saturated only (SO) wetland with a seasonally flowing stream (SFS) within the wetland, with approximately 2.26 acres onsite and a total area of approximately 10.06 acres (Figure 8). Portions of Wetland A's offsite boundary were approximated by utilizing lidar and topographic maps to determine obvious changes in elevation as well as observing changes in vegetation while onsite. Wetland A's onsite vegetation is dominated by Oregon ash, common rush, and reed canarygrass. Hydrology is supported by precipitation, surface runoff, a shallow groundwater table, and seasonal overbank flooding from Stream A, which serves as Wetland A's outlet. According to the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Rating System), Wetland A is a Category III wetland, scoring 7 points for water quality functions, 4 points for hydrologic functions, and 7 points for habitat functions, for a total score of 18 points. The wetland rating form is in Appendix C.

Wetland B

Wetland B is a Category III, depressional, EM, FO, SF wetland, with approximately 0.03 acres onsite and a total area of approximately 0.84 acres, located primarily offsite to the west. Wetland B's vegetation is dominated by Oregon ash, black cottonwood, Scouler's willow, Nootka rose, reed canarygrass, and water smartweed. Hydrology is supported by a shallow groundwater table, precipitation, and runoff from adjacent uplands, and the wetland has no outlet. According to the Rating System, Wetland B is a Category III wetland, scoring 6 points for water quality functions, 5 points for hydrologic functions, and 7 points for habitat functions, for a total score of 18 points. The wetland rating form can be found in Appendix C.

Wetland Buffers

Standard wetland buffers are based on wetland category and habitat score from the Rating System, in conjunction with the proposed land use intensity (*CMC 16.53.040(B)(2)*). Wetland A and Wetland B are both Category III wetlands, each with a habitat score of 7 points. According to *CMC Table 16.53.040-3*, the standard buffer widths for both wetlands are 75 feet, 110 feet, and 150 feet for proposed low, moderate, and high land use intensities, respectively. According to *CMC 16.53.040(B)(4)(b)(i)*, functionally isolated buffer areas are areas that do not protect the wetland from adverse impacts, such as preexisting roads and structures, and shall be excluded from buffer requirements. Portions of the wetland buffers are functionally isolated due to existing impervious surfaces such as the house onsite and the road that runs through the central portion of the site (Figure 2). Wetlands and buffers are summarized in Table 3.

Stream A

Onsite, Stream A is mapped as Type-U by WDNR (WDNR 2025). According to WAC 222-16-031, Stream A meets the definition of a Type 3 water based on having a defined channel of 2 feet or greater within the bankfull width, a gradient of 16 percent or less, and the absence of any fish passage barriers (WDFW 2025b). As such, Stream A is considered a Type-F (fish-bearing) stream. Onsite hydrology is supported by precipitation, a shallow groundwater table, and runoff from upslope areas. Both sides of Stream A's onsite OHWM and the centerline of the stream were mapped. The streambed is composed of sediment and silty sands, with approximately 12 to 24 inches of flowing water, and banks that are sloping but not prominent.

Stream Buffers

According to Washington State Fish Passage online mapping, Stream A may have the potential presence of resident fish (WDFW 2025b). According to *CMC 16.61.040(D),* non-anadromous Type-F streams require a 75-foot riparian buffer. The riparian buffer of Stream A is primarily vegetated with reed canarygrass, slough sedge, and a mixture of mature coniferous and deciduous trees with a multi-layered subcanopy. Stream A is summarized in Table 3.

Table 3. Critical Areas Summary

Identifier	Classification	Cowardin Class, Hydroperiod[4]	Habitat Score/ Category[5]	Proposed Land Use Intensity	Buffer Width[6,7]
Wetland A (2.26 acres onsite)	Depressional[1]	EM/FO, SF/SO/SFS	III/7	Low	75 feet
				Moderate	110 feet
Wetland B (0.03 acres onsite)		EM/FO, SF		High	150 feet
Stream A	Type F, non-anadromous[2]	--			75 feet

[1]NRCS 2008; [2]WAC 222-16-031; [3]WDNR 2025b; [4]FGDC 2013; [5]Hruby 2023; [6]CMC Table 16.53.040-3; [7]CMC 16.61.040(D).

Ditch A

Ditch A is an agricultural ditch that appears to have been created within uplands for the purpose of diverting upslope runoff into Stream A (Figure 2). According to *CMC 16.53.010(C)(2)(b),* Ditch A is exempt from buffers as detailed below:

> *Artificial. Wetlands created from non-wetland sites including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, stormwater facilities, farm ponds, and landscape amenities; provided, that wetlands created as mitigation shall not be exempted.*

Ditch A is not classified as a fish and wildlife habitat conservation area per *CMC 16.61.010(A)(5)* which defines "Water of the State" as omitting, "man-made ditches or bio-swales that have been created from areas not meeting the definition of waters of the state."

Oregon White Oak

CMC Chapter 16.61 regulates Fish and Wildlife Habitat Conservation Areas, which include areas with which state or federally designated endangered, threatened, and sensitive species have a primary association, state priority habitats and areas associated with state priority species, habitats of local importance (Oregon white oak and Camas lily), naturally occurring ponds under 20 acres, waters of the state, bodies of water planted with game fish by a governmental or tribal entity, and state natural area preserves and natural resource conservation areas (*CMC 16.61.010(A)*).

WDFW identifies which oak communities are considered priority habitats through its Priority Habitats and Species (PHS) program. The Washington Natural Heritage Program (WNHP) defines a North Pacific Oak Woodland as a community dominated or co-dominated by oak and associated with dry, low-elevation sites or those with frequent fires pre-settlement (Nolan and Azerrad 2024). Oregon white oak woodlands are associated with eight different plant communities, including a wide variety of native herbaceous and shrub species. Oak woodlands provide a mix of feeding, resting, and breeding habitat for many wildlife species (Nolan and Azerrad 2024). In addition to oak woodlands, individual oak trees can be considered a priority habitat if they provide considerable value to wildlife. In addition to woodland communities, oaks are also associated with prairies and savannas in Washington. These communities are considered wooded grasslands and are associated with upland grassland and meadows (Rocchio and Crawford 2015).

A cluster of 16 Oregon white oak trees is present in the central western portion, with 3 of the oaks existing onsite and the remaining 13 located on the western adjacent parcel (Figure 2). The cluster has a contiguous dripline of 0.10 acres (onsite and offsite combined). Although PHS mapping identifies the cluster as an oak woodland, it does not meet the woodland size requirements, and each oak shall be considered an individual rather than part of an oak woodland. Several of the oak trees meet WDFW priority habitat criteria for individual oaks.

LIMITATIONS

ELS bases the above listed determinations and conclusions on standard scientific methodology and best professional judgment. In our opinion, local, state, and federal regulatory agencies should agree with the conclusions of this report. However, this should be considered a preliminary report and should be used at your own risk until it has been reviewed and 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.

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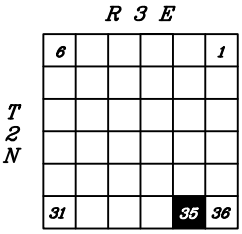
FIGURES

WASHINGTON

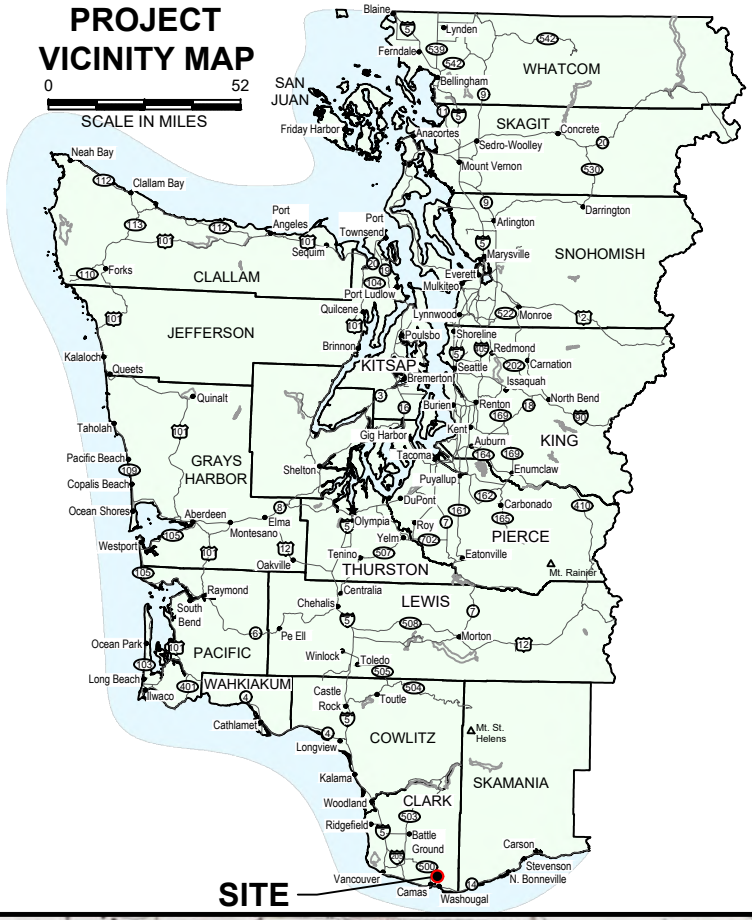


45.6188° Latitude
-122.4123° Longitude

LOCATION MAP



PROJECT VICINITY MAP



NOTE:
Quadrangle topographic map from USGS.

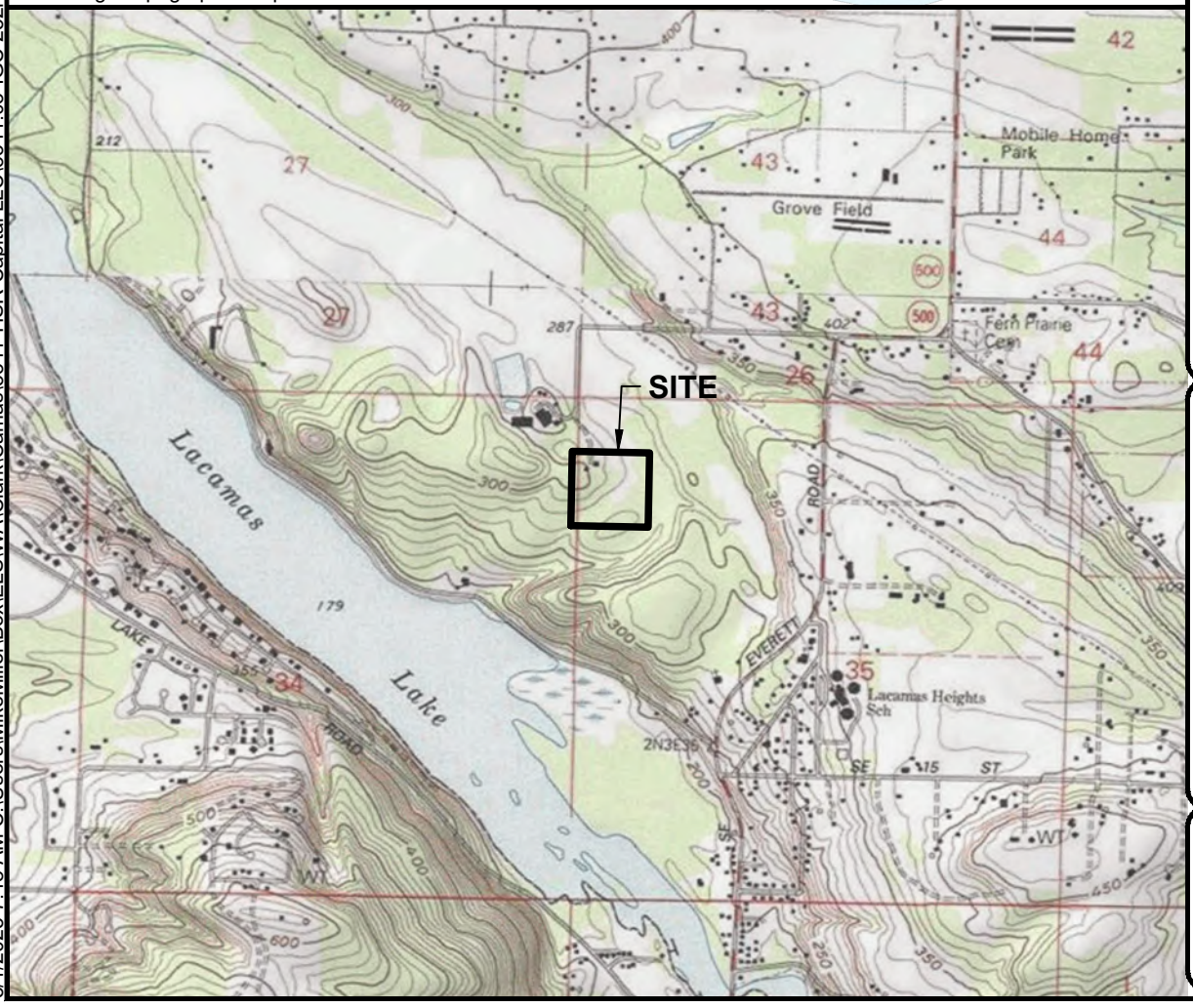


Figure 1
VICINITY MAP
ICG 252nd Property
HSR Capital LLC
City of Camas, Clark County, WA
Section 35, Township 2N, Range 3E, W.M.

DATE: 5/1/25
DWN: MPM
REQ. BY: ND
PRJ. MGR: JB
CHK:
PROJECT NO: 3341.03

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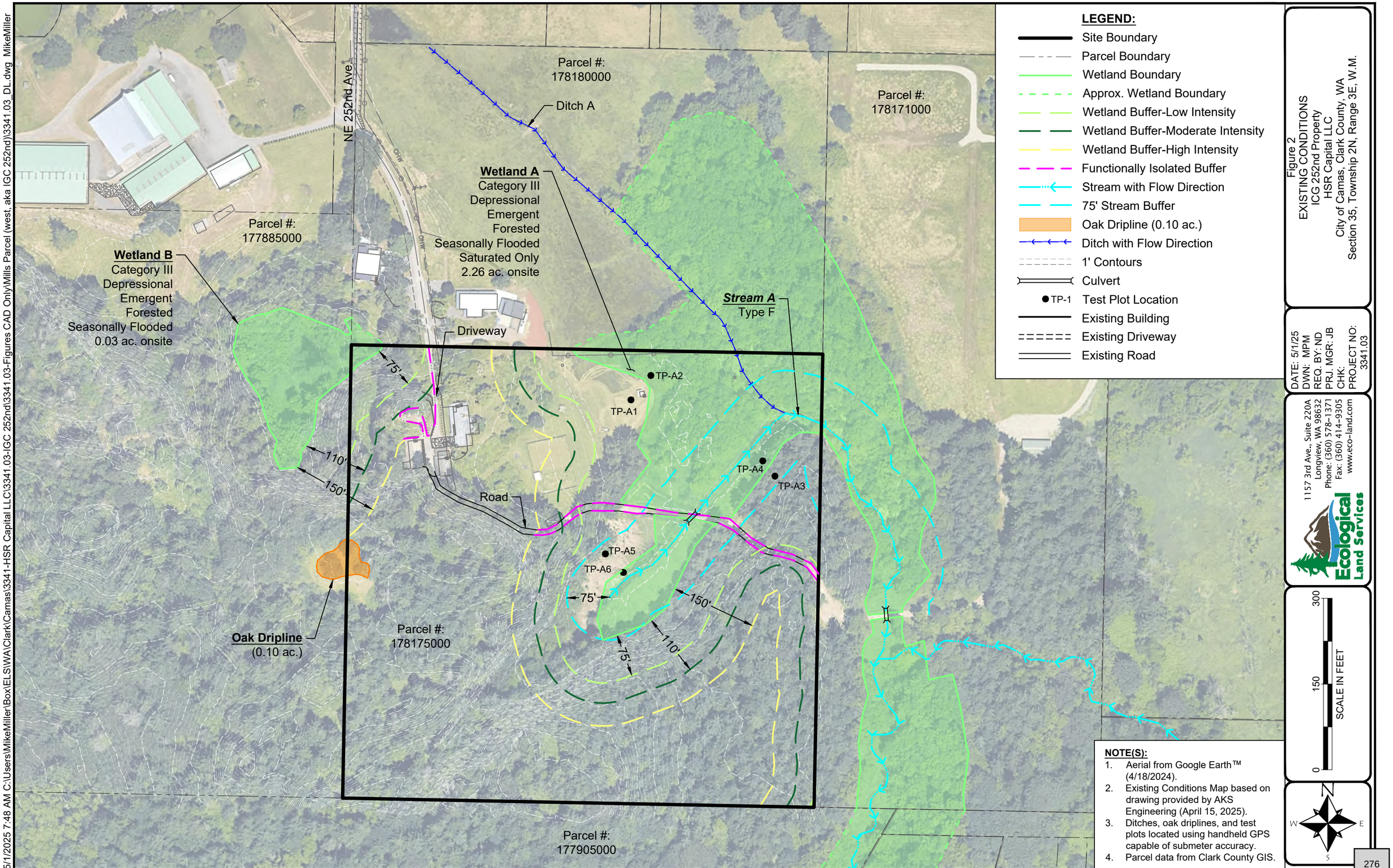

Figure 2
EXISTING CONDITIONS
ICG 252nd Property
HSR Capital LLC
City of Camas, Clark County, WA
Section 35, Township 2N, Range 3E, W.M.

DATE: 5/1/25
DWN: MPM
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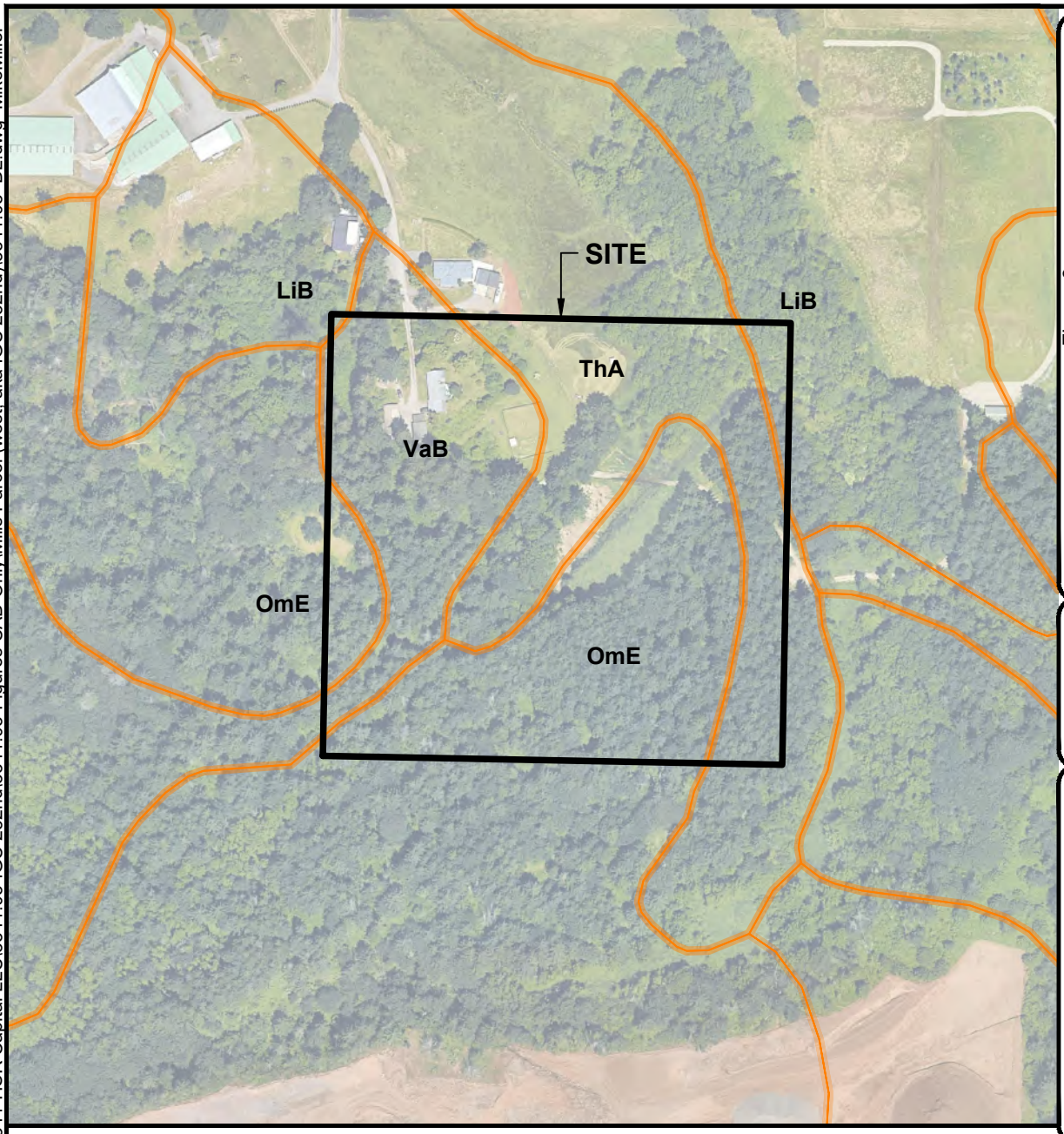

Figure 3
NRCS SOIL SURVEY
ICG 252nd Property
HSR Capital LLC
City of Camas, Clark County, WA
Section 35, Township 2N, Range 3E, W.M.

DATE: 5/1/25
DWN: MPM
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LEGEND:

- Site Boundary
- NRCS Soil Boundary

ThA Tisch silt loam, 0 to 3 percent slopes. **Hydric.**
VaB Vader silt loam, 3 to 8 percent slopes. Not Hydric.
LiB Lauren very gravelly loam, 0 to 8 percent slopes. Not Hydric.
OmE Olympic stony clay loam, 3 to 30 percent slopes. Not Hydric.

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

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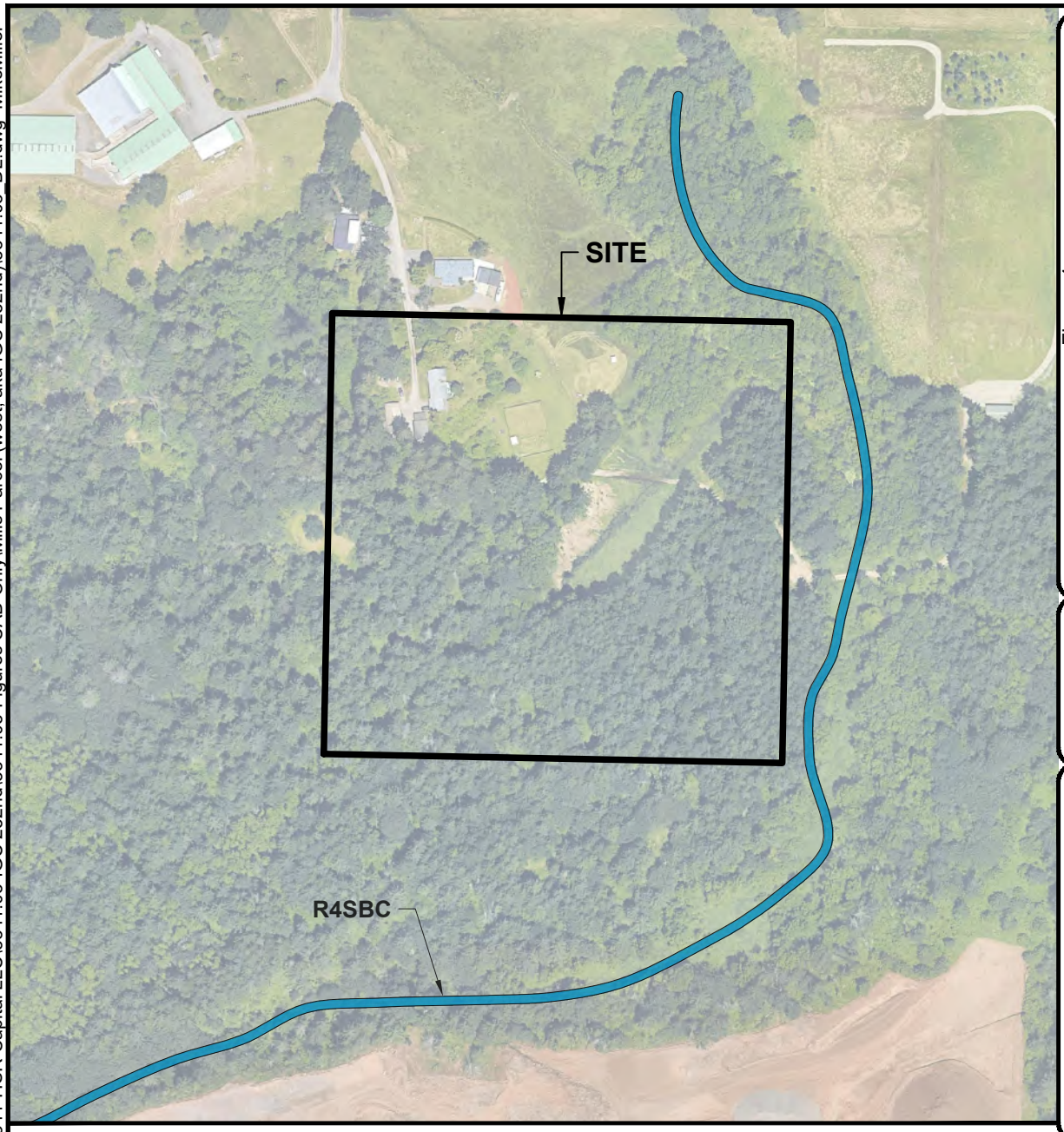

Figure 4
USFWS NATIONAL WETLANDS INVENTORY
ICG 252nd Property
HSR Capital LLC
City of Camas, Clark County, WA
Section 35, Township 2N, Range 3E, W.M.

DATE: 5/1/25
DWN: MPM
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No mapped wetlands indicated onsite by US Fish & Wildlife Service.

LEGEND:

Site Boundary

Wetlands

Riverine

R4SBC Riverine, Intermittent, Streambed, Seasonally Flooded

0 300 600
SCALE IN FEET

N W E S

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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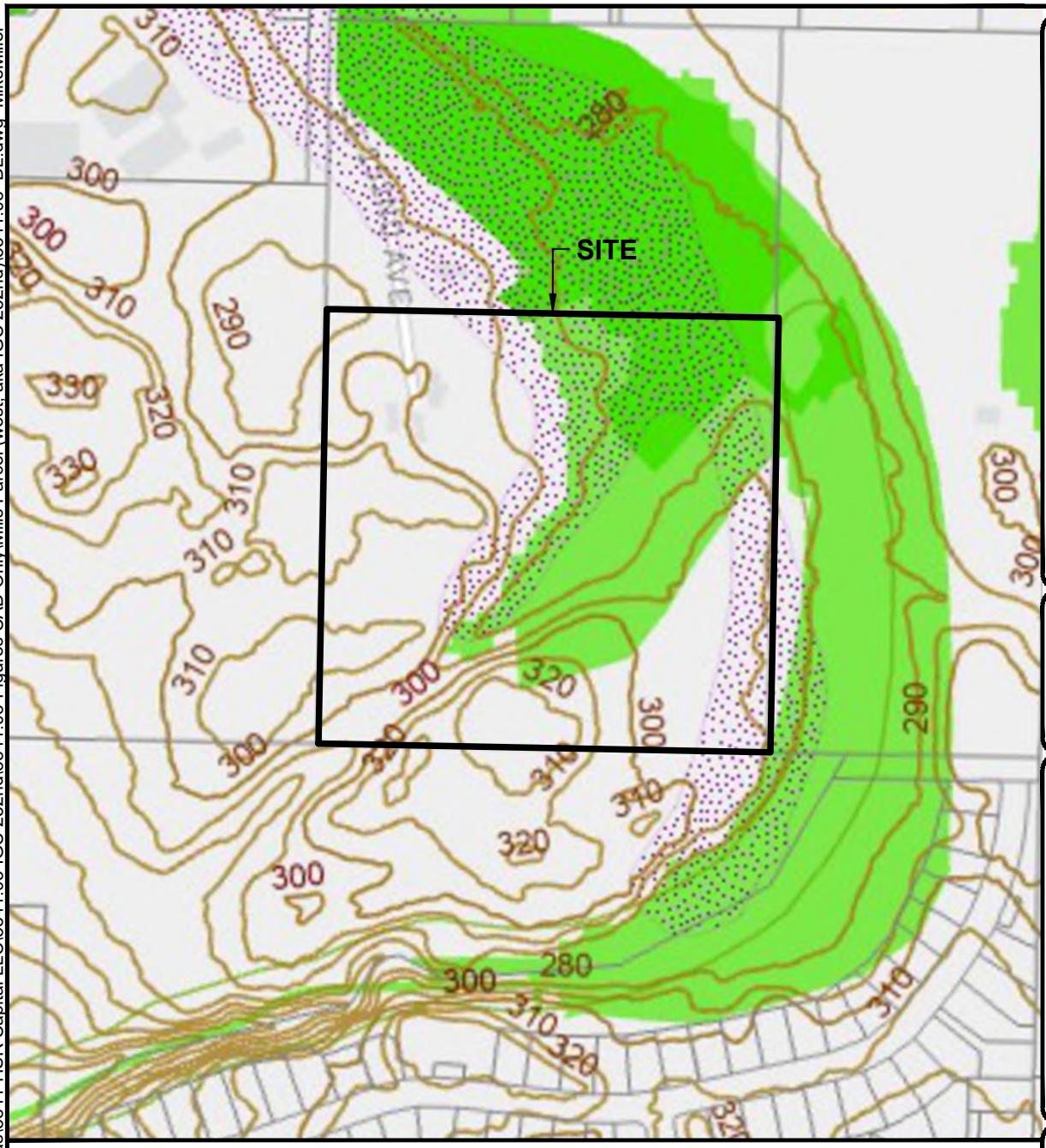

Figure 5
CLARK COUNTY CRITICAL AREAS
ICG 252nd Property
HSR Capital LLC
City of Camas, Clark County, WA
Section 35, Township 2N, Range 3E, W.M.

DATE: 5/1/25
DWN: MPM
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LEGEND:

- Site Boundary

Environmental
Priority Habitats and Species Group

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

Soils and Wetlands Inventory
- Hydric Soils
- Potential Wetlands Presence
- Permitted Wetland

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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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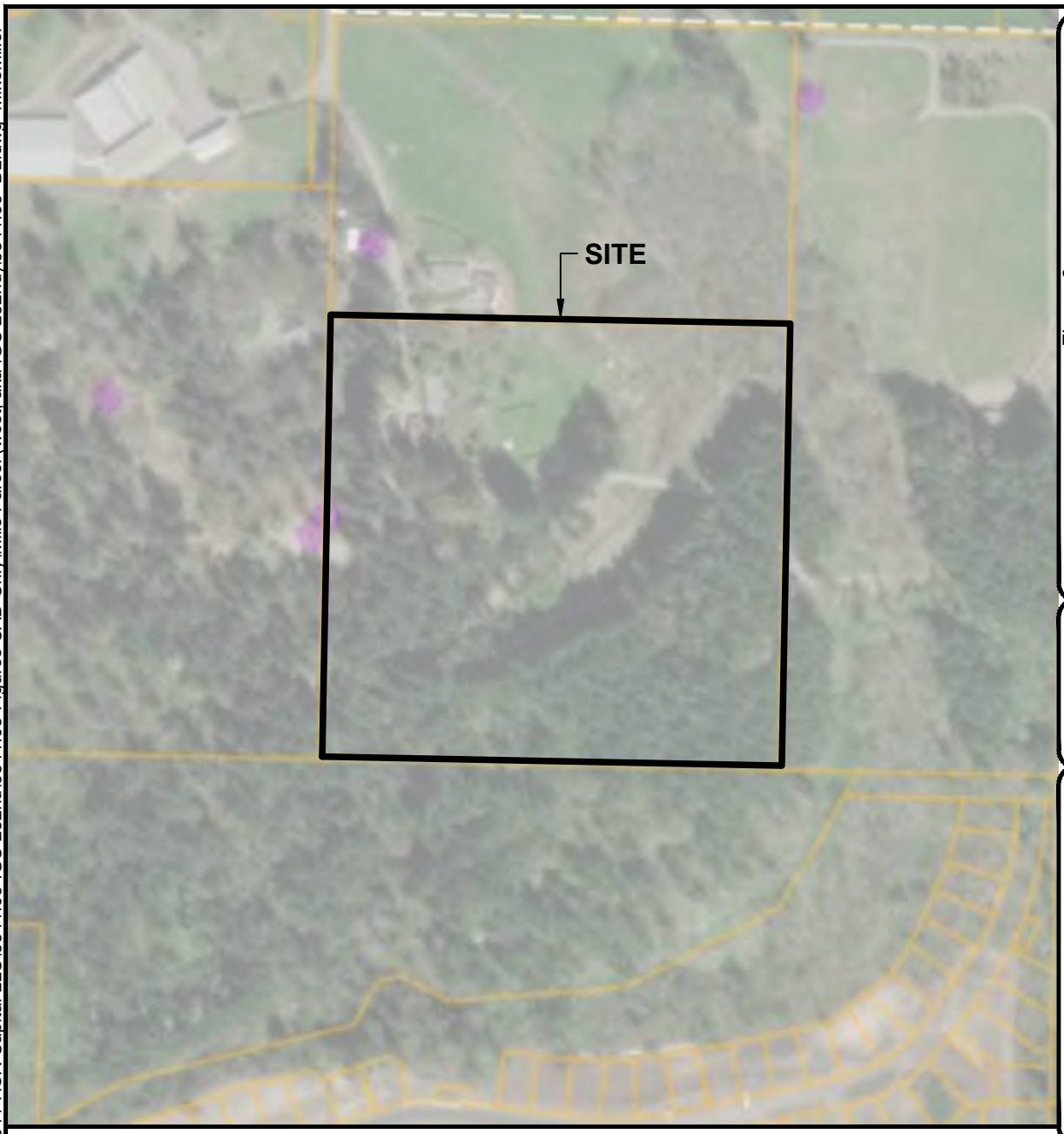

Figure 6
WDFW PRIORITY HABITATS AND SPECIES
ICG 252nd Property
HSR Capital LLC
City of Camas, Clark County, WA
Section 35, Township 2N, Range 3E, W.M.

DATE: 5/1/25
DWN: MPM
REQ. BY: ND
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Ecological Land Services

LEGEND:

- Site Boundary
- Parcel Boundary
- Oak Woodland

By Township
Cave or Cave Rich Areas

0 300 600
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NOTE: Map provided on-line by Washington State Department of Fish & Wildlife at web address:
http://apps.wdfw.wa.gov/phsontheweb/

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Figure 7
WDNR STREAM TYPE MAP
ICG 252nd Property
HSR Capital LLC
City of Camas, Clark County, WA
Section 35, Township 2N, Range 3E, W.M.

DATE: 5/1/25
DWN: MPM
REQ. BY: ND
PRJ. MGR: JB
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PROJECT NO: 3341.03

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Ecological Land Services

LEGEND:

- Site Boundary
- 40-foot Contours
  - 40 ft. Contours
- Water Courses (FP)
  - Type S
  - Type N, Np, Ns
- DNR Roads
  - Paved Road
  - Unpaved Road/Surface Unknown

0 300 600
SCALE IN FEET

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NOTE: Map provided on-line by Washington State Department of Natural Resources at web address: *http://fortress.wa.gov/dnr/app1/Fpars/viewer.htm*

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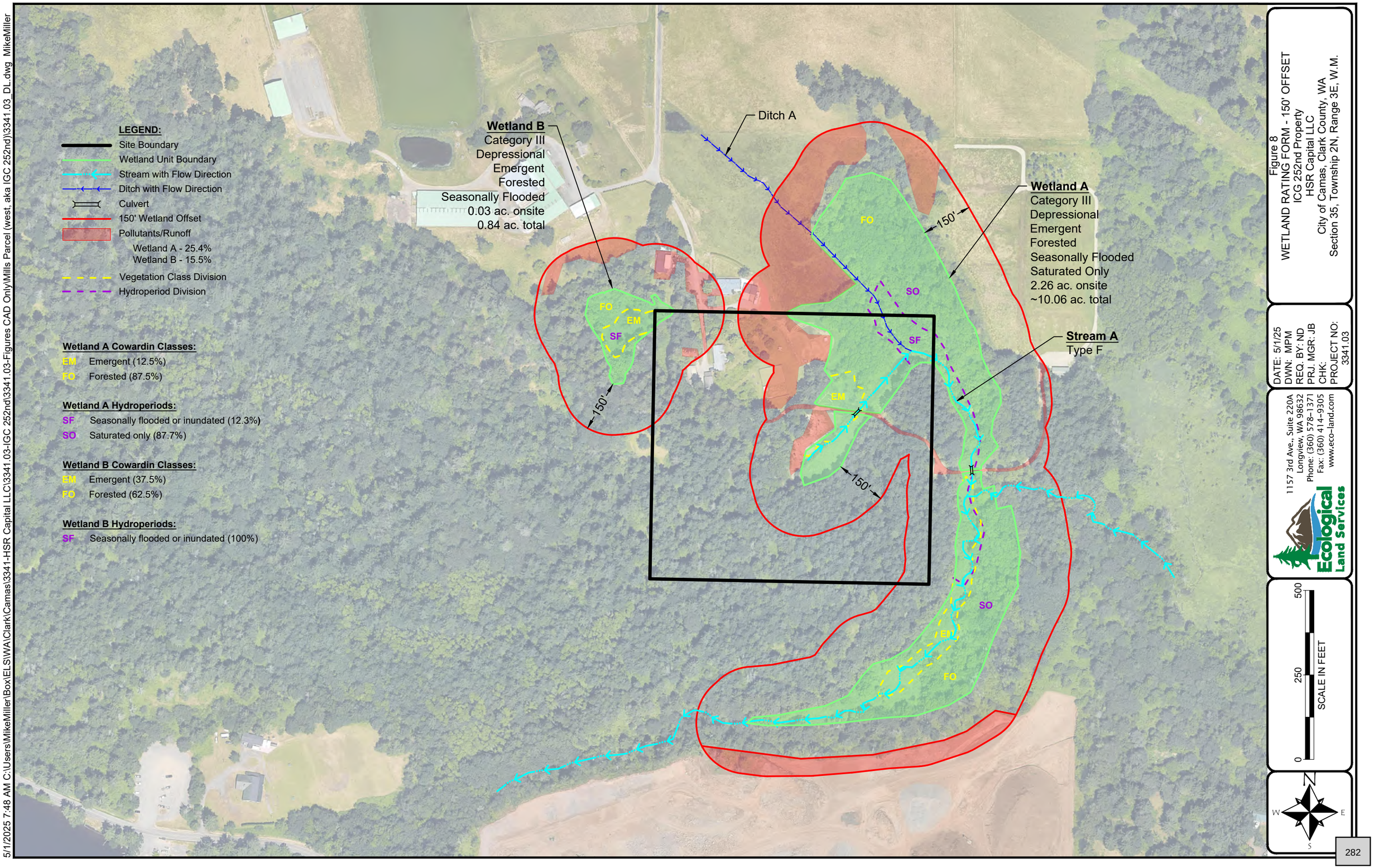

Figure 8
WETLAND RATING FORM - 150' OFFSET
ICG 252nd Property
HSR Capital LLC
City of Camas, Clark County, WA
Section 35, Township 2N, Range 3E, W.M.

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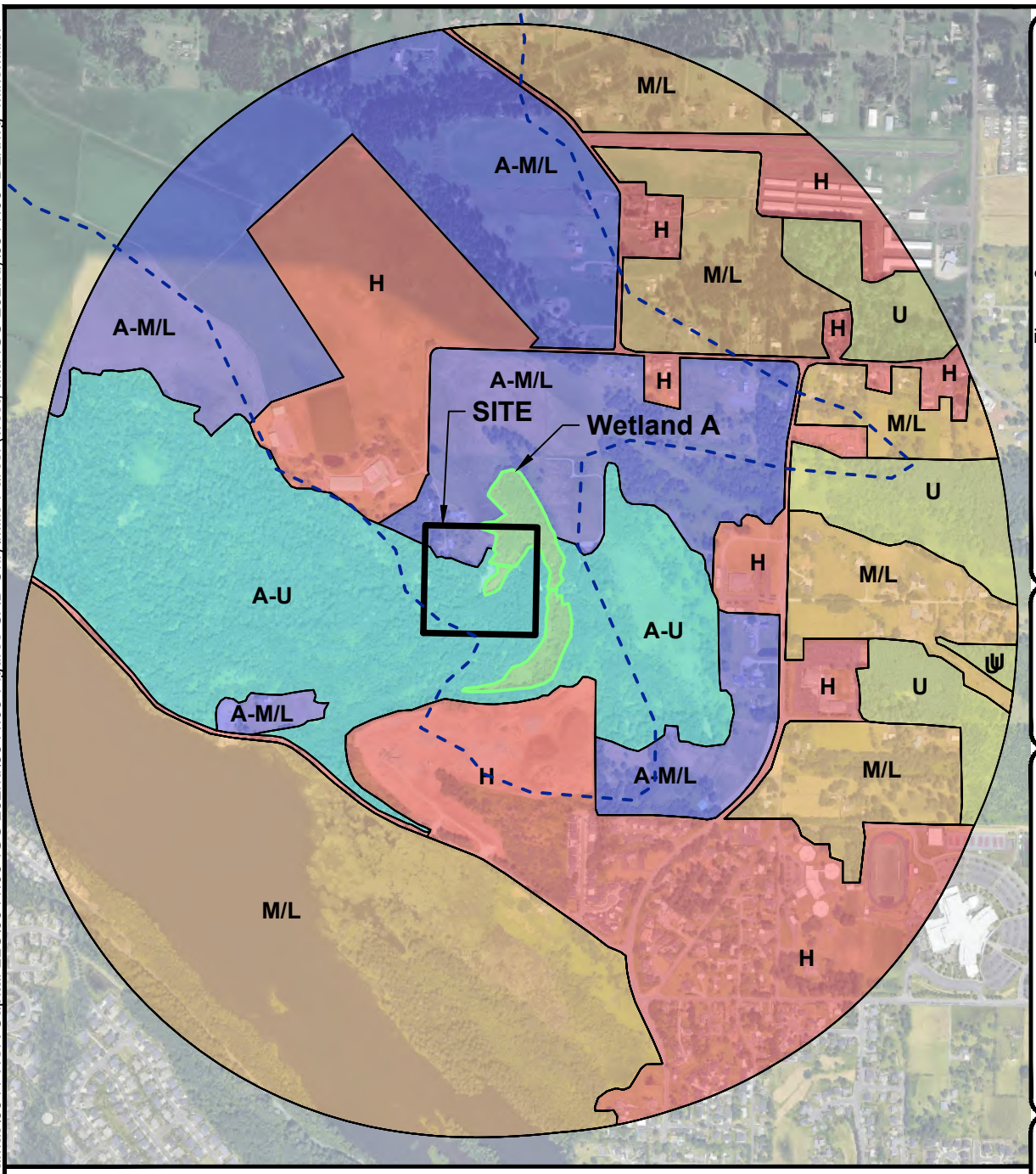

Figure 9a
WETLAND RATING FORM-1 km OFFSET - Wetland A
ICG 252nd Property
HSR Capital LLC
City of Camas, Clark County, WA
Section 35, Township 2N, Range 3E, W.M.

DATE: 5/1/25
DWN: MPM
REQ. BY: ND
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LEGEND:

- Site Boundary
- Wetland Unit Boundary
- Contributing Basin
  46x area of Wetland A

H2.1 Accessible Habitat

- A-U — A-U (16.5%)
- A-M/L — A-M/L (21.5%)

H2.2 Undisturbed Habitat

- U — U (5.3%)
- M/L — M/L (32.6%)

H2.3 Land Use Intensity

- H — H (24.1%)

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H 2.1. Accessible Habitat Equation

% A-U habitat **16.6%** + [(% A-M/L intensity land uses)/2] **10.8%** = **27.4%**

H 2.2. Total Undisturbed Habitat Equation

% A-U + % U habitat **21.9%** + [(% A-M/L + % M/L land uses)/2] **27.1%** = **49.0%**

N, W, E, S

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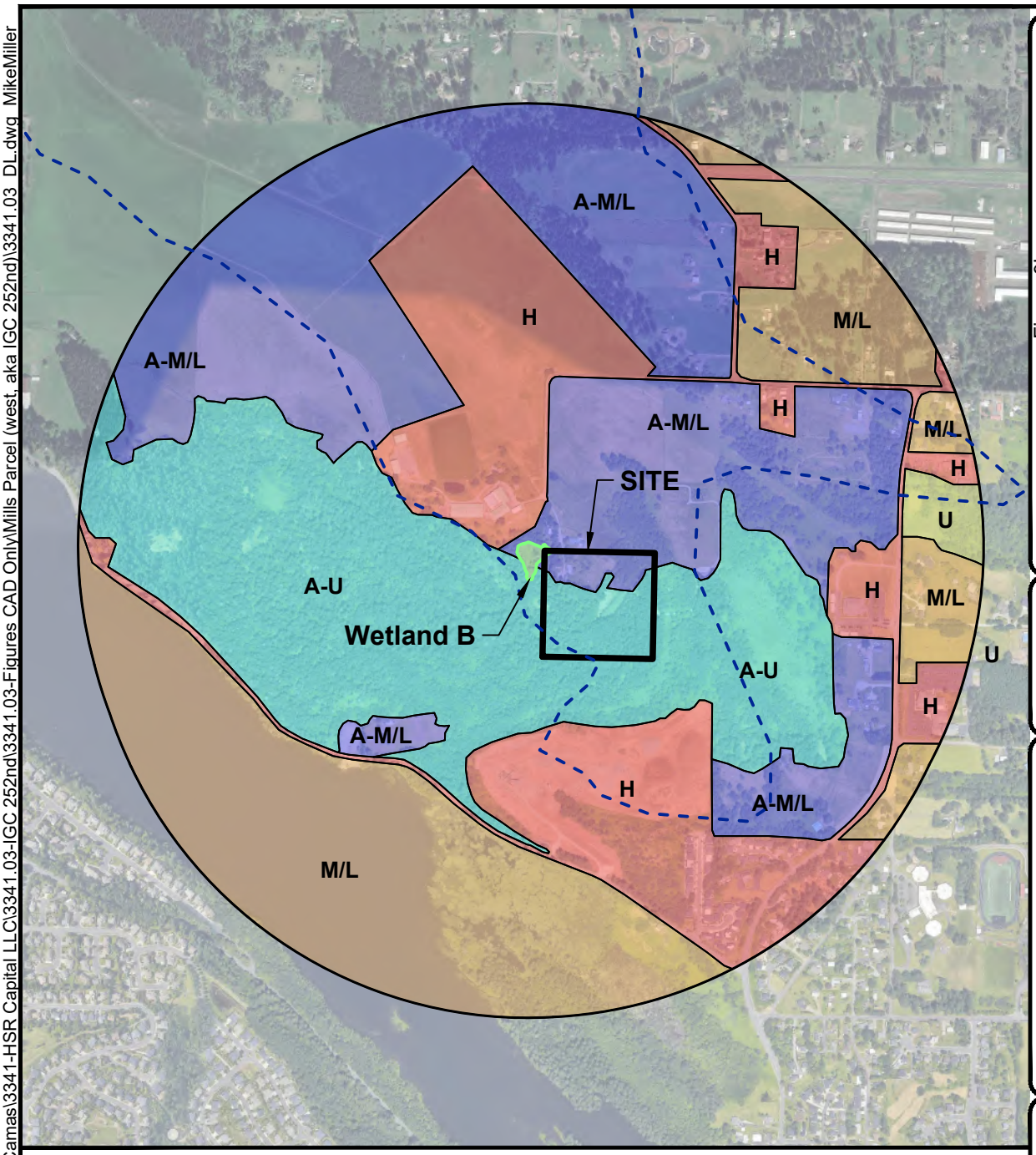

Figure 9b
WETLAND RATING FORM-1 km OFFSET - Wetland B
ICG 252nd Property
HSR Capital LLC
City of Camas, Clark County, WA
Section 35, Township 2N, Range 3E, W.M.

DATE: 5/1/25
DWN: MPM
REQ. BY: ND
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PROJECT NO: 3341.03

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1200
2400

N
W
E
S

LEGEND:

- Site Boundary
- Wetland Unit Boundary
- Contributing Basin
  552x area of Wetland B

H2.1 Accessible Habitat

- A-U — A-U (23.9%)
- A-M/L — A-M/L (30.8%)

H2.2 Undisturbed Habitat

- U — U (0.9%)
- M/L — M/L (23.9%)

H2.3 Land Use Intensity

- H — H (20.5%)

H 2.1. Accessible Habitat Equation

% A-U habitat **23.9%** + [(% A-M/L intensity land uses)/2] **15.4%** = **39.3%**

H 2.2. Total Undisturbed Habitat Equation

% A-U + % U habitat **24.8%** + [(% A-M/L + % M/L land uses)/2] **27.4%** = **52.2%**

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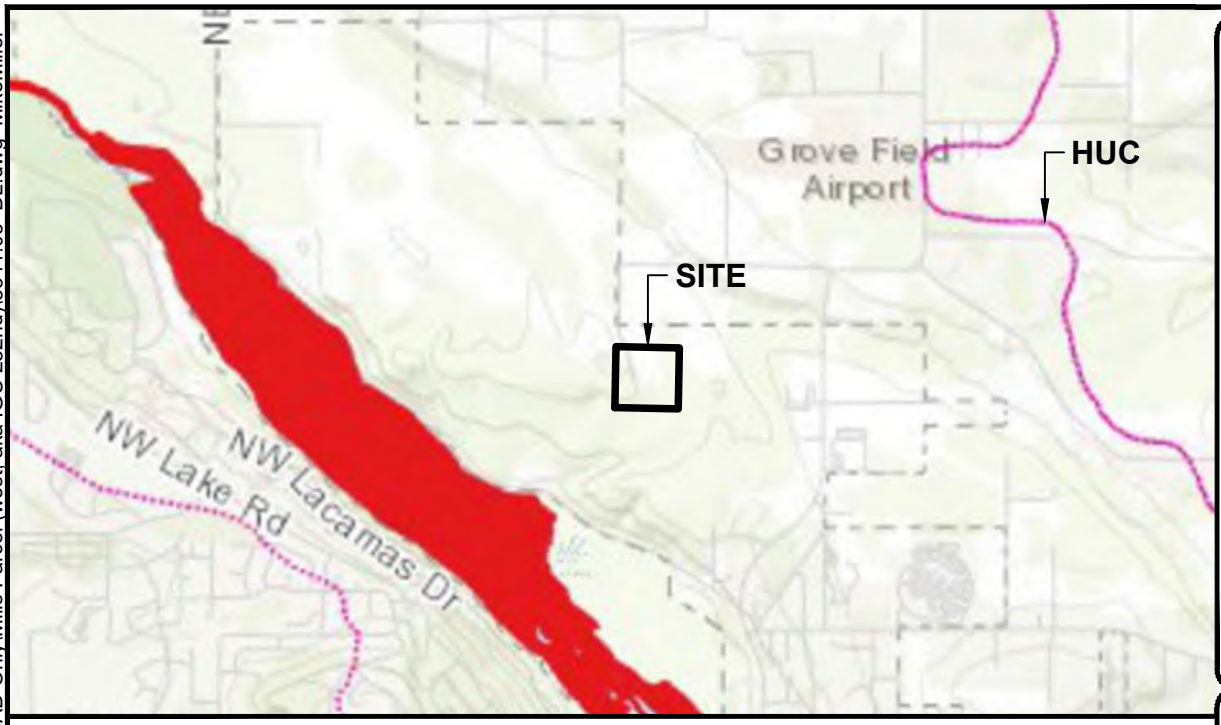

Figure 10
WETLAND RATING FORM-303(d) and TMDLs
ICG 252nd Property
HSR Capital LLC
City of Camas, Clark County, WA
Section 35, Township 2N, Range 3E, W.M.

DATE: 5/1/25
DWN: MPM
REQ. BY: ND
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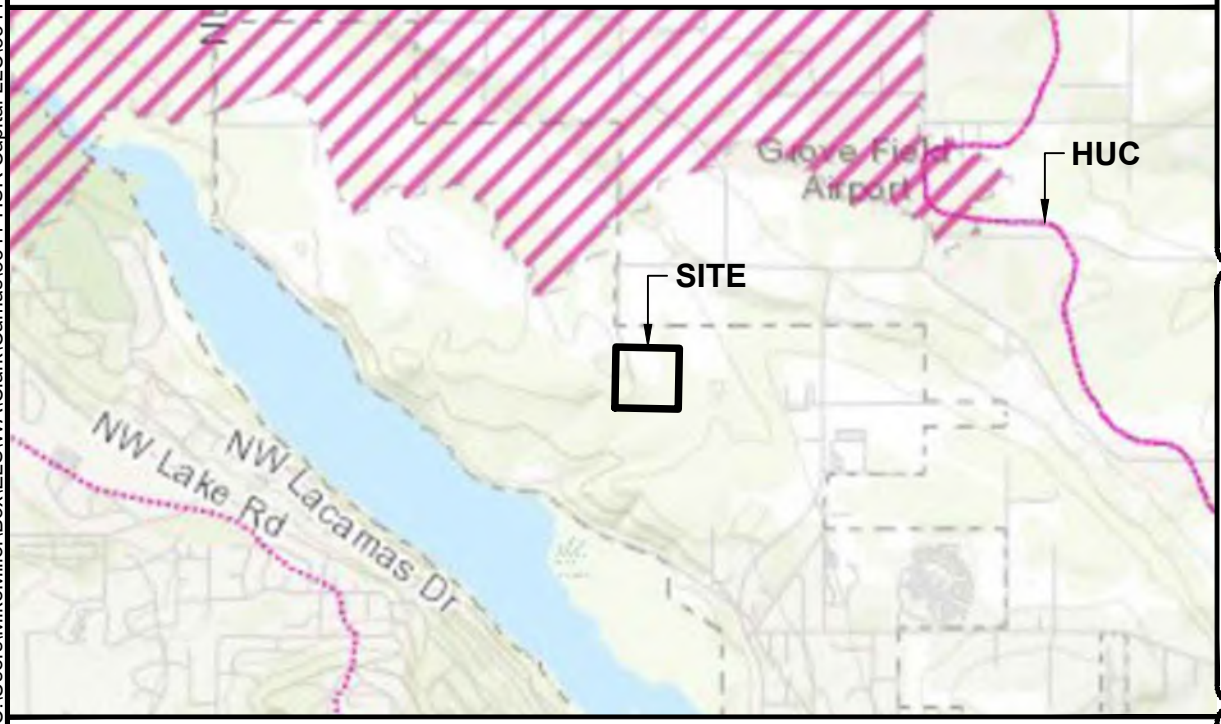
CHK:
PROJECT NO: 3341.03

Assessed Waters/Sediment

Water	Sediment	Subbasins
Category 5 - 303d	Category 5 - 303d	12 Digit HUC Boundary
Category 4C	Category 4C	
Category 4B	Category 4B	
Category 4A	Category 4A	
Category 2	Category 2	
Category 1	Category 1	



WQ Improvement Projects

ARP - In Development

NOTE(S):

1. Map provided on-line by Washington State Department of Ecology at web address: *https://fortress.wa.gov/ecy/waterqualityatlas/map.aspx?*

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APPENDIX A

ROUTINE DETERMINATION METHOD AND PLANT INDICATOR RATING DEFINITIONS

Routine Determination Method

The Routine Determination Method is defined 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 examines three parameters – vegetation, soils, and hydrology – to determine if wetlands exist in a given area. Hydrology is critical in determining what is a wetland, but if often difficult to assess because hydrologic conditions can change periodically (hourly, daily, or seasonally). Consequently, it is necessary to determine if hydrophytic vegetation and hydric soils are present, which would indicate that water is present for a long enough duration to support a wetland plant community. By definition, wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Vegetation Indicator Status

The indicator status, following the scientific names of plant species, indicates the likelihood of the species to be found in wetlands according to the *National Wetland Plant List Indicator Rating Definitions* (Corps 2012). Listed from most likely to least likely to be found in wetlands, the indicator status categories are:

- **OBL** (obligate wetland) - occur almost always under natural conditions in wetlands.
- **FACW** (facultative wetland) - usually occur in wetlands, but occasionally found in non-wetlands.
- **FAC** (facultative) - equally likely to occur in wetlands or non-wetlands.
- **FACU** (facultative upland) - usually occur in non-wetlands, but occasionally found in wetlands.
- **UPL** (obligate upland) - occur almost always under natural conditions in non-wetlands.
- **NI** (no indicator) - insufficient data to assign to an indicator category.

APPENDIX B

WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: ICG 252nd Property City/County: Camas/Clark Sampling Date: 08/15/2024
Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-A1
Investigator(s): Naglich F., Mendez A. Section, Township, Range: S35, T2N, R3E
Landform (hillslope, terrace, etc.): Depressions Local relief: (concave, convex, none): None Slope (%): 0-3%
Subregion (LRR): A Lat: 45.6198537 Long: -122.4122602 Datum: NAD83
Soil Map Unit Name: Tisch silt loam, 0 to 3 percent slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Are "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** **Yes☐ No☒**
Hydric Soils Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks: TP-A1 is located in the northern, central portion of the site and is paired with TP-A2.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
50% = ___ 20% = ___	%	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
50% = ___ 20% = ___	%	=Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Lolium perenne*	70%	yes	FAC
2. *Prunella vulgaris*	10%	no	FACU
3. *Daucus carota*	5%	no	FACU
4. *Taraxacum officinale*	5%	no	FACU
5. *Rubus ursinus*	5%	no	FACU
6. *Plantago major*	5%	no	FAC
7.	%		
8.	%		
9.	%		
10.	%		
11.	%		
50% = 50 20% = 20	100%	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft radius)			
1.	%		
2.	%		
50% = ___ 20% = ___	%	=Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC 100 (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species		x 1=	
FACW species		x 2=	
FAC species		x 3=	
FACU species		x 4=	
UPL species		x 5=	
Column Totals:	(A)		(B)

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes☒ No☐**

Remarks:

SOIL

Sampling Point: TP-A1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	100%		%			Clay	
8-16	10YR 3/2	100%		%			Clay	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosal (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Minerals (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____
Depth (inches):_____

Hydric Soil Present? **Yes☐ No☒**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (Inches): _____
Water Table Present? Yes ☐ No ☒ Depth (Inches): _____
Saturation Present? (Includes Capillary fringe) Yes ☐ No ☒ Depth (Inches): _____

Wetland Hydrology Present? **Yes ☐ No ☒**

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: ICG 252nd Property City/County: Camas/Clark Sampling Date: 08/15/2024
Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-A2
Investigator(s): Naglich F., Mendez A. Section, Township, Range: S35, T2N, R3E
Landform (hillslope, terrace, etc.): Depression Local relief: (concave, convex, none): Concave Slope (%): 0-3 %
Subregion (LRR): A Lat: 45.6199713 Long: 45.6199713 Datum: NAD83
Soil Map Unit Name: Tisch silt loam, 0 to 3 percent slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Are "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** **Yes☒ No☐**
Hydric Soils Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks: TP-A2 is located in the northern, central portion of the site and is paired with TP-A1.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
50% = ___ 20% = ___	%	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
50% = ___ 20% = ___	%	=Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Juncus effusus*	50%	yes	FACW
2. *Phalaris arundinacea*	50%	yes	FACW
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
11.	%		
50% = 50 20% = 20	100%	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft radius)			
1.	%		
2.	%		
50% = ___ 20% = ___	%	=Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC 100 (A/B)

Prevalence Index worksheet

Total % Cover of:	Multiply by:
OBL species ___	x 1= ___
FACW species ___	x 2= ___
FAC species ___	x 3= ___
FACU species ___	x 4= ___
UPL species ___	x 5= ___
Column Totals: ___ (A)	___ (B)

Prevalence Index = B/A=___

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes☒ No☐**

Remarks:

SOIL

Sampling Point: TP-A2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	98%	7.5YR 3/4	2%	C	M	Mucky Clay	See Remarks Below
6-16	10YR 4/1	97%	7.5YR 7/6	3%	C	M	Mucky Clay	See Remarks Below
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosal (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☒ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Minerals (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____
Depth (inches):_____

Hydric Soil Present? **Yes☒ No☐**

Remarks: Distinct and prominent redox concentrations.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

- ☒ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☒ No ☐ Depth (Inches): 1
Water Table Present? Yes ☐ No ☒ Depth (Inches): _____
Saturation Present? Yes ☐ No ☒ Depth (Inches): _____
(Includes Capillary fringe)

Wetland Hydrology Present? **Yes ☒ No ☐**

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: ICG 252nd Property City/County: Camas/Clark Sampling Date: 08/15/2024
Applicant/Owner: HSR Cappital, LLC State: WA Sampling Point: TP-A3
Investigator(s): Naglich F., Mendez A. Section, Township, Range: S35, T2N, R3E
Landform (hillslope, terrace, etc.): Depression Local relief: (concave, convex, none): None Slope (%): 3-30%
Subregion (LRR): A Lat: 45.6195082 Long: -122.4112567 Datum: NAD83
Soil Map Unit Name: Olympic stony clay loam, 3 to 30 percent slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Are "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☒	**Is the Sampled Area within a Wetland?** **Yes☐ No☒**
Hydric Soils Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks: TP-A3 is located in the northeastern portion of the site and is paired with TP-A4.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pseudotsuga menziesii*	30%	yes	FACU
2.	%		
3.	%		
4.	%		
50% = 15 20% = 6	30%	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1. *Oemleria cerasiformis*	5%	yes	FACU
2. *Symphoricarpos albus*	5%	yes	FACU
3. *Rubus parviflorus*	5%	yes	FAC
4.	%		
5.	%		
50% = 8 20% = 3	15%	=Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Polystichum munitum*	30%	yes	FACU
2. *Rubus ursinus*	30%	yes	FACU
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
11.	%		
50% = 30 20% = 12	60%	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft radius)			
1.	%		
2.	%		
50% = ___ 20% = ___	%	=Total Cover	

% Bare Ground in Herb Stratum 40%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC 17 (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species		x 1=	
FACW species		x 2=	
FAC species		x 3=	
FACU species		x 4=	
UPL species		x 5=	
Column Totals:	(A)		(B)

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☐ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes☐ No☒**

Remarks:

SOIL

Sampling Point: TP-A3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/2	100%		%			Silt Loam	
8-16	10YR 5/2	100%		%			Silt Loam	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosal (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Minerals (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____
Depth (inches):_____

Hydric Soil Present? **Yes☐ No☒**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (Inches): _____
Water Table Present? Yes ☐ No ☒ Depth (Inches): _____
Saturation Present? Yes ☐ No ☒ Depth (Inches): _____
(Includes Capillary fringe)

Wetland Hydrology Present? **Yes ☐ No ☒**

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: ICG 252nd Property City/County: Camas/Clark Sampling Date: 08/15/2024
Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-A4
Investigator(s): Naglich F., Mendez A. Section, Township, Range: S35, T2N, R3E
Landform (hillslope, terrace, etc.): Depression Local relief: (concave, convex, none): Concave Slope (%): 3-30%
Subregion (LRR): A Lat: 45.6195713 Long: -122.4113417 Datum: NAD83
Soil Map Unit Name: Olympic stony clay loam, 3 to 30 percent slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Are "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** **Yes☒ No☐**
Hydric Soils Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks: TP-A4 is located in the northeastern portion of the site and is paired with TP-A3.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
50% = ___ 20% = ___	%	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
50% = ___ 20% = ___	%	=Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Phalaris arundinacea*	100%	yes	FACW
2.	%		
3.	%		
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
11.	%		
50% = 50 20% = 20	100%	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft radius)			
1.	%		
2.	%		
50% = ___ 20% = ___	%	=Total Cover	

% Bare Ground in Herb Stratum 0%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC 100 (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species		x 1=	
FACW species		x 2=	
FAC species		x 3=	
FACU species		x 4=	
UPL species		x 5=	
Column Totals:	(A)		(B)

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes☒ No☐**

Remarks:

SOIL

Sampling Point: TP-A4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/1	90%	10YR 5/4	10%	C	M	Silty Clay Loam	See Remarks Below
10-16	10YR 4/1	90%	10YR 5/4	10%	C	M	Silty Clay Loam	See Remarks Below
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosal (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Minerals (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☒ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____
Depth (inches):_____

Hydric Soil Present? **Yes☒ No☐**

Remarks: Distinct redox concentrations.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (Inches): _____
Water Table Present? Yes ☐ No ☒ Depth (Inches): _____
Saturation Present? (Includes Capillary fringe) Yes ☒ No ☐ Depth (Inches): 0

Wetland Hydrology Present? **Yes ☒ No ☐**

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:Saturated to surface.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: ICG 252nd Property City/County: Camas/Clark Sampling Date: 08/15/2024
Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-A5
Investigator(s): Naglich F., Mendez A. Section, Township, Range: S35, T2N, R3E
Landform (hillslope, terrace, etc.): Terrace Local relief: (concave, convex, none): None Slope (%): 0-3%
Subregion (LRR): A Lat: 45.6191137 Long: -122.4124104 Datum: NAD83
Soil Map Unit Name: Tisch silt loam, 0 to 3 percent slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Are "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** Yes☐ No☒
Hydric Soils Present?	Yes ☐ No ☒	
Wetland Hydrology Present?	Yes ☐ No ☒	

Remarks: TP-A5 is located in the central portion of the site and is paired with TP-A6.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
50% = ___ 20% = ___	%	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1. *Phyllostachys* sp.*	10%	yes	UPL
2.	%		
3.	%		
4.	%		
5.	%		
50% = 5 20% = 2	10%	=Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Lolium perenne*	30%	yes	FAC
2. *Daucus carota*	10%	yes	FACU
3. *Rumex obtusifolius*	10%	yes	FAC
4. *Plantago major*	10%	yes	FAC
5. *Cirsium vulgare*	5%	no	FACU
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
11.	%		
50% = 33 20% = 13	65%	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft radius)			
1.	%		
2.	%		
50% = ___ 20% = ___	%	=Total Cover	

% Bare Ground in Herb Stratum 35%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC 60 (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species		x 1=	
FACW species		x 2=	
FAC species		x 3=	
FACU species		x 4=	
UPL species		x 5=	
Column Totals:	(A)		(B)

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes☒ No☐

Remarks: *Phyllostachis* sp.* assumed UPL.

SOIL

Sampling Point: TP-A5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/3	100%		%			Silt Loam	
10-16	10YR 4/3	100%		%			SIlt Loam	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosal (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Minerals (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____
Depth (inches):_____

Hydric Soil Present? **Yes☐ No☒**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (Inches): _____
Water Table Present? Yes ☐ No ☒ Depth (Inches): _____
Saturation Present? Yes ☐ No ☒ Depth (Inches): _____
(Includes Capillary fringe)

Wetland Hydrology Present? **Yes ☐ No ☒**

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys and Coast Region

Project/Site: ICG 252nd Property City/County: Camas/Clark Sampling Date: 08/15/2024
Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-A6
Investigator(s): Naglich F., Mendez A. Section, Township, Range: S35, T2N, R3E
Landform (hillslope, terrace, etc.): Depression Local relief: (concave, convex, none): Concave Slope (%): 0-3%
Subregion (LRR): A Lat: 45.6190404 Long: -122.4123058 Datum: NAD83
Soil Map Unit Name: Tisch silt loam, 0 to 3 percent slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes☒ No☐ (If no, explain Remarks.)
Are Vegetation☐, Soil☐, or Hydrology☐ significantly disturbed? Are "Normal Circumstances" present? Yes☒ No☐
Are Vegetation☐, Soil☐, or Hydrology☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	**Is the Sampled Area within a Wetland?** **Yes☒ No☐**
Hydric Soils Present?	Yes ☒ No ☐	
Wetland Hydrology Present?	Yes ☒ No ☐	

Remarks: TP-A6 is located to the central portion of the site and is paired with TP-A5.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.	%		
2.	%		
3.	%		
4.	%		
50% = ___ 20% = ___	%	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.	%		
2.	%		
3.	%		
4.	%		
5.	%		
50% = ___ 20% = ___	%	=Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Phalaris arundinacea*	30%	yes	FACW
2. *Juncus effusus*	30%	yes	FACW
3. *Ranunculus repens*	25%	yes	FAC
4.	%		
5.	%		
6.	%		
7.	%		
8.	%		
9.	%		
10.	%		
11.	%		
50% = 43 20% = 17	85%	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft radius)			
1.	%		
2.	%		
50% = ___ 20% = ___	%	=Total Cover	

% Bare Ground in Herb Stratum 15%

Dominance Test Worksheet

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC 100 (A/B)

Prevalence Index worksheet

Total % Cover of:		Multiply by:	
OBL species		x 1=	
FACW species		x 2=	
FAC species		x 3=	
FACU species		x 4=	
UPL species		x 5=	
Column Totals:	(A)		(B)

Prevalence Index = B/A=

Hydrophytic Vegetation Indicators:

- ☐ 1 – Rapid Test for Hydrophytic Vegetation
- ☒ 2 – Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ 5 - Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes☒ No☐**

Remarks:

SOIL

Sampling Point: TP-A6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 5/1	100%		%			Silty Clay Loam	
12-16	10YR 3/1	100%		%			Silty Clay Loam	
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				
		%		%				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosal (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☒ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Minerals (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and Wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if present):

Type: _____
Depth (inches):_____

Hydric Soil Present? **Yes☒ No☐**

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (min. of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☒ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) **(except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☒ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) **(MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☒ FAC Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) **(LRR A)**
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ☐	No ☒	Depth (Inches): _____
Water Table Present?	Yes ☐	No ☒	Depth (Inches): _____
Saturation Present? (Includes Capillary fringe)	Yes ☒	No ☐	Depth (Inches): 0

Wetland Hydrology Present? **Yes ☒ No ☐**

Describe Recorded Data (Stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX C

WETLAND RATING FORMS FOR WESTERN WASHINGTON

Wetland A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 8/15/2024

Rated by: Julianne Blake Trained by Ecology? X Yes ___No Date of training: 6/2022

HGM Class used for rating: Depressional Wetland has multiple HGM classes?___Y_X_ N

NOTE: **Form is not complete without the required figures** (figures can be combined).
Source of base aerial photo/map: Google Earth

OVERALL WETLAND CATEGORY III (based on functions X or special characteristics__)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

__X__**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality			Hydrologic			Habitat			
										Circle the appropriate ratings
Site Potential	H	(M)	L	H	M	(L)	H	(M)	L	
Landscape Potential	H	(M)	L	H	(M)	L	H	(M)	L	
Value	(H)	M	L	H	M	(L)	(H)	M	L	**TOTAL**
Score Based on Ratings	**7**			**4**			**7**			**18**

Score for each function based on three ratings (order of ratings is not important)

9 = H, H, H
8 = H, H, M
7 = H, H, L
7 = H, M, M
6 = H, M, L
6 = M, M, M
5 = H, L, L
5 = M, M, L
4 = M, L, L
3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	**I** **II**
Wetland of High Conservation Value	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I** **II**
Interdunal	**I** **II** **III** **IV**
None of the above	(Not Applicable)

Wetland A

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	8
Hydroperiods	D 1.4, H 1.2	8
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	8
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	8
Map of the contributing basin	D 4.3, D 5.3	9a
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	9a
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	10
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	10

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland A

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe, it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.

2. The entire wetland unit is flat, and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

NO – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size,
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

NO – go to 4 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
   ____The wetland is on a slope (slope can be very gradual),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheet flow, or in a swale without distinct banks,
   ____The water leaves the wetland **without being impounded**.

NO – go to 5 **YES –** The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

Wetland A

5. Does the entire wetland unit **meet all** of the following criteria?
   ____The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ____The overbank flooding occurs at least once every 2 years.

   NO – go to 6 **YES** – The wetland class is **Riverine**
   NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? This means that any outlet, if present, is higher than the interior of the wetland.

   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched but has no obvious natural outlet.

   NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

   NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.

Wetland A

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	**2**
D 1.2. The soil 2 in. below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* Yes = 4 No = 0	**0**
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed plants > 95% of area points = 5 Wetland has persistent, ungrazed plants > ½ of area points = 3 Wetland has persistent, ungrazed plants ≥ $^1/_{10}$ of area points = 1 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	**5**
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is ≥ ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	**0**
Total for D 1 Add the points in the boxes above	**7**

Rating of Site Potential If score is: __**12-16 = H** __**X**__ **6-11 = M** ___**0-5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	**0**
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	**1**
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	**1**
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source_____ Yes = 1 No = 0	**0**
Total for D 2 Add the points in the boxes above	**2**

Rating of Landscape Potential If score is: __**3 or 4 = H** __**X**__ **1 or 2 = M** ___**0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	**1**
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	**1**
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (Answer YES if there is a TMDL in development or in effect for the basin in which the unit is found.) Yes = 2 No = 0	**0**
Total for D 3 Add the points in the boxes above	**2**

Rating of Value If score is: __**X**__ **2-4 = H** __**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland A

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream/ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (question 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	**2**
D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part. Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	**0**
D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratio of the area of upstream basin contributing surface water to the area of the wetland unit itself. The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	**3**
Total for D 4 Add the points in the boxes above	**5**

Rating of Site Potential If score is: ___**12-16 = H** ___**6-11 = M** _**X**_ **0-5 = L** *Record the rating on the first page*

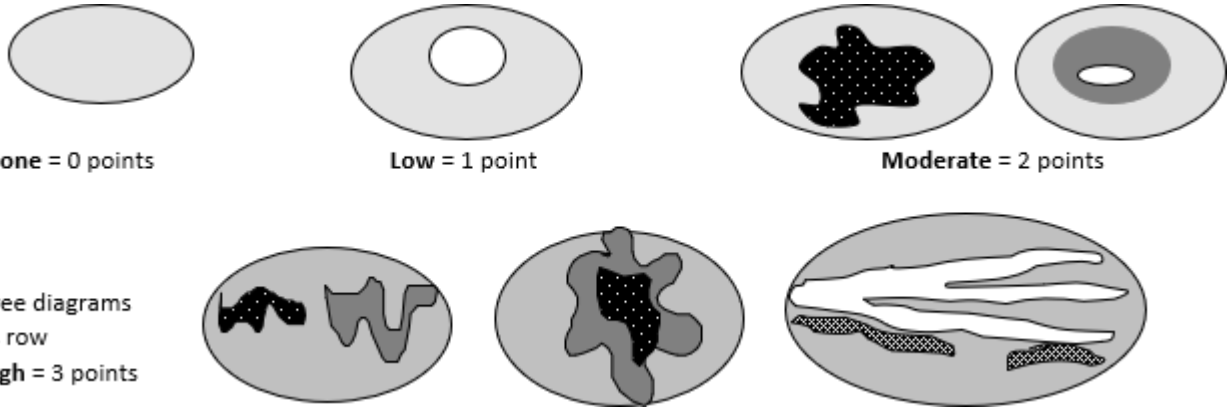
D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	**0**
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	**1**
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	**1**
Total for D 5 Add the points in the boxes above	**2**

Rating of Landscape Potential If score is: ___**3 = H** _**X**_ **1 or 2 = M** ___**0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. Is the unit in a landscape that has flooding problems? Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met. The wetland captures surface water that would otherwise flow downgradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately downgradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther downgradient. points = 1 • Flooding from groundwater is an issue in the sub-basin. points = 1 • The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____ points = 0 • There are no problems with flooding downstream of the wetland. points = 0	**0**
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	**0**
Total for D 6 Add the points in the boxes above	**0**

Rating of Value If score is: ___**2-4 = H** ___**1 = M** _**X**_ **0 = L** *Record the rating on the first page*

Wetland A

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac if the unit is at least 2.5 ac, or more than 10% of the unit if it is smaller than 2.5 ac. ____Aquatic bed — 4 structures or more: points = 4 __X__Emergent — 3 structures: points = 2 ____Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 __X__Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* __X__The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/groundcover) that each cover 20% within the Forested polygon	**2**
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland if the unit is < 2.5 ac, or ¼ ac if the unit is at least 2.5 ac to count (see text for descriptions of hydroperiods). ____Permanently flooded or inundated — 4 or more types present: points = 3 __X__Seasonally flooded or inundated — 3 types present: points = 2 ____Occasionally flooded or inundated — 2 types present: points = 1 __X__Saturated only — 1 type present: points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland __X__Intermittently or seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	**2**
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canada thistle** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	**2**
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. If you have four or more plant classes or three classes and open water, the rating is always high.  **None** = 0 points — **Low** = 1 point — **Moderate** = 2 points All three diagrams in this row are **High** = 3 points	**1**

Wetland A

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. The number of checks is the number of points. __X__Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft long). __X__Standing snags (dbh > 4 in.) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extend at least 3.3 ft (1 m) over open water or a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered where wood is exposed) __X__At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 above for the list of strata and H 1.5 in the manual for the list of aggressive plant species)	**3**
Total for H 1 Add the points in the boxes above	**10**

Rating of Site Potential If score is: ___**15-18 = H** __**X**__ **7-14 = M** __**0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include only habitat polygons accessible from the wetland. *Calculate:* % relatively undisturbed habitat 16.6%**+**[(% moderate and low intensity land uses)/2]10.8% **= 27.4**% Total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	**2**
H 2.2. Total habitat in 1 km Polygon around the wetland. *Calculate:* % relatively undisturbed habitat 21.9%**+**[(% moderate and low intensity land uses)/2]27.1% **=49.0%** Total habitat > 50% of Polygon points = 3 Total habitat 10-50% and in 1-3 patches points = 2 Total habitat 10-50% and > 3 patches points = 1 Total habitat < 10% of 1 km Polygon points = 0	**1**
H 2.3. Land use intensity in 1 km Polygon: > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	**0**
Total for H 2 Add the points in the boxes above	**3**

Rating of Landscape Potential If score is**:** ___**4-6 = H** __**X**__ **1-3 = M** ___**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — It has 3 or more Priority Habitats within 100 m (see next page) __ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) __ It is mapped as a location for an individual WDFW Priority Species. — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources data — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 Priority Habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	**2**

Rating of Value If score is: __**X**__**2 = H** ___**1 = M** ____**0 = L** *Record the rating on the first page*

Wetland A

WDFW Priority Habitats

See complete descriptions of Priority Habitats listed by WDFW, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008 (current year, as revised). Priority Habitat and Species List.[133] This list was updated for consistency with guidance from WDFW.

This question is independent of the land use between the wetland unit and the Priority Habitat. All vegetated wetlands are by definition a Priority Habitat but are not included in this list because they are addressed by this rating system.

Count how many of the following Priority Habitats are within 330 ft (100 m) of the wetland unit:

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife. This habitat automatically counts if mapped on the PHS online map within 100m of the wetland. If not mapped, a determination can be made in the field.

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Fresh Deepwater:** Lands permanently flooded with freshwater, including environments where surface water is permanent and often deep, so that water, rather than air, is the principal medium within which the dominant organisms live. Substrate does not support emergent vegetation. Do not select if Instream habitat is also present, or if the entire Deepwater feature is included in the wetland unit being rated (such as a pond with a vegetated fringe).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. Do not select if Fresh Deepwater habitat is also present.

— **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in. (81 cm) diameter at breast height (dbh) or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in. (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

[133] http://wdfw.wa.gov/publications/00165/wdfw00165.pdf

Wetland A

- **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important. For single oaks or oak stands <0.4 ha in urban areas, WDFW's Management Recommendations for Oregon White Oak[134] provides more detail for determining if they are Priority Habitats
- **Riparian:** The area adjacent to freshwater aquatic systems with flowing or standing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in. (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in. (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.
- **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie.

[134] https://wdfw.wa.gov/publications/00030/wdfw00030.pdf

Wetland A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes – Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No – Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 10% cover of non-native plant species. If non-native species are *Spartina*, see chapter 4.8 in the manual. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Does the wetland overlap with any known or historical rare plant or rare & high-quality ecosystem polygons on the WNHP Data Explorer?[135] Yes = **Category I** No – Go to **SC 2.2** SC 2.2. Does the wetland have a rare plant species, rare ecosystem (e.g., plant community), or high-quality common ecosystem that may qualify the site as a WHCV? Contact WNHP for resources to help determine the presence of these elements. Yes – Submit data to WA Natural Heritage Program for determination,[136] Go to **SC 2.3** No = **Not a WHCV** SC 2.3. Did WNHP review the site within 30 days and determine that it has a rare plant or ecosystem that meets their criteria? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES, you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in. or more of the first 32 in. of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in. deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in. deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Category I bog** No = **Not a bog**	**Cat. I**

[135] https://www.dnr.wa.gov/NHPdata
[136] https://www.dnr.wa.gov/Publications/amp_nh_sighting_form.pdf

Wetland A

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as Priority Habitats? ***If you answer YES, you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in. (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in. (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* — The lagoon retains some of its surface water at low tide during spring tides Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species in H 1.5 in the manual). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer YES, you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 and Ocean Shores Blvd SW, including lands west of E. Oceans Shores Blvd SW. Yes – Go to **SC 6.1** No = **Not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**Not Applicable**

Wetland B

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland B Date of site visit: 11/11/2022

Rated by: Julianne Blake Trained by Ecology? X Yes ___No Date of training: 6/2022

HGM Class used for rating: Depressional Wetland has multiple HGM classes?___Y_X_ N

NOTE: **Form is not complete without the required figures** (figures can be combined).
Source of base aerial photo/map: Google Earth

OVERALL WETLAND CATEGORY III (based on functions X or special characteristics__)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

__X__**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H (M) L	H (M) L	H M (L)	
Landscape Potential	H (M) L	H (M) L	(H) M L	
Value	H (M) L	H M (L)	(H) M L	TOTAL
Score Based on Ratings	**6**	**5**	**7**	**18**

Score for each function based on three ratings
(order of ratings is not important)

9 = H, H, H
8 = H, H, M
7 = H, H, L
7 = H, M, M
6 = H, M, L
6 = M, M, M
5 = H, L, L
5 = M, M, L
4 = M, L, L
3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	**I** **II**
Wetland of High Conservation Value	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I** **II**
Interdunal	**I II III IV**
None of the above	(Not Applicable)

Wetland B

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	8
Hydroperiods	D 1.4, H 1.2	8
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	8
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	8
Map of the contributing basin	D 4.3, D 5.3	9b
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	9b
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	10
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	10

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland B

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe, it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.

2. The entire wetland unit is flat, and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

NO – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size,
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

NO – go to 4 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
   ____The wetland is on a slope (slope can be very gradual),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheet flow, or in a swale without distinct banks,
   ____The water leaves the wetland **without being impounded**.

NO – go to 5 **YES –** The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

Wetland B

5. Does the entire wetland unit **meet all** of the following criteria?
   ____The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ____The overbank flooding occurs at least once every 2 years.

   NO – go to 6 **YES** – The wetland class is **Riverine**
   NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? This means that any outlet, if present, is higher than the interior of the wetland.

   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched but has no obvious natural outlet.

   NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

   NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.

Wetland B

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	**3**
D 1.2. The soil 2 in. below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* Yes = 4 No = 0	**0**
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed plants > 95% of area points = 5 Wetland has persistent, ungrazed plants > ½ of area points = 3 Wetland has persistent, ungrazed plants ≥ 1/10 of area points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0	**3**
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is ≥ ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	**4**
Total for D 1 Add the points in the boxes above	**10**

Rating of Site Potential If score is: **__12-16 = H __X_6-11 = M ___0-5 = l** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	**0**
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	**1**
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	**0**
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source: Yes = 1 No = 0	**0**
Total for D 2 Add the points in the boxes above	**1**

Rating of Landscape Potential If score is: **___3 or 4 = H __X_1 or 2 = M ____ 0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	**0**
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	**1**
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (Answer YES if there is a TMDL in development or in effect for the basin in which the unit is found.) Yes = 2 No = 0	**0**
Total for D 3 Add the points in the boxes above	**1**

Rating of Value If score is**: ___2-4 = H __X_1 = M ____0 = L** *Record the rating on the first page*

Wetland B

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream/ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (question 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	**4**
D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part. Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 **Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3** The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	**3**
D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratio of the area of upstream basin contributing surface water to the area of the wetland unit itself. The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	0
Total for D 4 — Add the points in the boxes above	7

Rating of Site Potential If score is: ___**12-16 = H** __**X**__**6-11 = M** ___**0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?

D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	**0**
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	**1**
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	**1**
Total for D 5 — Add the points in the boxes above	2

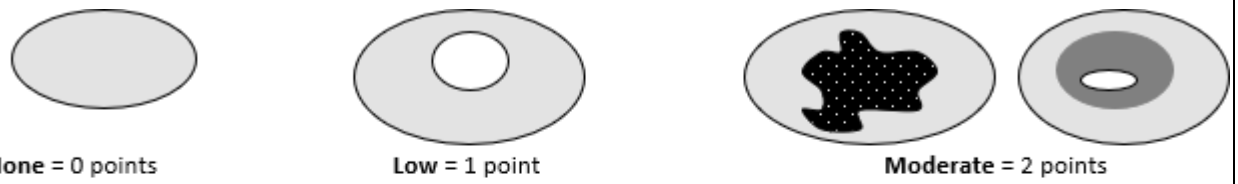
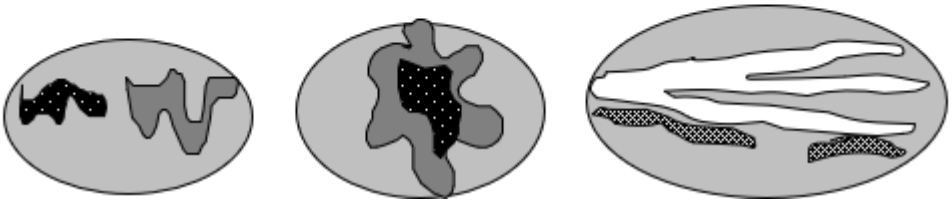
Rating of Landscape Potential If score is: ___**3 = H** __**X**__**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?

D 6.1. Is the unit in a landscape that has flooding problems? Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met. The wetland captures surface water that would otherwise flow downgradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately downgradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther downgradient. points = 1 • Flooding from groundwater is an issue in the sub-basin. points = 1 • The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* points = 0 • There are no problems with flooding downstream of the wetland. points = 0	**0**
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	**0**
Total for D 6 — Add the points in the boxes above	**0**

Rating of Value If score is: ___**2-4 = H** ___**1 = M** __**X**__**0 = L** *Record the rating on the first page*

Wetland B

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac if the unit is at least 2.5 ac, or more than 10% of the unit if it is smaller than 2.5 ac. ____Aquatic bed — 4 structures or more: points = 4 _X_Emergent — 3 structures: points = 2 ____Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 _X_Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* ___The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/groundcover) that each cover 20% within the Forested polygon	**1**
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland if the unit is < 2.5 ac, or ¼ ac if the unit is at least 2.5 ac to count (see text for descriptions of hydroperiods). ____Permanently flooded or inundated — 4 or more types present: points = 3 _X_Seasonally flooded or inundated — 3 types present: points = 2 ____Occasionally flooded or inundated — 2 types present: points = 1 ____Saturated only — 1 type present: points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Intermittently or seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	**0**
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canada thistle** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	**2**
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. If you have four or more plant classes or three classes and open water, the rating is always high.  **None** = 0 points — **Low** = 1 point — **Moderate** = 2 points All three diagrams in this row are **High** = 3 points 	**2**

Wetland B

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. The number of checks is the number of points. __X__Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft long). ____Standing snags (dbh > 4 in.) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extend at least 3.3 ft (1 m) over open water or a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) __Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered where wood is exposed) ____At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 above for the list of strata and H 1.5 in the manual for the list of aggressive plant species)	**1**
Total for H 1 Add the points in the boxes above	**6**

Rating of Site Potential If score is: __**15-18 = H** __**7-14 = M** __**X 0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include only habitat polygons accessible from the wetland. *Calculate:* % relatively undisturbed habitat 23.9% **+** [(% moderate and low intensity land uses)/2] 15.4% **= 39.3%** Total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	**3**
H 2.2. Total habitat in 1 km Polygon around the wetland. *Calculate:* % relatively undisturbed habitat 24.8% **+**[(% moderate and low intensity land uses)/2] 27.4% **= 52.2%** Total habitat > 50% of Polygon points = 3 Total habitat 10-50% and in 1-3 patches points = 2 Total habitat 10-50% and > 3 patches points = 1 Total habitat < 10% of 1 km Polygon points = 0	**3**
H 2.3. Land use intensity in 1 km Polygon: > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	**0**
Total for H 2 Add the points in the boxes above	**6**

Rating of Landscape Potential If score is**: __X__ 4-6 = H** __**1-3 = M** __**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — It has 3 or more Priority Habitats within 100 m (see next page) ___ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ___ It is mapped as a location for an individual WDFW Priority Species. — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources data — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 Priority Habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	**2**

Rating of Value If score is: __X__ **2 = H** __**1 = M** __**0 = L** *Record the rating on the first page*

Wetland B

WDFW Priority Habitats

See complete descriptions of Priority Habitats listed by WDFW, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008 (current year, as revised). Priority Habitat and Species List.[133] This list was updated for consistency with guidance from WDFW.

This question is independent of the land use between the wetland unit and the Priority Habitat. All vegetated wetlands are by definition a Priority Habitat but are not included in this list because they are addressed by this rating system.

Count how many of the following Priority Habitats are within 330 ft (100 m) of the wetland unit:

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife. This habitat automatically counts if mapped on the PHS online map within 100m of the wetland. If not mapped, a determination can be made in the field.

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Fresh Deepwater:** Lands permanently flooded with freshwater, including environments where surface water is permanent and often deep, so that water, rather than air, is the principal medium within which the dominant organisms live. Substrate does not support emergent vegetation. Do not select if Instream habitat is also present, or if the entire Deepwater feature is included in the wetland unit being rated (such as a pond with a vegetated fringe).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. Do not select if Fresh Deepwater habitat is also present.

— **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in. (81 cm) diameter at breast height (dbh) or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in. (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

[133] http://wdfw.wa.gov/publications/00165/wdfw00165.pdf

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- **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important. For single oaks or oak stands <0.4 ha in urban areas, WDFW's Management Recommendations for Oregon White Oak[134] provides more detail for determining if they are Priority Habitats
- **Riparian:** The area adjacent to freshwater aquatic systems with flowing or standing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in. (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in. (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.
- **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie.

[134] https://wdfw.wa.gov/publications/00030/wdfw00030.pdf

Wetland B

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes – Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No – Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 10% cover of non-native plant species. If non-native species are *Spartina*, see chapter 4.8 in the manual. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Does the wetland overlap with any known or historical rare plant or rare & high-quality ecosystem polygons on the WNHP Data Explorer?[135] Yes = **Category I** No – Go to **SC 2.2** SC 2.2. Does the wetland have a rare plant species, rare ecosystem (e.g., plant community), or high-quality common ecosystem that may qualify the site as a WHCV? Contact WNHP for resources to help determine the presence of these elements. Yes – Submit data to WA Natural Heritage Program for determination,[136] Go to **SC 2.3** No = **Not a WHCV** SC 2.3. Did WNHP review the site within 30 days and determine that it has a rare plant or ecosystem that meets their criteria? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES, you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in. or more of the first 32 in. of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in. deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in. deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Category I bog** No = **Not a bog**	**Cat. I**

[135] https://www.dnr.wa.gov/NHPdata

[136] https://www.dnr.wa.gov/Publications/amp_nh_sighting_form.pdf

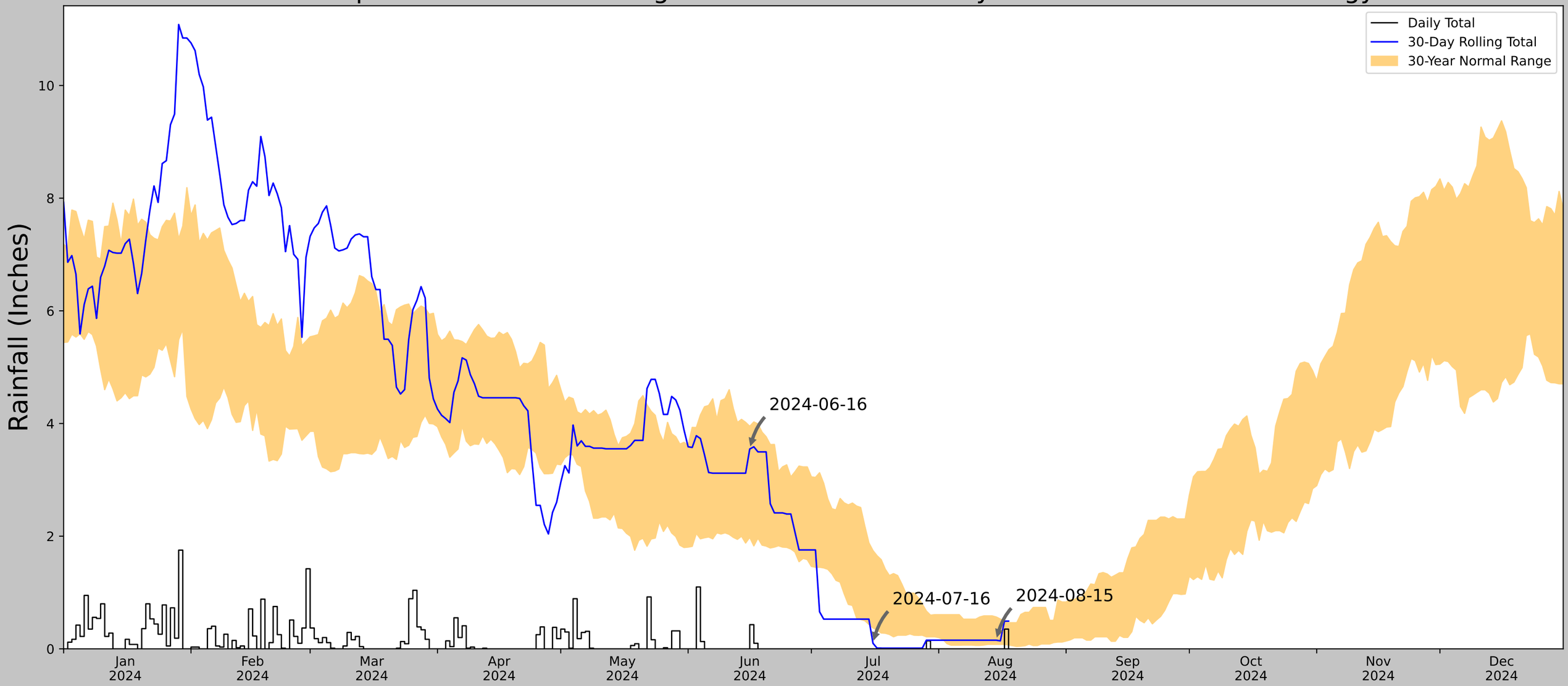
Wetland B

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as Priority Habitats? ***If you answer YES, you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in. (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in. (53 cm). Yes = **Category I** No = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* — The lagoon retains some of its surface water at low tide during spring tides Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species in H 1.5 in the manual). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^1/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer YES, you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 and Ocean Shores Blvd SW, including lands west of E. Oceans Shores Blvd SW. Yes – Go to **SC 6.1** No = **Not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**Not Applicable**

APPENDIX D

ANTECEDENT PRECIPITATION TOOL DATA

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	45.6198537, -122.4122602
Observation Date	2024-08-15
Elevation (ft)	280.598
Drought Index (PDSI)	Mild drought (2024-07)
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-08-15	0.079134	0.564961	0.153543	Normal	2	3	6
2024-07-16	0.372047	1.743307	0.098425	Dry	1	2	2
2024-06-16	1.979921	3.949213	3.547244	Normal	2	1	2
Result							Normal Conditions - 10

US Army Corps of Engineers

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
TROUTDALE	45.5533, -122.3886	33.136	4.739	247.462	3.305	9243	80
PORTLAND TROUTDALE AP	45.5511, -122.4097	24.934	1.032	8.202	0.473	1693	10
CAMAS 2.4 E	45.5845, -122.374	58.071	2.268	24.935	1.077	3	0
PORTLAND WFO	45.5608, -122.5383	20.997	7.261	12.139	3.356	315	0
PORTLAND INTL AP	45.5958, -122.6092	21.982	11.066	11.154	5.103	98	0

CRITICAL AREAS REPORT

May 19, 2025







Mills Property

Camas, Washington

Prepared for

HSR Capital, LLC

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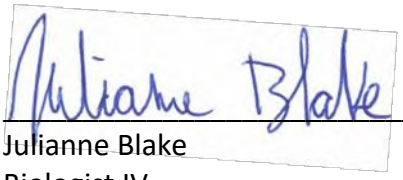
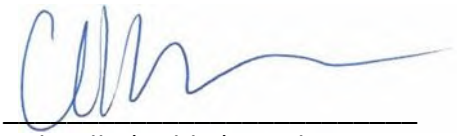
SIGNATURE PAGE

The information in this report was compiled and prepared under the supervision and direction of the undersigned.



Julianne Blake
Biologist IV



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INTRODUCTION

Ecological Land Services, Inc. (ELS) was contracted by HSR Capital, LLC to complete a critical areas report for Clark County Tax Parcel Number 177885000, located at 313 SE Leadbetter Road, in Camas, Washington. The site is approximately 21.02 acres and is located within Section 34, Township 2 North, Range 3 East of the Willamette Meridian (Figure 1). ELS biologists conducted site visits between September 2022 and January 2023, to determine the presence and extent of wetlands and fish and wildlife habitat conservation areas onsite. This critical areas report summarizes ELS findings according to *City of Camas Municipal Code (CMC) Chapter 16.53 Wetlands* and *Chapter 16.61 Fish and Wildlife Habitat Conservation Areas* (March 2025).

SITE DESCRIPTION

The approximately 21-acre site is zoned North Shore Higher Density Residential (HD-NS), North Shore Mixed Use (MX-NS), and North Shore Commercial (C-NS). Surrounding properties consist of undeveloped forested land, single-family residences, and agricultural uses. Access to the site is provided by informal foot trails which extend from Clark County Parcel number 178175000 with no existing vehicle access roads. Topography onsite consists of moderate slopes to the south over the majority of the site, with the presence of several depressional areas to the north and northeast. Shallow bedrock and rock outcroppings are also present in some locations. The site is dominated by a forested canopy with a small area of herbaceous vegetation in the northern portion of the parcel. One wetland (Wetland B), two clusters of Oregon white oak trees (*Quercus garryana*, FACU), and two herbaceous bald areas are present onsite. One wetland (Wetland A) and one stream (Stream A) were observed offsite to the east. The offsite wetland and stream were delineated by ELS biologists on August 15, 2024 and are described in the *Critical Areas Report for ICG 252nd Property* (ELS 2025).

METHODOLOGY

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 Appendix A. Wetlands are regulated as "Waters of the United States" by the U.S. Army Corps of Engineers (Corps), as "Waters of the State" by the Washington Department of Ecology (Ecology), and locally by the City of Camas (City).

ELS biologists evaluated the property on September 9, September 22, November 11, and December 15, 2022, and January 4, 2023, for the presence of critical areas including streams, wetlands, and priority habitats and species. Due to the site's extensive size and the need to evaluate hydrologic conditions over time, multiple site visits were conducted. The wetland boundaries were delineated on November 11, 2022. An additional site visit was conducted on April 29, 2025 to assess the functions of oaks mapped during prior field work, confirm herbaceous bald boundaries, and confirm Wetland B conditions. Prior to conducting field work, ELS biologists

reviewed current and historic aerial photographs dating back to 1990 and reviewed the Clark County GIS database for information regarding soils, topography, wetlands, and habitat conservation areas. One depressional wetland (Wetland B) was delineated onsite (Figure 2). The offsite wetland and stream are assessed in the *Critical Areas Report for ICG 252nd Property*, and these features were determined not to have buffers that extend to the site.

Vegetation, soil, and hydrology information was collected from eleven test plots (TP) to determine the location and extent of onsite wetlands (Appendix B). Onsite wetland boundaries were flagged with consecutively numbered flagging tape and test plot locations were also flagged. Wetland and test plot flag locations, oak locations, oak driplines, and herbaceous bald areas were mapped using a hand-held global positioning system (GPS) unit capable of submeter accuracy (Figures 2 and 2a). Additional information regarding herbaceous bald mapping is in the Critical Areas Summary section of this report.

VEGETATION

Vegetation onsite is dominated by a mature forested canopy with a dense understory of scrub-shrub and herbaceous vegetation. Two herbaceous balds with two associated clusters of Oregon white oak trees were identified onsite and associated vegetation is detailed below. 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 Appendix A.

WETLANDS

Dominant vegetation consists of **trees:** black cottonwood (*Populus balsamifera*, FAC) and Oregon ash (*Fraxinus latifolia*, FACW); **shrubs:** Scouler's willow (*Salix scoulerina*, FAC) and Nootka rose (*Rosa nutkana*, FAC); and **herbs:** longroot smartweed (*Polygonum amphibium*, OBL), reed canarygrass (*Phalaris arundinacea*, FACW), and common duckweed (*Lemna minor*, OBL).

UPLANDS

Dominant vegetation consists of **trees:** bigleaf maple (*Acer macrophyllum*, FACU) and Douglas fir (*Pseudotsuga menziesii*, FACU); **shrubs:** oceanspray (*Holodiscus discolor*, FACU), snowberry (*Symphoricarpos albus*, FACU), vine maple (*Acer circinatum*, FAC), beaked hazelnut (*Corylus cornuta*, FACU), salal (*Gaultheria shallon*, FACU), and Oregon grape (*Mahonia nervosa*, FACU); and **herbs:** western swordfern (*Polysticum minutum*, FACU) and trailing blackberry (*Rubus ursinus*, FACU).

OREGON WHITE OAK AND HERBACEOUS BALD ASSOCIATED VEGETATION

Vegetation associated with herbaceous bald habitat and Oregon white oak clusters includes **trees:** Douglas fir; **shrubs:** Pacific poison oak (*Toxicodendron diversilobum*, FAC); and **herbs:** deer fern (*Blechnum spicant*, FAC), licorice fern (*Polypodium glycyrrhiza*, UPL), Camas lily (*Camassia quamash*, FACW), trailing blackberry, and various grasses.

SOILS

Soils onsite are mapped as Lauren very gravelly loam, 0 to 8 percent slopes (LlB), Olympic stony clay loam, 3 to 30 percent slopes (OmE), Vader silt loam, 3 to 8 percent slopes (VaB), and Lauren loam, 0 to 8 percent slopes (LeB), as referenced on the Natural Resources Conservation Service (NRCS) Web Soil Survey website (2025a; Figure 3).

Lauren very gravelly loam, 0 to 8 percent slopes is classified as a well-drained soil typically found on terraces, with an average depth to water table of greater than 80 inches below ground surface (BGS). Olympic stony clay loam, 3 to 30 percent slopes is classified as a well-drained soil typically found on mountain slopes, with an average depth to water table of greater than 80 inches BGS. Vader silt loam, 3 to 8 percent slopes is classified as a well-drained soil with a depth to water table of greater than 80 inches BGS. A landform is not specified for VaB; however, it can be assumed this soil type exists on terraces because of its slope classification. Lauren loam, 0 to 8 percent slopes is classified as a well-drained soil typically found on terraces, with an average depth to water table of greater than 80 inches BGS. According to the Washington State Hydric Soils List (NRCS 2025b), none of the soils mapped onsite are classified as hydric.[1]

WETLANDS

Soils evaluated in TP-2 in the southern portion of Wetland B consisted of mucky loam and loamy clay. The upper portion of the profile, where mucky soils were observed, displayed a black (10YR 2/1) matrix with no redoximorphic features. The central portion of the profile displayed a matrix color of very dark gray (10YR 3/1) with brown redoximorphic features (7.5YR 4/4). The lower portion of the profile displayed a matrix color of very dark grayish brown (10YR 3/2) and strong brown redoximorphic features (7.5YR 4/6). Test Plot 2 met several hydric soil indicators including Depleted Below Dark Surface (A11), Loamy Mucky Mineral (F1), Depleted Matrix (F3), and Redox Dark Surface (F6).

Soils were not evaluated in TP-4 or TP-5 due to the presence of standing water and unconsolidated soils; therefore, hydric soil conditions are assumed. Approximately one foot of standing water was present at TP-5, and approximately 18 inches of standing water was present at TP-4.

UPLANDS

Evaluated soils in upland test plots consisted of loam and clay soils. Matrix colors were identified as 10YR 2/1, 10YR 2/2, 10YR 3/2, 10YR 3/3, and 10YR 4/2. Test Plot 7 had redoximorphic features present in the pore linings, however, these features were not present at the depth and quantity required to meet hydric soil conditions. Refusal was encountered throughout upland and herbaceous bald areas onsite due to shallow soils over bedrock or roots present in the test plot.

[1]Areas mapped with hydric soils do not necessarily mean that the area is a wetland—hydrology, hydrophytic vegetation, and hydric soils must all be present to classify an area as a wetland.

Soil Depth Plots

Other notable soil investigations include the non-wetland pool in the northwest corner of the site. ELS biologists revisited this location between November and January to determine the presence or absence of wetland indicators including hydric soils. Soils were evaluated in Soil Depth (SD) Plots 1 through 4 on all sides of the pool location, showing shallow soils were present over bedrock. Soil Depth Plots 1, 2, and 3 showed two inches of soil present over bedrock, primarily consisting of a duff layer with loamy components. Soil Depth Plot 4 showed 5 inches of soil over bedrock with an approximately two-inch layer of duff and gravelly loam in the lower portion of the profile. No redoximorphic features were observed in the SD profiles and the matrix color of the loam component was dark brown (10YR 3/3). These observations indicate that soils on all sides of the pool location do not meet wetland conditions. The hydrologic component of this pool feature will be discussed in the Hydrology section of this report.

ELS does not agree with NRCS mapped hydric soils, as wetlands were observed in areas mapped with non-hydric soils, and uplands were observed in areas with mapped hydric soils. Specific soil information is recorded on the attached wetland determination data forms (Appendix B) and summarized in Table 1.

Table 1. Mapped Soils

Soil Series[1]	Landform[1]	Drainage Class[1]	Hydric Soil[2]	Plots per Soil Series
Lauren very gravelly loam, 0-8% slopes (LlB)	Terraces	Well drained	No	TP-4 through TP-9
Olympic stony clay loam, 3-30% slopes (OmE)	Mountain slopes			TP-1, TP-2, TP-3, TP-10, TP-11, SD-1, SD-2, SD-3, SD-4
Vader silt loam, 3-8% slopes (VaB)	Terraces[3]			--
Lauren loam, 0 to 8 percent slopes (LeB)	Terraces			--

[1]NRCS 2024a; [2]NRCS 2024b; [3]A landform is not specified for VaB; however, it can be assumed this soil type exists on terraces because of its slope classification.

Hydrology

Wetland B

Wetland B is a seasonally flooded wetland located primarily onsite in a topographical depression in the northeast corner. Surface water was observed in Wetland B during site visits that took place between November 2022 and January 2023, however, it should be noted that no surface hydrology was observed during the September 2022 site visits. During the November 11, 2022 site visit, 12 to 18 inches of surface water was documented in the wetland. Wetland B provides flood storage and delay and groundwater recharge functions. Hydrology is supported by a shallow groundwater table, precipitation, and runoff from adjacent uplands. Wetland B does not have an outlet. According to Ecology's Water Quality Atlas, the site is in the Lacamas Creek 12-

digit hydrologic unit code (HUC) 170800050305 and Watershed Resource Inventory Area (WRIA) 28 Salmon – Washougal.

Other Onsite Hydrology

Potential wetland areas were investigated during several site visits following periods of precipitation from September 2022 to January 2023. A small pool developed in the northwest corner of the site in November 2022 and was observed during subsequent site visits. The pool was inundated with 8 inches of standing water. Although standing water was present, vegetation in and around the pool was not hydrophytic and no hydric soils were present, as described in the Soil Depth Plots subsection of this report. Based on these evaluations, ELS concludes that shallow bedrock prevents infiltration in this area and localized topography prevents water from leaving the depression, resulting in an area of pooling water that does not meet wetland criteria.

The depressional area in the northern portion of the site where TP-7 is located was also investigated as it displayed topographical conditions which could indicate the presence of wetlands. Redoximorphic concentrations were present but did not meet hydric soil criteria. Although hydrophytic vegetation was present in this area, neither hydric soils nor wetland hydrology were observed, and wetland criteria are not met.

Precipitation

Because the wetland boundaries were delineated during the November 11, 2022 site visit, precipitation data relevant to this date only were assessed. The Corps Antecedent Precipitation Tool (APT) indicates normal precipitation conditions were present preceding the November site visit (Corps 2025). Precipitation data were gathered from the NOAA Regional Climate Centers *Multnomah County, Oregon, WETS Station: Troutdale*, which is the closest station to the project site with the most complete set of precipitation data. Precipitation two weeks prior to the site visit in November totaled 7.03 inches. September and October precipitation levels were drier than normal and November precipitation levels were wetter than normal. A copy of the APT data is provided in Appendix D and precipitation data is summarized in Table 2.

Table 2. Precipitation Data

Precipitation (inches)								
Date of Visit	Two Weeks Prior	30 Days Ending	Observed	30%	70%	DAREM[1]		
						Value	Weight	Total
11/11/2022 0.00	7.03	11/11/2022	8.49	3.62	6.70	3	3	9
		10/12/2022	0.55	1.61	3.99	1	2	2
		09/12/2022	0.01	0.22	1.27	1	1	1
Rainfall 3 months prior was: drier (sum 6-9), **normal** (sum 10-14), wetter (sum 15-18).								12
Year to Date Mean Rainfall[2,3]: 6.29								
Year to Date Actual Rainfall[3]: 8.99								

[1]Direct Antecedent Rainfall Evaluation Methods (Sumner et al 2009); [2]Based on 2002-2022 precipitation data; [3]Based on a water year, which starts on October 1.

Critical Area Inventories

National Wetlands Inventory

The National Wetlands Inventory Map (NWI) does not show the presence of wetlands onsite or within 300 feet of the site (Figure 4). ELS field investigations are inconsistent with NWI Mapping as one wetland was delineated in the northeast portion of the site. Critical area inventory maps are typically used to gather information about a region and due to the large scale necessary for regional mapping, are limited in accuracy for localized analyses.

Clark County Maps Online

Clark County Maps Online (CCMO) does not indicate the presence of any critical areas onsite (Figure 5). A permitted wetland is shown offsite to the northeast and was determined to be functionally isolated from the site by existing roads. ELS field investigations are inconsistent with CCMO mapping as a wetland was mapped onsite.

Washington Department of Fish and Wildlife Priority Habitats and Species

The Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) mapping displays the presence of oak woodlands onsite (Figure 6). ELS field investigations are partially consistent with PHS, as oaks were observed in the vicinity of the mapped oaks. However, ELS biologists identified two herbaceous bald areas onsite, which are also considered priority habitats but were not mapped by WDFW. Additional discussion of oaks and herbaceous balds are in the Critical Areas Summary section of this report.

Critical Areas Summary

Wetlands

Wetland B

Wetland B is a Category III, depressional, emergent (EM), forested (FO), seasonally flooded (SF) wetland with no outlet that extends offsite to the east. The wetland is approximately 0.78 acres onsite with a total area of approximately 0.84 acres. Vegetation in Wetland B is dominated by Oregon ash, black cottonwood, Scouler's willow, Nootka rose, reed canarygrass, and water smartweed. Hydrology is supported by a shallow groundwater table, precipitation, and runoff from adjacent uplands. According to the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Rating System), Wetland B is a Category III wetland, scoring 6 points for water quality functions, 5 points for hydrologic functions, and 7 points for habitat functions, for a total score of 18 points (Appendix C).

Wetland Buffers

Standard wetland buffers are based on wetland category and habitat score from the Rating System, in conjunction with the proposed land use intensity (*CMC 16.53.040(B)(2)*). Wetland B is a Category III wetland with a habitat score of 7 points. According to *CMC Table 16.53.040-3*, the standard buffer widths for Wetland B are 75 feet, 110 feet, and 150 feet for proposed low, moderate, and high land use intensities, respectively. According to *CMC 16.53.040(B)(4)(b)(i)*, functionally isolated buffer areas are areas that do not protect the wetland from adverse impacts,

such as preexisting roads and structures, and shall be excluded from buffer requirements. A portion of the wetland buffer in the northeast corner of the site is functionally isolated due to existing impervious surfaces that extend from adjacent parcels to the north and east (Figure 2). Wetlands and buffers are summarized in Table 3.

Table 3. Wetland Summary

Identifier	HGM Class[1]	Cowardin Class, Hydroperiod[2]	Habitat Score/ Category[3]	Proposed Land Use Intensity	Buffer Width[4,5]
Wetland B (0.78 acres onsite)	Depressional	EM/FO, SF	III/7	Low	75 feet
				Moderate	110 feet
				High	150 feet

[1]NRCS 2008; [2]FGDC 2013; [3]Hruby 2023; [4]CMC Table 16.53.040-3; [5]CMC 16.61.040(D).

Fish and Wildlife Habitat Conservation Areas

Fish and Wildlife Habitat Conservation Areas are regulated by *CMC Chapter 16.61* and include areas with which state or federally designated endangered, threatened, and sensitive species have a primary association, state priority habitats and areas associated with state priority species, habitats of local importance, naturally occurring ponds under 20 acres, waters of the state, bodies of water planted with game fish by a governmental or tribal entity, and state natural area preserves and natural resource conservation areas. Habitats of local importance include Camas lily of a significant concentration (0.25 acres or greater) and Oregon white oak trees with a diameter at breast height (DBH) of 20 inches or greater (*CMC 16.61.010(A)*).

Oregon White Oak

The Washington Department of Fish and Wildlife (WDFW) identifies which oak communities are considered priority habitats through its Priority Habitats and Species (PHS) program. The Washington Natural Heritage Program (WNHP) defines a North Pacific Oak Woodland as a community dominated or co-dominated by oak and associated with dry, low-elevation sites or those with frequent fires pre-settlement (Nolan and Azerrad 2024). Oregon white oak woodlands are associated with eight different plant communities, including a wide variety of native herbaceous and shrub species. Oak woodlands provide a mix of feeding, resting, and breeding habitat for many wildlife species (Nolan and Azerrad 2024). In addition to oak woodlands, individual oak trees can be considered a priority habitat if they provide considerable value to wildlife. In addition to woodland communities, oaks are also associated with prairies and savannas in Washington. These communities are considered wooded grasslands and are an association of upland grassland and meadows (Rocchio and Crawford 2015).

Two oak clusters were identified onsite, with sixteen oaks in Cluster 1 and four oaks in Cluster 2. Three of the oaks in Cluster 1 are located offsite to the east but form a continuous and contiguous canopy with the rest of the cluster. The total dripline of Cluster 1 is approximately 0.10 acres (4,146 sq. ft.) and the total dripline of Cluster 2 is approximately 0.05 acres (2,169 sq. ft.). Although PHS mapping identifies each cluster as an oak woodland, these areas do not meet woodland size requirements and each oak shall be considered an individual. Several of the oak

trees meet WDFW priority habitat criteria for individual oaks. Oak data is summarized in Appendix E.

Herbaceous Bald Habitat

According to *CMC 16.61.010(A)(2)*, priority habitats and species are identified by WDFW; however, *CMC 16.61.010(A)(1)* states that lists, categories, and definitions of species promulgated by WDFW are provided to the City to be used for guidance only. According to the WDFW Priority Habitat and Species List (WDFW 2008) herbaceous balds are defined as:

"*…variable-sized patches of grass and forb vegetation located on shallow soils over bedrock that commonly is fringed by forest or woodland. Typically consists of low-growing vegetation adapted for survival on shallow soils amid seasonally dry conditions, and is often on steep slopes. Dominant flora includes herbaceous vegetation, dwarf shrubs, mosses, and lichens. Rock outcrops, boulders, and scattered trees are often present, especially Douglas-fir, Pacific madrone, and Oregon white oak. Balds occur within mid-montane to lowland forest zones. On slopes near saltwater shorelines in the northern Puget Trough, herbaceous balds and herbaceous bluffs can sometimes be difficult to differentiate. Balds typically are smaller than 5 ha (12 ac), although some can be up to about 100 ha (≅ 250 ac)*" (WDFW 2008).

ELS biologists identified two areas onsite that meet herbaceous bald criteria (Herbaceous Bald 1 and Herbaceous Bald 2). Herbaceous Bald 1 is approximately 0.15 acres (6,628 sq. ft.) and Herbaceous Bald 2 is approximately 0.06 acres (2,497 sq. ft.) in size. These areas are defined by shallow soils with vegetation dominated by grasses and forbs. Dominant vegetation found on herbaceous bald locations included Camas lily, licorice fern, various grasses, moss, and blackberry species. Although Camas lily was observed on the entirety of both herbaceous balds, it comprises less than 0.25 acres and is not considered a priority habitat itself. Douglas fir trees were rooted near herbaceous bald locations but not directly on the balds. All observed oaks were rooted within herbaceous bald boundaries and many displayed stunted crowns and curled leaves, likely from stress related to shallow soils and shading by Douglas fir trees. Herbaceous bald boundaries were delineated based on vegetation and the presence of bedrock under shallow soils.

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.

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FIGURES AND PHOTOPLATES

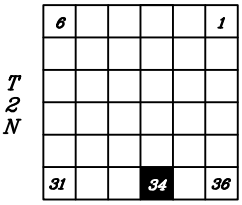
WASHINGTON



Latitude: 45.6193°
Longitude: -122.4156°

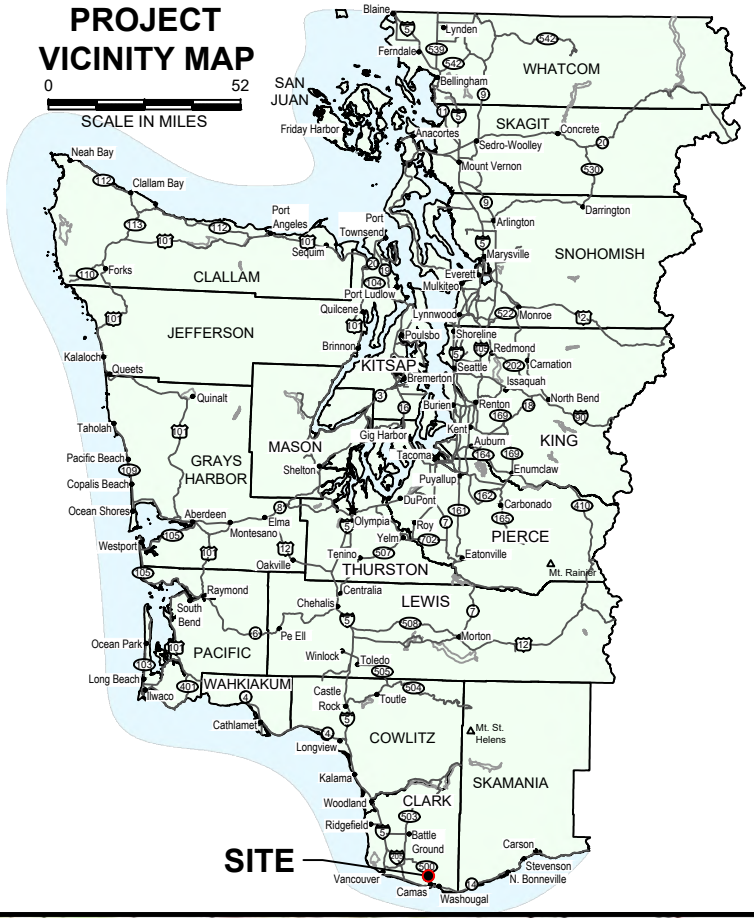
LOCATION MAP

R 3 E



PROJECT VICINITY MAP

0 52
SCALE IN MILES



SITE

NOTE:
Quadrangle topographic map from USGS.

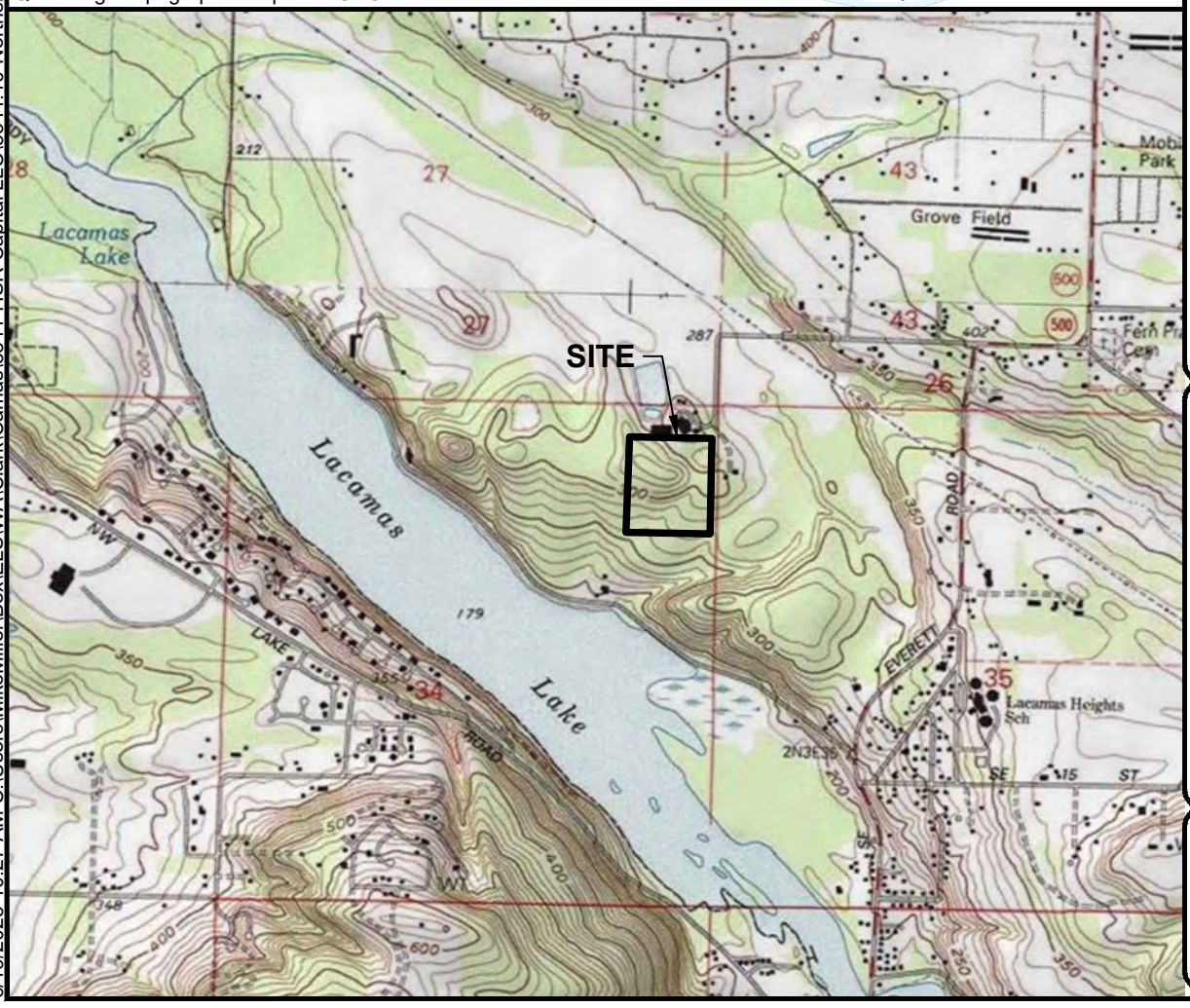


Figure 1
VICINITY MAP
Mills Property
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 5/19/25
DWN: JKJ
REQ. BY: GB
PRJ. MGR: GB
CHK:
PROJECT NO: 3341.10

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SCALE IN FEET
0
2000
4000

N
W
E
S

6/19/2025 10:27 AM C:\Users\MikeMiller\Box\ELS\WA\Clark\Camas\3341-HSR Capital LLC\3341.10-Northshore Critical Areas\3341.10-Figures CAD Only\3341.10_CAR.dwg MikeMiller

Offsite Wetland
Functionally isolated from site by road. Clark County MapsOnline identifies that this wetland unit was rated as a Category IV depressional wetland on 9/27/2016.

Parcel #: 177885000

Existing Gravel Road

NE 252nd Avenue

Wetland B
Category III
Depressional
Emergent
Forested
Seasonally Flooded
(0.78 ac. onsite)

Ditch

Existing Gravel Road

Wetland A
Category III
Depressional
Emergent
Forested
Seasonally Flooded
Saturated Only
(10.06 ac.)

Parcel #: 177885000

TP-10
TP-7
TP-8
TP-6
TP-5
TP-9
TP-4
TP-2
TP-3
TP-1
TP-11

SD-1
SD-2
SD-3
SD-4

150'
110'
75'

Herbaceous Bald 2

Herbaceous Bald 1

Parcel #: 178175000

Stream A
Type F

150'
110'
75'

NOTE(S):
1. Aerial (6/17/2021) from Google Earth™.
2. Contours obtained from drawing provided by AKS Engineering & Forestry.
3. Wetlands, herbaceous bald boundaries, oak driplines, soil depth plots, and test plots located using handheld GPS capable of submeter accuracy.

LEGEND:
- Site Boundary
- Parcel Boundary
- Wetland Boundary
- Approximate Wetland Boundary
- Wetland Buffer - Low Intensity (75')
- Wetland Buffer - Moderate Intensity (110')
- Wetland Buffer - High Intensity (150')
- Functionally Isolated Wetland Buffer
- Stream with Flow Direction
- Riparian Buffer
- 1'-5' Contours
- Contiguous Oak Dripline
- Herbaceous Bald Boundary
- TP-1 ● Test Plot Location
- SD-1 × Soil Depth Plot Location

Figure 2
EXISTING CONDITIONS
Mills Property
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 5/19/25
DWN: JKJ
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SCALE IN FEET
0
150
300

N
W
E
S

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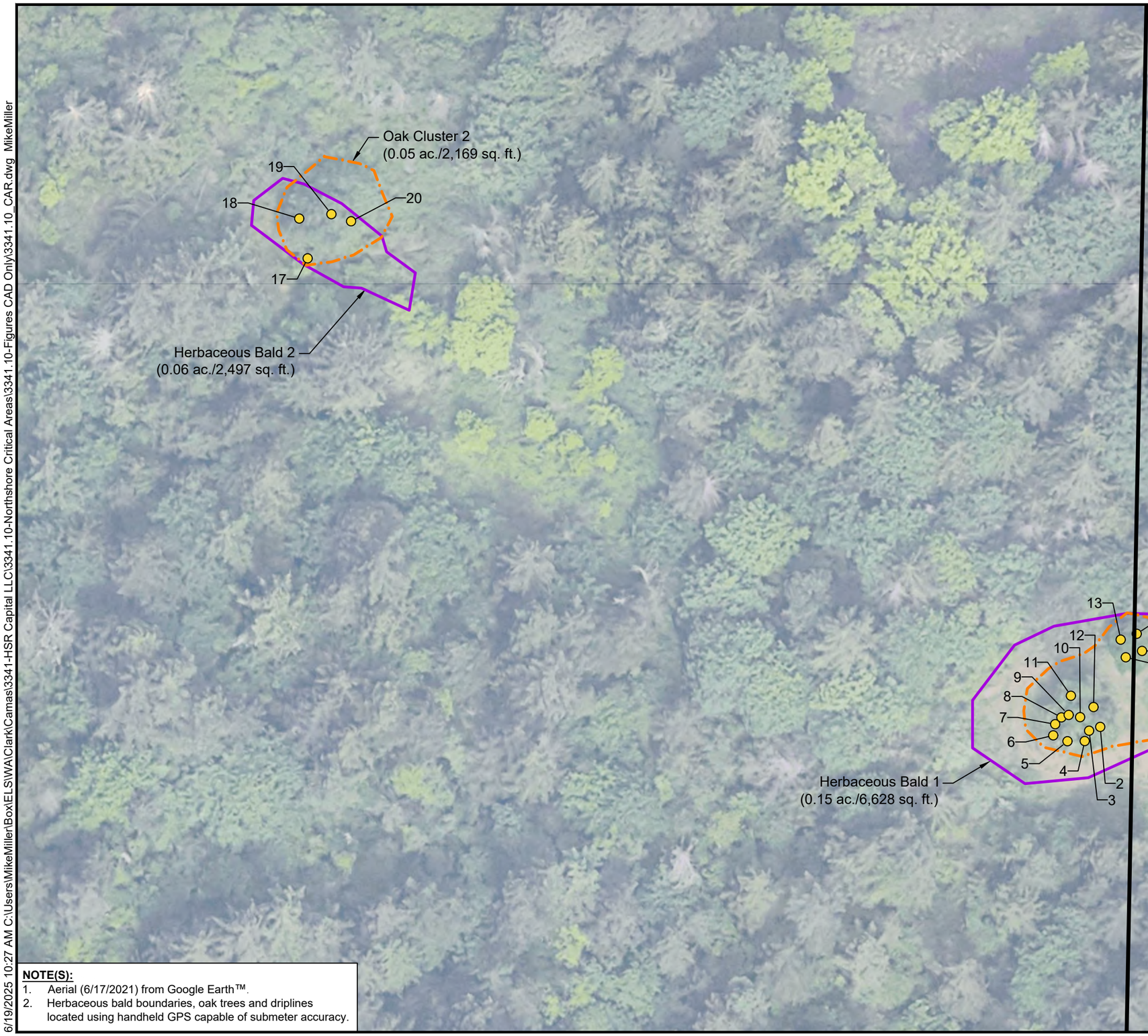

NOTE(S):
1. Aerial (6/17/2021) from Google Earth™.
2. Herbaceous bald boundaries, oak trees and driplines located using handheld GPS capable of submeter accuracy.

LEGEND:
- Site Boundary
- Oak
- Contiguous Oak Dripline
- Herbaceous Bald

SCALE IN FEET: 0, 50, 100

N, W, E, S

Figure 2a
HABITAT AREAS DETAIL
Mills Property
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 5/19/25
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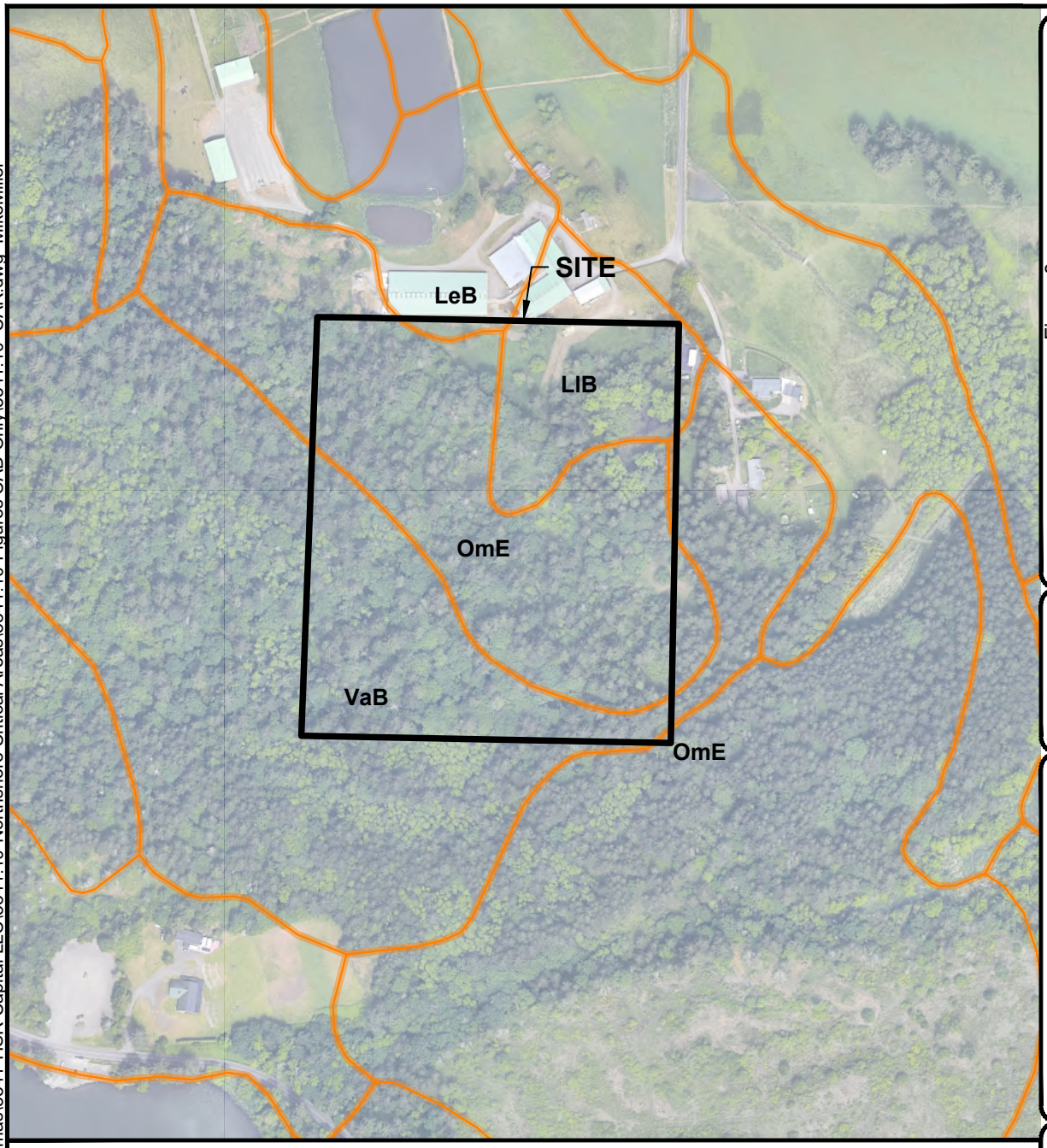

Figure 3
NRCS SOIL SURVEY
Mills Property
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 5/19/25
DWN: JKJ
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0 400 800
SCALE IN FEET

N
W E
S

LEGEND:

- Site Boundary
- NRCS Soil Boundary
- **LeB** Lauren loam, 0 to 8 percent slopes. Not hydric.
- **LIB** Lauren very gravelly loam, 0 to 8 percent slopes. Not hydric.
- **OmE** Olympic stony clay loam, 3 to 30 percent slopes. Not hydric.
- **VaB** Vader silt loam, 3 to 8 percent slopes. Not hydric.

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

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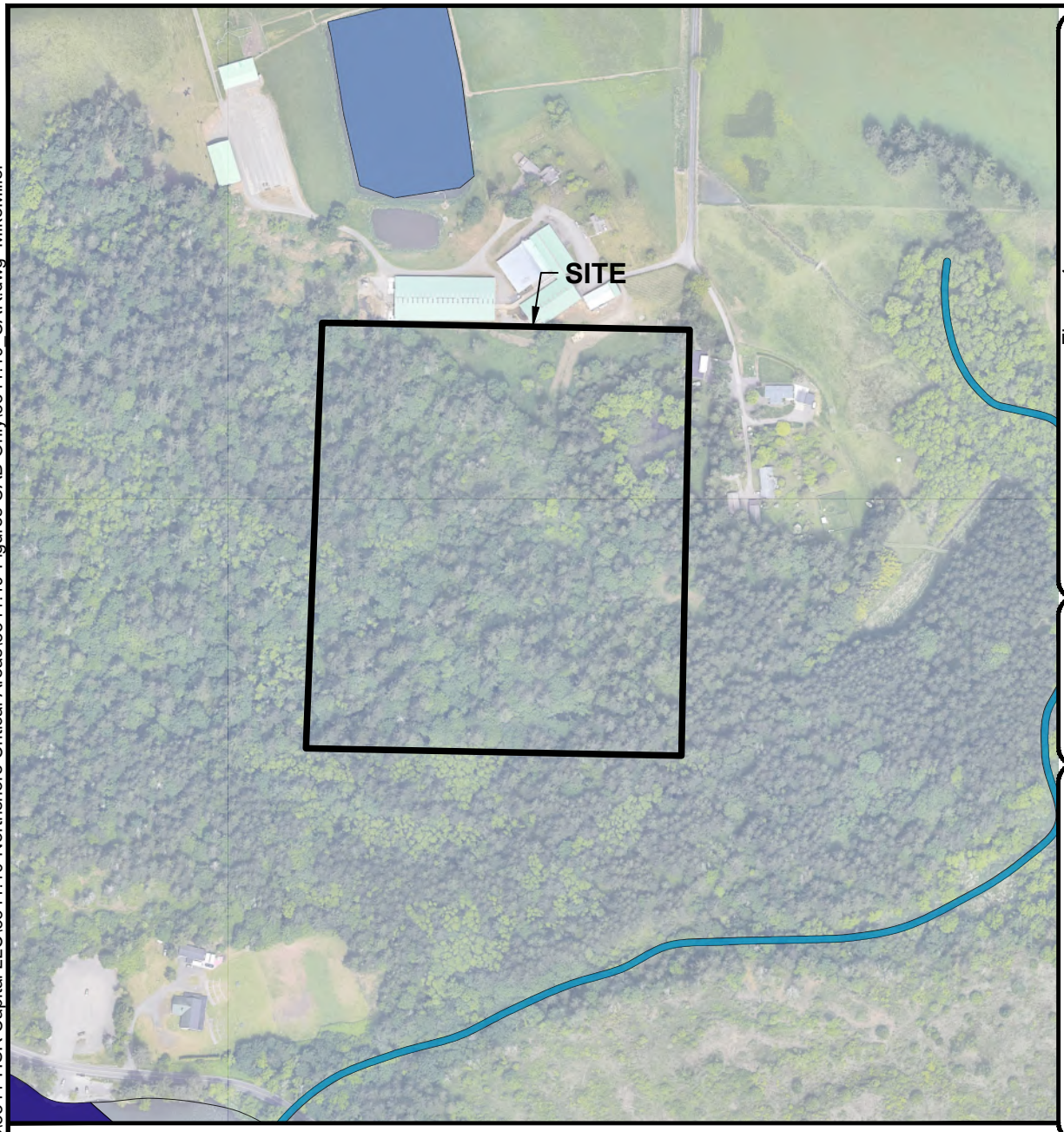

Figure 4
USFWS NATIONAL WETLANDS INVENTORY
Mills Property
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 5/19/25
DWN: JKJ
REQ. BY: GB
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No mapped wetlands indicated onsite by US Fish & Wildlife Service.

LEGEND:

Site Boundary

Wetlands

Freshwater Pond

Riverine

0 400 800
SCALE IN FEET

N
W E
S

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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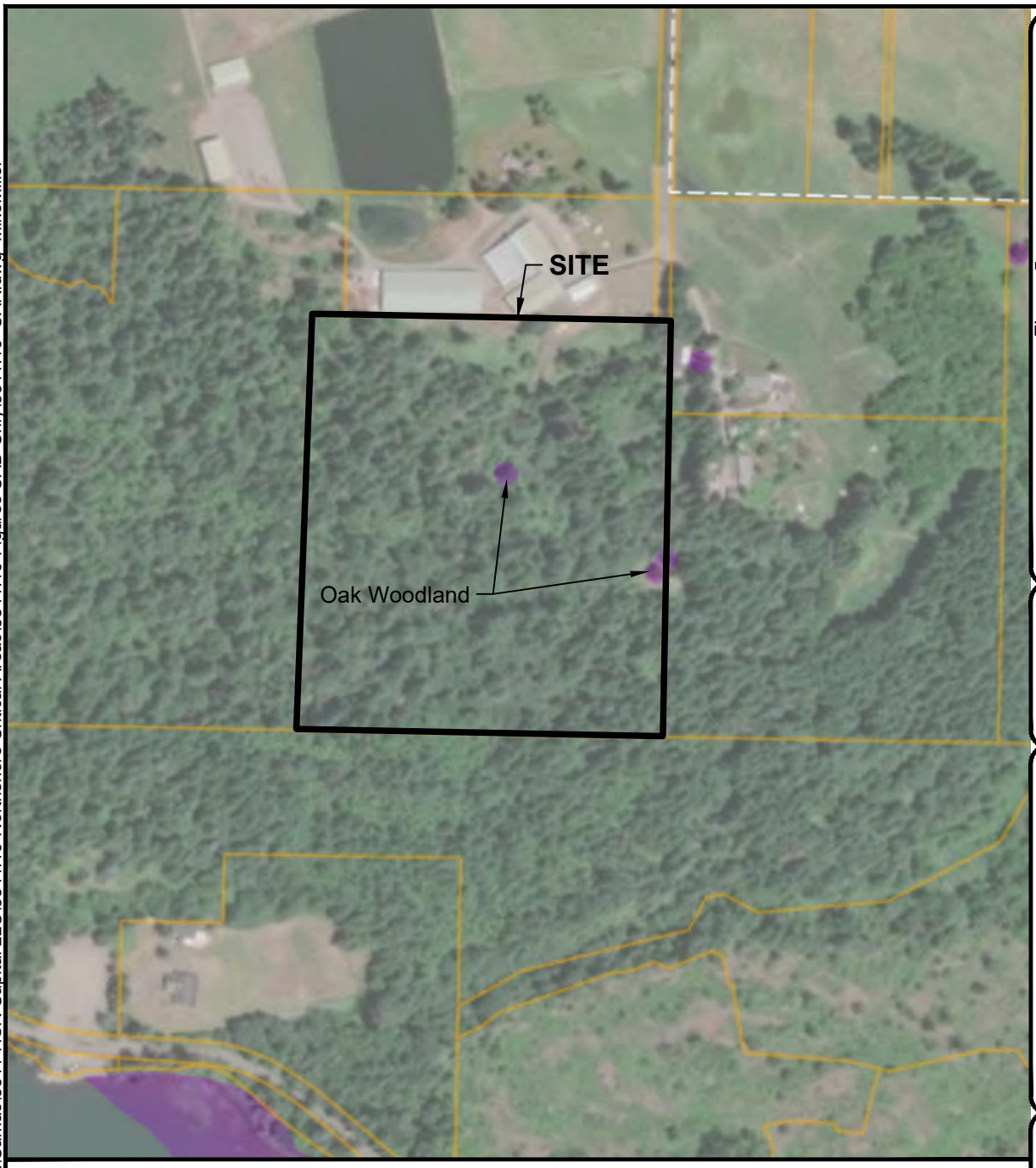

Figure 5
WDFW PRIORITY HABITAT AND SPECIES
Mills Property
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 5/19/25
DWN: JKJ
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0 400 800
SCALE IN FEET

N W E S

LEGEND:

Site Boundary

Parcel Boundary

Priority Habitats
Oak Woodland - Habitat Feature
By Township:
Caves or Cave-rich Areas - Occurence

NOTE: Map provided on-line by Washington State Department of Fish & Wildlife at web address:
http://apps.wdfw.wa.gov/phsontheweb/

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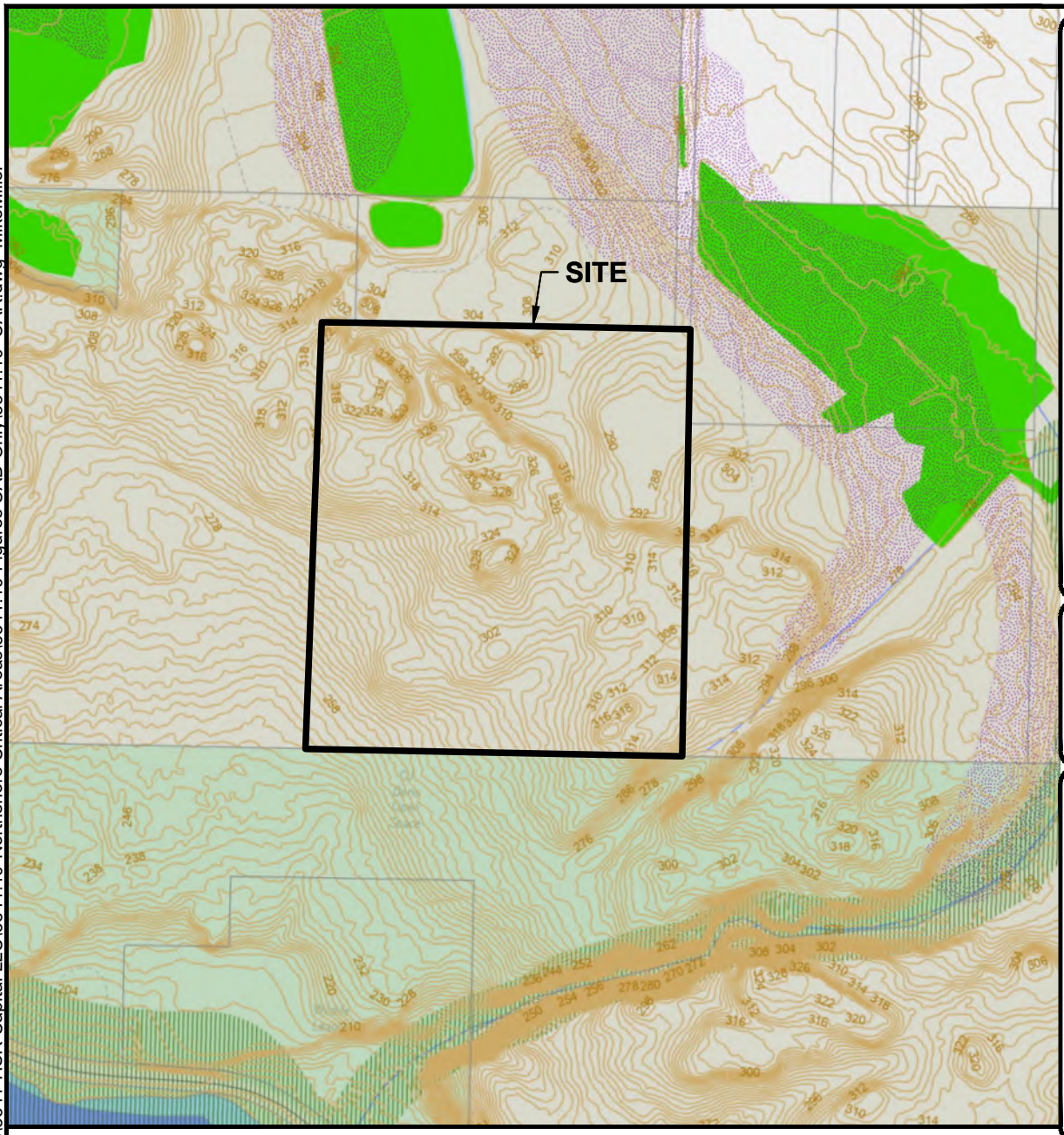

Figure 6
CLARK COUNTY CRITICAL AREAS
Mills Property
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 5/19/25
DWN: JKJ
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LEGEND:

Site Boundary

Environmental
Priority Habitats and Species Group
Riparian Habitat
Riparian Habitat Area

Slopes and Geologic Hazards Group
Contour Lines
Contour Lines - 2 ft

Soils and Wetlands Inventory
Hydric Soils
Permitted Wetland

DNR Water Feature
Stream - DNR

0 400 800
SCALE IN FEET

N
W E
S

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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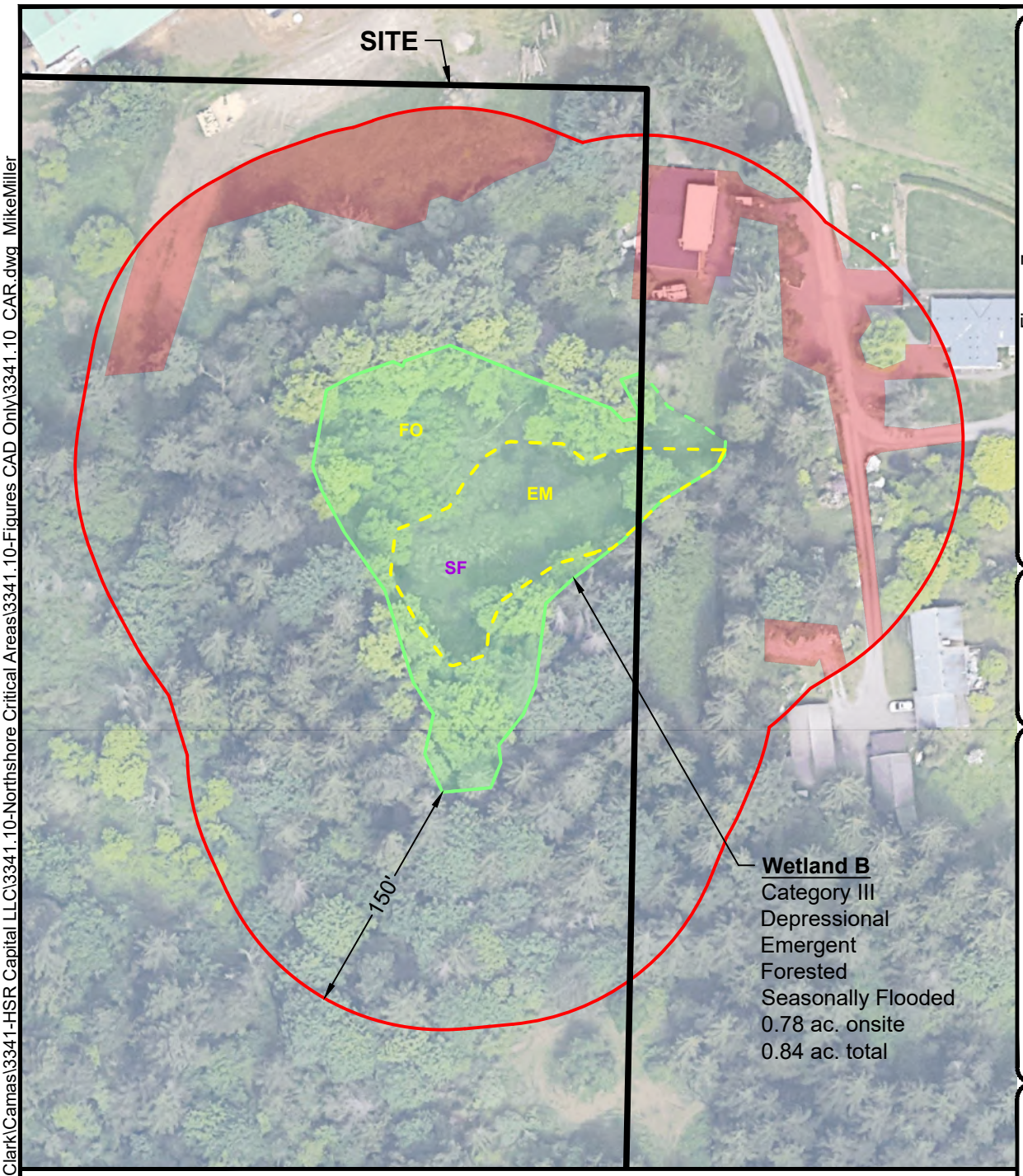

Figure 7
WETLAND RATING FORM-150' OFFSET
Mills Property
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 5/19/25
DWN: JKJ
REQ. BY: GB
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0 100 200
SCALE IN FEET

N W E S

LEGEND:
- Site Boundary
- Wetland Unit Boundary
- 150' Wetland Offset
- Pollutants/Runoff - 15.5%
- Vegetation Class Division

Cowardin Classes:
- EM Emergent (37.5%)
- FO Forested (62.5%)

Hydroperiods:
- SF Seasonally flooded or inundated (100%)

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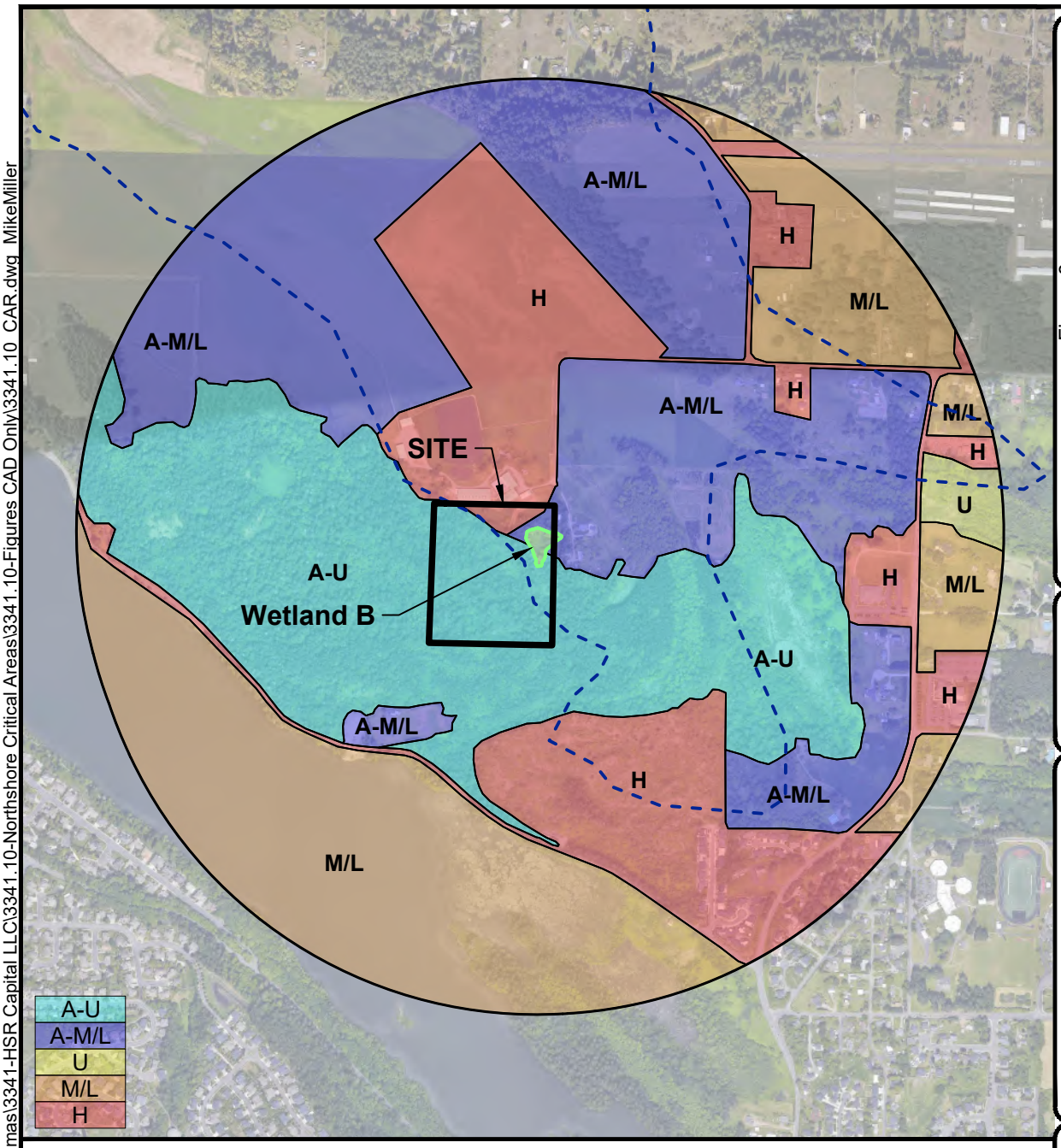

Figure 8
WETLAND RATING FORM-1 km OFFSET
Mills Property
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 5/19/25
DWN: JKJ
REQ. BY: GB
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LEGEND:

- Site Boundary
- Wetland Unit Boundary
- Contributing Basin
  552x area of Wetland B

H2.1 Accessible Habitat

- A-U: A-U (23.9%)
- A-M/L: A-M/L (30.8%)

H2.2 Undisturbed Habitat

- U: U (0.9%)
- M/L: M/L (23.9%)

H2.3 Land Use Intensity

- H: H (20.5%)

SCALE IN FEET: 0, 1200, 2400

H 2.1. Accessible Habitat Equation

% A-U habitat **23.9%** + [(% A-M/L intensity land uses)/2] **15.4%** = **39.3%**

H 2.2. Total Undisturbed Habitat Equation

% A-U + % U habitat **24.8%** + [(% A-M/L + % M/L land uses)/2] **27.4%** = **52.2%**

N, W, E, S

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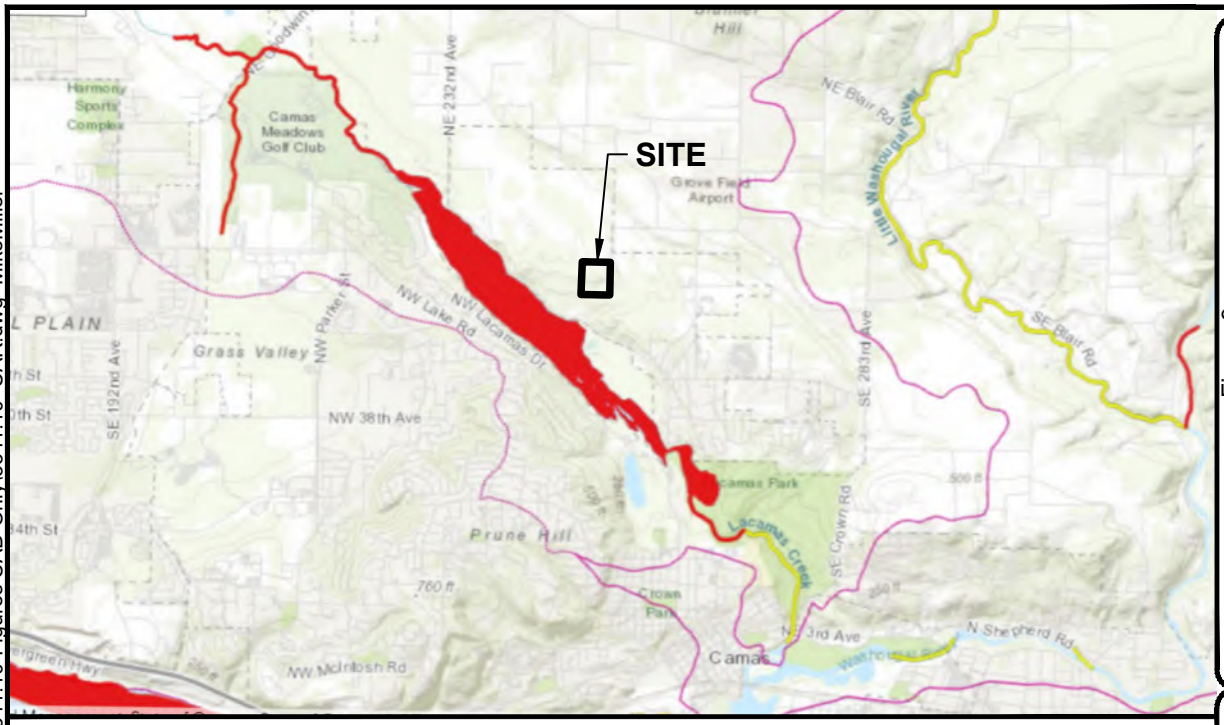


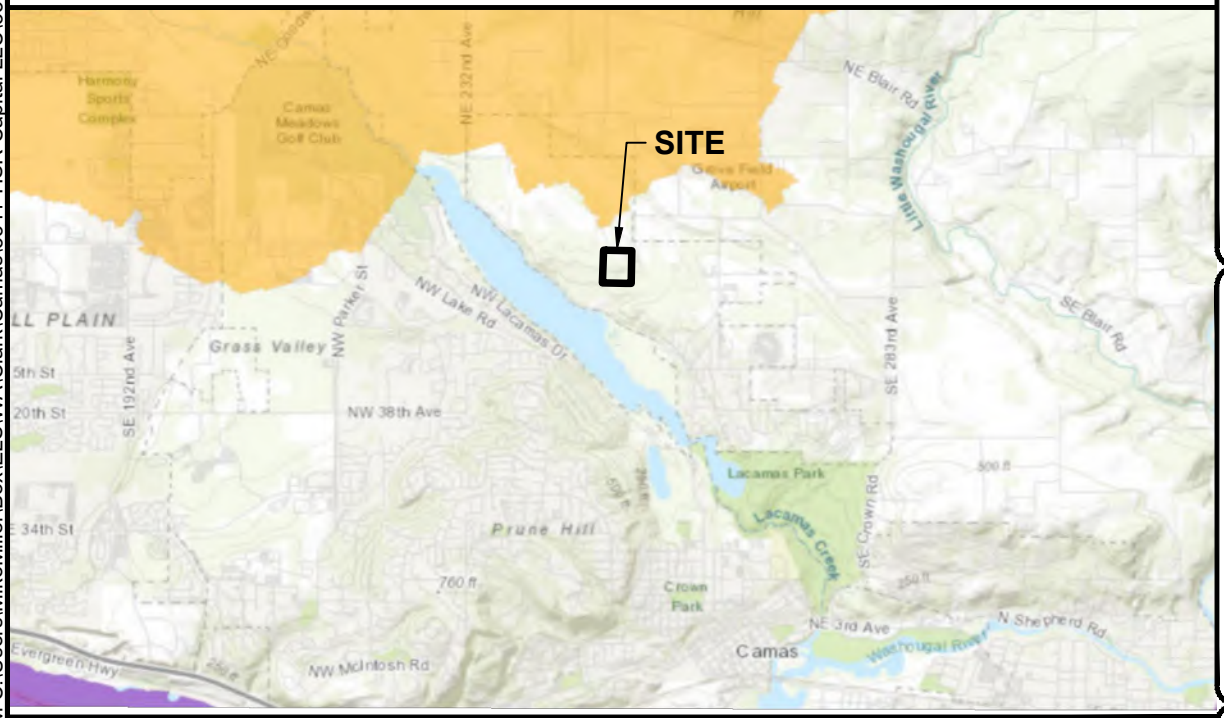
Assessed Waters/Sediment

Water

- Category 5 - 303d
- Category 2

Subbasins

- 12 Digit HUC Boundary



WQ Improvement Projects

- Approved
- In Development

NOTE(S):

1. Map provided on-line by Washington State Department of Ecology at web address: *https://fortress.wa.gov/ecy/waterqualityatlas/map.aspx?*

Figure 9
WETLAND RATING FORM-303(d) and TMDLs
Mills Property
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 5/19/25
DWN: JKJ
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0 6000 12000
SCALE IN FEET

N W E S

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Photo 1

A view of the herbaceous bald area which is dominated by mosses and licorice fern.



Photo 2

A view of Oak Cluster 1, facing north.



Photo 3

A view of Oak Cluster 2 adjacent to the herbaceous bald showing in Photo 1 above.

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PROJ.#: 3341.10

Photoplate 1
Mills Property
Camas, Washington
Section 34, Township 2N, Range 3E, W.M.



Photo 4

A view of the forested portion of Wetland B, facing east.



Photo 5

A view of slough sedge in the southern portion of Wetland B.



Photo 6

A view of standing water at the location of TP-5 within Wetland B.

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11/11/2022
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Photoplate 2
Mills Property
Camas, Washington
Section 34, Township 2N, Range 3E, W.M.



Photo 7

A view of the non-wetland pool in the north-west corner of the site.



Photo 8

A view of upland conditions in the central portion of the site.



Photo 9

A view of the herbaceous upland area in the northern portion of the site.

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PRJ. MGR: JB
PROJ.#: 3341.10

Photoplate 3
Mills Property
Camas, Washington
Section 34, Township 2N, Range 3E, W.M.



Photo 10

A view of upland vegetation in the southwest corner of the site.



Photo 11

A view of upland vegetation in the southeast corner of the site.



Photo 12

A view of upland vegetation in the south central portion of the site.

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Photoplate 4
Mills Property
Camas, Washington
Section 34, Township 2N, Range 3E, W.M.



Photo 13

Photo is of Oak Cluster 1 showing the presence of Camas lily and herbaceous bald habitat



Photo 14

A view of herbaceous bald habitat near Oak Cluster 2.



Photo 15

A view of herbaceous bald habitat near Oak Cluster 2.

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DATE: 4/29/2025
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PRJ. MGR: JB
PROJ.#: 3341.10

Photoplate 5
Mills Property
Camas, Washington
Section 34, Township 2N, Range 3E, W.M.

APPENDIX A

ROUTINE DETERMINATION METHOD AND PLANT INDICATOR RATING DEFINITIONS

Routine Determination Method

The Routine Determination Method is defined 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 examines three parameters – vegetation, soils, and hydrology – to determine if wetlands exist in a given area. Hydrology is critical in determining what is a wetland, but if often difficult to assess because hydrologic conditions can change periodically (hourly, daily, or seasonally). Consequently, it is necessary to determine if hydrophytic vegetation and hydric soils are present, which would indicate that water is present for a long enough duration to support a wetland plant community. By definition, wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Vegetation Indicator Status

The indicator status, following the scientific names of plant species, indicates the likelihood of the species to be found in wetlands according to the *National Wetland Plant List Indicator Rating Definitions* (Corps 2012). Listed from most likely to least likely to be found in wetlands, the indicator status categories are:

- **OBL** (obligate wetland) - occur almost always under natural conditions in wetlands.
- **FACW** (facultative wetland) - usually occur in wetlands, but occasionally found in non-wetlands.
- **FAC** (facultative) - equally likely to occur in wetlands or non-wetlands.
- **FACU** (facultative upland) - usually occur in non-wetlands, but occasionally found in wetlands.
- **UPL** (obligate upland) - occur almost always under natural conditions in non-wetlands.
- **NI** (no indicator) - insufficient data to assign to an indicator category.

APPENDIX B

WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mills Property City/County: Camas/Clark Sampling Date: 9/23/22

Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-1

Investigator(s): KT Wills; Jess Andrade Section, Township, Range: S34, T2N, R3E

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 3-30

Subregion (LRR): LRR A, MLRA 2 Lat: 45.6190672 Long: -122.4161983 Datum: NAD83

Soil Map Unit Name: Olympic stony clay loam, 3 to 30 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
This test plot is located in the central section of Parcel 177885000 at the bottom of a slope. This test plot did not meet all wetland indicators, therefore it does not meet the criteria of being a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Pseudotsuga menziesii*	30	Yes	FACU
2. *Thuja plicata*	20	Yes	FAC
3.			
4.			
	50	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1. *Acer circinatum*	20	Yes	FAC
2. *Frangula purshiana*	20	Yes	FAC
3. *Corylus cornuta*	20	Yes	FACU
4. *Mahonia aquifolium*	15	No	FACU
5. *Acer macrophyllum (saplings)*	5	No	FACU
	85	=Total Cover	
Herb Stratum (Plot size: 5 ft. radius)			
1. *Polystichum munitum*	30	Yes	FACU
2. *Rubus ursinus*	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	50	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft. radius)			
1. *Clematis sp**	20	Yes	FAC
2.			
	20	=Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vacular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:
* Assumed FAC indicator status.

VEGETATION Continued – Use scientific names of plants. Sampling Point: TP-1

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	50	=Total Cover	
Sapling/Shrub Stratum			
6. *Holodiscus discolor*	5	No	FACU
7.			
8.			
9.			
10.			
11.			
12.			
13.			
	85	=Total Cover	
Herb Stratum			
12.			
13.			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
23.			
	50	=Total Cover	
Woody Vine Stratum			
3.			
4.			
5.			
6.			
7.			
	20	=Total Cover	

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants less than 3 in. DBH, regardless of height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size.

Woody Vine – All woody vines, regardless of height.

Remarks:

SOIL

Sampling Point: TP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: bedrock

Depth (inches): 4

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ? Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mills Property City/County: Camas/Clark Sampling Date: 11/11/22

Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-2

Investigator(s): KT Wills; Jess Andrade Section, Township, Range: S34, T2N, R3E

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 3-30

Subregion (LRR): LRR A, MLRA 2 Lat: 45.6195332 Long: -122.4145612 Datum: NAD83

Soil Map Unit Name: Olympic stony clay loam, 3 to 30 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
This test plot is located in the eastern section of Parcel 177885000. All three wetland indicators were met within the profile. Therefore, TP-2 is located in a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	50	Yes	FACW
2.			
3.			
4.			
	50	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1. *Rosa nutkana*	30	Yes	FAC
2. *Spiraea douglasii*	20	Yes	FACW
3. *Cornus nuttallii*	10	No	FACU
4.			
5.			
	60	=Total Cover	
Herb Stratum (Plot size: 5 ft. radius)			
1. *Carex obnupta*	50	Yes	OBL
2. *Rubus ursinus*	20	Yes	FACU
3. *Athyrium filix-femina*	5	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	75	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft. radius)			
1. *Rubus armeniacus*	1	No	FAC
2.			
	1	=Total Cover	

% Bare Ground in Herb Stratum 25

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vacular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: TP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					Mucky Loam/Clay	
5-10	10YR 3/1	95	7.5YR 4/4	5	C	M	Loamy/Clayey	
10-16	10YR 4/2	95	7.5YR 4/6	5	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- X Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 6
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mills Property City/County: Camas/Clark Sampling Date: 11/11/22

Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-3

Investigator(s): KT Wills; Jess Andrade Section, Township, Range: S34, T2N, R3E

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 3-30

Subregion (LRR): LRR A, MLRA 2 Lat: 45.6194916 Long: -122.414523 Datum: NAD83

Soil Map Unit Name: Olympic stony clay loam, 3 to 30 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
This test plot is located in the eastern section of Parcel 177885000. This test plot did not meet all wetland indicators, therefore it does not meet the criteria of being a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	40	Yes	FACW
2. *Thuja plicata*	30	Yes	FAC
3.			
4.			
	70	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1. *Rosa nutkana*	15	Yes	FAC
2. *Corylus cornuta*	10	Yes	FACU
3. *Cornus nuttallii*	5	No	FACU
4. *Sambucus racemosa*	5	No	FACU
5.			
	35	=Total Cover	
Herb Stratum (Plot size: 5 ft. radius)			
1. *Athyrium filix-femina*	30	Yes	FAC
2. *Polystichum munitum*	15	Yes	FACU
3. *Carex obnupta*	2	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	47	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft. radius)			
1. Rubus armeniacus	5	Yes	FAC
2.			
	5	=Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.4% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vacular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:
Moss and leaf litter cover approximately 53 percent of the herbaceous stratum.

SOIL

Sampling Point: TP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 2/2	100					Loamy/Clayey	See below.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
This layer also had 40% gravel.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mills Property City/County: Camas/Clark Sampling Date: 11/11/22

Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-4

Investigator(s): KT Wills; Jess Andrade Section, Township, Range: S34, T2N, R3E

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-8

Subregion (LRR): LRR A, MLRA 2 Lat: 45.6198613 Long: -122.4147568 Datum: NAD83

Soil Map Unit Name: Lauren very gravelly loam, 0 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
This test plot is located in the northeastern section of Parcel 177885000 in a depression. This test plot did meet all wetland indicators, therefore it does meet the criteria of being a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: 5 ft. radius)			
1. *Phalaris arundinacea*	40	Yes	FACW
2. *Persicaria amphibia*	40	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80 =Total Cover		
Woody Vine Stratum (Plot size: 15 ft. radius)			
1.			
2.			
	____ =Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vacular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:
20% open water and trace presence of Salix sitchensis (sitka willow).

SOIL

Sampling Point: TP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** x **No** ___

Remarks:

18+ inches of water depth at this test plot.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes x	No ___	Depth (inches): 18
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

18+ inches of water depth at this test plot.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mills Property City/County: Camas/Clark Sampling Date: 11/11/22

Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-5

Investigator(s): KT Wills; Jess Andrade Section, Township, Range: S34, T2N, R3E

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-8

Subregion (LRR): LRR A, MLRA 2 Lat: 45.6202391 Long: -122.4146616 Datum: NAD83

Soil Map Unit Name: Lauren very gravelly loam, 0 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
This test plot is located in the northeastern section of Parcel 177885000. This test plot did meet all wetland indicators, therefore it does meet the criteria of being a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus latifolia*	5	Yes	FACW
2.			
3.			
4.			
	5	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1. *Rosa nutkana*	10	Yes	FAC
2. *Populus balsamifera (saplings)*	10	Yes	FAC
3. *Salix scouleriana*	10	Yes	FAC
4.			
5.			
	30	=Total Cover	
Herb Stratum (Plot size: 5 ft. radius)			
1. *Phalaris arundinacea*	20	Yes	FACW
2. *Persicaria amphibia*	10	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	30	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft. radius)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vacular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:
70% open water

SOIL

Sampling Point: TP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
								See below.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- X Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

12 inches of surface water depth at this test plot.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes x	No ___	Depth (inches): 12
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mills Property City/County: Camas/Clark Sampling Date: 11/11/22

Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-6

Investigator(s): KT Wills; Jess Andrade Section, Township, Range: S34, T2N, R3E

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 0-8

Subregion (LRR): LRR A, MLRA 2 Lat: 45.6202862 Long: -122.4146177 Datum: NAD83

Soil Map Unit Name: Lauren very gravelly loam, 0 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
This test plot is located in the northeastern section of Parcel 177885000 upland of Wetland A. This test plot did not meet all wetland indicators, therefore it does not meet the criteria of being a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus balsamifera*	30	Yes	FAC
2. *Fraxinus latifolia*	20	Yes	FACW
3.			
4.			
	50	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1. *Populus balsamifera (saplings)*	30	Yes	FAC
2. *Fraxinus latifolia*	5	No	FACW
3.			
4.			
5.			
	35	=Total Cover	
Herb Stratum (Plot size: 5 ft. radius)			
1. *Rubus ursinus*	50	Yes	FACU
2. *Phalaris arundinacea*	15	No	FACW
3. *Carex deweyana*	15	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80	=Total Cover	
Woody Vine Stratum (Plot size: 15 ft. radius)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vacular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: TP-6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/1	100					Loamy/Clayey	See below.

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Root refusal

Depth (inches): 10

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
Root refusal at 10".

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- x FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mills Property City/County: Camas/Clark Sampling Date: 11/11/22

Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-7

Investigator(s): KT Wills; Jess Andrade Section, Township, Range: S34, T2N, R3E

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 3-30

Subregion (LRR): LRR A, MLRA 2 Lat: 45.620403 Long: -122.4158555 Datum: NAD83

Soil Map Unit Name: Olympic stony clay loam, 3 to 30 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
This test plot is located in the northeastern section of Parcel 177885000 in a depression. This test plot did meet all wetland indicators, therefore it does meet the criteria of being a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft. radius)			
1. *Festuca arundinacea*	80	Yes	FACW
2. *Ranunculus repens*	10	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 =Total Cover		
Woody Vine Stratum (Plot size: 15 ft. radius)			
1.			FAC
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vacular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: TP-7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 2/2	100					Loamy/Clayey	
12-16	10YR 3/2	75	5YR 3/4	5	C	PL	Loamy/Clayey	See below.
			5YR 3/4	20	C	M		Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** x

Remarks:

Some gravel and charcoal near the bottom of the soil sample range.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No x Depth (inches): ___

Water Table Present? Yes ___ No x Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No x Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mills Property City/County: Camas/Clark Sampling Date: 12/15/22

Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-8

Investigator(s): KT Wills; Jess Andrade Section, Township, Range: S34, T2N, R3E

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 0-8

Subregion (LRR): LRR A, MLRA 2 Lat: 45.6205959 Long: -122.414489 Datum: NAD83

Soil Map Unit Name: Lauren very gravelly loam, 0 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
This test plot is located in the northeastern section of Parcel 177885000 on a terrace. This test plot did not meet all wetland indicators, therefore it does not meet the criteria of being wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: 5 ft. radius)			
1. *Carex obnupta*	80	Yes	OBL
2. *Plantago lanceolata*	5	No	FACU
3. *Rumex crispus*	5	No	FAC
4. *Hypochaeris radicata*	5	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95 =Total Cover		
Woody Vine Stratum (Plot size: 15 ft. radius)			
1. *Rubus armeniacus*	5	Yes	FAC
2.			
	5 =Total Cover		

% Bare Ground in Herb Stratum 5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vacular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: TP-8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	100					Loamy/Clayey	Restrictive layer at 6"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 6

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mills Property City/County: Camas/Clark Sampling Date: 12/15/22

Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-9

Investigator(s): KT Wills; Jess Andrade Section, Township, Range: S34, T2N, R3E

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 0-8

Subregion (LRR): LRR A, MLRA 2 Lat: 45.6202053 Long: -122.4157401 Datum: NAD83

Soil Map Unit Name: Lauren very gravelly loam, 0 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
This test plot is located in the northern central section of Parcel 177885000 on a terrace. This test plot did not meet all wetland indicators, therefore it does not meet the criteria of being wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft. radius)			
1. *Agrostis capillaris*	55	Yes	FAC
2. *Hypochaeris radicata*	20	Yes	FACU
3. *Ranunculus repens*	20	Yes	FAC
4. *Cirsium arvense*	5	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: 15 ft. radius)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vacular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: TP-9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/3	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mills Property City/County: Camas/Clark Sampling Date: 12/15/22

Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-10

Investigator(s): KT Wills; Jess Andrade Section, Township, Range: S34, T2N, R3E

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 0-8

Subregion (LRR): LRR A, MLRA 2 Lat: 45.6204896 Long: -122.4163951 Datum: NAD83

Soil Map Unit Name: Lauren loam, 0 to 8 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
This test plot is located in the northwestern section of Parcel 177885000 on a terrace. This test plot did not meet all wetland indicators, therefore it does not meet the criteria of being a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft. radius)			
1. *Agrostis capillaris*	100	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: 15 ft. radius)			
1.			
2.			
	=Total Cover		
% Bare Ground in Herb Stratum 0			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vacular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:

SOIL

Sampling Point: TP-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/3	100					Loamy/Clayey	Restrictive layer at 5"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 5

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mills Property City/County: Camas/Clark Sampling Date: 12/15/22

Applicant/Owner: HSR Capital, LLC State: WA Sampling Point: TP-11

Investigator(s): KT Wills; Jess Andrade Section, Township, Range: S34, T2N, R3E

Landform (hillside, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 3-20

Subregion (LRR): LRR A, MLRA 2 Lat: 45.6189702 Long: -122.4143748 Datum: NAD83

Soil Map Unit Name: Onlympic stony clay loam, 3 to 20 percent slopes NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
This test plot is located in the western section of Parcel 177885000 on a terrace. This test plot did not meet all wetland indicators, therefore it does not meet the criteria of being a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1. *Mahonia nervosa*	10	Yes	FACU
2.			
3.			
4.			
5.			
	10 =Total Cover		
Herb Stratum (Plot size: 5 ft. radius)			
1. *Agrostis capillaris*	90	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 =Total Cover		
Woody Vine Stratum (Plot size: 15 ft. radius)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 10

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

____ 1 - Rapid Test for Hydrophytic Vegetation

____ 2 - Dominance Test is >50%

____ 3 - Prevalence Index is ≤3.0[1]

____ 4 - Morphological Adaptations[1](Provide supporting data in Remarks or on a separate sheet)

____ 5 - Wetland Non-Vacular Plants[1]

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:

SOIL

Sampling Point: TP-11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/1	100					Loamy/Clayey	
3-11	10YR 3/3	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Bedrock

Depth (inches): 11

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No x	Depth (inches): ___
Water Table Present?	Yes ___	No x	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No x	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

APPENDIX C

WETLAND RATING FORM FOR WESTERN WASHINGTON

Wetland B

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland B Date of site visit: 11/11/2022

Rated by: Julianne Blake Trained by Ecology? X Yes ___No Date of training: 6/2022

HGM Class used for rating: Depressional Wetland has multiple HGM classes? ___Y X N

NOTE: **Form is not complete without the required figures** (figures can be combined).
Source of base aerial photo/map: Google Earth

OVERALL WETLAND CATEGORY III (based on functions X or special characteristics__)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

__X__**Category III** – Total score = 16 - 19

_____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H (M) L	H (M) L	H M (L)	
Landscape Potential	H (M) L	H (M) L	(H) M L	
Value	H (M) L	H M (L)	(H) M L	TOTAL
Score Based on Ratings	**6**	**5**	**7**	**18**

Score for each function based on three ratings
(order of ratings is not important)

9 = H, H, H
8 = H, H, M
7 = H, H, L
7 = H, M, M
6 = H, M, L
6 = M, M, M
5 = H, L, L
5 = M, M, L
4 = M, L, L
3 = L, L, L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	**I** **II**
Wetland of High Conservation Value	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I** **II**
Interdunal	**I II III IV**
None of the above	(Not Applicable)

Wetland B

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	7
Hydroperiods	D 1.4, H 1.2	7
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	7
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	7
Map of the contributing basin	D 4.3, D 5.3	8
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	8
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	9
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	9

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and total habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland B

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**

If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe, it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.

2. The entire wetland unit is flat, and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

NO – go to 3 **YES** – The wetland class is **Flats**

If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet all** of the following criteria?
   ___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size,
   ___At least 30% of the open water area is deeper than 6.6 ft (2 m).

NO – go to 4 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
   ____The wetland is on a slope (slope can be very gradual),
   ____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheet flow, or in a swale without distinct banks,
   ____The water leaves the wetland **without being impounded**.

NO – go to 5 **YES –** The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

Wetland B

5. Does the entire wetland unit **meet all** of the following criteria?
   ____The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ____The overbank flooding occurs at least once every 2 years.

   NO – go to 6 **YES** – The wetland class is **Riverine**
   NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? This means that any outlet, if present, is higher than the interior of the wetland.

   NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched but has no obvious natural outlet.

   NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

   NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.

Wetland B

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	**3**
D 1.2. The soil 2 in. below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* Yes = 4 No = 0	**0**
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed plants > 95% of area points = 5 Wetland has persistent, ungrazed plants > ½ of area points = 3 Wetland has persistent, ungrazed plants ≥ 1/10 of area points = 1 Wetland has persistent, ungrazed plants < 1/10 of area points = 0	**3**
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is ≥ ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	**4**
Total for D 1 Add the points in the boxes above	**10**

Rating of Site Potential If score is: **__12-16 = H __X_6-11 = M ___0-5 = l** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	**0**
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	**1**
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	**0**
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source: Yes = 1 No = 0	**0**
Total for D 2 Add the points in the boxes above	**1**

Rating of Landscape Potential If score is: **___3 or 4 = H __X_1 or 2 = M ____ 0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	**0**
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	**1**
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality? (Answer YES if there is a TMDL in development or in effect for the basin in which the unit is found.) Yes = 2 No = 0	**0**
Total for D 3 Add the points in the boxes above	**1**

Rating of Value If score is**: ___2-4 = H __X_1 = M ____0 = L** *Record the rating on the first page*

Wetland B

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?

D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream/ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (question 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	**4**
D 4.2. Depth of storage during wet periods: Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part. Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 **Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3** The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	**3**
D 4.3. Contribution of the wetland to storage in the watershed: Estimate the ratio of the area of upstream basin contributing surface water to the area of the wetland unit itself. The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	0
Total for D 4 Add the points in the boxes above	7

Rating of Site Potential If score is: ___**12-16 = H** __**X**__**6-11 = M** ___**0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?

D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	**0**
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	**1**
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	**1**
Total for D 5 Add the points in the boxes above	2

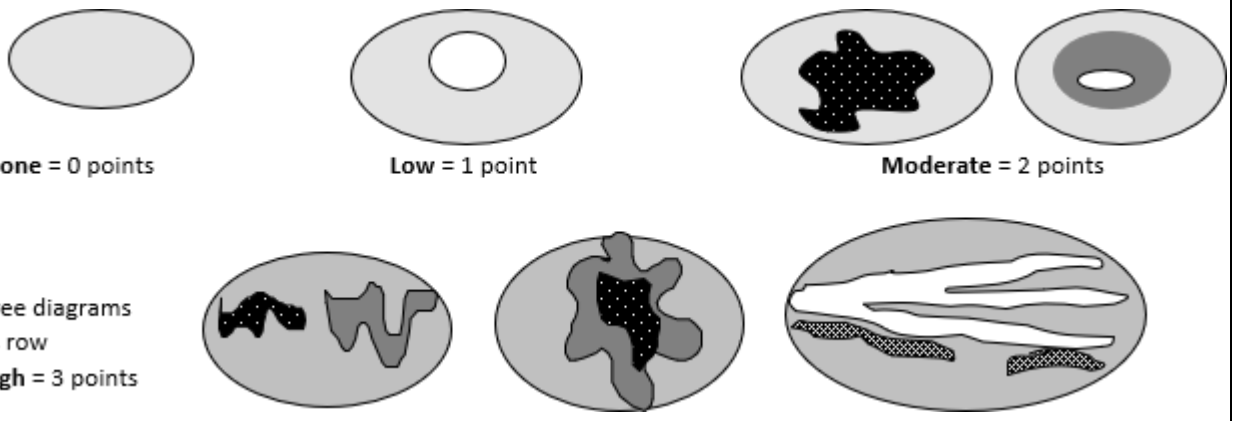
Rating of Landscape Potential If score is: ___**3 = H** __**X**__**1 or 2 = M** ___**0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?

D 6.1. Is the unit in a landscape that has flooding problems? Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met. The wetland captures surface water that would otherwise flow downgradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately downgradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther downgradient. points = 1 • Flooding from groundwater is an issue in the sub-basin. points = 1 • The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* points = 0 • There are no problems with flooding downstream of the wetland. points = 0	**0**
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	**0**
Total for D 6 Add the points in the boxes above	**0**

Rating of Value If score is: ___**2-4 = H** ___**1 = M** __**X**__**0 = L** *Record the rating on the first page*

Wetland B

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: Indicators are Cowardin classes and strata within the Forested class. Check the Cowardin plant classes in the wetland. Up to 10 patches may be combined for each class to meet the threshold of ¼ ac if the unit is at least 2.5 ac, or more than 10% of the unit if it is smaller than 2.5 ac. ____Aquatic bed — 4 structures or more: points = 4 __X__Emergent — 3 structures: points = 2 ____Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 __X__Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* ___The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/groundcover) that each cover 20% within the Forested polygon	**1**
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland if the unit is < 2.5 ac, or ¼ ac if the unit is at least 2.5 ac to count (see text for descriptions of hydroperiods). ____Permanently flooded or inundated — 4 or more types present: points = 3 __X__Seasonally flooded or inundated — 3 types present: points = 2 ____Occasionally flooded or inundated — 2 types present: points = 1 ____Saturated only — 1 type present: points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Intermittently or seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	**0**
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. **Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canada thistle** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	**2**
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. If you have four or more plant classes or three classes and open water, the rating is always high.  **None** = 0 points — **Low** = 1 point — **Moderate** = 2 points All three diagrams in this row are **High** = 3 points	**2**

Wetland B

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. The number of checks is the number of points. __X__Large, downed, woody debris within the wetland (> 4 in. diameter and 6 ft long). ____Standing snags (dbh > 4 in.) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extend at least 3.3 ft (1 m) over open water or a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) __Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present (cut shrubs or trees that have not yet weathered where wood is exposed) ____At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated (structures for egg-laying by amphibians) ____Invasive plants cover less than 25% of the wetland area in every stratum of plants (see H 1.1 above for the list of strata and H 1.5 in the manual for the list of aggressive plant species)	**1**
Total for H 1 Add the points in the boxes above	**6**

Rating of Site Potential If score is: __**15-18 = H** __**7-14 = M** __**X 0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include only habitat polygons accessible from the wetland. *Calculate:* % relatively undisturbed habitat 23.9% **+** [(% moderate and low intensity land uses)/2] 15.4% **= 39.3%** Total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	**3**
H 2.2. Total habitat in 1 km Polygon around the wetland. *Calculate:* % relatively undisturbed habitat 24.8% **+**[(% moderate and low intensity land uses)/2] 27.4% **= 52.2%** Total habitat > 50% of Polygon points = 3 Total habitat 10-50% and in 1-3 patches points = 2 Total habitat 10-50% and > 3 patches points = 1 Total habitat < 10% of 1 km Polygon points = 0	**3**
H 2.3. Land use intensity in 1 km Polygon: > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	**0**
Total for H 2 Add the points in the boxes above	**6**

Rating of Landscape Potential If score is**: __X__ 4-6 = H** __**1-3 = M** __**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — It has 3 or more Priority Habitats within 100 m (see next page) ___ It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) ___ It is mapped as a location for an individual WDFW Priority Species. — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources data — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 Priority Habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	**2**

Rating of Value If score is: __X__ **2 = H** ___**1 = M** ____**0 = L** *Record the rating on the first page*

Wetland B

WDFW Priority Habitats

See complete descriptions of Priority Habitats listed by WDFW, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008 (current year, as revised). Priority Habitat and Species List.[133] This list was updated for consistency with guidance from WDFW.

This question is independent of the land use between the wetland unit and the Priority Habitat. All vegetated wetlands are by definition a Priority Habitat but are not included in this list because they are addressed by this rating system.

Count how many of the following Priority Habitats are within 330 ft (100 m) of the wetland unit:

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife. This habitat automatically counts if mapped on the PHS online map within 100m of the wetland. If not mapped, a determination can be made in the field.

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Fresh Deepwater:** Lands permanently flooded with freshwater, including environments where surface water is permanent and often deep, so that water, rather than air, is the principal medium within which the dominant organisms live. Substrate does not support emergent vegetation. Do not select if Instream habitat is also present, or if the entire Deepwater feature is included in the wetland unit being rated (such as a pond with a vegetated fringe).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. Do not select if Fresh Deepwater habitat is also present.

— **Nearshore:** Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in. (81 cm) diameter at breast height (dbh) or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in. (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

[133] http://wdfw.wa.gov/publications/00165/wdfw00165.pdf

Wetland B

- **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important. For single oaks or oak stands <0.4 ha in urban areas, WDFW's Management Recommendations for Oregon White Oak[134] provides more detail for determining if they are Priority Habitats
- **Riparian:** The area adjacent to freshwater aquatic systems with flowing or standing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in. (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in. (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.
- **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie.

[134] https://wdfw.wa.gov/publications/00030/wdfw00030.pdf

Wetland B

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes – Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No – Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 10% cover of non-native plant species. If non-native species are *Spartina*, see chapter 4.8 in the manual. — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Does the wetland overlap with any known or historical rare plant or rare & high-quality ecosystem polygons on the WNHP Data Explorer?[135] Yes = **Category I** No – Go to **SC 2.2** SC 2.2. Does the wetland have a rare plant species, rare ecosystem (e.g., plant community), or high-quality common ecosystem that may qualify the site as a WHCV? Contact WNHP for resources to help determine the presence of these elements. Yes – Submit data to WA Natural Heritage Program for determination,[136] Go to **SC 2.3** No = **Not a WHCV** SC 2.3. Did WNHP review the site within 30 days and determine that it has a rare plant or ecosystem that meets their criteria? Yes = **Category I** No = **Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES, you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in. or more of the first 32 in. of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in. deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in. deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Category I bog** No = **Not a bog**	**Cat. I**

[135] https://www.dnr.wa.gov/NHPdata

[136] https://www.dnr.wa.gov/Publications/amp_nh_sighting_form.pdf

Wetland B

SC 4.0. Forested Wetlands

Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as Priority Habitats? ***If you answer YES, you will still need to rate the wetland based on its functions.***

- **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in. (81 cm) or more.
- **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in. (53 cm).

Yes = **Category I** No = **Not a forested wetland for this section** — **Cat. I**

SC 5.0. Wetlands in Coastal Lagoons

Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?

- The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks
- The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)*
- The lagoon retains some of its surface water at low tide during spring tides

Yes – Go to **SC 5.1** No = **Not a wetland in a coastal lagoon** — **Cat. I**

SC 5.1. Does the wetland meet all of the following three conditions?

- The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species in H 1.5 in the manual).
- At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.
- The wetland is larger than $^1/_{10}$ ac (4350 ft^2)

Yes = **Category I** No = **Category II** — **Cat. II**

SC 6.0. Interdunal Wetlands

Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer YES, you will still need to rate the wetland based on its habitat functions.***

In practical terms that means the following geographic areas:

- Long Beach Peninsula: Lands west of SR 103
- Grayland-Westport: Lands west of SR 105 — **Cat I**
- Ocean Shores-Copalis: Lands west of SR 115 and SR 109 and Ocean Shores Blvd SW, including lands west of E. Oceans Shores Blvd SW.

Yes – Go to **SC 6.1** No = **Not an interdunal wetland for rating** — **Cat. II**

SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2**

SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? — **Cat. III**

Yes = **Category II** No – Go to **SC 6.3**

SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac?

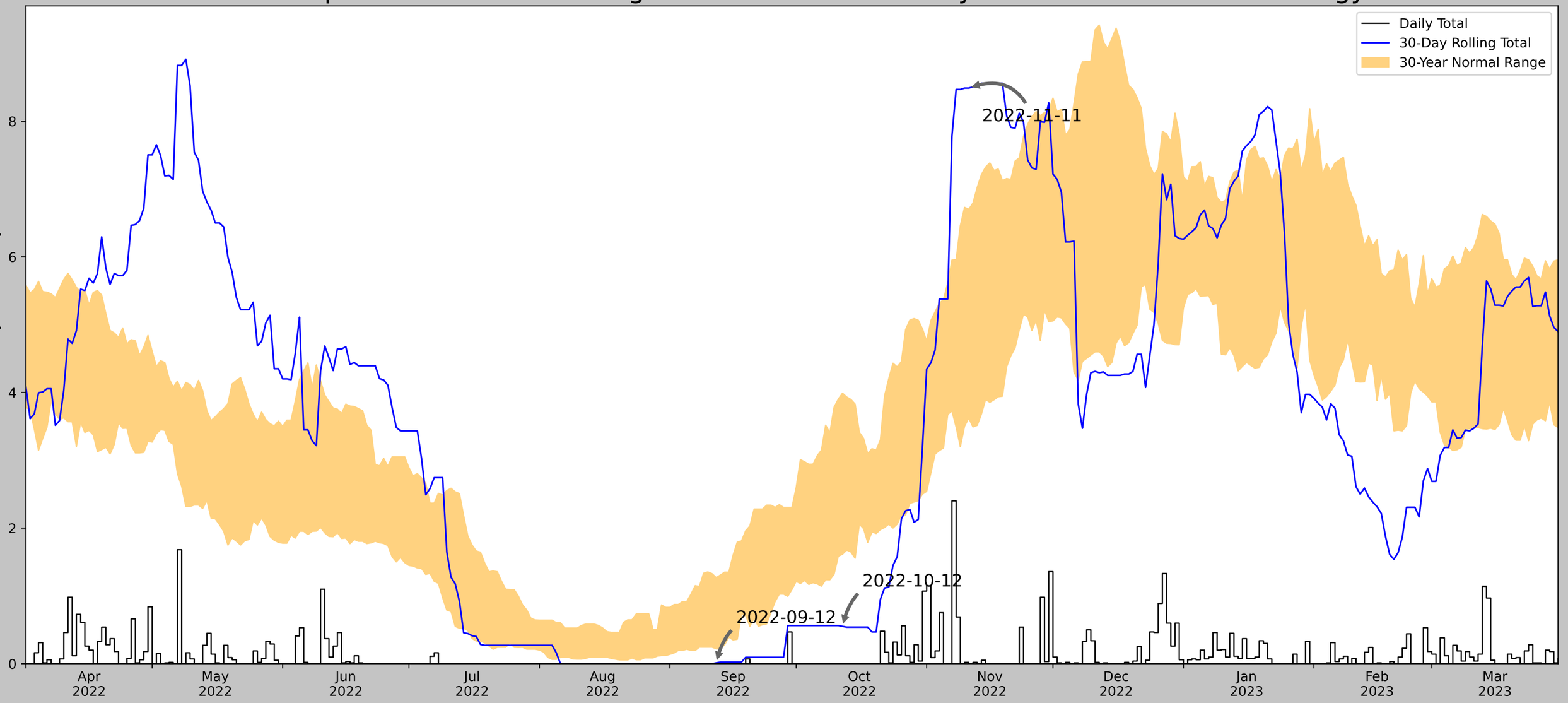
Yes = **Category III** No = **Category IV** — **Cat. IV**

Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	**Not Applicable**

APPENDIX D

ANTECEDENT PRECIPITATION TOOL DATA

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	45.619781, -122.416341
Observation Date	2022-11-11
Elevation (ft)	322.65
Drought Index (PDSI)	Mild drought
WebWIMP H_2O Balance	Wet Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-11-11	3.621654	6.700394	8.488189	Wet	3	3	9
2022-10-12	1.614961	3.990158	0.551181	Dry	1	2	2
2022-09-12	0.220472	1.269685	0.011811	Dry	1	1	1
Result							Normal Conditions - 12

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
TROUTDALE	45.5533, -122.3886	33.136	4.785	289.514	3.539	9310	83
PORTLAND TROUTDALE AP	45.5511, -122.4097	24.934	1.032	8.202	0.473	1610	7
CAMAS 2.4 E	45.5845, -122.374	58.071	2.268	24.935	1.077	3	0
PORTLAND WFO	45.5608, -122.5383	20.997	7.261	12.139	3.356	315	0
PORTLAND INTL AP	45.5958, -122.6092	21.982	11.066	11.154	5.103	115	0

APPENDIX E

OREGON WHITE OAK INVENTORY

Oregon White Oak Inventory

Identifier	DBH (inches)	Notes
Oak 1	8	Low hanging leaves, broken/dead branches, full crown
Oak 2	8	Low hanging leaves, broken/dead branches, suppressed crown
Oak 3	8	Low hanging leaves, broken/dead branches, suppressed crown
Oak 4	6	Low hanging leaves, broken/dead branches, suppressed crown
Oak 5	6	Low hanging leaves, broken/dead branches, suppressed crown
Oak 6	5	Low hanging leaves, broken/dead branches, suppressed crown
Oak 7	9	Low hanging leaves, broken/dead branches, suppressed crown
Oak 8	10	Low hanging leaves, broken/dead branches, suppressed crown
Oak 9	8	Low hanging leaves, broken/dead branches, suppressed crown
Oak 10	10	Low hanging leaves, broken/dead branches, suppressed crown
Oak 11	5	Low hanging leaves, broken/dead branches, suppressed crown
Oak 12	10	Low hanging leaves, broken/dead branches, suppressed crown
Oak 13	9	Suppressed crown
Oak 14	8	Low hanging leaves, broken/dead branches, suppressed crown
Oak 15	8	Low hanging leaves, broken/dead branches, suppressed crown
Oak 16	9	Low hanging leaves, broken/dead branches, suppressed crown
Oak 17	6	Low hanging leaves, leaves, full crown
Oak 18	10	Low hanging leaves, broken/dead branches, galls, suppressed crown
Oak 19	15	Low hanging leaves, broken/dead branches, galls, suppressed crown
Oak 20	15, 25	Split trunk, broken/dead branches, suppressed crown

**All oaks produce acorns. Insects and cavities are absent in all oaks.*

WETLAND BUFFER MODIFICATION & MITIGATION PLAN

July 8, 2025



Village at North Shore

Camas, Washington

Prepared for

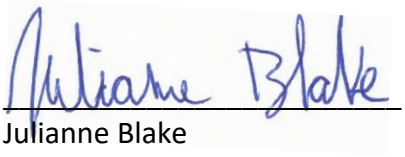
HSR Capital, LLC
19120 SE 34th St. #103
Vancouver, WA 98683
(360) 798-6458

Prepared by

Ecological Land Services, Inc.
1157 3rd Avenue, Suite 220A • Longview, WA 98632
(360) 578-1371 • Project Number 3341.26

SIGNATURE PAGE

The information and data in this report was compiled and prepared under the supervision and direction of the undersigned.



Julianne Blake
Biologist IV

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Appendix

Appendix A – WDFW Functional Assessments for Individual Oaks and Mitigation Calculations
Appendix B – Offsite Protected Wetland Area

INTRODUCTION

Ecological Land Services, Inc. (ELS) was contracted by the applicant, HSR Capital, LLC, to address impacts to the buffers of two Category III wetlands and impacts to Oregon white oak (*Quercus garryana*; oak) and herbaceous bald habitat associated with the proposed Village at North Shore (VANS) subdivision. The project will include 102 single-family lots, 4 multi-family buildings with 96 apartment units, and 3 mixed-use building(s) with 30,250 square feet of commercial use and 44 apartment units, within Clark County parcel numbers 177885000 and 178175000. The approximately 36-acre site is located just south of the terminus of NE 252nd Avenue in Camas, Washington within a portion of Section 34, Township 2 North, Range 3 East of the Willamette Meridian (Figure 1). This wetland buffer modification and mitigation plan has been prepared in accordance with *City of Camas Municipal Code (CMC) Title 16 – Environment* (June 2025) and *Management recommendations for Washington's priority habitats: Best management practices for mitigating impacts to Oregon white oak priority habitat* (Guidance; Nolan and Azerrad 2024).

RESPONSIBLE PARTIES

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PROJECT DESCRIPTION

PROPOSED DEVELOPMENT

The project will include 102 single-family lots, 4 multi-family buildings with 96 apartment units, and 3 mixed-use building(s) with 30,250 square feet of commercial use and 44 apartment units, over the approximately 36.03-acre site. Residential lot sizes range from approximately 2,280 to 6,500 square feet. Construction of the subdivision will include clearing, grading, lot preparation, and construction of supporting infrastructure including parking areas, stormwater facilities, interior circulation roads, sidewalks, utilities, streetlights, and open space areas (Figure 4). All interior roads will be designed to meet minimum emergency vehicle circulation requirements and City of Camas North Shore Subarea design standards. Access to the subdivision will be provided by extending NE 252nd Avenue southerly at the northern site boundary. Construction of a new arterial road (North Shore Blvd.) extending northwest from the eastern boundary of the site is required to comply with the mandated public road alignment. This roadway supports broader City transportation goals established in the municipal code and has been closely coordinated with City staff. Several alignment alternatives were evaluated, including the City's initial proposal to route the boulevard through Wetland B. The final proposed alignment was selected by the City to avoid critical areas, meet long-term transportation objectives, and comply with roadway design standards for this higher classification roadway to ensure the safe and efficient movement of traffic. While the City may complete construction of the roadway as part of a larger transportation improvement project, the development will, at a minimum, dedicate the necessary right-of-way to accommodate future construction. If the City does not proceed with its transportation project, the applicant will construct the roadway as shown in the proposed plans.

Stormwater generated from new impervious surfaces will be managed according to the *2019 Stormwater Management Manual for Western Washington* and City of Camas stormwater design requirements. Stormwater runoff from the western and southwestern portions of the site will be collected and directed to an onsite mechanical water quality treatment facility, where it will receive basic treatment for pollutants and phosphorous treatment prior to being discharged to Lacamas Lake, which has a large water body direct discharge exemption. Runoff from the eastern portion of the site will be collected and conveyed to water quality treatment facilities prior to entering detention facilities for flow control management. Three stormwater detention facilities will be located in low-lying areas in the eastern and north-central portions of the site for detaining stormwater prior to discharge to Wetland A and Stream A and eventually Lacamas Lake.

The proposed project will remove eleven Oregon white oak trees in Oak Cluster 1, each with a diameter at breast height (DBH) of 10 inches or less for a combined dripline impact of 0.048 acres (2,077 sq. ft.). Approximately 0.088 acres (3,852 sq. ft.) of herbaceous bald habitat and 0.184 acres (8,001 sq. ft.) of Wetland B's buffer will also be impacted (Figure 5). All direct wetland impacts will be avoided and impacts to wetland buffers will be minimized through the use of low impact strategies, combined with buffer averaging. Wetland buffer impacts will be mitigated by enhancing approximately 0.184 acres (8,001 sq. ft.) of wetland buffer onsite. Herbaceous bald impacts and a portion of temporal oak impacts will be mitigated by preserving and enhancing

approximately 0.15 acres (6,522 sq. ft.) of existing oak and herbaceous bald habitat onsite. The remaining oak impacts will be mitigated by purchasing 1.063 credits from Terrace Oak Mitigation Bank (Terrace). Additionally, two vegetated corridors will be established and protected in perpetuity to offset wetland impacts, achieve an overall net gain in ecological functions onsite, and further protect critical areas from the surrounding developments.

EXISTING CONDITIONS

EXISTING AND SURROUNDING LAND USES

The approximately 36-acre site consists of Clark County Tax Parcel Numbers 177885000 and 178175000 and is accessed by a gravel road off SE 252nd Avenue from the north. The site is zoned as North Shore Lower Density Residential (LD-NS), North Shore Higher Density Residential (HD-NS), Mixed Use (MX-NS), and North Shore Commercial (C-NS). The properties surrounding the site consist of single-family homes, farmland, undeveloped forested land, and two subdivisions with construction in progress. The northwest portion of the site has a single-family residence and fenced area for livestock. Topography on parcel 178175000 is generally level in the north and northeast, with a depressional area in the northwest corner of the parcel that corresponds to the location of Wetland B. Topography in the remainder of the parcel consists of moderate to steep slopes that descend towards the onsite portions of Wetland A and Stream A. Topography on parcel 177885000 consists of moderate slopes downward to the south, undulating hills throughout the parcel, and several low-lying areas to the north and northeast. Shallow bedrock and rock outcroppings are also present in some locations. General vegetation consists of grasses, weedy herbs, and forbs in the northern portions of each parcel, and the remainder of the site consists of a forested canopy containing a mix of coniferous and deciduous trees with a multi-layered subcanopy. Two wetlands (Wetlands A and B), one stream (Stream A), two oak clusters consisting of a total of 20 oak trees, and two herbaceous balds (Herbaceous Bald 1 and Herbaceous Bald 2; HB-1 and HB-2) are located onsite. An agricultural ditch (Ditch A) was also mapped onsite (Figure 2).

EXISTING CRITICAL AREAS

The site was assessed for critical areas by ELS in 2022, 2023, and 2024. The *Critical Areas Report for ICG 252nd Property* was completed by ELS on May 19, 2025, and addresses critical areas on parcel 178175000 (ELS 2025a). The *Critical Areas Report for Mills Property* was also completed by ELS on May 19, 2025, and addresses critical areas on parcel 17885000 (ELS 2025b).

WETLAND A

Wetland A is Category III, depressional, emergent (EM), forested (FO), seasonally flooded (SF) and saturated only (SO) wetland with a seasonally flowing stream (SFS) within the wetland, with approximately 2.26 acres onsite and a total area of approximately 10.06 acres (Figure 2). Portions of Wetland A's offsite boundary were approximated using lidar and topographic maps along with visual observations of noticeable changes in elevation and vegetation. Wetland A's onsite vegetation is dominated by Oregon ash (*Fraxinus latifolia*), common rush (*Juncus effusus*), and reed canarygrass (*Phalaris arundinacea*). Hydrology is supported by seasonal overbank flooding from Stream A, which serves as Wetland A's outlet, a shallow groundwater table, precipitation,

and surface runoff. According to the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Rating System), Wetland A is a Category III wetland, scoring 7 points for water quality functions, 4 points for hydrologic functions, and 7 points for habitat functions, for a total score of 18 points.

Wetland B

Wetland B is a Category III, depressional, EM, FO, SF wetland, with approximately 0.81 acres onsite and a total area of approximately 0.84 acres. Wetland B's vegetation is dominated by Oregon ash, black cottonwood (*Populus trichocarpa*), Scouler's willow (*Salix scouleriana*), Nootka rose (*Rosa nutkana*), reed canarygrass, and water smartweed (*Persicaria amphibia*). Hydrology is supported by a shallow groundwater table, precipitation, and runoff from adjacent uplands. Wetland B does not have an outlet. According to the Rating System, Wetland B is a Category III wetland, scoring 6 points for water quality functions, 5 points for hydrologic functions, and 7 points for habitat functions, for a total score of 18 points.

Wetland Buffers

Standard wetland buffers are based on wetland category and habitat score from the Rating System, in conjunction with the proposed land use intensity (*CMC 16.53.040(B)(2)*). Wetland A and Wetland B are both Category III wetlands, each with a habitat score of 7 points. According to *CMC Table 16.53.040-3*, the standard buffer widths for both wetlands adjacent to proposed high land use intensity is 150 feet. According to *CMC 16.53.040(B)(4)(b)(i)*, functionally isolated buffer areas are areas that do not protect the wetland from adverse impacts, such as preexisting roads and structures, and shall be excluded from buffer requirements. Portions of the wetland buffers are functionally isolated due to existing impervious surfaces (Figure 2). Wetlands and buffers are summarized in Table 1.

Stream A

Stream A is mapped as Type-U by Washington Department of Natural Resources (WDNR 2025). According to WAC 222-16-031, Stream A meets the definition of a Type 3 water based on a defined channel of 2 feet or greater within the bankfull width, a gradient of 16 percent or less, and the absence of any fish passage barriers (WDFW 2025a). As such, Stream A is considered a Type-F (fish-bearing) stream. Onsite hydrology is supported by a shallow groundwater table, precipitation, and runoff from upslope areas.

Stream Buffers

According to Washington State Fish Passage online mapping, Stream A may have the potential presence of resident fish (WDFW 2025a). According to *CMC 16.61.040(D),* non-anadromous Type-F streams require a 75-foot stream buffer. The buffer of Stream A is primarily vegetated with reed canarygrass, slough sedge, and a mixture of mature coniferous and deciduous trees with a multi-layered subcanopy. Stream A is summarized in Table 1.

Table 1. Wetland and Stream Summary

Identifier	Classification	Cowardin, Hydroperiod[4]	Habitat Score/ Category[5]	Proposed Land Use Intensity	Buffer Width[6,7]
Wetland A (2.26 acres onsite)	Depressional[1]	EM/FO, SF/SO/SFS	III/7	High	150 feet
Wetland B (0.81 acres onsite)		EM/FO, SF			
Stream A	Type F, non-anadromous[2]	--			75 feet

[1]NRCS 2008; [2]WAC 222-16-031; [3]WDNR 2025b; [4]FGDC 2013; [5]Hruby and Yahnke 2023; [6]CMC Table 16.53.040-3; [7]CMC 16.61.040(D).

Ditch A

Ditch A is an agricultural ditch that appears to have been created within uplands for the purpose of diverting upslope runoff into Stream A (Figure 2). According to *CMC 16.53.010(C)(2)(b),* Ditch A is exempt from buffers as detailed below:

> *Artificial. Wetlands created from non-wetland sites including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, stormwater facilities, farm ponds, and landscape amenities; provided, that wetlands created as mitigation shall not be exempted.*

Ditch A is not classified as a fish and wildlife habitat conservation area per *CMC 16.61.010(A)(5)* which defines "Water of the State" as omitting, "man-made ditches or bio-swales that have been created from areas not meeting the definition of waters of the state."

Landscape Position

According to the Washington State Department of Ecology's Water Quality Atlas, the site is in the Lacamas Creek 12-digit hydrologic unit code (HUC) 170800050305 and Watershed Resource Inventory Area (WRIA) 28 Salmon – Washougal. Onsite hydrology generally flows downslope to the east into the wetlands and stream.

Oregon White Oak

The Washington Department of Fish and Wildlife (WDFW) identifies which oak communities are considered priority habitats through its Priority Habitats and Species (PHS) program. The Washington Natural Heritage Program (WNHP) defines a North Pacific Oak Woodland as a community dominated or co-dominated by oak and associated with dry, low-elevation sites or those with frequent fires pre-settlement. Oregon white oak woodlands are associated with eight different plant communities, including a wide variety of native herbaceous and shrub species. Oak woodlands provide a mix of feeding, nesting, and breeding habitat for many wildlife species (Nolan and Azerrad 2024). In addition to oak woodlands, individual oak trees can be considered a priority habitat if they provide considerable value to wildlife. In addition to woodland communities, oaks are also associated with prairies and savannas in Washington. These

communities are considered wooded grasslands and are an association of upland grassland and meadows (Rocchio and Crawford 2015).

Two oak clusters were identified onsite, with sixteen oaks in Cluster 1 and four oaks in Cluster 2. The total dripline of Cluster 1 is approximately 0.10 acres and the total dripline of Cluster 2 is approximately 0.05 acres. Although PHS mapping identifies each cluster as an oak woodland, these areas do not meet woodland size requirements, and each oak shall be considered an individual (Figure 3). Details for Oaks 2-12 will be discussed in this report, as these oaks will be impacted by the proposed project. For more details on other oaks onsite, see the *Critical Areas Report for Mills Property (*ELS 2025b).

Herbaceous Bald Habitat

According to *CMC 16.61.010(A)(2)*, priority habitats and species are identified by WDFW; however, *CMC 16.61.010(A)(1)* states that lists, categories, and definitions of species promulgated by WDFW are provided to the City to be used for guidance only. According to the WDFW Priority Habitat and Species Program (WDFW 2025b) herbaceous balds are defined as:

"*…variable-sized patches of grass and forb vegetation located on shallow soils over bedrock that commonly is fringed by forest or woodland. Typically consists of low-growing vegetation adapted for survival on shallow soils amid seasonally dry conditions, and is often on steep slopes. Dominant flora includes herbaceous vegetation, dwarf shrubs, mosses, and lichens. Rock outcrops, boulders, and scattered trees are often present, especially Douglas-fir, Pacific madrone, and Oregon white oak. Balds occur within mid-montane to lowland forest zones. On slopes near saltwater shorelines in the northern Puget Trough, herbaceous balds and herbaceous bluffs can sometimes be difficult to differentiate. Balds typically are smaller than 5 ha (12 ac), although some can be up to about 100 ha (≅ 250 ac)*" (WDFW 2008).

ELS biologists identified two areas onsite that meet herbaceous bald criteria (HB-1 and HB-2). These areas are defined by shallow soils with vegetation dominated by grasses and forbs. Dominant vegetation found on herbaceous bald locations included Camas lily (*Camassia quamash*), licorice fern (*Polypodium glycyrrhiza*), various grasses, moss, and blackberry species. Although Camas lily was observed on the entirety of both herbaceous balds, it comprises less than 0.25 acres and is not considered a priority habitat itself. Douglas fir (*Pseudotsuga menziesii*) trees were rooted near herbaceous bald locations but not directly on the balds. All observed oaks were rooted within herbaceous bald boundaries and many displayed stunted crowns and curled leaves, likely from stress related to shallow soils and shading by Douglas fir trees. Herbaceous bald boundaries were delineated based on vegetation and the presence of bedrock under shallow soils.

Standard Wetland Buffer Modifications

According to *CMC 16.53.050.C(1)*, standard wetland buffer widths may be reduced under certain conditions, provided the project results in no net loss or a net gain in ecological functions and values provided by the wetland. The section also specifies that buffer width reductions allowed

under subsections (C)(1)(a) and (C)(1)(b) may be combined, provided that minimum buffer widths shall never be less than fifty feet for Category III wetlands. In *italic* font are excerpts from *CMC* detailing the criteria required to utilize the buffer reductions, with a description of how this project will meet the criteria in regular font.

WETLAND BUFFER REDUCTION

LOWER IMPACT LAND USES

According to *CMC 16.53.050.C(1)(a)*, buffer widths recommended for proposed land uses with high-intensity impacts to wetlands can be reduced to those recommended for moderate-intensity impacts if both the following criteria are met:

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

Wetland A: Wetland A extends onto the adjacent parcel to the east (parcel 178171000), which was permitted for the Enclave development in June 2025 (NWS-2025-263). A vegetated corridor, ranging in width between approximately 141 feet to 491 feet from Wetland A's eastern boundary to the eastern parcel boundary, will be established and protected in perpetuity through a conservation covenant or similar (Figure 6). Protection and enhancement of Wetland A and its buffer on the Enclave parcel are mandated by the permit (NWS-2025-263), providing an additional corridor width of approximately 300 feet to the adjacent development (Appendix B). This additional corridor width will increase the ecological functions of critical areas on- and offsite and further minimize impacts caused by the proposed project. The *Buffer Modification and Onsite Mitigation Plan for Enclave Property* (ELS 2025) details the offsite mitigation and protection measures.

Wetland B: A corridor ranging between approximately 66 feet and 260 feet will be established between Wetland B and the location of HB-1 and Oak Cluster 1. Wetland B's buffer will be increased and enhanced in this area to provide more protection for nearby habitats and to create continuity between the wetland and other priority habitat areas in the vicinity.

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

Wetland A and B: Infiltration is not feasible due to the shallow soils present over solid bedrock; however, runoff impacts to wetlands and buffers from the development will be minimized by collecting stormwater for detention and treatment prior to regulated discharge toward the wetlands, to maintain hydrologic input to the wetlands. Where possible, disturbed vegetated areas will be restored by placing topsoil that meets Ecology standards on top of the grading slopes to allow for reestablishment of native vegetation. Many areas onsite are composed of shallow soils over solid bedrock. If solid bedrock is present as anticipated, cut slopes will be minimized to

the greatest extent practicable by control blasting near vertical slopes to limit disturbance from the development toward the wetland. These near vertical slopes will not be suitable for revegetation; however, disturbance beyond the top of the cuts will be minimized.

Stormwater facilities proposed within the buffers are designed to meet city and state standards for managing stormwater runoff prior to discharge towards the critical areas. The discharge locations will be placed as far from the critical areas as feasible to allow for the greatest flow path through the wetland buffers. No untreated stormwater will be discharged from the project. Streetlights will be directed down and away from the wetland to the greatest extent practicable to reduce light pollution. Increases to ambient noise after construction is complete are expected, as the proposed subdivision is in a growing mixed-use residential area with commercial uses required by City zoning standards. However, noise generated by the completed project will be comparable to surrounding land uses and is not anticipated to exceed standard acceptable levels. The project will retain a significant amount of heavily vegetated areas which will reduce noise disturbances to the wetlands and stream. Additionally, the buffers for both wetlands will be enhanced by controlling invasive species to provide an overall higher ecological function than currently exists onsite (Figure 6). A full description of buffer enhancement activities can be found in the *Onsite Mitigation Plan* section of this report.

The above design measures will be implemented to reduce the land use intensity of the project and reduce adverse impacts. Therefore, the project meets the required criteria, and this buffer reduction should be allowed. As such, the buffers for Wetland A and Wetland B are reduced from 150 feet to 110 feet per *CMC Table 16.53.040-3* (Figure 4).

Restoration

The following is an excerpt from *CMC 16.53.050.C(1)(b)*: *Buffer widths may be reduced up to twenty-five percent if the buffer is restored or enhanced from a pre-project condition that is disturbed (e.g., dominated by invasive species), so that functions of the post-project wetland and buffer are equal or greater. To the extent possible, restoration should provide a vegetated corridor of a minimum one hundred feet wide between the wetland and any other priority habitat areas as defined by the Washington State Department of Fish and Wildlife. The habitat corridor must be protected for the entire distance between the wetland and the priority habitat area by some type of permanent legal protection such as a covenant or easement. The restoration plan must meet requirements in subsection D of this section for a mitigation plan, and this section for a critical area report.*

Wetland A and B: Invasive species such as reed canarygrass and Himalayan blackberry are present in the wetland and buffer areas of both wetlands and are prolific in some areas. The buffers of both Wetland A and Wetland B will be enhanced by removing invasive vegetation, which will allow native species to reestablish and provide an overall net gain in ecological functions. Two vegetated corridors, one for each wetland, will be established and protected as described in the *Lower Impact Land Uses* section of this report. The vegetated corridors will be protected in perpetuity through a conservation covenant or similar legal mechanism and the restoration plan will follow all applicable guidelines outlined in the *CMC*. As such, the buffers for

Wetland A and Wetland B are reduced further from 110 feet to 82.5 feet per *CMC 16.53.050.C(1)(b)* (Figure 4).

WETLAND BUFFER AVERAGING

According to *CMC 16.53.050(C)(2)*, averaging buffers is allowed in conjunction with any of the other provisions for reductions in buffer width listed in subsection (C)(1), provided that minimum buffer widths listed in subsection (C)(1)(c) are adhered to. This project proposes buffer averaging to further avoid and minimize wetland buffer impacts caused by construction of the subdivision, and will adhere to the following criteria:

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

Wetland A: A total of 0.015 acres (661 sq. ft.) of the buffer will be decreased in the southwestern portion of the wetland and correspondingly increased in the northwest portion of the wetland. **Wetland B:** A total of 0.216 acres (9,388 sq. ft.) of the buffer will be decreased along the northeast and western portions of the wetland and correspondingly increased in the southeast portion of the wetland (Figure 4).

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

Wetland A and Wetland B: The buffer areas proposed for decrease generally provide equal or less ecological function than the areas proposed for increase, resulting in no net loss of function. Native vegetation is less dense, and invasive species are present in higher quantities in decreased areas than increased areas. Thus, no net loss is achieved, and this criterion is met.

c. The averaged buffer width at its narrowest point shall not result in a width less than seventy-five percent of the required width, provided that minimum buffer widths shall never be less than fifty feet for all Category 1, 2, and 3 wetlands and twenty-five feet for all Category IV wetlands.

Wetland A and Wetland B: The standard wetland buffer width, after applying the allowed reduction, is 82.5 feet. The averaged buffer width at its narrowest point is approximately 62 feet, which meets the requirement of being no less than 75 percent of the standard width. Buffer averaging is shown on Figure 4.

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

Wetland A and Wetland B: It is not anticipated that onsite mitigation will result in a change to the wetland ratings, as mitigation will take place in the wetland buffers. Functions of the wetland buffers will increase, but the ratings are expected to remain the same.

AVOIDANCE AND MINIMIZATION

The preferred mitigation sequencing of first avoidance, then minimization, and finally compensation for unavoidable impacts was taken into consideration during the project design process. The proposed subdivision has been designed to completely avoid direct impacts to Wetland A, Wetland B, Oak Cluster 2, and Herbaceous Bald 2, by utilizing lower impact development strategies in conjunction with buffer enhancement and averaging as described in the *Standard Wetland Buffer Modifications* section of this report. Several layouts were tested during the project design process to locate the majority of development outside of critical areas boundaries. Grading impacts to Oak Cluster 2 and HB-2 have been completely avoided by incorporating a 2:1 slope up to the proposed open space in which they are located. This area also appears to be solid rock based on site observations and the project geotechnical findings; therefore, the 2:1 slopes may be steeper and thus minimize the grading impact around the oak cluster and herbaceous bald even further.

Impacts to the buffer for Wetland A, Wetland B, Oak Cluster 1, and HB-1 could not be entirely avoided due to the City mandated location of North Shore Blvd., topographical and environmental constraints onsite, as well as required roadway circulation, density requirements, stormwater paths, and parking lots to support the residential and commercial uses as required by *CMC*. However, impacts will be minimized to the greatest extent practicable by applying the buffer reductions described above, retaining and protecting oaks and herbaceous balds to the maximum extent possible, and establishing and protecting two vegetated corridors onsite. Impacts will be further minimized by utilizing best management practices (BMPs) as described in the *Best Management Practices* subsection of this report.

BEST MANAGEMENT PRACTICES

Before work begins, a construction entrance will be established and clearing and grading will occur within the project area. All construction and tree removal will strictly adhere to the designated construction area. BMPs utilized prior to, during, and after construction to further minimize impacts to critical areas are as follows:

- Install silt fencing or similar measures to control sedimentation and general ground disturbance.
- Locate construction access and staging and stockpile areas within uplands.
- Limit ground disturbance to only those areas necessary to construct project elements.
- Grading will occur during the dry season to minimize surface runoff.
- Maintain stable construction access per the 2019 *Stormwater Management Manual for Western Washington*.
- Use a water truck as needed during construction to control fugitive dust.
- Maintain, repair, and service vehicles and equipment outside of any critical area onsite.
- Maintenance, service, and repair operations include, but are not limited to:
    - Prohibiting discharge of wastewaters into stormwater drains or hose down work areas.
    - Removing the buildup of oils and grease on equipment.

- Removing construction maintenance waste materials from work site and dispose and/or recycle.
- Having a spill kit onsite.

- Stabilize exposed soil with straw mulch or other suitable BMP if left exposed and unworked according to the *2019 Stormwater Management Manual for Western Washington*.

UNAVOIDABLE IMPACTS

The project will result in approximately 0.184 acres (8,001 sq. ft.) of wetland buffer impact and approximately 0.088 acres (3,852 sq. ft.) of herbaceous bald impact. The project will also remove Oaks 2-12, resulting in approximately 0.048 acres (2,077 sq. ft.) of oak canopy dripline impact from clearing and grading for construction of North Shore Blvd. (Figures 4 and 5, Table 2).

Table 2. Impact Summary

Oregon White Oak Trees			
Name	**Size**	**Impact Type**	**Impact Area**
Oak 2	8-inch DBH	Individual Oak Removal	0.048 acres (2,077 sq. ft.) Combined Dripline Impact[1]
Oak 3	8-inch DBH		
Oak 4	6-inch DBH		
Oak 5	6-inch DBH		
Oak 6	5-inch DBH		
Oak 7	9-inch DBH		
Oak 8	10-inch DBH		
Oak 9	8-inch DBH		
Oak 10	10-inch DBH		
Oak 11	5-inch DBH		
Oak 12	10-inch DBH		
		Total Oak Impact	0.048 acres (2,077 sq. ft.)

Herbaceous Balds			
Name	**Size**	**Impact Type**	**Impact Area**
HB-1	0.15 acres (6,628 sq. ft.)	Permanent	0.088 acres (3,852 sq. ft.)

Wetlands				
Critical Area	**Impact Type**	**HGM[2]**	**Ecology Rating[3]**	**Impact Area**
Wetland B	Buffer	Depressional	Category III	0.184 acres (8,001 sq. ft.)

[1]The driplines for Oaks 2-12 are contiguous and shall be combined for the purpose of mitigation calculations. [2]NRCS 2008. [3]Hruby & Yahnke 2023.

Oak Mitigation Discussion

Oak Mitigation Requirements

According to the Guidance, compensatory mitigation should ideally take place onsite or as close to the site as possible when options for onsite mitigation are limited, and any plan for compensatory mitigation must address both the physical loss of oak habitat and the temporal loss in ecological function (Nolan and Azerrad 2024). This mitigation plan accounts for both the physical and temporal losses from the project, as described later in this section. Because North Shore Blvd. construction is still under discussion between the applicant and the City, oak habitat will be retained as long as possible and will not be impacted until road construction begins. Suitable area for oak mitigation is limited onsite due to the densely forested canopy and sub-canopy, which interfere with the potential for oak establishment as they require ample sunlight and open area. Use of open spaces that may be suitable for oak mitigation is undetermined, and these areas may not be available in the future due to *CMC* requirements and potential changes to North Shore Blvd. design and construction. Because of this, a portion of temporal impacts will be offset by enhancing retained oak habitat onsite and the remainder will be offset by purchasing 1.063 credits from Terrace.

Oak Woodland Determination

Mitigation for impacts to oak woodlands differs from mitigation for impacts to individual oaks. As such, an assessment must be completed to determine whether the project impacts an oak woodland or individual oaks. Each oak on- and offsite is assigned a habitat area with a 118-foot radius, which produces an area of approximately one acre per oak. If two or more of these habitat areas overlap, further investigation is required to determine if they meet the definition of an oak woodland. To be considered an oak woodland, there must be a minimum density of five large oaks per acre and the oak component must be no less than 25 percent of the total canopy cover. The habitat areas for all oaks in Cluster 1 overlap; however, the oak component of the canopy comprises approximately 7.46 percent of the total canopy. The habitat areas for all oaks in Cluster 2 also overlap; however, the oak component of the canopy comprises approximately 4.16 percent of the total canopy. The habitat areas for Cluster 1 and Cluster 2 do not overlap and the oak component of each cluster comprises less than 25 percent of the total canopy. As such, all oaks onsite are considered individuals, and project impacts will be calculated according to the WDFW process for individual oak trees (Nolan and Azerrad 2024). Table 3 summarizes the completed oak woodland assessment, which is also depicted on Figure 3.

Table 3. Oak Woodland Determination

Identifier	Habitat Area Total	Oak Dripline Total	Oak Canopy Coverage
Oak Cluster 1	1.34 acres	0.10 acres	7.46 percent
Oak Cluster 2	1.20 acres	0.05 acres	4.16 percent

Physical Impacts

After it has been determined whether the project will impact oak woodland or individual oaks, mitigation to offset project impacts must be calculated. Physical mitigation is designed to offset

the physical losses of an impacted oak and is determined by the DBH of the impacted oak. Table 4 summarizes the mitigation needed to offset physical impacts of the proposed project. No mitigation is required for removal of Oak 6 or Oak 11, as both oaks have a DBH of approximately 5 inches; therefore, these oaks are excluded from mitigation calculations.

Table 4. Oak Mitigation to Offset Physical Impacts

Name	Mitigation Ratio[1]	Oak Quantity
Oak 2	50:1	50
Oak 3		50
Oak 4		50
Oak 5		50
Oak 7		50
Oak 8		50
Oak 9		50
Oak 10		50
Oak 12		50
	Total Oak Quantity	**450**
	Total Area for Physical Loss (Oak Quantity x Spacing[2] = Total Area)	**0.90 acres (39,150 sq. ft.)**

[1]Nolan and Azerrad 2024. [2]Spacing = 87 square feet (Nolan and Azerrad 2024).

Temporal Impacts

Because oaks are slow-growing trees, temporal mitigation is designed to offset the temporal functional losses of an impacted oak by enhancing and/or preserving existing oak habitat. An assessment must be completed for the functions of each impacted oak prior to and after development and will determine the mitigation ratios to be used. Because the oaks will be removed entirely, a post-development assessment will not completed and post-development functions shall be considered minimal. After mitigation ratios have been established, the dripline of each oak is used to determine how much area is needed to offset temporal impacts. This information is summarized in Table 5. Functional assessments and mitigation calculations are in Appendix A.

Table 5. Mitigation for Temporal Impacts

Name	Baseline Functions	Functions After Development	Mitigation Ratio[1]	Combined Dripline[2]
Oak 2	High	Minimal	10:1	0.048 acres (2,077 sq. ft.)
Oak 3				
Oak 4				
Oak 5				
Oak 7				
Oak 8				
Oak 9				
Oak 10				
Oak 12				
Total Area Required for Temporal Mitigation[3]				**0.477 acres (20,770 sq. ft.)**
Temporal Mitigation to be Mitigated Onsite				**0.150 acres (6,522 sq. ft.)**
Temporal Mitigation Remaining after Onsite Enhancement				**0.327 acres (14,248 sq. ft.)**

[1]Nolan and Azerrad 2024. [2]The driplines for Oaks 2-12 are contiguous and the assigned mitigation ratio is consistent for each oak; therefore, the combined dripline shall be used for mitigation calculations. [3]Dripline x Ratio = Area Required.

OREGON WHITE OAK MITIGATION BANK SELECTION RATIONALE

The Oregon white oaks proposed for removal are located in the service area for the Terrace Oak Bank (Bank). The oak trees are approximately 5 miles southeast of the Bank which is in the southeastern portion of the service area (Figure 7). The proposed oak removal will be mitigated by purchasing credits from the Bank at ratios specified in the Terrace Oak Bank's Mitigation Banking Instrument (MBI).

Rationale for selecting this mitigation bank is as follows:

- There is not adequate space available onsite to fully compensate for oak habitat losses utilizing onsite mitigation. The use of the Bank will ensure that habitat functions common to urban areas can be fully replaced.
- The habitat functions lost from the proposed oak removal correspond directly with the habitat creation purpose, goals, and objectives at the Bank which identifies 13.93 acres of existing Oregon white oak woodland WDFW Priority Habitat that will be restored to pre-agricultural conditions through creation, enhancement, and preservation. Creation and enhancement will be accomplished through planting oak saplings and/or native understory plantings, removing of Douglas-fir, and establishing a conservation easement over the entire 13.93 acres.
- The use of Terrace Oak Bank credits will provide immediate compensation for the accrued oak impacts.

The 2008 *Compensatory Mitigation for Losses of Aquatic Resources, Final Rule* (Corps) recommends purchasing mitigation bank credits for ecological considerations (lower risk of failure and lower temporal loss of resources and services) and to avoid the maintenance and

contingency issues and outright failures that often accompany permittee-responsible mitigation sites. As such, use of the Terrace Oak Bank substantially lowers the risk of failure and temporal loss of resource functions and services over newly established, permittee-responsible mitigation sites and offsite mitigation is anticipated to be more meaningful and beneficial to the watershed's habitat functions.

Functions Provided at Oak Bank

The general goal of the Bank is to restore the approximately 13.93 acres to a state similar to its pre-agricultural condition through creation, enhancement, and preservation of an existing Oregon white oak woodland. All functions related to oak habitat are expected to increase as a result of design implementation. The primary ecological goals of the Bank are as follows:

- Removal of all existing impervious surfaces, including buildings, large equipment, gravel and paved areas, and debris, followed by replanting oak saplings and native understory species.
- Removal of invasive species in creation, enhancement, and preservation areas, primarily English ivy (*Hedera helix*) and Himalayan blackberry (*Rubus armeniacus*).
- Removal of Douglas-fir (*Pseudotsuga menziesii*) overstory as recommended by WDFW to reduce competition and further degradation of the Oregon white oak woodland from shading.
- Replanting of both creation and enhancement areas with oak saplings and native understory species to augment and expand existing Oregon white oak habitat.
- Preserve the Bank through a conservation easement.

Wildlife Habitat

The proposed development site plan will provide diverse habitat for a variety of large and small mammals, songbirds, waterfowl, amphibians, and insects by improving the condition of the existing Oregon White Oak habitat through creation and enhancement that includes replanting of oaks and native understory, removing invasive species, non-native debris, and impervious surfaces, and eliminating Douglas-fir encroachment.

Anticipated Functional Lift

The creation, enhancement, and Douglas-fir stand release activities proposed in the Bank will provide a variety of benefits lifting overall habitat functions. Invasive species eradication and installing oak trees and native understory in open areas will increase the site's potential to provide habitat by providing improved and increased diversity of plant species, structure, and interspersion of habitat. Removing Douglas-fir competition will allow the existing oaks to increase branching and smaller oak trees to become better established. The changes will increase acorn production, provide additional food for wildlife, and support a greater diversity of wildlife species as will removing impervious surfaces and debris. All functions impacted by removing an oak tree at the project site will be fully mitigated at the Bank.

Proposed Mitigation Credits

The mitigation credits required for oak impacts will be determined using calculations described in the Guidance (Nolan and Azerrad 2024). Because the Guidance recommends physical impacts be mitigated by planting new oaks, and temporal impacts be mitigated by enhancing or preserving existing oak habitat, physical impacts shall be treated as creation and temporal impacts shall be treated as enhancement and preservation. As such, physical impacts shall be assigned a 2:1 creation ratio and temporal impacts shall be assigned a 1:1 enhancement and preservation ratio. Because mitigating at the bank increases the likelihood of mitigation success and impacts can be mitigated immediately, the total credit amount shall be multiplied by a "risk reduction factor" of 50 percent (0.5). Table 9 summarizes the impact type, mitigation ratio, and total credits proposed for compensation.

Table 6. Proposed Credit Purchase Summary

Impact Type[1]	Impact Area	Credit Type	Ratio	Multiplier	Credits
Physical	0.899 acres (39,150 sq. ft.)	Creation	2:1	0.5	0.899
Temporal	0.327 acres[2] (14,248 sq. ft.)	Enhancement/ Preservation	1:1		0.164
				Total	**1.063**

[1]Nolan and Azerrad 2024. [2]Remaining mitigation required after onsite enhancement.

Credit Purchase or Transfer Timing

Following permit issuance, HSR Capital, LLC, as the applicant, will enter into a Buy/Sell Agreement with Terrace Oak Bank, for purchase of mitigation credits (in the quantity specified in Table 9) that would appropriately mitigate for the proposed project impacts. The actual purchase of credits will occur upon permit issuance. Prior to impacting the project oak, the applicant will submit proof of transfer of mitigation credits to project managers for the City of Camas. Proof of the mitigation transfer will be provided in the form of a notification letter to the approving agencies. Upon service of this notification, the mitigation requirement to purchase 1.063 mitigation credits will be fully satisfied.

Confirmation of Mitigation Credit Availability

Proof of the current number of available mitigation credits at the Terrace Oak Bank site will be confirmed by the approving agency, City of Camas and through the advising members of the Oak Bank Review Team.

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Onsite Enhancement Plan

Mitigation Goals and Discussion

The goal of this onsite mitigation plan is to fully compensate for wetland buffer and herbaceous bald impacts, partially compensate for oak temporal impacts associated with the proposed development, and to satisfy the aforementioned buffer reduction requirements.

Wetland Buffers

To compensate for wetland buffer impacts, approximately 0.184 acres (8,001 sq. ft.) of the buffer for Wetland A will be enhanced by removing invasive species and installing native species, for an overall buffer enhancement ratio of 1:1. Although the majority of buffer impacts are associated with Wetland B, the buffer planting area will be located entirely within the buffer for Wetland A. The majority of Wetland B's buffer is densely forested with a diverse sub-canopy, providing ample protection for the wetland from the surrounding development, while the portions of Wetland A's buffer proposed for planting consist of regularly mowed grasses and provide very little protection for the wetland. As such, mitigating impacts within Wetland A's buffer will provide a higher ecological lift than mitigating within Wetland B's buffer.

Additionally, a vegetated corridor will be established within each wetland buffer, and the entirety of both buffers will be enhanced through invasive species removal to satisfy buffer reduction criteria, further contributing to the functional gain onsite. Enhancing the buffers will improve wetland protection from surrounding human activity, helping to preserve important habitat and

water quality functions. This enhancement will offset for any loss to functions or values and ensure no net loss of ecological function. Furthermore, the enhancement areas will be protected in perpetuity by installing protective fencing and signage, and by establishing a conservation covenant or similar legal mechanism. The legal mechanism shall protect the Existing Oak Habitat and Herbaceous Bald Enhancement Areas and the entirety of the vegetated corridors, which include all other critical areas required for protection. Temporary impacts to Wetland A's buffer will be restored to pre-project conditions by applying a native seed mix to disturbed areas and will not require further mitigation or monitoring.

Oak and Herbaceous Bald Habitat

Approximately 0.15 acres (6,522 sq. ft.) of retained oak and HB habitat areas will be utilized to compensate for HB impacts and a portion of oak temporal impacts. This approach is ecologically appropriate due to the correlation between oak habitat and HB habitat, and because all oaks present onsite were near or within HB boundaries. According to WDFW's HB priority area description, dominant flora found on HBs includes herbaceous vegetation, dwarf shrubs, mosses, and lichens. Rock outcrops, boulders, and scattered trees are often present, especially Douglas fir, Pacific madrone (*Arbutus menziesii*), and Oregon white oak (WDFW 2025b). These conditions were present within the oak and HB areas, which further supports utilizing retained habitat as mitigation for oak temporal impacts and HB impacts. Oak physical impacts and the remaining temporal impacts will be offset by purchasing 1.063 credits from Terrace, as described in the *Proposed Mitigation Credits* section of this report.

There is currently no guidance that details management recommendations for herbaceous bald habitat. To ensure no net loss is achieved and impacts are adequately compensated for, ELS recommends HB impacts be mitigated at a 1:1 ratio. Enhancement will consist of removing invasive species and seeding native herbaceous species commonly associated with oak and HB habitat (Table 7).

Objectives and Performance Standards

Monitoring and maintenance of the enhancement areas will occur for a 5-year period with annual monitoring and reporting occurring in Years 1, 2, 3, and 5. Monitoring and maintenance will ensure the mitigation area is meeting the mitigation plan's goals, objectives, and performance standards. To meet this goal, the following objectives and performance standards are proposed:

Objective 1: Control invasive plant species including, but not limited to, English ivy (Hedera helix), Himalayan blackberry (Rubus armeniacus), reed canarygrass, and Canada thistle (Cirsium arvense) throughout the Wetland Buffer Enhancement Area, Existing Oak Habitat and Herbaceous Bald Enhancement Areas, and Wetland Buffer Planting Area.

Performance Standard 1a: Remove existing invasive species in the enhancement areas. Document the removal in the as-built report.

Performance Standard 1b: In all years, invasive plant species (not including reed canarygrass) will not exceed 20 percent aerial cover within the enhancement areas.

Objective 2: Enhance the buffers for Wetland A and Wetland B by installing native vegetation within the Wetland Buffer Planting Area.

Performance Standard 2a: Install native species according to the specifications in Table 7. Document installation in the as-built report.

Performance Standard 2b: In Year 1, planted species will achieve 90 percent survival. If dead plants are replaced, this performance standard will be met. Volunteers will be included in species counts. Document in annual monitoring report.

Performance Standard 2c: In Year 2, planted species will achieve 85 percent survival. If dead plants are replaced, this performance standard will be met. Volunteers will be included in species counts. Document in annual monitoring report.

Performance Standard 2d: In Year 3, planted species will achieve a minimum of 25 percent aerial cover OR 75 percent survival. If dead plants are replaced, this performance standard will be met. Volunteers will be included in species counts. Document in annual monitoring report.

Performance Standard 2e: In Year 5, planted species will achieve 35 percent aerial cover. If dead plants are replaced, this performance standard will be met. Volunteers will be included in cover estimates. Document in annual monitoring report.

Objective 3: Enhance the retained oak and herbaceous bald habitat by seeding native herbaceous species in the Existing Oak Habitat Enhancement and Herbaceous Bald Enhancement Areas.

Performance Standard 3a: Spread native seed according to specifications in Table 8. Document in the as-built report.

Performance Standard 3b: In Year 1, native herbaceous species will achieve 15 percent aerial cover. If the areas are reseeded to meet cover requirements, this performance standard will be met. Document in annual monitoring report.

Performance Standard 3c: In Year 2, native herbaceous species will achieve 20 percent aerial cover. If the areas are reseeded to meet cover requirements, this performance standard will be met. Document in annual monitoring report.

Performance Standard 3d: In Year 3, native herbaceous species will achieve 25 percent aerial cover. If the areas are reseeded to meet cover requirements, this performance standard will be met. Document in annual monitoring report.

Performance Standard 3e: In Year 5, native herbaceous species will achieve 35 percent aerial cover. If the areas are reseeded to meet cover requirements, this performance standard will be met. Document in annual monitoring report.

Objective 4: Provide long-term protection for the enhancement areas.

Performance Standard 4a: Record a conservation covenant or similar legal mechanism protecting the Vegetated Corridors in perpetuity. This performance standard will be met when the protection mechanism is recorded by the City, and a copy will be provided in the as-built report.

Performance Standard 4b: Permanent fencing and logs salvaged from trees removed onsite will be installed along the boundary of the enhancement area. This performance standard will be met when the logs and fencing are reported to be in place in the final monitoring report.

Performance Standard 4c: Restrictive signage meeting *CMC* requirements will be posted every 100 feet along the fencing and will remain in legible condition. Signs will be replaced if they become missing or illegible. This performance standard will be met when signs are reported to be in place in the final monitoring report.

PLANTING SPECIFICATIONS

The enhancement areas will be cleared of invasive species, planted with native trees and shrubs, and seeded with herbaceous species, providing greater habitat diversity, refuge, and forage opportunities than currently exist onsite. Planting native trees and shrubs in the wetland buffers will improve their ability to trap sediments and pollutants, reduce stormwater surface flows, and protect the wetlands from the surrounding development. The proposed species were selected due to their hardy and fast-growing nature, ensuring quick establishment and a timely net gain in functions (Table 7). Actual planting locations will be determined in the field, with consideration to the listed spacing and density to produce the most natural appearance possible. The enhancement will also create more habitat interspersion adjacent to Wetland A, increase its value to a greater variety of animal species, and increase screening from the proposed development, resulting in an overall net gain in ecological functions. Impacts and proposed mitigation measures are summarized in Table 6.

Table 7. Proposed Impacts and Onsite Mitigation

Critical Area	Impact Type	Mitigation Ratio	Impact Area	Mitigation Total	Mitigation Activities
Wetland B	Buffer	1:1	0.184 acres (8,001 sq. ft.)	0.184 acres (8,001 sq. ft.)	• Remove invasive species • Install native species • Protect with fencing, signage, and a conservation covenant • Maintain and monitor for 5 years
Herbaceous Bald 1	Removal	1:1	0.088 acres (3,852 sq. ft.)	0.150 acres (6,522 sq. ft.)[2,3]	
Oak Cluster 1		--[1]	0.048 acres (2,077 sq. ft.)		

[1]See the Oak Mitigation Requirements *section of this report for required oak mitigation discussion. [2]Remaining oak impacts will be mitigated at Terrace Oak Bank. [3]Oak and HB impacts will be mitigated together due to their similar habitat conditions.*

Table 8. Wetland Buffer Planting Specifications

Species Name and Facultative Status[1]	Spacing[2]	Stock[3]	Quantity
Trees			
Red alder (*Alnus rubra,* FAC)	10 feet on-center	One-gallon Container	10
Black cottonwood (*Populus trichocarpa,* FAC)			10
Total Trees			**20**
Shrubs			
Red flowering currant (*Ribes sanguineum,* FACU)	6 feet on-center	One-gallon Container	45
Nootka rose (*Rosa nutkana,* FAC)			45
Common snowberry (*Symphoricarpos albus,* FACU)			45
Scouler's willow (*Salix scouleriana,* FAC)			45
Total Shrubs			**180**
Total Woody Species			**200**

[1]Corps 2012. [2]Actual planting locations will be determined in the field. [3]Actual plant stock will be determined based on nursery availability.

Table 9. Seed Mix Specifications

Sunmark Seeds International, Inc – Native Pollinator Mix			
Species	**Composition**	**Rate**	**Quantity**
Baby Blue Eyes (*Nemophila menziesii*)	20.00%	1 pound per 1,000 sq. ft.	7 pounds (6,522 sq. ft.)
Meadow Barley (*Hordeum brachyantherum*)	18.50%		
Blanketflower (*Gaillardia aristata*)	18.00%		
Coastal Tidytips (*Layia platyglossa*)	13.00%		
Riverbank Lupine (*Lupinus rivularis*)	10.0%		
Small Camas (*Camassia quamash*)	7.00%		
Tufted Hairgrass (*Deschampsia cespitosa*)	4.50%		
Black-Eyed Susan (*Rudbeckia hirta*)	3.50%		
Sweet Alyssum (*Lobularia maritima*)	2.00%		
Common Yarrow (*Achillea millifolium*)	1.75%		
Aspen Fleabane (*Erigeron speciosus*)	1.25%		
Oceanspray (*Holodiscus discolor*)	0.50%		
Total	**100%**		

**An alternate seed mix may be used in the Existing Oak and Herbaceous Bald Enhancement Areas, provided it is appropriate for the local habitat type and comprised entirely of native species.*

PLANTING PLAN

Site Specifications

- Stake or flag the enhancement area.
- Investigate for and remove invasive and competing species from the mitigation area.
- Install mitigation plantings according to plant specifications.

Planting Implementation

- Install plants and spread seed in late fall (October-November) or early spring (February-March) at the intervals listed in Table 7 and Table 8.
- Space plants somewhat irregularly to encourage heterogeneity in the density and appearance of the mitigation area.
- Place plants so that their roots can extend down entirely and do not bend upward or circle inside the hole (no “J” or “U” roots).
- Position the root crowns so that they are at or slightly below the level of surrounding soil.
- Compact the soil around the planted species to eliminate air spaces.
- Irrigate all installed plants as site and weather conditions warrant.

Potted Stock

- Potted species will be purchased from a native plant nursery.
- Potted plants will be a minimum size of one-gallon.
- Potted stock will be kept cool and moist prior to being planted.
- Potted stock will have well-developed roots and sturdy stems, with an appropriate root-to-shoot ratio.
- Unplanted potted stock will be properly stored at the end of each day.

- The planting technician will be responsible for inspecting potted plant stock prior to and during planting, culling unacceptable plant materials.

Monitoring, Maintenance, and Contingency Measures

Monitoring and maintenance of the enhancement areas will occur for a 5-year period and annual monitoring and reporting will be conducted in Years 1, 2, 3, and 5. Plant counts will be conducted in Years 1, 2, and 3, to determine percent survival of installed species. Native volunteers may be included. Percent of aerial cover will be assessed in Year 5 using visual estimation. At least six monitoring plots will be established in the Wetland Buffer Enhancement Areas, one plot in the Wetland Buffer Planting Area, and one plot in each Existing Oak Habitat and Herbaceous Bald Enhancement Area during as-built activities to assess performance standards. Additionally, a photostation will be established at each monitoring plot to photo-document vegetation establishment. Photostation locations and the direction in which the picture is taken will also be recorded in the as-built report.

The goal of monitoring will be to determine if the previously stated performance standards are being met. Monitoring reports will be submitted no later than December 31st of each monitoring year to the City of Camas. Year 1 monitoring will begin a minimum of one year after plant installation.

At minimum, the following items will be included in the annual report:

- Location map and as-built drawing, including any changes.
- Historic description of the project, including dates of plant installation, current year of monitoring, and remedial actions taken (if any).
- Description of monitoring methods.
- Documentation of vegetative performance standards and overall development of plant communities.
- Assessment of invasive plant species and recommendations for management.
- Photographs from established photo stations.
- Observations of wildlife, including amphibians, invertebrates, reptiles, birds, and mammals. If photographs are taken, they will be included.
- Summary of the maintenance and contingency measures completed for the past year and proposed for the next year.

Monitoring

Monitoring will occur annually during the growing season, preferably during the same two-week period to better compare data. The following information will be gathered in the mitigation area:

- Percent survival of native species in Years 1, 2, and 3.
- Percent cover of native species in Year 5.
- Percent cover of non-native, invasive species in all monitoring years.

- General health of plants in the mitigation area, noting specific problems and potential causes.
- Photo documentation of vegetative changes over time from photo station established after plant installation.

Maintenance

Maintenance will include the following:

- Irrigating planting areas every other week or as needed in the dry season for the first three years. Taper watering in Years 2 and 3, watering approximately every 3 to 4 weeks in the dry season, or as needed.
- Remove competing herbaceous species at least three times yearly within a 3-foot radius of planted species and re-apply mulch, as needed.
- Weed-eat, spray, or mow invasive species as needed during the growing season.
- Replace dead or failed plants as described for the original installation to meet the minimum performance standards.

Contingency Measures

If the performance criteria are not met, steps will be taken to correct the situation in a timely manner. The following steps will be implemented when an area is identified as failing or potentially failing:

- Identify the cause(s) of the failure or potential failure.
- Identify the extent of the failure or potential failure.
- Implement corrective actions such as irrigating, fertilizing, and replanting.
- Document the activities and include this data in the monitoring reports.
- If a routine corrective action will not correct the problem, immediately consult with the appropriate agencies.
- Evaluate recommendations from resource agency staff and implement recommendations in a timely manner.

Funding for corrective actions will be the responsibility of the applicant.

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.

REFERENCES

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Nolan, M. P., and J. M. Azerrad. 2024. *Management recommendations for Washington's priority habitats: Best management practices for mitigating impacts to Oregon white oak priority habitat*. Washington Department of Fish and Wildlife (WDFW), Olympia, Washington. January 2, 2024.

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Rocchio, F. J., and Crawford. R. C. 2015. Ecological Systems of Washington State: A Guide to Identification. Washington Department of Natural Resources Natural Heritage Program. Olympia, WA.

Washington Department of Fish and Wildlife (WDFW). 2025a. *Washington State Fish Passage online map*. https://geodataservices.wdfw.wa.gov/hp/fishpassage/index.html. Accessed May 2025.

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Washington Department of Natural Resources (WDNR). 2025. Forest Practices Application Mapping Tool (FPAMT). https://www.dnr.wa.gov/programs-and-services/forestpractices/forest-practices-application-review-system-fpars. Accessed July 2025.

FIGURES

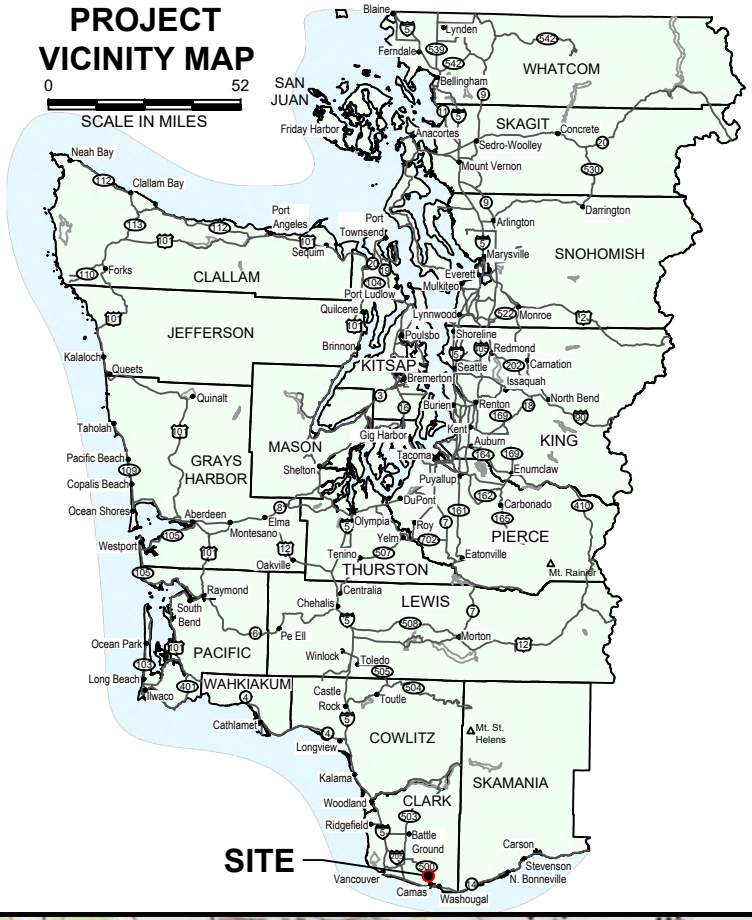
WASHINGTON



Latitude: 45.6193°
Longitude: -122.4156°

LOCATION MAP

PROJECT VICINITY MAP



R 3 E

6					1
31			34		36

T 2 N

NOTE:
Quadrangle topographic map from USGS.

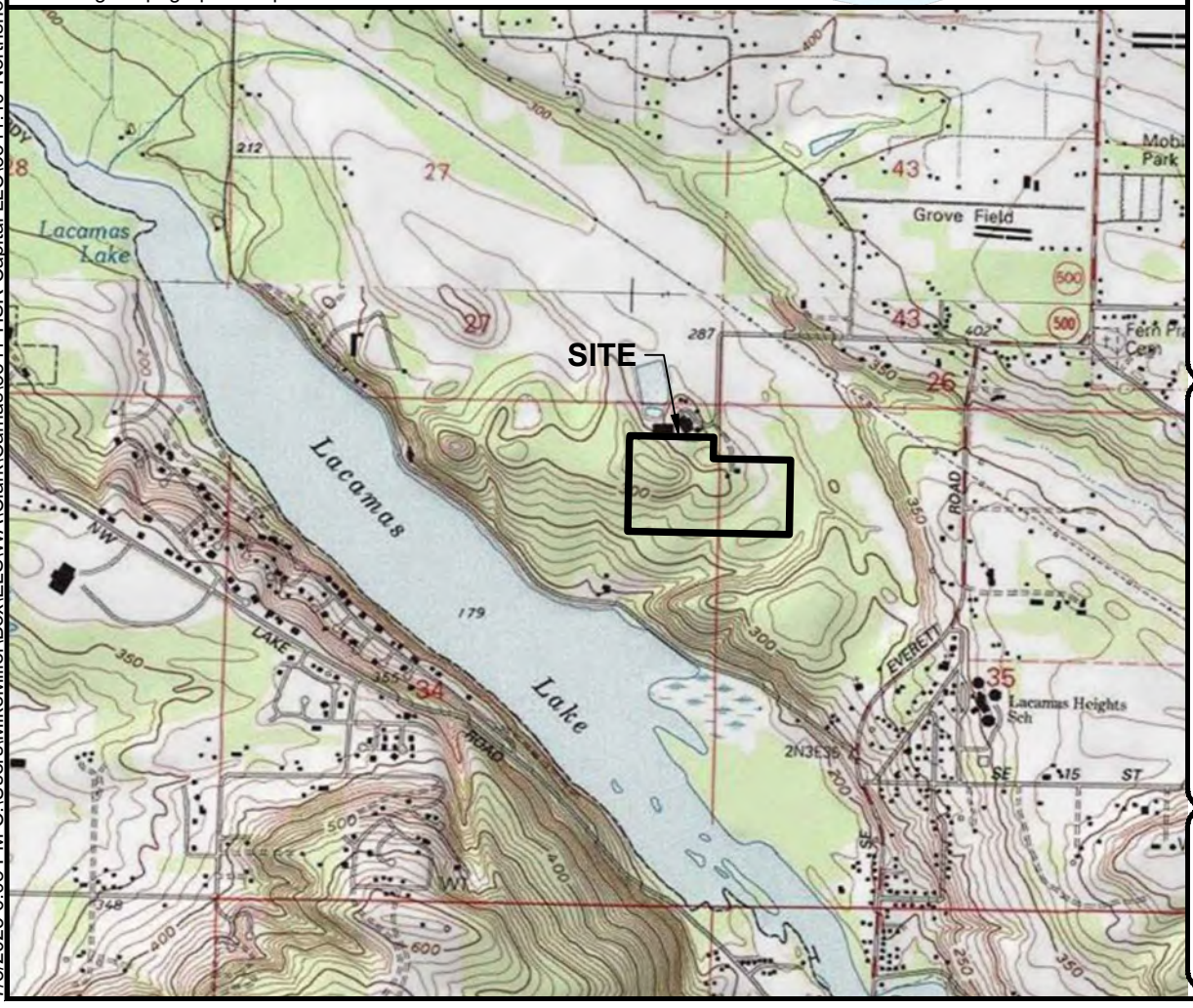


Figure 1
VICINITY MAP
Village at North Shore Mitigation
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 7/8/25
DWN: MPM
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3341.26

1157 3rd Ave., Suite 220A
Longview, WA 98632
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LEGEND:
- Site Boundary
- Parcel Boundary
- Wetland Boundary
- Approximate Wetland Boundary
- Wetland Buffer - High Intensity (150')
- Functionally Isolated Wetland Buffer
- Stream with Flow Direction
- Stream Buffer
- 1'-5' Contours
- Contiguous Oak Dripline
- Herbaceous Bald Boundary

Offsite Wetland
Functionally isolated from site by road. Clark County MapsOnline identifies that this wetland unit was rated as a Category IV depressional wetland on 9/27/2016.

Parcel #:177891000

Existing Gravel Road

NE 252nd Avenue

Wetland B
Category III
Depressional
Emergent
Forested
Seasonally Flooded
(0.81 ac. onsite)

Existing Gravel Road

Wetland A
Category III
Depressional
Emergent
Forested
Seasonally Flooded
Saturated Only
Seasonally Flowing Stream
(2.26 ac. onsite)

Ditch A

Parcel #: 177885000

150'

Oak Cluster 2

Herbaceous Bald 2

Existing Parking Pad

Parcel #: 178175000

Herbaceous Bald 1

Oak Cluster 1

150'

Stream A
Type F

Parcel #: 178171000

NOTE(S):
1. Aerial (June 3, 2024) from Google Earth™.
2. Contours obtained from drawing provided by AKS Engineering & Forestry.
3. Wetland, herbaceous bald boundaries and oak driplines located using handheld GPS capable of submeter accuracy.
4. The offsite portion of Wetland A's boundaries on parcel 178171000 were delineated by ELS biologists in November 2023 and are described in the Critical Areas Report for Enclave Property (ELS 2025c).

Figure 2
EXISTING CONDITIONS
Village at North Shore Mitigation
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 7/8/25
DWN: MPM
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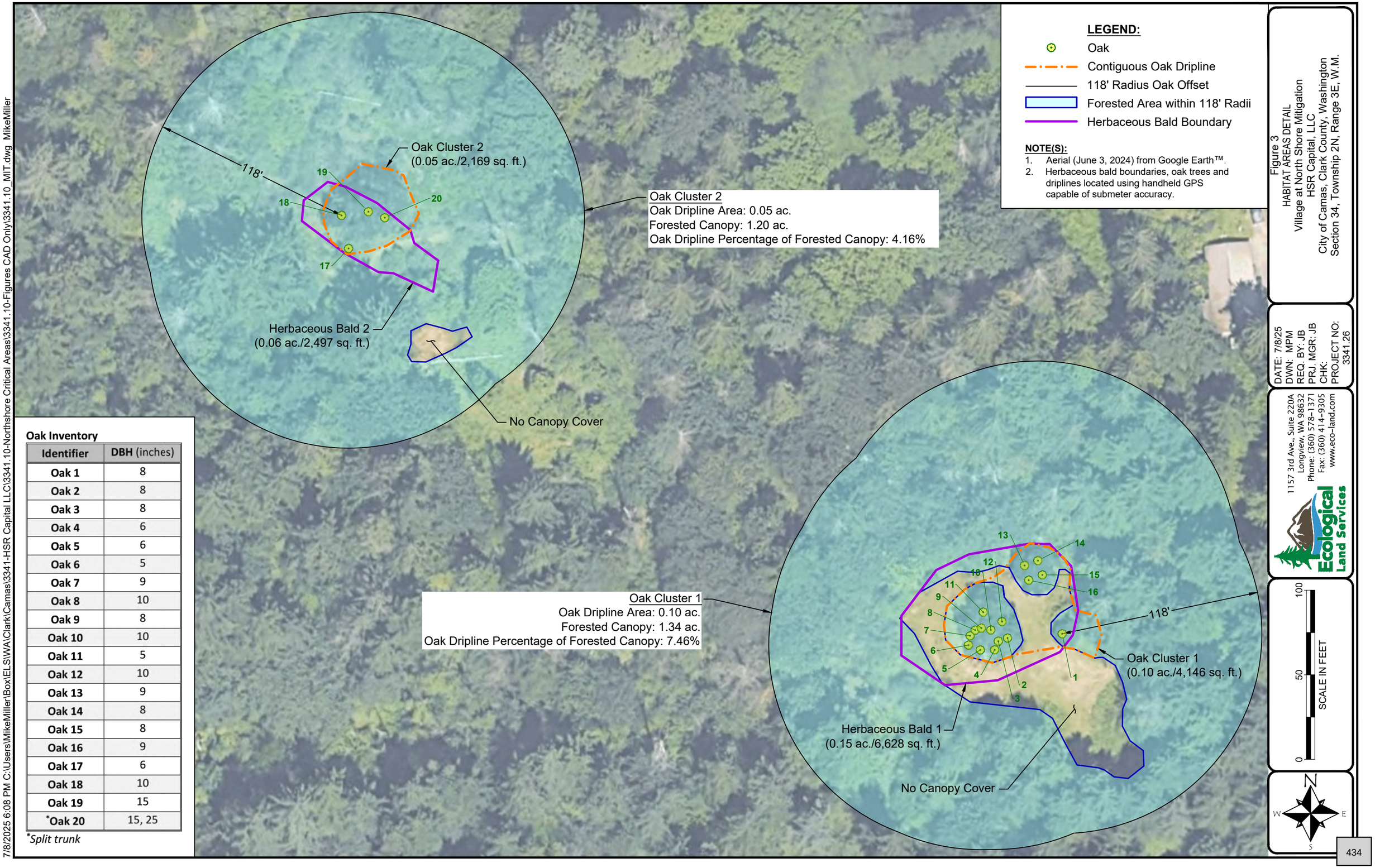

Oak Inventory

Identifier	DBH (inches)
Oak 1	8
Oak 2	8
Oak 3	8
Oak 4	6
Oak 5	6
Oak 6	5
Oak 7	9
Oak 8	10
Oak 9	8
Oak 10	10
Oak 11	5
Oak 12	10
Oak 13	9
Oak 14	8
Oak 15	8
Oak 16	9
Oak 17	6
Oak 18	10
Oak 19	15
*Oak 20	15, 25

*Split trunk

Figure 3
HABITAT AREAS DETAIL
Village at North Shore Mitigation
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 7/8/25
DWN: MPM
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LEGEND:

- Site Boundary
- Parcel Boundary
- Wetland Boundary
- Approximate Wetland Boundary
- Reduced Buffer (82.5')[1]
- Stream with Flow Direction
- Stream Buffer
- Herbaceous Bald Boundary
- Proposed Road Centerline
- Proposed Curbing
- Proposed Sidewalk
- Proposed Stormwater Pond
- Proposed Limits of Grading
- Wetland Buffer Averaging Reductions:[2]
  A - (0.015 ac./661 sq. ft.)
  B - (0.216 ac./9,388 sq. ft.)
- Wetland Buffer Averaging Increases:
  A - (0.015 ac./661 sq. ft.)
  B- (0.216 ac./9,388 sq. ft.)
- Temporary Wetland Buffer Impact Areas
  A - (0.003 ac./132 sq. ft.)
- Wetland Buffer Impact Areas
  B - (0.184 ac./8,001 sq. ft.)
- Herbaceous Bald Impact (0.088 ac./3,852 sq. ft.)
- Oak Dripline to Remain (0.048 ac./4,238 sq. ft.)[3]
- Oak Dripline to be Removed (0.048 ac./2,077 sq. ft.)[3]

Parcel #:177891000

Parcel #: 177885000

Wetland B
Category III
Depressional
Emergent
Forested
Seasonally Flooded
(0.81 ac. onsite)

Wetland A
Category III
Depressional
Emergent
Forested
Seasonally Flooded
Saturated Only
Seasonally Flowing Stream
(2.26 ac. onsite)

NE 252nd Avenue

Ditch A

Parcel #: 178175000

Parcel #: 178171000

Oak Cluster 2

Herbaceous Bald 2

Oak Impact Detail[3]

Herbaceous Bald 1

Oak Cluster 1

Stream A
Type F

62'

82.5'

82.5'

82.5'

PRIVATE B

PRIVATE A

PRIVATE D

PRIVATE C

N 56TH AVE

N 55TH AVE

N 54TH AVE

N MILLS ST

NORTH SHORE BLVD

ACCESS RD

NOTE(S):
1. Buffer reduced from 110' to 82.5 feet per CMC 16.53.050(C)(1).
2. Buffer averaged rom 82.5' to 62 feet at narrowest point per CMC 16.53.050(C)(2).
3. See Figure 5 - Impact Detail - Habitat Areas.
4. Proposed features based on drawing titled Site Layout 7, dated June 13, 2025, prepared by AKS Engineering & Forestry.
5. Wetland, herbaceous bald boundaries and oak driplines located using handheld GPS capable of submeter accuracy.

Figure 4
PROPOSED CONDITIONS
Village at North Shore Mitigation
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 7/8/25
DWN: MPM
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3341.26

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Longview, WA 98632
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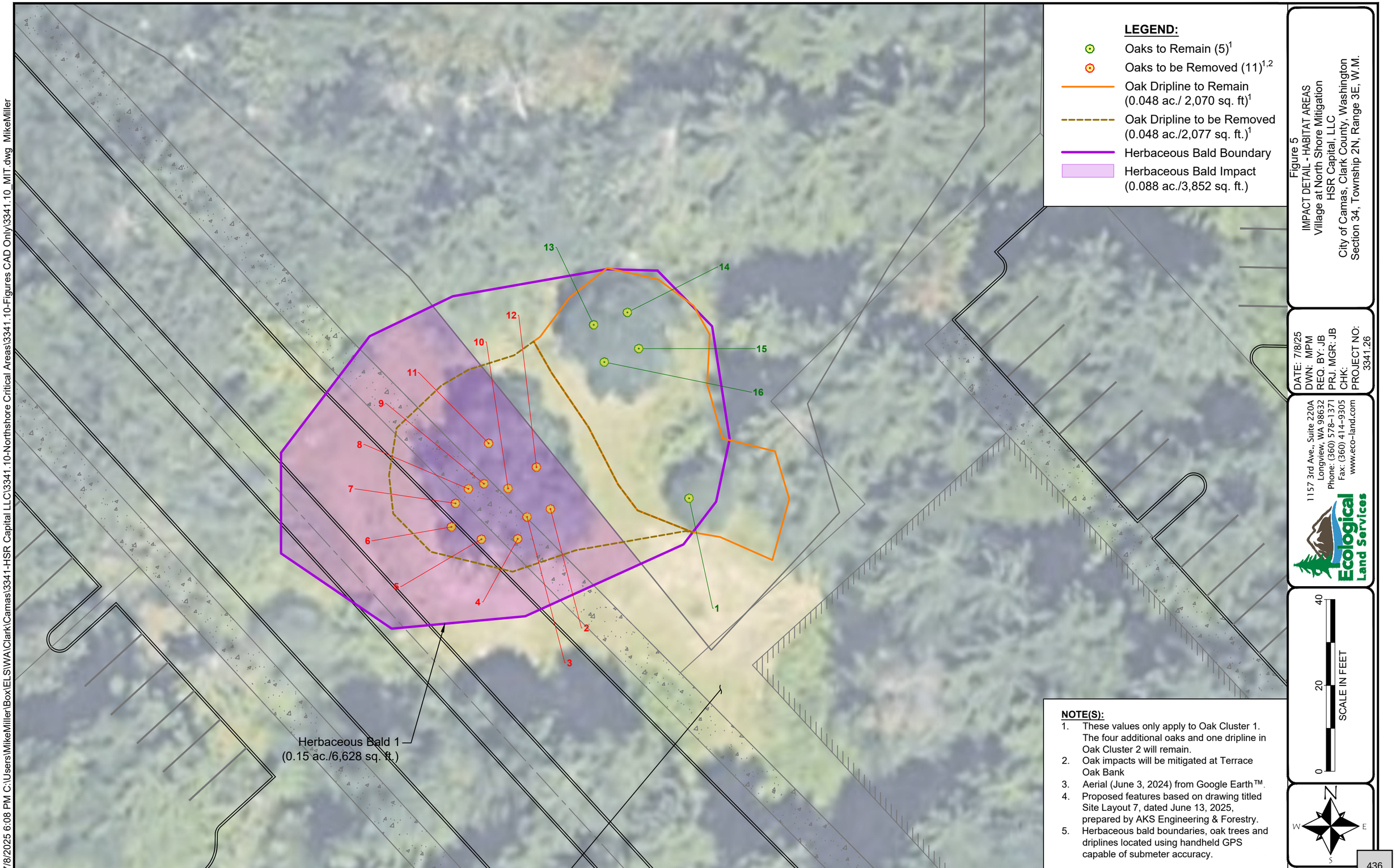
LEGEND:
Oaks to Remain (5)[1]
Oaks to be Removed (11)[1,2]
Oak Dripline to Remain (0.048 ac./ 2,070 sq. ft)[1]
Oak Dripline to be Removed (0.048 ac./2,077 sq. ft.)[1]
Herbaceous Bald Boundary
Herbaceous Bald Impact (0.088 ac./3,852 sq. ft.)
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Herbaceous Bald 1
(0.15 ac./6,628 sq. ft.)
NOTE(S):
1. These values only apply to Oak Cluster 1. The four additional oaks and one dripline in Oak Cluster 2 will remain.
2. Oak impacts will be mitigated at Terrace Oak Bank
3. Aerial (June 3, 2024) from Google Earth™.
4. Proposed features based on drawing titled Site Layout 7, dated June 13, 2025, prepared by AKS Engineering & Forestry.
5. Herbaceous bald boundaries, oak trees and driplines located using handheld GPS capable of submeter accuracy.
Figure 5
IMPACT DETAIL - HABITAT AREAS
Village at North Shore Mitigation
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.
DATE: 7/8/25
DWN: MPM
REQ. BY: JB
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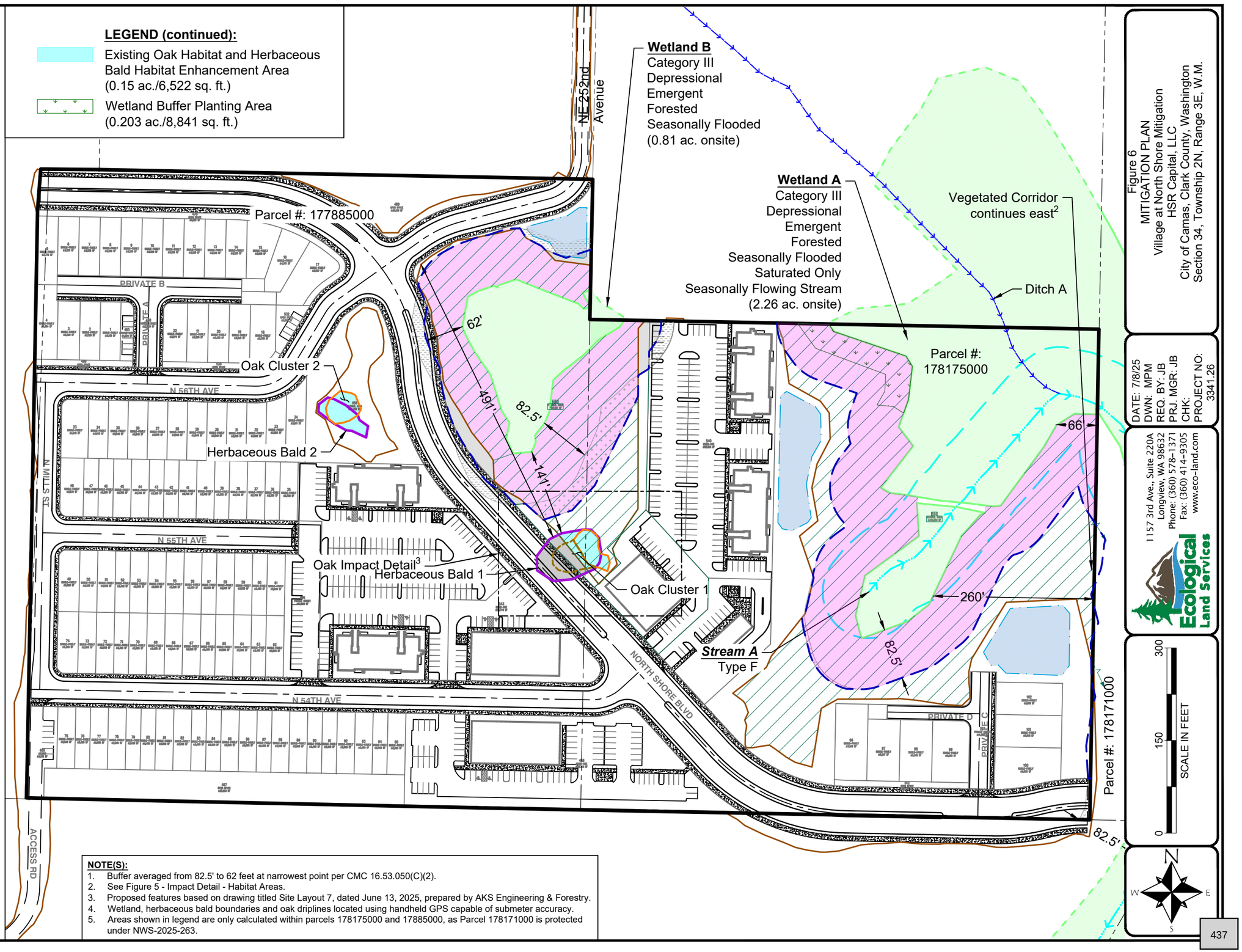
LEGEND:

- Site Boundary
- Parcel Boundary
- Wetland Boundary
- Approximate Wetland Boundary
- Final Wetland Buffer
- Stream with Flow Direction
- Stream Buffer
- Herbaceous Bald Boundary
- Proposed Road Centerline
- Proposed Curbing
- Proposed Sidewalk
- Proposed Stormwater Pond
- Proposed Limits of Grading
- Wetland Buffer Averaging Reductions:[1]
  A - (0.015 ac./9,388 sq. ft.)
  B - (0.216 ac./661 sq. ft.)
- Wetland Buffer Averaging Increases:
  A - (0.015 ac./637 sq. ft.)
  B - (0.216 ac./9,388 sq. ft.)
- Temporary Wetland Buffer Impact Areas:
  A - (0.003 ac./132 sq. ft.)
- Wetland Buffer Impact Areas
  B - (0.184 ac./8,001 sq. ft.)
- Herbaceous Bald Impact (0.088 ac./3,852 sq. ft.)
- Oak Dripline to Remain (0.048 ac./4,238 sq. ft.)[2]
- Oak Dripline to be Removed (0.048 ac./2,077 sq. ft.)[2]
- Vegetated Corridors:[3]
  Wetland A -
  (3.98 ac./173,575 sq. ft.)
  Wetland B -
  (2.11 ac./92,126 sq. ft.)
- Wetland Buffer Enhancement Areas:
  A - (2.52 ac./109,580 sq. ft.)
  B - (1.69 ac./73,597 sq. ft.)

LEGEND (continued):

- Existing Oak Habitat and Herbaceous Bald Habitat Enhancement Area (0.15 ac./6,522 sq. ft.)
- Wetland Buffer Planting Area (0.203 ac./8,841 sq. ft.)



NOTE(S):

1. Buffer averaged from 82.5' to 62 feet at narrowest point per CMC 16.53.050(C)(2).
2. See Figure 5 - Impact Detail - Habitat Areas.
3. Proposed features based on drawing titled Site Layout 7, dated June 13, 2025, prepared by AKS Engineering & Forestry.
4. Wetland, herbaceous bald boundaries and oak driplines located using handheld GPS capable of submeter accuracy.
5. Areas shown in legend are only calculated within parcels 178175000 and 17885000, as Parcel 178171000 is protected under NWS-2025-263.

Figure 6
MITIGATION PLAN
Village at North Shore Mitigation
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 7/8/25
DWN: MPM
REQ. BY: JB
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LEGEND:

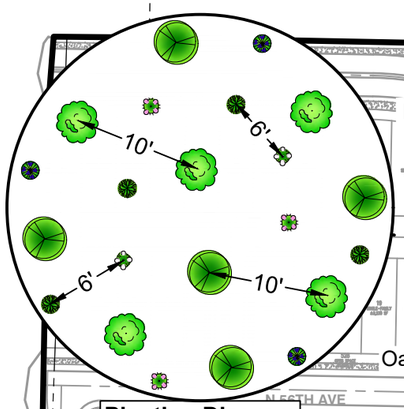
- Site Boundary
- Parcel Boundary
- Wetland Boundary
- Approximate Wetland Boundary
- Final Buffer
- Stream with Flow Direction
- Stream Buffer
- Herbaceous Bald Boundary
- Proposed Road Centerline
- Proposed Curbing
- Proposed Sidewalk
- Proposed Stormwater Pond
- Proposed Limits of Grading
- Wetland Buffer Averaging Reductions:[2]
  A - (0.015 ac./9,388 sq. ft.)
  B - (0.216 ac./661 sq. ft.)
- Wetland Buffer Averaging Increases:
  A - (0.015 ac./637 sq. ft.)
  B - (0.216 ac./9,388 sq. ft.)
- Temporary Wetland Buffer Impact Areas:
  A - (0.003 ac./132 sq. ft.)
- Wetland Buffer Impact Areas
  B - (0.184 ac./8,001 sq. ft.)
- Herbaceous Bald Impact (0.088 ac./3,852 sq. ft.)
- Oak Dripline to Remain (0.048 ac./4,238 sq. ft.)[3]
- Oak Dripline to be Removed (0.048 ac./2,077 sq. ft.)[3]
- Vegetated Corridors:[4]
  Wetland A - (3.98 ac./173,575 sq. ft.)
  Wetland B - (2.11 ac./92,126 sq. ft.)
- Wetland Buffer Enhancement Areas:
  A - (2.52 ac./109,580 sq. ft.)
  B - (1.69 ac./73,597 sq. ft.)

LEGEND (continued):

- Existing Oak Habitat and Herbaceous Bald Habitat Enhancement Area (0.15 ac./6,522 sq. ft.)
- Wetland Buffer Planting Area (0.203 ac./8,841 sq. ft.)

NOTE(S):

1. Buffer reduced from 110' to 82.5 feet per CMC 16.53.050(C)(1).
2. Buffer averaged rom 82.5' to 62 feet at narrowest point per CMC 16.53.050(C)(2).
3. See Figure 5 - Impact Detail - Habitat Areas.
4. Proposed features based on drawing titled Site Layout 7, dated June 13, 2025, prepared by AKS Engineering & Forestry.
5. Wetland, herbaceous bald boundaries and oak driplines located using handheld GPS capable of submeter accuracy.
6. Areas shown in legend are only calculated within parcels 178175000 and 17885000, as Parcel 178171000 is protected under NWS-2025-263.



Planting Diagram
(Not to Scale)

Wetland Buffer Planting Specifications

Species Name and Facultative Status[1]	Spacing[2]	Stock[3]	Quantity
Trees			
Red alder (*Alnus rubra,* FAC)	10 feet on-center	One-gallon Container	10
Black cottonwood (*Populus trichocarpa,* FAC)			10
		Total Trees	**20**
Shrubs			
Red flowering currant (*Ribes sanguineum,* FACU)	6 feet on-center	One-gallon Container	45
Nootka rose (*Rosa nutkana,* FAC)			40
Common snowberry (*Symphoricarpos albus,* FACU)			40
Scouler's willow (*Salix scouleriana,* FAC)			40
		Total Shrubs	**165**
		Total Woody Species	**185**

[1]Corps 2012. [2]Actual planting locations will be determined in the field. [3]Actual plant stock will be determined based on nursery availability.

Seed Mix Specifications (Existing Oak and Herbaceous Bald Habitat Enhancement Areas)

Sunmark Seeds International, Inc – Native Pollinator Mix			
Species	Composition	Rate	Quantity
Baby Blue Eyes (*Nemophila menziesii*)	20.00%	1 pound per 1,000 sq. ft.	7 pounds (6,522 sq. ft.)
Meadow Barley (*Hordeum brachyantherum*)	18.50%		
Blanketflower (*Gaillardia aristata*)	18.00%		
Coastal Tidytips (*Layia platyglossa*)	13.00%		
Riverbank Lupine (*Lupinus rivularis*)	10.0%		
Small Camas (*Camassia quamash*)	7.00%		
Tufted Hairgrass (*Deschampsia cespitosa*)	4.50%		
Black-Eyed Susan (*Rudbeckia hirta*)	3.50%		
Sweet Alyssum (*Lobularia maritima*)	2.00%		
Common Yarrow (*Achillea millifolium*)	1.75%		
Aspen Fleabane (*Erigeron speciosus*)	1.25%		
Oceanspray (*Holodiscus discolor*)	0.50%		
Total	100%		

**An alternate seed mix may be used, provided it is appropriate for the local habitat type and comprised entirely of native species.*

Figure 7
PLANTING PLAN
Village at North Shore Mitigation
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 7/8/25
DWN: MPM
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3341.26

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

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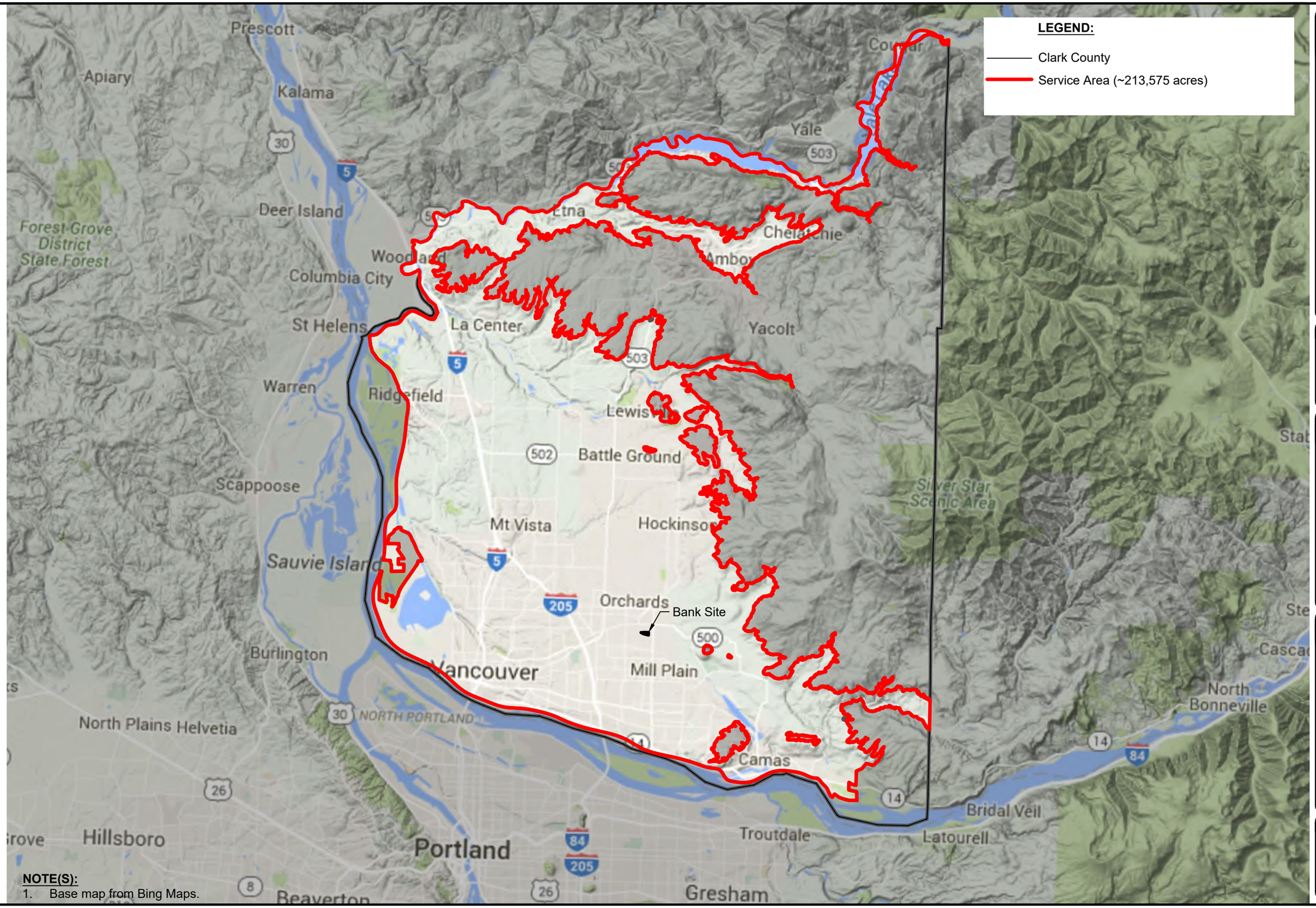

NOTE(S):
1. Base map from Bing Maps.

Figure 8
TERRACE MIITGATION BANK SERVICE AREA
Village at North Shore
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 7/8/25
DWN: MPM
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3341.26

1157 3rd Ave., Suite 220A
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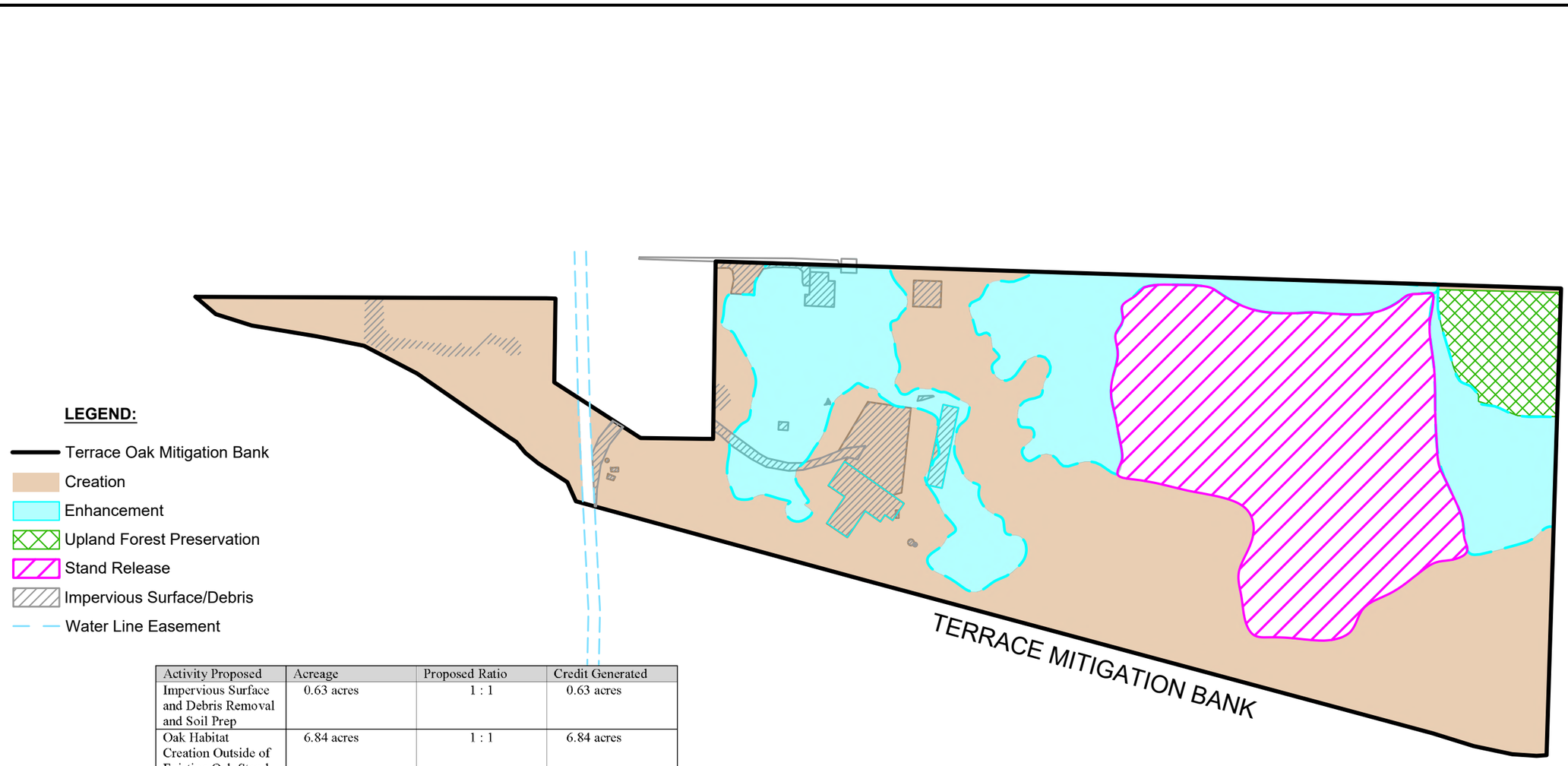

Activity Proposed	Acreage	Proposed Ratio	Credit Generated
Impervious Surface and Debris Removal and Soil Prep	0.63 acres	1 : 1	0.63 acres
Oak Habitat Creation Outside of Existing Oak Stand	6.84 acres	1 : 1	6.84 acres
Douglas Fir Stand Release	3.34 acres	0.4 : 1	8.35 acres
Enhancement of Existing Oak Stand	3.20 acres	0.4 : 1	8.00 acres
Upland Forest Preservation	0.50 acres	0.5 : 1	1.00 acres
Totals	14.51 acres[1]		24.82 acres

[1] Total acreage includes areas of activity overlap and does not include 0.05 acres of water line easement, so is not reflective of the 13.93 acres represented in the legal survey of Oak Bank area.

Table 2. Oak Mitigation Bank Activity Descriptions.

Activity Proposed	Type of Activity/Area
Impervious Surface and Debris Removal and Soil Prep	• Includes: • Buildings, driveways, gravel pads or any other impervious area to be removed (regardless of whether oak tree canopy already covers the area) • Removal of debris piles throughout the site • Loosening of soils following impervious/debris removal
Oak Habitat Creation Outside of Existing Oak Stand	• Includes open areas of all types not currently covered by oak canopy • Areas to be replanted with oak saplings and native understory
Douglas Fir Stand Release	• Includes area of dense fir canopy within existing oak stand • Douglas fir over-story to be removed through harvest or tree girdling/snag creation
Enhancement of Existing Oak Stand	• Includes areas of existing oak canopy • Enhancement areas will have non-natives removed and understory planted with native shrubs typically associated with oak woodlands
Upland Forest Preservation	• Includes areas of deciduous forest adjacent to oak canopy, providing upland forest habitat • Area will be preserved through administration of a conservation easement

Figure 9
TERRACE MIITGATION BANK SITE DESIGN
Village at North Shore
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 7/8/25
DWN: MPM
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3341.26

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

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APPENDIX A

WDFW FUNCTIONAL ASSESSMENTS FOR INDIVIDUAL OAKS AND MITIGATION CALCULATIONS

WDFW Functional Assessments for Individual Oaks to be Impacted

Oregon White Oak Functional Assessments - HSR Capital, Village at North Shore - April 29, 2025										
Metric	**Multiplier**	**Oak 2**	**Oak 3**	**Oak 4**	**Oak 5**	**Oak 7**	**Oak 8**	**Oak 9**	**Oak 10**	**Oak 12**
Size of Oak Trees (*Choose one*)										
>76 cm (30 in) DBH	6	☐	☐	☐	☐	☐	☐	☐	☐	☐
50-76 cm (20-30 in) DBH	5	☐	☐	☐	☐	☐	☐	☐	☐	☐
30-50 cm (12-20 in) DBH	3	☐	☐	☐	☐	☐	☐	☐	☐	☐
<30 cm (12 in) DBH	1	☑	☑	☑	☑	☑	☑	☑	☑	☑
Condition of Crown (*Choose one*)										
Well-formed/dominant	3	☐	☐	☐	☐	☐	☐	☐	☐	☐
Suppressed/stunted	2	☑	☑	☑	☑	☑	☑	☑	☑	☑
Seedling/Sapling	1	☐	☐	☐	☐	☐	☐	☐	☐	☐
Wildlife Value (*Choose all that apply*)										
Acorn production	2	☑	☑	☑	☑	☑	☑	☑	☑	☑
Leaves available for wildlife browsing	1	☑	☑	☑	☑	☑	☑	☑	☑	☑
Presence of cavities	2	☐	☐	☐	☐	☐	☐	☐	☐	☐
Presence of dead branches	1	☑	☑	☑	☑	☑	☑	☑	☑	☑
Presence of galls or fungi	1	☐	☐	☐	☐	☐	☐	☐	☐	☐
Presence of heart rot or carpenter ants	1	☐	☐	☐	☐	☐	☐	☐	☐	☐
Located near other OWO trees (<118 ft)	3	☑	☑	☑	☑	☑	☑	☑	☑	☑
Total		**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Function Score		**High**	**High**	**High**	**High**	**High**	**High**	**High**	**High**	**High**

*Oak 6 and Oak 11 were not assessed due to DBH < 6 inches.

Score	Function
0	Minimal
1	Minimal
2	Minimal
3	Minimal
4	Low
5	Low
6	Low
7	Medium
8	Medium
9	Medium
10	High
11	High
12	High
13	High
14	High
15	High
16	High
17	High
18	High
19	High
20	High
21	High
22	High
23	High

APPENDIX B

OFFSITE PROTECTED WETLAND AREA

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Planting Specifications

Common Name	Scientific Name	Stock	Spacing	Quantity
Wetland Buffer Enhancement Area				
Douglas fir	*Pseudotsuga menziesii*	One-gallon Container	15 feet on-center	**10**
Bigleaf maple	*Acer macrophyllum*			**10**
Red alder	*Alnus rubra*			**12**
Common snowberry	*Symphoricarpos albus*	Bare-root	6 feet on-center	**150**
Nootka rose	*Rosa nutkana*			**150**
Salmonberry	*Rubus spectabilis*			**150**
Vine maple	*Acer circinatum*			**150**
			Total	**632**
Riparian Buffer Enhancement Area				
Douglas fir	*Pseudotsuga menziesii*	One-gallon Container	15 feet on-center	**10**
Bigleaf maple	*Acer macrophyllum*			**8**
Red alder	*Alnus rubra*			**8**
Cascara	*Frangula purshiana*	Bare-root	4 feet on-center	**120**
Osoberry	*Oemleria cerasiformis*			**120**
Common snowberry	*Symphoricarpos albus*			**120**
Black hawthorn	*Crataegus douglasii*			**120**
			Total	**506**

NOTE(S):
1. Wetland and test plots located using handheld GPS capable of submeter accuracy.
2. Parcel data from Clark County GIS.
3. Proposed Conditions Map based on drawing dated January 10, 2025, provided by AKS Engineering.

Wetland A
Category III
Depressional
Emergent
Forested 3/5
Seasonally Flooded
Saturated Only
Seasonally Flowing Stream
2.59 ac. Onsite
~10.09 ac. Total

Spyglass Hill
Oak Mitigation

Limits of Grading

Stream B
Type F

75'

110'

Wetland B
Category III
Depressional
Emergent
Scrub-Shrub
Forested
Seasonally Flooded
Saturated Only
Seasonally Flowing Stream
0.13 ac. Onsite
~11.01 ac. Total

Stream A
Type F

95'

328'

Wildlife Habitat Corridor

67.5'

62.5'

LEGEND:
- Site Boundary
- Parcel Boundary
- Wetland Boundary
- Approx. Wetland Boundary
- 110' Wetland Buffer (Reduced)
- Functionally Isolated Buffer
- Stream with Flow Direction
- 75' Stream Buffer
- Ditch with Flow Direction
- OHWM
- Existing Fence
- Culvert
- Habitat Log
- Temporary Wetland Buffer Impact (Wetland A=0.07 ac. / 3,237 sq.ft.)
- Indirect Wetland Impact (Wetland B=0.11 ac. / 4,590 sq.ft.)
- Proposed Wetland Buffer Impact (Wetland A=0.005 ac. / 220 sq.ft.)
- Wetland Buffer Average-Decrease (Wetland A=0.13 ac. / 5,646 sq.ft.) (Wetland B=0.02 ac. / 703 sq.ft.)
- Wetland Buffer Average-Increase (Wetland A=0.13 ac. / 5,646 sq.ft.) (Wetland B=0.02 ac. / 703 sq.ft.)
- Temporary Stream Buffer Impacts (0.08 ac. / 3,677 sq.ft.)
- Proposed Stream Buffer Impacts (0.50 ac. / 21,673 sq.ft.)
- Proposed Instream Impacts (0.03 ac. / 1,410 sq.ft.)
- Wetland Buffer Enhancement Area (0.66 ac. / 28,860 sq.ft.)
- Stream Buffer Enhancement Area (0.53 ac. / 23,083 sq.ft.)

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SCALE IN FEET

Ecological Land Services
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371

PURPOSE: Mitigation for Indirect Wetland Impacts and Instream Impacts

DATUM: NAD83
ADJACENT PROPERTY OWNERS:

Mitigation Plan
APPLICANT: HSR Capital, LLC
PROJECT NAME: Enclave Property
REFERENCE #: NWS-2025-263
SITE LOCATION ADDRESS: No Situs Address

PROPOSED: Indirect and Instream Impacts
IN Streams
NEAR: Camas
COUNTY: Clark **STATE:** WA
SHEET 6 **OF** 7
DATE: 3/4/25

1. Pre-Application Conference Report

PRE-APPLICATION MEETING NOTES
North Shore Village
PA24-16

Thursday, June 6, 2024, 3:30pm (meeting via zoom)

Applicant:	AKS Engineering Attn: Michael Andreotti 9600 NE 126th Ave, Suite 2520 Vancouver, WA 98682
City of Camas:	Madeline Sutherland, Planner Robert Maul, Planning Manager Anita Ashton, Project Manager Engineering Brian Smith, Building Official Ron Schumacher, Fire Marshal
Location:	313 SE Leadbetter Rd, 305 SE 252nd Ave Parcel Numbers: 177885000, 178175000
Zoning:	North Shore Mixed Use, NS Residential-High Density, NS Commercial
Description:	The applicant is proposing to construct 94 single family lots, two mixed use lots with associated road and site improvements.

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 SUTHERLAND (360) 817-1568**

Applicable codes for this proposal include Title 16 Environment, Title 17 Land Development, and Title 18 Zoning of the Camas Municipal Code (CMC), which can be found on the city website. Please note it remains the **applicant's responsibility** to review the CMC and address all applicable provisions. The following pre-application notes are based on application materials and site plan submitted to the City on May 14, 2024:

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).

Fees will be based on the adopted fees at the time of land use application submittal. The current fees include the following:	
1. Shoreline Permit	$1,367.00
2. Preliminary Subdivision Review	$7,848 +$250 per lot
3. Site Plan Review	$4,435 + 34 per unit + $68 per 1,000sf of GFA
4. Major Design Review	$2,598
5. SEPA	$886
6. Critical Areas Review *(for each type)*	$848
7. Archaeological Review	$150
8. Fire Department Review	$460
Fees for building permit are collected at the time of the building permit application. Fees for engineering are collected at time of engineering plan approval.	
9. Building Permit and Plan Review	based on the valuation of the project.
10. Engineering Review	3% of estimated construction costs

2. A complete list of the permit approvals 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 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 and reports- three sets and an electronic copy (send as a PDF by email or on a disc).
6. Copy of the pre-application meeting notes.
7. A development sign must be posted on site per CMC Section 18.55.110.H (1-5).

Shoreline Substantial Development Permit and Shoreline Conditional Use Permit
Per SMP Table 6-1 a conditional use permit is required for utilities within the Medium Intensity shoreline designation. A pedestrian pathway is permitted in the Medium Intensity designation and requires a shoreline substantial development permit which may be consolidated with the conditional use permit for the utilities. Exemptions from a substantial development permit are in SMP 2.3.2.

Subdivision Preliminary Plat
The preliminary plat for a subdivision is a Type III permit process, where the examiner renders the final decision. A complete application must include the materials in CMC 17.11.030. The narrative must address the approval criteria in Subsection D. The following comments are based on the submittal:

- The lots must meet the dimensional standards for the north shore zones
- The boundaries of each zone should be shown on the preliminary plat as reference

Site Plan Review
Per CMC 18.24.020.A, "*All new development within the Mixed Use (MX) zone shall submit a site plan review application in accordance with CMC Chapter 18.18 Site Plan Review of this title*." The site development approval process will be considered under a Type II site plan, which is an administrative process. The application for Site Plan Review shall contain the information outlined in CMC 18.18.040(A-J). The application shall address in a narrative the criteria for approval CMC 18.18.060 (A-F). Building height, setback, and lot coverage can be found in CMC 18.09.0030 Table 1.

- *"MX-NS North Shore Mixed Use. This zone provides for a wide range of commercial and residential uses in the North Shore subarea. Compact development that supports transit and pedestrian travel is encouraged. Mixed-use areas should create spaces for community gathering, waiting, discussion, and outdoor commercial activities. Horizontal and vertical mixed-use developments are allowed. Mixed-use development should include multiple entries and windows on the ground floor to facilitate business access, create visual interest, and promote safety. For residential uses, this zone allows a maximum density of 24 dwellings per acre and minimum density of 10 dwelling units per acre. Each horizontal mixed-use development should have no more than 70% of the total acreage of the development dedicated to residential uses. Each vertical mixed-use development shall, at a minimum, dedicate the 107 Item 11. Created: 2022-10-13 14:57:34 [EST] (Supp. No. 42, Update 1) Page 30 of 73 ground floor to commercial uses (up to 50% of the ground floor may be used for indoor parking). Residential multifamily is allowed only on the second floor or above or in the back of commercial buildings as a live-work unit (only 25% of the required 30% can be live-work units)."*
- *Site Plan Review will be conditioned for future commercial developments if none are proposed at this time.*

Temporary Use Permit
A TUP is required for blasting prior to land use approval. TUP requirements are in CMC 18.47.

Boundary Line Adjustment
A boundary line adjustment is required to adjust the proposed property line. The criteria per CMC 17.07.040 will need to be met and addressed in the project narrative. Criteria F does not allow a BLA to be "used to circumvent subdivision or short subdivision procedures".

Major Design Review
Design Review is required for all new development within mixed use zones and multifamily development per CMC 18.19.020. The standards applicable to this property for Design Review are found in the North Shore Design Review Manual. Additional standards per the North Shore Sub Area Design Manual shall be followed.

A submittal for Design Review should include a site plan drawing, a detailed landscape plan, exterior building materials and colors, elevation views and lighting specifications and plan.

Landscaping Regulations and Tree Retention
Landscaping standards shall apply to all new land divisions per CMC 18.13.020.B.1. A Landscape, Tree and Vegetation plan must be submitted pursuant to CMC 18.13.040.A. A Tree Survey is required per CMC 18.13.040.B and must be prepared by a certified arborist or professional forester pursuant to the requirements outlined in CMC 18.13.045. A minimum 30-unit tree density per net acre is required in the Northshore area and needs to be incorporated in the overall landscape plan per CMC 18.13.051.A.

CMC 17.19.030.C.1, Buffer Between Uses. "*Where single-family residential lots are to be adjacent to multiple-family, commercial or industrial land use districts, and where natural separation does not exist, adequate landscape buffer strips and/or solid fences for purposes of buffering sound, restricting access, pedestrian safety and privacy shall be provided.*"

Parking

Parking requirements per CMC 18.11 must be met.

Critical Areas

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

SEPA

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

Archaeological Review

The site is located in an area of high probability for the presence of archaeological objects and therefore an archaeological predetermination is required per CMC Section 16.31.070.A. Submit proof of mailing or emailing the tribes per CMC 16.31.160.

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

General Requirements:

1. The proposed development is located in the North District and subject to the North Shore design standards, as well as the *Camas Design Standards Manual (CDSM)* and CMC 17.19.040.
2. Civil site construction plans shall be prepared by a licensed Washington State Engineer.
3. The Community Development Engineering Dept. is responsible for plan review (PR) and construction inspection (CI).
4. 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 prior to or with submittal of plans for first review.
        i. The first review submittal shall consist of one (1) full size set, a PDF copy of the engineering plans, and an electronic version of the final stormwater report (TIR).
    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 construction plan approval.
5. ***Engineering site improvements plans are not to be submitted until after the land-use decision is issued.***
6. *Per CMC 17.21.060.H Except for one sales office or one model home, building applications will not be accepted until after Final Acceptance has been issued for all infrastructure improvements.*
7. *Final acceptance is issued by the Community Development Engineering Dept.*

8. Any existing wells, 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. Regulations for installation of public improvements, improvement agreements, bonding, final platting, and final acceptance can be found at CMC 17.21.
11. 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, at a minimum, to have a traffic engineer analyze the following:
    a. Site distance access at the intersections of:
        i. NE 252nd and proposed N. 58th Avenue.
        ii. NE 3rd Street and NE 257th Avenue.
        iii. NE 3rd Street and NE Everett Street (SR 500).
    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 252nd Avenue and N. 58th Avenue at the proposed access locations, and applicable private driveways along NE 252nd Avenue.
    d. Analyze turn movements at both accesses, including storage lanes for turns.
    e. Address the existing narrow County roads and the traffic impacts to said roads from the proposed development:
        i. NE 3rd Street consists of approximately 18-feet of paved surface and 46-feet of County ROW.
        ii. NE 252nd Avenue consists of approximately 18-feet of paved surface and 40-feet of County ROW.
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. The preliminary TIA will be sent to City of Vancouver and Clark County traffic engineers for review and comments.

Streets:

1. On-site street improvements will be subject to the North Shore Design Standards (NSDS) for minimum road standards and right-of-way widths, in addition to the Camas Design Standards Manual (CDSM) for all other infrastructure improvements.
2. The proposed development is located northwest of the Lacamas Hills subdivision and west of the future Enclave of North Shore short plat.

Future on-site and off-site road connections to the proposed development:

3. Camas staff is coordinating an effort to look at an alternative east-west North Shore arterial alignment that would best suit the overall layout of the land based on critical areas and existing impacts thereto. Staff will keep the applicant posted on the findings.

On-site Street Requirements:

4. Per CMC 17.19.040.B.1, the applicant will be required to construct all road improvements in accordance with the adopted North Shore Design Manual (NSDM):
    a. Proposed N Ridgeline Road, N Elk Street, N 54th Avenue, N 55th Avenue, and N 57th Avenue are to be full-width, full-depth road improvements from the intersection with NE 252nd Avenue to the southeastern corner of the proposed development.
    b. Proposed N Ridgeline Road shall consist of a 60-foot right-of-way width, 28-feet of paved surface, with planter strips, and sidewalks on both sides of the road.
    c. Proposed N 54th Avenue, N 55th Avenue, N Elk Street, N 57th Avenue shall consist of a minimum 54-foot right-of-way width, 28-feet paved surface with two 10-foot travel lanes and an 8-foot on-street parking lane on one side, planter strips and sidewalks on both sides.
    d. Proposed N Mill Street and N 58th Avenue are to be a minimum 24-foot half-width full-depth road improvements with a minimum 24-feet paved surface to allow for two-way vehicular movements.
        i. Additional paved width may be required for on-street parking.
    e. All half-width street improvements are to be constructed with a minimum 24-foot-wide paved surface to allow for 2-way traffic movements.
    f. Location of roundabouts are to be in accordance with the NSDM.
5. Per CMC 17.19.040.B.5, the applicant will be required to:
    a. Dedicate sufficient right-of-way width for full depth half-width street improvements for N Mills Street and N. 58th Avenue.
    b. Right-of-way dedication for the proposed interior roads shall be per the North Shore Design Manual.
    c. Right-of-way dedication for Ridgeline Road is to be extended to the southeast property line of Parcel No. 178175000 abutting the western most property line of the future Enclave at North Shore.
        i. The proposed BLA of Parcel No. 178175000 does not remove the applicant's requirement to extend right-of-way dedication to the southeast property line of Parcel No. 178175000 abutting the western most property line of the future Enclave at North Shore.
6. Per CDSM, Table 3 - Access Spacing Standards:
    a. The minimum driveway setback from a collector is 110-feet, as measured from the centerline of the adjacent street to the proposed access.
    b. As proposed, Lot 1 mixed use eastern entrance is approximately 244-feet from N Ridgeline Road.
    c. The proposed driveway location meets the minimum setback standard from N. Ridgeline Road.
7. Street tree planting is required in accordance with CMC 17.19.030 (F).
8. Off-street parking requirements are to be per CMC 18.11.100.
9. LED street lighting is to be installed along all street frontages within and adjacent to the proposed development, in accordance with CDSM.

County Roads:

10. The proposed development is shown to be accessed via existing Clark County roads, NE 3rd Street and NE 252nd Avenue.
11. NE 3rd Street and NE 252nd Avenue are unimproved County roads west of NE 257th Avenue, that consist of approximately 18-feet of paved surface.
    a. Both roads are currently used by approximately three (3) existing single-family residences.
    b. NE 252nd Avenue and NE 3rd Street as configured are not designed for the amount traffic that would be generated by the proposed development.
12. Improvements to these existing County roads will be determined by Clark County. The minimum rural local road standards, per Clark County Design Standards are as follows:
    a. Rural Local Access, drawing 21, consists of 50-foot ROW, 24-feet of paved surface with 10-foot travel lanes & 2-foot paved shoulders.
    b. Rural Minor Collector, 2-lane, drawing 20, consists of 60-foot ROW, 40-feet of paved surface with 12-foot travel lanes and 8-foot shoulders.
13. Work on Clark County roads will require permits from Clark County.

Stormwater:

1. The combined site of the proposed development is approximately 36.02 acres.
2. The applicant shall submit a preliminary stormwater report (PTIR) in accordance with CMC 14.02 Stormwater Control and the most current edition of Ecology's *Stormwater Management Manual for Western Washington* ***(latest edition 2024 SWMMWW*)**.
3. The Department of Ecology (DOE) has issued an updated Stormwater Management Manual for Western Washington that becomes effective on August 1, 2024.
    a. Stormwater requirements are not vested.
4. Per *CMC 14.02 Stormwater Control*, stormwater treatment and detention shall be designed in accordance with the latest edition of Ecology's ***Stormwater Management Manual for Western Washington (2024 SWMMWW).***
5. Refer to Ecology's *Figure I-3.1 Flow Chart for Determining Requirements for New Development (Vol. I, Chapter 3, Page 109)*.
    a. As the project will result in 5,000 sf, or greater, of new plus replaced hard surface area; then all Minimum Requirements will apply.
6. The applicant is proposing to construct a stormwater main from the proposed development south to the existing stormwater main located in NE Leadbetter Road, which discharges to Lacamas Lake.
    a. All treatment of impervious surfaces is to be located within the proposed development.
    b. The applicant is to verify that the existing stormwater system, culvert, and outfall to Lacamas Lake are sufficiently sized to accommodate stormwater runoff from the proposed development.
7. 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.
8. Per CMC 14.02.090 ownership and maintenance of onsite stormwater facilities will be the responsibility of the Owner/HOA, per CMC 17.19.040 (C3).
9. Public and private storm easements, if required, are to be shown on the final engineering plans.
10. Provisions are to be provided for roof downspout controls. Stormwater from downspouts is not to be directed onto adjoining parcels. Reference CMC 14.02 and 17.19.040.C for roof downspout controls.
11. The new stormwater main is to follow, as close as feasible, the future trail alignment through the parks and open space to the south of the proposed development.

12. A water, sanitary sewer, and stormwater easement will be required over and through the parks and open space.

Erosion Control

1. The combined site of the proposed development is approximately 36.02 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 the road surface is discouraged and any mud tracking is to be cleaned up immediately.

Water:

1. There is an existing 12-inch ductile iron water main located in NE Leadbetter Road.
2. The applicant will be required to design and construct a 12-inch ductile iron transmission water main from NE Leadbetter Road north to serve the proposed development.
3. 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.
4. Per CMC 17.19.040.C.4.c the applicant shall provide a separate water service for each of the proposed multi-family buildings and commercial improvements.
5. There is an existing fire hydrant approximately 216-feet west of the intersection of NE Leadbetter and the proposed utility easement.
    a. The applicant will be required to provide new fire hydrants located within the proposed development, per the CDSM and the FMO.
6. An onsite water sampling station will be required.
7. Separate irrigation services, irrigation meters, and backflow prevention devices will be required.
    a. Irrigation meters are to be owned by the HOA and/or commercial and multi-family improvements.
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. Trenching, backfill, and surface restoration on NE Leadbetter Road will be required, per CDSM Detail G2 and G2A.
11. A 10-foot separation shall be maintained between water and sanitary sewer lines.
12. The new water main is to follow, as close as feasible, the future trail alignment through the parks and open space to the south of the proposed development.
13. A water, sanitary sewer, and stormwater easement will be required over and through the parks and open space.

Sanitary Sewer:

1. There is an existing 6-inch and 8-inch sanitary sewer force mains on the south side of NE Leadbetter Road.
2. There is an existing pump station located approximately 1470-feet west of the intersection of NE Leadbetter Road and the proposed utility access easement location.

3. Staff is in support of an on-site conventional gravity sewer system with connection to the existing Leadbetter Road pump station.
4. The applicant is required to design and construct a minimum 8-inch sanitary sewer main required to serve the proposed development.
5. Trenching, backfill, and surface restoration on NE Leadbetter Road is required, per CDSM Detail G2 and G2A.
6. A 10-foot separation shall be maintained between water and sanitary sewer lines.
7. The new sewer main is to follow, as close as feasible, the future trail alignment through the parks and open space to the south of the proposed development.
8. A water, sanitary sewer, and stormwater easement will be required over and through the parks and open space.

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
2. The applicant is to work with staff on the location and design of the proposed trail system through the city's parks and open space to the south of the proposed development.
3. The proposed trail alignment is to be:
   a. Pedestrian friendly and ADA accessible.
   b. Meandering to impact as few trees as possible.
   c. Provide staff with options and cross-sections for further discussion.

Garbage & Recycling:

1. Garbage and recycling receptacles for SFR are to be placed at the city right-of-way/sidewalks for pickup.
2. Locations for garbage and recycling receptacles for multi-family and commercial sites are to be approved by the garbage and recycling providers.

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.

2. Apartment (per DU):

a. Traffic Impact Fees (TIF) - $5,972.00
b. School Impact Fees (SIF) (Camas) – $6,650.00
c. Park/Open Space Impact Fees (PIF) – $5,853.00
d. Fire Impact Fees (FIF) - $0.37 sf.

3. Commercial:
    a. Traffic Impact Fees (TIF) - Calculated
    b. School Impact Fees (SIF) (Camas) – N/A
    c. Park/Open Space Impact Fees (PIF) – Calculated
    d. Fire Impact Fees (FIF) - $0.89 sf.

System Development Charges (SDCs) for 2024:

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

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1. Water – Apartment Building / Commercial
    a. 1" meter - $15,093.00 + $502.00 connection fee
    b. 2" meter - $48,248.00 + $2,148.00 connection fee
    c. Applicant to coordinate with their Design Team to ensure that the size of apartment/commercial meters, which are to be shown on water plans, are the correct size prior to final engineering plan review.
    d. A restocking fee will be collected if apartment/commercial meter sizes are changed after meters are ordered by Operations.

2. Sewer - Commercial
    a. 1" - $11,973.00
    b. 2" – $38,313.00

3. Irrigation:
    a. Applicant to coordinate with their Design Team to ensure that the size of irrigation meters, which are to be shown on water plans and irrigation plans, are the correct size prior to final engineering plan review.
    b. A restocking fee will be collected if irrigation meter sizes are changed after irrigation meters are ordered by Operations.

BUILDING DIVISION **BRIAN SMITH (360) 817-7243**

1. If any existing structures are to be removed, they'll 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 placement of buildings and structures on or adjacent to slopes steeper than one unit vertical in three unit's horizontal shall conform to Sections R403.1.7.1 through R403.1.7.4. A geotechnical report may be required.
6. The required fire distance between buildings and property line shall be in accordance with the International Residential Code and International Building Code, as applicable.
7. 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.
8. Compliance with the Wildland Urban Interface Code may be required if it's been adopted by the state building code council prior to submittal of any building permits.
9. Storm water from adjacent properties and existing developments should be taken into consideration.
10. Storm sewer disposal and connections shall be identified on the approved plans.
11. Developer shall provide a designated concrete wash out area.
12. Street Naming and Addressing will be completed by the Building Division and will need to comply with the City of Camas Street Naming Manual and CMC 12.24 & 12.28. The Street Naming will be coordinated with the civil permit review.
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. Impact fees and System Development charges shall be applicable.
15. Estimated review for building plan review is currently 4 – 6 weeks.

FIRE DEPARTMENT **RON SCHUMACHER (360) 834-6191**

No building or structure regulated by the building and/or fire code shall be erected, constructed, enlarged, altered, repaired, moved, converted or demolished unless a separate permit for each building or structure has first been obtained from the CWFMO Camas Municipal Code 15.04.030.D.12.a

Any inadvertent omission or failure to site or include any applicable codes or code language by the Fire Marshal's office or the City shall not be considered a waiver by the applicant.

1) Low Flow Life Safety Residential Fire Sprinklers (NFPA 13D) required in all new residential one and two family dwellings. Because of the compromised secondary access road all garages shall have sprinklers.
2) Apartment buildings shall have NFPA 13 systems instead of NFPA 13R because of the compromised secondary access road.
3) All apartments in excess of 30' in height shall have an aerial access road of at a minimal 26' in width.
4) Depending on size and type of occupancy on commercial lots sprinklers may be required.
5) Fire Alarm and Fire Sprinklers Systems shall be designed, installed and tested by Washington State standards, licensing and qualifications.

6) Hydrants shall be installed prior to any vertical construction. The distance from a required fire hydrant may be doubled when Low Flow Life Safety Residential Fire Sprinklers are installed throughout a fully sprinklered subdivision. CMC 17.19.040.C.4.a.
7) An approved address sign, in accordance with the Camas Municipal Code, must be posted for each residence where the flag lot leaves the public road or access tract. This sign shall be of permanence in its design/installation and shall be approved prior to installation. Contact the FMO for approval. CMC 17.19.030.D.5.d
8) Underground oil tank removal requires a permit with the fire marshal's office following IFC (International Fire Code) 3404.2.14
9) Any existing structures scheduled to be torn down may be considered for fire department training. Contact the FMO for further information.
10) Private Streets require a plan for access obstruction per CMC, 17.19.040.A.9
11) Secondary access road to meet fire department standards. 28' radius require on any turns.
12) Witnessed Hydrant Flushing and fire-flow testing required contact the FMO to schedule.
13) Water line size installation from the meter into the house shall be determined with the fire sprinkler contractor and not the underground or plumbing contractor. If the Fire Sprinkler Contractor is not consulted then a minimum 2 inch supply line is required.
14) If Installed CMC 12.36 Privacy Gate Permit required with the fire marshal's office and the public works department.
15) No parking signs required per city and fire codes.
16) Temporary fire department access road on lot 5 serving lots 6-10
17) If blasting occurs a permit from our office is required.

6. Transportation Impact Study

KITTELSON & ASSOCIATES
851 SW 6th Avenue, Suite 600
Portland, OR 97204
P 503.228.5230

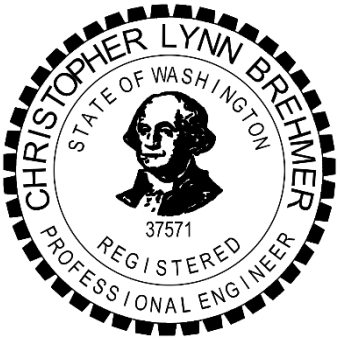
TRANSPORTATION IMPACT STUDY

June 30, 2025 Project# 31552

To: James E Carothers, PE & Anita Ashton
City of Camas Community Development Engineering
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, Claire Dougherty, PE, & Sutapa Banerjee
CC: Bryce Hanson, PE, LSIT, AKS Engineering & Forestry, LLC
Kevin Miller, HSR Development
RE: North Shore Village Residential Transportation Impact Study



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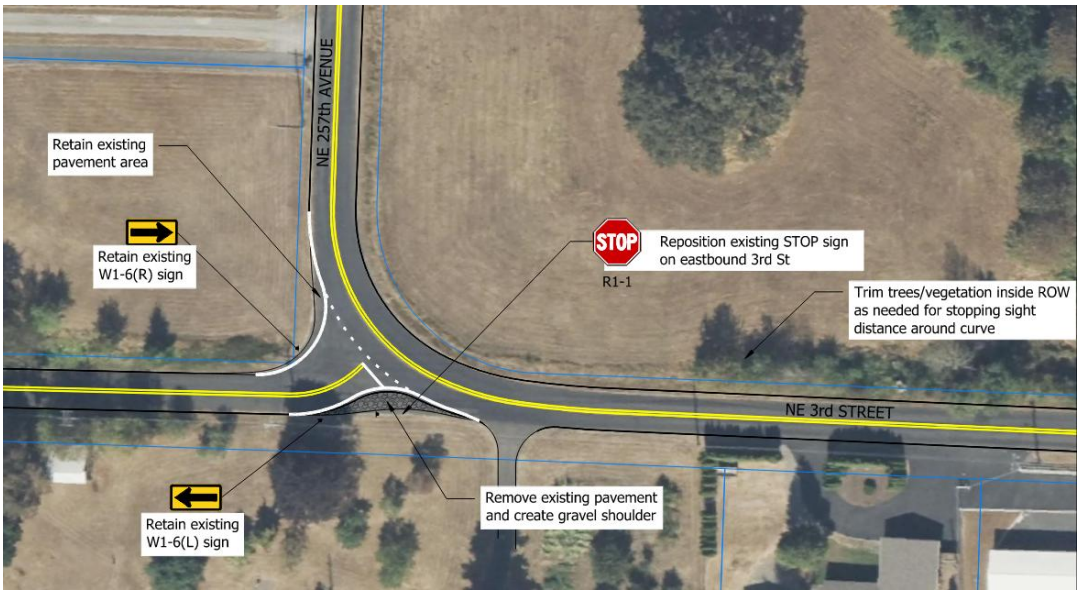
Village at North Shore - HSR Dev Mills LLC, the Applicant, proposes to develop a 36.04-acre residential project located on the west side of NE Everett Street (State Route 500) and south of NE 3rd Street, in the vicinity of NE 252nd Avenue. A Transportation Impact Study (TIS) is required per City of Camas Municipal Code (CMC) Section 17.11.030.B.12 as part of the land use approvals for the new homes. This memorandum documents the TIS analysis, findings, and recommendations. Subject to City, County and Washington State Department of Transportation (WSDOT) review and direction, the following recommendations were identified to be implemented in conjunction with site development:

- Make a proportional financial mitigation contribution to the City of Camas' planned NW Sierra Street/NW Lake Road roundabout project.
  - The City is currently assessing a fee of $1,423 per PM peak hour trip added to this intersection, but may switch to a future Traffic Impact Fee (TIF) as part of the on-going TIF Update program which is anticipated to be completed in 2025. Should the $1,423 per PM peak trip remain in effect for this development application, the resulting fee estimate for this development is $45,536 (based on 32 PM peak hour trips added). The City will determine the final contribution amount or if a TIF would apply.
- Collaborate with WSDOT to identify and implement (if construction is required) capacity mitigation at the SR 500 (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 payment of a proportional share financial contribution to a future intersection capacity improvement.
- Collaborate with Clark County to define and, if needed, construct an appropriate paved section along NE 252th Avenue and NE 3rd Street to serve as the interim primary access to the proposed development.
- Collaborate with Clark County to re-sign and restripe the NE 257th Avenue/NE 3rd Street intersection in conjunction with the proposed development in accordance with the *Manual on Uniform Traffic Control Devices.* Exhibit 1 below shows a conceptual illustration of suggested curve warning signs, striping revisions along with suggested STOP sign and STOP bar relocation/replacement that could be implemented with the proposed site development, subject to Clark County direction.

Exhibit 1. Conceptual NE 257th Avenue/NE 3rd Street Signing and Striping Changes



Aerial Image Source: Google Earth

- Subject to City of Vancouver concurrence and final residential unit count confirmation, pay the following proportional share intersection fees as identified per City of Vancouver requirements:
  - $9,200 towards NE 192nd Avenue/NE 13th Street mitigation
  - $2,100 towards NE 172nd Avenue/NE 18th Street mitigation
  - $5,600 towards NE 179th Place/NE 18th Street mitigation
  - $8,400 towards NE 187th Avenue/NE 18th Street mitigation
- Locate and maintain site landscaping, above-ground utilities, and site signage at all local street intersections within and adjacent to the site to provide adequate intersection sight distance per applicable City and County requirements.

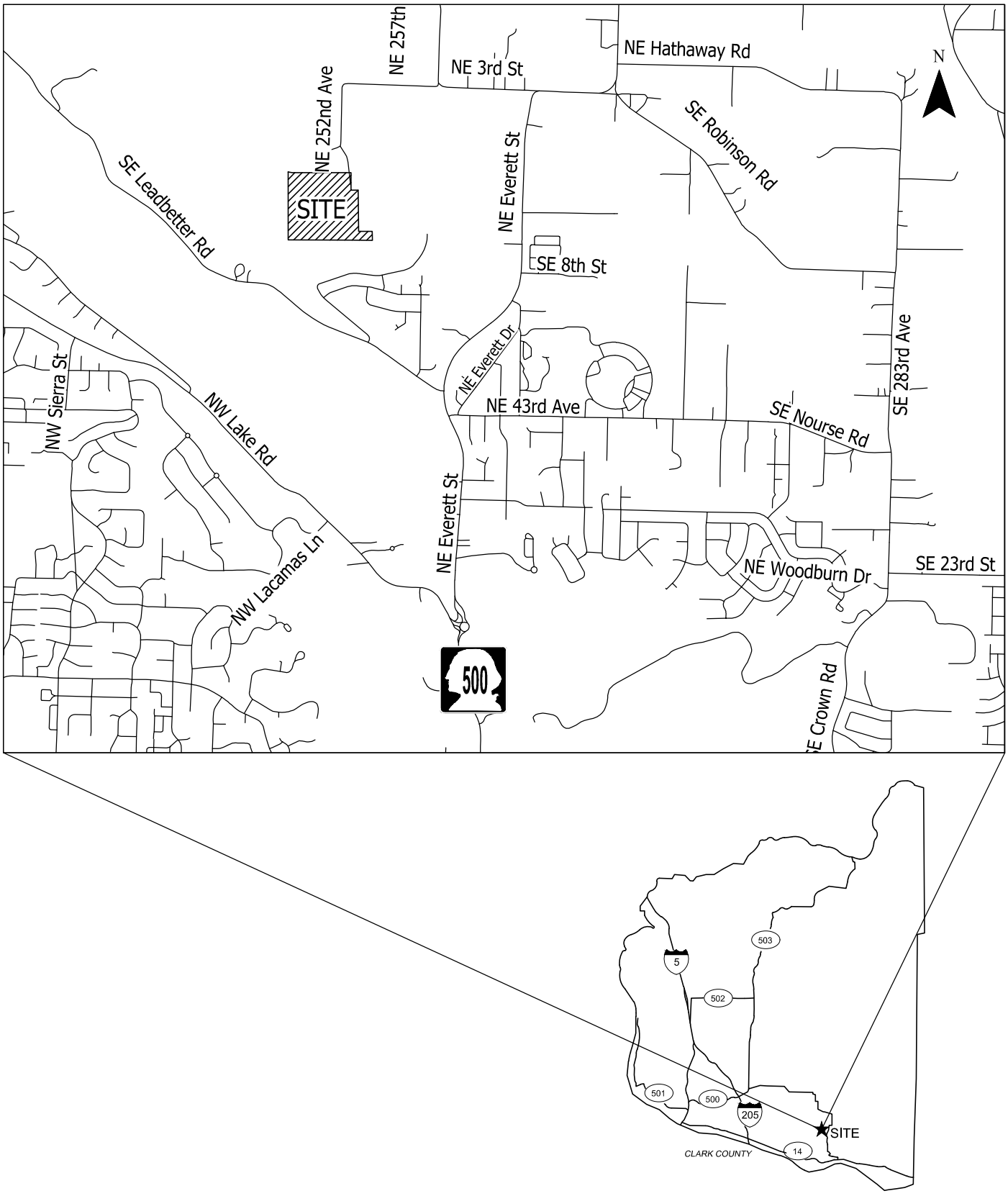
The details of the study methodology, findings, and recommendations are summarized herein.

INTRODUCTION

The Applicant's current site plan includes 41 detached single-family homes, 61 attached homes (townhomes), and 140 apartments, with construction and occupancy anticipated by 2030. The site may develop in up 5 phases, with Phases 1-3 built initially, followed by Phases 4 and 5. Longer-term, the site may be expanded to include approximately 30,250 square feet of commercial space once vehicular connectivity to the site is improved via North Shore Boulevard to the west and east; however, this initial development phase and the focus of this TIS is limited to the proposed residential units and the connectivity available at this time.

Vehicular site access for the proposed residential phase will be via the existing NE 252nd Avenue connection to NE 3rd Street and the NE 3rd Street/NE 257th Avenue intersection. Longer-term, with future development by others, a North Shore Boulevard connection east to the planned SE Everett Street/SE Everett Drive roundabout may be added, but such a connection is assumed to be outside of the timeframe for buildout (2030). Additionally, if adjacent properties to the west re-develop in the future, North Shore Boulevard will also connect west, to NE 232nd Avenue.

Figure 1 shows the site vicinity map, and Figure 2 shows a current site plan and anticipated phasing.



Site Vicinity Map
Camas, Washington

Figure
1

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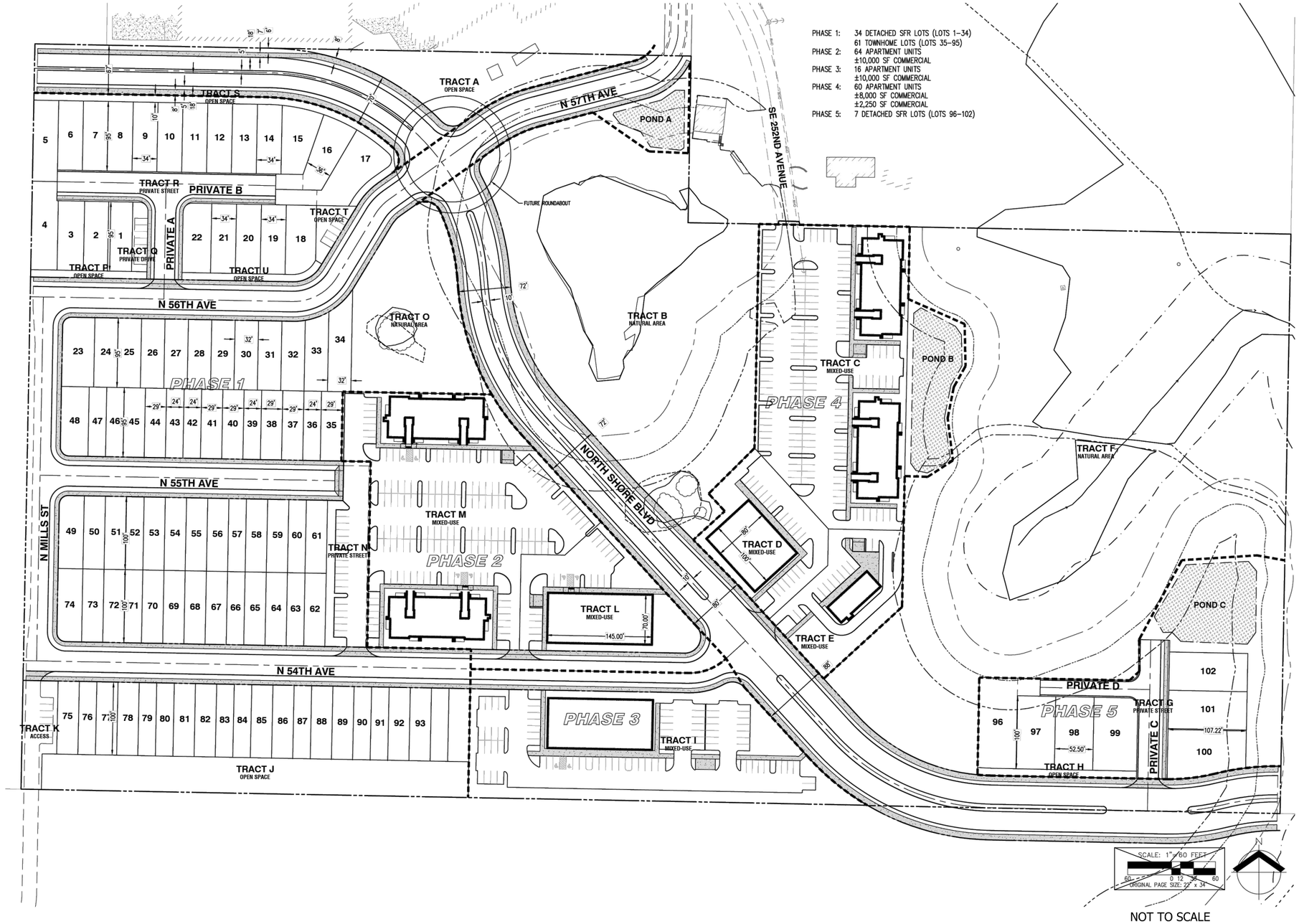

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Preliminary Site Plan
Camas, Washington

Figure
2

H:\31\31552 - Village at North Shore\report\figs\31552_Figures.dwg Jun 24, 2025 - 4:06pm - sbanerjee Layout Tab: Fig2 Proposed Site Plan

STUDY METHODOLOGY

The City of Camas' *Transportation Impact Study Guidelines* (Reference 1) require preparation and submittal of a TIS for each proposed development that generates 200 or more daily vehicle trips. The 200 daily trip threshold is met for the North Shore Village residential phase, triggering a TIS.

The study intersections were determined through a scoping process involving staff from the City of Camas, WSDOT and Clark County. The final study intersection list reflects a combination of City of Camas trip thresholds, the anticipated site trip distribution pattern and trip assignment, and scoping correspondence with agency staff.

Notably, the current site plan is slightly revised from the preliminary site plan shared during the TIA scoping phase due to coordination of, and revisions, to the North Shore Boulevard alignment. The change in roadway layout and unit totals resulted in 3 additional AM peak hour trips and 5 additional PM peak hour trips as compared to the preliminary site plan and trip assignment shared during scoping. *Appendix A includes documentation from the scoping process.*

Analysis Scenarios

Weekday morning (7-9 AM) and weekday afternoon commuter peak period (4-6 PM) traffic conditions were assessed for the following analysis scenarios:

- Year 2025 existing traffic conditions;
- Year 2030 background traffic conditions (including background growth and identified in-process developments, but not including any site-generated traffic volumes related to the proposed development); and,
- Year 2030 total traffic conditions (including site-generated traffic volumes to the proposed development).

Study Intersections

The study intersections and existing traffic control configurations are identified in Table 1. The intersection numbers listed in Table 1 correspond with the analysis figures in this report.

Clark County requires inclusion of regionally significant intersections within a two-mile radius of a site that generates between 51 and 250 peak hour trips. Clark County staff initially indicated that the NE Reily Road/NE Blair Road should be included in the analysis, however the site-generated trip distribution pattern and trip assignment shown in the scoping documentation (and Figures 9 and 10 herein) show no site-generated trips are anticipated to utilize this intersection. Therefore, this intersection is not carried forward in the analysis as a study intersection.

Table 1. Study Intersections and Peak Hour Analysis Periods

ID	Study Intersection	Traffic Control
1	NE 232nd Ave/NE 28th St	TWSC
2	SR 500/NE 28th St	TWSC
3	SR 500/NE 249th Ave	TWSC
4	NE 249th Ave/NE 14th St	TWSC
5	NE 257th Ave/NE 3rd St	TWSC
6	SR 500/NE 3rd St	TWSC (Future Roundabout)
7	SR 500/NE Everett Dr	TWSC (Future Roundabout)
8	SR 500/SE Leadbetter Rd	TWSC
9	SR 500/NE 43rd Ave	Signalized
10	SR 500/NW Lake Rd	Roundabout
11	SR 500/NE 17th Ave	TWSC
12	SR 500/NE 15th Ave	TWSC
13	SR 500/NE 14th Ave	TWSC
14	Division St/NW 6th Ave	TWSC
15	NW Lacamas Ln/NW Lake Rd	TWSC
16	NW Sierra St/NW Lake Rd	TWSC (Future Roundabout)
17	NW Leadbetter Dr/NW Lake Rd	TWSC
18	NW Parker St/NW Lake Rd	Signalized
19	SE 283rd Ave/SE 23rd St	TWSC

TWSC = Two Way Stop Control

Capacity Analysis Methodology

Intersection level-of-service and volume-to-capacity (v/c) analyses described in this report were performed at signalized and unsignalized intersections in accordance with the procedures stated in the *Highway Capacity Manual, 7th Edition* (Reference 2) methodology using Synchro 12 software. Roundabouts were analyzed using Sidra and incorporate Sidra Policy Settings per WSDOT requirements (Reference 3)[1].

[1] https://wsdot.wa.gov/sites/default/files/2021-03/TrafficOps-WSDOTSidraPolicyAndSettings.pdf

Mobility Standards

City of Camas

Camas uses level of service (LOS) for traffic operations. Minor and local streets must meet LOS C standards, and collector and arterial streets must meet LOS D standards. If site traffic contributes to traffic operations that exceed the LOS D standard, then the TIS recommendations need to include mitigations or roadways improvements.

SR 500 (NE Everett Street)

Chapter 320 of WSDOT's *Design Manual* (Reference 4) covers traffic impact analysis on state facilities.

The Urban non-National Highway System facilities (non-HSS standard) established by the Southwest Washington RTC for Clark County is LOS E and applies to study intersections 6 through 12[2]. The Rural non-HSS standard is LOS C, which based on WSDOT mapping, applies to study intersections 2 and 3.

Clark County

Clark County Code (CCC) Section 40.350.020.G defines the County's LOS standards.

> Per CCC Section 40.350.020.G.1.c: "*All unsignalized intersections of regional significance in the unincorporated county shall achieve LOS E standards or better (if warrants are not met). If warrants are met, unsignalized intersections of regional significance shall achieve LOS D standards or better. Intersection control or mitigation of unsignalized intersections shall be at the discretion of the Public Works Director and shall not obligate the County to meet this LOS standard. However, proposed developments shall not be required to mitigate their impacts in order to obtain a concurrency approval unless:*
>
> *(1) The proposed development adds at least five (5) peak hour trips to a failing intersection approach; and*
>
> *(2) The worst movement on the failing approach is worsened by the proposed development. In determining whether the movement is worsened, the Public Works Director shall consider trip volume, delay, and any other relevant factors."*

Table 2 summarizes the applicable intersection performance metrics at each study intersection.

Two minor roadway County intersections are also included in the analysis – study intersections 4 and 5. Though by classification, these intersections are not regionally significant and are compared to a LOS E standard for informational purposes only.

[2] Regional Transportation Planning Organizations (RTPOs) have the authority to set LOS thresholds for non-Highways of Statewide Significance (HSS). The Urban non-HSS standard established by RTC for Clark County is LOS E.

Table 2. Study Intersection Performance Metrics

ID	Potential Study Intersection	Traffic Control	Jurisdictional Authority	Facility Designation	Operating Requirement
1	NE 232nd Ave/NE 28th St	TWSC	Clark County	Rural Major Collector	LOS E
2	SR 500/NE 28th St	TWSC	RTC[1]	Rural non-HSS	LOS C
3	SR 500/NE 249th Ave	TWSC	RTC[1]	Rural non- HSS	LOS C
4	NE 249th Ave/NE 14th St	TWSC	Clark County	Minor Road	LOS E[2]
5	NE 257th Ave/NE 3rd St	TWSC	Clark County	Minor Road	LOS E[2]
6	SR 500/SE 3rd St	TWSC (Future Roundabout)	RTC[1]	Urban non-HSS	LOS E
7	SR 500/NE Everett Dr	TWSC (Future Roundabout)	RTC[1]	Urban non-HSS	LOS E
8	SR 500/SE Leadbetter Rd	TWSC	RTC[1]	Urban non-HSS	LOS E
9	SR 500/NE 43rd Ave	Signalized	RTC[1]	Urban non-HSS	LOS E
10	SR 500/NW Lake Rd	Roundabout	RTC[1]	Urban non-HSS	LOS E
11	SR 500/NE 17th Ave	TWSC	RTC[1]	Urban non-HSS	LOS E
12	SR 500/NE 15th Ave	TWSC	RTC[1]	Urban non-HSS	LOS E
13	SR 500/NE 14th Ave	TWSC	RTC[1]	Urban non-HSS	LOS E
14	Division St/NW 6th Ave	TWSC	City of Camas	City Arterial	LOS D
15	NW Lacamas Ln/ NW Lake Rd	TWSC	City of Camas	City Arterial	LOS D
16	NW Sierra St/ NW Lake Rd	TWSC (Future Roundabout)	City of Camas	City Arterial	LOS D
17	NW Leadbetter Dr/ NW Lake Rd	TWSC	City of Camas	City Arterial	LOS D
18	NW Parker St/NW Lake Rd	Signalized	City of Camas	City Arterial	LOS D
19	SE 283rd Ave/SE 23rd St	TWSC	Clark County	Urban Collector	LOS E

TWSC = Two-way Stop Control

[1]RTPOs have the authority to set LOS thresholds for non-Highways of Statewide Significance (HSS). The Urban non-HSS standard established by RTC for Clark County is LOS E.

[2]The Clark County Arterial Atlas identifies NE 249th Avenue, NE 3rd Street and NE 257th Avenue as Minor Roads. They are not considered Regionally Significant roadways and were compared to the regionally significant LOS E standard for informational purposes only.

REPORT FORMAT

This report addresses the following transportation topics:

- Existing land use and transportation system conditions within the site vicinity, including facilities for people walking, bicycles or taking transit, as well as traffic safety and intersection operations;
- Planned developments and transportation improvements within the study area;
- Forecast year 2030 background traffic conditions during the weekday AM and PM peak hours;
- Weekday AM and PM peak hour site trip generation and distribution estimates;
- Forecast year 2030 total traffic conditions with site development during the weekday AM and PM peak hours;
- Vehicle queuing and turn lane considerations at the study intersections closest to the site; and,
- Conclusions and recommendations.

EXISTING CONDITIONS

The existing conditions analysis identifies site conditions and the current operational and geometric characteristics of streets within the study area. The purpose of this section is to set the stage for a basis of comparison to future conditions. The study intersections were inventoried in April 2025.

Site Conditions and Adjacent Land Uses

The proposed development is generally located north of Lacamas Lake, west of NE Everett Street (SR 500) and south of NE 3rd Street, in the vicinity of NE 252nd Avenue. The approximately 36.04-acre site is comprised of Parcel Numbers 17788000 and 178175000. These two parcels are located within the North Shore area and are zoned North Shore Lower Density Residential (LD-NS), North Shore Mixed Use (MX-NS) and North Shore Commercial (C-NS).

A few single-family homes and agricultural uses occupy the site today. The site accesses the public roadway system via NE 252nd Avenue which connects to NE 3rd Street. The few existing structures may be removed part of the proposed site redevelopment, but structures on adjacent properties will remain until potential future development (by others)

Longer-term, with future development by others, a North Shore Boulevard connection east to the planned SE Everett Street/SE Everett Drive roundabout may be added, but such a connection is assumed to be outside of the timeframe for buildout of this development and is dependent on development of several of the adjacent properties. Additionally, North Shore Boulevard may be extended west in the future, to connect to NE 232nd Avenue if adjacent taxlots pursue redevelopment in the future.

This site is bordered to the north by the existing Johnston Dairy property, which includes several agricultural associated structures. To the southeast, this site is bordered by the CJ Dens development open space green area.

Transportation Facilities

Table 3 provides a summary of the existing streets closest to the site. Figure 3 illustrates the existing lane configurations and traffic control devices at the study intersections.

Table 3. Existing Transportation Facilities

Street	Jurisdiction	Classification	Cross-Section	Posted Speed	Sidewalks Present?	Bike Lanes Present?
NE 232nd Avenue	Clark County	Major Rural Arterial[1]	2-lane	45 mph	No	No
NE Everett Street (SR 500)	WSDOT	Rural Major Collector / Urban Minor Arterial[3]	2-lane	45 mph[4]	No	No
NE 249th Avenue	Clark County	Minor Road	2-lane	40 mph	No	No
NE 14th Street	Clark County	Minor Road	2-lane	40 mph	No	No
NE 3rd Street	Clark County	Minor Road	2-lane	40 mph	No	No
NE 257th Avenue	Clark County	Minor Road	2-lane	40 mph	No	No
SE Leadbetter Road	City	Local[5]	2-lane	40 mph	No	No

[1]Clark County Arterial Atlas (References 5 and 6)
[2]WSDOT Functional Classification (Reference 7)
[3]North of Robinson Road, SR 500 is classified as a Rural Major Collector. South of Robinson Road, SR 500 is classified as an Urban Minor Arterial.
[4]Along SR 500, lower advisory speeds are posted at roadway curves. As SR 500 approaches downtown Camas, the posted speed is reduced to 25 mph.
[5] 2035 *City of Camas 2035 Comprehensive Plan (Transportation Element,* Reference 8*)*.

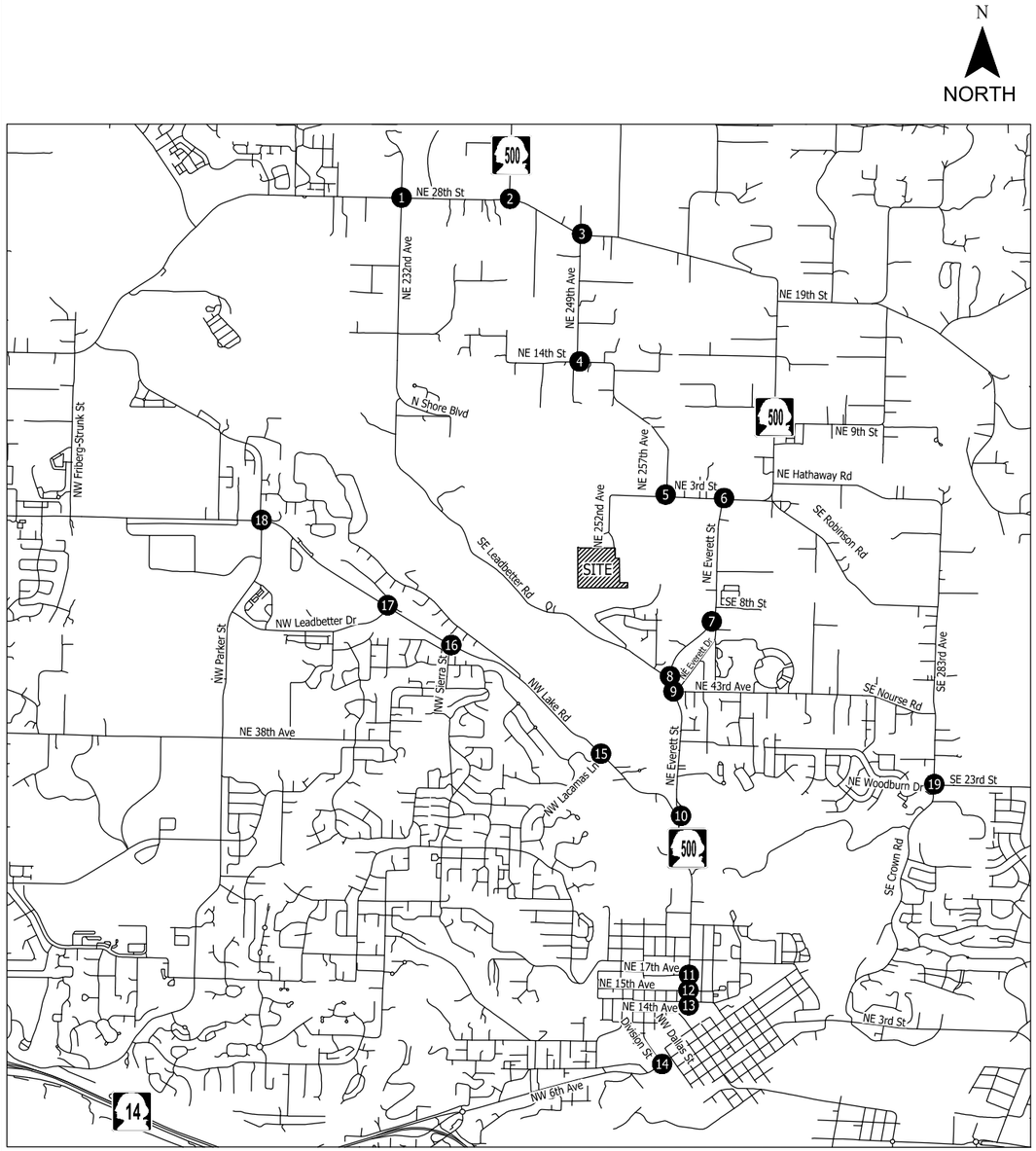
Facilities for Non-Motorized Users

As shown in Table 3, given the rural nature of the surrounding roadways, there are no sidewalks or bike lanes present today. It is anticipated that new sidewalks will be constructed on-site with project development, and that when built-out as an arterial, North Shore Boulevard will include facilities for pedestrians and bicyclists.

Transit Facilities

C-Tran provides transit service within the City of Camas. There are no fixed-route transit services currently operated in the site vicinity. The nearest fixed-route service provides east-west service along NE 3rd Avenue in the downtown Camas area and is located over two miles south of the project site.

Given the lack of transit service within a convenient ½ mile walking distance today and for the foreseeable future, no transit-related trip reductions were assumed in this study and no transit-related mitigation measures are recommended as part of the proposed development.



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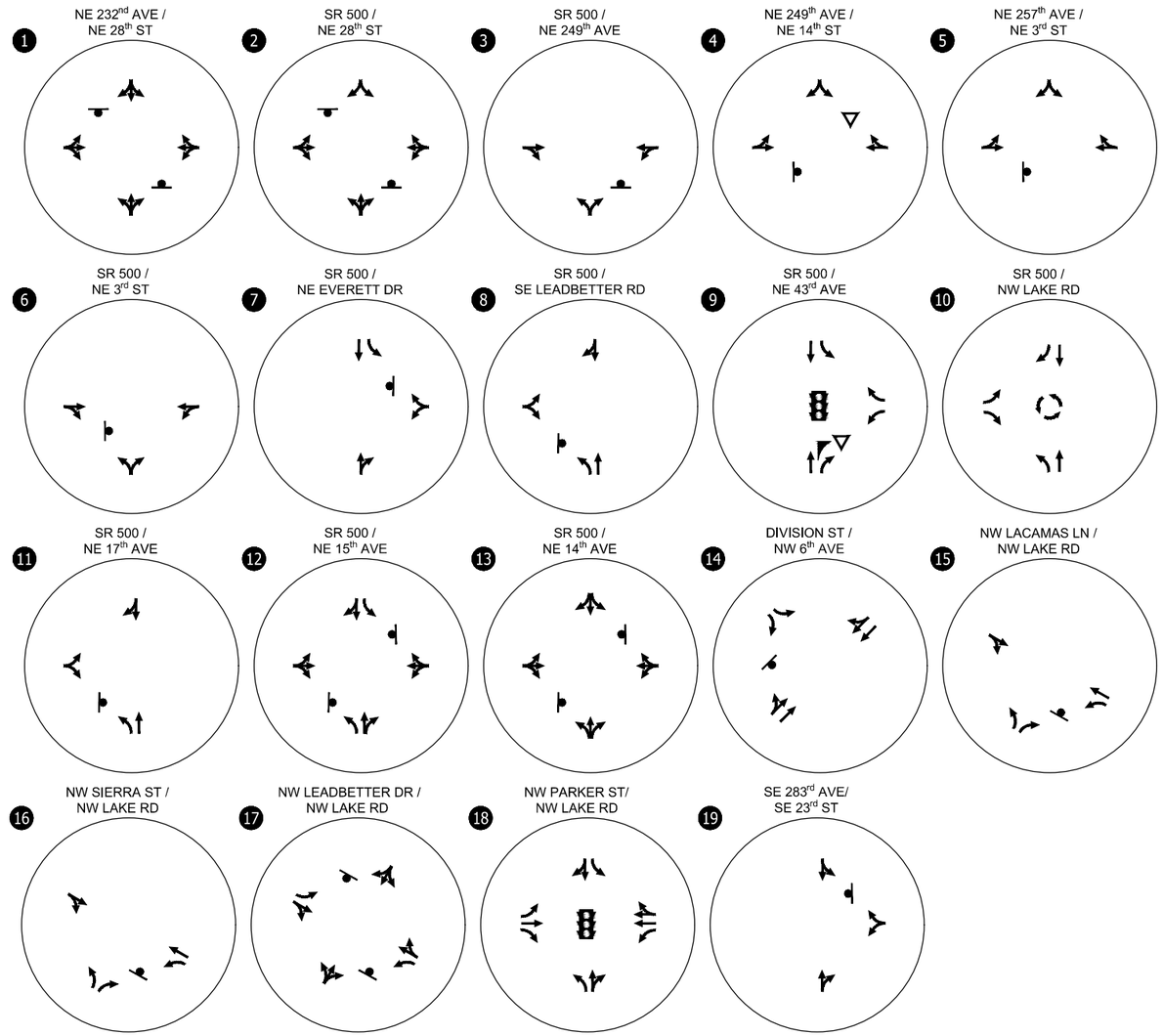

- SITE
- # - STUDY INTERSECTION
- TRAFFIC SIGNAL
- STOP SIGN
- YIELD SIGN
- ROUNDABOUT

Existing Lane Configurations & Traffic Control Devices
Camas, Washington

Figure 3

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TRAFFIC SAFETY

WSDOT provided crash records for the five-year period from January 1, 2020 to December 31, 2024. The data was reviewed to identify potential crash trends or safety needs at the study intersection. Table 4 summarizes the reported crash type, severity and calculated crash rate by intersection. *Appendix B contains the WSDOT crash data*.

Table 4. Intersection Crash Frequency and Severity (January 2020 through December 2024)

#	Intersection	Agency	Collision Type								Crash Severity			Total Number of Crashes	Crash Rate[1]
			Rear-end	Turning	Angle	Side Swipe	Backing	Fixed Object	Ped/Bike	Other	PDO	Injury	Fatality		
1	NE 232nd Ave/NE 28th St	County	1	1	3	-	-	2	1	-	6	2	-	**8**	0.71
2	SR 500/NE 28th St	WSDOT	-	1	2	-	-	-	-	-	3	-	-	**3**	0.24
3	SR 500/NE 249th Ave	WSDOT	-	1	-	-	-	2	-	-	2	1	-	**3**	0.27
4	NE 249th Ave/NE 14th St	County	-	-	-	-	-	-	-	-	-	-	-	**0**	0.00
5	NE 257th Ave/NE 3rd St	County	-	-	-	-	-	-	-	-	-	-	-	**0**	0.00
6	SR 500/SE 3rd St	WSDOT	1	-	-	-	-	3	-	-	4	-	-	**4**	0.61
7	SR 500/NE Everett Dr	WSDOT	-	-	1	-	-	2	-	-	2	1	-	**3**	0.36
8	SR 500/SE Leadbetter Rd	WSDOT	1	-	1	-	-	-	-	-	2	-	-	**2**	0.19
9	SR 500/NE 43rd Ave	WSDOT	1	2	-	-	-	-	-	-	2	1	-	**3**	0.15
10	SR 500/NW Lake Rd	WSDOT	2	-	4	1	-	2	-	-	6	3	-	**9**	0.28
11	SR 500/NE 17th Ave	WSDOT	-	-	-	-	-	-	-	-	-	-	-	**0**	0.00
12	SR 500/NE 15th Ave	WSDOT	-	1	1	-	-	-	-	-	1	1	-	**2**	0.11
13	SR 500/NE 14th Ave	WSDOT	1	1	1	-	-	1	-	-	4	-	-	**4**	0.27
14	Division St/NW 6th Ave	City	2	1	1	-	-	1	1	-	4	2	-	**6**	0.21
15	NW Lacamas Ln/ NW Lake Rd	City	-	-	-	-	-	1	-	-	1	-	-	**1**	0.05
16	NW Sierra St/NW Lake Rd	City	-	-	1	-	-	-	-	-	1	-	-	**1**	0.04
17	NW Leadbetter Dr/ NW Lake Rd	City	-	-	1	-	-	-	-	-	-	1	-	**1**	0.05
18	NW Parker St/NW Lake Rd	City	5	1	1	1	-	-	-	-	5	3	-	**8**	0.30
19	SE 283rd Ave/SE 23rd St	City	-	-	-	-	-	2	-	-	1	1	-	**2**	0.26

[1] Crash rate is calculated as the number of crashes per million entering vehicles.

The sections that follow provide identification of crash types and/or factors contributing to the reported crashes.

Walking and Biking Related Crashes

As shown in Table 4, there were two reported crashes involving people riding bikes, one each at intersections #1 and #14. Details include:

- **NE 232nd Avenue / NE 28th Street (Intersection #1):** One non-injury bicycle-related crash was reported at this intersection. The incident involved a westbound through vehicle and a bicyclist making an improper turn/merge maneuver.

- **Division Street / NW 6th Avenue (Intersection #14):** A single bicycle-related crash was reported at this location, with a bicyclist and vehicle colliding at a stop sign and resulted in a suspected minor injury.

Crash Severity

There were no reported fatal crashes at the study intersections. There was one reported fatal collision that occurred in the vicinity of the NW Lacamas Lane/NW Lake Road intersection. This head-on collision involved two passenger cars and resulted in one fatality and four injuries. This collision occurred during daylight and dry conditions while one vehicle was negotiating a curve south of the intersection and was attributed to an unknown distraction.

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

Further review of individual intersection crash patterns at WSDOT-maintained intersections is summarized below.

SR 500/NE 28th Street (Intersection #2)

Of the three reported crashes at the SR 500/NE 28th Street intersection:

- All occurred during daylight conditions.
- One involved a southbound through movement to the private driveway (south approach) that did not grant the right-of-way to a westbound through movement.
- One involved a northbound through movement from the private driveway that did not grant the right-of-way to a southbound left-turn movement.
- The third involved an eastbound through movement that made an improper turn/merge with an eastbound left-turn vehicle.

No crash trends requiring mitigation were identified at this intersection through the crash data review.

SR 500/NE 249th Avenue (Intersection #3)

Of the three reported crashes at the SR 500/NE 249th Avenue intersection:

- The injury crash involved a westbound motorcycle that struck a tree in the dark while reportedly exceeding the "reasonable safe speed" per the crash report.
- One involved an improper southbound left-turn out of a nearby driveway that was struck by a westbound through vehicle with the crash reported at the driveway within the intersection during daylight conditions.
- One involved interaction between an eastbound right-turn and a westbound through movement during rainy daylight conditions.

There are two private driveway approaches on the north side of SR 500 offset from the NE 249th Avenue approach: one located approximately 50 feet west of the intersection on SR 500 and the other approximately 80 feet to the east on SR 500. No crash trends requiring mitigation were identified at this intersection through the crash data review.

Exhibit 7 SUB25-1008

SR 500/SE 3rd Street (Intersection #6)

Of the four reported crashes at the SR 500/NE 249th Avenue intersection:

- Two fixed object collisions involved drivers under the influence of alcohol and one was exceeding a reasonable safe speed that ended up in a roadway ditch.
- The rear-end crash involved two eastbound vehicles with one driver characterized as "operating recklessly or aggressively".

The intersection is located on a horizontal curve. WSDOT plans to construct a single lane roundabout at this intersection in the near-term (prior to the North Shore village residential development) as will be described further later in this report.

SR 500/NE Everett Drive (Intersection #7)

Of the three reported crashes at the NE Everett Street/NE Everett Drive intersection:

- All three crashes occurred during daylight conditions.
- Of the two single vehicle fixed object collisions, one was attributed a driver under the influence of alcohol in which the vehicle drove into a ditch while the other was attributed to distracted driving in which the vehicle struck a street light pole. Neither crash involved an injury.
- The injury crash involved a southbound left-turn and a northbound through movement in which the left-turn did not yield.

This intersection is planned to be reconstructed as a single lane roundabout in conjunction with the approved Camas Woods development project as will be described further later in this report.

SR 500/SE Leadbetter Road (Intersection #8)

Of the two reported crashes at the NE Everett Street/SE Leadbetter Road intersection:

- Both occurred during daylight hours.
- One involved an eastbound rear-end collision and one was an angle crash involving an eastbound left-turn and a northbound through movement. No injuries were reported with either crash.

Though SE Leadbetter Road currently connects to NE 232nd Avenue, longer-term the City envisions SE Leadbetter Road being disconnected to the west and converted to a walking/bicycling trail along Lacamas Lake. This change is not currently expected until after North Shore Boulevard is built-out, connecting NE 232nd Avenue to SR 500, but would be anticipated to change travel patterns through this intersection.

No crash trends requiring mitigation were identified at this intersection through the crash data review.

SR 500/NE 43rd Avenue (Intersection #9)

Of the three reported crashes at the SR 500/SE Leadbetter Road intersection:

- One crash was a rear-end collision that occurred during dark conditions and two were angle crashes that occurred during daylight.
- The two angle crashes involved southbound left-turning vehicles. The southbound left-turn movement is currently controlled by a protected green arrow and a permissive Flashing Yellow Arrow.

Exhibit 7 SUB25-1008

The City of Camas is currently in the process of designing a roundabout to replace the existing traffic signal, though roundabout construction is not programmed or financed at the time this report was prepared. No crash trends requiring mitigation were identified at this intersection through the crash data review.

SR 500/NW Lake Road (Intersection #10)

Of the nine reported crashes at the SR 500/NW Lake Road roundabout intersection:

- Four occurred during daylight conditions.
- Three were described as circulating the roundabout (one side swipe, two fixed object), five entering the roundabout, and one rear-end at the intersection but not related.

The roundabout was constructed in 2020. One crash was reported in 2020, one in 2021, two in 2023, and five in 2024 (one of which involved a driver under the influence of alcohol who hit a fixed object).

Roundabouts are considered a proven safety countermeasure by the Federal Highway Administration (FHWA), offering benefits such as slower travel speeds, fewer conflict points, and reduced crash severity compared to other intersection types. There was no pattern apparent amongst the crashes and no crash trends requiring mitigation were identified at this intersection through the crash data review.

SR 500/NE 17th Avenue (Intersection #11)

This intersection had no reported crashes over the five-year review period.

SR 500/NE 15th Avenue (Intersection #12)

Of the two reported crashes at the SR 500/NE 15th Avenue intersection:

- Both occurred during daylight hours.
- One involved an eastbound right turn that did not signal being struck by an eastbound through movement while the other angle crash resulted in a minor injury attributed to a vehicle that failed to grant the right-of-way.

No crash trends requiring mitigation were identified at this intersection through the crash data review.

SR 500/NE 14th Avenue (Intersection #13)

Of the four reported non-injury crashes at the NE Everett Street/NE 14th Avenue intersection:

- A single vehicle fixed object crash occurred during daylight hours and involved a fire hydrant.
- The turning crash involved a speeding vehicle making a left-turn making contact with a legally parked unoccupied vehicle in the dark at 5:30 AM.
- One rear-end crash involved two southbound vehicles on SR 500, with one vehicle noted as following too closely under dark conditions.
- One involved a school bus making a northbound right-turn around 4:22 PM struck by a westbound vehicle that did not grant the right-of-way in 2021.

No crash trends requiring mitigation were identified at this intersection through the crash data review, though it is noted that the existing two-way stop control configuration (eastbound and westbound are stop controlled, northbound and southbound operate uncontrolled) functionally operates more like a three-way stop control, as the northbound private driveway approach crosses a sidewalk. Observations of the

intersection showed a tendency for many westbound drivers on NE 14th Avenue to slow, but not fully stop at the intersection.

No safety-based mitigation needs were identified for implementation in conjunction with the proposed development based on the crash data review.

Traffic Volumes and Peak Hour Operations

Vehicle turning movement, pedestrian and bicycle counts were collected at the study intersections on a mid-week day in April 2025 during the morning (7:00 – 9:00 AM) and evening (4:00 - 6:00 PM) hours when local schools were in-session and there were no adverse weather conditions. *Appendix C contains the traffic count sheets used in this study*.

The weekday AM and PM peak hour traffic volumes and the associated intersection operations are shown in Figures 4 and 5. As shown, the study intersections satisfy the applicable agency standards/targets under existing weekday AM peak hour conditions. During weekday PM peak hour conditions, all but two study intersections satisfy the applicable agency standards/targets today. The two study intersections that do not satisfy the applicable performance measures during PM peak hour conditions are discussed further below.

SR 500 (NE Everett Street)/NE 14th Avenue (Intersection #13)

Delay experienced on the eastbound stop controlled approach results in LOS F operations (exceed LOS E requirement) during the weekday PM peak hour with a V/C ratio of 0.61. Although both the eastbound and westbound approaches are stop controlled, observation of the intersection indicates that drivers making the higher volume westbound to northbound movement at times create "courtesy gaps" for the occasional eastbound drivers to enter the intersection.

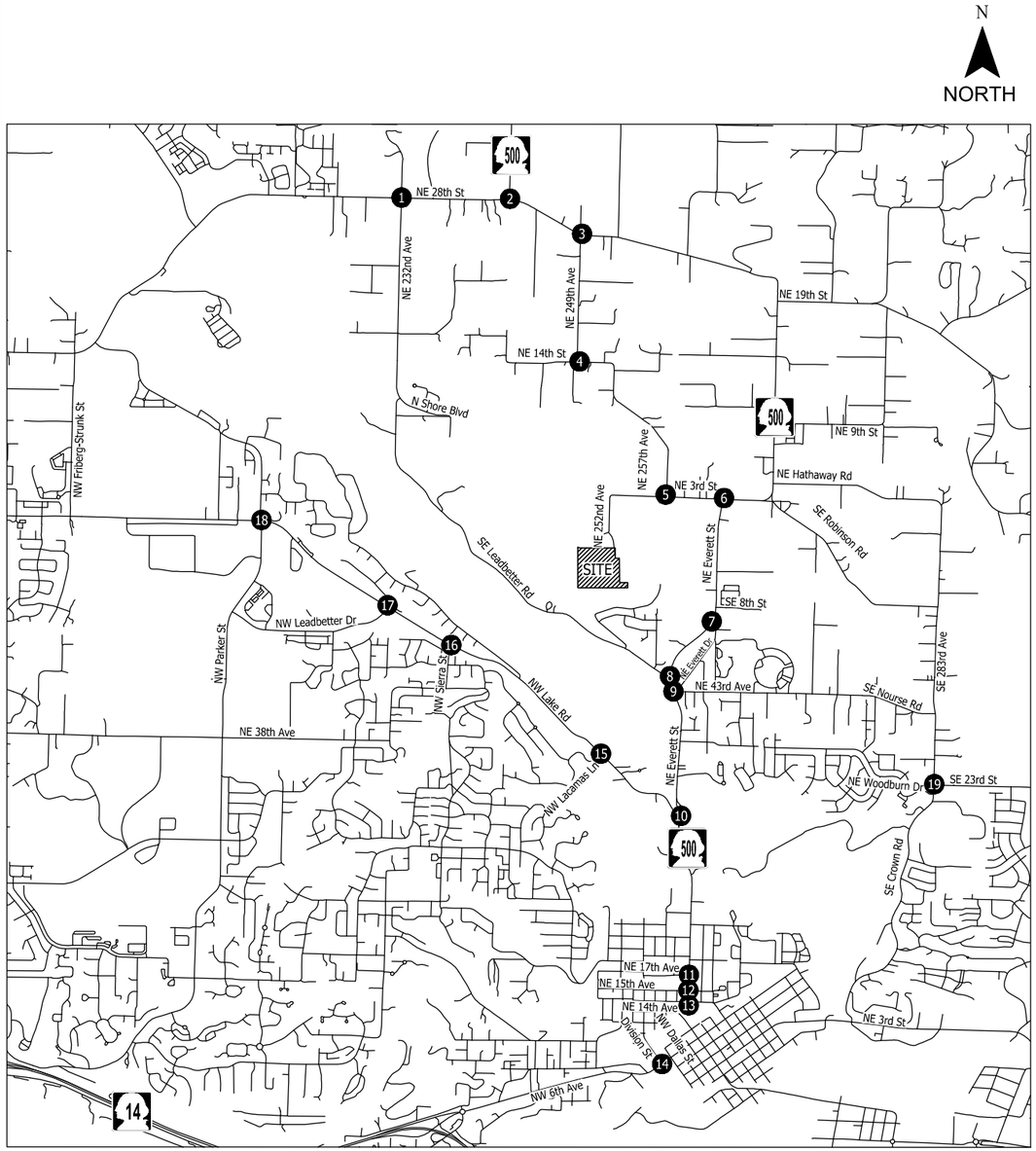
NW Sierra Street/NW Lake Road (Intersection #16)

Delay experienced by the stop controlled northbound left-turn movement results in LOS E operations (exceed LOS D requirement) with a V/C ratio of 0.40 during the weekday PM peak hour. Northbound right-turn movements operate at LOS B with a 0.21 V/C ratio during the same period. The City of Camas is preparing design plans to construct a roundabout at the intersection.

Other Observations

While the respective agency standards/targets are satisfied, field observations identified notable delay and queueing on SR 500 near Everrett Drive, and the northbound NE 232nd Avenue approach to NE 28th Street during the weekday morning and afternoon dismissal periods of the nearby schools. These peak queues were observed to last for approximately 15 minutes and were associated with school related trips at the start and end of the school classroom day.

Appendix D includes the existing conditions level-of-service worksheets.



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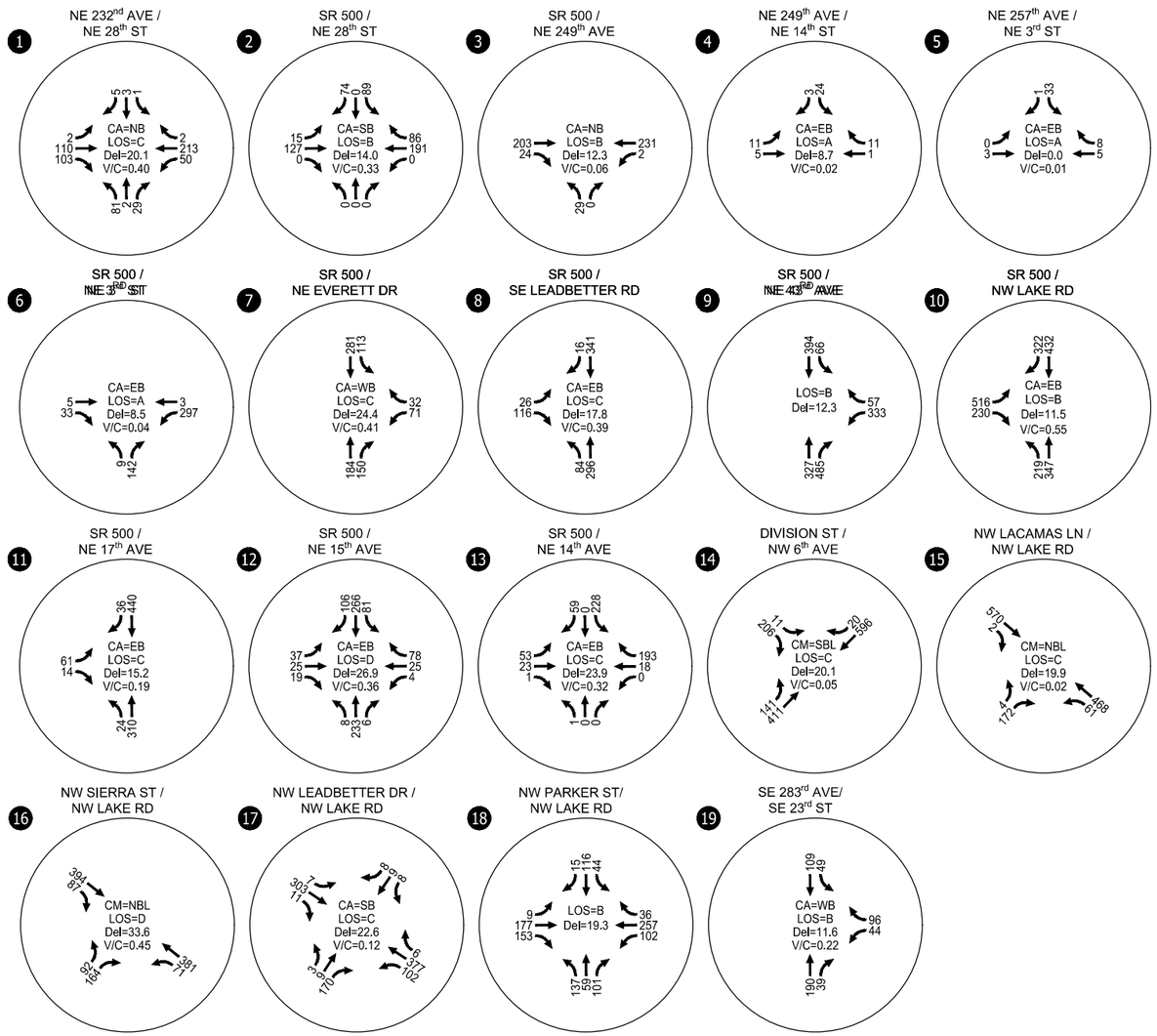

- SITE

- STUDY INTERSECTION

CA =CRITICAL APPROACH (TWSC / ROUNDABOUT)
CM = CRITICAL MOVEMENT (TWSC)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/ CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC / ROUNDABOUT)
V/C = INTERSECTION VOLUME-TO-CAPACITY RATIO

Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
TWSC = TWO-WAY STOP CONTROL

2025 Existing Traffic Conditions
Weekday AM Peak Hour
Camas, Washington

Figure
4

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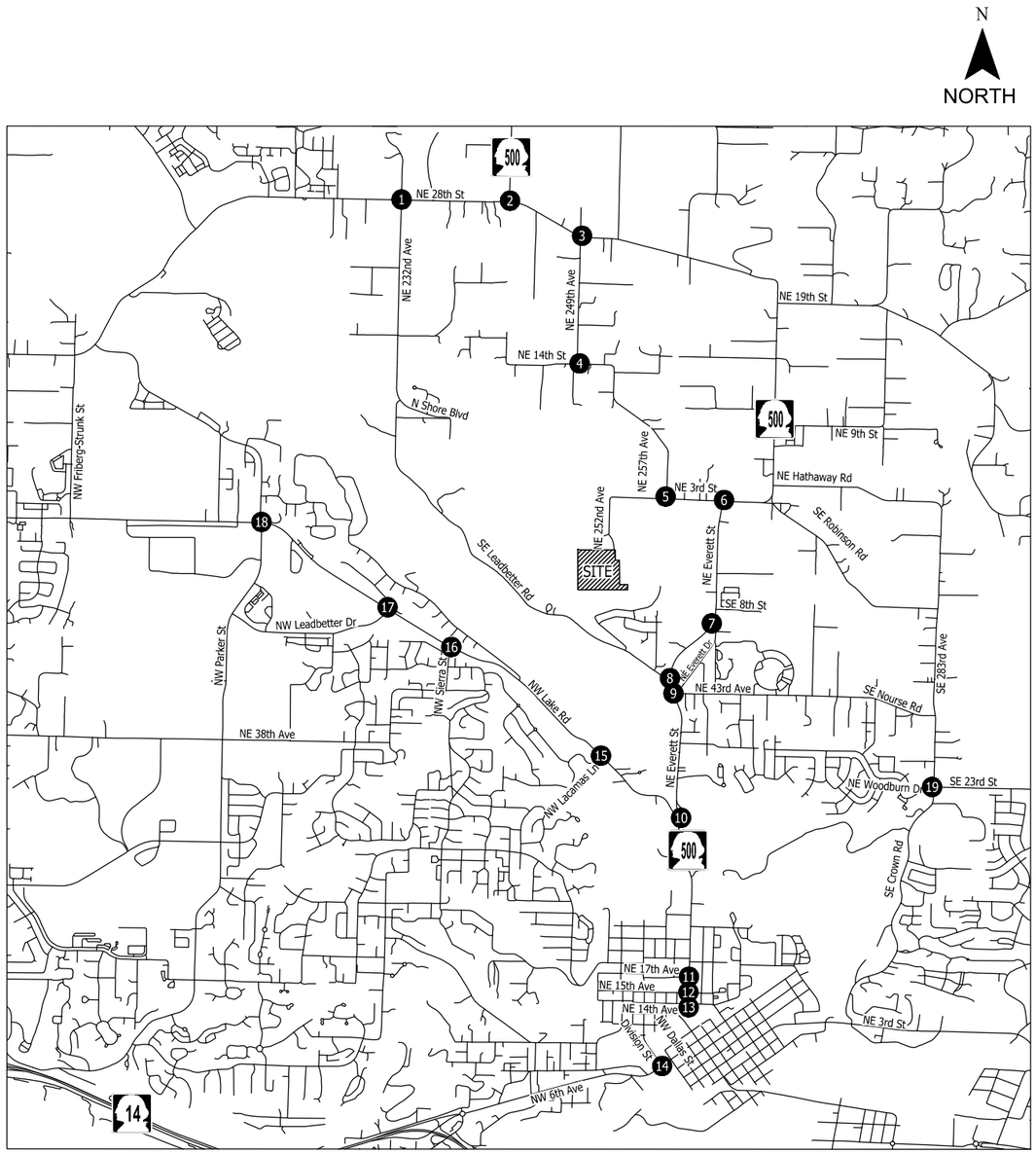
KITTELSON & ASSOCIATES



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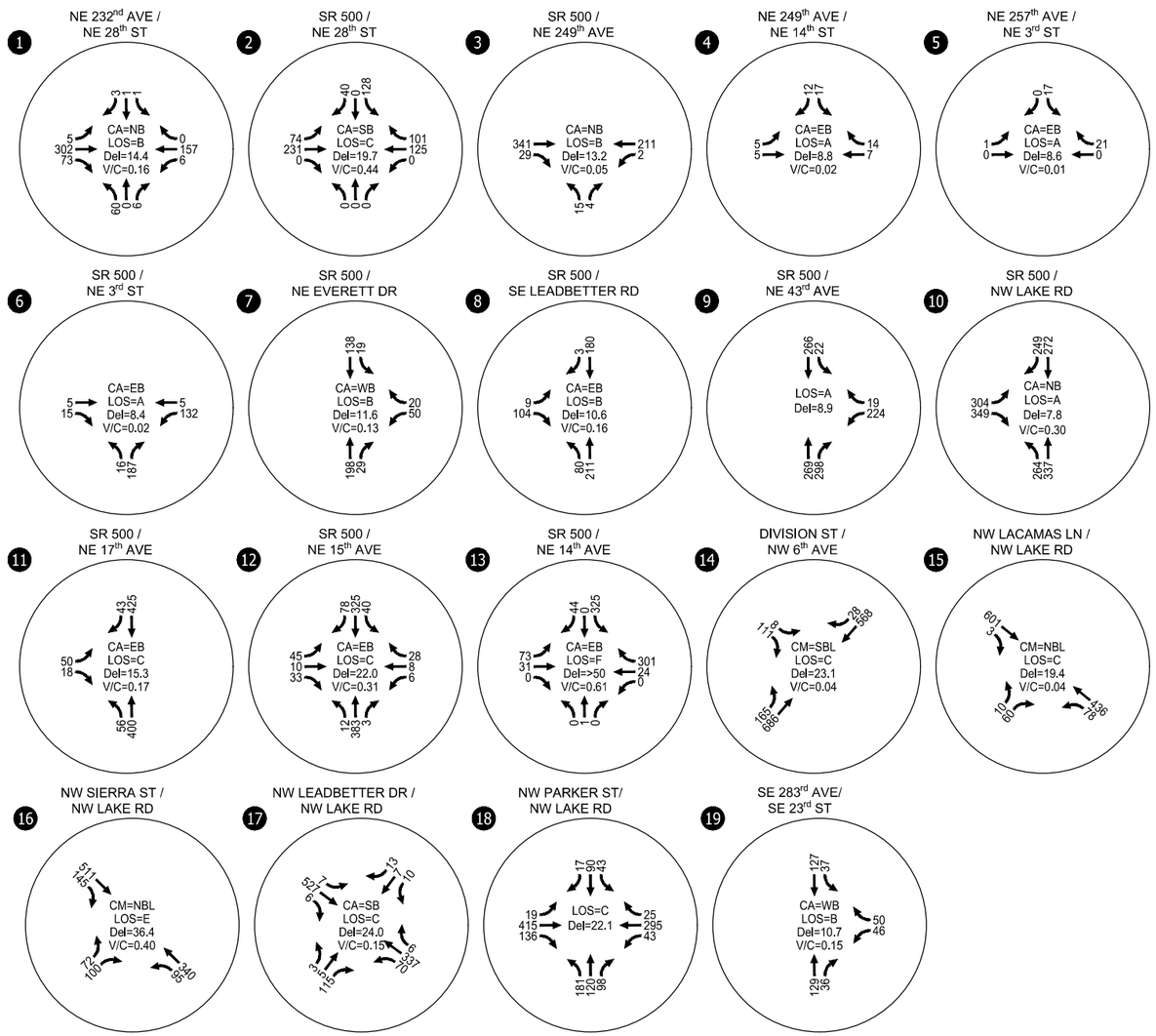

- SITE

- STUDY INTERSECTION

CA =CRITICAL APPROACH (TWSC / ROUNDABOUT)
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V/C = INTERSECTION VOLUME-TO-CAPACITY RATIO

Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
TWSC = TWO-WAY STOP CONTROL

2025 Existing Traffic Conditions
Weekday PM Peak Hour
Camas, Washington

Figure
5

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2030 BACKGROUND TRAFFIC CONDITIONS

The year 2030 background traffic analysis identifies how the study intersections will operate prior to the construction and occupancy of the North Shore Village development. This analysis includes traffic attributed to planned developments within the study area and to general growth in the region but does not include traffic from the proposed homes.

Planned Developments & Transportation Improvements

City staff identified the following previously approved developments to include in the traffic forecasts for the year 2030:

- Camas Woods and Camas Woods 2, located east of SR 500 between Everett Drive and NE 8th Street;
- Camas Heights, located on the north side of NE 28th Street at and west of NE 232nd Avenue;
- Green Mountain Estates, located on the north side of NE 28th Street east of NE 222nd Avenue;
- Green Mountain Planned Residential Development (PRD), located east of NE Ingle Road north of NE 28th Street;
- Lacamas Hills, located on the north side of Leadbetter Road west of Everett Road (formerly known as CJ Dens East Subdivision); and,
- Monte Verde Subdivision, located on the south side of NE 28th Street west of NE 232nd Avenue.

In addition to the "in-process" development traffic, a two percent growth rate was also applied to study intersections 1 through 7 and 19, to account for continued growth in regional traffic along SR 500 north of Everett Drive and at Clark County intersections. *In-process traffic details as provided by the City are included in Appendix E*.

Per City staff, there are no funded changes to the study intersections and/or streets within the next six years that will materially affect traffic volumes. However, there are two near-term planned roundabout projects that are anticipated to be completed by 2030 and are therefore considered in-place for the background analyses. These roundabout projects are:

- SR 500/SE 3rd Street (WSDOT delivered, construction anticipated in late 2025-2026); and,
- SR 500/NE Everett Drive (Private development delivered, associated with the Camas Woods project).

Although the City of Camas is currently planning for, and designing a roundabout at the NW Sierra Street/NW Lake Road intersection, the construction funding and timing is uncertain at this time. Therefore, this roundabout is not considered in-place for the background analyses but is further discussed in the following sections relating to mitigations and associated fees.

Figures 6 and 7 show the projected 2030 turning movement volumes and associated intersection analyses during weekday AM and PM peak hour periods. As shown, three intersections were found to experience delays that do not satisfy the applicable operating parameters during the future peak hour analysis periods including the two intersections whose performance levels don't satisfy the operating metrics today (NE Everett Street/NE 14th Avenue and NW Sierra Street/NW Lake Road).

Study intersections that are projected to not satisfy the applicable performance metrics are:

- SR500 (NE Everett Street)/NE 28th Street (Intersection #2): PM peak hour

- NE Everett Street/NE 14th Avenue (Intersection #13): PM peak hour
- NW Sierra Street/NW Lake Road (Intersection #16): AM and PM peak hours

Appendix F includes the 2030 background traffic operations worksheets.

SR 500 (NE Everett Street)/NE 28th Avenue (Intersection #2)

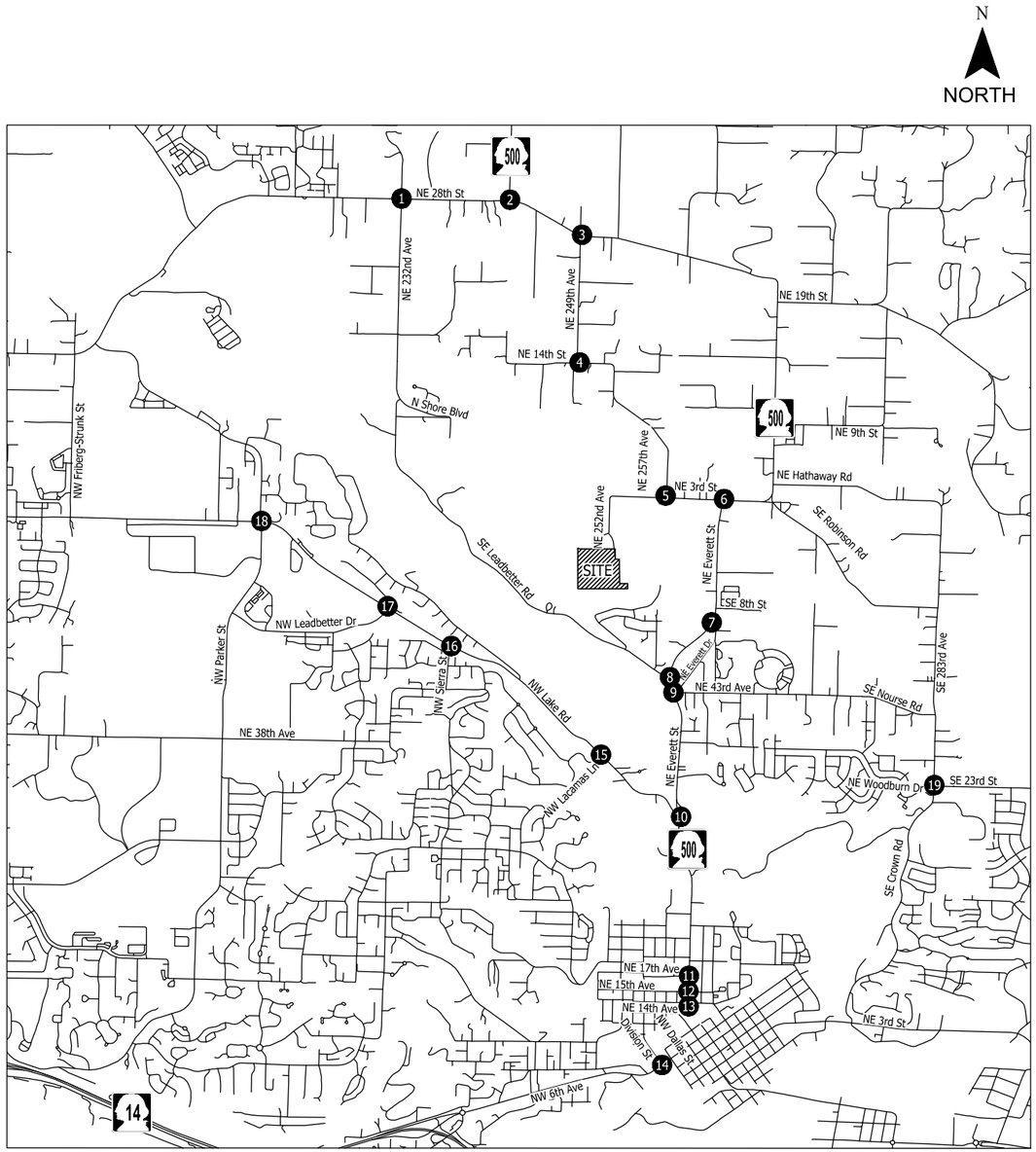
Forecast delay for the southbound stop controlled approach results in LOS E operations (exceeding LOS requirements) during the weekday PM peak hour with a V/C ratio of 071. This finding is consistent with past studies and the City of Camas, Clark County and WSDOT are coordinating regarding the potential to collect proportional share mitigation towards a future roundabout from development projects that impact the intersection.

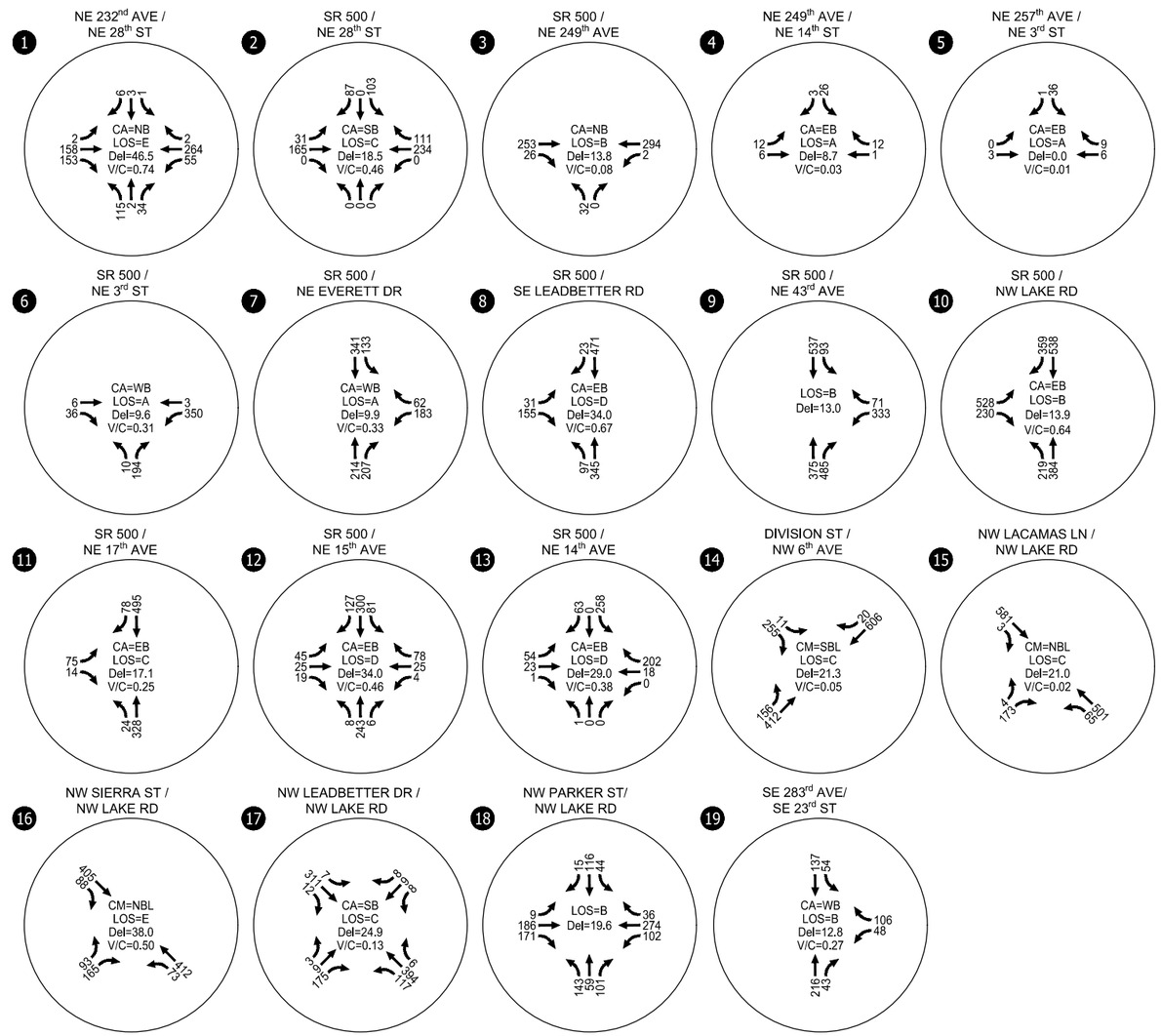
SR 500 (NE Everett Street)/NE 14th Avenue (Intersection #13)

As seen under existing conditions, delay experienced on the eastbound stop controlled approach results in LOS F operations (exceed LOS E requirement) during the weekday PM peak hour with a V/C ratio of 0.72.

NW Sierra Street/NW Lake Road (Intersection #16)

As seen under existing conditions, delay experienced by the stop controlled northbound left-turn movement results in LOS E operations (exceeding LOS D requirement) with a V/C ratio of 0.45 during the weekday PM peak hour. During the weekday AM peak hour, the critical northbound left-turn movement is also forecast to operate at LOS E and with a V/C ratio of 0.50. The City of Camas is preparing design plans to construct a roundabout at this intersection, but as construction funding and timing is uncertain, the roundabout is not assumed in place for the 2030 analyses.





- SITE

- STUDY INTERSECTION

CA =CRITICAL APPROACH (TWSC / ROUNDABOUT)
CM = CRITICAL MOVEMENT (TWSC)
LOS = INTERSECTION LEVEL OF SERVICE (SIGNALIZED)/ CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC / ROUNDABOUT)
V/C = INTERSECTION VOLUME-TO-CAPACITY RATIO

Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
TWSC = TWO-WAY STOP CONTROL

2030 Background Traffic Conditions
Weekday AM Peak Hour
Camas, Washington

Figure
6

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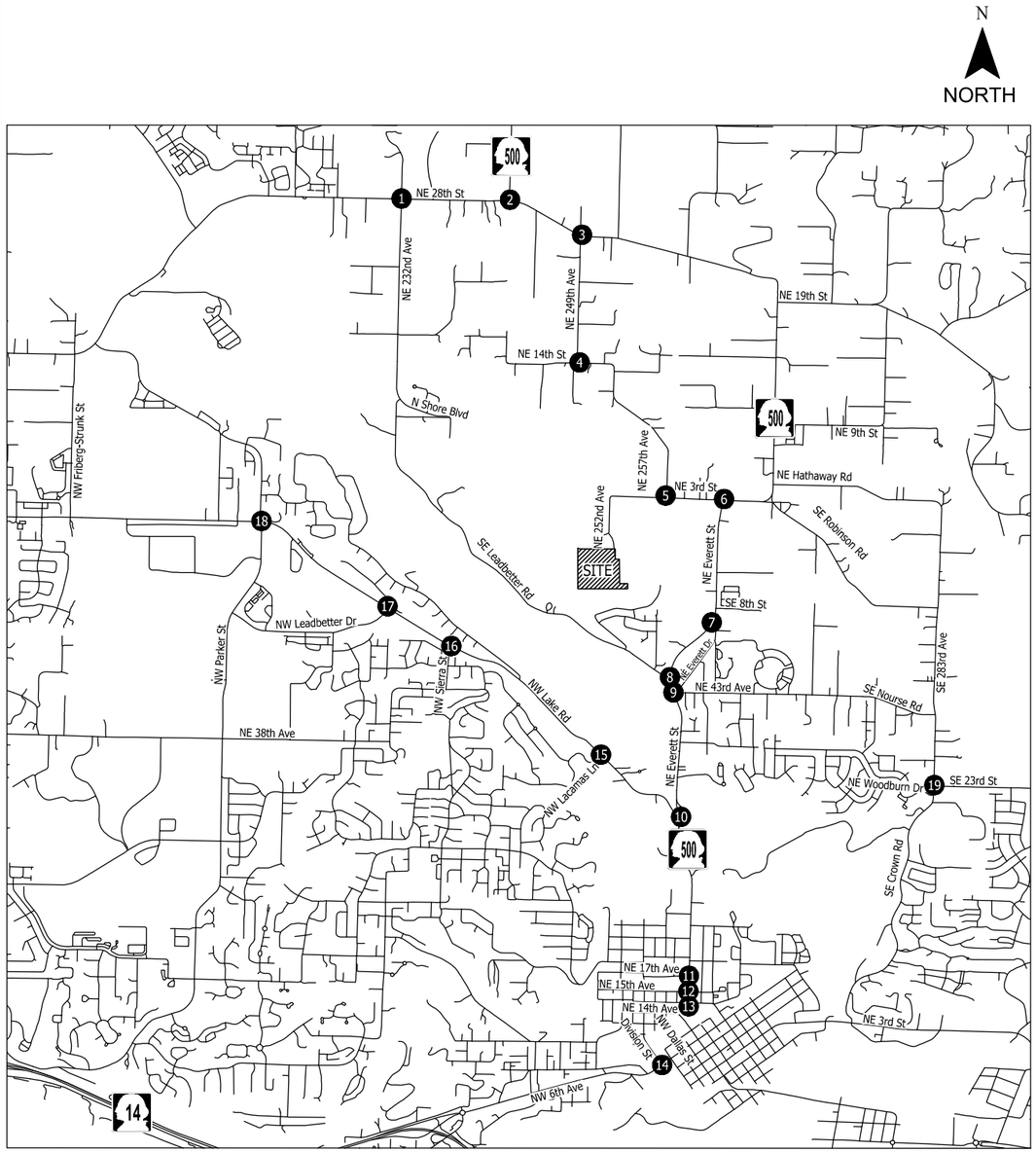
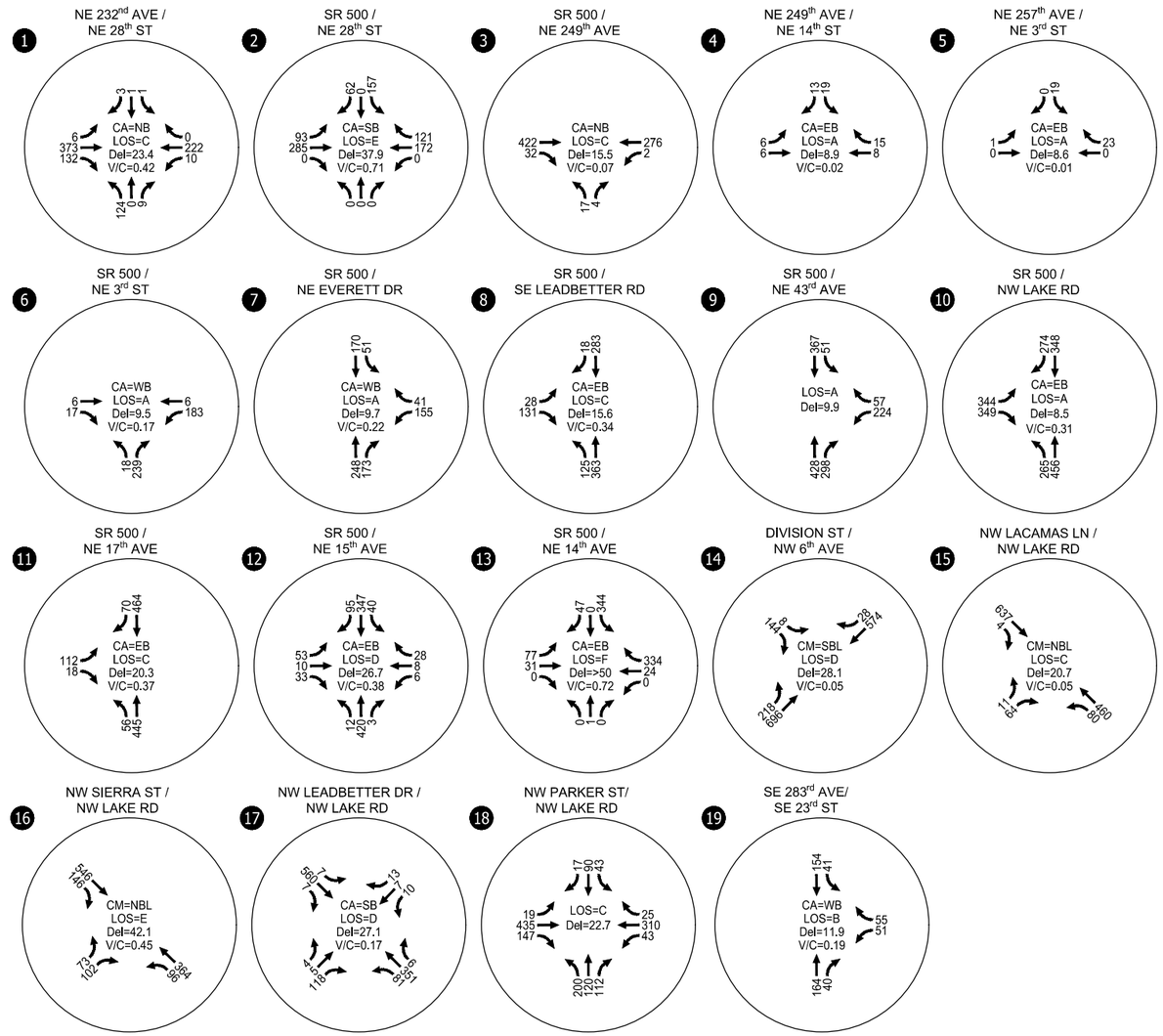
KITTELSON & ASSOCIATES



KEY MAP



- SITE

- STUDY INTERSECTION

CA = CRITICAL APPROACH (TWSC / ROUNDABOUT)
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TWSC = TWO-WAY STOP CONTROL

2030 Background Traffic Conditions
Weekday PM Peak hour
Camas, Washington

Figure
7

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KITTELSON & ASSOCIATES

PROPOSED DEVELOPMENT

The Applicant proposes to construct 41 detached single-family homes, 61 attached homes (townhomes), and 140 apartments on the project site. Residential buildout is anticipated by 2030.

Vehicular site access is proposed via the existing NE 252nd Avenue connection to NE 3rd Street and NE 257th Avenue. Longer-term, with future development by others, a North Shore Boulevard connection to the planned SE Everett Street/SE Everett Drive roundabout may be added. Additionally, if properties to the west of the subject development also redevelop in the future, it is anticipated that North Shore Boulevard will also connect west to NE 232nd Avenue.

With development of this site, it is anticipated that the existing adjacent dairy farm and few residential homes may remain, and continue to utilize NE 252nd Avenue to access NE 3rd Street.

Trip Generation Estimate

The anticipated vehicular trips for the proposed development (Phases 1-5) were calculated based on fitted equation trip rates contained in *the Trip Generation Manual, 11th Edition* (Reference 9) as shown in Table 5. A breakout of daily traffic is provided considering just Phases 1- 3, and Phases 4-5 to inform daily traffic volume estimates for adjacent County roadways, though buildout of all phases (1-5) are considered in this TIA peak hour analysis.[3]

Table 5. Estimated Site Trip Generation

Land Use	ITE Code	Size (Units)	Daily Trips	Weekday AM Peak			Weekday PM Peak		
				Total	In	Out	Total	In	Out
Detached Single-Family Homes	210	41	444	33	8	25	43	27	16
Multi-Family Low-Rise	220	140	973	66	16	50	81	51	30
Single Family Attached	215	61	414	26	7	19	33	19	14
TOTAL NET NEW (ALL PHASES)			**1,831**	**125**	**31**	**94**	**157**	**97**	**60**
Phases 1 – 3			1,338						
Phases 4 – 5			493						

Trip Distribution and Assignment

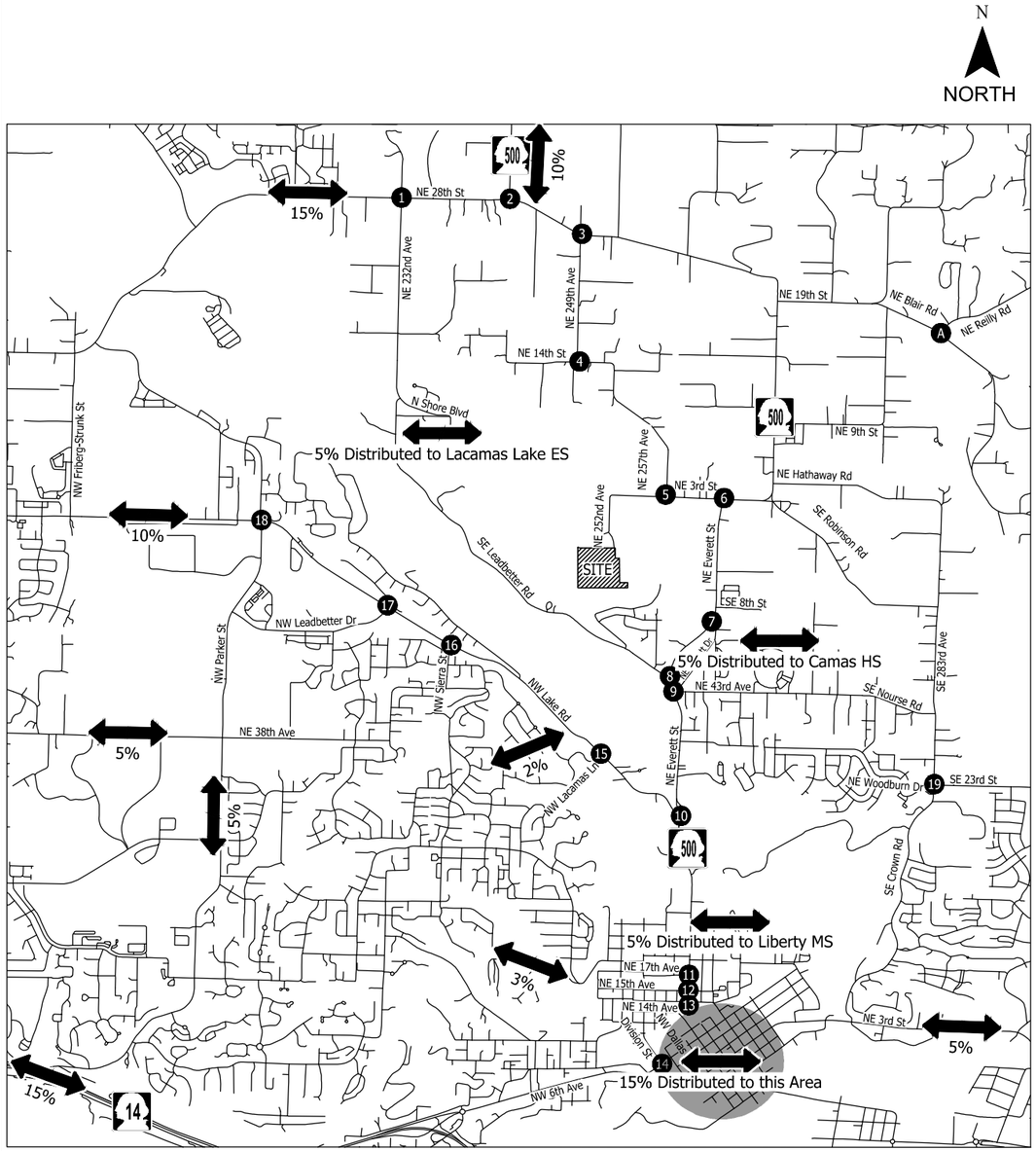
An estimated trip distribution pattern for the planned residential land uses was developed based on review of past Southwest Washington Regional Transportation Council (RTC) modeling of nearby TAZs and review of the existing and planned roadway network in the North Shore area[4].

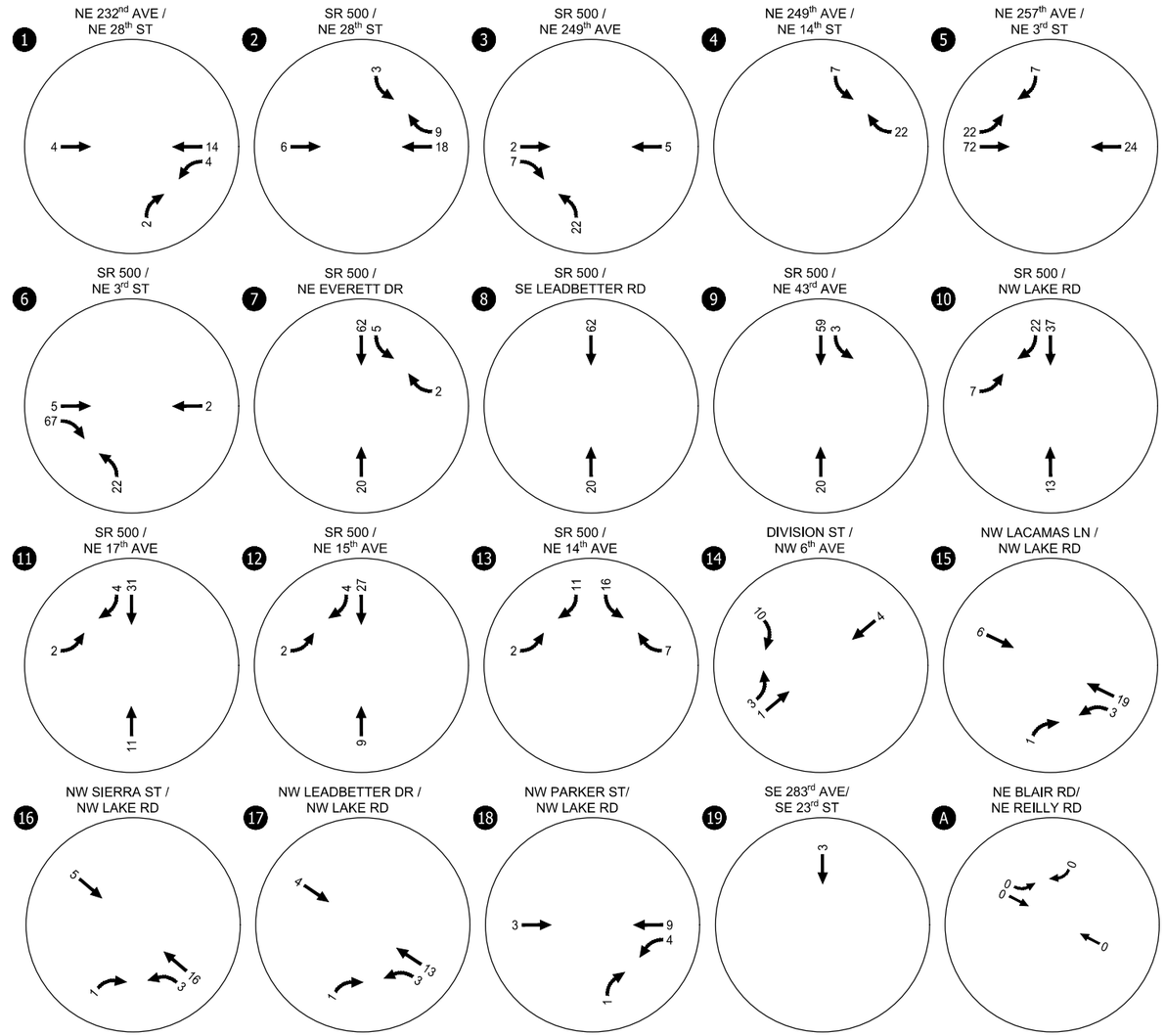
[3] As the fitted curve equations are not all linear functions, the breakout of daily trips for Phases 1-3 and 4-5 is based the proportional of number of units per phase applied to the full buildout (Phases 1-5) estimate.

[4] We note that RTC does not currently have a model fully reflective of the adopted North Shore Plan and companion roadway network as of April 2025. RTC staff indicate they will create model updates upon the City's adoption of a new Growth Management Area (GMA) and road network and completion of the County's Regional Transportation Plan updates in collaboration with communities across the County.

Additionally, Google Maps mapping and route planning suggestions were reviewed during peak hour time frames to better understand this tool's recommended travel routes, route travel time and route distances. Specifically, routing between the proposed site and nearby key destinations including Harmony Sports Complex, the NE 192nd Avenue and SE Mill Plain Boulevard retail corridors, and the Vancouver Mall area were reviewed during AM and PM peak hour time frames. Ultimately, for trips within 5 to 12 miles of the site, the recommended routing for northbound and westbound vehicles trips heavily favored NE 28th Street and NE Lake Road, whereas SR 14 is more often recommended by Google as a westbound route for trips exceeding 15 miles in length.

Figures 8 and 9 illustrate the estimated trip distribution pattern and resulting AM and PM peak hour site trip assignments, respectively. The estimated trip assignment reflects the opening day access plan for the site, with all vehicle trips accessing the public roadway network via NE 252nd Avenue to NE 3rd Street. Some site-generated trips can be expected to re-route to North Shore Boulevard when that roadway is extended west to NE 232nd Avenue and/or east to SR 500 by others in the future.





- SITE
- STUDY INTERSECTION
- -TRIP DISTRIBUTION (XX)

Site Generated Trip Assignment
Weekday AM Peak Hour
Camas, Washington

Figure 8

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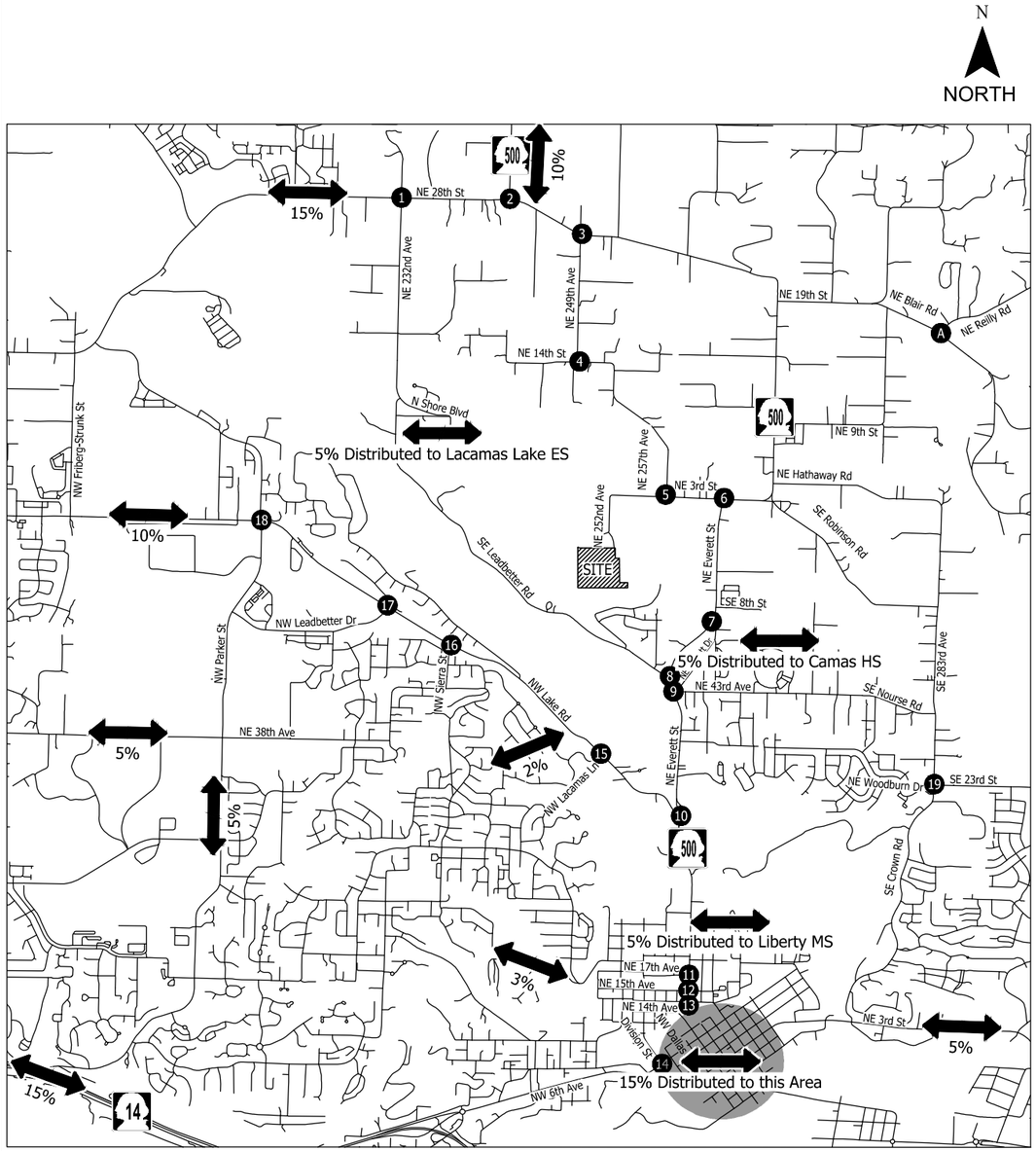

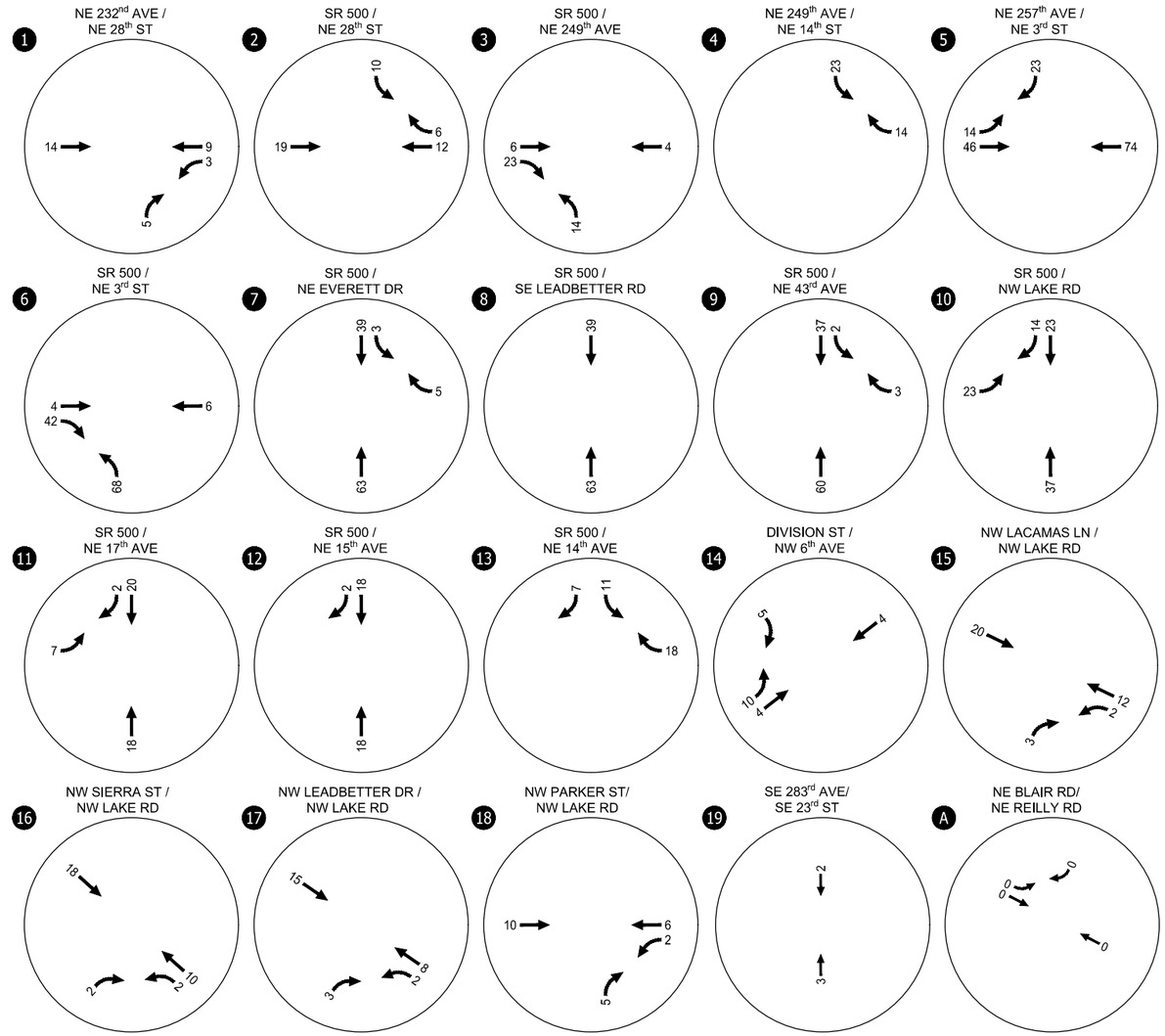

- SITE
- STUDY INTERSECTION
- -TRIP DISTRIBUTION (XX%)

Site Generated Trip Assignment
Weekday PM Peak Hour
Camas, Washington

Figure 9

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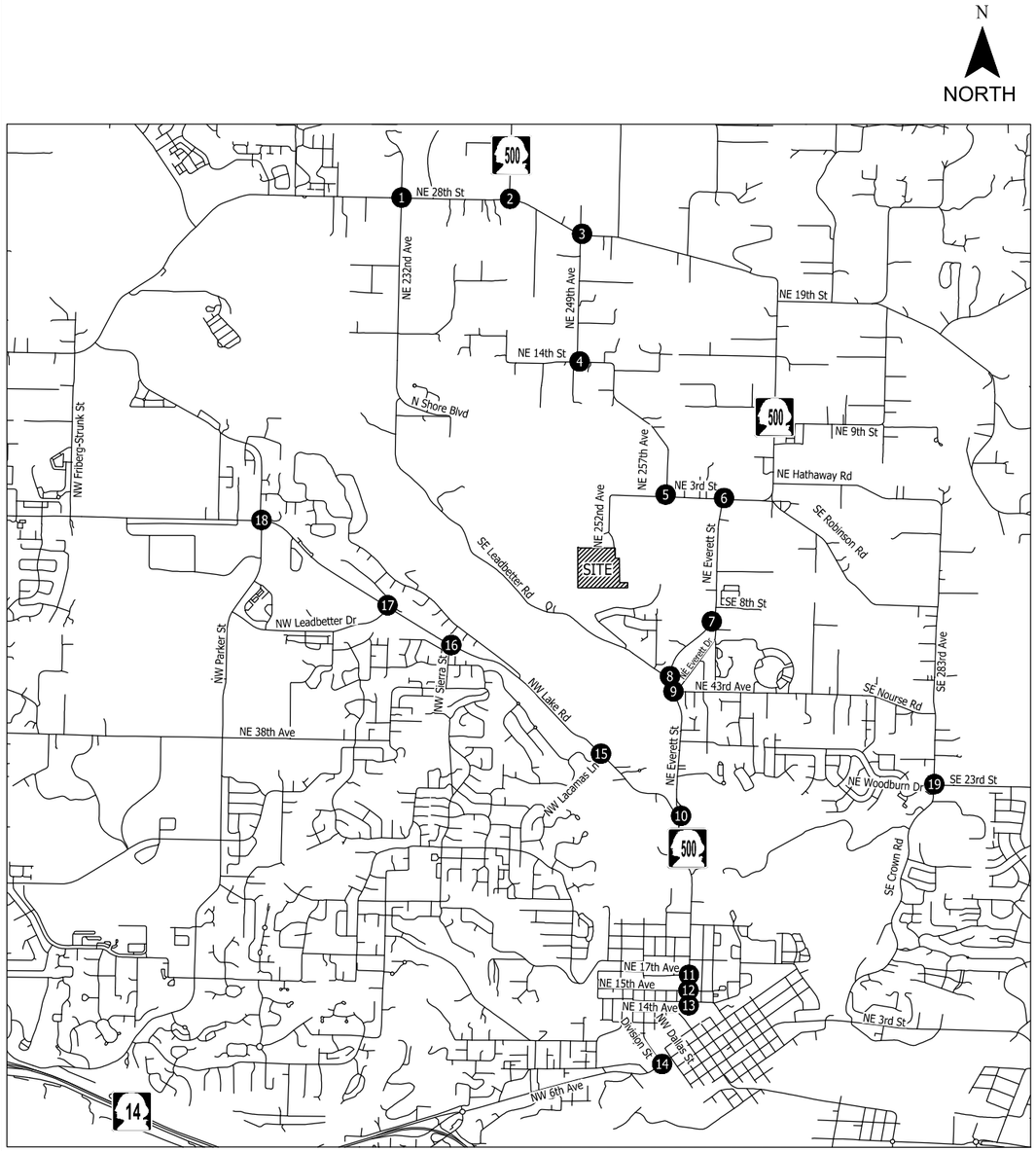
2030 TOTAL TRAFFIC CONDITIONS

The total traffic conditions analysis forecasts how the study intersections will operate with the traffic associated with full occupancy of the proposed residential development. The site-generated trips shown in Figures 8 and 9 were added to the 2030 background traffic volumes reflected in Figures 6 and 7 to arrive at the 2030 total traffic volumes shown in Figures 10 and 11. Figures 10 and 11 also include the resulting intersection operations under total traffic conditions.

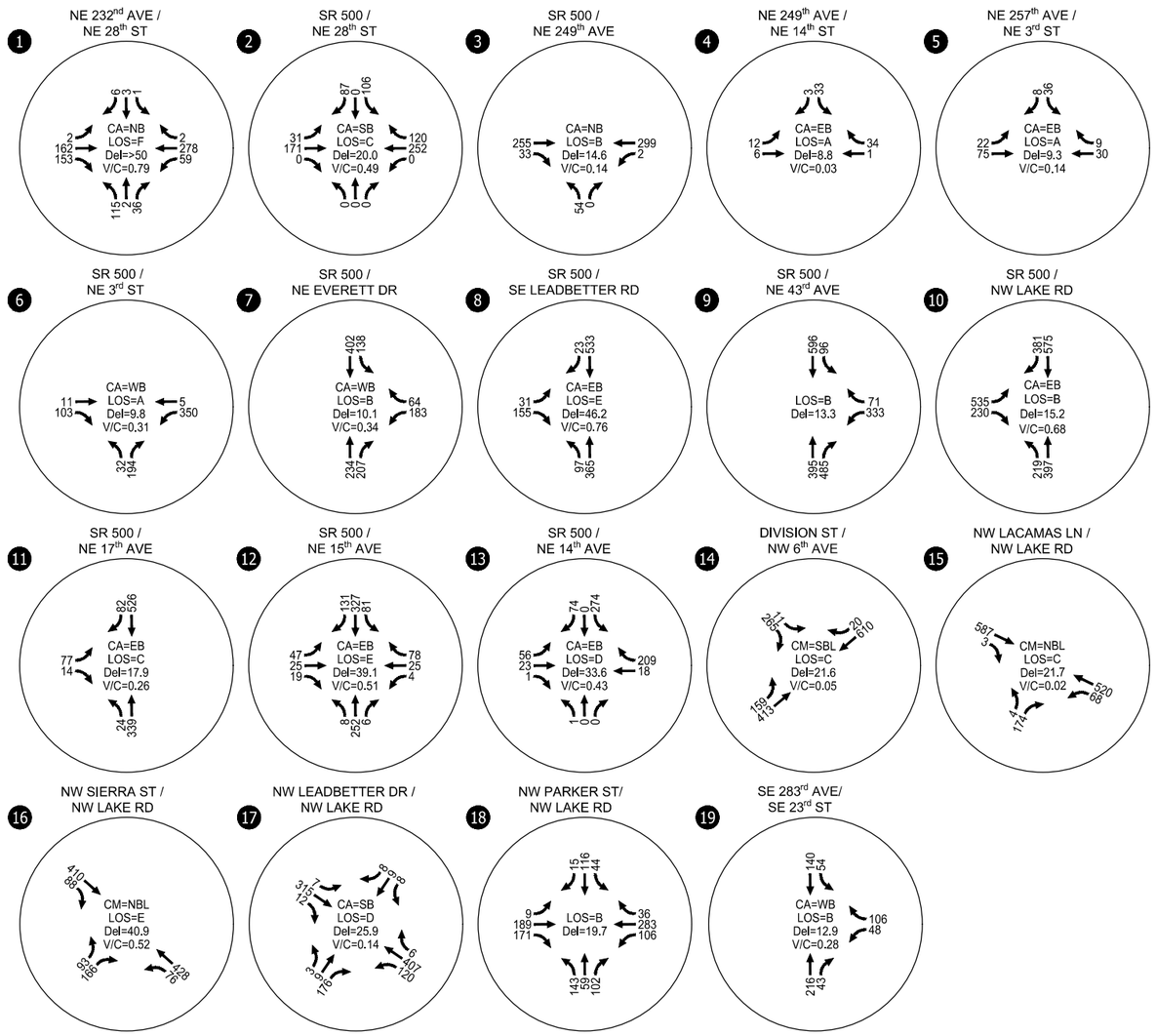
Those intersections that did not satisfy the applicable performance metrics under background conditions each are projected to experience an incremental increase in delay/degradation in operations with the addition of site trips. Further, the northbound stop-controlled approach to NE 232nd Avenue/NE 28th Street (Intersection #1) is projected to operate with high delay (LOS F) during the AM peak hour.

For ease of comparison, Tables 6 and 7 summarize intersection operations for the AM and PM peak hour analysis periods, respectively. 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 G contains the year 2030 total traffic analysis worksheets.



KEY MAP



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Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
TWSC = TWO-WAY STOP CONTROL

2030 Total Traffic Conditions Weekday AM Peak Hour Camas, Washington

Figure 10

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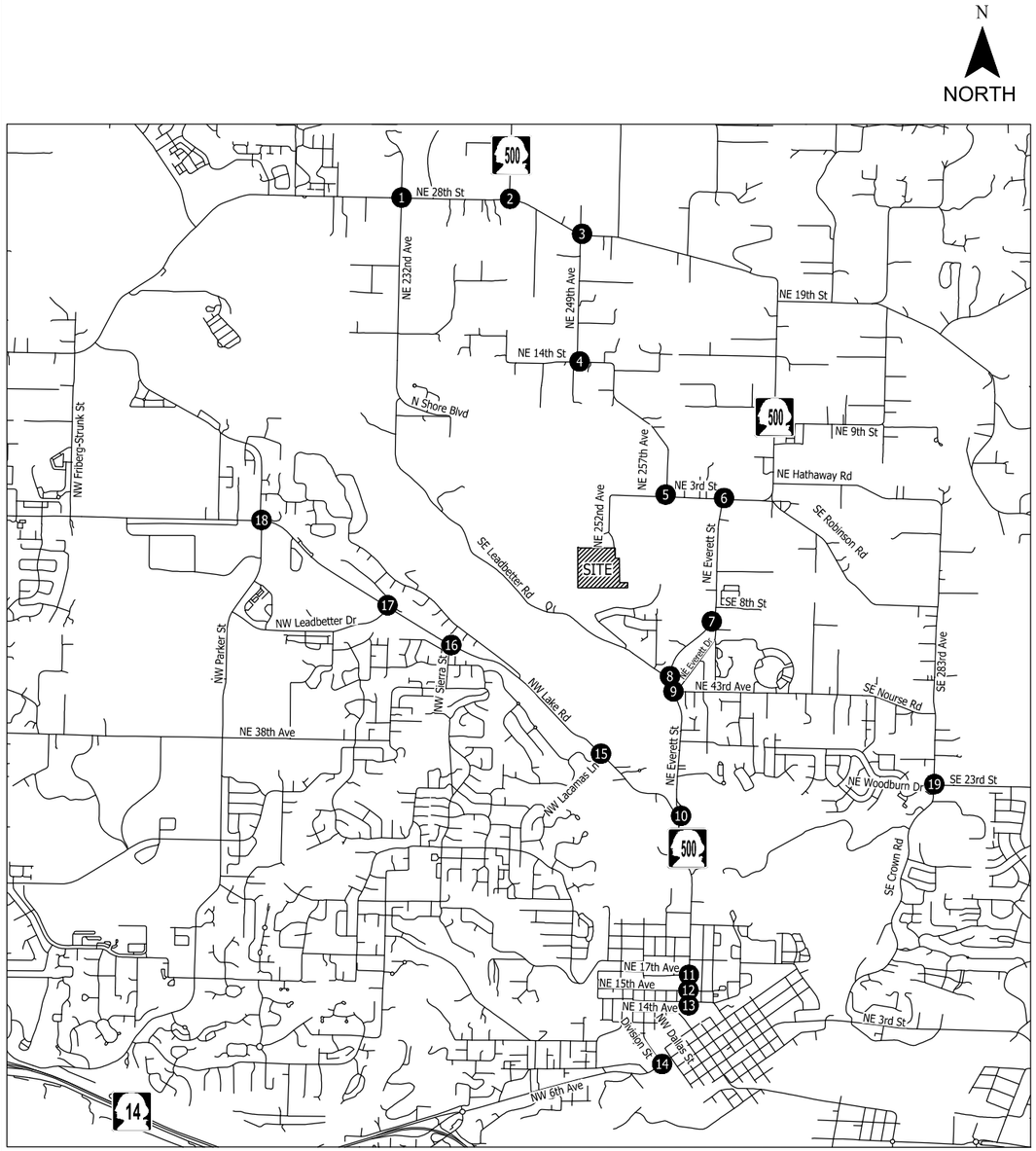
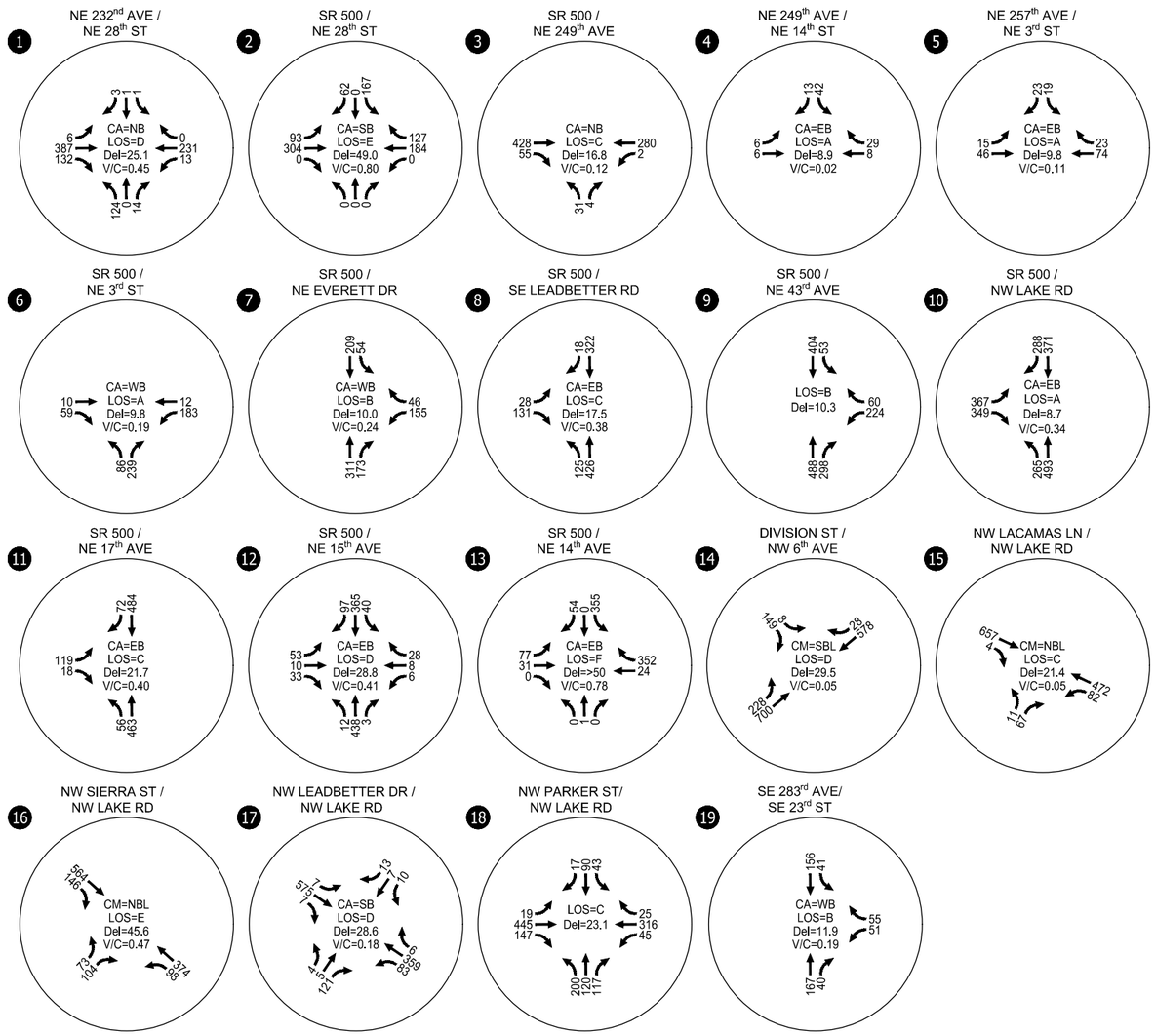


KEY MAP



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Del = INTERSECTION AVERAGE CONTROL DELAY (SIGNALIZED)/ CRITICAL MOVEMENT DELAY (UNSIGNALIZED)
TWSC = TWO-WAY STOP CONTROL

2030 Total Traffic Conditions Weekday PM Peak Hour Camas, Washington

Figure 11

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KITTELSON & ASSOCIATES

Table 6. Projected Weekday AM Peak Hour Study Intersection Operations Summary

ID	Study Intersection	Traffic Control	Operating Requirement	Existing Conditions	2030 Background Traffic	2030 Total Traffic
1	NE 232nd Ave/ NE 28th St	TWSC	LOS E	CA = NB LOS C, 20.1 sec V/C = 0.40	CA = NB LOS E, 46.5 sec V/C = 0.74	**CA = NB LOS F, >50.0 sec V/C = 0.79**
2	SR 500/ NE 28th St	TWSC	LOS C	CA = SB LOS B, 14.0 sec V/C = 0.33	CA = SB LOS C, 18.5 sec V/C = 0.46	CA = SB LOS C, 20.0 sec V/C = 0.49
3	SR 500/ NE 249th Ave	TWSC	LOS C	CA = NB LOS B, 12.3 sec V/C = 0.06	CA = NB LOS B, 13.8 sec V/C = 0.08	CA = NB LOS B, 14.6 sec V/C = 0.14
4	NE 249th Ave/ NE 14th St	TWSC	LOS E*	CA = EB LOS A, 8.7 sec V/C = 0.02	CA = EB LOS A, 8.7 sec V/C = 0.03	CA = EB LOS A, 8.8 sec V/C = 0.03
5	NE 257th Ave/ NE 3rd St	TWSC	LOS E*	CA = EB LOS A, 0.0 sec V/C = 0.01	CA = EB LOS A, 0.0 sec V/C = 0.01	CA = EB LOS A, 9.3 sec V/C = 0.14
6	SR 500/ SE 3rd St	TWSC (Future Roundabout by 2030)	LOS E	CA=EB LOS A, 8.5 sec V/C = 0.04	CA=WB LOS A, 9.6 sec V/C = 0.31	CA=WB LOS A, 9.8 sec V/C = 0.31
7	SR 500/ NE Everett Dr	TWSC (Future Roundabout by 2030)	LOS E	CA = WB LOS C, 24.4 sec V/C = 0.41	CA = WB LOS A, 9.9 sec V/C = 0.33	CA = WB LOS B, 10.1 sec V/C = 0.34
8	SR 500/ SE Leadbetter Rd	TWSC	LOS E	CA = EB LOS C, 17.8 sec V/C = 0.39	CA = EB LOS D, 34.0 sec V/C = 0.67	CA = EB LOS E, 46.2 sec V/C = 0.76
9	SR 500/ NE 43rd Ave	Signalized	LOS E	LOS B, 12.3 sec	LOS B, 13.0 sec	LOS B, 13.3 sec
10	SR 500/ NW Lake Rd	Roundabout	LOS E	CA = EB LOS B, 11.5 sec V/C = 0.55	CA = EB LOS B, 13.9 sec V/C = 0.64	CA = EB LOS B, 15.2 sec V/C = 0.68
11	SR 500/ NE 17th Ave	TWSC	LOS E	CA = EB LOS C, 15.2 sec V/C = 0.19	CA = EB LOS C, 17.1 sec V/C = 0.25	CA = EB LOS C, 17.9 sec V/C = 0.26
12	SR 500/ NE 15th Ave	TWSC	LOS E	CA = EB LOS D, 26.9 sec V/C = 0.36	CA = EB LOS D, 34.0 sec V/C = 0.46	CA = EB LOS E, 39.1 sec V/C = 0.51
13	SR 500/ NE 14th Ave	TWSC	LOS E	CA = EB LOS C, 23.9 sec V/C = 0.32	CA = EB LOS D, 29.0 sec V/C = 0.38	CA = EB LOS D, 33.6 sec V/C = 0.43
14	Division St/ NW 6th Ave	TWSC	LOS D	CM = SBL LOS C, 20.1 sec V/C = 0.05	CM = SBL LOS C, 21.3 sec V/C = 0.05	CM = SBL LOS C, 21.6 sec V/C = 0.05
15	NW Lacamas Ln/ NW Lake Rd	TWSC	LOS D	CM = NBL LOS C, 19.9 sec V/C = 0.02	CM = NBL LOS C, 21.0 sec V/C = 0.02	CM = NBL LOS C, 21.7 sec V/C = 0.02

ID	Study Intersection	Traffic Control	Operating Requirement	Existing Conditions	2030 Background Traffic	2030 Total Traffic
16	NW Sierra St/ NW Lake Rd	TWSC (Future Roundabout Not Assumed by 2030)	LOS D	CM = NBL LOS D, 33.6 sec V/C = 0.45	**CM = NBL** **LOS E, 38.0 sec** **V/C = 0.50**	**CM = NBL** **LOS E, 40.9 sec** **V/C = 0.52**
17	NW Leadbetter Dr/NW Lake Rd	TWSC	LOS D	CA = SB LOS C, 22.6 sec V/C = 0.12	CA = SB LOS C, 24.9 sec V/C = 0.13	CA = SB LOS D, 25.9 sec V/C = 0.14
18	NW Parker St/ NW Lake Rd	Signalized	LOS D	LOS B, 19.3 sec	LOS B, 19.6 sec	LOS B, 19.7 sec
19	SE 283rd Ave/SE 23rd St	TWSC	LOS E	CA = WB LOS B, 11.6 sec V/C = 0.22	CA = WB LOS B, 12.8 sec V/C = 0.27	CA = WB LOS B, 12.9 sec V/C = 0.28

Where: TWSC = Two-way Stop Control, LOS = Level of Service, CA = Critical Approach, CM = Critical Movement, V/C = Volume-to-Capacity ratio, NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, R = Right-turn. **Bold indicates operating requirement is exceeded.**
*Used as a basis of comparison for informational purposes only. Clark County has no adopted operational standard for intersections of rural local roads.

Table 7. Projected Weekday PM Peak Hour Study Intersection Operations Summary

ID	Study Intersection	Traffic Control	Operating Requirement	Existing Conditions	2030 Background Traffic	2030 Total Traffic
1	NE 232nd Ave/ NE 28th St	TWSC	LOS E	CA = NB LOS B, 14.4 sec V/C = 0.16	CA = NB LOS C, 23.4 sec V/C = 0.42	CA = NB LOS D, 25.1 sec V/C = 0.45
2	SR 500/ NE 28th St	TWSC	LOS C	CA = SB LOS C, 19.7 sec V/C = 0.44	**CA = SB LOS E, 37.9 sec V/C = 0.71**	**CA = SB LOS E, 49.0 sec V/C = 0.80**
3	SR 500/ NE 249th Ave	TWSC	LOS C	CA = NB LOS B, 13.2 sec V/C = 0.05	CA = NB LOS C, 15.5 sec V/C = 0.07	CA = NB LOS C, 16.8 sec V/C = 0.12
4	NE 249th Ave/ NE 14th St	TWSC	LOS E*	CA = EB LOS A, 8.8 sec V/C = 0.02	CA = EB LOS A, 8.9 sec V/C = 0.02	CA = EB LOS A, 8.9 sec V/C = 0.02
5	NE 257th Ave/ NE 3rd St	TWSC	LOS E*	CA = EB LOS A, 8.6 sec V/C = 0.01	CA = EB LOS A, 8.6 sec V/C = 0.01	CA = EB LOS A, 9.8 sec V/C = 0.11
6	SR 500/ SE 3rd St	TWSC (Future Roundabout By 2030)	LOS E	CA=EB LOS A, 8.4 sec V/C = 0.02	CA=WB LOS A, 9.5 sec V/C = 0.17	CA=WB LOS A, 9.8 sec V/C = 0.19
7	SR 500/ NE Everett Dr	TWSC (Future Roundabout By 2030)	LOS E	CA = WB LOS B, 11.6 sec V/C = 0.13	CA = WB LOS A, 9.7 sec V/C = 0.22	CA = WB LOS B, 10.0 sec V/C = 0.24
8	SR 500/ SE Leadbetter Rd	TWSC	LOS E	CA = EB LOS B, 10.6 sec V/C = 0.16	CA = EB LOS C, 15.6 sec V/C = 0.34	CA = EB LOS C, 17.5 sec V/C = 0.38
9	SR 500/ NE 43rd Ave	Signalized	LOS E	LOS A, 8.9 sec	LOS A, 9.9 sec	LOS B, 10.3 sec
10	SR 500/ NW Lake Rd	Roundabout	LOS E	CA = NB LOS A, 7.8 sec V/C = 0.30	CA = EB LOS A, 8.5 sec V/C = 0.31	CA = EB LOS A, 8.7 sec V/C = 0.34
11	SR 500/ NE 17th Ave	TWSC	LOS E	CA = EB LOS C, 15.3 sec V/C = 0.17	CA = EB LOS C, 20.3 sec V/C = 0.37	CA = EB LOS C, 21.7 sec V/C = 0.40
12	SR 500/ NE 15th Ave	TWSC	LOS E	CA = EB LOS C, 22.0 sec V/C = 0.31	CA = EB LOS D, 26.7 sec V/C = 0.38	CA = EB LOS D, 28.8 sec V/C = 0.41
13	SR 500/ NE 14th Ave	TWSC	LOS E	**CA = EB LOS F, >50 sec V/C = 0.61**	**CA = EB LOS F, >50 sec V/C = 0.72**	**CA = EB LOS F, >50 sec V/C = 0.78**
14	Division St/ NW 6th Ave	TWSC	LOS D	CM = SBL LOS C, 23.1 sec V/C = 0.04	CM = SBL LOS D, 28.1 sec V/C = 0.05	CM = SBL LOS D, 29.5 sec V/C = 0.05
15	NW Lacamas Ln/ NW Lake Rd	TWSC	LOS D	CM = NBL LOS C, 19.4 sec V/C = 0.04	CM = NBL LOS C, 20.7 sec V/C = 0.05	CM = NBL LOS C, 21.4 sec V/C = 0.05

ID	Study Intersection	Traffic Control	Operating Requirement	Existing Conditions	2030 Background Traffic	2030 Total Traffic
16	NW Sierra St/ NW Lake Rd	TWSC (Future Roundabout, Not Assumed by 2030)	LOS D	**CM = NBL LOS E, 36.4 sec V/C = 0.40**	**CM = NBL LOS E, 42.1 sec V/C = 0.45**	**CM = NBL LOS E, 45.6 sec V/C = 0.47**
17	NW Leadbetter Dr/NW Lake Rd	TWSC	LOS D	CA = SB LOS C, 24.0 sec V/C = 0.15	CA = SB LOS D, 27.1 sec V/C = 0.17	CA = SB LOS D, 28.6 sec V/C = 0.18
18	NW Parker St/ NW Lake Rd	Signalized	LOS D	LOS C, 22.1 sec	LOS C, 22.7 sec	LOS C, 23.1 sec
19	SE 283rd Ave/SE 23rd St	TWSC	LOS E	CA = WB LOS B, 10.7 sec V/C = 0.15	CA = WB LOS B, 11.9 sec V/C = 0.19	CA = WB LOS B, 11.9 sec V/C = 0.19

Where: TWSC = Two-way Stop Control, LOS = Level of Service, CA = Critical Approach, CM = Critical Movement, V/C = Volume-to-Capacity ratio, NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound, L = Left-turn, R = Right-turn. **BOLD indicates operating requirement is exceeded.**
*Used as a basis of comparison for informational purposes only. Clark County has no adopted operational standard for intersections of rural local roads.

Total Traffic Intersection Operations Discussion

Considerations associated with each of the intersections not satisfying the applicable agency performance metrics during one or both of peak hour analysis periods are presented below. *Appendix H contains the year 2030 total traffic mitigation analysis worksheets.*

NE 232nd Avenue/NE 28th Street (Intersection #1)

The northbound stop-controlled approach to NE 232nd Avenue/NE 28th Street (Intersection #1) is projected to operate with high delay (LOS F) during the AM peak hour and with a V/C ratio of 0.79.

The proposed site development projected to add 2 weekday AM peak hour trips to the stop controlled northbound approach. 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).

SR 500 (NE Everett Street)/NE 28th Street (Intersection #2)

Consistent with the background conditions analysis, delay experienced on the southbound stop-controlled approach continues to result in LOS E operations (exceed the LOS C requirement) during the weekday PM peak hour with a V/C ratio of 0.80. The intersection is projected to continue to operate acceptably during the weekday AM peak hour analysis period. The City of Camas, Clark County and WSDOT are coordinating regarding the potential to collect proportional share mitigation towards a future roundabout from development projects that impact the intersection; however, WSDOT does not currently have a planned/funded project for the intersection.

Given the forecast LOS E conditions occur under background conditions and that the proposed development is projected to add 10 southbound left-turns to the intersection during the weekday PM peak hour (47 total site trips are projected to enter the intersection during the PM peak hour), we recommend the Applicant collaborate with WSDOT to determine if a proportional share financial contribution to a future intersection capacity improvement is appropriate in conjunction with the proposed development.

As an alternative, implementation of interim all-way stop control at the intersection would provide for acceptable operations during the weekday PM peak hour (eastbound approach LOS C with a V/C ratio of 0.65, overall intersection LOS B).

SR 500 (NE Everett Street)/NE 14th Avenue (Intersection #13)

Consistent with existing and forecast background conditions, delay experienced on the eastbound stop controlled approach results in LOS F operations (exceed LOS E requirement) during the weekday PM peak hour with a V/C ratio of 0.78.

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 #16)

As shown under background 2030 conditions, delay experienced by the stop controlled northbound left-turn movement results in LOS E operations (exceed LOS D requirement) during both and AM and PM peak hours with V/C ratios of 0.52 and 0.47, respectively. The City of Camas is preparing design plans to construct a roundabout at this intersection and has begun collection of proportional share mitigation fees at the intersection. We recommend the Applicant make a proportional financial mitigation contribution to the City of Camas' planned NW Sierra Street/NW Lake Road intersection improvement project.

Based on a recent land use decision, the City is currently assessing a fee of $1,423 per PM peak hour trip added to this intersection, but may switch to a future Traffic Impact Fee (TIF) as part of the on-going TIF Update program which is anticipated to be completed in 2025. Assuming the $1,423 per PM peak trip remains in effect for this development application, the resulting fee for this development is estimated to be $45,536 (based on 32 PM peak hour trips added through the intersection). The City will determine the final contribution amount required.

INTERSECTION QUEUING CONSIDERATIONS

Forecast total traffic year 2030 95th percentile queues were reviewed at the intersections closest to the study site. Each of these locations is discussed independently below.

NE 3rd Street/NE 257th Avenue (Intersection #5)

This existing County intersection will be the primary public roadway connection for the residential development, until North Shore Boulevard is built (by others) connecting to the west at NE 232nd Avenue and to the east at SR 500. The 95th percentile queue lengths at the stop-controlled eastbound approach are forecast to be one vehicle length or less under total traffic 2030 conditions.

NE 249th Avenue/SR 500 (Intersection #3)

The 95th percentile queue lengths at the stop-controlled northbound approach to this intersection are forecast to be one vehicle length or less under total traffic 2030 conditions.

NE 3rd Street/SR 500 (Intersection #6)

It is forecast that the west leg (eastbound approach) to the future a single lane roundabout at this location will experience 95th percentile queues of one vehicle length of less under total traffic 2030 conditions.

TURN LANE NEEDS

The potential need for a turn lanes at the intersections closest to the proposed site was also reviewed. These locations include:

- NE 249th Avenue / SR 500, and
- NE 257th Avenue / NE 3rd Street.

Consideration of turn lanes at each of these intersections is further described below. *Appendix I includes the supporting turn lane guidance worksheets.*

SR 500/NE 249th Avenue

As it is anticipated that most trips to/from the north and northwest will utilize NE 249th Avenue to access SR 500, the forecast total traffic volumes at the existing two way stop-controlled intersection were reviewed based on the guidance in the *WSDOT Design Manual.*

The low westbound left-turning volumes at the intersection indicate that the guidance for consideration of a westbound-left turn lane is not met.

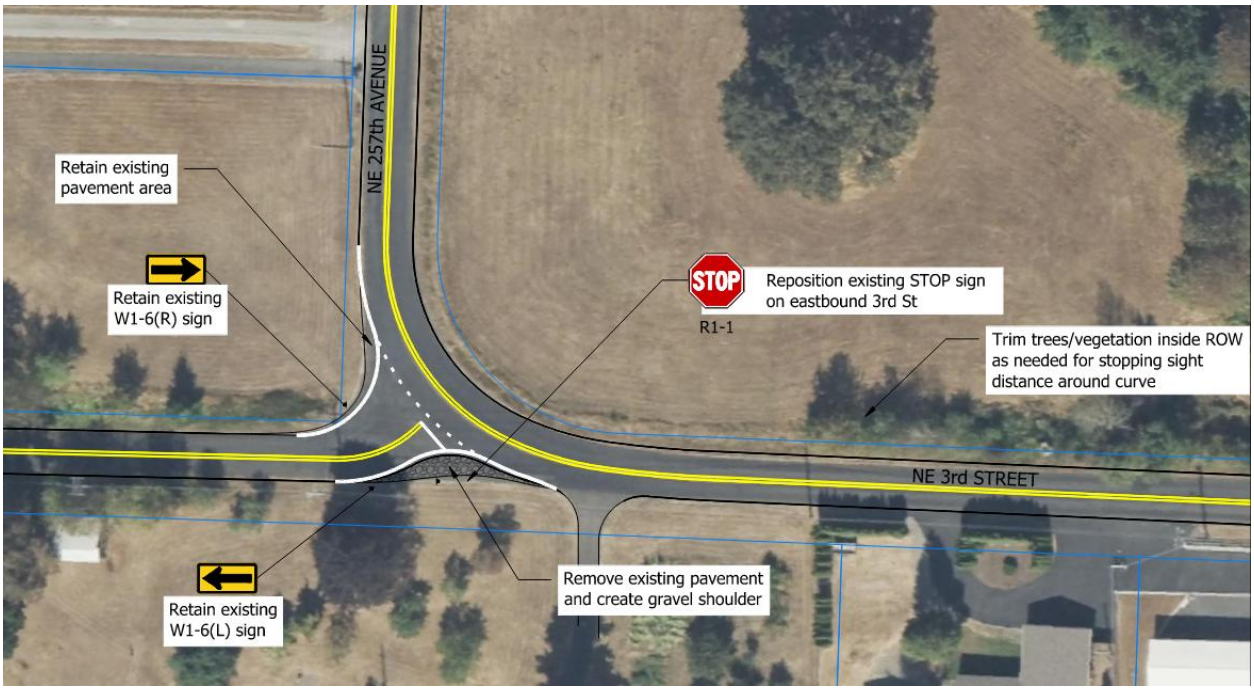
The forecast right-turning volumes indicate that that right-turn pocket or taper should be considered. However, the addition of a right-turn lane or taper may be precluded by existing limited right-of-way, and may require removal of several existing roadside trees. Additionally, the use of NE 249th Avenue by trips traveling to/from the site that are north/northwest bound is an anticipated to be an interim condition, until North Shore Boulevard is built connecting NE 232nd Avenue to SR 500. Once North Shore Boulevard is constructed, it is anticipated that fewer site trips will utilize NE 249th Avenue to access SR 500.

NE 257th Avenue/NE 3rd Street

As the NE 257th Avenue /NE 3rd Street intersection will functionally serve as the access point to the public roadway system for the proposed development, at least until North Shore Boulevard is extended east to SR 500 in the future, the need for a westbound left-turn lane was reviewed based on the guidance in the *WSDOT Design Manual*. With the existing geometry of the intersection, trips headed westbound on NE 3rd Street are required to make a left-turn maneuver and yield to southbound vehicles navigating the curved intersection. The volume-based WSDOT guidance indicated that the intersection volumes do not meet the guidance for consideration a left-turn lane.

Considering the site-generated traffic added to the intersection with the proposed development and the relatively low traffic volumes at the intersection, it is recommended that the development team collaborate with Clark County Public Works to re-sign and restripe the intersection in conjunction with the proposed development. Exhibit 1 is a conceptual illustration of suggested curve warning signs, striping revisions along with suggested STOP sign and STOP bar relocation/replacement that could be implemented in accordance with the *Manual on Uniform Traffic Control Devices* in conjunction with the proposed site development, subject to Clark County direction.

Exhibit 1. Conceptual NE 257th Avenue/NE 3rd Street Signing and Striping Changes



Aerial Image Source: Google Earth

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.

DAILY TRAFFIC VOLUMES

Clark County operates and maintains NE 252nd Avenue, NE 257th Avenue and NE 3rd Street as designated rural minor roadways. Clark County Code (CCC) defines minimum width requirements including stipulation that roadways have an unobstructed and paved roadway width of twenty (20) feet, or eighteen (18) feet of pavement with one (1) foot wide shoulders[5]. Further, CCC addresses Maximum Dwelling Units Served by Access Roads and states:

> *"Urban neighborhood circulator roads within a development which meet the access requirements above may serve up to three hundred (300) lots or units if approved by the review authority. However, the review authority may require a traffic circulation study showing a balanced traffic flow of less than two thousand (2,000) vehicles per day past any dwelling unit accessing on a neighborhood circulator road or lesser classification upon full buildout."*[6]

Per Table 5, the proposed development is estimated to generate 1,831 daily vehicles trips. To inform forecast with-development daily vehicle volumes on NE 252nd Avenue, NE 257th Avenue and NE 3rd Street,

[5] CCC 40.350.060.B.6.b(1) (Off-site Access Road Improvements)
[6] CCC 40.350.030.B.4.b.4.b

24-hour daily vehicle counts were collected on each roadway. Exhibit 2 details the existing 2025, and forecast 2030 background and with-development daily vehicles volumes considering full site buildout (Phases 1-5). Exhibit 3 displays the existing 2025 and forecast 2030 background and with partial development, if only Phases 1-3 are constructed. As shown, NE 252nd Avenue, NE 3rd Street and NE 257th Avenue volumes are forecast to remain below 2,000 average daily trips (ADT) with full, or partial, buildout of this residential development.

Exhibit 2. Existing & Future Projected Daily Traffic Volumes (Full Buildout, Phases 1-5)

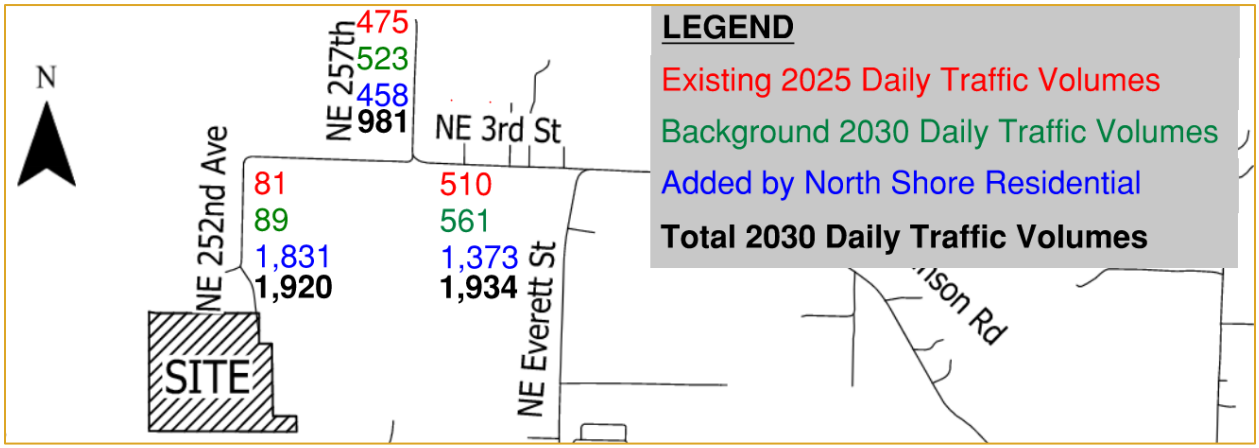
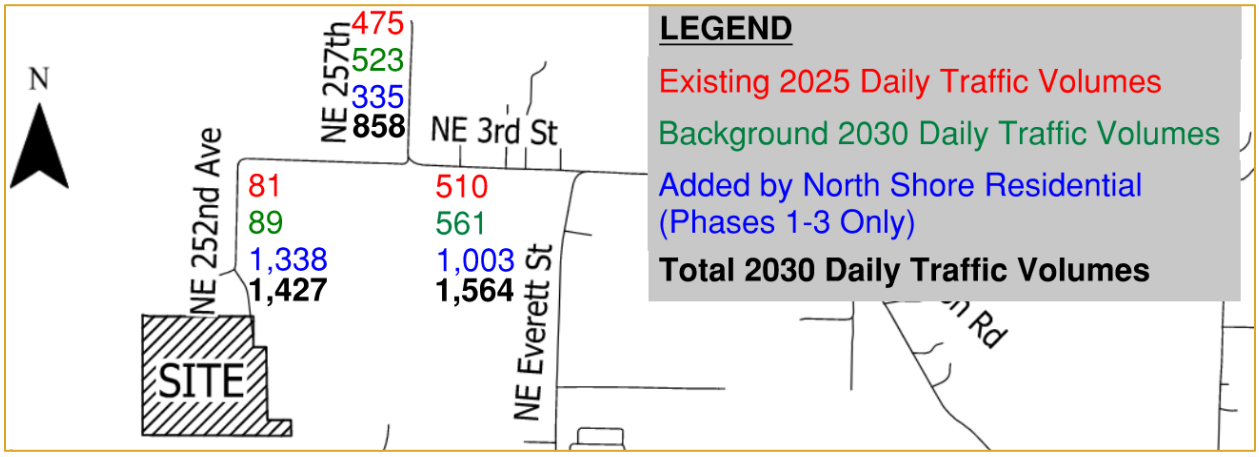


Exhibit 3. Existing & Future Projected Daily Traffic Volumes (Partial Buildout, Phases 1-3 Only)



We recommend the Applicant collaborate with Clark County Public Works to define and, if needed, construct an appropriate paved section along NE 252th Avenue and NE 3rd Street as well as at the NE 257th Avenue/NE 3rd Street intersection to serve as the interim primary access to the proposed development.

PROPORTIONATE SHARE CONTRIBUTIONS

The City of Vancouver collects proportionate share fee contributions from all future developments that add one or more site-generated trips to an adopted list of intersections that require mitigation. Table 8 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 8. City of Vancouver Proportionate Share Fee Summary

Mitigation Location	Mitigation Cost/Peak Hour Trip	Peak Hour Trips Added	Estimated Mitigation Cost
137th Ave: 49th St to Fourth Plain Blvd	$3,000/PM	0	$0
Fourth Plain Blvd & 152nd Ave Signal	$333/PM	0	$0
Lieser/St. Helens/MacArthur	$2,000/PM	0	$0
176th Ave & SE 20th St	$400/PM	0	$0
192nd Avenue & NE 13th Street	$400/PM	23	$9,200
192nd Ave & SE 34th St	$150/PM	0	$0
192nd Ave & SR-14 ramps	$2,000/PM	0	$0
MacArthur & Andresen Roundabout	$2,285/PM	0	$0
MacArthur & Devine Roundabout	$2,226/PM	0	$0
Grove St/Columbia House Blvd/SR-14 WB Ramp	$600/AM	0	$0
NE 172nd Avenue & NE 18th Street	$300/PM	7	$2,100
NE 179th Place & NE 18th Street	$900/PM	7	$5,600
NE 187th Avenue & NE 18th Street	$1,200/PM	7	$8,400
NE 162nd Avenue & NE 9th Street	$1,500/PM	0	$0
NE 172nd Avenue & NE 9th Street	$4,100/PM	0	$0
NE 192nd Avenue & NE 9th Street	$1,100/PM	0	$0
NE 187th Avenue & SE 1st Street	$1,100/PM	0	$0
Total Proportional Share Cost			$25,300

Exhibit 7 SUB25-1008

SUMMARY FINDINGS & RECOMMENDATIONS

Based on the transportation impact analysis results, the proposed residential homes can be developed while maintaining acceptable operations at the study intersections assuming provision of the recommended mitigation measures in conjunction with site redevelopment.

Findings

- Two study intersections experience performance levels that don't satisfy the applicable operating parameters today (NE Everett Street/NE 14th Avenue and NW Sierra Street/NW Lake Road).
- 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 =0.79;
  - SR 500 (NE 242nd Avenue)/NE 28th Street (Intersection #2): PM peak hour LOS E operations with a V/C = 0.80;
  - SR 500 (NE Everett Street)/NE 14th Avenue (Intersection #13): PM peak hour LOS F operations with a V/C = 0.78;
  - NW Sierra Street/NW Lake Road (Intersection #16): AM and PM peak hour LOS E operations with a V/C = 0.52 during the AM peak hour, and a V/C = 0.47 during the PM peak hour.
- The proposed development adds one or more site-generated trip(s) 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 =0.79.
    - 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 two (2) weekday AM peak hour trips to the stop controlled northbound approach when the Clark County LOS standard is not met.
  - SR 500 (NE 242nd Avenue)/NE 28th Street (Intersection #2): PM peak hour LOS E operations with a V/C = 0.80.
    - The City of Camas, Clark County and WSDOT are coordinating regarding the potential to collect proportional share mitigation towards a future roundabout from development projects that impact the intersection; however, WSDOT does not currently have a planned/funded project for the intersection.
    - 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 C with a V/C ratio of 0.65, overall intersection LOS B).
  - SR 500 (NE Everett Street)/NE 14th Avenue (Intersection #13): PM peak hour LOS F operations with a V/C = 0.78
    - 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 a route alternative (including but not limited to NE 17th Avenue, NE 19th Avenue and NE 21st Avenue to the north).

Exhibit 7 SUB25-1008

  - NW Sierra Street/NW Lake Road (Intersection #16): AM and PM peak hour LOS E operations with a V/C = 0.52 during the AM peak hour, and a V/C = 0.47 during the PM peak hour.
    - 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.
    - The City is currently assessing a fee of $1,423 per PM peak hour trip added to this intersection, but may switch to a future TIF as part of the on-going TIF Update program which is anticipated to be completed in 2025. Assuming the $1,423 per PM peak trip remains in effect for this development application, the resulting fee for this development is $45,536 (based on 32 PM peak hour trips added) through the intersection.

- The proposed site development is projected to add weekday PM peak hour trips to the following intersections where the City of Vancouver assesses proportional share mitigation payments:
  - NE 192nd Avenue/NE 13th Street mitigation: 23 trips
  - NE 179th Place/NE 18th Street mitigation: 7 trips
  - NE 187th Avenue/NE 18th Street mitigation: 7 trips

Recommendations

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

- Make a proportional financial mitigation contribution to the City of Camas' planned NW Sierra Street/NW Lake Road roundabout project.
  - The City is currently assessing a fee of $1,423 per PM peak hour trip added to this intersection, but may switch to a future TIF as part of the on-going TIF Update program which is anticipated to be completed in 2025. Should the $1,423 per PM peak trip remain in effect for this development application, the resulting fee estimate for this development is $45,536 (based on 32 PM peak hour trips added). The City will determine the final contribution amount.

- Collaborate with WSDOT to identify and implement (if construction is required) capacity mitigation at the SR 500 (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 payment of a proportional share financial contribution to a future intersection capacity improvement.

- Collaborate with Clark County to define and, if needed, construct an appropriate paved section along NE 252th Avenue and NE 3rd Street to serve as the interim primary access to the proposed development.

- Collaborate with Clark County to re-sign and restripe the NE 257th Avenue/NE 3rd Street intersection in conjunction with the proposed development in accordance with the *Manual on Uniform Traffic Control Devices* (refer to Exhibit 1, a conceptual illustration of suggested curve warning signs, striping revisions along with suggested STOP sign and STOP bar relocation/replacement that could be implemented with the proposed site development, subject to Clark County direction).

- Subject to City of Vancouver concurrence and final residential unit count confirmation, pay the following proportional share intersection fees as identified per City of Vancouver requirements:
  - $9,200 towards NE 192nd Avenue/NE 13th Street mitigation

- $2,100 towards NE 172nd Avenue/NE 18th Street mitigation
- $5,600 towards NE 179th Place/NE 18th Street mitigation
- $8,400 towards NE 187th Avenue/NE 18th Street mitigation

REFERENCES

1. City of Camas. *Transportation Impact Study Guidelines*. June 10, 2019.
2. Transportation Research Board. *Highway Capacity Manual, 7th Edition*. 2022.
3. Washington State Department of Transportation. *WDOT Sidra Policy Settings*. 2021.
4. Washington State Department of Transportation. *WSDOT Design Manual M 22-01.22 – Chapter 320: Traffic Analysis*. September 2024.
5. Clark County. MapsOnline, Clark County WA. GIS. https://gis.clark.wa.gov/mapsonline/index.cfm?
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7. Washington State Department of Transportation. Functional Classification Map, accessed May 2025. https://www.wsdot.wa.gov/data/tools/geoportal/?config=functionalclass
8. City of Camas. Camas 2035. https://www.cityofcamas.us/sites/default/files/fileattachments/community_development/page/5971/comprehensive_plan_camas_2035.pdf
9. Institute of Transportation Engineers. *Trip Generation Manual, 11th Edition*. September 2021.
10. Federal Highway Administration. *Manual on Uniform Traffic Control Devices (MUTCD), 11th Edition*. 2023

LIST OF APPENDICES

A. Traffic Study Scoping Documentation
B. WSDOT Crash Data
C. Traffic Count Data
D. Existing Conditions Analysis Worksheets
E. In-Process Data
F. Year 2030 Background Traffic Conditions Analysis Worksheets
G. Year 2030 Total Traffic Conditions Analysis Worksheets
H. Year 2030 Mitigated Total Traffic Conditions Analysis Worksheets
I. Turn Lane Worksheets

Appendix A: Traffic Study Scoping Documentation

KITTELSON & ASSOCIATES
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SCOPING MEMORANDUM

April 17, 2025 Project# 31552

To: James E Carothers, PE & Anita Ashton
City of Camas Community Development Engineering

Dylan Bass, Jason Lugo, & Courtney Hajda
Washington State Department of Transportation (WSDOT) Southwest Region

Craig Kathol & David Jardin
Clark County Public Works

From: Chris Brehmer, PE, Claire Dougherty, PE, & Julia Kuhn, PE

CC: Bryce Hanson, PE, LSIT, AKS Engineering & Forestry, LLC
Kevin Miller, HSR Development

RE: North Shore Village Residential Transportation Impact Study Scoping Request (PA 24-16)

This updated scoping memorandum documents the project assumptions and methodology associated with preparing a transportation impact study (TIS) for the proposed North Shore Village residential development in Camas. Details of the TIS assumptions and methodology are documented herein based on preliminary pre-application conference feedback as well as guidance in the City of Camas *Transportation Impact Study Guidelines* and the Washington State Department of Transportation (WSDOT) *Design Manual – Chapter 320 Traffic Analysis*.

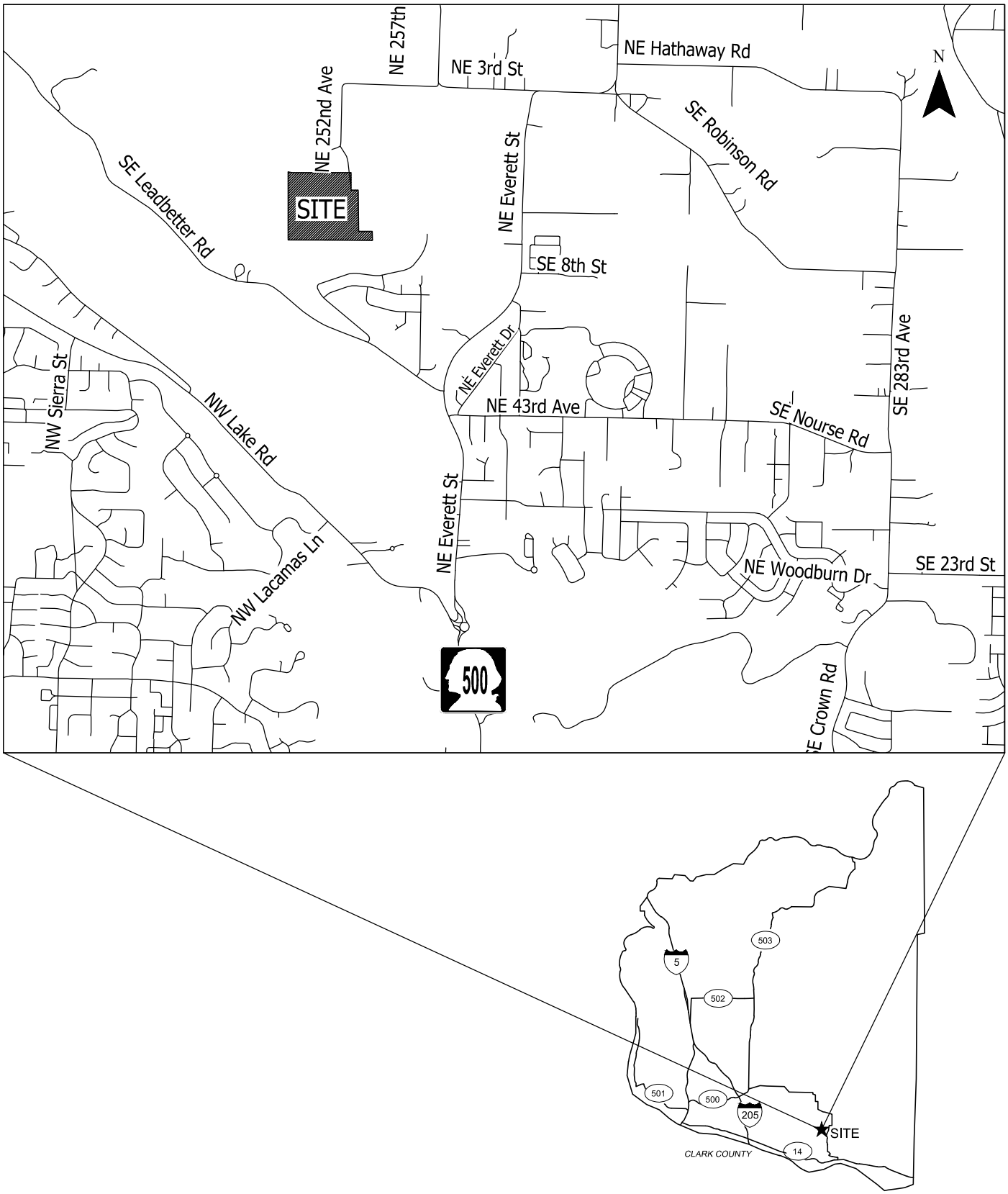
We request that you please review this material and provide us with your comments, suggestions and any questions. We will proceed with the TIS analysis once the path forward has been confirmed.

PROPOSED PROJECT

Village at North Shore - HSR Dev Mills LLC proposes to develop a 36.04-acre residential project located on the west side of NE Everett Street (State Route 500) and south of NE 3rd Street, in the vicinity of NE 252nd Avenue. The preliminary site plan includes 43 detached single-family homes, 58 attached homes (townhomes), and 128 apartments, with construction and occupancy anticipated by 2030. Longer-term, the site may also be expanded to include approximately 97,460 square feet of commercial space once roadway connectivity to the site is improved; however, this initial development phase and the focus of this TIS will be only the proposed residential units.

Figure 1 shows the site vicinity map, and Figure 2 shows a preliminary site plan.

Vehicular site access is proposed via the existing NE 252nd Avenue connection to NE 3rd Street and NE 257th Avenue. Longer-term, with future development by others, a North Shore Boulevard connection to the planned SE Everett Street/SE Everett Drive roundabout may be added, but such a connection is assumed to be outside of the timeframe for buildout (2030).



Site Vicinity Map
Camas, Washington

Figure
1

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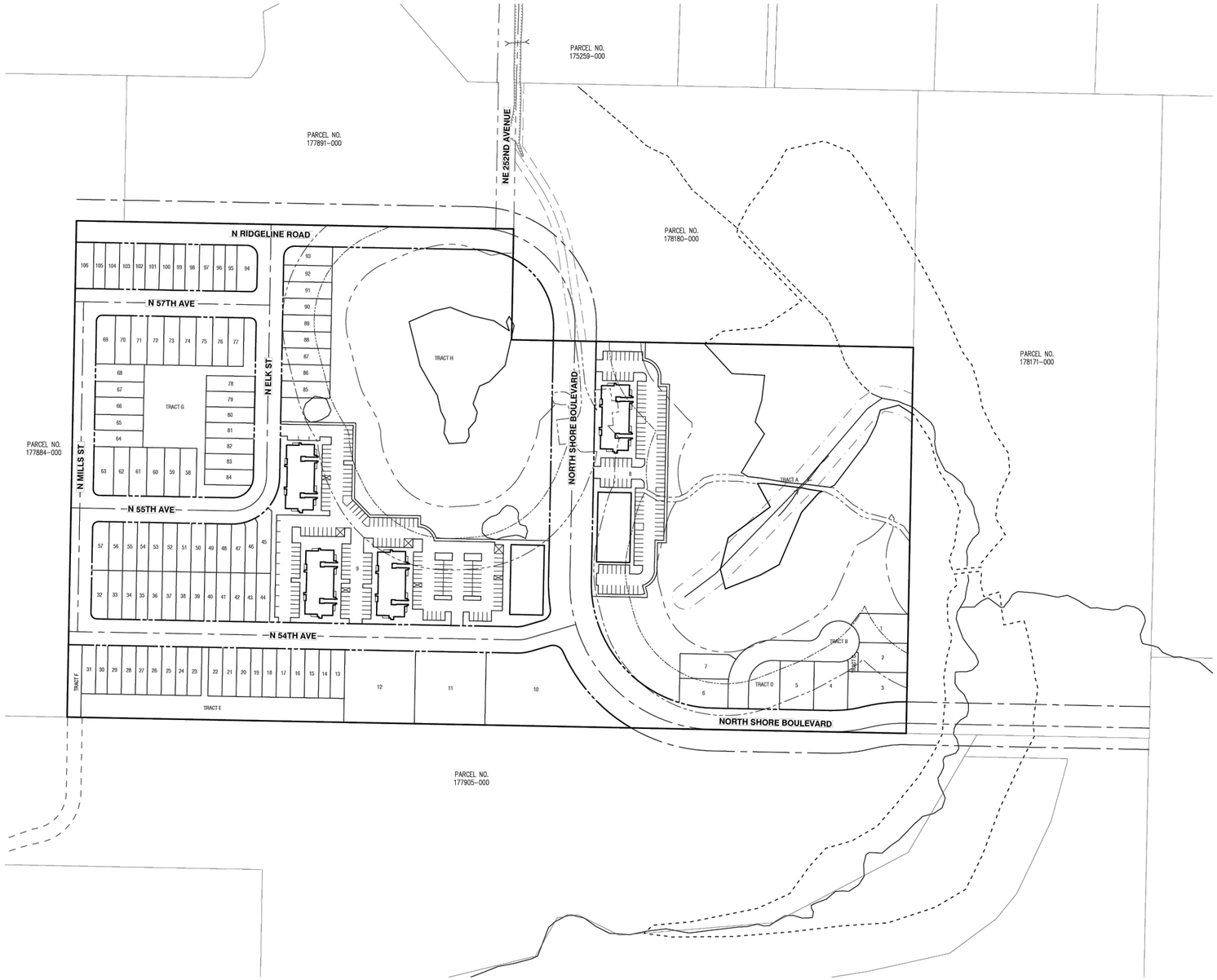

LD-NS DENSITY

GROSS AREA:	448,583 SF (10.30 AC)
CRITICAL/OPEN SPACE AREA:	317,670 SF (7.29 AC)
NET AREA:	130,913 SF (3.01 AC)

DENSITY:

MAXIMUM DENSITY (5.8 X 3.01):	18 (17.45) UNITS
MINIMUM DENSITY (4 X 3.01):	12 (12.04) UNITS
PROPOSED DETACHED UNITS:	7 UNITS
PROPOSED MULTI-FAMILY UNITS:	18 UNITS
TOTAL PROPOSED UNITS:	25

HD-NS DENSITY

GROSS SITE AREA:	723,693 SF (16.61 AC)
CRITICAL/OPEN SPACE AREA:	205,616 SF (4.72 AC)
NET AREA:	518,077 SF (11.89 AC)

DENSITY :

MAXIMUM DENSITY (18 X 11.89):	214 (214.02) UNITS
MINIMUM DENSITY (10 X 11.89):	119 (118.90) UNITS
PROPOSED MULTI-FAMILY UNITS:	48 UNITS
PROPOSED ATTACHED UNITS:	58 UNITS
PROPOSED DETACHED UNITS:	36 UNITS
TOTAL PROPOSED UNITS:	142 UNITS

MX-NS DENSITY

GROSS SITE AREA:	299,961 SF (6.89 AC)
CRITICAL/OPEN SPACE AREA:	114,028 SF (2.62 AC)
NET AREA:	185,933 SF (4.27 AC)

DENSITY :

MAXIMUM DENSITY (24 X 4.27):	103 (102.48) UNITS
MINIMUM DENSITY (10 X 4.27):	43 (42.70) UNITS
PROPOSED MULTI-FAMILY UNITS:	62 UNITS

OVERALL SITE DENSITY

GROSS SITE AREA:	1,569,697 SF (36.04 AC)
COMMERCIAL AREA:	97,460 SF (2.24 AC)
CRITICAL/OPEN SPACE AREA:	637,314 SF (14.63 AC)
NET RESIDENTIAL/MX AREA:	834,923 SF (19.17 AC)

DENSITY :

MAXIMUM DENSITY:	334 (333.95) UNITS
MINIMUM DENSITY:	174 (173.64) UNITS
PROPOSED MULTI-FAMILY UNITS:	128 UNITS
PROPOSED ATTACHED UNITS:	58 UNITS
PROPOSED DETACHED UNITS:	43 UNITS
TOTAL PROPOSED UNITS:	229 UNITS

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SCALE: 1"=100 FEET

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ORIGINAL PAGE SIZE: 22" x 34"

NOT TO SCALE

AKS ENGINEERING & FORESTRY, LLC
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ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

LAYOUT UPDATE
NORTH SHORE VILLAGE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

JOB NUMBER:	9095
DATE:	2/12/2025
DESIGNED BY:	MPA
DRAWN BY:	MPA
CHECKED BY:	BDH

EX-A

RECEIVED FROM AKS ENGINEERING AND FORESTRY, LLC: (FEBRUARY 2025)

Preliminary Site Plan
Camas, Washington

Figure
2

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ESTIMATED TRIP GENERATION

Weekday daily, AM, and PM peak hour vehicle trips for the proposed development were estimated using data from the *Trip Generation Manual, 11th Edition*, published by the Institute of Transportation Engineers (ITE), as summarized in Table 1 below. The residential trip estimates shown in Table 1 reflect fitted equation trip rates.

Table 1. Estimated Site Trip Generation

Land Use	ITE Code	Size (units)	Daily Trips	Weekday AM Peak			Weekday PM Peak		
				Total	In	Out	Total	In	Out
Detached Single-Family Homes	210	43	464	35	9	26	45	28	17
Multi-Family Low-Rise	220	128	896	63	15	48	76	48	28
Single Family Attached	215	58	391	24	6	18	31	18	13
	TOTAL TRIPS		**1,751**	**122**	**30**	**92**	**152**	**94**	**58**

ESTIMATED TRIP DISTRIBUTION PATTERN

An estimated trip distribution pattern for the planned residential land uses was developed based on review of past Southwest Washington Regional Transportation Council (RTC) modeling of nearby TAZs and review of the existing and planned roadway network in the North Shore area[1].

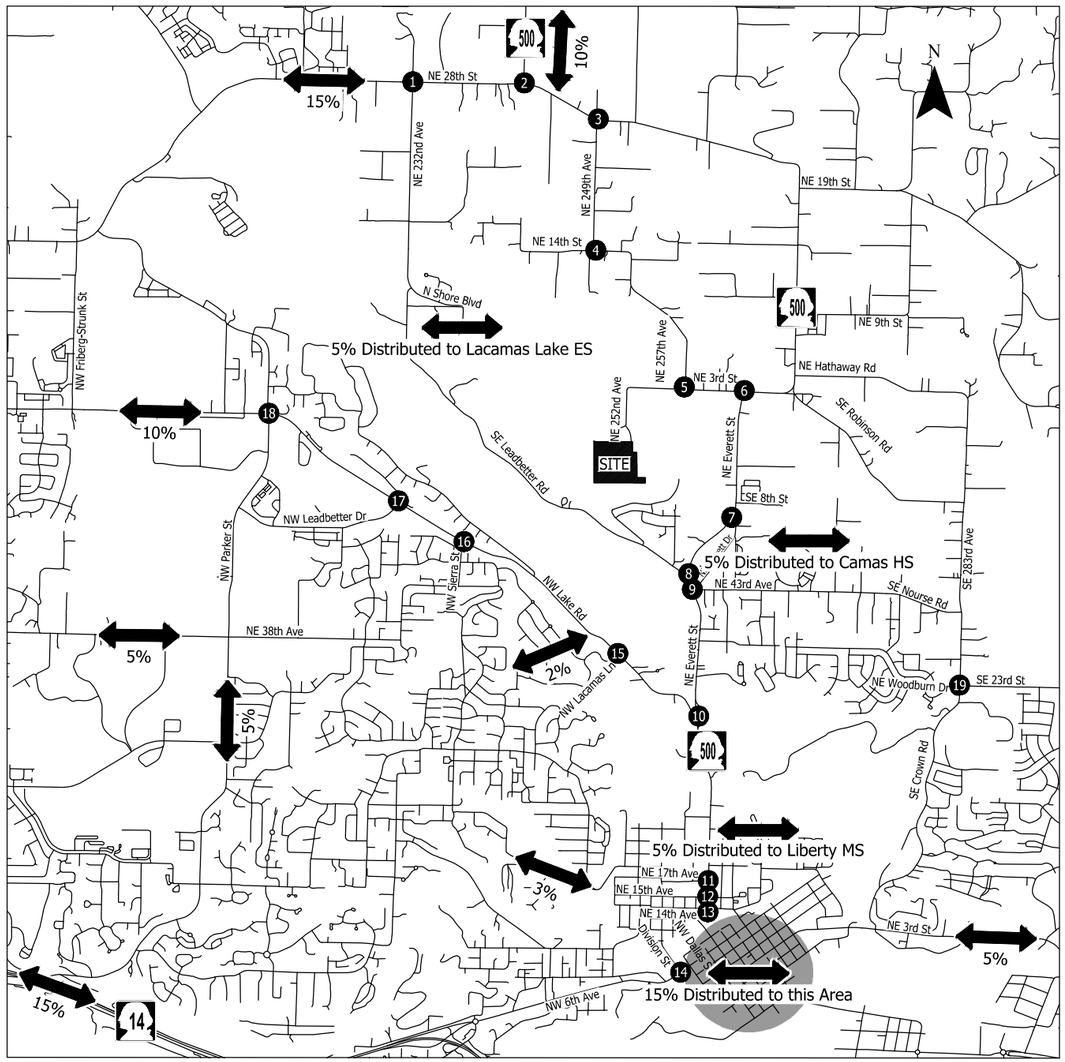
Additionally, Google Maps mapping and route planning suggestions were reviewed during peak hour time frames to better understand this tool's recommended travel routes, route travel time and route distances. Specifically, routing between the proposed site and nearby key destinations including Harmony Sports Complex, the NE 192nd Avenue and SE Mill Plain Boulevard retail corridors, and the Vancouver Mall area were reviewed during AM and PM peak hour time frames. Ultimately, for trips within 5 to 12 miles of the site, the recommended routing for northbound and westbound vehicles trips heavily favored NE 28th Street and NE Lake Road, whereas SR 14 is more often recommended by Google as a westbound route for trips exceeding 15 miles in length.

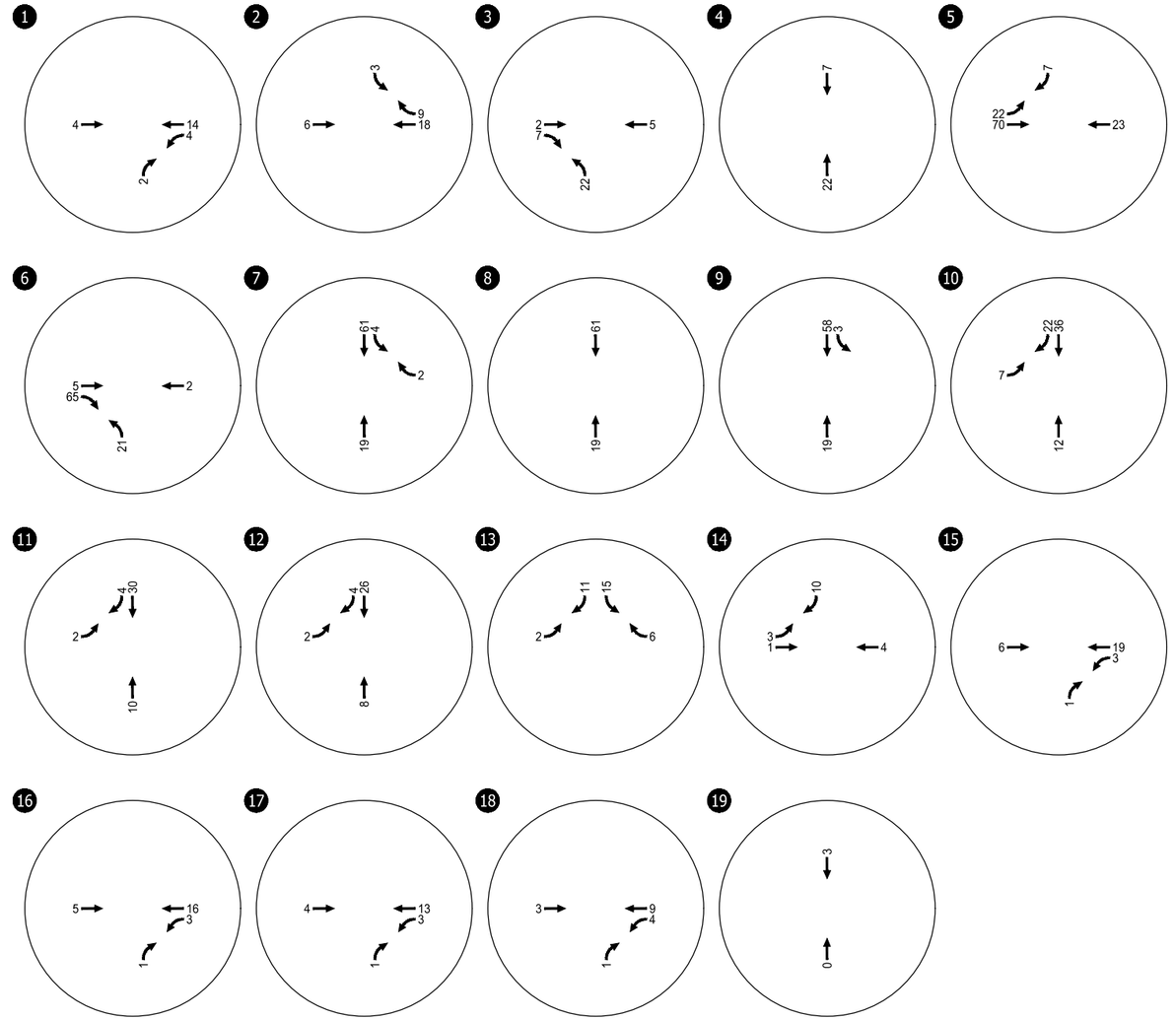
Figures 3 and 4 illustrate the estimated trip distribution pattern and corresponding new site-generated trip assignment to potential study intersections based on the trip estimates in Table 1.

[1] We note that RTC does not currently have a model fully reflective of the adopted North Shore Plan and companion roadway network as of March 2025. RTC staff indicate they will create model updates upon the City's adoption of a new Growth Management Area (GMA) and road network and completion of the County's Regional Transportation Plan updates in collaboration with communities across the County. The schedule for completion of these changes is unknown as of time this scoping memo was prepared.

North Shore Village

April 2025





Study Intersections

Weekday AM Peak Hour Trip Assignment Camas, Washington

Figure 3

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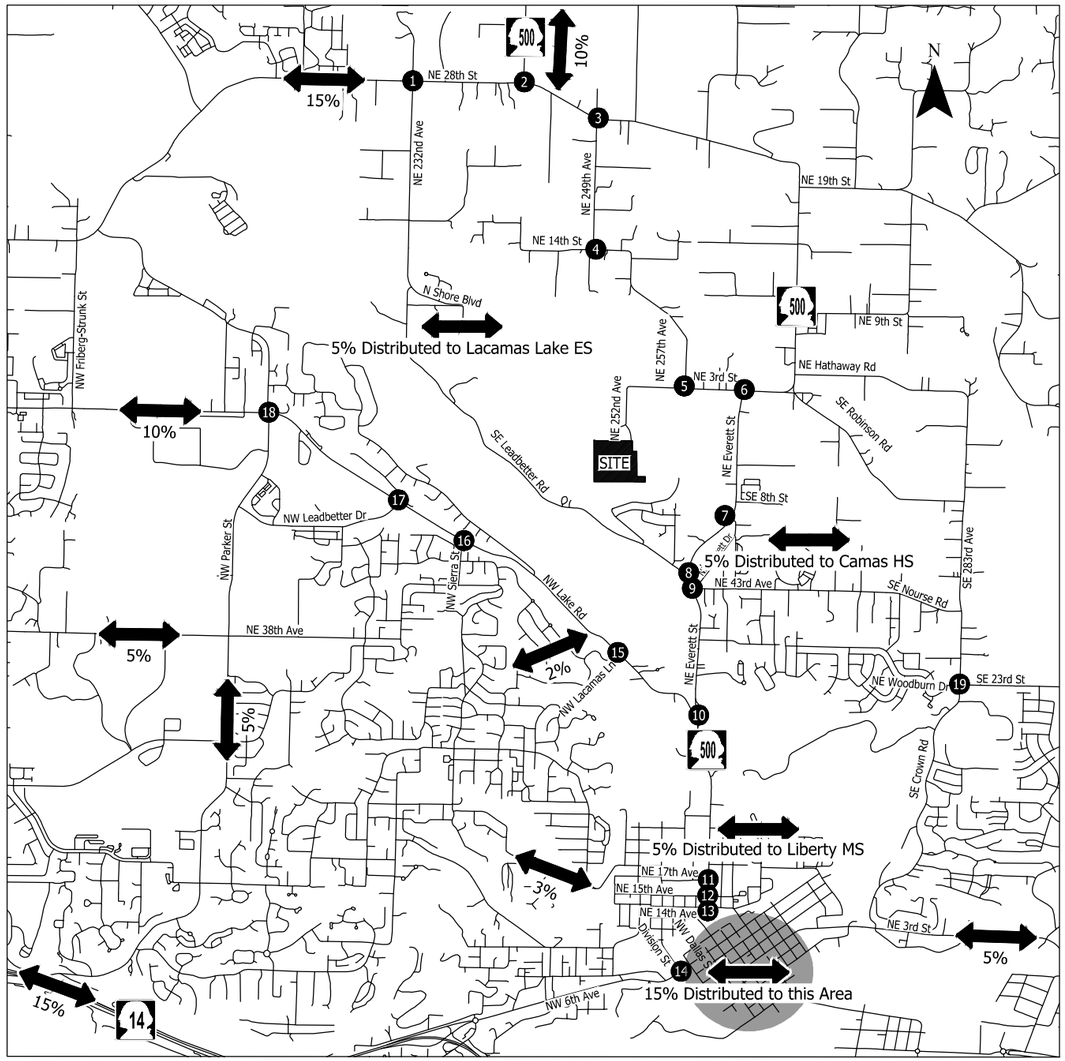
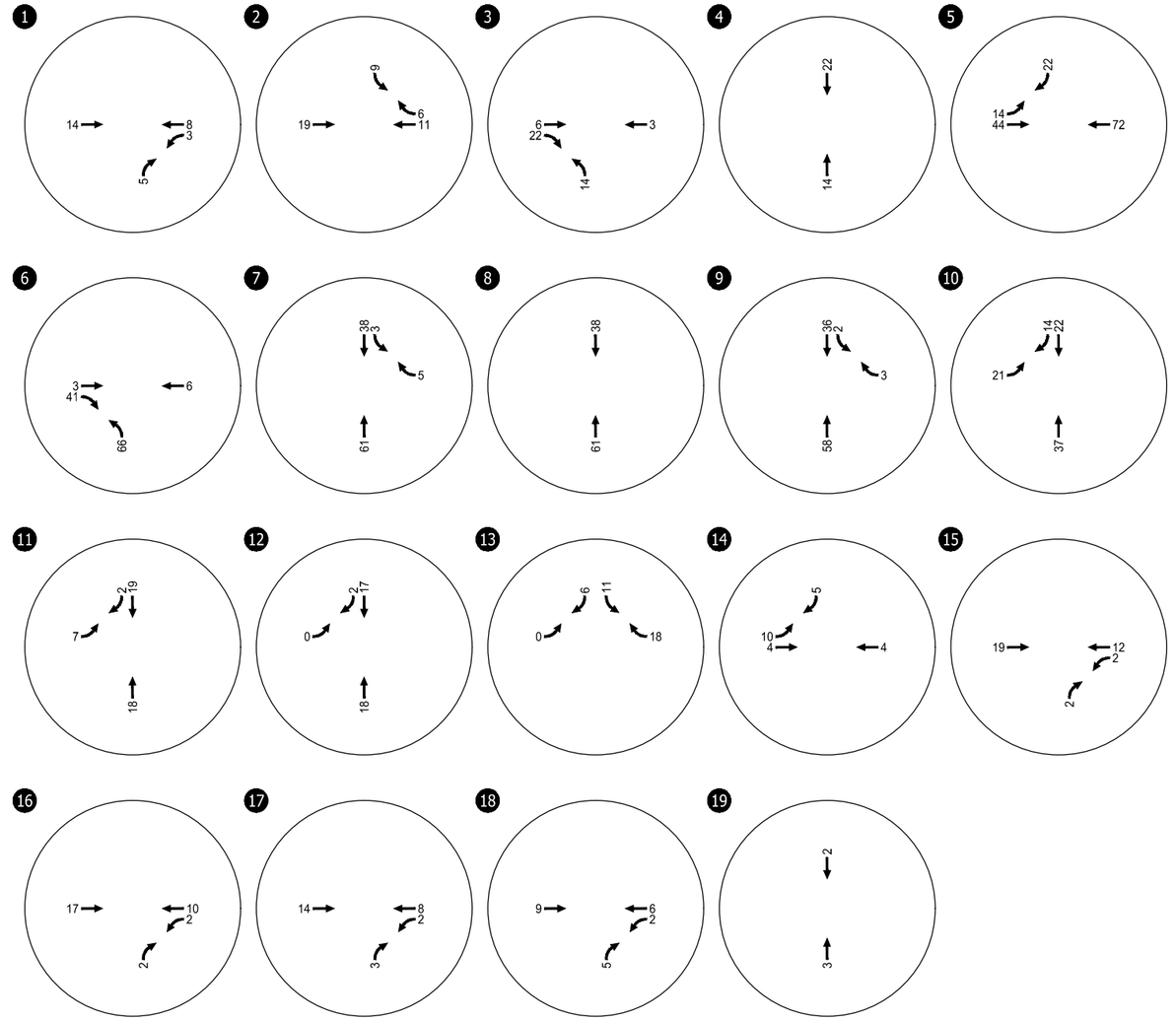
North Shore Village

April 2025





Study Intersections

Weekday PM Peak Hour Trip Assignment Camas, Washington

Figure 4

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KITTELSON & ASSOCIATES

POTENTIAL STUDY INTERSECTIONS

The City of Camas requires an intersection to be included in a TIS if 20 or more peak hour trips are added to the City intersection from the development. WSDOT generally requires WSDOT-maintained intersections be included in a TIS if 25 or more peak hour trips are added to the intersection or 10 or more trips are added to State highway approach. Clark County typically requires consideration of regionally significant intersections within a 2 mile radius for a project that generates between 51 and 250 new peak hour trips per Clark County Code Section 40.350.020.D.5.b.

Based on the identified trip thresholds, the preliminary trip distribution pattern and trip assignment outlined above, the intersections listed in Table 2 have been identified for potential inclusion in the TIS. We request City and partner agency staff review and confirm which intersections need to be addressed in the TIS.

New AM and PM peak hour counts will be collected at all listed study intersections.

Table 2. Potential Study Intersections

ID	Potential Study Intersection	Traffic Control
1	NE 232nd Ave/NE 28th St	TWSC
2	SR 500/NE 28th St	TWSC
3	SR 500/NE 249th Ave	TWSC
4	NE 249th Ave/NE 14th St	TWSC
5	NE 257th Ave/NE 3rd St	TWSC
6	SR 500/NE 3rd St	TWSC (Future Roundabout)
7	SR 500/NE Everett Dr	TWSC (Future Roundabout)
8	SR 500/SE Leadbetter Rd	TWSC
9	SR 500/NE 43rd Ave	Signalized
10	SR 500/NW Lake Rd	Roundabout
11	SR 500/NE 17th Ave	TWSC
12	SR 500/NE 15th Ave	TWSC
13	SR 500/NE 14th Ave	TWSC
14	Division St/NW 6th Ave	TWSC
15	NW Lacamas Ln/NW Lake Rd	TWSC
16	NW Sierra St/NW Lake Rd	TWSC (Future Roundabout)
17	NW Leadbetter Dr/NW Lake Rd	TWSC
18	NW Parker St/NW Lake Rd	Signalized
19	SE 283rd Ave/SE 23rd St[1]	TWSC

[1] The need to provide analysis of this intersection is subject to Clark County direction. Up to 3 weekday AM peak hour and 5 weekday PM peak hour site-generated trips are anticipated as documented later in this memorandum.

Exhibit 7 SUB25-1008

ANALYSIS METHODOLOGY

All stop-control and signalized intersection operations analysis will be completed using Synchro software and the *Highway Capacity Manual, 7th Edition* methodologies. Roundabout intersection operations analysis will be completed using Sidra software.

MOBILITY STANDARDS

The applicable City, WSDOT and Clark County mobility standards for are described below and summarized in Table 3.

City of Camas

According to the City of Camas' *Transportation Impact Study Guidelines*, a TIS is required when a proposed development generates 200 or more daily vehicle trips. As Table 1 shows, this threshold has been met for this project, triggering a TIS. Camas uses level of service (LOS) for traffic operations. Minor and local streets must meet LOS C standards, and collector and arterial streets must meet LOS D standards. If site traffic contributes to traffic operations that exceed the LOS D standard, then the TIS recommendations need to include mitigations or roadways improvements.

SR 500

Chapter 320 of WSDOT's *Design Manual* covers traffic impact analysis on state facilities.

The Urban non-National Highway System facilities (non-HSS standard) established by the Southwest Washington RTC for Clark County is LOS E and applies to study intersections 6 through 12[2]. The Rural non-HSS standard is LOS C, which based on WSDOT mapping applies to intersections 2 and 3.

Clark County

Clark County Code (CCC) 40.350.020.G specifies that the LOS standard is LOS E if warrants are not met. If warrants are met, unsignalized intersections of regional significance shall be LOS D or better. This standard is applicable to intersection 1.

We request Clark County guidance on the LOS standard for routes that are not regionally significant. Because the Clark County *Arterial Atlas* identifies NE 249th Avenue, NE 3rd Street and NE 257th Avenue as Minor Roads, these do not appear to be considered Regionally Significant roadways. We request County guidance on relevant LOS standard for these intersections (study intersections 4 and 5).

[2] Regional Transportation Planning Organizations (RTPOs) have the authority to set LOS thresholds for non-Highways of Statewide Significance (HSS). The Urban non-HSS standard established by RTC for Clark County is LOS E, and the Rural non-HSS standard is LOS C. https://geo.wa.gov/datasets/WSDOT::wsdot-roadway-data-urban-rural/

Table 3. Applicable Mobility Standards

ID	Potential Study Intersection	Traffic Control	Jurisdictional Authority	Facility Designation	Operating Requirement
1	NE 232nd Ave/NE 28th St	TWSC	Clark County	Rural Major Collector	LOS E
2	SR 500/NE 28th St	TWSC	RTC[1]	Rural non-HSS	LOS C
3	SR 500/NE 249th Ave	TWSC	RTC[1]	Rural non- HSS	LOS C
4	NE 249th Ave/NE 14th St	TWSC	Clark County	Minor Road	LOS E[2]
5	NE 257th Ave/NE 3rd St	TWSC	Clark County	Minor Road	LOS E[2]
6	SR 500/SE 3rd St	TWSC (Future Roundabout)	RTC[1]	Urban non-HSS	LOS E
7	SR 500/NE Everett Dr	TWSC (Future Roundabout)	RTC[1]	Urban non-HSS	LOS E
8	SR 500/ SE Leadbetter Rd	TWSC	RTC[1]	Urban non-HSS	LOS E
9	SR 500/NE 43rd Ave	Signalized	RTC[1]	Urban non-HSS	LOS E
10	SR 500/NW Lake Rd	Roundabout	RTC[1]	Urban non-HSS	LOS E
11	SR 500/NE 17th Ave	TWSC	RTC[1]	Urban non-HSS	LOS E
12	SR 500/NE 15th Ave	TWSC	RTC[1]	Urban non-HSS	LOS E
13	SR 500/NE 14th Ave	TWSC	WSDOT	Urban	LOS D
14	Division St/NW 6th Ave	TWSC	City of Camas	City Arterial	LOS D
15	NW Lacamas Ln/ NW Lake Rd	TWSC	City of Camas	City Arterial	LOS D
16	NW Sierra St/ NW Lake Rd	TWSC (Future Roundabout)	City of Camas	City Arterial	LOS D
17	NW Leadbetter Dr/ NW Lake Rd	TWSC	City of Camas	City Arterial	LOS D
18	NW Parker St/ NW Lake Rd	Signalized	City of Camas	City Arterial	LOS D
19	SE 283rd Ave/SE 23rd St	TWSC	Clark County	Urban Collector	LOS E

TWSC = Two-way Stop Control
[1]RTPOs have the authority to set LOS thresholds for non-Highways of Statewide Significance (HSS). The Urban non-HSS standard established by RTC for Clark County is LOS E.
[2]Because the Clark County Arterial Atlas identifies NE 249th Avenue, NE 3rd Street and NE 257th Avenue as Minor Roads, these do not appear to be considered Regionally Significant roadways that would be subject to LOS E standard. We request County guidance on relevant LOS standard for these intersections.

STUDY TIME PERIODS

We propose to analyze one-hour peak within the weekday morning (7-9 AM) and weekday PM (4-6 PM) commuter peak periods. The following analysis scenarios will be analyzed assuming project buildout by the year 2030:

- Year 2025 existing traffic conditions – weekday AM and weekday PM peak hours.
- Year 2030 background traffic conditions (including background growth and identified in-process developments, but not including any site-generated traffic volumes related to the proposed development) – weekday AM and weekday PM peak hours.
- Year 2030 total traffic conditions (including site-generated traffic volumes to the proposed development) – weekday AM and weekday PM peak hours.

IN-PROCESS DEVELOPMENTS AND BACKGROUND GROWTH RATES

Based on previous development projects in Camas, we propose to assume a two percent annual background growth rate along SR 500 north of NE Everett Drive (Study intersections 2-3 and 6-7), as well as to the County's intersections (Study intersections 1, 4, 5 and 19). The remaining study intersections will not have a growth rate applied but will have in-process development trips added.

The following are known in-process developments for which site trips for each will be included at all impacted study intersections as background vehicular trips:

- Camas Woods and Camas Woods 2, located east of SR 500 between Everrett Drive and NE 8th Street;
- Camas Heights, located on the north side of NE 28th Street and west of NE 232nd Avenue;
- Green Mountain Estates, located on the north of NE 28th Street east of NE 222nd Avenue;
- Green Mountain Planned Residential Development (PRD), located east of NE Ingle Road north of NE 28th Street;
- Lacamas Hills, located on the north side of Leadbetter Road west of Everett Road (formerly known as CJ Dens East Subdivision); and,
- Monte Verde Subdivision, located on the south side of NE 28th Street west of NE 232nd Avenue.

We ask that City and WSDOT staff identify and provide any additional relevant in-process developments to be included in the background traffic conditions analysis.

BACKGROUND TRANSPORTATION IMPROVEMENTS

As noted in Tables 2 and 3, there are three potential study intersections slated for near-term reconstruction as single lane roundabouts. Considering the 2030 buildout year, the TIS will assume these roundabout improvements are in-place. These locations are:

- SR 500/SE 3rd St (WSDOT delivered)

- SR 500/NE Everett Dr (Private development delivered)
- NW Sierra St/NW Lake Rd (City delivered)

We ask that the City and WSDOT staff identify and provide any additional funded transportation improvement projects that should be assumed in place for the background traffic conditions analysis.

CITY OF VANCOUVER PROPORTIONAL SHARE INTERSECTIONS

We will track site-generated trips through impacted City of Vancouver proportional share intersections and summarize those findings in tabular form as part of the final report.

NEXT STEPS

We request that staff please review and provide direction on the potential study intersections, intersection analysis periods, trip generation estimates and trip distribution pattern in particular. Please contact us if you have any questions as you review this material.

Appendix B: WSDOT Crash Data

OFFICER REPORTED CRASHES THAT OCCURRED *at* OR *in the vicinity of* MULTIPLE INTERSECTIONS IN CITH OF CAMAS & CLARK COUNTY

01/01/2020 - 12/31/2024 *See 2nd tab below for road info*

Under 23 U.S. Code § 148 and 23 U.S. Code § 407, safety data, reports, surveys, schedules, lists compiled or collected for the purpose of identifying, evaluating, or planning the safety enhancement of potential crash sites, hazardous roadway conditions, or railway-highway crossings are not subject to discovery or admitted into evidence in a Federal or State court proceeding or considered for other purposes in any action for damages arising from any occurrence at a location mentioned or addressed in such reports, surveys, schedules, lists, or data.

KAI Intersection #	KAI Assigned	JURISDICTION	COUNTY	CITY	PRIMARY TRAFFIC WAY	MILEPOST	BLOCK NUMBER	INTERSECTING TRAFFIC WAY	INTERSECTING COUNTY ROAD MP	DIST FROM REF POINT	MI or FT	COMP DIR FROM REF POINT	REFERENCE POINT NAME	SR ONLY HISTORY / SUSPENSE IND	REPORT NUMBER	DATE	TIME	MOST SEVERE INJURY TYPE	KAI - Crash Severity	# INJ	# FAT	# PEDS	# BIKES	VEHICLE 1 TYPE	VEHICLE 2 TYPE	JUNCTION RELATIONSHIP	WEATHER	ROADWAY SURFACE CONDITION
1	NE 232nd Ave/NE 28th St	County	Clark		93350	3.090								No	EA84265	11/24/2020	15:25	Possible Injury	Injury	2	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	Driveway Related but Not a	Overcast	Dry
1	NE 232nd Ave/NE 28th St	County	Clark		93350	3.090		30950	2.890					No	EB10619	02/28/2021	16:35	No Apparent Injury	PDO	0	0	0	1	Pickup,Panel Truck or Vanette	under 10,000 lb	At Intersection and Related	Clear	Dry
1	NE 232nd Ave/NE 28th St	County	Clark		93350	3.090		30950	2.890					No	EB42601	06/15/2021	18:31	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	At Intersection and Related	Raining	Wet
1	NE 232nd Ave/NE 28th St	County	Clark		93350	3.090		30950	2.890					No	EB53840	07/20/2021	15:10	Suspected Minor Injury	Injury	3	0	0	0	Passenger Car	Pickup,Panel Truck or Vane	At Intersection and Related	Clear	Dry
1	NE 232nd Ave/NE 28th St	County	Clark		93350	3.090		30950	2.890					No	EB69640	09/01/2021	11:59	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	under 10,000 lb	At Intersection and Related	Clear	Dry
1	NE 232nd Ave/NE 28th St	County	Clark		93350	3.090		30950	2.890					No	ED64349	05/21/2023	16:55	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	At Intersection and Related	Overcast	Dry
1	NE 232nd Ave/NE 28th St	County	Clark		93350	3.090		30950	2.890					No	EE74231	02/18/2024	15:52	Unknown	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	At Intersection and Related	Overcast	Unknown
1	NE 232nd Ave/NE 28th St	County	Clark		30950	2.890		93350	3.090					No	EE81852	05/28/2024	14:30	No Apparent Injury	PDO	0	0	0	0	Truck & Trailer		At Intersection and Related	Overcast	Dry
2	SR 500/NE 28th St	State Ro	Clark		500	13.85								No	EB67310	09/03/2021	08:40	Suspected Minor Injury	Injury	1	0	0	0	Pickup,Panel Truck or Vanette	under 10,000 lb	Not at Intersection and Not	Clear	Dry
2	SR 500/NE 28th St	State Ro	Clark		500	13.84								No	EB87073	11/06/2021	15:55	No Apparent Injury	PDO	0	0	0	0	Passenger Car	Passenger Car	At Driveway within Major In	Raining	Wet
2	SR 500/NE 28th St	State Ro	Clark		500	13.84								No	ED77436	07/04/2023	16:05	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	At Intersection and Related	Clear or Partly C	Dry
2	SR 500/NE 28th St	State Ro	Clark		500	13.84								No	EF31345	10/28/2024	07:59	No Apparent Injury	PDO	0	0	0	0	Passenger Car	Pickup,Panel Truck or Vane	At Driveway within Major In	Overcast	Wet
2	SR 500/NE 28th St	County	Clark		93350	3.580								No	EA17727	02/21/2020	21:32	Possible Injury	Injury	1	0	0	0	Passenger Car		Not at Intersection and Not	Clear	Dry
3	SR 500/NE 249th Ave	State Ro	Clark		500	14.20								No	EA12626	01/21/2020	02:36	No Apparent Injury	PDO	0	0	0	0	Passenger Car		Not at Intersection and Not	Raining	Wet
3	SR 500/NE 249th Ave	State Ro	Clark		500	14.20								No	EA23775	03/06/2020	10:15	No Apparent Injury	PDO	0	0	0	0	Passenger Car	Pickup,Panel Truck or Vane	At Driveway	Overcast	Wet
3	SR 500/NE 249th Ave	State Ro	Clark		500	14.20								No	EA51132	07/29/2020	23:49	Suspected Minor Injury	Injury	1	0	0	0	Motorcycle		At Intersection and Not Rel	Clear	Dry
3	SR 500/NE 249th Ave	State Ro	Clark		500	14.21								No	EC04351	12/23/2021	08:12	No Apparent Injury	PDO	0	0	0	0	Passenger Car	Pickup,Panel Truck or Vane	At Intersection and Related	Raining	Wet
3	SR 500/NE 249th Ave	State Ro	Clark		500	14.22								No	ED39574	02/27/2023	16:30	No Apparent Injury	PDO	0	0	0	0	Passenger Car		Not at Intersection and Not	Clear	Wet
6	SR 500/SE 3rd St	State Ro	Clark		500	16.36								No	EA79205	10/28/2020	22:10	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	under 10,000 lb	At Intersection and Not Rel	Clear	Dry
6	SR 500/SE 3rd St	State Ro	Clark		500	16.36								No	EC75152	08/17/2022	19:00	No Apparent Injury	PDO	0	0	0	0	Passenger Car		At Intersection and Not Rel	Clear	Dry
6	SR 500/SE 3rd St	State Ro	Clark		500	16.36								No	ED51725	04/12/2023	17:53	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	At Intersection and Not Rel	Clear	Dry
6	SR 500/SE 3rd St	State Ro	Clark		500	16.36								No	EE82275	05/29/2024	23:10	No Apparent Injury	PDO	0	0	0	0	Passenger Car		At Intersection and Not Rel	Clear	Dry
7	SR 500/NE Everett Dr	State Ro	Clark	Camas	500	16.95								No	EA37248	05/30/2020	14:02	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	under 10,000 lb	At Intersection and Not Rel	Overcast	Dry
7	SR 500/NE Everett Dr	State Ro	Clark	Camas	500	16.94								No	EC39091	04/12/2022	16:39	No Apparent Injury	PDO	0	0	0	0	Passenger Car		At Intersection and Not Rel	Overcast	Wet
7	SR 500/NE Everett Dr	State Ro	Clark	Camas	500	16.94								No	EF48090	12/18/2024	12:35	Suspected Minor Injury	Injury	2	0	0	0	Passenger Car	Pickup,Panel Truck or Vane	At Intersection and Related	Overcast	Wet
8	SR 500/SE Leadbetter Rd	State Ro	Clark	Camas	500	17.26								No	EC88859	09/29/2022	15:12	No Apparent Injury	PDO	0	0	0	0	Passenger Car	Passenger Car	Not at Intersection and Not	Overcast	Dry
8	SR 500/SE Leadbetter Rd	State Ro	Clark	Camas	500	17.26								No	EC94672	10/17/2022	11:32	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	At Intersection and Related	Clear or Partly C	Dry
8	SR 500/SE Leadbetter Rd	State Ro	Clark	Camas	500	17.26								No	EE99646	07/23/2024	14:39	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	At Intersection and Related	Clear or Partly C	Dry
9	SR 500/NE 43rd Ave	State Ro	Clark	Camas	500	17.33								No	EC02446	12/14/2021	08:40	No Apparent Injury	PDO	0	0	0	0	Passenger Car		At Intersection and Related	Clear	Ice
9	SR 500/NE 43rd Ave	State Ro	Clark	Camas	500	17.33								No	EC13028	01/11/2022	08:25	Suspected Minor Injury	Injury	3	0	0	0	Pickup,Panel Truck or Vanette	Passenger Car	At Intersection and Related	Raining	Wet
9	SR 500/NE 43rd Ave	State Ro	Clark	Camas	500	17.33								No	EF15278	09/13/2024	22:45	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	At Intersection and Related	Clear or Partly C	Dry
10	SR 500/NW Lake Rd	State Ro	Clark	Camas	500	17.94								No	EB68144	09/10/2021	22:38	No Apparent Injury	PDO	0	0	0	0	Passenger Car	Pickup,Panel Truck or Vane	Circulating Roundabout	Clear	Dry
10	SR 500/NW Lake Rd	State Ro	Clark	Camas	500	17.95								No	ED77972	07/09/2023	18:23	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Passenger Car	Entering Roundabout	Clear or Partly C	Dry
10	SR 500/NW Lake Rd	State Ro	Clark	Camas	500	17.96								No	EE12985	10/23/2023	17:36	Possible Injury	Injury	1	0	0	0	Pickup,Panel Truck or Vanette	Passenger Car	Entering Roundabout	Clear	Dry
10	SR 500/NW Lake Rd	State Ro	Clark	Camas	500	17.95								No	EE59686	03/10/2024	18:46	No Apparent Injury	PDO	0	0	0	0	Passenger Car		Circulating Roundabout	Raining	Wet
10	SR 500/NW Lake Rd	State Ro	Clark	Camas	500	17.94								No	EE70253	03/21/2024	23:58	Suspected Minor Injury	Injury	1	0	0	0	Pickup,Panel Truck or Vanette	under 10,000 lb	Circulating Roundabout	Clear	Dry
10	SR 500/NW Lake Rd	State Ro	Clark	Camas	500	17.95								No	EE76103	05/11/2024	14:27	Possible Injury	Injury	1	0	0	0	Passenger Car	Passenger Car	Entering Roundabout	Clear	Dry
10	SR 500/NW Lake Rd	State Ro	Clark	Camas	500	17.95								No	EF44810	12/10/2024	18:11	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	Entering Roundabout	Clear	Dry
10	SR 500/NW Lake Rd	State Ro	Clark	Camas	500	17.95								No	EF45423	12/12/2024	18:14	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Passenger Car	Entering Roundabout	Raining	Wet
10	SR 500/NW Lake Rd	State Ro	Clark	Camas	500	17.84								No	EA22073	03/09/2020	09:33	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	Not at Intersection and Not	Clear	Dry
10	SR 500/NW Lake Rd	State Ro	Clark	Camas	500	17.90								No	EA87306	12/07/2020	08:30	No Apparent Injury	PDO	0	0	0	0	Passenger Car	Pickup,Panel Truck or Vane	At Intersection and Not Rel	Clear	Dry
10	SR 500/NW Lake Rd	State Ro	Clark	Camas	500	17.85								No	EE48959	02/04/2024	19:41	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	Not at Intersection and Not	Clear	Dry
10	SR 500/NW Lake Rd	State Ro	Clark	Camas	500	17.89								No	EF20538	09/30/2024	19:14	Possible Injury	Injury	1	0	0	0	Passenger Car	Pickup,Panel Truck or Vane	Not at Intersection and Not	Clear	Dry
12	SR 500/NE 15th Ave	City Str	Clark	Camas	NE 15TH AVE		500			43	F	E	NE EVER	No	EA41160	06/17/2020	18:45	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	At Driveway	Clear or Partly C	Dry
12	SR 500/NE 15th Ave	State Ro	Clark	Camas	500	18.73								No	EB24372	04/22/2021	15:53	No Apparent Injury	PDO	0	0	0	0	Passenger Car		Not at Intersection and Not	Clear	Dry
12	SR 500/NE 15th Ave	State Ro	Clark	Camas	500	18.75								No	EE31626	11/07/2023	16:17	Suspected Minor Injury	Injury	1	0	0	0	Passenger Car	Passenger Car	At Intersection and Related	Overcast	Wet
13	SR 500/NE 14th Ave	State Ro	Clark	Camas	500	18.80								No	EB52359	07/27/2021	16:59	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	under 10,000 lb	At Intersection and Related	Clear	Dry
13	SR 500/NE 14th Ave	State Ro	Clark	Camas	500	18.80								No	EB68471	09/16/2021	16:22	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	School Bus	At Intersection and Related	Clear or Partly C	Dry
13	SR 500/NE 14th Ave	State Ro	Clark	Camas	500	18.80								No	EC10091	01/06/2022	17:26	No Apparent Injury	PDO	0	0	0	0	Passenger Car	Pickup,Panel Truck or Vane	At Intersection and Related	Clear or Partly C	Wet
13	SR 500/NE 14th Ave	State Ro	Clark	Camas	500	18.80								No	EC28645	03/01/2022	05:30	No Apparent Injury	PDO	0	0	0	0	Passenger Car	Passenger Car	At Intersection and Related	Raining	Wet
14	Division St/NW 6th Ave	City Str	Clark	Camas	NW 6TH AVE		141	DIVISION ST						No	EB48003	07/13/2021	13:34	No Apparent Injury	PDO	0	0	0	0	Passenger Car	Pickup,Panel Truck or Vane	At Intersection and Related	Clear or Partly C	Dry
14	Division St/NW 6th Ave	City Str	Clark	Camas	NW 6TH AVE		141	DIVISION ST						No	EB74074	10/02/2021	08:00	Possible Injury	Injury	1	0	0	0	Passenger Car		At Intersection and Related	Overcast	Dry
14	Division St/NW 6th Ave	City Str	Clark	Camas	DIVISION ST		201	NE 6TH AVE						No	ED76877	07/02/2023	12:19	Suspected Minor Injury	Injury	1	0	0	1	Pickup,Panel Truck or Vanette	under 10,000 lb	At Intersection and Related	Clear	Dry
14	Division St/NW 6th Ave	City Str	Clark	Camas	NW 6TH AVE		141	DIVISION ST						No	ED88447	08/10/2023	15:58	No Apparent Injury	PDO	0	0	0	0	Passenger Car	Pickup,Panel Truck or Vane	At Intersection and Related	Clear or Partly C	Dry
14	Division St/NW 6th Ave	City Str	Clark	Camas	NW 6TH AVE		141	DIVISION ST						No	EE26307	12/03/2023	08:07	No Apparent Injury	PDO	0	0	0	0	Passenger Car	Pickup,Panel Truck or Vane	At Intersection and Related	Raining	Wet
14	Division St/NW 6th Ave	City Str	Clark	Camas	DIVISION ST		201	NW 6TH AVE						No	EF44133	12/09/2024	17:28	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Passenger Car	At Intersection and Related	Clear	Dry
15	NW Lacamas Ln/NW Lake Rd	City Str	Clark	Camas	NW LAKE RD		500			100	F	NW	NW LAC	No	EA55174	08/09/2020	16:28	Dead on Arrival	Fatal	4	1	0	0	Passenger Car	Passenger Car	Not at Intersection and Not	Clear	Dry
15	NW Lacamas Ln/NW Lake Rd	City Str	Clark	Camas	NW LAKE RD		1299	NW LACAMAS LN						No	EB29220	05/10/2021	19:03	No Apparent Injury	PDO	0	0	0	0	Passenger Car		At Intersection and Related	Clear	Dry
16	NW Sierra St/NW Lake Rd	City Str	Clark	Camas	NW LAKE RD		4300	NW SIERRA ST						No	EC06334	12/27/2021	21:10	No Apparent Injury	PDO	0	0	0	0	Passenger Car	Passenger Car	At Intersection and Related	Snowing	Ice
16	NW Sierra St/NW Lake Rd	City Str	Clark	Camas	NW LAKE RD		1800			165	F	NW	NW SIER	No	ED21295	12/31/2022	17:41	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	Not at Intersection and Not	Clear	Wet
17	NW Leadbetter Dr/NW Lake Rd	City Str	Clark	Camas	NW LAKE RD		2300			139	F	SE	NW LEA	No	EA05036	01/15/2020	13:17	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	under 10,000 lb	Not at Intersection and Not	Overcast	Dry
17	NW Leadbetter Dr/NW Lake	City Str	Clark	Camas	NW LAKE RD		2400			83	F	SE	NW LEA	No	EC22918	02/13/2022	18:26	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	under 10,000 lb	Not at Intersection and Not	Clear or Partly C	Dry
17	NW Leadbetter Dr/NW Lake	City Str	Clark	Camas	NW LAKE RD		2531	NW LEADBETTER BLVD						No	EE76102	05/10/2024	13:00	Suspected Minor Injury	Injury	1	0	0	0	Pickup,Panel Truck or Vanette	Passenger Car	At Intersection and Related	Clear or Partly C	Dry
18	NW Parker St/NW Lake Rd	City Str	Clark	Camas	NW LAKE RD		3716	NW PARKER ST						No	EB35916	06/03/2021	10:12	Possible Injury	Injury	1	0	0	0	Passenger Car	Pickup,Panel Truck or Vane	At Intersection and Related	Clear or Partly C	Dry
18	NW Parker St/NW Lake Rd	City Str	Clark	Camas	NW LAKE RD		3716	NW PARKER ST						No	EC17085	01/26/2022	14:40	Possible Injury	Injury	1	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	At Intersection and Related	Clear	Dry
18	NW Parker St/NW Lake Rd	City Str	Clark	Camas	NW LAKE RD		3716	NW PARKER ST						No	EC85934	09/21/2022	08:53	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Passenger Car	At Intersection and Related	Clear or Partly C	Dry
18	NW Parker St/NW Lake Rd	City Str	Clark	Camas	NW LAKE RD		3600			80	F	E	NW PAR	No	EC92262	10/10/2022	11:26	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	Intersection Related but Not	Clear	Dry
18	NW Parker St/NW Lake Rd	City Str	Clark	Camas	NW LAKE RD		3716	NW PARKER ST						No	ED14248	11/16/2022	16:55	No Apparent Injury	PDO	0	0	0	0	Passenger Car	Pickup,Panel Truck or Vane	At Intersection and Related	Clear or Partly C	Dry
18	NW Parker St/NW Lake Rd	City Str	Clark	Camas	NW PARKER ST			NW LAKE RD						No	EE22702	11/16/2023	09:50	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Pickup,Panel Truck or Vane	At Intersection and Related	Clear or Partly C	Dry
18	NW Parker St/NW Lake Rd	City Str	Clark	Camas	NW LAKE RD		3716	NW PARKER ST						No	EF15111	09/08/2024	20:40	Suspected Minor Injury	Injury	5	0	0	0	Passenger Car	Pickup,Panel Truck or Vane	At Intersection and Related	Clear or Partly C	Dry
18	NW Parker St/NW Lake Rd	City Str	Clark	Camas	NW PARKER ST			NW LAKE RD						No	EF18541	09/22/2024	16:28	No Apparent Injury	PDO	0	0	0	0	Pickup,Panel Truck or Vanette	Passenger Car	At Intersection and Related	Clear or Partly C	Dry
19	SE 283rd Ave/SE 23rd St	City Str	Clark	Camas	SE 283RD A	0		SE 23RD ST						No	EA13156	02/07/2020	20:53	No Apparent Injury	PDO	0	0	0	0	Passenger Car		At Intersection and Not Rel	Clear	Dry
19	SE 283rd Ave/SE 23rd St	City Str	Clark	Camas	SE 23RD ST	28475		SE 283RD AVE						No	EE22703	11/10/2023	16:33	Suspected Minor Injury	Injury	1	0	0	0	Motorcycle		At Intersection and Related	Overcast	Dry

LIGHTING CONDITION	KAI - Collision Type	FIRST COLLISION TYPE / OBJECT STRUCK	VEHICLE 1 ACTION	VEHICLE 2 ACTION	VEHICLE 1 COMPASS DIRECTION FROM	VEHICLE 1 COMPASS DIRECTION TO	VEHICLE 2 COMPASS DIRECTION FROM	VEHICLE 2 COMPASS DIRECTION TO	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)
Daylight	Rear End	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	East	West	Vehicle Stopped	Vehicle Stopped	Follow Too Closely			None
Daylight	Ped/Bike	Vehicle Strikes Pedalcyclist	Going Straight Ahead		East	West			None			
Daylight	Angle	Entering at angle	Making Right Turn	Stopped at Signal or Stop Sign	West	South	South	West	Exceeding Reas. Safe Speed			None
Daylight	Angle	Entering at angle	Making Left Turn	Going Straight Ahead	South	West	East	West	Did Not Grant RW to Vehicle	Unknown Distraction		None
Daylight	Fixed Object	Utility Pole	Going Straight Ahead		East	West			Other Contributing Circ Not Listed			
Daylight	Turning	From same direction - one right turn - one straight	Going Straight Ahead	Making Right Turn	West	East	West	South	Distracted by Adjusting Vehicle Cntrls			None
Other	Angle	Entering at angle	Going Straight Ahead	Making Left Turn	West	East	South	Northwest	None			Unknown Distraction
Daylight	Fixed Object	Utility Pole	Making Right Turn		West	South			None			
Daylight	Fixed Object	Tree or Stump (stationary)	Going Straight Ahead		East	West			Under Influence of Drugs			
Daylight	Angle	Entering at angle	Starting in Traffic Lane	Going Straight Ahead	North	South	East	West	Did Not Grant RW to Vehicle			None
Daylight	Angle	Entering at angle	Starting in Traffic Lane	Making Left Turn	West	East	West	North	Improper Turn/Merge			None
Daylight	Turning	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	North	East	South	North	Did Not Grant RW to Vehicle			None
Dark-No Street Lights	Fixed Object	Roadway Ditch	Going Straight Ahead		East	West			Exceeding Stated Speed Limit			
Dark-No Street Lights	Fixed Object	Metal Sign Post	Going Straight Ahead		West	East			Other Contributing Circ Not Listed			
Daylight	Fixed Object	Entering at angle	Making Left Turn	Going Straight Ahead	North	East	East	West	Improper Turn/Merge			None
Dark-No Street Lights	Fixed Object	Tree or Stump (stationary)	Going Straight Ahead		East	West			Exceeding Reas. Safe Speed			
Daylight	Turning	From opposite direction - all others	Going Straight Ahead	Making Right Turn	East	West	West	South	Other Contributing Circ Not Listed			None
Daylight	Fixed Object	Roadway Ditch	Negotiating a Curve		West	East			Other Contributing Circ Not Listed			
Dark-No Street Lights	Fixed Object	Metal Sign Post	Going Straight Ahead		East	West			Under Influence of Alcohol			
Daylight	Fixed Object	Roadway Ditch	Going Straight Ahead		East	South			Exceeding Reas. Safe Speed			
Daylight	Rear End	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Slowing	West	East	West	East	Follow Too Closely			Operating Recklessly or Aggressively
Dark-No Street Lights	Fixed Object	Tree or Stump (stationary)	Going Straight Ahead		East	West			Under Influence of Alcohol			
Daylight	Fixed Object	Street Light Pole or Base	Going Straight Ahead		South	North			Unknown Distraction			
Daylight	Fixed Object	Roadway Ditch	Negotiating a Curve		North	South			Under Influence of Alcohol			
Daylight	Angle	Entering at angle	Making Left Turn	Going Straight Ahead	Southeast	Southwest	Southwest	Northeast	Did Not Grant RW to Vehicle			None
Daylight	Rear End	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	North	South	North	Vehicle Stopped	Other Contributing Circ Not Listed			None
Daylight	Rear End	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	Northwest	Southeast	Vehicle Stopped	Vehicle Stopped	Other Distractions			None
Daylight	Angle	Entering at angle	Making Left Turn	Going Straight Ahead	West	North	North	South	Did Not Grant RW to Vehicle			None
Daylight	Turning	Traffic Island	Making Left Turn		North	East			None			
Daylight	Turning	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	North	East	South	North	Did Not Grant RW to Vehicle			None
Dark-Street Lights On	Rear End	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	North	South	North	Vehicle Stopped	Other Distractions			None
Dark-Street Lights On	Side Swipe	From same direction - both going straight - both moving - sideswipe	Negotiating a Curve	Negotiating a Curve	West	North	South	North	Improper Turn/Merge			None
Daylight	Angle	Entering at angle	Making Right Turn	Going Straight Ahead	South	Southeast	South	South	Improper Turn/Merge	Other Distractions		None
Daylight	Rear End	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	North	North	North	Vehicle Stopped	Follow Too Closely			None
Dusk	Fixed Object	Tree or Stump (stationary)	Negotiating a Curve		South	North			None			
Dark-Street Lights On	Fixed Object	Metal Sign Post	Other*		South	Northwest			Under Influence of Alcohol			
Daylight	Angle	Entering at angle	Merging (Entering Traffic)	Going Straight Ahead	North	Southwest	North	Southwest	Did Not Grant RW to Vehicle			None
Dark-Street Lights On	Angle	Entering at angle	Going Straight Ahead	Going Straight Ahead	South	North	West	East	Did Not Grant RW to Vehicle			None
Dark-Street Lights On	Angle	Entering at angle	Going Straight Ahead	Other*	South	North	Northeast	West	Did Not Grant RW to Vehicle			None
Daylight	Rear End	From same direction - both going straight - one stopped - rear-end	Starting in Traffic Lane	Stopped at Signal or Stop Sign	South	North	Vehicle Stopped	Vehicle Stopped	Other Distractions			None
Daylight	Rear End	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	South	North	Vehicle Stopped	Vehicle Stopped	Unknown Distraction			None
Dark-Street Lights On	Rear End	From same direction - both going straight - both moving - rear-end	Going Straight Ahead	Slowing	South	North	South	North	Under Influence of Alcohol	Follow Too Closely		None
Dark-No Street Lights	Rear End	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	South	North	South	Vehicle Stopped	Follow Too Closely			None
Daylight	Turning	From same direction - one left turn - one straight	Overtaking and Passing	Making Left Turn	East	West	East	South	Improper Passing			Improper Turn/Merge
Daylight	Fixed Object	Tree or Stump (stationary)	Going Straight Ahead		North	South			Other Contributing Circ Not Listed			
Daylight	Angle	Entering at angle	Going Straight Ahead	Going Straight Ahead	East	East	South	South	Did Not Grant RW to Vehicle			None
Daylight	Fixed Object	Fire Hydrant	Going Straight Ahead		North	South			None			
Daylight	Angle	Entering at angle	Starting in Traffic Lane	Making Left Turn	East	West	South	East	Did Not Grant RW to Vehicle			None
Dark-Street Lights On	Rear End	From same direction - both going straight - one stopped - rear-end	Stopped in Roadway	Going Straight Ahead	Vehicle Stopped	Vehicle Stopped	North	South	None			Follow Too Closely
Dark-Street Lights On	Turning	One parked--one moving	Making Left Turn	Legally Parked, Unoccupied	North	East			Exceeding Stated Speed Limit			None
Daylight	Angle	Entering at angle	Making Left Turn	Making Left Turn	North	East	West	North	Did Not Grant RW to Vehicle			None
Daylight	Fixed Object	Retaining Wall (concrete, rock, brick, etc.)	Making Left Turn		West	North			Other Contributing Circ Not Listed			
Daylight	Ped/Bike	Pedalcyclist Strikes Moving Vehicle	Stopped at Signal or Stop Sign		Vehicle Stopped	Vehicle Stopped			None			
Daylight	Turning	From same direction - all others	Making U-Turn	Going Straight Ahead	South	South	West	West	Improper U-Turn	Did Not Grant RW to Vehicle	Unknown Distraction	None
Daylight	Rear End	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped in Roadway	Northwest	East	Vehicle Stopped	Vehicle Stopped	Other Contributing Circ Not Listed	Other Distractions		None
Dark-Street Lights On	Rear End	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	Northwest	Southeast	Northwest	Vehicle Stopped	Under Influence of Alcohol			None
Daylight	Turning	From opposite direction - both moving - head-on	Negotiating a Curve	Negotiating a Curve	East	West	West	East	Unknown Distraction			None
Daylight	Fixed Object	Linear Curb	Making Left Turn		East	South			Exceeding Reas. Safe Speed	Unknown Distraction		
Dark-Street Lights On	Angle	Entering at angle	Making Right Turn	Stopped at Signal or Stop Sign	West	South	Vehicle Stopped	Vehicle Stopped	Overcorrecting / Oversteering	Failing to Signal		None
Dark-Street Lights On	Rear End	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	Northwest	Southeast	Northwest	Southeast	Lost in Thought / Day Dreaming	Follow Too Closely		None
Daylight	Other	Vehicle Strikes Deer	Going Straight Ahead		West	East			None			
Dark-Street Lights On	Other	Vehicle Strikes Deer	Going Straight Ahead		West	East			None			
Daylight	Angle	Entering at angle	Starting in Traffic Lane	Going Straight Ahead	Southwest	Northeast	Southeast	Northwest	Did Not Grant RW to Vehicle			None
Daylight	Angle	Entering at angle	Going Straight Ahead	Going Straight Ahead	Southeast	Northwest	South	North	Did Not Grant R/W to Non Motorist			None
Daylight	Rear End	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	West	East	Vehicle Stopped	Vehicle Stopped	Follow Too Closely			None
Daylight	Rear End	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	West	East	Vehicle Stopped	Vehicle Stopped	Other Contributing Circ Not Listed			None
Daylight	Rear End	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped for Traffic	East	West	Vehicle Stopped	Vehicle Stopped	Distractions Outside Vehicle	Follow Too Closely		None
Dark-Street Lights On	Rear End	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	West	East	Vehicle Stopped	Vehicle Stopped	Lost in Thought / Day Dreaming			None
Daylight	Rear End	From same direction - both going straight - one stopped - rear-end	Going Straight Ahead	Stopped at Signal or Stop Sign	South	North	Vehicle Stopped	Vehicle Stopped	Unknown Distraction			None
Dark-Street Lights On	Turning	From opposite direction - one left turn - one straight	Making Left Turn	Going Straight Ahead	East	South	West	East	Did Not Grant RW to Vehicle			None
Daylight	Side Swipe	From same direction - both going straight - both moving - sideswipe	Changing Lanes	Going Straight Ahead	North	South	North	South	Did Not Grant RW to Vehicle			None
Dark-Street Lights On	Fixed Object	Roadway Ditch	Making U-Turn		North	North			Improper U-Turn			
Daylight	Fixed Object	Tree or Stump (stationary)	Making Left Turn		West	West			None			

MV DRIVER CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	MV DRIVER CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 1 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 2 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 3 (UNIT 1)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	BICYCLIST CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 1 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 2 (UNIT 2)	PEDESTRIAN CONTRIBUTING CIRCUMSTANCE 3 (UNIT 2)	FIRST IMPACT LOCATION (City, County & Misc Trafficways - 2010 forward)	WA STATE PLANE SOUTH - X 2010 - FORWARD	WA STATE PLANE SOUTH - Y 2010 - FORWARD
											Lane of Primary Trafficway	1145581.94	119082.99
					Improper Turn/Merge						Lane of Primary Trafficway	1145581.94	119082.99
											Intersecting Trafficway	1145581.94	119082.99
											Lane of Primary Trafficway	1145581.94	119082.99
											Past the Outside Shoulder of Primary Trafficway	1145581.94	119082.99
											Lane of Primary Trafficway	1145581.94	119082.99
											Lane of Primary Trafficway	1145581.94	119082.99
											Past the Outside Shoulder of Primary Trafficway	1145581.94	119082.99
											Past Right Shoulder Decreasing Milepost	1148293.99	119032.97
											Lane 1 Increasing Milepost	1148221.08	119048
											Lane 1 Increasing Milepost	1148221.08	119048
											Lane 1 Increasing Milepost	1148224.12	119052.38
											Past the Outside Shoulder of Primary Trafficway	1148121.6	119048.59
											Past Right Shoulder Increasing Milepost	1149954.12	118188.89
											Lane 1 Decreasing Milepost	1149912.91	118205.36
											Past Right Shoulder Increasing Milepost	1149937.43	118192.81
											Lane 1 Increasing Milepost	1149959.58	118188.16
											Past Right Shoulder Increasing Milepost	1150015.76	118175.86
											Past Right Shoulder Increasing Milepost	1153463.61	111686.8
											Past Right Shoulder Decreasing Milepost	1153465.36	111687.85
											Lane 1 Decreasing Milepost	1153463.61	111686.8
											Past Right Shoulder Increasing Milepost	1153463.61	111686.8
											Past Right Shoulder Decreasing Milepost	1153096.05	108634.08
											Intersecting Road Decreasing Milepost	1153134.84	108693.07
											Lane 1 Decreasing Milepost	1153135.32	108693.65
											Lane 1 Increasing Milepost	1152149.21	107358.3
											Intersecting Road Increasing Milepost	1152153.03	107393.23
											Lane 1 Increasing Milepost	1152153.03	107393.23
											Decreasing Other Location	1152219.53	107017.48
											Lane 1 Decreasing Milepost	1152219.53	107017.48
											Lane 1 Increasing Milepost	1152219.53	107017.48
											Lane 1 Decreasing Milepost	1152480.74	104025.76
											Lane 1 Increasing Milepost	1152377.01	103948.01
											Lane 1 Decreasing Milepost	1152423.25	103881.17
											Past Right Shoulder Decreasing Milepost	1152504.41	103935.94
											Decreasing Other Location	1152437.15	104024.8
											Lane 1 Increasing Milepost	1152387.86	103953.1
											Lane 2 Increasing Milepost	1152447.23	103890.01
											Lane 2 Decreasing Milepost	1152470.14	103890.13
											Lane 1 Decreasing Milepost	1152299.04	104426.41
											Lane 1 Decreasing Milepost	1152315.28	104189.31
											Lane 1 Decreasing Milepost	1152296.84	104457.07
											Lane 1 Decreasing Milepost	1152365.44	104285.2
Failing to Signal											Lane of Primary Trafficway	1152636.1	99721.52
											Past Right Shoulder Decreasing Milepost	1152594.07	99832.65
											Lane 1 Increasing Milepost	1152593.79	99723.39
											Past Right Shoulder Increasing Milepost	1152587.2	99453.43
											Lane 1 Decreasing Milepost	1152590.11	99454.29
											Lane 1 Increasing Milepost	1152590.11	99454.29
											Past Right Shoulder Increasing Milepost	1152590.11	99454.29
											Lane of Primary Trafficway	1151945.25	97940.01
											Past the Outside Shoulder of Primary Trafficway	1151945.25	97940.01
					Physically Impaired						Lane of Primary Trafficway	1151945.25	97940.01
											Lane of Primary Trafficway	1151945.25	97940.01
											Lane of Primary Trafficway	1151945.25	97940.01
											Lane of Primary Trafficway	1151945.25	97940.01
											Lane of Primary Trafficway	1150393.61	105566.36
											Intersecting Trafficway	1150456.09	105487.5
											Intersecting Trafficway	1146760.44	108137.26
											Lane of Primary Trafficway	1146646.89	108248.79
											Lane of Primary Trafficway	1145368.64	109020.49
											Lane of Primary Trafficway	1145320.74	109050.07
											Lane of Primary Trafficway	1145224.41	109111.55
											Lane of Primary Trafficway	1142143.4	111229.4
											Lane of Primary Trafficway	1142143.4	111229.4
											Lane of Primary Trafficway	1142143.4	111229.4
											Lane of Primary Trafficway	1142249.84	111201.87
											Lane of Primary Trafficway	1142143.4	111229.4
											Lane of Primary Trafficway	1142143.4	111229.4
											Lane of Primary Trafficway	1142143.4	111229.4
											Lane of Primary Trafficway	1142143.4	111229.4
		Past the Outside Sh	1158578.06	104745.56									
		Past the Outside Sh	1158578.21	104746.99									

Appendix C: Traffic Count Data

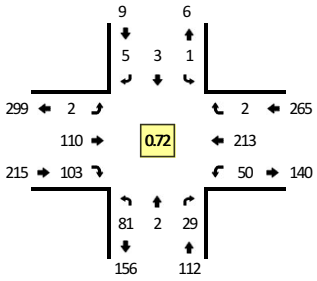
Type of peak hour being reported: Intersection Peak

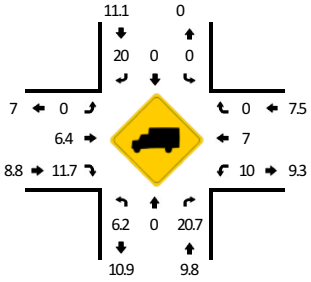
Method for determining peak hour: Total Entering Volume

LOCATION: NE 232nd Ave -- NE 28th St
CITY/STATE: Fern Prairie, WA

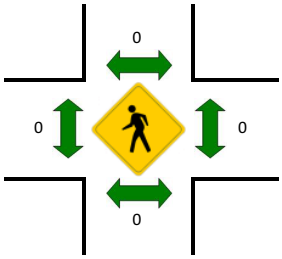
QC JOB #: 16977001
DATE: Tue, Apr 8 2025

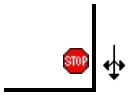
Peak-Hour: 7:25 AM -- 8:25 AM
Peak 15-Min: 7:50 AM -- 8:05 AM

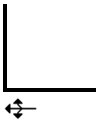


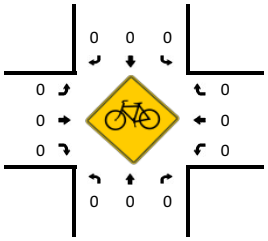


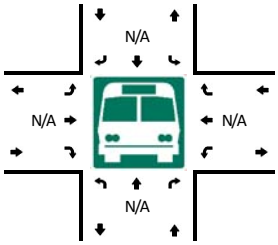
TRUE DATA TO IMPROVE MOBILITY

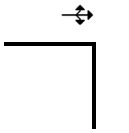


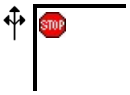


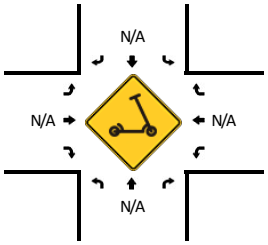












R* = RTOR

5-Min Count Period Beginning At	NE 232nd Ave (Northbound)					NE 232nd Ave (Southbound)					NE 28th St (Eastbound)					NE 28th St (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	5	0	0	0	0	0	0	0	0	0	0	3	4	0	0	2	15	0	0	0	29	
7:05 AM	9	0	0	0	0	0	0	0	0	0	0	10	6	0	0	2	17	0	0	0	44	
7:10 AM	3	0	0	0	0	0	0	0	0	0	0	10	1	0	0	0	18	0	0	0	32	
7:15 AM	2	0	0	0	0	1	0	0	0	0	0	8	2	0	0	3	19	0	0	0	35	
7:20 AM	2	0	0	0	0	0	0	0	0	0	0	8	6	0	0	1	12	0	0	0	29	
7:25 AM	3	0	0	0	0	0	0	2	0	0	0	10	4	0	0	2	20	0	0	0	41	
7:30 AM	2	0	0	0	0	0	0	0	0	0	0	6	3	0	0	1	28	0	0	0	40	
7:35 AM	1	0	0	0	0	0	0	0	0	0	0	3	7	0	0	2	27	0	0	0	40	
7:40 AM	4	0	0	0	0	0	0	1	0	0	0	5	14	0	0	8	14	0	0	0	46	
7:45 AM	9	0	4	0	0	1	0	0	0	0	0	14	10	0	0	14	10	0	0	0	62	
7:50 AM	7	0	6	0	0	0	1	0	0	0	0	12	16	0	0	12	16	0	0	0	70	
7:55 AM	11	0	6	0	0	0	2	0	0	0	0	14	11	0	0	6	15	0	0	0	65	533
8:00 AM	14	1	6	0	0	0	0	0	0	0	0	14	15	0	0	3	21	0	0	0	74	578
8:05 AM	11	0	5	0	0	0	0	1	0	0	0	11	9	0	0	0	16	1	0	0	54	588
8:10 AM	6	0	1	0	0	0	0	0	0	0	0	9	7	0	0	0	16	1	0	0	40	596
8:15 AM	7	0	1	0	0	0	0	0	0	0	1	4	4	0	0	1	17	0	0	0	35	596
8:20 AM	6	1	0	0	0	0	0	1	0	0	1	8	3	0	0	1	13	0	0	0	34	601
8:25 AM	2	0	4	0	0	1	0	1	0	0	0	6	4	0	0	0	17	0	0	0	35	595
8:30 AM	1	0	1	0	0	0	0	0	0	0	0	13	8	0	0	0	17	0	0	0	40	595
8:35 AM	6	0	1	0	0	0	0	0	0	0	1	5	6	0	0	0	14	0	0	0	33	588
8:40 AM	6	0	1	0	0	0	0	1	0	0	0	7	2	0	0	0	19	0	0	0	36	578
8:45 AM	1	0	1	0	0	0	0	2	0	0	0	8	10	0	0	1	14	0	0	0	37	553
8:50 AM	2	0	1	0	0	0	0	1	0	0	0	12	5	0	0	1	27	0	0	0	49	532
8:55 AM	2	0	3	0	0	0	0	0	0	0	2	14	7	0	0	0	16	0	0	0	44	511

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	128	4	72	0	0	0	12	0	0	0	0	160	168	0	0	84	208	0	0	0	836
Heavy Trucks	8	0	12			0	0	0			0	12	16			0	8	0			56
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

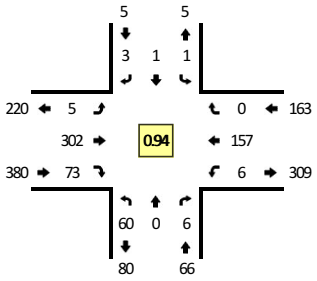
Type of peak hour being reported: Intersection Peak

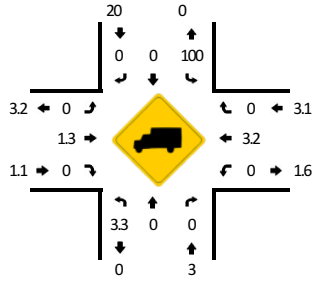
Method for determining peak hour: Total Entering Volume

LOCATION: NE 232nd Ave -- NE 28th St
CITY/STATE: Fern Prairie, WA

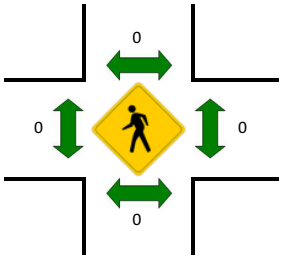
QC JOB #: 16977002
DATE: Tue, Apr 8 2025

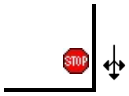
Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

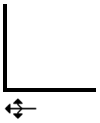


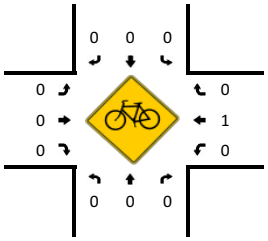


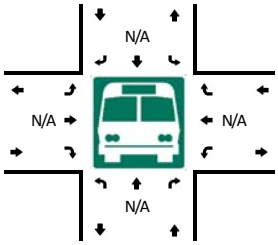
TRUE DATA TO IMPROVE MOBILITY

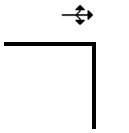


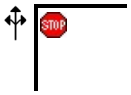


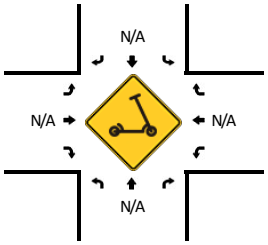












R* = RTOR

5-Min Count Period Beginning At	NE 232nd Ave (Northbound)					NE 232nd Ave (Southbound)					NE 28th St (Eastbound)					NE 28th St (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	5	0	1	0	0	0	0	0	0	0	1	34	6	0	0	1	15	0	0	0	63	
4:05 PM	2	0	2	0	0	0	0	0	0	0	0	23	7	0	0	0	18	0	0	0	52	
4:10 PM	7	0	1	0	0	0	0	0	0	0	0	27	6	0	0	0	20	0	0	0	61	
4:15 PM	4	0	0	0	0	0	0	0	0	0	1	11	4	0	0	2	16	0	0	0	38	
4:20 PM	7	0	0	0	0	0	0	0	0	0	0	13	4	0	0	1	18	1	0	0	44	
4:25 PM	2	0	1	0	0	0	0	0	0	0	0	25	7	0	0	0	11	0	0	0	46	
4:30 PM	2	0	1	0	0	0	0	0	0	0	0	21	8	0	0	0	17	0	0	0	49	
4:35 PM	5	0	1	0	0	0	0	0	0	0	0	34	4	0	0	1	14	0	0	0	59	
4:40 PM	9	0	1	0	0	0	1	2	0	0	1	25	3	0	0	1	20	0	0	0	63	
4:45 PM	3	0	0	0	0	0	0	0	0	0	0	16	7	0	0	1	11	0	0	0	38	
4:50 PM	10	0	0	0	0	0	0	1	0	0	2	19	5	0	0	0	15	0	0	0	52	
4:55 PM	2	0	1	0	0	0	0	0	0	0	0	25	7	0	0	1	11	0	0	0	47	612
5:00 PM	2	0	0	0	0	1	0	0	0	0	0	19	2	0	0	0	10	0	0	0	34	583
5:05 PM	4	0	1	0	0	0	0	0	0	0	1	27	11	0	0	0	9	0	0	0	53	584
5:10 PM	2	0	0	0	0	0	0	0	0	0	0	29	7	0	0	0	16	0	0	0	54	577
5:15 PM	12	0	0	0	0	0	0	0	0	0	0	22	7	0	0	1	15	0	0	0	57	596
5:20 PM	2	0	0	0	0	0	0	0	0	0	0	33	7	0	0	0	10	0	0	0	52	604
5:25 PM	5	0	2	0	0	0	0	0	0	0	0	27	5	0	0	0	15	0	0	0	54	612
5:30 PM	4	0	0	0	0	0	0	0	0	0	1	26	8	0	0	1	11	0	0	0	51	614
5:35 PM	4	0	1	0	0	0	0	0	0	0	1	18	7	0	0	0	11	0	0	0	42	597
5:40 PM	9	0	0	0	0	0	0	0	0	0	1	29	10	0	0	1	11	0	0	0	61	595
5:45 PM	4	0	1	0	0	0	0	0	0	0	0	16	3	0	0	0	17	0	0	0	41	598
5:50 PM	5	0	1	0	0	0	0	0	0	0	0	22	3	0	0	1	15	0	0	0	47	593
5:55 PM	6	0	0	0	0	0	0	0	0	0	0	22	4	0	0	0	16	0	0	0	48	594

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	72	0	4	0	0	0	0	0	0	0	4	312	100	0	0	4	160	0	0	0	656
Heavy Trucks	4	0	0			0	0	0			0	0	0			0	0	0			4
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

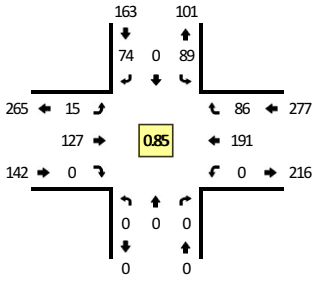
Type of peak hour being reported: Intersection Peak

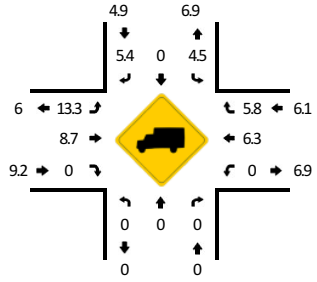
Method for determining peak hour: Total Entering Volume

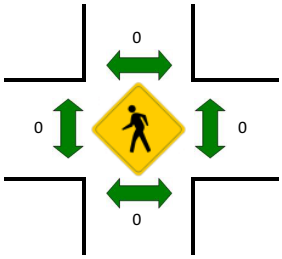
LOCATION: NE 242nd Ave (SR 500) -- NE 28th St
CITY/STATE: Fern Prairie, WA

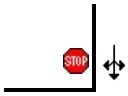
QC JOB #: 16977003
DATE: Tue, Apr 8 2025

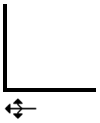
Peak-Hour: 7:10 AM -- 8:10 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

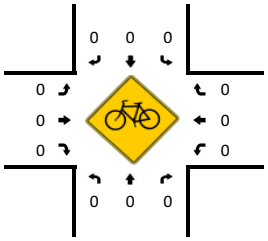


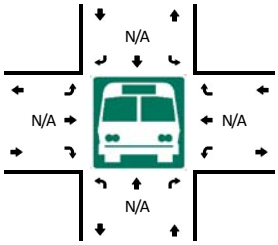


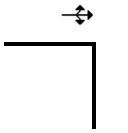


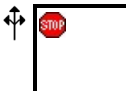


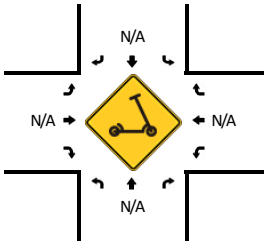












R* = RTOR

5-Min Count Period Beginning At	NE 242nd Ave (SR 500) (Northbound)					NE 242nd Ave (SR 500) (Southbound)					NE 28th St (Eastbound)					NE 28th St (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	0	0	0	0	1	0	7	0	0	0	4	0	0	0	0	10	11	0	0	33	
7:05 AM	0	0	0	0	0	3	0	6	0	0	0	9	0	0	0	0	14	8	0	0	40	
7:10 AM	0	0	0	0	0	4	0	7	0	0	0	6	0	0	0	0	16	10	0	0	43	
7:15 AM	0	0	0	0	0	7	0	2	0	0	0	11	0	0	0	0	17	7	0	0	44	
7:20 AM	0	0	0	0	0	6	0	4	0	0	1	9	0	0	0	0	11	8	0	0	39	
7:25 AM	0	0	0	0	0	3	0	4	0	0	0	7	0	0	0	0	18	12	0	0	44	
7:30 AM	0	0	0	0	0	6	0	10	0	0	0	9	0	0	0	0	14	11	0	0	50	
7:35 AM	0	0	0	0	0	9	0	7	0	0	0	3	0	0	0	0	24	9	0	0	52	
7:40 AM	0	0	0	0	0	7	0	11	0	0	1	4	0	0	0	0	9	2	0	0	34	
7:45 AM	0	0	0	0	0	12	0	8	0	0	2	14	0	0	0	0	16	7	0	0	59	
7:50 AM	0	0	0	0	0	6	0	7	0	0	3	15	0	0	0	0	20	3	0	0	54	
7:55 AM	0	0	0	0	0	11	0	6	0	0	4	16	0	0	0	0	16	5	0	0	58	550
8:00 AM	0	0	0	0	0	5	0	4	0	0	3	17	0	0	0	0	15	7	0	0	51	568
8:05 AM	0	0	0	0	0	13	0	4	0	0	1	16	0	0	0	0	15	5	0	0	54	582
8:10 AM	0	0	0	0	0	2	0	3	0	0	2	6	0	0	0	0	14	6	0	0	33	572
8:15 AM	0	0	0	0	0	6	1	3	0	0	0	7	0	0	0	0	13	7	0	0	37	565
8:20 AM	0	0	0	0	0	14	0	5	0	0	2	7	0	0	0	0	11	5	0	0	44	570
8:25 AM	0	0	0	0	0	7	0	4	0	0	2	7	0	0	0	0	15	5	0	0	40	566
8:30 AM	0	0	0	0	0	11	0	4	0	0	2	14	0	0	0	0	11	13	0	0	55	571
8:35 AM	0	0	0	0	0	11	0	5	0	0	1	4	0	0	0	0	11	7	0	0	39	558
8:40 AM	0	0	0	0	0	11	0	4	0	0	0	6	0	0	0	0	15	7	0	0	43	567
8:45 AM	0	0	0	0	0	8	0	1	0	0	1	9	0	0	0	0	13	16	0	0	48	556
8:50 AM	0	0	0	0	0	12	1	6	0	0	4	12	0	0	0	0	22	9	0	0	66	568
8:55 AM	0	0	0	0	0	6	0	4	0	0	1	13	0	0	0	0	12	5	0	0	41	551

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	116	0	84	0	0	36	180	0	0	0	0	208	60	0	0	684
Heavy Trucks	0	0	0			0	0	0			4	24	0			0	0	8			36
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

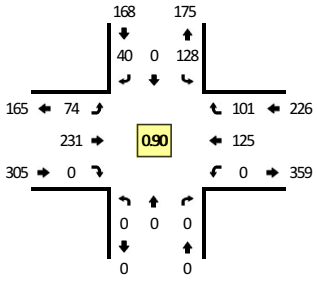
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

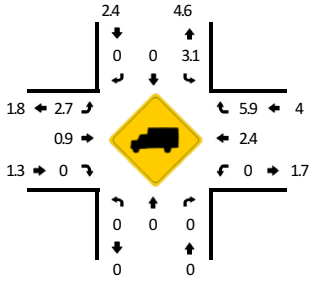
LOCATION: NE 242nd Ave (SR 500) -- NE 28th St
CITY/STATE: Fern Prairie, WA

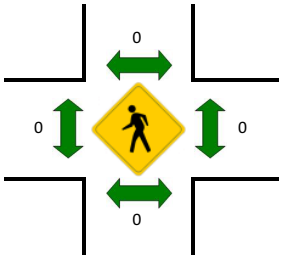
QC JOB #: 16977004
DATE: Tue, Apr 8 2025

Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

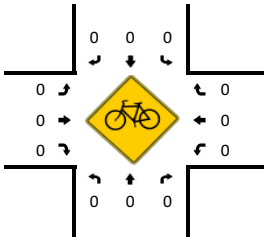


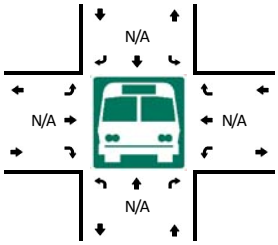




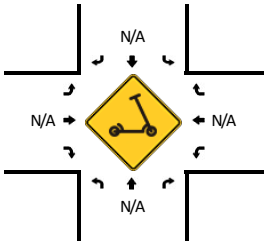












R* = RTOR

5-Min Count Period Beginning At	NE 242nd Ave (SR 500) (Northbound)					NE 242nd Ave (SR 500) (Southbound)					NE 28th St (Eastbound)					NE 28th St (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	1	0	0	0	0	15	0	3	0	0	5	18	0	0	0	0	9	6	0	0	57	
4:05 PM	0	0	0	0	0	12	0	3	0	0	7	28	0	0	0	0	16	9	0	0	75	
4:10 PM	0	0	0	0	0	5	0	2	0	0	9	21	0	0	0	0	17	11	0	0	65	
4:15 PM	0	0	0	0	0	11	0	5	0	0	3	8	0	0	0	0	13	8	0	0	48	
4:20 PM	0	0	0	0	0	5	0	1	0	0	3	10	0	0	0	0	17	10	0	0	46	
4:25 PM	0	0	0	0	0	10	0	4	0	0	3	24	0	0	0	0	9	9	0	0	59	
4:30 PM	0	0	0	0	0	10	0	2	0	0	3	15	0	0	0	0	15	10	0	0	55	
4:35 PM	0	0	0	0	0	9	0	0	0	0	8	22	0	0	0	0	14	9	0	0	62	
4:40 PM	0	0	0	0	0	12	0	8	0	0	11	19	0	0	0	0	10	13	0	0	73	
4:45 PM	0	0	0	0	0	14	0	8	0	0	7	14	0	0	0	0	7	6	0	0	56	
4:50 PM	0	0	0	0	0	12	0	3	0	0	4	13	0	0	0	0	11	3	0	0	46	
4:55 PM	0	0	0	0	0	5	0	5	0	0	4	21	0	0	0	0	6	6	0	0	47	689
5:00 PM	0	0	0	0	0	14	0	1	0	0	5	17	0	0	0	0	10	10	0	0	57	689
5:05 PM	0	0	0	0	0	11	0	0	0	0	7	16	0	0	0	0	8	8	0	0	50	664
5:10 PM	0	0	0	0	0	6	0	3	0	0	8	21	0	0	0	0	11	9	0	0	58	657
5:15 PM	0	0	0	0	0	9	0	4	0	0	3	24	0	0	0	0	13	13	0	0	66	675
5:20 PM	0	0	0	0	0	16	0	2	0	0	7	23	0	0	0	0	10	5	0	0	63	692
5:25 PM	0	0	0	0	0	10	0	4	0	0	7	26	0	0	0	0	10	9	0	0	66	699
5:30 PM	0	0	0	0	0	9	0	2	0	0	5	16	0	0	0	0	8	10	0	0	50	694
5:35 PM	0	0	0	0	0	10	0	2	0	0	2	18	0	0	0	0	9	11	0	0	52	684
5:40 PM	0	0	0	0	0	2	0	4	0	0	6	20	0	0	0	0	8	6	0	0	46	657
5:45 PM	0	0	0	0	0	9	0	5	0	0	5	15	0	0	0	0	13	4	0	0	51	652
5:50 PM	0	0	0	0	0	10	0	4	0	0	5	17	0	0	0	0	13	10	0	0	59	665
5:55 PM	0	0	0	0	0	6	0	1	0	0	8	15	0	0	0	0	15	4	0	0	49	667

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	140	0	40	0	0	68	292	0	0	0	0	132	108	0	0	780
Heavy Trucks	0	0	0			4	0	0			0	8	0			0	0	0			12
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

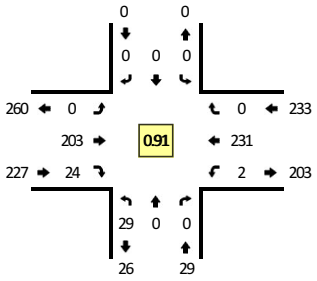
Type of peak hour being reported: Intersection Peak

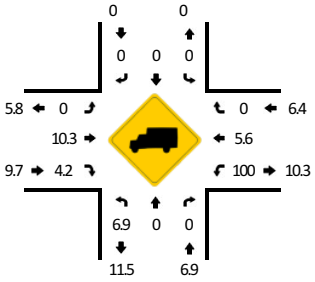
Method for determining peak hour: Total Entering Volume

LOCATION: NE 249th Ave -- NE 25th St (SR 500)
CITY/STATE: Fern Prairie, WA

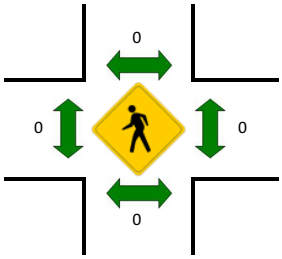
QC JOB #: 16977005
DATE: Tue, Apr 8 2025

Peak-Hour: 7:55 AM -- 8:55 AM
Peak 15-Min: 8:40 AM -- 8:55 AM

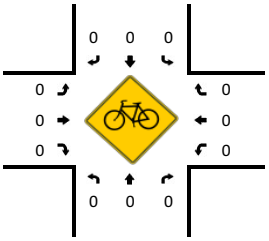


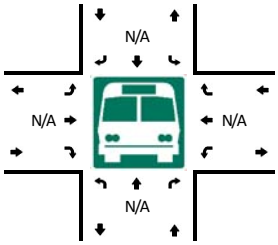


TRUE DATA TO IMPROVE MOBILITY

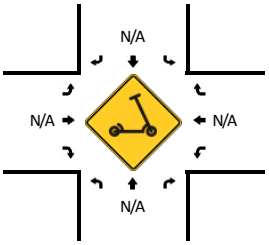












R* = RTOR

5-Min Count Period Beginning At	NE 249th Ave (Northbound)					NE 249th Ave (Southbound)					NE 25th St (SR 500) (Eastbound)					NE 25th St (SR 500) (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	2	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	20	0	0	0	27	
7:05 AM	0	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	21	0	0	0	32	
7:10 AM	1	0	0	0	0	0	0	0	0	0	0	11	0	0	0	0	26	0	0	0	38	
7:15 AM	2	0	1	0	0	0	0	0	0	0	0	13	3	0	0	0	18	0	0	0	37	
7:20 AM	1	0	0	0	0	0	0	0	0	0	0	16	0	0	0	0	18	0	0	0	35	
7:25 AM	2	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	28	0	0	0	40	
7:30 AM	3	0	0	0	0	0	0	0	0	0	0	11	3	0	0	0	23	0	0	0	40	
7:35 AM	3	0	0	0	0	0	0	0	0	0	0	12	2	0	0	0	30	0	0	0	47	
7:40 AM	1	0	0	0	0	0	0	0	0	0	0	8	0	0	0	0	9	0	0	0	18	
7:45 AM	3	0	0	0	0	0	0	0	0	0	0	20	2	0	0	0	19	0	0	0	44	
7:50 AM	1	0	0	0	0	0	0	0	0	0	0	23	2	0	0	0	22	0	0	0	48	
7:55 AM	1	0	0	0	0	0	0	0	0	0	0	17	1	0	0	0	21	0	0	0	40	446
8:00 AM	3	0	0	0	0	0	0	0	0	0	0	21	3	0	0	1	18	0	0	0	46	465
8:05 AM	2	0	0	0	0	0	0	0	0	0	0	22	3	0	0	0	18	0	0	0	45	478
8:10 AM	0	0	0	0	0	0	0	0	0	0	0	14	0	0	0	1	21	0	0	0	36	476
8:15 AM	2	0	0	0	0	0	0	0	0	0	0	9	2	0	0	0	18	0	0	0	31	470
8:20 AM	1	0	0	0	0	0	0	0	0	0	0	14	4	0	0	0	15	0	0	0	34	469
8:25 AM	3	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	15	0	0	0	33	462
8:30 AM	3	0	0	0	0	0	0	0	0	0	0	26	4	0	0	0	21	0	0	0	54	476
8:35 AM	6	0	0	0	0	0	0	0	0	0	0	14	1	0	0	0	14	0	0	0	35	464
8:40 AM	4	0	0	0	0	0	0	0	0	0	0	12	3	0	0	0	17	0	0	0	36	482
8:45 AM	1	0	0	0	0	0	0	0	0	0	0	17	1	0	0	0	28	0	0	0	47	485
8:50 AM	3	0	0	0	0	0	0	0	0	0	0	22	2	0	0	0	25	0	0	0	52	489
8:55 AM	1	0	0	0	0	0	0	0	0	0	0	11	4	0	0	0	15	0	0	0	31	480

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	32	0	0	0	0	0	0	0	0	0	0	204	24	0	0	0	280	0	0	0	540
Heavy Trucks	0	0	0			0	0	0			0	24	0			0	8	0			32
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

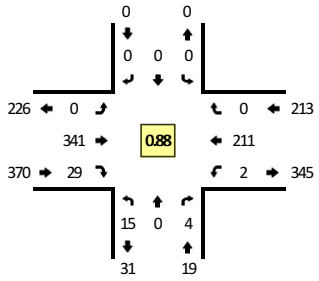
Type of peak hour being reported: Intersection Peak

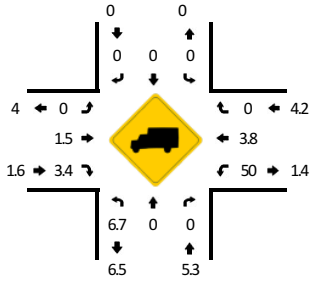
Method for determining peak hour: Total Entering Volume

LOCATION: NE 249th Ave -- NE 25th St (SR 500)
CITY/STATE: Fern Prairie, WA

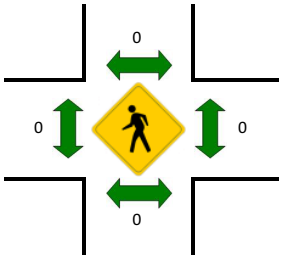
QC JOB #: 16977006
DATE: Tue, Apr 8 2025

Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

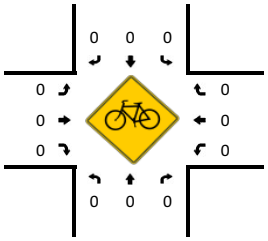


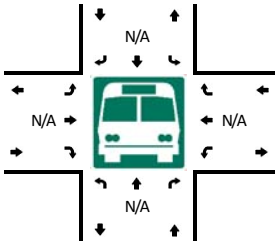


TRUE DATA TO IMPROVE MOBILITY

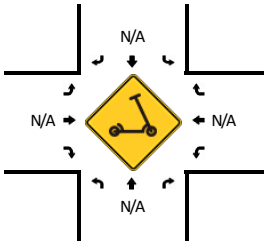












R* = RTOR

5-Min Count Period Beginning At	NE 249th Ave (Northbound)					NE 249th Ave (Southbound)					NE 25th St (SR 500) (Eastbound)					NE 25th St (SR 500) (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	2	0	0	0	0	0	0	0	0	0	0	30	3	0	0	0	12	0	0	0	47	
4:05 PM	1	0	0	0	0	0	0	0	0	0	0	40	3	0	0	1	23	0	0	0	68	
4:10 PM	1	0	1	0	0	0	0	0	0	0	0	21	1	0	0	1	28	0	0	0	53	
4:15 PM	1	0	1	0	0	0	0	0	0	0	0	20	3	0	0	0	19	0	0	0	44	
4:20 PM	3	0	0	0	0	0	0	0	0	0	0	15	1	0	0	0	26	0	0	0	45	
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	22	1	0	0	1	18	0	0	0	42	
4:30 PM	1	0	1	0	0	0	0	0	0	0	0	34	2	0	0	1	23	0	0	0	62	
4:35 PM	2	0	0	0	0	0	0	0	0	0	0	23	6	0	0	0	20	0	0	0	51	
4:40 PM	4	0	0	0	0	0	0	0	0	0	0	27	3	0	0	1	21	0	0	0	56	
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	21	5	0	0	0	11	0	0	0	37	
4:50 PM	1	0	0	0	0	0	0	0	0	0	0	24	0	0	0	0	13	0	0	0	38	
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	28	4	0	0	0	13	0	0	0	45	588
5:00 PM	0	0	1	0	0	0	0	0	0	0	0	29	0	0	0	0	18	0	0	0	48	589
5:05 PM	1	0	0	0	0	0	0	0	0	0	0	23	2	0	0	0	14	0	0	0	40	561
5:10 PM	2	0	0	0	0	0	0	0	0	0	0	28	3	0	0	0	20	0	0	0	53	561
5:15 PM	2	0	1	0	0	0	0	0	0	0	0	31	2	0	0	0	24	0	0	0	60	577
5:20 PM	2	0	0	0	0	0	0	0	0	0	0	34	0	0	0	0	14	0	0	0	50	582
5:25 PM	0	0	1	0	0	0	0	0	0	0	0	39	2	0	0	0	20	0	0	0	62	602
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	28	0	0	0	0	16	0	0	0	44	584
5:35 PM	0	0	0	0	0	0	0	0	0	0	0	18	5	0	0	0	20	0	0	0	43	576
5:40 PM	2	0	0	0	0	0	0	0	0	0	0	18	4	0	0	0	13	0	0	0	37	557
5:45 PM	1	0	0	0	0	0	0	0	0	0	0	23	2	0	0	0	16	0	0	0	42	562
5:50 PM	1	0	0	0	0	0	0	0	0	0	0	22	2	0	0	0	21	0	0	0	46	570
5:55 PM	2	0	0	0	0	0	0	0	0	0	0	24	3	0	0	0	17	0	0	0	46	571

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	16	0	8	0	0	0	0	0	0	0	0	416	16	0	0	0	232	0	0	0	688
Heavy Trucks	0	0	0			0	0	0			0	8	0			0	4	0			12
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

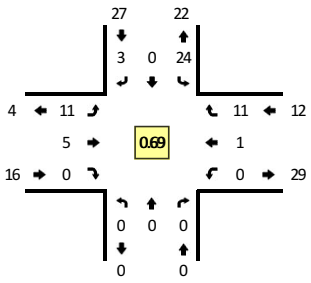
Type of peak hour being reported: Intersection Peak

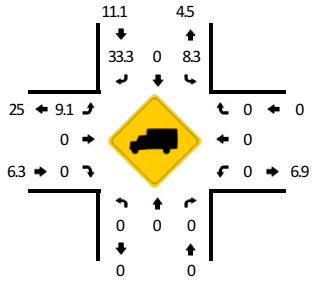
Method for determining peak hour: Total Entering Volume

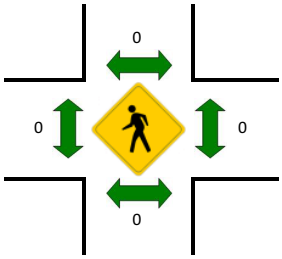
LOCATION: NE 249th Ave -- NE 14th St
CITY/STATE: Fern Prairie, WA

QC JOB #: 16977007
DATE: Tue, Apr 8 2025

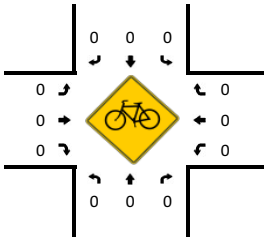
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:20 AM -- 8:35 AM

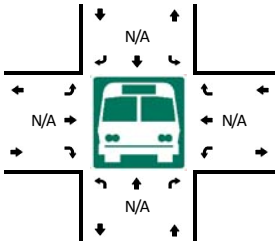




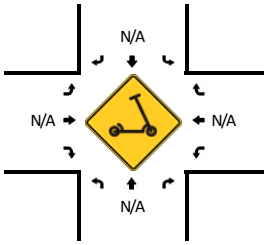












R* = RTOR

5-Min Count Period Beginning At	NE 249th Ave (Northbound)					NE 249th Ave (Southbound)					NE 14th St (Eastbound)					NE 14th St (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	
7:05 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
7:10 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:15 AM	0	0	0	0	0	1	0	2	0	0	1	0	0	0	0	0	0	1	0	0	5	
7:20 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2	
7:25 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	2	0	0	4	
7:30 AM	0	0	0	0	0	1	0	1	0	0	2	0	0	0	0	0	0	1	0	0	5	
7:35 AM	0	0	0	0	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	3	
7:40 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	3	
7:45 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	3	0	0	5	
7:50 AM	0	0	0	0	0	3	0	0	0	0	0	2	0	0	0	0	0	0	0	0	5	
7:55 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	36
8:00 AM	0	0	0	0	0	2	0	1	0	0	0	0	0	0	0	0	0	1	0	0	4	38
8:05 AM	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	3	40
8:10 AM	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	42
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	39
8:20 AM	0	0	0	0	0	5	0	0	0	0	0	2	0	0	0	0	0	2	0	0	9	46
8:25 AM	0	0	0	0	0	1	0	0	0	0	3	1	0	0	0	0	0	0	0	0	5	47
8:30 AM	0	0	0	0	0	3	0	1	0	0	1	1	0	0	0	0	0	0	0	0	6	48
8:35 AM	0	0	0	0	0	2	0	0	0	0	3	0	0	0	0	0	0	1	0	0	6	51
8:40 AM	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	2	0	0	6	54
8:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	51
8:50 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	2	0	0	4	50
8:55 AM	0	0	0	0	0	2	0	1	0	0	1	0	0	0	0	0	1	1	0	0	6	55

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	36	0	4	0	0	16	16	0	0	0	0	0	8	0	0	80
Heavy Trucks	0	0	0			4	0	0			0	0	0			0	0	0			4
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments: Only EB has a stop sign for this location, EB/WB stop sign shown due to technical limitations

Report generated on 4/16/2025 4:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

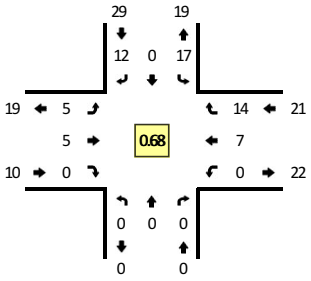
Type of peak hour being reported: Intersection Peak

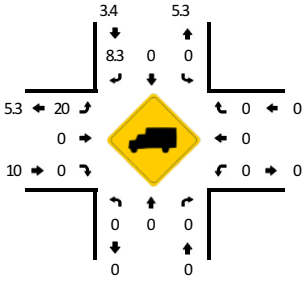
Method for determining peak hour: Total Entering Volume

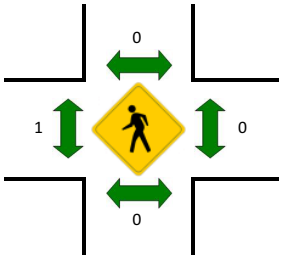
LOCATION: NE 249th Ave -- NE 14th St
CITY/STATE: Fern Prairie, WA

QC JOB #: 16977008
DATE: Tue, Apr 8 2025

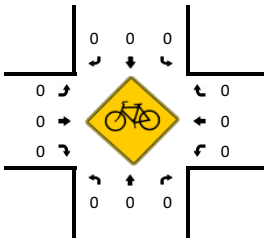
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 4:35 PM -- 4:50 PM

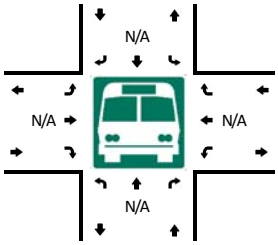




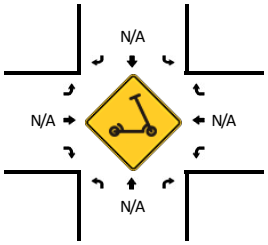












R* = RTOR

5-Min Count Period Beginning At	NE 249th Ave (Northbound)					NE 249th Ave (Southbound)					NE 14th St (Eastbound)					NE 14th St (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0	0	4	
4:05 PM	0	0	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	0	0	4	
4:10 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	
4:15 PM	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	6	0	0	9	
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:25 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	
4:30 PM	0	0	0	0	0	2	0	2	0	0	1	0	0	0	0	0	0	0	0	0	5	
4:35 PM	0	0	0	0	0	3	0	2	0	0	2	0	0	0	0	0	0	2	0	0	9	
4:40 PM	0	0	0	0	0	0	0	3	0	0	0	2	0	0	0	0	0	1	0	0	6	
4:45 PM	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0	2	1	0	0	7	
4:50 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	
4:55 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	1	0	0	5	54
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	2	1	0	0	5	55
5:05 PM	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	1	0	0	0	5	56
5:10 PM	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	1	2	0	0	6	60
5:15 PM	0	0	0	0	0	1	0	0	0	0	3	0	0	0	0	0	0	1	0	0	5	56
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	58
5:25 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	57
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	2	54
5:35 PM	0	0	0	0	0	3	0	0	0	0	1	0	0	0	0	0	0	0	0	0	4	49
5:40 PM	0	0	0	0	0	4	0	1	0	0	1	0	0	0	0	0	0	1	0	0	7	50
5:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0	0	4	47
5:50 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	2	0	0	5	51
5:55 PM	0	0	0	0	0	1	0	1	0	0	1	0	0	0	0	0	0	2	0	0	5	51

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	24	0	24	0	0	8	8	0	0	0	0	8	16	0	0	88
Heavy Trucks	0	0	0			0	0	0			4	0	0			0	0	0			4
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments: Only EB has a stop sign for this location, EB/WB stop sign shown due to technical limitations

Report generated on 4/16/2025 4:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

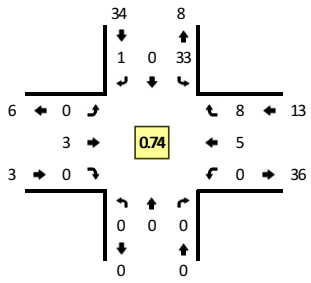
Type of peak hour being reported: Intersection Peak

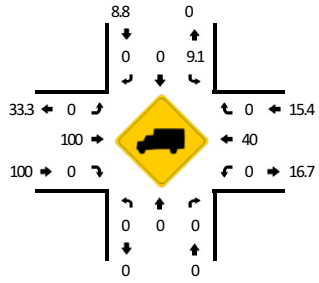
Method for determining peak hour: Total Entering Volume

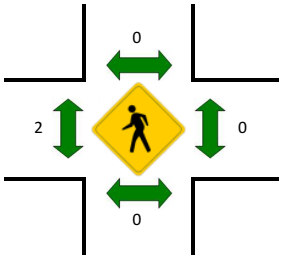
LOCATION: NE 257th Ave -- NE 3rd St
CITY/STATE: Fern Prairie, WA

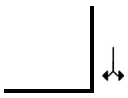
QC JOB #: 16977009
DATE: Tue, Apr 8 2025

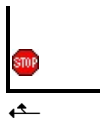
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 8:10 AM -- 8:25 AM

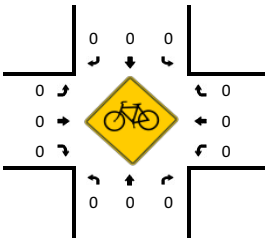


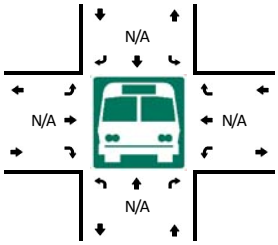


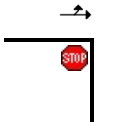


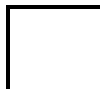


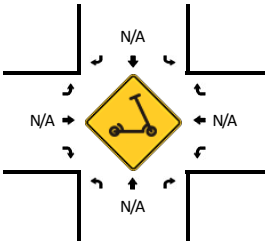












R* = RTOR

5-Min Count Period Beginning At	NE 257th Ave (Northbound)					NE 257th Ave (Southbound)					NE 3rd St (Eastbound)					NE 3rd St (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
7:05 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	
7:10 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
7:20 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	
7:25 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	
7:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	
7:35 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4	
7:40 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
7:45 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	3	
7:50 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	2	0	0	0	6	
7:55 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	30
8:00 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	3	32
8:05 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	31
8:10 AM	0	0	0	0	0	3	0	1	0	0	0	1	0	0	0	0	0	0	0	0	5	33
8:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	3	35
8:20 AM	0	0	0	0	0	5	0	0	0	0	0	2	0	0	0	0	1	1	0	0	9	42
8:25 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	44
8:30 AM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	45
8:35 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	3	0	0	6	47
8:40 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	1	0	0	4	50
8:45 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	48
8:50 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	1	0	0	0	4	46
8:55 AM	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	2	0	0	4	49

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	40	0	4	0	0	0	12	0	0	0	0	4	8	0	0	68
Heavy Trucks	0	0	0			4	0	0			0	12	0			0	0	0			16
Buses																					
Pedestrians		0					0					8					0				8
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments: Only EB has a stop sign for this location, EB/WB stop sign shown due to technical limitations

Report generated on 4/16/2025 4:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

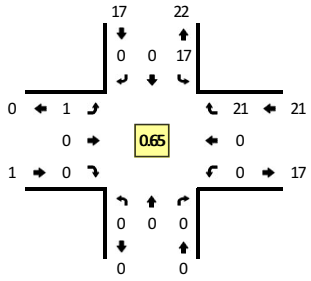
Type of peak hour being reported: Intersection Peak

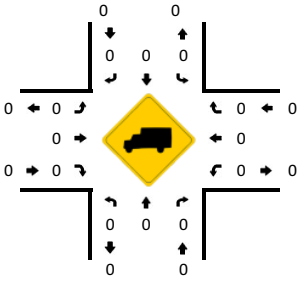
Method for determining peak hour: Total Entering Volume

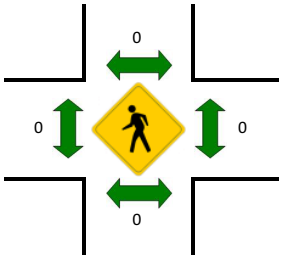
LOCATION: NE 257th Ave -- NE 3rd St
CITY/STATE: Fern Prairie, WA

QC JOB #: 16977010
DATE: Tue, Apr 8 2025

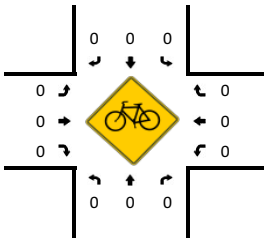
Peak-Hour: 4:15 PM -- 5:15 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

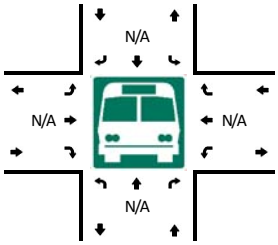




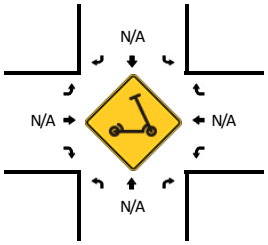












R* = RTOR

5-Min Count Period Beginning At	NE 257th Ave (Northbound)					NE 257th Ave (Southbound)					NE 3rd St (Eastbound)					NE 3rd St (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	3	0	0	4	
4:05 PM	0	0	0	0	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	4	
4:10 PM	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	1	0	0	4	
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	4	0	0	5	
4:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
4:25 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
4:35 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2	
4:40 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	3	0	0	7	
4:45 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
4:50 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
4:55 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	36
5:00 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	1	0	0	5	37
5:05 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	2	0	0	5	38
5:10 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	4	0	0	5	39
5:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	35
5:20 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	35
5:25 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	36
5:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	38
5:35 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	38
5:40 PM	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	1	0	0	4	35
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	34
5:50 PM	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	3	0	0	5	38
5:55 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	35

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	28	0	0	60
Heavy Trucks	0	0	0			0	0	0			0	0	0			0	0	0			0
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments: Only EB has a stop sign for this location, EB/WB stop sign shown due to technical limitations

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

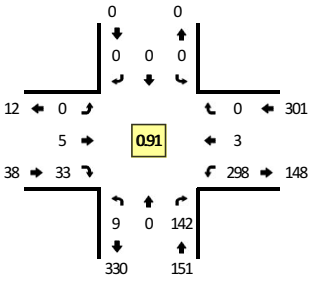
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

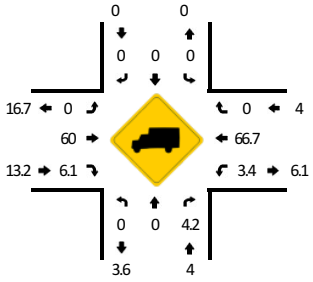
LOCATION: NE Everett St (SR 500) -- NE 3rd St
CITY/STATE: Clark, WA

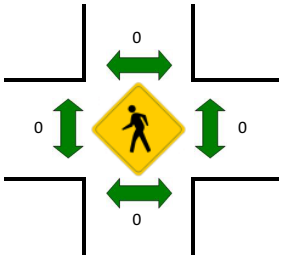
QC JOB #: 16977011
DATE: Tue, Apr 8 2025

Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

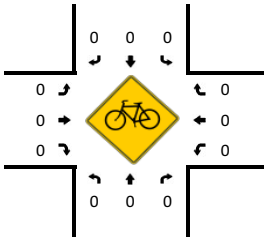


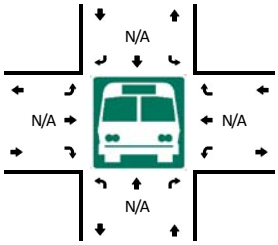




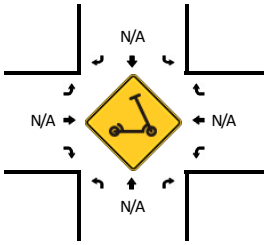












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					NE 3rd St (Eastbound)					NE 3rd St (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	0	3	0	0	0	0	0	0	0	0	0	1	0	0	9	0	0	0	0	13	
7:05 AM	0	0	4	0	0	0	0	0	0	0	0	0	2	0	0	14	1	0	0	0	21	
7:10 AM	1	0	1	0	0	0	0	0	0	0	0	1	3	0	0	13	0	0	0	0	19	
7:15 AM	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	15	0	0	0	0	19	
7:20 AM	1	0	6	0	0	0	0	0	0	0	0	0	1	0	0	7	0	0	0	0	15	
7:25 AM	0	0	2	0	0	0	0	0	0	0	0	0	1	0	0	16	1	0	0	0	20	
7:30 AM	1	0	7	0	0	0	0	0	0	0	0	0	1	0	0	15	0	0	0	0	24	
7:35 AM	1	0	7	0	0	0	0	0	0	0	0	1	2	0	0	13	0	0	0	0	24	
7:40 AM	1	0	6	0	0	0	0	0	0	0	0	0	2	0	0	13	0	0	0	0	22	
7:45 AM	0	0	2	0	0	0	0	0	0	0	0	0	2	0	0	21	1	0	0	0	26	
7:50 AM	0	0	7	0	0	0	0	0	0	0	0	0	4	0	0	32	2	0	0	0	45	
7:55 AM	0	0	8	0	0	0	0	0	0	0	0	0	2	0	0	16	0	0	0	0	26	274
8:00 AM	2	0	13	0	0	0	0	0	0	0	0	0	2	0	0	29	0	0	0	0	46	307
8:05 AM	0	0	17	0	0	0	0	0	0	0	0	0	2	0	0	25	0	0	0	0	44	330
8:10 AM	0	0	16	0	0	0	0	0	0	0	0	0	3	0	0	26	0	0	0	0	45	356
8:15 AM	0	0	14	0	0	0	0	0	0	0	0	1	2	0	0	24	1	0	1	0	43	380
8:20 AM	3	0	8	0	0	0	0	0	0	0	0	2	5	0	0	19	0	0	0	0	37	402
8:25 AM	0	0	9	0	0	0	0	0	0	0	0	0	3	0	0	31	0	0	0	0	43	425
8:30 AM	0	0	10	0	0	0	0	0	0	0	0	1	3	0	0	27	0	0	0	0	41	442
8:35 AM	3	0	8	0	0	0	0	0	0	0	0	0	3	0	0	34	0	0	0	0	48	466
8:40 AM	1	0	14	0	0	0	0	0	0	0	0	1	2	0	0	16	0	0	0	0	34	478
8:45 AM	0	0	18	0	0	0	0	0	0	0	0	0	2	0	0	18	0	0	0	0	38	490
8:50 AM	1	0	13	0	0	0	0	0	0	0	0	0	2	0	0	12	0	0	0	0	28	473
8:55 AM	2	0	19	0	0	0	0	0	0	0	0	0	1	0	0	10	1	0	0	0	33	480

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	8	0	184	0	0	0	0	0	0	0	0	0	28	0	0	320	0	0	0	0	540
Heavy Trucks	0	0	4			0	0	0			0	0	0			16	0	0			20
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments: Only EB has a stop sign for this location, EB/WB stop sign shown due to technical limitations

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

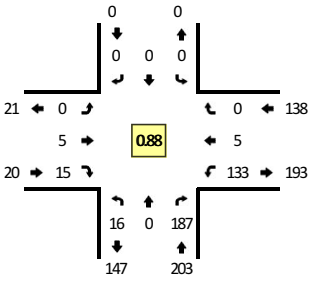
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

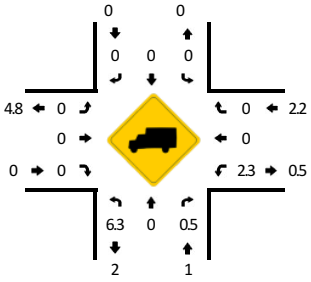
LOCATION: NE Everett St (SR 500) -- NE 3rd St
CITY/STATE: Clark, WA

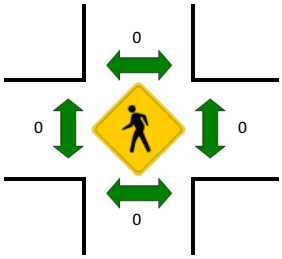
QC JOB #: 16977012
DATE: Tue, Apr 8 2025

Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

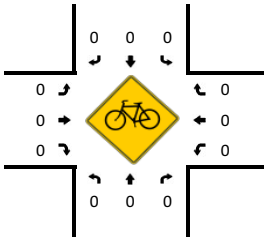


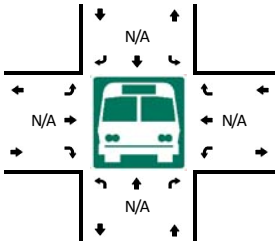




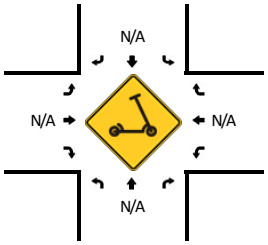












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					NE 3rd St (Eastbound)					NE 3rd St (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	5	0	15	0	0	0	0	0	0	0	0	0	2	0	0	9	0	0	0	0	31	
4:05 PM	0	0	24	0	0	0	0	0	0	0	0	1	1	0	0	12	0	0	0	0	38	
4:10 PM	3	0	15	0	0	0	0	0	0	0	0	2	4	0	0	13	0	0	0	0	37	
4:15 PM	2	0	17	0	0	0	0	0	0	0	0	1	1	0	0	14	1	0	0	0	36	
4:20 PM	1	0	11	0	0	0	0	0	0	0	0	0	1	0	0	7	1	0	0	0	21	
4:25 PM	1	0	11	0	0	0	0	0	0	0	0	1	0	0	0	8	0	0	0	0	21	
4:30 PM	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	0	0	25	
4:35 PM	1	0	14	0	0	0	0	0	0	0	0	0	0	0	0	8	1	0	0	0	24	
4:40 PM	3	0	9	0	0	0	0	0	0	0	0	3	1	0	0	13	0	0	0	0	29	
4:45 PM	0	0	14	0	0	0	0	0	0	0	0	0	4	0	0	15	0	0	0	0	33	
4:50 PM	0	0	13	0	0	0	0	0	0	0	0	0	3	0	0	13	0	0	0	0	29	
4:55 PM	4	0	13	0	0	0	0	0	0	0	0	0	0	0	0	10	1	0	0	0	28	352
5:00 PM	0	0	17	0	0	0	0	0	0	0	0	1	5	0	0	8	0	0	1	0	32	353
5:05 PM	2	0	19	0	0	0	0	0	0	0	0	0	3	0	0	8	0	0	0	0	32	347
5:10 PM	4	0	21	0	0	0	0	0	0	0	0	1	0	0	0	12	0	0	0	0	38	348
5:15 PM	0	0	11	0	0	0	0	0	0	0	0	0	1	0	0	11	0	0	0	0	23	335
5:20 PM	1	0	16	0	0	0	0	0	0	0	0	0	1	0	0	9	0	0	0	0	27	341
5:25 PM	1	0	13	0	0	0	0	0	0	0	0	0	1	0	0	8	0	0	0	0	23	343
5:30 PM	1	0	11	0	0	0	0	0	0	0	0	0	1	0	0	13	1	0	0	0	27	345
5:35 PM	0	0	22	0	0	0	0	0	0	0	0	0	1	0	0	9	0	0	0	0	32	353
5:40 PM	2	0	11	0	0	0	0	0	0	0	0	1	2	0	0	9	0	0	0	0	25	349
5:45 PM	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	16	1	0	0	0	37	353
5:50 PM	1	0	13	0	0	0	0	0	0	0	0	2	0	0	0	19	2	0	0	0	37	361
5:55 PM	0	0	13	0	0	0	0	0	0	0	0	1	0	0	0	10	0	0	0	0	24	357

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	24	0	228	0	0	0	0	0	0	0	0	8	32	0	0	112	0	0	4	0	408
Heavy Trucks	0	0	0			0	0	0			0	0	0			0	0	0			0
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments: Only EB has a stop sign for this location, EB/WB stop sign shown due to technical limitations

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

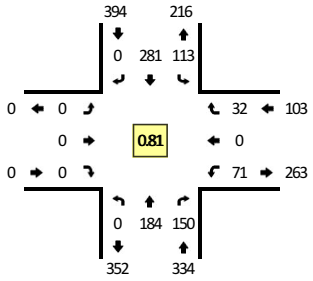
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

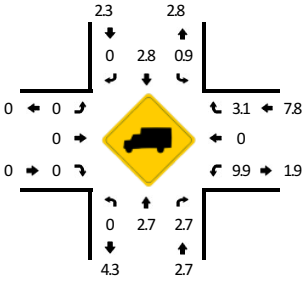
LOCATION: NE Everett St (SR 500) -- NE Everett Dr
CITY/STATE: Camas, WA

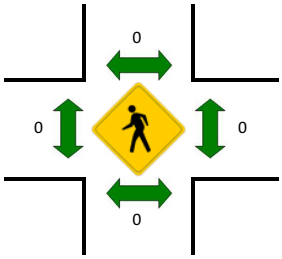
QC JOB #: 16977016
DATE: Tue, Apr 8 2025

Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 8:05 AM -- 8:20 AM

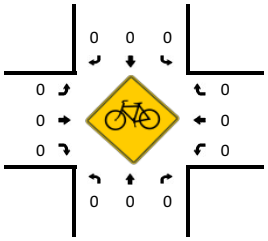


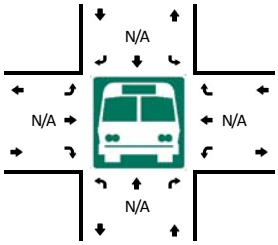




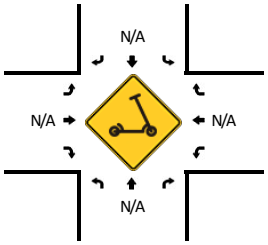












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					NE Everett Dr (Eastbound)					NE Everett Dr (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	3	2	0	0	2	8	0	0	0	0	0	0	0	0	1	0	1	0	0	17	
7:05 AM	0	8	5	0	0	1	12	0	0	0	0	0	0	0	0	2	0	1	0	0	29	
7:10 AM	0	4	1	0	0	2	12	0	0	0	0	0	0	0	0	3	0	1	0	0	23	
7:15 AM	0	7	2	0	0	4	10	0	0	0	0	0	0	0	0	1	0	0	0	0	24	
7:20 AM	0	3	3	0	0	2	9	0	0	0	0	0	0	0	0	1	0	1	0	0	19	
7:25 AM	0	4	3	0	0	7	12	0	0	0	0	0	0	0	0	2	0	1	0	0	29	
7:30 AM	0	8	4	0	0	4	12	0	0	0	0	0	0	0	0	1	0	6	0	0	35	
7:35 AM	0	5	3	0	0	3	14	0	0	0	0	0	0	0	0	2	0	2	0	0	29	
7:40 AM	0	12	3	0	0	3	13	0	0	0	0	0	0	0	0	1	0	0	0	0	32	
7:45 AM	0	11	3	0	0	1	20	0	0	0	0	0	0	0	0	3	0	1	0	0	39	
7:50 AM	0	8	6	0	0	5	30	0	0	0	0	0	0	0	0	1	0	1	0	0	51	
7:55 AM	0	16	8	0	0	11	9	0	0	0	0	0	0	0	0	0	0	1	0	0	45	372
8:00 AM	0	24	17	0	0	8	14	0	0	0	0	0	0	0	0	1	0	2	0	0	66	421
8:05 AM	0	37	16	0	0	5	32	0	0	0	0	0	0	0	0	2	0	6	0	0	98	490
8:10 AM	0	21	8	0	0	8	43	0	0	0	0	0	0	0	0	0	0	0	0	0	80	547
8:15 AM	0	18	14	0	0	6	38	0	0	0	0	0	0	0	0	2	0	1	0	0	79	602
8:20 AM	0	8	15	0	0	11	25	0	0	0	0	0	0	0	0	3	0	1	0	0	63	646
8:25 AM	0	9	12	0	0	12	20	0	0	0	0	0	0	0	0	11	0	4	0	0	68	685
8:30 AM	0	9	22	0	0	19	20	0	0	0	0	0	0	0	0	5	0	2	0	0	77	727
8:35 AM	0	9	21	0	0	22	12	0	0	0	0	0	0	0	0	15	0	5	0	0	84	782
8:40 AM	0	11	9	0	0	5	16	0	0	0	0	0	0	0	0	17	0	4	0	0	62	812
8:45 AM	0	14	2	0	0	1	22	0	0	0	0	0	0	0	0	14	0	5	0	0	58	831
8:50 AM	0	15	0	0	0	2	16	0	0	0	0	0	0	0	0	2	0	4	0	0	39	819
8:55 AM	0	21	0	0	0	0	8	0	0	0	0	0	0	0	0	0	0	1	0	0	30	804

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	304	152	0	0	76	452	0	0	0	0	0	0	0	0	16	0	28	0	0	1028
Heavy Trucks	0	4	8			0	16	0			0	0	0			8	0	0			36
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

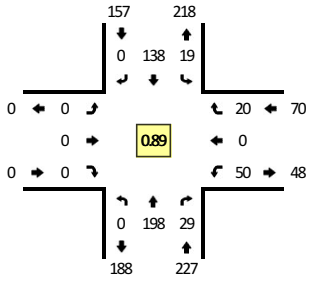
Type of peak hour being reported: Intersection Peak

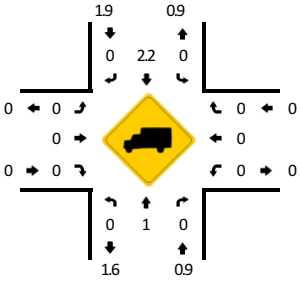
Method for determining peak hour: Total Entering Volume

LOCATION: NE Everett St (SR 500) -- NE Everett Dr
CITY/STATE: Camas, WA

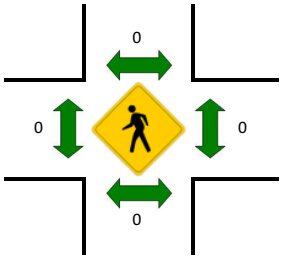
QC JOB #: 16977017
DATE: Tue, Apr 8 2025

Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:45 PM -- 6:00 PM

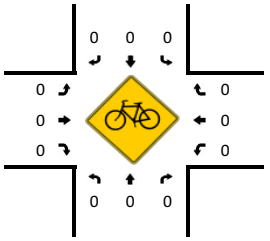


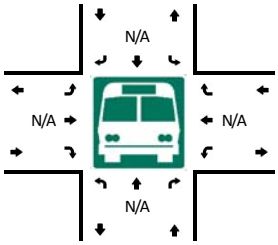


TRUE DATA TO IMPROVE MOBILITY

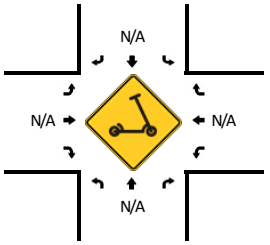












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					NE Everett Dr (Eastbound)					NE Everett Dr (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	0	20	1	0	0	0	12	0	0	0	0	0	0	0	0	2	0	1	0	0	36	
4:05 PM	0	21	3	0	0	1	14	0	0	0	0	0	0	0	0	6	0	2	0	0	47	
4:10 PM	0	13	3	0	0	1	19	0	0	0	0	0	0	0	0	0	0	2	0	0	38	
4:15 PM	0	17	1	0	0	2	15	0	0	0	0	0	0	0	0	1	0	1	0	0	37	
4:20 PM	0	14	0	0	0	1	10	0	0	0	0	0	0	0	0	3	0	0	0	0	28	
4:25 PM	0	13	0	0	0	1	9	0	0	0	0	0	0	0	0	0	0	2	0	0	25	
4:30 PM	0	17	2	0	0	0	8	0	0	0	0	0	0	0	0	0	0	1	0	0	28	
4:35 PM	0	18	0	0	0	1	10	0	0	0	0	0	0	0	0	1	0	0	0	0	30	
4:40 PM	0	15	0	0	0	0	14	0	0	0	0	0	0	0	0	1	0	0	0	0	30	
4:45 PM	0	10	1	0	0	3	17	0	0	0	0	0	0	0	0	3	0	1	0	0	35	
4:50 PM	0	10	3	0	0	7	15	0	0	0	0	0	0	0	0	4	0	2	0	0	41	
4:55 PM	0	18	4	0	0	2	9	0	0	0	0	0	0	0	0	4	0	0	0	0	37	412
5:00 PM	0	19	4	0	0	0	6	0	0	0	0	0	0	0	0	5	0	2	0	0	36	412
5:05 PM	0	19	5	0	0	0	18	0	0	0	0	0	0	0	0	2	0	1	0	0	45	410
5:10 PM	0	21	0	0	0	2	9	0	0	0	0	0	0	0	0	5	0	3	0	0	40	412
5:15 PM	0	14	1	0	0	2	14	0	0	0	0	0	0	0	0	6	0	0	0	0	37	412
5:20 PM	0	19	2	0	0	2	8	0	0	0	0	0	0	0	0	1	0	1	0	0	33	417
5:25 PM	0	21	1	0	0	1	6	0	0	0	0	0	0	0	0	2	0	1	0	0	32	424
5:30 PM	0	13	5	0	0	1	11	0	0	0	0	0	0	0	0	5	0	2	0	0	37	433
5:35 PM	0	19	2	0	0	1	12	0	0	0	0	0	0	0	0	3	0	1	0	0	38	441
5:40 PM	0	10	1	0	0	0	12	0	0	0	0	0	0	0	0	3	0	2	0	0	28	439
5:45 PM	0	17	2	0	0	3	13	0	0	0	0	0	0	0	0	5	0	3	0	0	43	447
5:50 PM	0	14	3	0	0	5	17	0	0	0	0	0	0	0	0	3	0	1	0	0	43	449
5:55 PM	0	12	3	0	0	2	12	0	0	0	0	0	0	0	0	10	0	3	0	0	42	454

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	172	32	0	0	40	168	0	0	0	0	0	0	0	0	72	0	28	0	0	512
Heavy Trucks	0	0	0			0	8	0			0	0	0			0	0	0			8
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

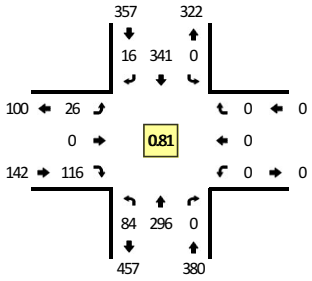
Type of peak hour being reported: Intersection Peak

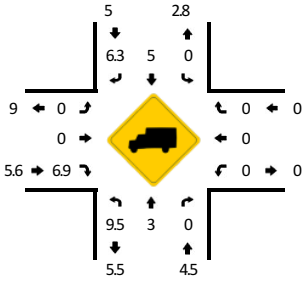
Method for determining peak hour: Total Entering Volume

LOCATION: NE Everett St (SR 500) -- SE Leadbetter Rd
CITY/STATE: Camas, WA

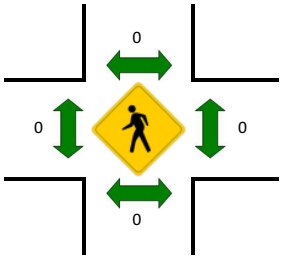
QC JOB #: 16977018
DATE: Tue, Apr 8 2025

Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 8:05 AM -- 8:20 AM

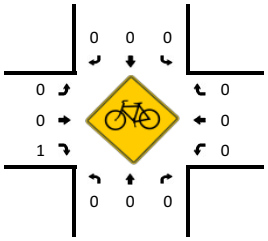


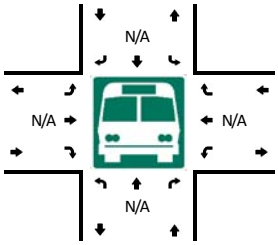


TRUE DATA TO IMPROVE MOBILITY

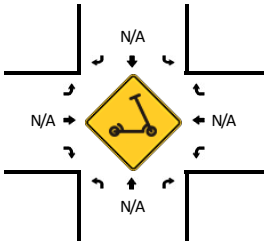












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					SE Leadbetter Rd (Eastbound)					SE Leadbetter Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	10	7	0	0	0	0	9	0	0	0	0	0	4	0	0	0	0	0	0	0	30	
7:05 AM	4	13	0	0	0	0	11	0	0	0	0	0	3	0	0	0	0	0	0	0	31	
7:10 AM	3	4	0	0	0	0	18	0	0	0	0	0	4	0	0	0	0	0	0	0	29	
7:15 AM	9	7	0	0	0	0	13	0	0	0	0	0	2	0	0	0	0	0	0	0	31	
7:20 AM	7	6	0	0	0	0	9	0	0	0	0	0	4	0	0	0	0	0	0	0	26	
7:25 AM	10	9	0	0	0	0	14	0	0	0	1	0	3	0	0	0	0	0	0	0	37	
7:30 AM	9	7	0	0	0	0	12	1	0	0	2	0	4	0	0	0	0	0	0	0	35	
7:35 AM	8	7	0	0	0	0	16	1	0	0	1	0	8	0	0	0	0	0	0	0	41	
7:40 AM	7	14	0	0	0	0	14	0	0	0	1	0	13	0	0	0	0	0	0	0	49	
7:45 AM	16	11	0	0	0	0	20	4	0	0	0	0	12	0	0	0	0	0	0	0	63	
7:50 AM	13	15	0	0	0	0	23	6	0	0	0	0	12	0	0	0	0	0	0	0	69	
7:55 AM	10	21	0	0	0	0	12	1	0	0	4	0	20	0	0	0	0	0	0	0	68	509
8:00 AM	2	30	0	0	0	0	12	1	0	0	6	0	18	0	0	0	0	0	0	0	69	548
8:05 AM	6	42	0	0	0	0	34	1	0	0	4	0	19	0	0	0	0	0	0	0	106	623
8:10 AM	6	29	0	0	0	0	38	5	0	0	2	0	8	0	0	0	0	0	0	0	88	682
8:15 AM	5	28	0	0	0	0	41	0	0	0	0	0	3	0	0	0	0	0	0	0	77	728
8:20 AM	7	23	0	0	0	0	29	0	0	0	1	0	9	0	0	0	0	0	0	0	69	771
8:25 AM	10	21	0	0	0	0	31	0	0	0	2	0	5	0	0	0	0	0	0	0	69	803
8:30 AM	8	27	0	0	0	0	27	1	0	0	4	0	5	0	0	0	0	0	0	0	72	840
8:35 AM	7	26	0	0	0	0	25	1	0	0	1	0	7	0	0	0	0	0	0	0	67	866
8:40 AM	4	21	0	0	0	0	28	0	0	0	1	0	7	0	0	0	0	0	0	0	61	878
8:45 AM	6	13	0	0	0	0	41	0	0	0	1	0	3	0	0	0	0	0	0	0	64	879
8:50 AM	8	17	0	0	0	0	19	0	0	0	0	0	8	0	0	0	0	0	0	0	52	862
8:55 AM	2	23	0	0	0	0	8	0	0	0	0	0	11	0	0	0	0	0	0	0	44	838

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	68	396	0	0	0	0	452	24	0	0	24	0	120	0	0	0	0	0	0	0	1084
Heavy Trucks	16	12	0			0	20	4			0	0	8			0	0	0			60
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

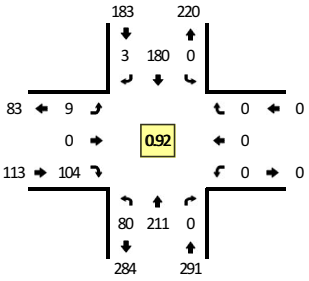
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

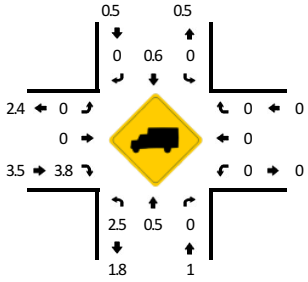
LOCATION: NE Everett St (SR 500) -- SE Leadbetter Rd
CITY/STATE: Camas, WA

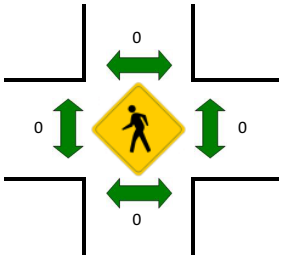
QC JOB #: 16977019
DATE: Tue, Apr 8 2025

Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

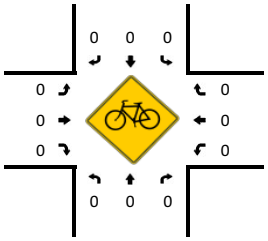


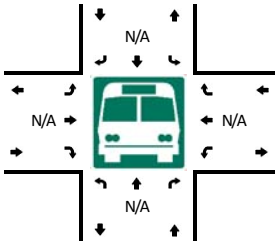




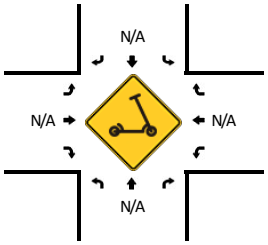












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					SE Leadbetter Rd (Eastbound)					SE Leadbetter Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	5	18	0	0	0	0	16	0	0	0	0	0	12	0	0	0	0	0	0	0	51	
4:05 PM	5	28	0	0	0	0	18	1	0	0	0	0	9	0	0	0	0	0	0	0	61	
4:10 PM	7	14	0	0	0	0	20	0	0	0	0	0	9	0	0	0	0	0	0	0	50	
4:15 PM	10	18	0	0	0	0	16	0	0	0	0	0	7	0	0	0	0	0	0	0	51	
4:20 PM	1	14	0	0	0	0	12	0	0	0	0	0	7	0	0	0	0	0	0	0	34	
4:25 PM	5	13	0	0	0	0	11	0	0	0	0	0	5	0	0	0	0	0	0	0	34	
4:30 PM	6	17	0	0	0	0	7	0	0	0	2	0	3	0	0	0	0	0	0	0	35	
4:35 PM	12	18	0	0	0	0	13	0	0	0	0	0	7	0	0	0	0	0	0	0	50	
4:40 PM	10	14	0	0	0	0	15	0	0	0	1	0	8	0	0	0	0	0	0	0	48	
4:45 PM	9	11	0	0	0	0	18	1	0	0	1	0	9	0	0	0	0	0	0	0	49	
4:50 PM	4	13	0	0	0	0	21	0	0	0	0	0	11	0	0	0	0	0	0	0	49	
4:55 PM	6	22	0	0	0	0	12	0	0	0	1	0	11	0	0	0	0	0	0	0	52	564
5:00 PM	6	22	0	0	0	0	11	0	0	0	0	0	7	0	0	0	0	0	0	0	46	559
5:05 PM	7	22	0	0	0	0	22	0	0	0	1	0	7	0	0	0	0	0	0	0	59	557
5:10 PM	10	16	0	0	0	0	14	0	0	0	1	0	11	0	0	0	0	0	0	0	52	559
5:15 PM	3	16	0	0	0	0	18	2	0	0	0	0	10	0	0	0	0	0	0	0	49	557
5:20 PM	2	20	0	0	0	0	8	0	0	0	0	0	4	0	0	0	0	0	0	0	34	557
5:25 PM	6	19	0	0	0	0	10	0	0	0	3	0	14	0	0	0	0	0	0	0	52	575
5:30 PM	5	18	0	0	0	0	18	0	0	0	1	0	5	0	0	0	0	0	0	0	47	587
5:35 PM	7	18	0	0	0	0	14	0	0	0	1	0	9	0	0	0	0	0	0	0	49	586
5:40 PM	7	15	0	0	0	0	15	1	0	0	0	0	8	0	0	0	0	0	0	0	46	584
5:45 PM	7	15	0	0	0	0	17	1	0	0	0	0	7	0	0	0	0	0	0	0	47	582
5:50 PM	5	17	0	0	0	0	18	0	0	0	0	0	8	0	0	0	0	0	0	0	48	581
5:55 PM	5	17	0	0	0	0	22	1	0	0	0	0	8	0	0	0	0	0	0	0	53	582

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	80	216	0	0	0	0	216	8	0	0	8	0	112	0	0	0	0	0	0	0	640
Heavy Trucks	0	0	0			0	0	0			0	0	8			0	0	0			8
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

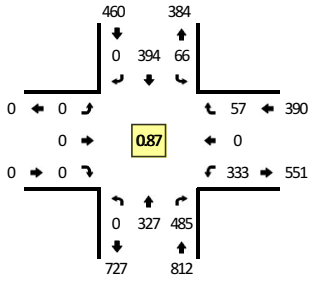
Type of peak hour being reported: Intersection Peak

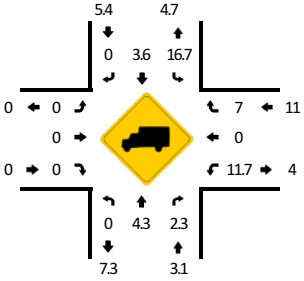
Method for determining peak hour: Total Entering Volume

LOCATION: NE Everett St (SR 500) -- NE 43rd Ave
CITY/STATE: Camas, WA

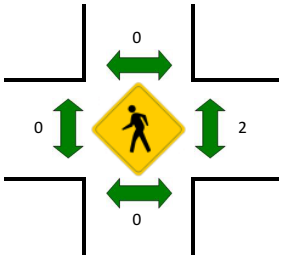
QC JOB #: 16977020
DATE: Tue, Apr 8 2025

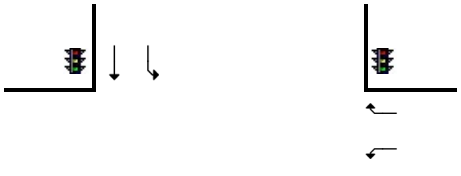
Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 8:10 AM -- 8:25 AM

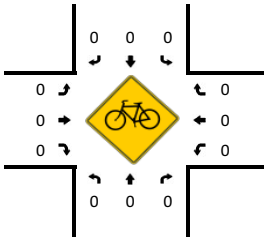


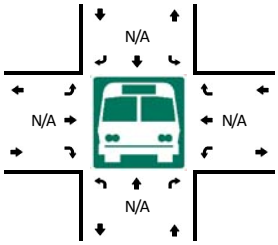


TRUE DATA TO IMPROVE MOBILITY

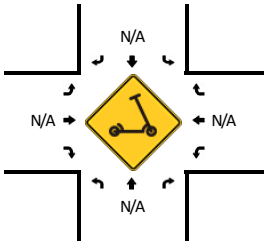












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					NE 43rd Ave (Eastbound)					NE 43rd Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	16	6	0	4	0	14	0	0	0	0	0	0	0	0	8	0	2	0	0	50	
7:05 AM	0	16	3	0	10	2	11	0	0	0	0	0	0	0	0	15	0	1	0	0	58	
7:10 AM	0	8	6	0	3	2	19	0	0	0	0	0	0	0	0	9	0	2	0	0	49	
7:15 AM	0	15	12	0	4	1	15	0	0	0	0	0	0	0	0	12	0	2	0	0	61	
7:20 AM	0	13	15	0	11	1	13	0	0	0	0	0	0	0	0	15	0	0	0	0	68	
7:25 AM	0	13	7	0	5	1	15	0	0	0	0	0	0	0	0	10	0	5	0	0	56	
7:30 AM	0	17	7	0	2	1	16	0	0	0	0	0	0	0	0	14	0	0	0	0	57	
7:35 AM	0	11	9	0	3	1	24	0	0	0	0	0	0	0	0	19	0	2	0	3	72	
7:40 AM	0	19	7	0	10	3	24	0	0	0	0	0	0	0	0	18	0	1	0	1	83	
7:45 AM	0	14	17	0	5	4	25	0	0	0	0	0	0	0	0	18	0	9	0	3	95	
7:50 AM	0	21	17	0	11	4	33	0	0	0	0	0	0	0	0	16	0	3	0	4	109	
7:55 AM	0	23	23	0	9	10	22	0	0	0	0	0	0	0	0	13	0	6	0	3	109	867
8:00 AM	0	30	21	0	22	9	17	0	0	0	0	0	0	0	0	14	0	2	0	1	116	933
8:05 AM	0	36	17	0	17	12	44	0	0	0	0	0	0	0	0	19	0	9	0	2	156	1031
8:10 AM	0	33	14	0	38	11	38	0	0	0	0	0	0	0	0	25	0	1	0	3	163	1145
8:15 AM	0	28	27	0	29	4	39	0	0	0	0	0	0	0	0	25	0	1	0	2	155	1239
8:20 AM	0	31	35	0	30	6	33	0	0	0	0	0	0	0	0	26	0	0	0	0	161	1332
8:25 AM	0	28	29	0	20	4	27	0	0	0	0	0	0	0	0	34	0	3	0	3	148	1424
8:30 AM	0	28	22	0	29	2	30	0	0	0	0	0	0	0	0	47	0	4	0	0	162	1529
8:35 AM	0	31	22	0	23	1	34	0	0	0	0	0	0	0	0	35	0	4	0	0	150	1607
8:40 AM	0	20	9	0	11	2	35	0	0	0	0	0	0	0	0	31	0	1	0	2	111	1635
8:45 AM	0	18	1	0	9	1	42	0	0	0	0	0	0	0	0	48	0	3	0	0	122	1662
8:50 AM	0	20	9	0	5	3	26	0	0	0	0	0	0	0	0	16	0	3	0	1	83	1636
8:55 AM	0	24	7	0	1	0	19	0	0	0	0	0	0	0	0	14	0	2	0	0	67	1594

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	368	692	0	388	84	440	0	0	0	0	0	0	0	0	304	0	28	0	20	2324
Heavy Trucks	0	32	32			20	16	0			0	0	0			20	0	0			120
Buses																					
Pedestrians		0					0					0					4				4
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

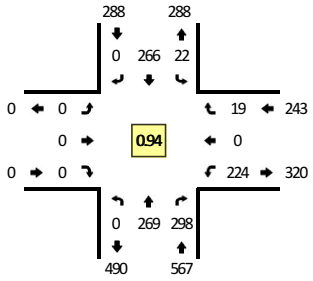
Type of peak hour being reported: Intersection Peak

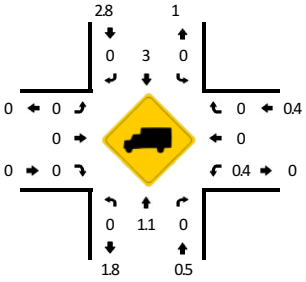
Method for determining peak hour: Total Entering Volume

LOCATION: NE Everett St (SR 500) -- NE 43rd Ave
CITY/STATE: Camas, WA

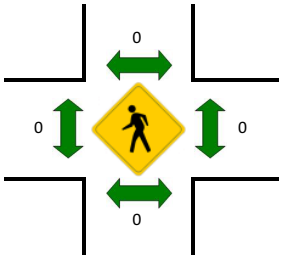
QC JOB #: 16977021
DATE: Tue, Apr 8 2025

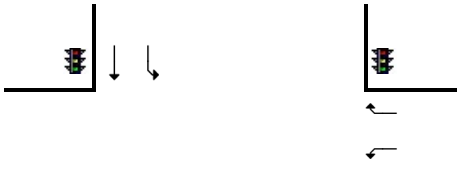
Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:45 PM -- 6:00 PM

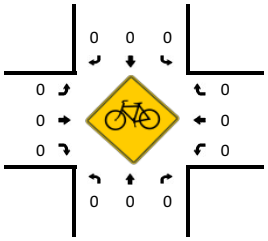


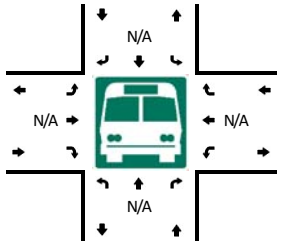


TRUE DATA TO IMPROVE MOBILITY

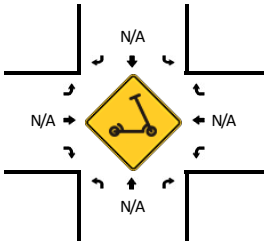












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					NE 43rd Ave (Eastbound)					NE 43rd Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	0	23	5	0	3	3	26	0	0	0	0	0	0	0	0	19	0	0	0	0	79	
4:05 PM	0	30	10	0	5	1	25	0	0	0	0	0	0	0	0	17	0	1	0	1	90	
4:10 PM	0	19	10	0	4	2	25	0	0	0	0	0	0	0	0	13	0	3	0	1	77	
4:15 PM	0	23	8	0	4	1	25	0	0	0	0	0	0	0	0	14	0	1	0	1	77	
4:20 PM	0	17	7	0	5	0	18	0	0	0	0	0	0	0	0	15	0	0	0	0	62	
4:25 PM	0	18	7	0	5	2	14	0	0	0	0	0	0	0	0	14	0	0	0	0	60	
4:30 PM	0	20	13	0	8	1	9	0	0	0	0	0	0	0	0	9	0	1	0	1	62	
4:35 PM	0	25	8	0	10	2	15	0	0	0	0	0	0	0	0	15	0	5	0	0	80	
4:40 PM	0	23	15	0	8	1	26	0	0	0	0	0	0	0	0	6	0	1	0	1	81	
4:45 PM	0	18	17	0	7	1	25	0	0	0	0	0	0	0	0	18	0	1	0	1	88	
4:50 PM	0	14	15	0	6	4	29	0	0	0	0	0	0	0	0	17	0	1	0	2	88	
4:55 PM	0	29	16	0	16	1	19	0	0	0	0	0	0	0	0	17	0	1	0	0	99	943
5:00 PM	0	25	13	0	10	5	15	0	0	0	0	0	0	0	0	25	0	0	0	1	94	958
5:05 PM	0	24	10	0	9	0	29	0	0	0	0	0	0	0	0	20	0	4	0	2	98	966
5:10 PM	0	24	7	0	17	1	19	0	0	0	0	0	0	0	0	26	0	1	0	0	95	984
5:15 PM	0	18	17	0	7	5	29	0	0	0	0	0	0	0	0	9	0	1	0	1	87	994
5:20 PM	0	25	11	0	12	1	11	0	0	0	0	0	0	0	0	20	0	0	0	0	80	1012
5:25 PM	0	22	26	0	9	2	21	0	0	0	0	0	0	0	0	14	0	0	0	1	95	1047
5:30 PM	0	23	16	0	8	1	20	0	0	0	0	0	0	0	0	18	0	0	0	0	86	1071
5:35 PM	0	24	13	0	4	0	26	0	0	0	0	0	0	0	0	19	0	2	0	1	89	1080
5:40 PM	0	19	12	0	10	3	17	0	0	0	0	0	0	0	0	21	0	1	0	0	83	1082
5:45 PM	0	23	14	0	13	3	22	0	0	0	0	0	0	0	0	12	0	1	0	1	89	1083
5:50 PM	0	19	13	0	17	1	27	0	0	0	0	0	0	0	0	22	0	0	0	1	100	1095
5:55 PM	0	23	17	0	13	0	30	0	0	0	0	0	0	0	0	18	0	0	0	1	102	1098

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	260	348	0	172	16	316	0	0	0	0	0	0	0	0	208	0	16	0	12	1348
Heavy Trucks	0	0	0			0	12	0			0	0	0			0	0	0			12
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

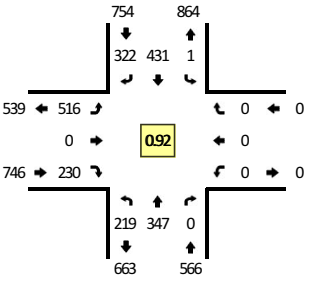
Type of peak hour being reported: Intersection Peak

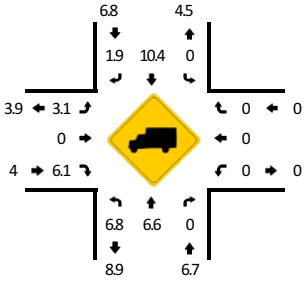
Method for determining peak hour: Total Entering Volume

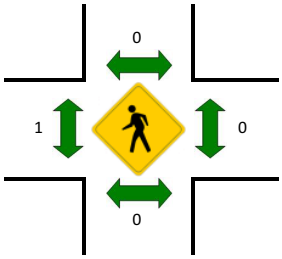
LOCATION: NE Everett St (SR 500) -- NW Lake Rd
CITY/STATE: Camas, WA

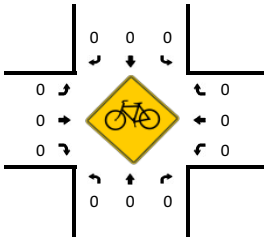
QC JOB #: 16977022
DATE: Tue, Apr 8 2025

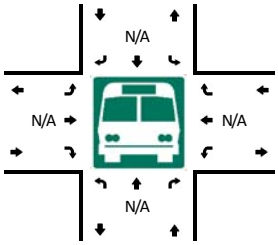
Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 8:10 AM -- 8:25 AM

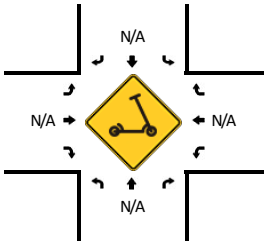












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					NW Lake Rd (Eastbound)					NW Lake Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	9	15	0	0	0	0	12	17	0	0	12	0	8	0	0	0	0	0	0	0	73	
7:05 AM	2	15	0	0	0	0	14	14	0	0	12	0	8	0	0	0	0	0	0	0	65	
7:10 AM	8	11	0	0	0	0	14	19	0	0	14	0	6	0	0	0	0	0	0	0	72	
7:15 AM	14	12	0	0	0	0	11	16	1	0	13	0	10	0	0	0	0	0	0	0	77	
7:20 AM	9	17	0	0	0	0	15	22	1	0	18	0	3	0	0	0	0	0	0	0	85	
7:25 AM	11	15	0	0	0	0	18	10	0	0	16	0	9	0	0	0	0	0	0	0	79	
7:30 AM	9	19	0	0	0	0	22	24	0	0	5	0	9	0	0	0	0	0	0	0	88	
7:35 AM	13	16	0	0	0	0	22	21	0	0	9	0	12	0	0	0	0	0	0	0	93	
7:40 AM	11	20	0	0	0	0	34	25	0	0	22	0	19	0	0	0	0	0	0	0	131	
7:45 AM	22	24	0	0	0	0	31	20	0	0	22	0	20	0	0	0	0	0	0	0	139	
7:50 AM	30	31	0	0	0	0	30	24	0	0	20	0	22	0	0	0	0	0	0	0	157	
7:55 AM	22	28	0	1	0	0	28	19	1	0	38	0	18	0	0	0	0	0	0	0	155	1214
8:00 AM	14	38	0	0	0	0	10	15	0	0	53	0	16	0	0	0	0	0	0	0	146	1287
8:05 AM	20	34	0	0	0	0	35	21	0	0	55	0	19	0	0	0	0	0	0	0	184	1406
8:10 AM	12	28	0	0	0	0	38	37	0	0	54	0	23	0	0	0	0	0	0	0	192	1526
8:15 AM	19	34	0	0	0	0	29	30	0	0	57	0	12	0	0	0	0	0	0	0	181	1630
8:20 AM	15	32	0	1	0	0	36	28	0	0	61	0	16	0	0	0	0	0	0	0	189	1734
8:25 AM	9	29	0	0	0	0	38	28	0	0	53	0	12	0	0	0	0	0	0	0	169	1824
8:30 AM	13	34	0	0	0	0	45	17	0	0	50	0	14	0	0	0	0	0	0	0	173	1909
8:35 AM	19	25	0	0	0	0	51	35	0	0	42	0	27	0	0	0	0	0	0	0	199	2015
8:40 AM	23	18	0	0	0	0	42	24	0	0	19	0	28	0	0	0	0	0	0	0	154	2038
8:45 AM	21	16	0	0	0	0	49	44	0	0	14	0	23	0	0	0	0	0	0	0	167	2066
8:50 AM	22	28	0	1	0	0	43	28	0	0	5	0	29	0	0	0	0	0	0	0	156	2065
8:55 AM	21	30	0	0	0	0	28	12	0	0	8	0	20	0	0	0	0	0	0	0	119	2029

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	184	376	0	4	0	0	412	380	0	0	688	0	204	0	0	0	0	0	0	0	2248
Heavy Trucks	12	28	0			0	20	12			40	0	4			0	0	0			116
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

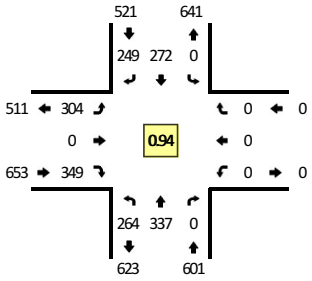
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

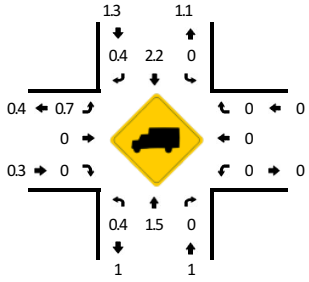
LOCATION: NE Everett St (SR 500) -- NW Lake Rd
CITY/STATE: Camas, WA

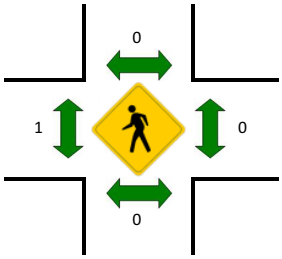
QC JOB #: 16977023
DATE: Tue, Apr 8 2025

Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 4:50 PM -- 5:05 PM

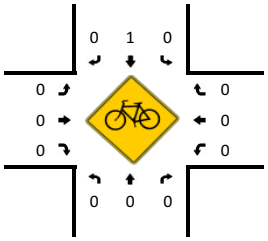


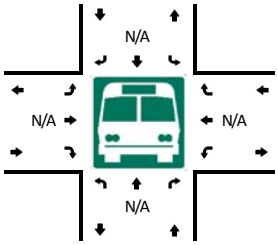




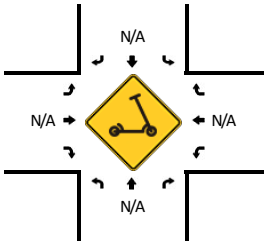












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					NW Lake Rd (Eastbound)					NW Lake Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	20	29	0	0	0	0	23	17	0	0	9	0	24	0	0	0	0	0	0	0	122	
4:05 PM	23	30	0	0	0	0	29	18	0	0	16	0	35	0	0	0	0	0	0	0	151	
4:10 PM	17	28	0	1	0	0	28	13	0	0	20	0	24	0	0	0	0	0	0	0	131	
4:15 PM	25	18	0	0	0	0	29	14	0	0	17	0	29	0	0	0	0	0	0	0	132	
4:20 PM	25	24	0	0	0	0	23	15	0	0	14	0	23	0	0	0	0	0	0	0	124	
4:25 PM	26	21	0	0	0	0	18	12	0	0	8	0	28	0	0	0	0	0	0	0	113	
4:30 PM	27	28	0	0	0	0	14	8	0	0	28	0	23	0	0	0	0	0	0	0	128	
4:35 PM	22	25	0	0	0	0	17	15	0	0	21	0	28	0	0	0	0	0	0	0	128	
4:40 PM	28	25	0	0	0	0	24	16	0	0	21	0	28	0	0	0	0	0	0	0	142	
4:45 PM	19	27	0	0	0	0	21	23	0	0	21	0	26	0	0	0	0	0	0	0	137	
4:50 PM	24	25	0	0	0	0	21	21	0	0	30	0	43	0	0	0	0	0	0	0	164	
4:55 PM	16	32	0	0	0	0	29	17	0	0	28	0	30	0	0	0	0	0	0	0	152	1624
5:00 PM	16	40	0	0	0	0	20	25	0	0	25	0	30	0	0	0	0	0	0	0	156	1658
5:05 PM	32	27	0	0	0	0	23	20	0	0	20	0	26	0	0	0	0	0	0	0	148	1655
5:10 PM	22	37	0	0	0	0	28	23	0	0	19	0	29	0	0	0	0	0	0	0	158	1682
5:15 PM	19	19	0	0	0	0	27	19	0	0	24	0	35	0	0	0	0	0	0	0	143	1693
5:20 PM	21	28	0	1	0	0	10	18	0	0	41	0	31	0	0	0	0	0	0	0	150	1719
5:25 PM	27	23	0	0	0	0	20	20	0	0	27	0	29	0	0	0	0	0	0	0	146	1752
5:30 PM	17	35	0	1	0	0	24	21	0	0	29	0	23	0	0	0	0	0	0	0	150	1774
5:35 PM	21	19	0	0	0	0	25	26	0	0	19	0	19	0	0	0	0	0	0	0	129	1775
5:40 PM	17	24	0	0	0	0	20	18	0	0	33	0	22	0	0	0	0	0	0	0	134	1767
5:45 PM	8	24	0	0	0	0	27	14	0	0	30	0	21	0	0	0	0	0	0	0	124	1754
5:50 PM	20	24	0	1	0	0	25	25	0	0	34	0	32	0	0	0	0	0	0	0	161	1751
5:55 PM	15	35	0	0	0	0	30	18	0	0	20	0	29	0	0	0	0	0	0	0	147	1746

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	224	388	0	0	0	0	280	252	0	0	332	0	412	0	0	0	0	0	0	0	1888
Heavy Trucks	0	4	0			0	0	4			0	0	0			0	0	0			8
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

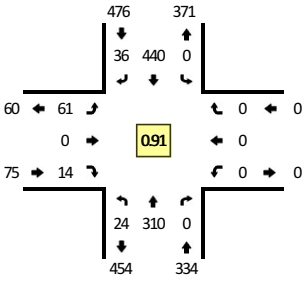
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

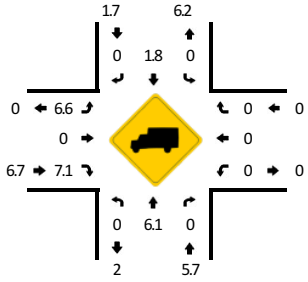
LOCATION: NE Everett St (SR 500) -- NE 17th Ave
CITY/STATE: Camas, WA

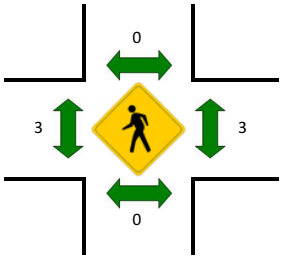
QC JOB #: 16977024
DATE: Tue, Apr 8 2025

Peak-Hour: 7:55 AM -- 8:55 AM
Peak 15-Min: 8:40 AM -- 8:55 AM

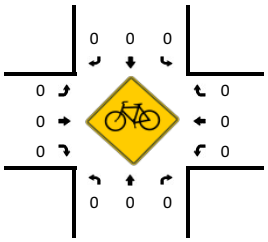


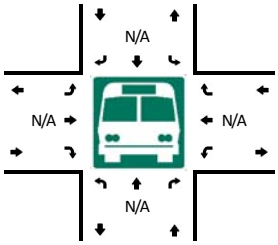




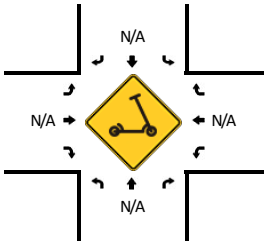












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					NE 17th Ave (Eastbound)					NE 17th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	2	13	0	0	0	0	16	1	0	0	4	0	3	0	0	0	0	0	0	0	39	
7:05 AM	1	8	0	0	0	0	14	2	0	0	5	0	0	0	0	0	0	0	0	0	30	
7:10 AM	0	13	0	0	0	0	14	1	0	0	3	0	0	0	0	0	0	0	0	0	31	
7:15 AM	1	15	0	0	0	0	12	2	0	0	4	0	0	0	0	0	0	0	0	0	34	
7:20 AM	0	14	0	0	0	0	9	5	0	0	5	0	1	0	0	0	0	0	0	0	34	
7:25 AM	0	15	0	0	0	0	12	3	0	0	4	0	1	0	0	0	0	0	0	0	35	
7:30 AM	1	10	0	0	0	0	16	4	0	0	1	0	0	0	0	0	0	0	0	0	32	
7:35 AM	0	21	0	0	0	0	18	3	0	0	7	0	3	0	0	0	0	0	0	0	52	
7:40 AM	0	12	0	0	0	0	20	1	0	0	3	0	1	0	0	0	0	0	0	0	37	
7:45 AM	4	34	0	0	0	0	30	7	0	0	5	0	4	0	0	0	0	0	0	0	84	
7:50 AM	4	28	0	0	0	0	22	7	0	0	5	0	0	0	0	0	0	0	0	0	66	
7:55 AM	6	17	0	0	0	0	36	4	0	0	11	0	1	0	0	0	0	0	0	0	75	549
8:00 AM	2	35	0	0	0	0	27	3	0	0	6	0	2	0	0	0	0	0	0	0	75	585
8:05 AM	1	25	0	0	0	0	26	1	0	0	8	0	0	0	0	0	0	0	0	0	61	616
8:10 AM	3	24	0	0	0	0	43	1	0	0	6	0	0	0	0	0	0	0	0	0	77	662
8:15 AM	1	26	0	0	0	0	31	4	0	0	6	0	0	0	0	0	0	0	0	0	68	696
8:20 AM	0	23	0	0	0	0	42	2	0	0	5	0	3	0	0	0	0	0	0	0	75	737
8:25 AM	0	16	0	0	0	0	31	3	0	0	8	0	1	0	0	0	0	0	0	0	59	761
8:30 AM	3	27	0	0	0	0	30	1	0	0	1	0	2	0	0	0	0	0	0	0	64	793
8:35 AM	3	31	0	0	0	0	46	5	0	0	2	0	0	0	0	0	0	0	0	0	87	828
8:40 AM	1	29	0	0	0	0	30	5	0	0	2	0	1	0	0	0	0	0	0	0	68	859
8:45 AM	1	27	0	0	0	0	38	4	0	0	4	0	2	0	0	0	0	0	0	0	76	851
8:50 AM	3	30	0	0	0	0	60	3	0	0	2	0	2	0	0	0	0	0	0	0	100	885
8:55 AM	2	32	0	0	0	0	35	2	0	0	1	0	0	0	0	0	0	0	0	0	72	882

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	20	344	0	0	0	0	512	48	0	0	32	0	20	0	0	0	0	0	0	0	976
Heavy Trucks	0	12	0			0	16	0			4	0	0			0	0	0			32
Buses																					
Pedestrians		0					0					4					8				12
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

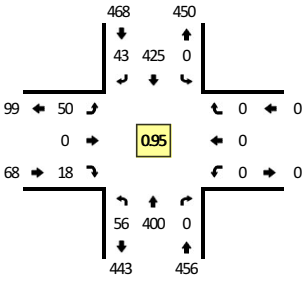
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

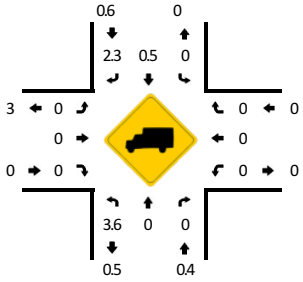
LOCATION: NE Everett St (SR 500) -- NE 17th Ave
CITY/STATE: Camas, WA

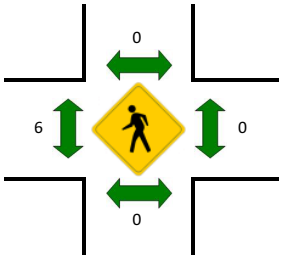
QC JOB #: 16977025
DATE: Tue, Apr 8 2025

Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

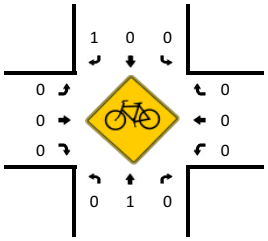


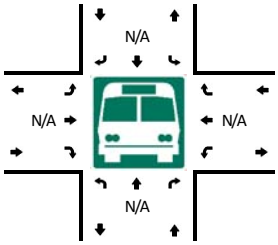




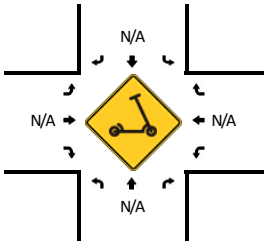












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					NE 17th Ave (Eastbound)					NE 17th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	4	26	0	0	0	0	29	2	0	0	5	0	1	0	0	0	0	0	0	0	67	
4:05 PM	7	26	0	0	0	0	47	4	0	0	4	0	2	0	0	0	0	0	0	0	90	
4:10 PM	5	36	0	0	0	0	29	3	0	0	6	0	1	0	0	0	0	0	0	0	80	
4:15 PM	3	30	0	0	0	0	38	2	0	0	2	0	4	0	0	0	0	0	0	0	79	
4:20 PM	4	25	0	0	0	0	35	5	0	0	2	0	4	0	0	0	0	0	0	0	75	
4:25 PM	4	23	0	0	0	0	36	2	0	0	2	0	3	0	0	0	0	0	0	0	70	
4:30 PM	4	25	0	0	0	0	27	2	0	0	4	0	2	0	0	0	0	0	0	0	64	
4:35 PM	3	36	0	0	0	0	35	2	0	0	3	0	1	0	0	0	0	0	0	0	80	
4:40 PM	4	30	0	0	0	0	35	1	0	0	2	0	1	0	0	0	0	0	0	0	73	
4:45 PM	3	31	0	0	0	0	33	3	0	0	4	0	4	0	0	0	0	0	0	0	78	
4:50 PM	3	36	0	0	0	0	36	2	0	0	3	0	4	0	0	0	0	0	0	0	84	
4:55 PM	7	30	0	0	0	0	37	4	0	0	2	0	1	0	0	0	0	0	0	0	81	921
5:00 PM	3	42	0	0	0	0	30	5	0	0	7	0	2	0	0	0	0	0	0	0	89	943
5:05 PM	4	39	0	0	0	0	36	3	0	0	7	0	0	0	0	0	0	0	0	0	89	942
5:10 PM	9	33	0	0	0	0	34	3	0	0	2	0	1	0	0	0	0	0	0	0	82	944
5:15 PM	5	25	0	0	0	0	44	4	0	0	3	0	0	0	0	0	0	0	0	0	81	946
5:20 PM	1	37	0	0	0	0	40	8	0	0	6	0	2	0	0	0	0	0	0	0	94	965
5:25 PM	7	27	0	0	0	0	37	5	0	0	8	0	0	0	0	0	0	0	0	0	84	979
5:30 PM	7	34	0	0	0	0	28	3	0	0	3	0	2	0	0	0	0	0	0	0	77	992
5:35 PM	5	29	0	0	0	0	29	6	0	0	5	0	1	0	0	0	0	0	0	0	75	987
5:40 PM	5	25	0	0	0	0	33	2	0	0	6	0	3	0	0	0	0	0	0	0	74	988
5:45 PM	9	20	0	0	0	0	31	8	0	0	4	0	1	0	0	0	0	0	0	0	73	983
5:50 PM	2	34	0	0	0	0	37	6	0	0	2	0	0	0	0	0	0	0	0	0	81	980
5:55 PM	5	29	0	0	0	0	23	7	0	0	4	0	0	0	0	0	0	0	0	0	68	967

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	64	456	0	0	0	0	400	44	0	0	64	0	12	0	0	0	0	0	0	0	1040
Heavy Trucks	0	0	0			0	0	4			0	0	0			0	0	0			4
Buses																					
Pedestrians		0					0					8					0				8
Bicycles	0	4	0			0	0	0			0	0	0			0	0	0			4
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

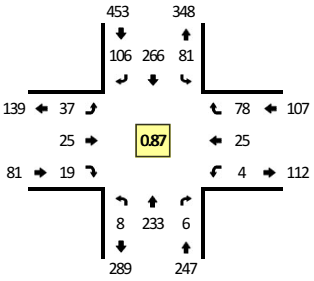
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NE Everett St (SR 500) -- NE 15th Ave
CITY/STATE: Camas, WA

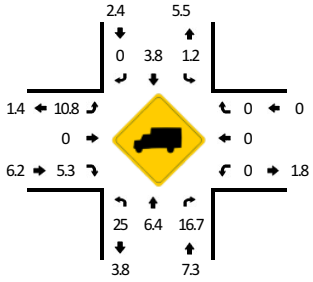
QC JOB #: 16977026
DATE: Tue, Apr 8 2025

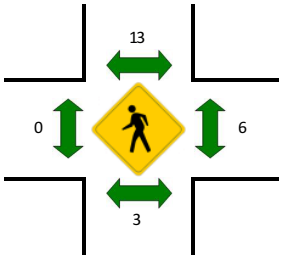
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM



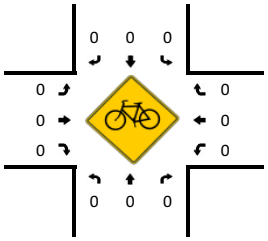


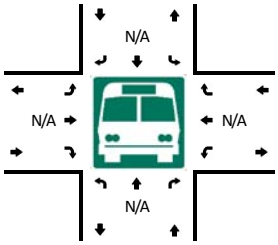
TRUE DATA TO IMPROVE MOBILITY



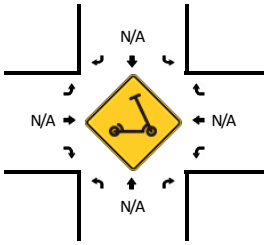












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					NE 15th Ave (Eastbound)					NE 15th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	12	0	0	0	0	11	8	0	0	1	0	1	0	0	0	0	0	0	0	33	
7:05 AM	0	8	0	0	0	0	6	9	0	0	1	0	2	0	0	1	0	0	0	0	27	
7:10 AM	1	11	0	0	0	0	7	6	0	0	3	1	2	0	0	0	1	0	0	0	32	
7:15 AM	1	14	0	0	0	0	9	4	0	0	1	0	3	0	0	0	2	0	0	0	34	
7:20 AM	0	11	0	0	0	0	6	3	0	0	3	0	0	0	0	0	1	0	0	0	24	
7:25 AM	0	9	1	0	0	1	11	2	0	0	5	0	3	0	0	0	0	1	0	0	33	
7:30 AM	0	11	1	0	0	0	3	12	0	0	1	1	1	0	0	0	0	0	0	0	30	
7:35 AM	2	19	1	0	0	1	9	11	0	0	1	0	1	0	0	0	0	0	0	0	45	
7:40 AM	0	9	2	0	0	7	9	6	0	0	2	1	3	0	0	1	0	1	0	0	41	
7:45 AM	1	29	1	0	0	8	18	8	0	0	0	6	1	0	0	0	3	9	0	0	84	
7:50 AM	0	25	0	0	0	2	10	6	0	0	3	3	3	0	0	0	3	4	0	0	59	
7:55 AM	5	12	0	0	0	10	21	9	0	0	2	3	1	0	0	0	2	6	0	0	71	513
8:00 AM	1	20	0	0	0	6	20	2	0	0	13	1	1	0	0	0	5	5	0	0	74	554
8:05 AM	1	20	0	0	0	5	13	8	0	0	5	1	3	0	0	0	1	1	0	0	58	585
8:10 AM	0	23	0	0	0	3	27	9	0	0	2	0	1	0	0	1	0	1	0	0	67	620
8:15 AM	1	24	1	0	0	5	23	6	0	0	2	1	4	0	0	0	1	2	0	0	70	656
8:20 AM	3	20	1	0	0	3	26	13	0	0	1	0	1	0	0	0	1	2	0	0	71	703
8:25 AM	0	8	1	0	0	3	19	12	0	0	5	2	2	0	0	2	0	3	0	0	57	727
8:30 AM	0	26	0	0	0	7	15	7	0	0	2	5	2	0	0	0	0	4	0	0	68	765
8:35 AM	1	20	0	0	0	16	25	9	0	0	1	7	0	0	0	0	5	11	0	0	95	815
8:40 AM	0	15	1	0	0	13	14	8	0	0	1	3	1	0	0	1	3	14	0	0	74	848
8:45 AM	0	19	1	0	0	9	20	8	0	0	0	2	0	0	0	0	4	9	0	0	72	836
8:50 AM	0	21	1	0	0	10	41	12	0	0	3	2	1	0	0	0	3	11	0	0	105	882
8:55 AM	1	17	0	0	0	1	23	12	0	0	2	1	3	0	0	0	2	15	0	0	77	888

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	4	228	8	0	0	80	336	128	0	0	20	20	16	0	0	0	36	140	0	0	1016
Heavy Trucks	0	16	4			0	16	0			4	0	0			0	0	0			40
Buses																					
Pedestrians		0					20					0					20				40
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

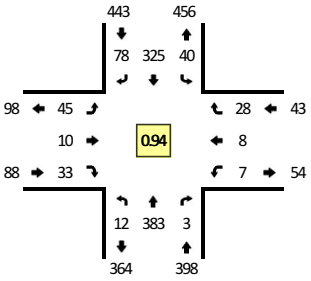
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: NE Everett St (SR 500) -- NE 15th Ave
CITY/STATE: Camas, WA

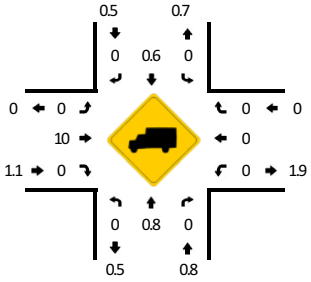
QC JOB #: 16977027
DATE: Tue, Apr 8 2025

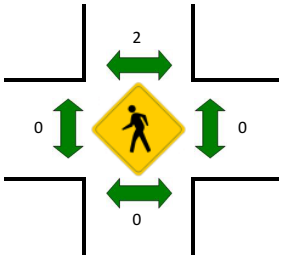
Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 4:50 PM -- 5:05 PM

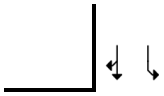


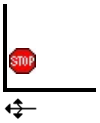


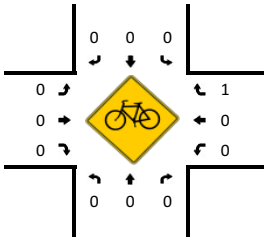
TRUE DATA TO IMPROVE MOBILITY

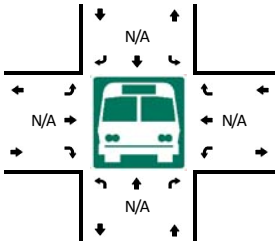


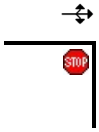


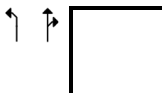


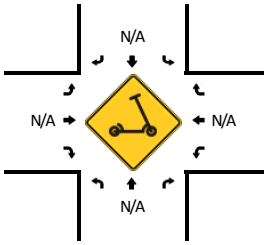












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					NE 15th Ave (Eastbound)					NE 15th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	2	24	1	0	0	1	23	7	0	0	3	0	1	0	0	0	1	2	0	0	65	
4:05 PM	0	29	0	0	0	2	38	10	0	0	5	0	2	0	0	0	0	1	0	0	87	
4:10 PM	1	33	1	0	0	1	23	4	0	0	6	1	4	0	0	0	1	1	0	0	76	
4:15 PM	3	30	1	0	0	3	34	6	0	0	3	0	1	0	0	0	1	0	0	0	82	
4:20 PM	1	25	2	0	0	2	29	8	0	0	1	0	4	0	0	0	0	2	0	0	74	
4:25 PM	3	21	1	0	0	1	33	4	0	0	7	2	4	0	0	0	1	0	0	0	77	
4:30 PM	1	23	1	0	0	0	24	5	0	0	5	3	4	0	0	2	1	1	0	0	70	
4:35 PM	0	35	0	0	0	3	30	4	0	0	3	1	0	0	0	1	0	0	0	0	77	
4:40 PM	1	27	0	0	0	1	24	9	0	0	6	0	4	0	0	0	0	1	0	0	73	
4:45 PM	3	29	0	0	0	5	29	5	0	0	4	0	3	0	0	0	0	2	0	0	80	
4:50 PM	1	35	0	0	0	4	26	9	0	0	3	3	6	0	0	1	1	0	0	0	89	
4:55 PM	2	33	0	0	0	5	28	5	0	0	4	1	1	0	0	0	1	1	0	0	81	931
5:00 PM	0	36	0	0	0	3	25	5	0	0	8	3	4	0	0	2	1	1	0	0	88	954
5:05 PM	0	38	1	0	0	2	25	10	0	0	2	0	5	0	0	1	1	3	0	0	88	955
5:10 PM	1	31	1	0	0	1	26	7	0	0	3	0	1	0	0	0	2	7	0	0	80	959
5:15 PM	1	21	1	0	0	4	33	3	0	0	6	2	3	0	0	0	0	2	0	0	76	953
5:20 PM	1	32	0	0	0	6	31	10	0	0	0	0	2	0	0	0	1	8	1	0	92	971
5:25 PM	1	26	0	0	0	2	27	6	0	0	4	0	3	0	0	1	0	2	0	0	72	966
5:30 PM	1	40	0	0	0	4	21	5	0	0	2	0	1	0	0	0	1	1	0	0	76	972
5:35 PM	0	27	0	0	0	2	20	9	0	0	5	0	2	0	0	1	1	1	0	0	68	963
5:40 PM	0	23	0	0	0	2	25	9	0	0	7	1	3	0	0	0	0	0	0	0	70	960
5:45 PM	1	27	1	0	0	2	24	5	0	0	3	1	1	0	0	0	1	0	0	0	66	946
5:50 PM	3	29	1	0	0	6	23	8	0	0	6	2	2	0	0	0	0	1	0	0	81	938
5:55 PM	1	28	1	0	0	2	14	5	0	0	5	1	3	0	0	0	1	2	1	0	64	921

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	12	416	0	0	0	48	316	76	0	0	60	28	44	0	0	12	12	8	0	0	1032
Heavy Trucks	0	4	0			0	0	0			0	4	0			0	0	0			8
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	4			4
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

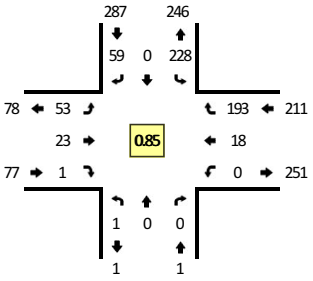
Type of peak hour being reported: Intersection Peak

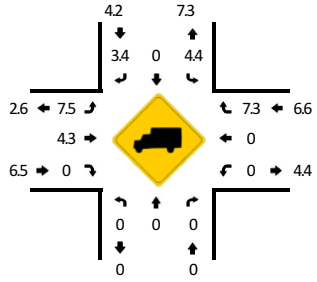
Method for determining peak hour: Total Entering Volume

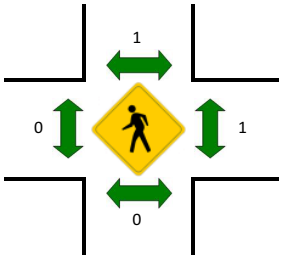
LOCATION: NE Everett St (SR 500) -- NE 14th Ave
CITY/STATE: Camas, WA

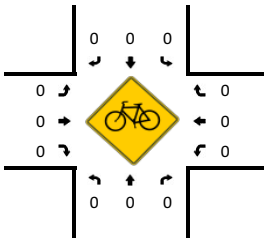
QC JOB #: 16977028
DATE: Tue, Apr 8 2025

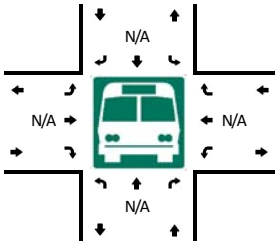
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM

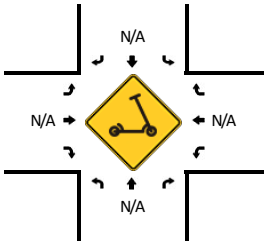












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					NE 14th Ave (Eastbound)					NE 14th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	0	0	0	0	8	0	1	0	0	2	1	0	0	0	0	0	9	0	0	21	
7:05 AM	0	0	0	0	0	5	0	3	0	0	1	1	0	0	0	0	0	6	0	0	16	
7:10 AM	0	0	0	0	0	9	0	1	0	0	2	3	0	0	0	0	0	9	0	0	24	
7:15 AM	0	0	0	0	0	9	0	2	0	0	3	1	0	0	0	0	2	13	0	0	30	
7:20 AM	0	0	0	0	0	5	0	1	0	0	2	0	1	0	0	0	2	7	0	0	18	
7:25 AM	0	0	0	0	0	12	0	2	0	0	3	1	0	0	0	0	0	8	0	0	26	
7:30 AM	0	0	0	0	0	4	0	0	0	0	1	1	0	0	0	0	1	11	0	0	18	
7:35 AM	0	0	0	0	0	10	0	1	0	0	4	3	0	0	0	0	0	16	0	0	34	
7:40 AM	0	0	0	0	0	9	0	2	0	0	1	4	0	0	0	0	1	11	0	0	28	
7:45 AM	0	0	0	0	0	14	0	3	0	0	5	1	0	0	0	0	0	23	0	0	46	
7:50 AM	0	0	0	0	0	10	0	4	0	0	6	4	0	0	0	0	3	20	0	0	47	
7:55 AM	0	0	0	0	0	17	0	4	0	0	3	1	0	0	0	0	1	15	0	0	41	349
8:00 AM	0	0	0	0	0	18	0	4	0	0	4	3	0	0	0	0	1	16	0	0	46	374
8:05 AM	0	0	0	0	0	14	0	2	0	0	4	1	0	0	0	0	0	17	0	0	38	396
8:10 AM	0	0	0	0	0	23	0	5	0	0	4	2	0	0	0	0	0	19	0	0	53	425
8:15 AM	0	0	0	0	0	21	0	5	0	0	8	1	0	0	0	0	0	18	0	0	53	448
8:20 AM	1	0	0	0	0	18	0	9	0	0	5	2	0	0	0	0	0	16	0	0	51	481
8:25 AM	0	0	0	0	0	16	0	8	0	0	3	0	0	0	0	0	0	6	0	0	33	488
8:30 AM	0	0	0	0	0	13	0	3	0	0	10	2	0	0	0	0	1	18	0	0	47	517
8:35 AM	0	0	0	0	0	20	0	5	0	0	2	1	0	0	0	0	3	17	0	0	48	531
8:40 AM	0	0	0	0	0	13	0	4	0	0	5	2	0	0	0	0	0	14	0	0	38	541
8:45 AM	0	0	0	0	0	14	0	4	0	0	2	3	1	0	0	0	2	17	0	0	43	538
8:50 AM	0	0	0	0	0	34	0	7	0	0	2	3	0	0	0	0	3	19	0	0	68	559
8:55 AM	0	0	0	0	0	24	0	3	0	0	4	3	0	0	0	0	8	16	0	0	58	576

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	288	0	56	0	0	32	36	4	0	0	0	52	208	0	0	676
Heavy Trucks	0	0	0			16	0	0			0	4	0			0	0	12			32
Buses																					
Pedestrians		0					0					0					4				4
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

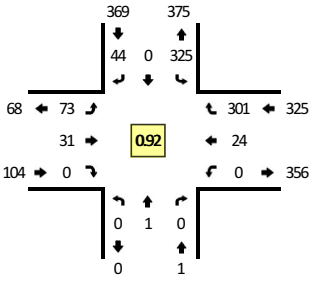
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

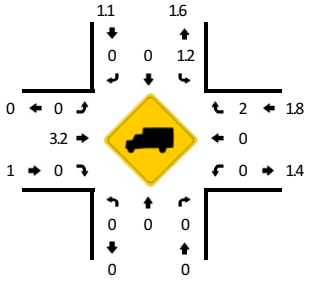
LOCATION: NE Everett St (SR 500) -- NE 14th Ave
CITY/STATE: Camas, WA

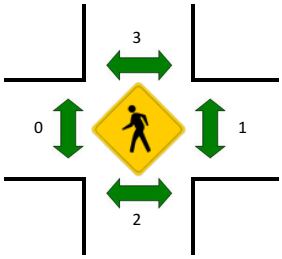
QC JOB #: 16977029
DATE: Tue, Apr 8 2025

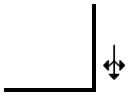
Peak-Hour: 4:10 PM -- 5:10 PM
Peak 15-Min: 4:55 PM -- 5:10 PM

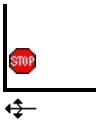


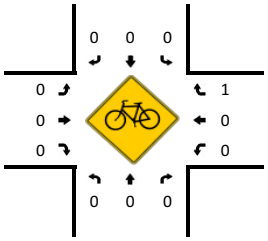
TRUE DATA TO IMPROVE MOBILITY

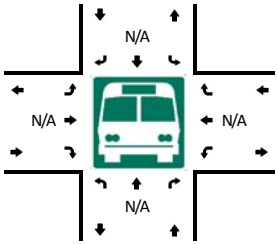


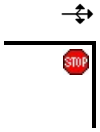


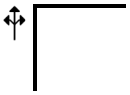


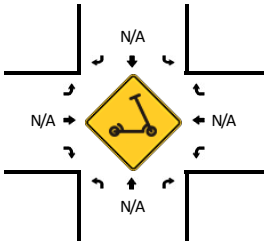












R* = RTOR

5-Min Count Period Beginning At	NE Everett St (SR 500) (Northbound)					NE Everett St (SR 500) (Southbound)					NE 14th Ave (Eastbound)					NE 14th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	0	0	0	0	0	18	0	5	0	0	5	2	0	0	0	0	0	22	0	0	52	
4:05 PM	0	0	0	0	0	36	0	4	0	0	3	0	0	0	0	0	0	28	0	0	71	
4:10 PM	0	0	0	0	0	24	0	3	0	0	8	2	0	0	0	0	1	26	0	0	64	
4:15 PM	0	0	0	0	0	28	0	7	0	0	5	2	0	0	0	0	2	28	0	0	72	
4:20 PM	0	0	0	0	0	28	0	2	0	0	7	2	0	0	0	0	0	22	0	0	61	
4:25 PM	0	0	0	0	0	30	0	5	0	0	4	2	0	0	0	0	1	21	0	0	63	
4:30 PM	0	0	0	0	0	27	0	4	0	0	5	7	0	0	0	0	1	20	0	0	64	
4:35 PM	0	0	0	0	0	26	0	6	0	0	4	0	0	0	0	0	3	29	0	0	68	
4:40 PM	0	1	0	0	0	21	0	3	0	0	6	2	0	0	0	0	2	22	0	0	57	
4:45 PM	0	0	0	0	0	30	0	4	0	0	6	1	0	0	0	0	2	23	0	0	66	
4:50 PM	0	0	0	0	0	30	0	2	0	0	3	2	0	0	0	0	2	29	0	0	68	
4:55 PM	0	0	0	0	0	23	0	5	0	0	10	5	0	0	0	0	1	28	0	0	72	778
5:00 PM	0	0	0	0	0	30	0	1	0	0	10	2	0	0	0	0	3	21	0	0	67	793
5:05 PM	0	0	0	0	0	28	0	2	0	0	5	4	0	0	0	0	6	32	0	0	77	799
5:10 PM	0	0	0	0	0	20	0	3	0	0	9	3	0	0	0	0	1	24	0	0	60	795
5:15 PM	0	0	0	0	0	26	0	9	0	0	6	0	0	0	0	0	2	20	0	0	63	786
5:20 PM	0	1	0	0	0	28	0	6	0	0	10	2	0	0	0	0	1	21	0	0	69	794
5:25 PM	0	0	0	0	0	21	0	5	0	0	6	1	0	0	0	0	0	21	0	0	54	785
5:30 PM	0	0	0	0	0	22	0	2	0	0	12	1	0	0	0	0	1	26	0	0	64	785
5:35 PM	0	0	0	0	0	20	0	1	0	0	4	2	0	0	0	0	0	22	0	0	49	766
5:40 PM	0	0	0	0	0	25	0	2	0	0	1	4	0	0	0	0	0	22	0	0	54	763
5:45 PM	0	0	0	0	0	21	1	2	0	0	3	4	0	0	0	0	2	27	0	0	60	757
5:50 PM	0	0	0	0	0	20	0	2	0	0	7	4	0	0	0	0	1	24	0	0	58	747
5:55 PM	0	0	0	0	0	18	0	1	0	0	6	5	0	0	0	0	3	20	0	0	53	728

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	324	0	32	0	0	100	44	0	0	0	0	40	324	0	0	864
Heavy Trucks	0	0	0			0	0	0			0	0	0			0	0	4			4
Buses																					
Pedestrians		0					0					0					4				4
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

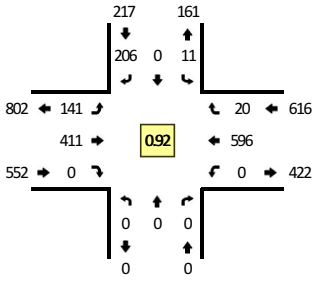
Type of peak hour being reported: Intersection Peak

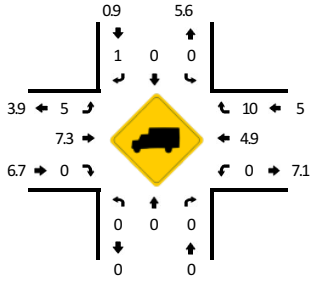
Method for determining peak hour: Total Entering Volume

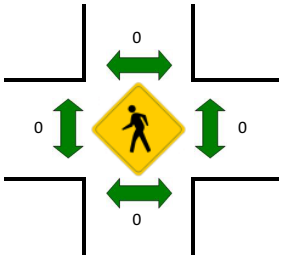
LOCATION: Division St -- NE 6th Ave
CITY/STATE: Camas, WA

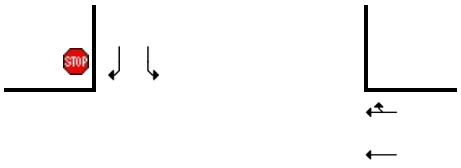
QC JOB #: 16977030
DATE: Tue, Apr 8 2025

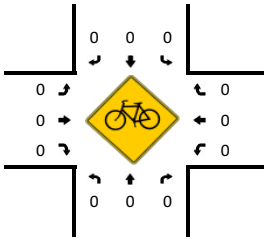
Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 7:50 AM -- 8:05 AM

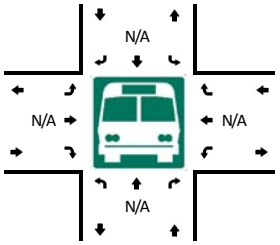




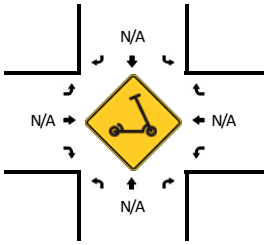












R* = RTOR

5-Min Count Period Beginning At	Division St (Northbound)					Division St (Southbound)					NE 6th Ave (Eastbound)					NE 6th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	0	0	0	0	1	0	10	0	0	8	19	0	0	0	0	31	0	0	0	69	
7:05 AM	0	0	0	0	0	2	0	12	0	0	4	24	0	0	0	0	37	0	0	0	79	
7:10 AM	0	0	0	0	0	0	0	12	0	0	7	22	0	0	0	0	42	2	0	0	85	
7:15 AM	0	0	0	0	0	1	0	17	0	0	6	26	0	0	0	0	30	1	0	0	81	
7:20 AM	0	0	0	0	0	0	0	14	0	0	4	37	0	0	0	0	48	1	0	0	104	
7:25 AM	0	0	0	0	0	1	0	10	0	0	10	20	0	0	0	0	30	0	0	0	71	
7:30 AM	0	0	0	0	0	2	0	21	0	0	8	25	0	0	0	0	56	1	0	0	113	
7:35 AM	0	0	0	0	0	0	0	26	0	0	10	25	0	0	0	0	53	1	0	0	115	
7:40 AM	0	0	0	0	0	0	0	10	0	0	12	18	0	0	0	0	49	0	0	0	89	
7:45 AM	0	0	0	0	0	0	0	17	0	0	12	36	0	0	0	0	44	0	0	0	109	
7:50 AM	0	0	0	0	0	0	0	24	0	0	14	30	0	0	0	0	55	1	0	0	124	
7:55 AM	0	0	0	0	0	1	0	20	0	0	10	48	0	0	0	0	56	4	0	0	139	1178
8:00 AM	0	0	0	0	0	0	0	13	0	0	13	33	0	0	0	0	53	0	0	0	112	1221
8:05 AM	0	0	0	0	0	2	0	9	0	0	11	25	0	0	0	0	42	1	0	0	90	1232
8:10 AM	0	0	0	0	0	0	0	15	0	0	11	37	0	0	0	0	37	0	0	0	100	1247
8:15 AM	0	0	0	0	0	2	0	16	0	0	11	28	0	0	0	0	49	2	0	0	108	1274
8:20 AM	0	0	0	0	0	0	0	17	0	0	18	37	0	0	0	0	47	4	0	0	123	1293
8:25 AM	0	0	0	0	0	1	0	17	0	0	12	32	0	0	0	0	44	2	0	0	108	1330
8:30 AM	0	0	0	0	0	2	0	19	0	0	5	38	0	0	0	0	61	2	0	0	127	1344
8:35 AM	0	0	0	0	0	2	0	17	0	0	11	30	0	0	0	0	47	2	0	0	109	1338
8:40 AM	0	0	0	0	0	0	0	21	0	0	10	35	0	0	0	0	57	0	0	0	123	1372
8:45 AM	0	0	0	0	0	1	0	18	0	0	15	38	0	0	0	0	48	2	0	0	122	1385
8:50 AM	0	0	0	0	0	0	0	21	0	0	7	49	0	0	0	0	34	1	0	0	112	1373
8:55 AM	0	0	0	0	0	1	0	18	0	0	7	34	0	0	0	0	39	0	0	0	99	1333

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	4	0	228	0	0	148	444	0	0	0	0	656	20	0	0	1500
Heavy Trucks	0	0	0			0	0	8			4	8	0			0	36	4			60
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

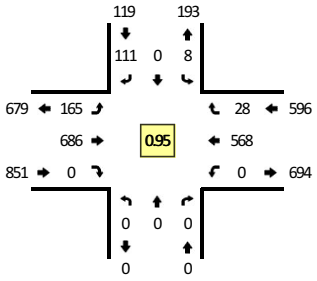
Type of peak hour being reported: Intersection Peak

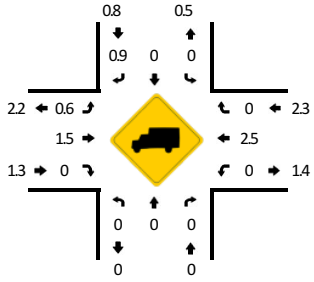
Method for determining peak hour: Total Entering Volume

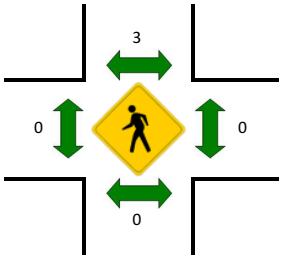
LOCATION: Division St -- NE 6th Ave
CITY/STATE: Camas, WA

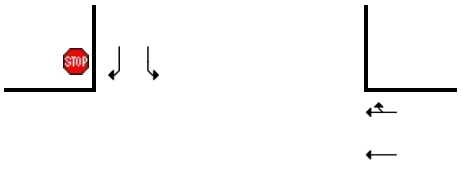
QC JOB #: 16977031
DATE: Tue, Apr 8 2025

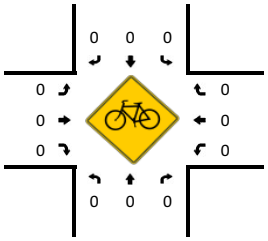
Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:05 PM -- 5:20 PM

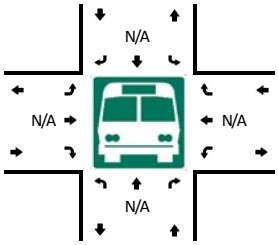




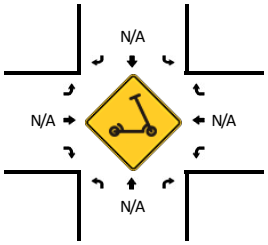












R* = RTOR

5-Min Count Period Beginning At	Division St (Northbound)					Division St (Southbound)					NE 6th Ave (Eastbound)					NE 6th Ave (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	0	0	0	0	0	2	0	8	0	0	17	54	0	0	0	0	55	1	0	0	137	
4:05 PM	0	0	0	0	0	0	0	8	0	0	8	45	0	0	0	0	53	3	0	0	117	
4:10 PM	0	0	0	0	0	0	0	13	0	0	13	45	0	0	0	0	53	2	0	0	126	
4:15 PM	0	0	0	0	0	2	0	10	0	0	11	55	0	0	0	0	37	1	0	0	116	
4:20 PM	0	0	0	0	0	3	0	15	0	0	10	42	0	0	0	0	43	2	0	0	115	
4:25 PM	0	0	0	0	0	0	0	6	0	0	13	61	0	0	0	0	32	3	0	0	115	
4:30 PM	0	0	0	0	0	0	0	9	0	0	16	37	0	0	0	0	47	3	0	0	112	
4:35 PM	0	0	0	0	0	3	0	10	0	0	14	55	0	0	0	0	34	3	0	0	119	
4:40 PM	0	0	0	0	0	1	0	6	0	0	11	56	0	0	0	0	51	4	0	0	129	
4:45 PM	0	0	0	0	0	1	0	8	0	0	14	52	0	0	0	0	47	2	0	0	124	
4:50 PM	0	0	0	0	0	0	0	11	0	0	16	61	0	0	0	0	52	2	0	0	142	
4:55 PM	0	0	0	0	0	0	0	8	0	0	10	60	0	0	0	0	48	1	0	0	127	1479
5:00 PM	0	0	0	0	0	1	0	12	0	0	15	52	0	0	0	0	39	3	0	0	122	1464
5:05 PM	0	0	0	0	0	0	0	7	0	0	13	61	0	0	0	0	59	2	0	0	142	1489
5:10 PM	0	0	0	0	0	0	0	13	0	0	13	60	0	0	0	0	51	0	0	0	137	1500
5:15 PM	0	0	0	0	0	1	0	5	0	0	17	59	0	0	0	0	47	3	0	0	132	1516
5:20 PM	0	0	0	0	0	1	0	12	0	0	13	48	0	0	0	0	54	6	0	0	134	1535
5:25 PM	0	0	0	0	0	0	0	8	0	0	10	62	0	0	0	0	40	2	0	0	122	1542
5:30 PM	0	0	0	0	0	1	0	12	0	0	15	57	0	0	0	0	37	1	0	0	123	1553
5:35 PM	0	0	0	0	0	2	0	9	0	0	18	58	0	0	0	0	43	2	0	0	132	1566
5:40 PM	0	0	0	0	0	0	0	15	0	0	10	51	0	0	0	0	29	0	0	0	105	1542
5:45 PM	0	0	0	0	0	1	0	7	0	0	15	56	0	0	0	0	42	3	0	0	124	1542
5:50 PM	0	0	0	0	0	1	0	7	0	0	23	74	0	0	0	0	47	5	0	0	157	1557
5:55 PM	0	0	0	0	0	4	0	18	0	0	7	51	0	0	0	0	41	2	0	0	123	1553

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	0	0	0	4	0	100	0	0	172	720	0	0	0	0	628	20	0	0	1644
Heavy Trucks	0	0	0			0	0	0			0	4	0			0	20	0			24
Buses																					
Pedestrians		0					4					0					0				4
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

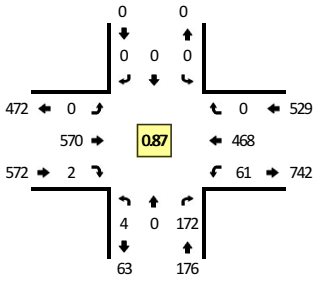
Type of peak hour being reported: Intersection Peak

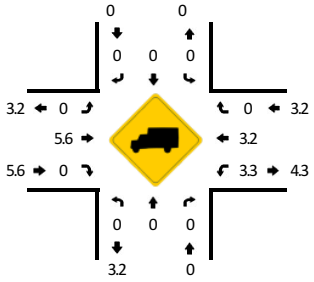
Method for determining peak hour: Total Entering Volume

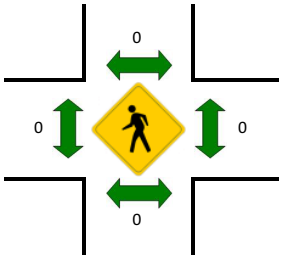
LOCATION: NW Lacamas Ln -- NW Lake Rd
CITY/STATE: Camas, WA

QC JOB #: 16977032
DATE: Tue, Apr 8 2025

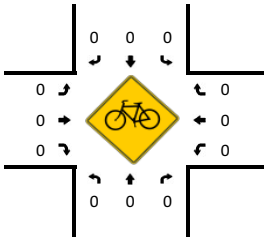
Peak-Hour: 7:55 AM -- 8:55 AM
Peak 15-Min: 8:05 AM -- 8:20 AM

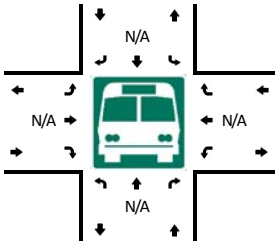




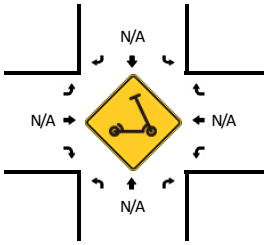












R* = RTOR

5-Min Count Period Beginning At	NW Lacamas Ln (Northbound)					NW Lacamas Ln (Southbound)					NW Lake Rd (Eastbound)					NW Lake Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	0	0	5	0	0	0	0	0	0	0	0	16	1	0	0	2	21	0	0	0	45	
7:05 AM	0	0	3	0	0	0	0	0	0	0	0	16	1	0	0	3	20	0	0	0	43	
7:10 AM	0	0	6	0	0	0	0	0	0	0	0	17	0	0	0	1	21	0	0	0	45	
7:15 AM	0	0	2	0	0	0	0	0	0	0	0	13	0	0	0	5	27	0	0	0	47	
7:20 AM	0	0	12	0	0	0	0	0	0	0	0	16	0	0	0	2	26	0	0	0	56	
7:25 AM	0	0	6	0	0	0	0	0	0	0	0	12	0	0	0	1	25	0	0	0	44	
7:30 AM	0	0	2	0	0	0	0	0	0	0	0	12	0	0	0	3	26	0	0	0	43	
7:35 AM	0	0	4	0	0	0	0	0	0	0	0	27	0	0	0	2	32	0	0	0	65	
7:40 AM	1	0	9	0	0	0	0	0	0	0	0	28	0	0	0	4	29	0	0	0	71	
7:45 AM	0	0	14	0	0	0	0	0	0	0	0	33	0	0	0	1	41	0	0	0	89	
7:50 AM	0	0	13	0	0	0	0	0	0	0	0	34	0	0	0	6	43	0	0	0	96	
7:55 AM	1	0	10	0	0	0	0	0	0	0	0	49	0	0	0	3	37	0	0	0	100	744
8:00 AM	0	0	26	0	0	0	0	0	0	0	0	44	0	0	0	2	21	0	0	0	93	792
8:05 AM	0	0	17	0	0	0	0	0	0	0	0	61	0	0	0	4	45	0	0	0	127	876
8:10 AM	0	0	23	0	0	0	0	0	0	0	0	62	0	0	0	4	42	0	0	0	131	962
8:15 AM	0	0	14	0	0	0	0	0	0	0	0	52	0	0	0	3	39	0	0	0	108	1023
8:20 AM	2	0	14	0	0	0	0	0	0	0	0	60	0	0	0	11	39	0	0	0	126	1093
8:25 AM	0	0	22	0	0	0	0	0	0	0	0	47	0	0	0	9	30	0	0	0	108	1157
8:30 AM	0	0	21	0	0	0	0	0	0	0	0	53	0	0	0	1	29	0	0	0	104	1218
8:35 AM	0	0	10	0	0	0	0	0	0	0	0	31	1	0	0	3	46	0	0	0	91	1244
8:40 AM	1	0	6	0	0	0	0	0	0	0	0	43	0	0	0	5	41	0	0	0	96	1269
8:45 AM	0	0	3	0	0	0	0	0	0	0	0	30	1	0	0	7	55	0	0	0	96	1276
8:50 AM	0	0	6	0	0	0	0	0	0	0	0	38	0	0	0	9	44	0	0	0	97	1277
8:55 AM	0	0	1	0	0	0	0	0	0	0	0	20	0	0	0	1	35	0	0	0	57	1234

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	0	0	216	0	0	0	0	0	0	0	0	700	0	0	0	44	504	0	0	0	1464
Heavy Trucks	0	0	0			0	0	0			0	28	0			4	36	0			68
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

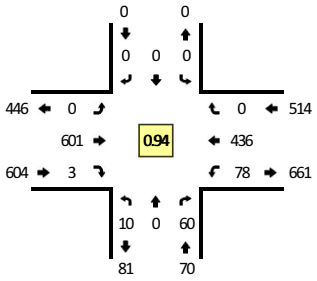
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

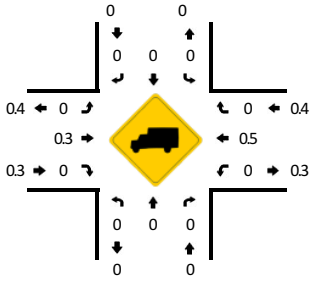
LOCATION: NW Lacamas Ln -- NW Lake Rd
CITY/STATE: Camas, WA

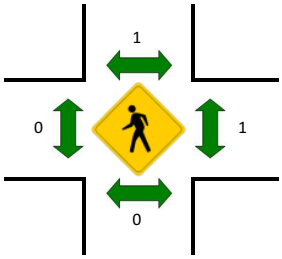
QC JOB #: 16977033
DATE: Tue, Apr 8 2025

Peak-Hour: 4:40 PM -- 5:40 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

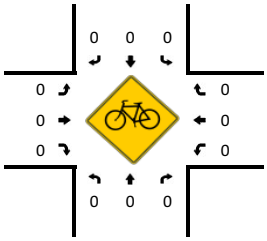


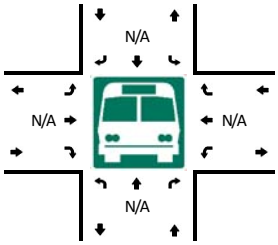




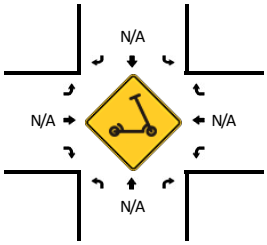












R* = RTOR

5-Min Count Period Beginning At	NW Lacamas Ln (Northbound)					NW Lacamas Ln (Southbound)					NW Lake Rd (Eastbound)					NW Lake Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	0	0	2	0	0	0	0	0	0	0	0	39	0	0	0	4	36	0	0	0	81	
4:05 PM	0	0	2	0	0	0	0	0	0	0	0	51	1	0	0	3	31	0	0	0	88	
4:10 PM	0	0	1	0	0	0	0	0	0	0	0	41	0	0	0	4	33	0	0	0	79	
4:15 PM	1	0	4	0	0	0	0	0	0	0	0	41	0	0	0	6	30	0	0	0	82	
4:20 PM	1	0	2	0	0	0	0	0	0	0	0	41	0	0	0	6	31	0	0	0	81	
4:25 PM	0	0	4	0	0	0	0	0	0	0	0	27	1	0	0	2	32	0	0	0	66	
4:30 PM	0	0	3	0	0	0	0	0	0	0	0	47	0	0	0	2	39	0	0	0	91	
4:35 PM	0	0	2	0	0	0	0	0	0	0	0	49	0	0	0	1	32	0	0	0	84	
4:40 PM	1	0	2	0	0	0	0	0	0	0	0	45	1	0	0	9	47	0	0	0	105	
4:45 PM	2	0	3	0	0	0	0	0	0	0	0	46	0	0	0	7	34	0	0	0	92	
4:50 PM	1	0	11	0	0	0	0	0	0	0	0	65	0	0	0	8	29	0	0	0	114	
4:55 PM	1	0	3	0	0	0	0	0	0	0	0	54	0	0	0	5	35	0	0	0	98	1061
5:00 PM	0	0	5	0	0	0	0	0	0	0	0	52	0	0	0	6	33	0	0	0	96	1076
5:05 PM	1	0	3	0	0	0	0	0	0	0	0	33	0	0	0	4	55	0	0	0	96	1084
5:10 PM	1	0	4	0	0	0	0	0	0	0	0	55	1	0	0	6	36	0	0	0	103	1108
5:15 PM	0	0	6	0	0	0	0	0	0	0	0	53	1	0	0	6	32	0	0	0	98	1124
5:20 PM	0	0	9	0	0	0	0	0	0	0	0	63	0	0	0	8	34	0	0	0	114	1157
5:25 PM	0	0	5	0	0	0	0	0	0	0	0	47	0	0	0	5	38	0	0	0	95	1186
5:30 PM	2	0	2	0	0	0	0	0	0	0	0	51	0	0	0	5	27	0	0	0	87	1182
5:35 PM	1	0	7	0	0	0	0	0	0	0	0	37	0	0	0	9	36	0	0	0	90	1188
5:40 PM	0	0	1	0	0	0	0	0	0	0	0	56	1	0	0	6	33	0	0	0	97	1180
5:45 PM	0	0	7	0	0	0	0	0	0	0	0	47	0	0	0	5	22	0	0	0	81	1169
5:50 PM	1	0	14	0	0	0	0	0	0	0	0	52	1	0	0	4	33	0	0	0	105	1160
5:55 PM	0	0	7	0	0	0	0	0	0	0	0	45	2	0	0	5	38	0	0	0	97	1159

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	4	0	76	0	0	0	0	0	0	0	0	684	8	0	0	80	408	0	0	0	1260
Heavy Trucks	0	0	0			0	0	0			0	4	0			0	0	0			4
Buses																					
Pedestrians		0					4					0					4				8
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

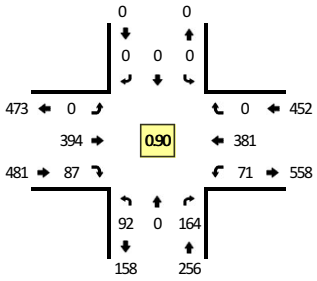
Type of peak hour being reported: Intersection Peak

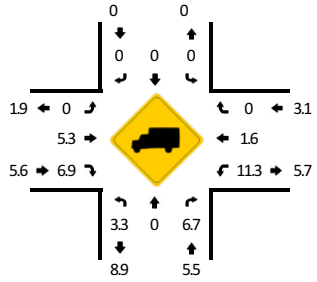
Method for determining peak hour: Total Entering Volume

LOCATION: NW Sierra St -- NW Lake Rd
CITY/STATE: Camas, WA

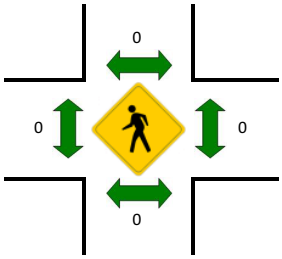
QC JOB #: 16977034
DATE: Tue, Apr 8 2025

Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 8:05 AM -- 8:20 AM

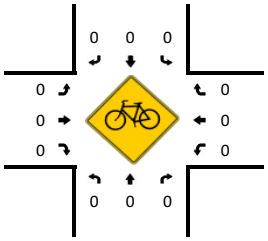


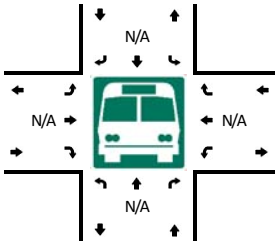


TRUE DATA TO IMPROVE MOBILITY

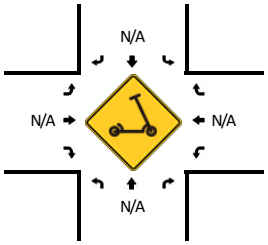












R* = RTOR

5-Min Count Period Beginning At	NW Sierra St (Northbound)					NW Sierra St (Southbound)					NW Lake Rd (Eastbound)					NW Lake Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	2	0	4	0	0	0	0	0	0	0	0	16	3	0	0	3	13	0	0	0	41	
7:05 AM	9	0	5	0	0	0	0	0	0	0	0	9	5	0	0	0	25	0	0	0	53	
7:10 AM	7	0	4	0	0	0	0	0	0	0	0	9	4	0	0	3	22	0	0	0	49	
7:15 AM	5	0	3	0	0	0	0	0	0	0	0	14	2	0	0	2	16	0	0	0	42	
7:20 AM	3	0	2	0	0	0	0	0	0	0	0	15	9	0	0	3	23	0	0	0	55	
7:25 AM	3	0	3	0	0	0	0	0	0	0	0	8	2	0	0	4	24	0	0	0	44	
7:30 AM	6	0	3	0	0	0	0	0	0	0	0	7	5	0	0	3	22	0	0	0	46	
7:35 AM	4	0	4	0	0	0	0	0	0	0	0	23	7	0	0	4	22	0	0	0	64	
7:40 AM	9	0	7	0	0	0	0	0	0	0	0	25	6	0	0	4	32	0	0	0	83	
7:45 AM	9	0	7	0	0	0	0	0	0	0	0	16	3	0	0	2	33	0	0	0	70	
7:50 AM	9	0	12	0	0	0	0	0	0	0	0	28	8	0	0	4	42	0	0	0	103	
7:55 AM	10	0	13	0	0	0	0	0	0	0	0	32	4	0	0	8	34	0	0	0	101	751
8:00 AM	11	0	15	0	0	0	0	0	0	0	0	35	7	0	0	3	11	0	0	0	82	792
8:05 AM	8	0	17	0	0	0	0	0	0	0	0	46	8	0	0	10	26	0	0	0	115	854
8:10 AM	8	0	9	0	0	0	0	0	0	0	0	48	8	0	0	3	29	0	0	0	105	910
8:15 AM	8	0	20	0	0	0	0	0	0	0	0	35	3	0	0	5	39	0	0	0	110	978
8:20 AM	5	0	17	0	0	0	0	0	0	0	0	32	6	0	0	5	31	0	0	0	96	1019
8:25 AM	8	0	17	0	0	0	0	0	0	0	0	26	6	0	0	7	28	0	0	0	92	1067
8:30 AM	8	0	16	0	0	0	0	0	0	0	0	32	4	0	0	5	28	0	0	0	93	1114
8:35 AM	5	0	10	0	0	0	0	0	0	0	0	23	9	0	0	5	36	0	0	0	88	1138
8:40 AM	6	0	7	0	0	0	0	0	0	0	0	33	10	0	0	2	43	0	0	0	101	1156
8:45 AM	6	0	11	0	0	0	0	0	0	0	0	24	14	0	0	14	34	0	0	0	103	1189
8:50 AM	8	0	9	0	0	0	0	0	0	0	0	27	9	0	0	15	33	0	0	0	101	1187
8:55 AM	6	0	3	0	0	0	0	0	0	0	0	15	11	0	0	4	33	0	0	0	72	1158

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	96	0	184	0	0	0	0	0	0	0	0	516	76	0	0	72	376	0	0	0	1320
Heavy Trucks	0	0	20			0	0	0			0	20	4			24	4	0			72
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

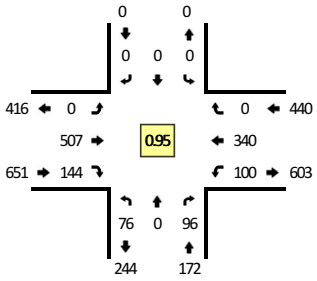
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

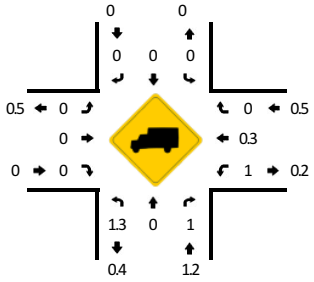
LOCATION: NW Sierra St -- NW Lake Rd
CITY/STATE: Camas, WA

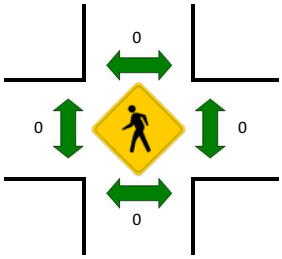
QC JOB #: 16977035
DATE: Tue, Apr 8 2025

Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:10 PM -- 5:25 PM

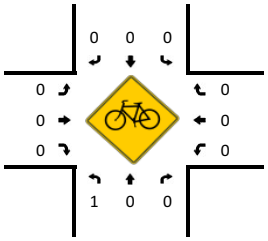


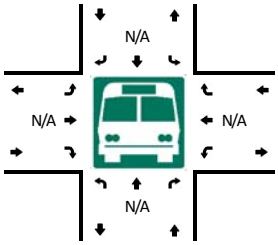




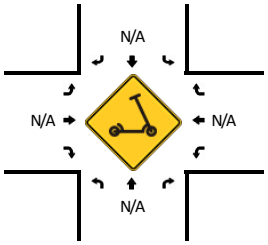












R* = RTOR

5-Min Count Period Beginning At	NW Sierra St (Northbound)					NW Sierra St (Southbound)					NW Lake Rd (Eastbound)					NW Lake Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	10	0	10	0	0	0	0	0	0	0	0	40	11	0	0	9	20	0	0	0	100	
4:05 PM	10	0	3	0	0	0	0	0	0	0	0	31	14	0	0	8	26	0	0	0	92	
4:10 PM	8	0	6	0	0	0	0	0	0	0	0	49	12	0	0	5	26	0	0	0	106	
4:15 PM	7	0	6	0	0	0	0	0	0	0	0	31	6	0	0	2	27	0	0	0	79	
4:20 PM	6	0	5	0	0	0	0	0	0	0	0	33	5	0	0	11	24	0	0	0	84	
4:25 PM	3	0	6	0	0	0	0	0	0	0	0	30	7	0	0	6	28	0	0	0	80	
4:30 PM	9	0	3	0	0	0	0	0	0	0	0	34	13	0	0	9	23	0	0	0	91	
4:35 PM	7	0	8	0	0	0	0	0	0	0	0	44	10	0	0	2	34	0	0	0	105	
4:40 PM	11	0	8	0	0	0	0	0	0	0	0	35	13	0	0	13	29	0	0	0	109	
4:45 PM	5	0	6	0	0	0	0	0	0	0	0	48	22	0	0	1	35	0	0	0	117	
4:50 PM	6	0	14	0	0	0	0	0	0	0	0	44	9	0	0	5	26	0	0	0	104	
4:55 PM	6	0	8	0	0	0	0	0	0	0	0	44	6	0	0	13	29	0	0	0	106	1173
5:00 PM	7	0	10	0	0	0	0	0	0	0	0	43	7	0	0	4	19	0	0	0	90	1163
5:05 PM	6	0	6	0	0	0	0	0	0	0	0	33	12	0	0	12	37	0	0	0	106	1177
5:10 PM	5	0	7	0	0	0	0	0	0	0	0	46	13	0	0	13	26	0	0	0	110	1181
5:15 PM	7	0	9	0	0	0	0	0	0	0	0	47	12	0	0	12	29	0	0	0	116	1218
5:20 PM	5	0	10	0	0	0	0	0	0	0	0	53	14	0	0	8	18	0	0	0	108	1242
5:25 PM	2	0	7	0	0	0	0	0	0	0	0	36	13	0	0	8	35	0	0	0	101	1263
5:30 PM	5	0	7	0	0	0	0	0	0	0	0	38	14	0	0	4	23	0	0	0	91	1263
5:35 PM	5	0	12	0	0	0	0	0	0	0	0	34	12	0	0	6	27	0	0	0	96	1254
5:40 PM	8	0	13	0	0	0	0	0	0	0	0	35	11	0	0	5	31	0	0	0	103	1248
5:45 PM	8	0	7	0	0	0	0	0	0	0	0	45	11	0	0	7	18	0	0	0	96	1227
5:50 PM	6	0	6	0	0	0	0	0	0	0	0	45	7	0	0	5	20	0	0	0	89	1212
5:55 PM	12	0	8	0	0	0	0	0	0	0	0	38	9	0	0	6	33	0	0	0	106	1212

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	68	0	104	0	0	0	0	0	0	0	0	584	156	0	0	132	292	0	0	0	1336
Heavy Trucks	0	0	0			0	0	0			0	0	0			0	0	0			0
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

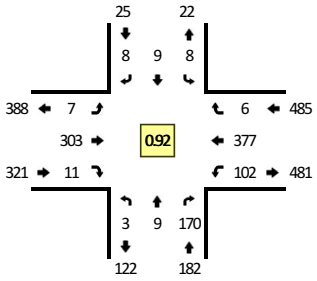
Type of peak hour being reported: Intersection Peak

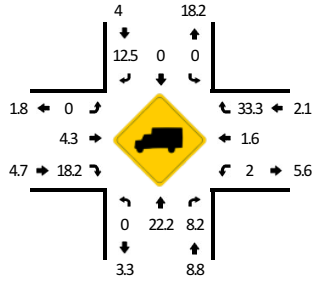
Method for determining peak hour: Total Entering Volume

LOCATION: NW Leadbetter Dr -- NW Lake Rd
CITY/STATE: Camas, WA

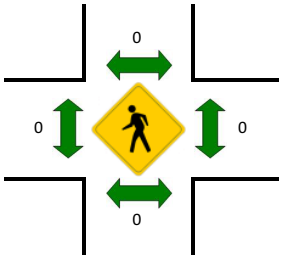
QC JOB #: 16977036
DATE: Tue, Apr 8 2025

Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 8:05 AM -- 8:20 AM

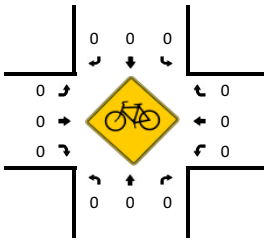


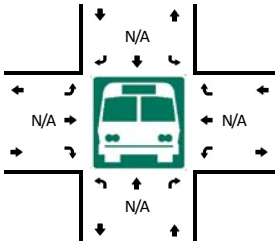


TRUE DATA TO IMPROVE MOBILITY

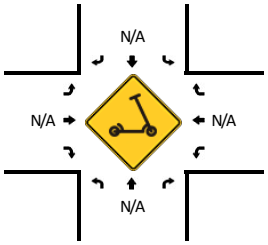












R* = RTOR

5-Min Count Period Beginning At	NW Leadbetter Dr (Northbound)					NW Leadbetter Dr (Southbound)					NW Lake Rd (Eastbound)					NW Lake Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	1	0	8	0	0	0	1	1	0	0	0	15	0	0	0	4	10	0	0	0	40	
7:05 AM	0	0	2	0	0	0	0	3	0	0	0	9	0	0	0	7	23	0	0	0	44	
7:10 AM	0	0	3	0	0	0	3	1	0	0	0	10	0	0	0	7	22	0	0	0	46	
7:15 AM	0	0	4	0	0	0	0	2	0	0	1	14	0	0	0	6	16	0	0	0	43	
7:20 AM	0	0	4	0	0	1	1	0	0	0	0	21	0	0	0	12	13	0	0	0	52	
7:25 AM	0	0	1	0	0	0	3	1	0	0	0	8	0	0	0	12	16	0	0	0	41	
7:30 AM	0	2	1	0	0	0	0	0	0	0	0	11	0	0	0	7	17	0	0	0	38	
7:35 AM	0	1	6	0	0	1	2	0	0	0	0	25	1	0	0	4	26	0	0	0	66	
7:40 AM	0	0	6	0	0	3	2	2	0	0	1	20	3	0	0	9	28	0	0	0	74	
7:45 AM	0	0	10	0	0	0	1	0	0	0	1	11	0	0	0	13	28	0	0	0	64	
7:50 AM	0	1	16	0	0	1	1	1	0	0	1	25	1	0	0	13	39	0	0	0	99	
7:55 AM	0	0	16	0	0	0	1	0	0	0	0	18	2	0	0	7	40	0	0	0	84	691
8:00 AM	0	0	21	0	0	1	1	0	0	0	0	22	2	0	0	3	22	1	0	0	73	724
8:05 AM	3	1	24	0	0	0	0	2	0	0	0	30	0	0	0	9	29	0	0	0	98	778
8:10 AM	0	1	18	0	0	1	1	1	0	0	0	30	0	0	0	5	37	1	0	0	95	827
8:15 AM	0	0	16	0	0	0	1	0	0	0	2	24	0	0	0	11	29	0	0	0	83	867
8:20 AM	0	0	15	0	0	1	0	0	0	0	1	21	0	0	0	8	26	1	0	0	73	888
8:25 AM	0	0	13	0	0	0	0	1	0	0	0	22	0	0	0	5	36	0	0	0	77	924
8:30 AM	0	1	9	0	0	1	0	0	0	0	0	23	0	0	0	10	23	2	0	0	69	955
8:35 AM	0	1	11	0	0	1	1	2	0	0	1	20	1	0	0	9	28	1	0	0	76	965
8:40 AM	0	3	8	0	0	0	0	0	0	0	1	39	2	0	0	15	35	0	0	0	103	994
8:45 AM	0	1	3	0	0	2	3	1	0	0	1	29	3	0	0	7	33	0	0	0	83	1013
8:50 AM	0	1	7	0	0	0	1	2	0	0	1	31	1	0	0	10	33	0	0	0	87	1001
8:55 AM	0	0	4	0	0	0	2	0	0	0	1	21	5	0	0	3	31	3	0	0	70	987

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	12	8	232	0	0	4	8	12	0	0	8	336	0	0	0	100	380	4	0	0	1104
Heavy Trucks	0	0	16			0	0	4			0	8	0			4	8	0			40
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

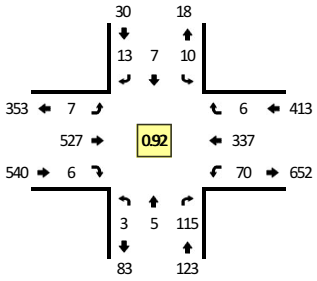
Type of peak hour being reported: Intersection Peak

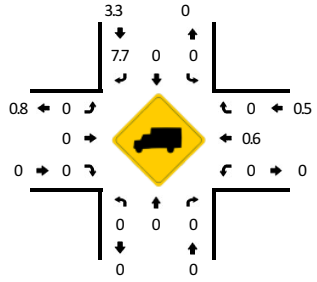
Method for determining peak hour: Total Entering Volume

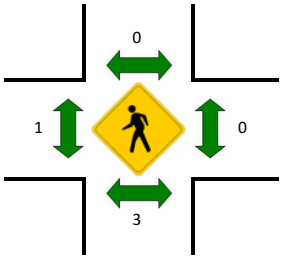
LOCATION: NW Leadbetter Dr -- NW Lake Rd
CITY/STATE: Camas, WA

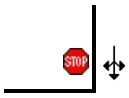
QC JOB #: 16977037
DATE: Tue, Apr 8 2025

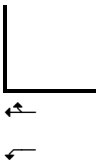
Peak-Hour: 4:35 PM -- 5:35 PM
Peak 15-Min: 4:35 PM -- 4:50 PM

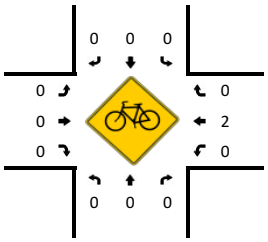


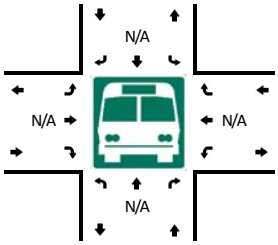


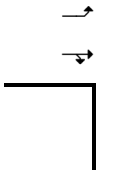


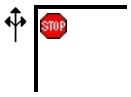


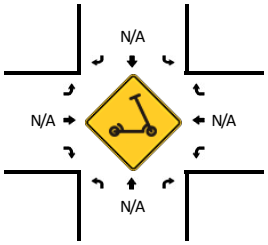












R* = RTOR

5-Min Count Period Beginning At	NW Leadbetter Dr (Northbound)					NW Leadbetter Dr (Southbound)					NW Lake Rd (Eastbound)					NW Lake Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	2	1	10	0	0	0	1	1	0	0	0	48	0	0	0	5	21	0	0	0	89	
4:05 PM	0	0	8	0	0	1	0	1	0	0	0	31	0	0	0	4	32	1	0	0	78	
4:10 PM	0	1	4	0	0	0	0	0	0	0	0	46	2	0	0	4	28	1	0	0	86	
4:15 PM	0	0	6	0	0	0	0	1	0	0	1	36	2	0	0	4	33	0	0	0	83	
4:20 PM	0	2	5	0	0	0	0	0	0	0	0	29	0	0	0	1	30	0	0	0	67	
4:25 PM	0	1	5	0	0	0	1	0	0	0	3	39	3	0	0	6	25	0	0	0	83	
4:30 PM	0	0	4	0	0	1	0	0	0	0	1	41	1	0	0	6	23	0	0	0	77	
4:35 PM	0	1	13	0	0	1	1	2	0	0	1	38	0	0	0	9	34	1	0	0	101	
4:40 PM	0	0	5	0	0	2	0	1	0	0	0	47	1	0	0	6	32	0	0	0	94	
4:45 PM	2	0	13	0	0	1	0	2	0	0	0	53	0	0	0	1	33	2	0	0	107	
4:50 PM	0	0	10	0	0	0	1	2	0	0	0	42	2	0	0	2	33	0	0	0	92	
4:55 PM	0	0	13	0	0	0	1	1	0	0	2	39	0	0	0	8	29	0	0	0	93	1050
5:00 PM	1	0	8	0	0	1	0	1	0	0	0	36	0	0	0	5	17	1	0	0	70	1031
5:05 PM	0	2	7	0	0	0	0	1	0	0	2	39	1	0	0	10	35	1	0	0	98	1051
5:10 PM	0	0	12	0	0	2	1	1	0	0	1	47	1	0	0	4	25	0	0	0	94	1059
5:15 PM	0	1	7	0	0	2	0	0	0	0	1	53	0	0	0	6	30	0	0	0	100	1076
5:20 PM	0	0	11	0	0	0	2	0	0	0	0	48	0	0	0	3	21	0	0	0	85	1094
5:25 PM	0	0	5	0	0	1	1	2	0	0	0	46	0	0	0	10	24	1	0	0	90	1101
5:30 PM	0	1	11	0	0	0	0	0	0	0	0	39	1	0	0	6	24	0	0	0	82	1106
5:35 PM	1	1	10	0	0	1	0	0	0	0	0	36	0	0	0	3	27	0	0	0	79	1084
5:40 PM	0	3	4	0	0	1	1	0	0	0	2	38	0	0	0	1	38	0	0	0	88	1078
5:45 PM	1	0	8	0	0	0	1	2	0	0	0	51	1	0	0	6	17	1	0	0	88	1059
5:50 PM	0	0	11	0	0	1	1	1	0	0	0	36	1	0	0	4	16	2	0	0	73	1040
5:55 PM	0	1	6	0	0	1	1	1	0	0	0	40	0	0	0	8	37	0	0	0	95	1042

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	8	4	124	0	0	16	4	20	0	0	4	552	4	0	0	64	396	12	0	0	1208
Heavy Trucks	0	0	0			0	0	0			0	0	0			0	4	0			4
Buses																					
Pedestrians		8					0					4					0				12
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

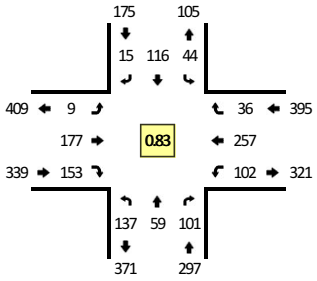
Type of peak hour being reported: Intersection Peak

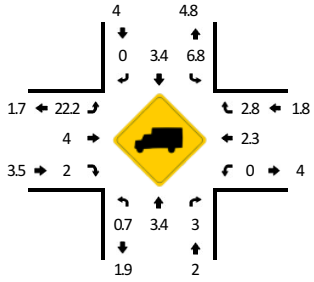
Method for determining peak hour: Total Entering Volume

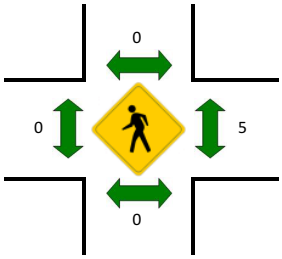
LOCATION: NW Parker St -- NW Lake Rd
CITY/STATE: Camas, WA

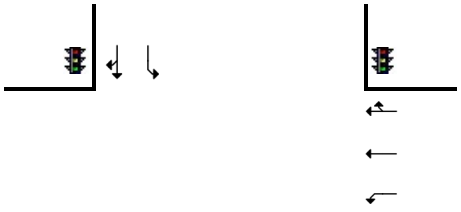
QC JOB #: 16977038
DATE: Tue, Apr 8 2025

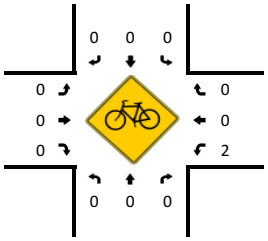
Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 7:50 AM -- 8:05 AM

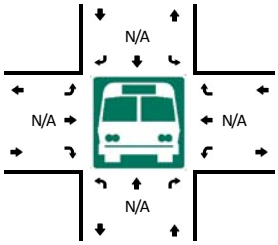


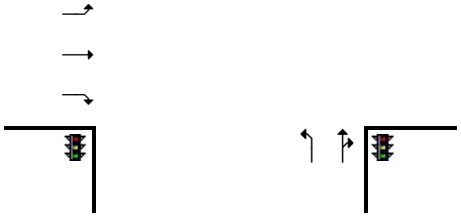


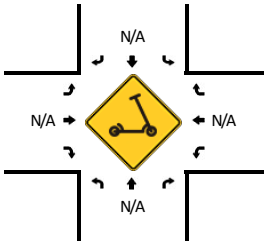












R* = RTOR

5-Min Count Period Beginning At	NW Parker St (Northbound)					NW Parker St (Southbound)					NW Lake Rd (Eastbound)					NW Lake Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
7:00 AM	8	4	0	0	0	3	5	0	0	0	2	11	5	0	2	1	11	0	0	1	53	
7:05 AM	6	5	0	0	0	1	8	1	0	1	0	7	1	0	0	2	23	2	0	0	57	
7:10 AM	2	4	1	0	0	5	9	1	0	0	1	6	2	0	3	5	16	0	0	0	55	
7:15 AM	5	3	2	0	0	3	7	2	0	0	1	10	5	0	1	4	15	2	0	0	60	
7:20 AM	4	2	0	0	1	4	5	1	0	1	0	14	2	0	0	4	10	0	0	1	49	
7:25 AM	5	3	0	0	0	1	5	1	0	0	1	4	2	0	3	6	13	0	0	1	45	
7:30 AM	6	4	1	0	1	3	2	0	0	0	0	8	5	0	2	1	12	1	0	0	46	
7:35 AM	3	5	4	0	1	4	5	1	0	1	0	21	8	0	2	7	19	2	0	0	83	
7:40 AM	5	4	2	0	2	3	10	0	0	1	1	11	9	0	4	10	21	1	0	0	84	
7:45 AM	7	5	2	0	1	5	12	0	0	0	2	8	13	0	10	6	18	1	0	1	91	
7:50 AM	10	6	3	0	1	1	19	2	0	0	0	17	21	0	13	4	27	2	0	3	129	
7:55 AM	7	10	5	0	2	3	19	1	0	0	1	12	12	0	12	17	19	1	0	2	123	875
8:00 AM	15	5	4	0	1	7	10	1	0	0	1	15	8	0	8	7	25	3	0	0	110	932
8:05 AM	16	6	4	0	1	6	10	0	0	0	1	24	5	0	3	4	16	2	0	3	101	976
8:10 AM	8	5	5	0	3	2	10	1	1	1	1	13	6	0	2	13	22	0	0	3	96	1017
8:15 AM	7	4	9	0	1	3	10	3	0	0	0	11	9	0	1	8	25	2	0	0	93	1050
8:20 AM	4	4	3	0	1	2	4	0	0	0	2	16	4	0	5	8	22	3	0	3	81	1082
8:25 AM	16	5	8	0	4	5	9	0	0	1	0	10	3	0	2	6	25	3	0	0	97	1134
8:30 AM	8	1	4	0	0	4	9	2	0	0	1	10	4	0	2	9	17	1	0	0	72	1160
8:35 AM	11	5	4	0	3	3	7	0	0	0	0	19	5	0	3	7	13	2	0	1	83	1160
8:40 AM	15	5	7	0	6	4	3	2	0	0	1	19	9	0	5	9	18	0	0	1	104	1180
8:45 AM	20	3	16	0	6	3	6	1	0	0	1	11	3	0	8	10	28	1	0	0	117	1206
8:50 AM	15	9	9	0	6	3	4	0	0	1	1	12	5	0	6	11	30	1	0	0	113	1190
8:55 AM	13	8	3	0	7	1	5	0	0	0	1	11	4	0	4	9	19	3	0	1	89	1156

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	128	84	64	0	16	44	192	16	0	0	8	176	296	0	132	112	284	44	0	20	1616
Heavy Trucks	0	0	0			4	4	0			0	4	0			0	8	0			20
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

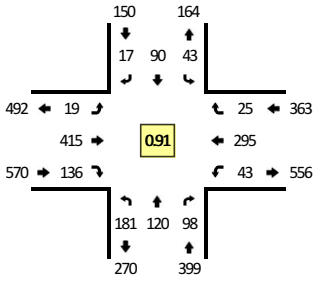
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

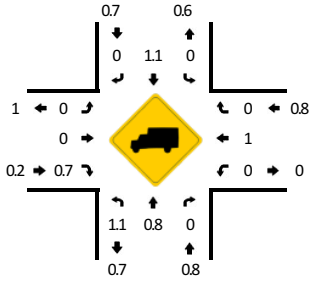
LOCATION: NW Parker St -- NW Lake Rd
CITY/STATE: Camas, WA

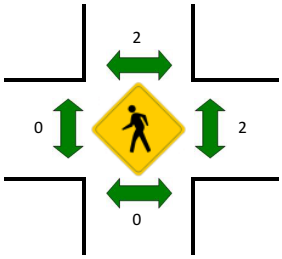
QC JOB #: 16977039
DATE: Tue, Apr 8 2025

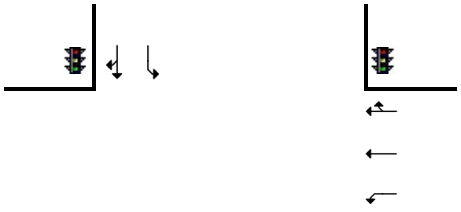
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:35 PM -- 4:50 PM

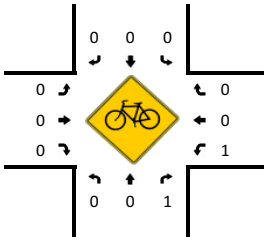


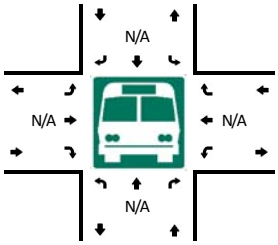
TRUE DATA TO IMPROVE MOBILITY

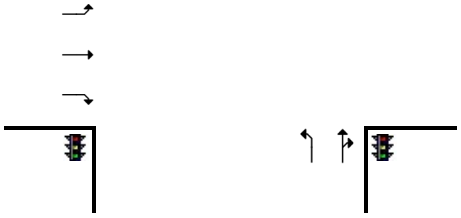


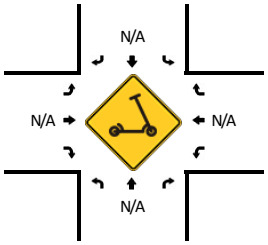












R* = RTOR

5-Min Count Period Beginning At	NW Parker St (Northbound)					NW Parker St (Southbound)					NW Lake Rd (Eastbound)					NW Lake Rd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	9	3	4	0	2	3	8	1	0	0	2	41	6	0	2	2	24	2	0	0	109	
4:05 PM	12	11	4	0	3	3	9	1	0	0	1	30	4	0	1	3	24	1	0	1	108	
4:10 PM	9	11	5	0	2	3	5	3	0	3	5	32	4	0	0	5	26	1	0	2	116	
4:15 PM	14	4	2	0	4	5	2	1	0	1	1	26	3	0	3	2	26	1	0	0	95	
4:20 PM	10	10	5	0	0	3	9	0	0	3	1	25	3	0	5	5	28	3	0	0	110	
4:25 PM	9	7	3	0	0	0	3	1	0	1	1	46	7	0	5	2	18	0	0	0	103	
4:30 PM	9	7	4	0	1	5	9	0	0	0	4	29	14	0	7	1	27	0	0	1	118	
4:35 PM	16	7	4	0	2	4	8	0	0	0	2	32	12	0	0	6	30	3	0	0	126	
4:40 PM	15	12	3	0	2	2	9	1	0	1	1	41	8	0	4	4	27	0	0	1	131	
4:45 PM	20	9	19	0	1	13	8	0	0	0	0	28	6	0	5	1	35	3	0	0	148	
4:50 PM	22	5	5	0	2	1	4	2	0	0	2	30	4	0	5	6	33	0	0	0	121	
4:55 PM	8	11	4	0	3	3	3	1	0	0	2	25	8	0	3	5	21	1	0	1	99	1384
5:00 PM	15	19	7	1	1	0	10	1	0	2	1	33	6	0	1	2	18	0	0	0	117	1392
5:05 PM	17	11	4	0	0	6	10	0	0	0	3	37	9	0	2	4	26	4	0	3	136	1420
5:10 PM	19	10	6	0	4	0	10	1	0	0	1	44	5	0	3	9	21	1	0	0	134	1438
5:15 PM	15	10	8	0	2	3	4	3	0	0	1	35	3	0	5	2	18	2	0	1	112	1455
5:20 PM	13	12	8	0	0	4	9	3	0	1	1	46	5	0	2	1	21	2	0	1	129	1474
5:25 PM	11	7	7	0	1	2	6	0	0	1	1	35	11	0	8	2	18	1	0	0	111	1482
5:30 PM	8	8	9	0	2	1	5	0	0	0	5	23	9	0	3	0	24	0	0	1	98	1462
5:35 PM	13	10	2	0	1	1	11	1	0	0	2	38	10	0	12	4	21	1	0	1	128	1464
5:40 PM	12	11	4	0	2	1	11	1	0	0	0	39	7	0	5	9	25	2	0	1	130	1463
5:45 PM	5	8	6	0	2	5	11	0	0	0	1	36	17	0	7	7	21	2	0	0	128	1443
5:50 PM	16	8	2	0	0	3	7	0	0	1	2	30	13	0	5	3	8	0	0	0	98	1420
5:55 PM	19	6	1	0	1	2	3	0	0	0	0	30	3	0	6	6	25	4	0	1	107	1428

Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	
All Vehicles	204	112	124	0	20	76	100	8	0	4	12	404	140	0	36	44	368	28	0	4	1684
Heavy Trucks	4	0	0			0	0	0			0	0	0			0	4	0			8
Buses																					
Pedestrians		0					0					0					0				0
Bicycles	0	0	0			0	0	0			0	0	0			4	0	0			4
Scooters																					

Comments:

Report generated on 4/16/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-

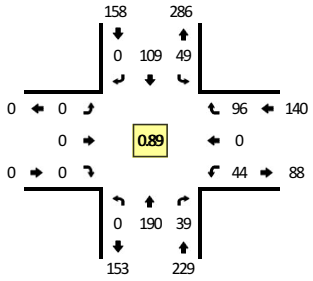
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

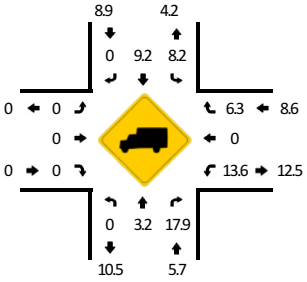
LOCATION: SE 283rd Ave -- SE 23rd St
CITY/STATE: Camas, WA

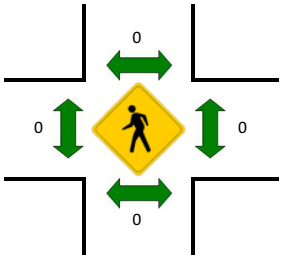
QC JOB #: 17021001
DATE: Tue, Apr 22 2025

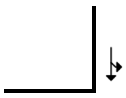
Peak-Hour: 7:40 AM -- 8:40 AM
Peak 15-Min: 8:20 AM -- 8:35 AM

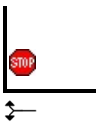


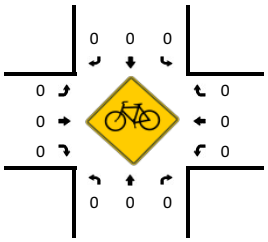


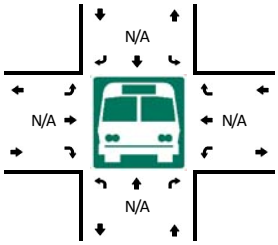




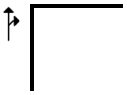


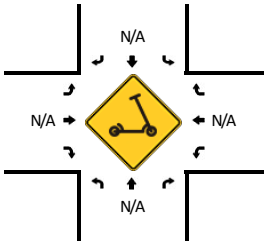












5-Min Count Period Beginning At	SE 283rd Ave (Northbound)				SE 283rd Ave (Southbound)				SE 23rd St (Eastbound)				SE 23rd St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	9	2	0	1	5	0	0	0	0	0	0	2	0	0	0	19	
7:05 AM	0	6	1	0	0	4	0	0	0	0	0	0	2	0	1	0	14	
7:10 AM	0	9	1	0	2	11	0	0	0	0	0	0	3	0	2	0	28	
7:15 AM	0	7	2	0	3	7	0	0	0	0	0	0	4	0	1	0	24	
7:20 AM	0	6	4	0	1	10	0	0	0	0	0	0	2	0	4	0	27	
7:25 AM	0	6	1	0	6	3	0	0	0	0	0	0	0	0	6	0	22	
7:30 AM	0	2	4	0	1	8	0	0	0	0	0	0	4	0	6	0	25	
7:35 AM	0	7	6	0	0	10	0	0	0	0	0	0	5	0	2	0	30	
7:40 AM	0	11	6	0	1	3	0	0	0	0	0	0	5	0	8	0	34	
7:45 AM	0	9	2	0	2	12	0	0	0	0	0	0	6	0	7	0	38	
7:50 AM	0	16	4	0	3	15	0	0	0	0	0	0	6	0	8	0	52	
7:55 AM	0	20	3	0	2	9	0	0	0	0	0	0	7	0	11	0	52	365
8:00 AM	0	16	4	0	0	10	0	0	0	0	0	0	2	0	8	0	40	386
8:05 AM	0	17	1	0	7	9	0	0	0	0	0	0	2	0	9	0	45	417
8:10 AM	0	19	4	0	4	7	0	0	0	0	0	0	4	0	7	0	45	434
8:15 AM	0	18	2	0	9	3	0	0	0	0	0	0	3	0	5	0	40	450
8:20 AM	0	18	0	0	7	7	0	0	0	0	0	0	1	0	13	0	46	469
8:25 AM	0	24	6	0	7	10	0	0	0	0	0	0	2	0	9	0	58	505
8:30 AM	0	17	2	0	2	12	0	0	0	0	0	0	2	0	9	0	44	524
8:35 AM	0	5	5	0	5	12	0	0	0	0	0	0	4	0	2	0	33	527
8:40 AM	0	6	3	0	5	8	0	0	0	0	0	0	2	0	2	0	26	519
8:45 AM	0	4	5	0	6	6	0	0	0	0	0	0	4	0	5	0	30	511
8:50 AM	0	8	3	0	4	7	0	0	0	0	0	0	6	0	2	0	30	489
8:55 AM	0	2	6	0	5	10	0	0	0	0	0	0	2	0	1	0	26	463

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	236	32	0	64	116	0	0	0	0	0	0	20	0	124	0	592
Heavy Trucks	0	12	8		8	16	0		0	0	0		0	0	4		48
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 4/29/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

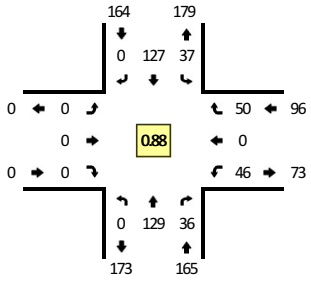
Type of peak hour being reported: Intersection Peak

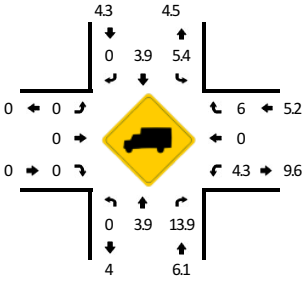
Method for determining peak hour: Total Entering Volume

LOCATION: SE 283rd Ave -- SE 23rd St
CITY/STATE: Camas, WA

QC JOB #: 17021002
DATE: Tue, Apr 22 2025

Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:20 PM -- 4:35 PM





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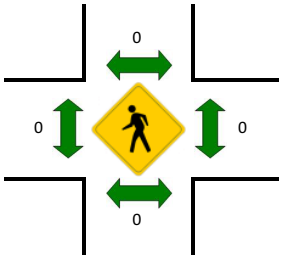
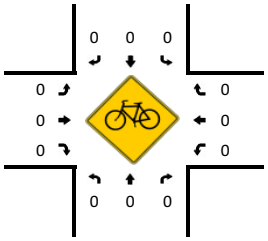
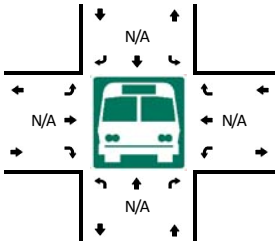
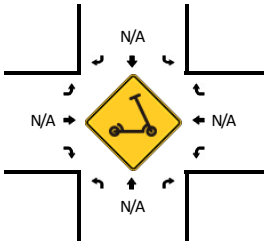












5-Min Count Period Beginning At	SE 283rd Ave (Northbound)				SE 283rd Ave (Southbound)				SE 23rd St (Eastbound)				SE 23rd St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	16	4	0	1	11	0	0	0	0	0	0	3	0	4	0	39	
4:05 PM	0	16	2	0	5	12	0	0	0	0	0	0	2	0	2	0	39	
4:10 PM	0	11	5	0	1	12	0	0	0	0	0	0	3	0	3	0	35	
4:15 PM	0	11	1	0	3	6	0	0	0	0	0	0	3	0	3	0	27	
4:20 PM	0	17	2	0	3	13	0	0	0	0	0	0	7	0	7	0	49	
4:25 PM	0	9	5	0	2	8	0	0	0	0	0	0	5	0	6	0	35	
4:30 PM	0	9	4	0	4	11	0	0	0	0	0	0	3	0	6	0	37	
4:35 PM	0	3	3	0	1	11	0	0	0	0	0	0	3	0	4	0	25	
4:40 PM	0	13	3	0	2	11	0	0	0	0	0	0	4	0	4	0	37	
4:45 PM	0	10	2	0	5	10	0	0	0	0	0	0	5	0	2	0	34	
4:50 PM	0	9	2	0	4	14	0	0	0	0	0	0	4	0	4	0	37	
4:55 PM	0	5	3	0	6	8	0	0	0	0	0	0	4	0	5	0	31	425
5:00 PM	0	6	4	0	3	7	0	0	0	0	0	0	7	0	5	0	32	418
5:05 PM	0	7	0	0	3	12	0	0	0	0	0	0	8	0	2	0	32	411
5:10 PM	0	13	3	0	2	10	0	0	0	0	0	0	4	0	2	0	34	410
5:15 PM	0	10	6	0	3	11	0	0	0	0	0	0	1	0	1	0	32	415
5:20 PM	0	9	0	0	5	7	0	0	0	0	0	0	3	0	1	0	25	391
5:25 PM	0	7	5	0	5	13	0	0	0	0	0	0	2	0	2	0	34	390
5:30 PM	0	9	4	0	8	10	0	0	0	0	0	0	2	0	3	0	36	389
5:35 PM	0	10	4	0	4	7	0	0	0	0	0	0	1	0	2	0	28	392
5:40 PM	0	11	2	0	2	14	0	0	0	0	0	0	5	0	6	0	40	395
5:45 PM	0	10	0	0	6	8	0	0	0	0	0	0	2	0	3	0	29	390
5:50 PM	0	11	2	0	3	12	0	0	0	0	0	0	2	0	8	0	38	391
5:55 PM	0	15	2	0	6	12	0	0	0	0	0	0	2	0	0	0	37	397

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	140	44	0	36	128	0	0	0	0	0	0	60	0	76	0	484
Heavy Trucks	0	8	8		0	4	0		0	0	0		0	0	0		20
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 4/29/2025 4:15 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of report: Midblock Count - Volume Data

LOCATION: NE 3rd St W of NE 257th Ave
QC JOB #: 16977013
SPECIFIC LOCATION:
DIRECTION: EB, WB
CITY/STATE: Clark, WA
DATE: Apr 8 2025 - Apr 8 2025

Start Time	Mon	Tue 8 Apr 25	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM		0				0			0	
01:00 AM		0				0			0	
02:00 AM		0				0			0	
03:00 AM		0				0			0	
04:00 AM		0				0			0	
05:00 AM		1				1			1	
06:00 AM		2				2			2	
07:00 AM		4				4			4	
08:00 AM		9				9			9	
09:00 AM		8				8			8	
10:00 AM		8				8			8	
11:00 AM		**12**				**12**			**12**	
12:00 PM		**7**				**7**			**7**	
01:00 PM		2				2			2	
02:00 PM		5				5			5	
03:00 PM		4				4			4	
04:00 PM		4				4			4	
05:00 PM		4				4			4	
06:00 PM		5				5			5	
07:00 PM		3				3			3	
08:00 PM		1				1			1	
09:00 PM		1				1			1	
10:00 PM		1				1			1	
11:00 PM		0				0			0	
Day Total		81				81			81	
% Weekday Average		100%								
% Week Average		100%				100%				
AM Peak Volume		11:00 AM 12				11:00 AM 12			11:00 AM 12	
PM Peak Volume		12:00 PM 7				12:00 PM 7			12:00 PM 7	

Comments:

Report generated on 4/14/2025 9:25 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

TRUE DATA TO IMPROVE MOBILITY

Type of report: Midblock Count - Volume Data

LOCATION: NE 3rd St E of NE 257th Ave
QC JOB #: 16977015
SPECIFIC LOCATION:
DIRECTION: EB, WB
CITY/STATE: Fern Prairie, WA
DATE: Apr 8 2025 - Apr 8 2025

Start Time	Mon	Tue 8 Apr 25	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM		0				0			0	
01:00 AM		2				2			2	
02:00 AM		1				1			1	
03:00 AM		0				0			0	
04:00 AM		1				1			1	
05:00 AM		9				9			9	
06:00 AM		14				14			14	
07:00 AM		31				31			31	
08:00 AM		**49**				**49**			**49**	
09:00 AM		17				17			17	
10:00 AM		42				42			42	
11:00 AM		33				33			33	
12:00 PM		22				22			22	
01:00 PM		31				31			31	
02:00 PM		40				40			40	
03:00 PM		**68**				**68**			**68**	
04:00 PM		38				38			38	
05:00 PM		35				35			35	
06:00 PM		24				24			24	
07:00 PM		25				25			25	
08:00 PM		14				14			14	
09:00 PM		11				11			11	
10:00 PM		2				2			2	
11:00 PM		1				1			1	
Day Total		510				510			510	
% Weekday Average		100%								
% Week Average		100%				100%				
AM Peak Volume		8:00 AM 49				8:00 AM 49			8:00 AM 49	
PM Peak Volume		3:00 PM 68				3:00 PM 68			3:00 PM 68	

Comments:

Report generated on 4/14/2025 9:25 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

TRUE DATA TO IMPROVE MOBILITY

Type of report: Midblock Count - Volume Data

LOCATION: NE 257th Ave N of NE 3rd St
QC JOB #: 16977014
SPECIFIC LOCATION:
DIRECTION: NB, SB
CITY/STATE: Fern Prairie, WA
DATE: Apr 8 2025 - Apr 8 2025

Start Time	Mon	Tue 8 Apr 25	Wed	Thu	Fri	Average Weekday Hourly Traffic	Sat	Sun	Average Week Hourly Traffic	Average Week Profile
12:00 AM		0				0			0	
01:00 AM		2				2			2	
02:00 AM		1				1			1	
03:00 AM		0				0			0	
04:00 AM		1				1			1	
05:00 AM		9				9			9	
06:00 AM		15				15			15	
07:00 AM		27				27			27	
08:00 AM		**42**				**42**			**42**	
09:00 AM		15				15			15	
10:00 AM		39				39			39	
11:00 AM		30				30			30	
12:00 PM		21				21			21	
01:00 PM		29				29			29	
02:00 PM		40				40			40	
03:00 PM		**66**				**66**			**66**	
04:00 PM		33				33			33	
05:00 PM		32				32			32	
06:00 PM		20				20			20	
07:00 PM		27				27			27	
08:00 PM		13				13			13	
09:00 PM		8				8			8	
10:00 PM		4				4			4	
11:00 PM		1				1			1	
Day Total		475				475			475	
% Weekday Average		100%								
% Week Average		100%				100%				
AM Peak Volume		8:00 AM 42				8:00 AM 42			8:00 AM 42	
PM Peak Volume		3:00 PM 66				3:00 PM 66			3:00 PM 66	

Comments:

Report generated on 4/14/2025 9:25 AM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net)

TRUE DATA TO IMPROVE MOBILITY

Appendix D: Existing Conditions Analysis Worksheets

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	110	103	50	213	2	81	2	29	1	3	5
Future Vol, veh/h	2	110	103	50	213	2	81	2	29	1	3	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	0	6	12	10	7	0	6	0	21	0	0	20
Mvmt Flow	3	153	143	69	296	3	113	3	40	1	4	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	299	0	0	296	0	0	667	667	224	596	738	297
Stage 1	-	-	-	-	-	-	230	230	-	436	436	-
Stage 2	-	-	-	-	-	-	437	438	-	160	301	-
Critical Hdwy	4.1	-	-	4.2	-	-	7.16	6.5	6.41	7.1	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.29	-	-	3.554	4	3.489	3.5	4	3.48
Pot Cap-1 Maneuver	1274	-	-	1221	-	-	367	382	770	418	348	702
Stage 1	-	-	-	-	-	-	764	718	-	603	583	-
Stage 2	-	-	-	-	-	-	591	582	-	847	668	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1274	-	-	1221	-	-	334	355	770	366	324	702
Mov Cap-2 Maneuver	-	-	-	-	-	-	334	355	-	366	324	-
Stage 1	-	-	-	-	-	-	762	716	-	562	543	-
Stage 2	-	-	-	-	-	-	541	543	-	798	667	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.07	1.53	20.12	12.86
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	392	15	-	-	339	-	-	470
HCM Lane V/C Ratio	0.397	0.002	-	-	0.057	-	-	0.027
HCM Ctrl Dly (s/v)	20.1	7.8	0	-	8.1	0	-	12.9
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1.9	0	-	-	0.2	-	-	0.1

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	15	127	0	0	191	86	0	0	0	89	0	74
Future Vol, veh/h	15	127	0	0	191	86	0	0	0	89	0	74
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	13	9	0	0	6	6	0	0	0	4	0	5
Mvmt Flow	18	149	0	0	225	101	0	0	0	105	0	87

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	326	0	0	149	0	0	409	511	149	460	460	275
Stage 1	-	-	-	-	-	-	185	185	-	275	275	-
Stage 2	-	-	-	-	-	-	225	326	-	185	185	-
Critical Hdwy	4.23	-	-	4.1	-	-	7.1	6.5	6.2	7.14	6.5	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Follow-up Hdwy	2.317	-	-	2.2	-	-	3.5	4	3.3	3.536	4	3.345
Pot Cap-1 Maneuver	1174	-	-	1444	-	-	556	469	902	508	501	756
Stage 1	-	-	-	-	-	-	822	751	-	727	686	-
Stage 2	-	-	-	-	-	-	782	652	-	812	751	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1174	-	-	1444	-	-	484	461	902	500	493	756
Mov Cap-2 Maneuver	-	-	-	-	-	-	484	461	-	500	493	-
Stage 1	-	-	-	-	-	-	808	738	-	727	686	-
Stage 2	-	-	-	-	-	-	692	652	-	799	738	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.86	0	0	13.99
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	190	-	-	1444	-	-	591
HCM Lane V/C Ratio	-	0.015	-	-	-	-	-	0.325
HCM Ctrl Dly (s/v)	0	8.1	0	-	0	-	-	14
HCM Lane LOS	A	A	A	-	A	-	-	B
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	1.4

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	203	24	2	231	29	0
Future Vol, veh/h	203	24	2	231	29	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	10	4	100	6	7	0
Mvmt Flow	223	26	2	254	32	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	249	0	495	236
Stage 1	-	-	-	-	236	-
Stage 2	-	-	-	-	258	-
Critical Hdwy	-	-	5.1	-	6.47	6.2
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	-	-	3.1	-	3.563	3.3
Pot Cap-1 Maneuver	-	-	906	-	525	808
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	773	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	906	-	524	808
Mov Cap-2 Maneuver	-	-	-	-	524	-
Stage 1	-	-	-	-	791	-
Stage 2	-	-	-	-	771	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.08	12.32
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	524	-	-	15	-
HCM Lane V/C Ratio	0.061	-	-	0.002	-
HCM Ctrl Dly (s/v)	12.3	-	-	9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	11	5	1	11	24	3
Future Vol, veh/h	11	5	1	11	24	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	9	0	0	0	8	33
Mvmt Flow	16	7	1	16	35	4

Major/Minor	Minor2		Major2	
Conflicting Flow All	9	9	-	0
Stage 1	9	9	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.49	6.5	-	-
Critical Hdwy Stg 1	5.49	5.5	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.581	4	-	-
Pot Cap-1 Maneuver	993	889	-	-
Stage 1	996	892	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	993	0	-	-
Mov Cap-2 Maneuver	993	0	-	-
Stage 1	996	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Ctrl Dly, s/v	8.71	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	993	-	-
HCM Lane V/C Ratio	0.023	-	-
HCM Ctrl Dly (s/v)	8.7	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	5	8	33	1
Future Vol, veh/h	0	3	5	8	33	1
Conflicting Peds, #/hr	0	0	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	3	3	-	-3	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	100	40	0	9	0
Mvmt Flow	0	4	7	11	45	1

Major/Minor	Minor2		Major2	
Conflicting Flow All	12	12	-	0
Stage 1	12	12	-	-
Stage 2	0	0	-	-
Critical Hdwy	7	8.1	-	-
Critical Hdwy Stg 1	6	7.1	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.5	4.9	-	-
Pot Cap-1 Maneuver	1010	721	-	-
Stage 1	1014	723	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	1010	0	-	-
Mov Cap-2 Maneuver	1010	0	-	-
Stage 1	1014	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Ctrl Dly, s/v		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Ctrl Dly (s/v)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	5	33	297	3	9	142
Future Vol, veh/h	5	33	297	3	9	142
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	60	6	3	67	0	4
Mvmt Flow	5	36	326	3	10	156

Major/Minor	Minor2		Major2	
Conflicting Flow All	656	3	0	0
Stage 1	656	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	7.1	6.26	4.13	-
Critical Hdwy Stg 1	6.1	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4.54	3.354	2.227	-
Pot Cap-1 Maneuver	320	1069	-	-
Stage 1	384	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	1069	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Ctrl Dly, s/v	8.51	
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	1069	-	-
HCM Lane V/C Ratio	0.039	-	-
HCM Ctrl Dly (s/v)	8.5	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	71	32	184	150	113	281
Future Vol, veh/h	71	32	184	150	113	281
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	140	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	10	3	3	3	1	3
Mvmt Flow	88	40	227	185	140	347

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	946	320	0	0	412	0
Stage 1	320	-	-	-	-	-
Stage 2	626	-	-	-	-	-
Critical Hdwy	6.5	6.23	-	-	4.11	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.327	-	-	2.209	-
Pot Cap-1 Maneuver	281	719	-	-	1152	-
Stage 1	719	-	-	-	-	-
Stage 2	518	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	247	719	-	-	1152	-
Mov Cap-2 Maneuver	247	-	-	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	455	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	24.45	0	2.45
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	310	1152	-
HCM Lane V/C Ratio	-	-	0.41	0.121	-
HCM Ctrl Dly (s/v)	-	-	24.4	8.6	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.9	0.4	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	26	116	84	296	341	16
Future Vol, veh/h	26	116	84	296	341	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	110	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	4	-4	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	7	10	3	5	6
Mvmt Flow	32	143	104	365	421	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1004	431	441	0	-	0
Stage 1	431	-	-	-	-	-
Stage 2	573	-	-	-	-	-
Critical Hdwy	6.8	6.47	4.2	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.363	2.29	-	-	-
Pot Cap-1 Maneuver	242	599	1078	-	-	-
Stage 1	629	-	-	-	-	-
Stage 2	533	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	219	599	1078	-	-	-
Mov Cap-2 Maneuver	219	-	-	-	-	-
Stage 1	568	-	-	-	-	-
Stage 2	533	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	17.81	1.92	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1078	-	455	-	-
HCM Lane V/C Ratio	0.096	-	0.386	-	-
HCM Ctrl Dly (s/v)	8.7	-	17.8	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.3	-	1.8	-	-



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	333	57	327	485	66	394
Future Volume (veh/h)	333	57	327	485	66	394
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1799	1814	1746	1732	1802	1997
Adj Flow Rate, veh/h	383	43	376	0	76	453
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	12	11	4	5	17	4
Cap, veh/h	486	436	588		412	1014
Arrive On Green	0.28	0.28	0.34	0.00	0.06	0.51
Sat Flow, veh/h	1713	1537	1746	1468	1716	1997
Grp Volume(v), veh/h	383	43	376	0	76	453
Grp Sat Flow(s),veh/h/ln	1713	1537	1746	1468	1716	1997
Q Serve(g_s), s	8.9	0.9	7.9	0.0	1.1	6.2
Cycle Q Clear(g_c), s	8.9	0.9	7.9	0.0	1.1	6.2
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	486	436	588		412	1014
V/C Ratio(X)	0.79	0.10	0.64		0.18	0.45
Avail Cap(c_a), veh/h	1429	1282	1417		913	2546
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	14.3	11.4	12.1	0.0	8.3	6.8
Incr Delay (d2), s/veh	2.9	0.1	2.5	0.0	0.2	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.0	0.5	5.1	0.0	0.6	3.4
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	17.2	11.5	14.6	0.0	8.6	7.1
LnGrp LOS	B	B	B		A	A
Approach Vol, veh/h	426		376			529
Approach Delay, s/veh	16.6		14.6			7.3
Approach LOS	B		B			A

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	7.4	19.5			26.9	16.2
Change Period (Y+Rc), s	5.0	5.0			5.0	4.0
Max Green Setting (Gmax), s	15.0	35.0			55.0	36.0
Max Q Clear Time (g_c+I1), s	3.1	9.9			8.2	10.9
Green Ext Time (p_c), s	0.1	4.5			4.0	1.4

Intersection Summary	
HCM 7th Control Delay, s/veh	12.3
HCM 7th LOS	B

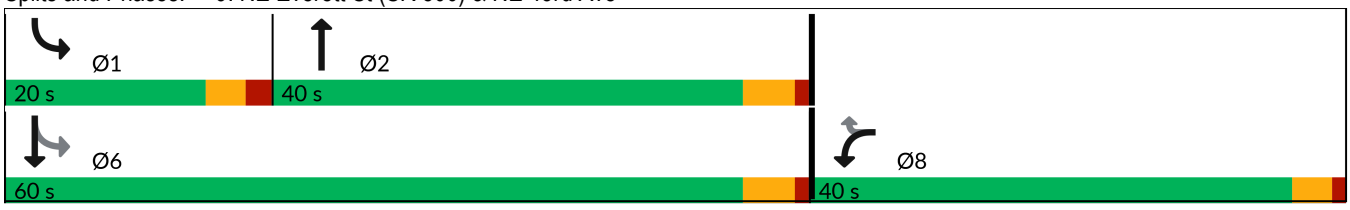
Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	333	57	327	485	66	394
Future Volume (vph)	333	57	327	485	66	394
Turn Type	Prot	Perm	NA	Free	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		Free	6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	5.0		4.0	5.0
Minimum Split (s)	23.0	23.0	30.0		10.0	50.0
Total Split (s)	40.0	40.0	40.0		20.0	60.0
Total Split (%)	40.0%	40.0%	40.0%		20.0%	60.0%
Yellow Time (s)	3.0	3.0	4.0		3.0	4.0
All-Red Time (s)	1.0	1.0	1.0		2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	Min		None	Min
Act Effct Green (s)	22.3	22.3	23.2	65.3	32.7	32.7
Actuated g/C Ratio	0.34	0.34	0.36	1.00	0.50	0.50
v/c Ratio	0.71	0.12	0.61	0.39	0.20	0.50
Control Delay (s/veh)	29.1	5.7	24.9	0.8	10.8	13.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	29.1	5.7	24.9	0.8	10.8	13.6
LOS	C	A	C	A	B	B
Approach Delay (s/veh)	25.7		10.5			13.2
Approach LOS	C		B			B

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 65.3	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.71	
Intersection Signal Delay (s/veh): 14.8	Intersection LOS: B
Intersection Capacity Utilization 51.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 9: NE Everett St (SR 500) & NE 43rd Ave



MOVEMENT SUMMARY

Site: 10 [NE Everett St & NW Lake Rd_ExistingAM (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															
7	L2	All MCs	238	7.0	238	7.0	0.346	14.0	LOS B	2.2	58.8	0.77	0.75	0.77	31.1
7	T1	All MCs	377	7.0	377	7.0	0.438	7.0	LOS A	3.3	86.4	0.81	0.67	0.81	34.3
Approach			615	7.0	615	7.0	0.438	9.7	LOS A	3.3	86.4	0.79	0.70	0.80	33.0
North: NE Everett Street															
10	T1	All MCs	470	10.0	470	10.0	0.421	5.3	LOS A	3.0	81.9	0.57	0.51	0.57	34.8
2	R2	All MCs	350	2.0	350	2.0	0.283	4.9	LOS A	1.9	47.4	0.50	0.52	0.50	35.2
Approach			820	6.6	820	6.6	0.421	5.2	LOS A	3.0	81.9	0.54	0.51	0.54	34.9
West: NW Lake Road															
5	L2	All MCs	561	3.0	561	3.0	0.553	13.8	LOS B	4.9	125.5	0.80	0.76	0.88	31.3
6	R2	All MCs	250	6.0	250	6.0	0.258	6.4	LOS A	1.6	42.8	0.66	0.62	0.66	34.7
Approach			811	3.9	811	3.9	0.553	11.5	LOS B	4.9	125.5	0.76	0.72	0.81	32.2
All Vehicles			2246	5.7	2246	5.7	0.553	8.7	LOS A	4.9	125.5	0.69	0.64	0.71	33.4

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.

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Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	61	14	24	310	440	36
Future Vol, veh/h	61	14	24	310	440	36
Conflicting Peds, #/hr	0	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	7	7	0	6	2	0
Mvmt Flow	67	15	26	341	484	40

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	900	506	526	0	-	0
Stage 1	506	-	-	-	-	-
Stage 2	393	-	-	-	-	-
Critical Hdwy	6.47	6.27	4.1	-	-	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.363	2.2	-	-	-
Pot Cap-1 Maneuver	303	556	1051	-	-	-
Stage 1	595	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	294	555	1048	-	-	-
Mov Cap-2 Maneuver	416	-	-	-	-	-
Stage 1	579	-	-	-	-	-
Stage 2	669	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	15.16	0.61	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1048	-	436	-	-
HCM Lane V/C Ratio	0.025	-	0.189	-	-
HCM Ctrl Dly (s/v)	8.5	-	15.2	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.7	-	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	37	25	19	4	25	78	8	233	6	81	266	106
Future Vol, veh/h	37	25	19	4	25	78	8	233	6	81	266	106
Conflicting Peds, #/hr	13	0	3	3	0	13	0	0	6	6	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	11	0	5	0	0	0	25	6	17	1	4	0
Mvmt Flow	43	29	22	5	29	90	9	268	7	93	306	122

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	866	852	370	805	909	290	428	0	0	281	0	0
Stage 1	553	553	-	296	296	-	-	-	-	-	-	-
Stage 2	314	299	-	509	614	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.25	7.1	6.5	6.2	4.35	-	-	4.11	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.345	3.5	4	3.3	2.425	-	-	2.209	-	-
Pot Cap-1 Maneuver	264	299	669	303	277	754	1019	-	-	1288	-	-
Stage 1	502	518	-	717	672	-	-	-	-	-	-	-
Stage 2	678	670	-	550	486	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	188	273	668	241	253	741	1019	-	-	1281	-	-
Mov Cap-2 Maneuver	188	273	-	241	253	-	-	-	-	-	-	-
Stage 1	465	480	-	707	663	-	-	-	-	-	-	-
Stage 2	559	660	-	463	451	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	26.88	14.92	0.28	1.44
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1019	-	-	256	485	1281	-	-
HCM Lane V/C Ratio	0.009	-	-	0.364	0.254	0.073	-	-
HCM Ctrl Dly (s/v)	8.6	-	-	26.9	14.9	8	-	-
HCM Lane LOS	A	-	-	D	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.6	1	0.2	-	-

Intersection	
Int Delay, s/veh	10.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↱			↕			↕	
Traffic Vol, veh/h	53	23	1	0	18	193	1	0	0	228	0	59
Future Vol, veh/h	53	23	1	0	18	193	1	0	0	228	0	59
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	8	4	0	0	0	7	0	0	0	4	0	3
Mvmt Flow	62	27	1	0	21	227	1	0	0	268	0	69

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	585	575	35	-	609	2	69	0	0	1	0	0
Stage 1	571	571	-	-	3	-	-	-	-	-	-	-
Stage 2	14	3	-	-	606	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.54	6.2	-	6.5	6.27	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.18	5.54	-	-	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.54	-	-	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.036	3.3	-	4	3.363	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	414	426	1044	0	412	1068	1544	-	-	1609	-	-
Stage 1	495	502	-	0	897	-	-	-	-	-	-	-
Stage 2	991	889	-	0	490	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	254	351	1044	-	340	1066	1544	-	-	1607	-	-
Mov Cap-2 Maneuver	254	351	-	-	340	-	-	-	-	-	-	-
Stage 1	409	414	-	-	896	-	-	-	-	-	-	-
Stage 2	760	888	-	-	404	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	23.89	10.51	7.33	6.11
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1544	-	-	280	901	1192	-	-
HCM Lane V/C Ratio	0.001	-	-	0.324	0.275	0.167	-	-
HCM Ctrl Dly (s/v)	7.3	0	-	23.9	10.5	7.7	0	-
HCM Lane LOS	A	A	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.4	1.1	0.6	-	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	141	411	596	20	11	206
Future Vol, veh/h	141	411	596	20	11	206
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-8	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	7	5	10	0	1
Mvmt Flow	153	447	648	22	12	224

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	670	0	-	0	1189	335
Stage 1	-	-	-	-	659	-
Stage 2	-	-	-	-	530	-
Critical Hdwy	4.2	-	-	-	5.2	6.12
Critical Hdwy Stg 1	-	-	-	-	4.2	-
Critical Hdwy Stg 2	-	-	-	-	4.2	-
Follow-up Hdwy	2.25	-	-	-	3.5	3.31
Pot Cap-1 Maneuver	897	-	-	-	312	715
Stage 1	-	-	-	-	646	-
Stage 2	-	-	-	-	709	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	897	-	-	-	251	715
Mov Cap-2 Maneuver	-	-	-	-	251	-
Stage 1	-	-	-	-	520	-
Stage 2	-	-	-	-	709	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	3.36	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	785	-	-	-	251	715
HCM Lane V/C Ratio	0.171	-	-	-	0.048	0.313
HCM Ctrl Dly (s/v)	9.8	1.1	-	-	20.1	12.3
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.6	-	-	-	0.1	1.3

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	570	2	61	468	4	172
Future Vol, veh/h	570	2	61	468	4	172
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	105	-	85	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	-6	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	6	0	3	3	0	0
Mvmt Flow	655	2	70	538	5	198

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	657	0	1334	656
Stage 1	-	-	-	-	656	-
Stage 2	-	-	-	-	678	-
Critical Hdwy	-	-	4.13	-	5.2	5.6
Critical Hdwy Stg 1	-	-	-	-	4.2	-
Critical Hdwy Stg 2	-	-	-	-	4.2	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	925	-	267	523
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	637	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	925	-	247	523
Mov Cap-2 Maneuver	-	-	-	-	247	-
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	588	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.06	16.09
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	247	523	-	-	925	-
HCM Lane V/C Ratio	0.019	0.378	-	-	0.076	-
HCM Ctrl Dly (s/v)	19.9	16	-	-	9.2	-
HCM Lane LOS	C	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	1.7	-	-	0.2	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	394	87	71	381	92	164
Future Vol, veh/h	394	87	71	381	92	164
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	110	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	7	11	2	3	7
Mvmt Flow	438	97	79	423	102	182

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	534	0	1067	486
Stage 1	-	-	-	-	486	-
Stage 2	-	-	-	-	581	-
Critical Hdwy	-	-	4.21	-	6.43	6.27
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.299	-	3.527	3.363
Pot Cap-1 Maneuver	-	-	989	-	245	571
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	557	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	989	-	225	571
Mov Cap-2 Maneuver	-	-	-	-	225	-
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	513	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.41	21.2
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	225	571	-	-	989	-
HCM Lane V/C Ratio	0.454	0.319	-	-	0.08	-
HCM Ctrl Dly (s/v)	33.6	14.2	-	-	9	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	2.2	1.4	-	-	0.3	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	303	11	102	377	6	3	9	170	8	9	8
Future Vol, veh/h	7	303	11	102	377	6	3	9	170	8	9	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	90	-	-	130	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	18	2	2	33	0	22	8	0	0	12
Mvmt Flow	8	329	12	111	410	7	3	10	185	9	10	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	416	0	0	341	0	0	987	989	335	984	991	413
Stage 1	-	-	-	-	-	-	351	351	-	635	635	-
Stage 2	-	-	-	-	-	-	636	638	-	349	357	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.1	6.72	6.28	7.1	6.5	6.32
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.72	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.72	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.5	4.198	3.372	3.5	4	3.408
Pot Cap-1 Maneuver	1154	-	-	1218	-	-	228	228	693	229	248	618
Stage 1	-	-	-	-	-	-	670	599	-	470	476	-
Stage 2	-	-	-	-	-	-	469	441	-	671	632	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1154	-	-	1218	-	-	195	206	693	145	224	618
Mov Cap-2 Maneuver	-	-	-	-	-	-	195	206	-	145	224	-
Stage 1	-	-	-	-	-	-	666	595	-	427	432	-
Stage 2	-	-	-	-	-	-	411	401	-	481	628	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.18	1.74	13.97	22.64
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	598	1154	-	-	1218	-	-	231
HCM Lane V/C Ratio	0.331	0.007	-	-	0.091	-	-	0.118
HCM Ctrl Dly (s/v)	14	8.1	-	-	8.3	-	-	22.6
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.4	0	-	-	0.3	-	-	0.4

05/01/2025 Existing 2025 AM
18: NW Parker St & NW Lake Rd Weekday AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	177	153	102	257	36	137	59	101	44	116	15
Future Volume (veh/h)	9	177	153	102	257	36	137	59	101	44	116	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1574	1841	1856	1900	1870	1826	1885	1856	1841	1796	1856	1900
Adj Flow Rate, veh/h	11	213	107	123	310	24	165	71	87	53	140	16
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	22	4	3	0	2	5	1	3	4	7	3	0
Cap, veh/h	385	311	266	397	553	43	405	121	149	386	251	29
Arrive On Green	0.11	0.17	0.17	0.10	0.17	0.17	0.09	0.16	0.16	0.09	0.15	0.15
Sat Flow, veh/h	1499	1841	1572	1810	3343	257	1795	754	924	1711	1632	186
Grp Volume(v), veh/h	11	213	107	123	164	170	165	0	158	53	0	156
Grp Sat Flow(s),veh/h/ln	1499	1841	1572	1810	1777	1824	1795	0	1679	1711	0	1818
Q Serve(g_s), s	0.0	5.3	2.9	0.0	4.1	4.1	0.0	0.0	4.2	0.0	0.0	3.8
Cycle Q Clear(g_c), s	0.0	5.3	2.9	0.0	4.1	4.1	0.0	0.0	4.2	0.0	0.0	3.8
Prop In Lane	1.00		1.00	1.00		0.14	1.00		0.55	1.00		0.10
Lane Grp Cap(c), veh/h	385	311	266	397	294	302	405	0	270	386	0	279
V/C Ratio(X)	0.03	0.68	0.40	0.31	0.56	0.56	0.41	0.00	0.59	0.14	0.00	0.56
Avail Cap(c_a), veh/h	514	1496	1278	933	1819	1868	604	0	837	559	0	891
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.0	18.9	17.9	18.8	18.5	18.6	18.9	0.0	18.8	17.9	0.0	18.9
Incr Delay (d2), s/veh	0.0	1.0	0.4	0.2	0.6	0.6	0.7	0.0	0.8	0.2	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	3.6	1.7	2.0	2.7	2.8	2.8	0.0	2.7	0.9	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.0	19.9	18.3	18.9	19.2	19.2	19.6	0.0	19.5	18.0	0.0	19.6
LnGrp LOS	B	B	B	B	B	B	B		B	B		B
Approach Vol, veh/h		331			457			323			209	
Approach Delay, s/veh		19.2			19.1			19.6			19.2	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	13.9	10.1	13.7	11.1	13.5	10.1	13.7
Change Period (Y+Rc), s	5.7	5.7	* 5.6	5.9	5.7	* 5.5	5.6	* 6.3
Max Green Setting (Gmax), s	19.3	39.3	* 9.4	24.1	9.5	* 50	9.8	* 24
Max Q Clear Time (g_c+I1), s	2.0	7.3	2.0	6.2	2.0	6.1	2.0	5.8
Green Ext Time (p_c), s	0.1	0.9	0.0	0.5	0.0	1.2	0.2	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	19.3
HCM 7th LOS	B

Notes

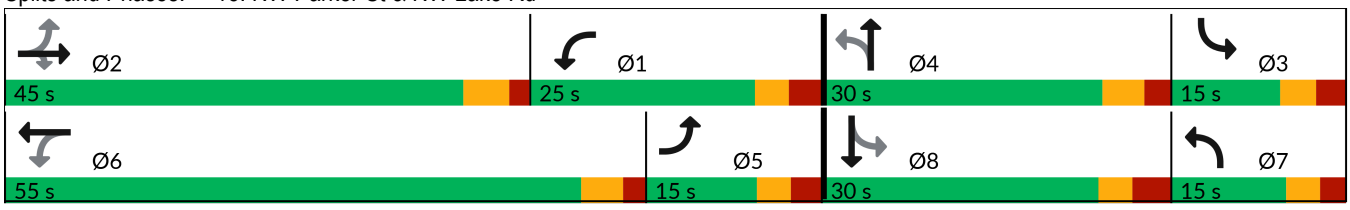
User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	9	177	153	102	257	137	59	44	116
Future Volume (vph)	9	177	153	102	257	137	59	44	116
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2		1	6	7	4	3	8
Permitted Phases	2		2	6		4		8	
Detector Phase	5	2	2	1	6	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.5	26.7	26.7	10.7	20.5	10.2	29.2	10.6	33.3
Total Split (s)	15.0	45.0	45.0	25.0	55.0	15.0	30.0	15.0	30.0
Total Split (%)	13.0%	39.1%	39.1%	21.7%	47.8%	13.0%	26.1%	13.0%	26.1%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.6	3.0	3.6	3.0	3.0
All-Red Time (s)	2.5	1.7	1.7	2.7	1.9	2.2	2.3	2.6	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.7	5.7	5.7	5.5	5.2	5.9	5.6	6.3
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	None	None	None	None
Act Effct Green (s)	17.9	12.0	12.0	20.4	18.3	21.7	16.9	16.6	9.8
Actuated g/C Ratio	0.32	0.22	0.22	0.37	0.33	0.39	0.30	0.30	0.18
v/c Ratio	0.03	0.54	0.38	0.26	0.31	0.30	0.36	0.13	0.49
Control Delay (s/veh)	13.8	27.1	6.3	15.2	16.0	13.9	15.5	12.9	28.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	13.8	27.1	6.3	15.2	16.0	13.9	15.5	12.9	28.0
LOS	B	C	A	B	B	B	B	B	C
Approach Delay (s/veh)		17.4			15.8		14.7		24.2
Approach LOS		B			B		B		C

Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 55.5	
Natural Cycle: 85	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay (s/veh): 17.2	Intersection LOS: B
Intersection Capacity Utilization 49.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 18: NW Parker St & NW Lake Rd



Intersection	
Int Delay, s/veh	3.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	44	96	190	39	49	109
Future Vol, veh/h	44	96	190	39	49	109
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-3	-	2	-	-	2
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	14	6	3	18	8	9
Mvmt Flow	49	108	213	44	55	122

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	468	235	0	0	257	0
Stage 1	235	-	-	-	-	-
Stage 2	233	-	-	-	-	-
Critical Hdwy	5.94	5.96	-	-	4.18	-
Critical Hdwy Stg 1	4.94	-	-	-	-	-
Critical Hdwy Stg 2	4.94	-	-	-	-	-
Follow-up Hdwy	3.626	3.354	-	-	2.272	-
Pot Cap-1 Maneuver	575	810	-	-	1273	-
Stage 1	807	-	-	-	-	-
Stage 2	809	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	549	810	-	-	1273	-
Mov Cap-2 Maneuver	549	-	-	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	11.58	0	2.47
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	704	558	-
HCM Lane V/C Ratio	-	-	0.223	0.043	-
HCM Ctrl Dly (s/v)	-	-	11.6	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	5	302	73	6	157	0	60	0	6	1	1	3
Future Vol, veh/h	5	302	73	6	157	0	60	0	6	1	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	1	0	0	3	0	3	0	0	100	0	0
Mvmt Flow	5	321	78	6	167	0	64	0	6	1	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	167	0	0	399	0	0	551	551	360	512	589	167
Stage 1	-	-	-	-	-	-	371	371	-	180	180	-
Stage 2	-	-	-	-	-	-	180	180	-	332	410	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.13	6.5	6.2	8.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.5	-	7.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.5	-	7.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.527	4	3.3	4.4	4	3.3
Pot Cap-1 Maneuver	1423	-	-	1171	-	-	443	445	689	348	423	882
Stage 1	-	-	-	-	-	-	647	623	-	639	754	-
Stage 2	-	-	-	-	-	-	819	754	-	517	599	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1423	-	-	1171	-	-	436	440	689	341	419	882
Mov Cap-2 Maneuver	-	-	-	-	-	-	436	440	-	341	419	-
Stage 1	-	-	-	-	-	-	644	620	-	635	750	-
Stage 2	-	-	-	-	-	-	810	750	-	510	596	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.1	0.3	14.45	11.34
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	451	23	-	-	66	-	-	573
HCM Lane V/C Ratio	0.156	0.004	-	-	0.005	-	-	0.009
HCM Ctrl Dly (s/v)	14.4	7.5	0	-	8.1	0	-	11.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	74	231	0	0	125	101	0	0	0	128	0	40
Future Vol, veh/h	74	231	0	0	125	101	0	0	0	128	0	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	1	0	0	2	6	0	0	0	3	0	0
Mvmt Flow	82	257	0	0	139	112	0	0	0	142	0	44

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	251	0	0	257	0	0	560	672	257	616	616	195
Stage 1	-	-	-	-	-	-	421	421	-	195	195	-
Stage 2	-	-	-	-	-	-	139	251	-	421	421	-
Critical Hdwy	4.13	-	-	4.1	-	-	7.1	6.5	6.2	7.13	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.13	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.13	5.5	-
Follow-up Hdwy	2.227	-	-	2.2	-	-	3.5	4	3.3	3.527	4	3.3
Pot Cap-1 Maneuver	1308	-	-	1320	-	-	442	380	787	401	409	851
Stage 1	-	-	-	-	-	-	614	592	-	804	743	-
Stage 2	-	-	-	-	-	-	869	703	-	608	592	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1308	-	-	1320	-	-	388	352	787	372	379	851
Mov Cap-2 Maneuver	-	-	-	-	-	-	388	352	-	372	379	-
Stage 1	-	-	-	-	-	-	569	549	-	804	743	-
Stage 2	-	-	-	-	-	-	824	703	-	564	549	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.93	0	0	19.67
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	437	-	-	1320	-	-	429
HCM Lane V/C Ratio	-	0.063	-	-	-	-	-	0.435
HCM Ctrl Dly (s/v)	0	7.9	0	-	0	-	-	19.7
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0.2	-	-	0	-	-	2.2

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	341	29	2	211	15	4
Future Vol, veh/h	341	29	2	211	15	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	3	50	4	7	0
Mvmt Flow	388	33	2	240	17	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	420	0	648	404
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	244	-
Critical Hdwy	-	-	4.6	-	6.47	6.2
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	-	-	2.65	-	3.563	3.3
Pot Cap-1 Maneuver	-	-	923	-	427	651
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	785	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	923	-	426	651
Mov Cap-2 Maneuver	-	-	-	-	426	-
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	782	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.08	13.23
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	459	-	-	17	-
HCM Lane V/C Ratio	0.047	-	-	0.002	-
HCM Ctrl Dly (s/v)	13.2	-	-	8.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	5	5	7	14	17	12
Future Vol, veh/h	5	5	7	14	17	12
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	20	0	0	0	0	8
Mvmt Flow	7	7	10	21	25	18

Major/Minor	Minor2		Major2	
Conflicting Flow All	21	21	-	0
Stage 1	21	21	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.6	6.5	-	-
Critical Hdwy Stg 1	5.6	5.5	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.68	4	-	-
Pot Cap-1 Maneuver	952	877	-	-
Stage 1	957	882	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	952	0	-	-
Mov Cap-2 Maneuver	952	0	-	-
Stage 1	957	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Ctrl Dly, s/v	8.84	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	952	-	-
HCM Lane V/C Ratio	0.015	-	-
HCM Ctrl Dly (s/v)	8.8	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	0	21	17	0
Future Vol, veh/h	1	0	0	21	17	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	3	3	-	-3	-
Peak Hour Factor	65	65	65	65	65	65
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	0	0	32	26	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	16	16	-	0
Stage 1	16	16	-	-
Stage 2	0	0	-	-
Critical Hdwy	7	7.1	-	-
Critical Hdwy Stg 1	6	6.1	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.5	4	-	-
Pot Cap-1 Maneuver	1005	880	-	-
Stage 1	1009	884	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	1005	0	-	-
Mov Cap-2 Maneuver	1005	0	-	-
Stage 1	1009	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Ctrl Dly, s/v	8.59	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	1005	-	-
HCM Lane V/C Ratio	0.002	-	-
HCM Ctrl Dly (s/v)	8.6	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	5	15	132	5	16	187
Future Vol, veh/h	5	15	132	5	16	187
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	0	0	2	0	6	1
Mvmt Flow	6	17	150	6	18	213

Major/Minor	Minor2		Major2	
Conflicting Flow All	306	6	0	0
Stage 1	306	-	-	-
Stage 2	0	-	-	-
Critical Hdwy	6.5	6.2	4.12	-
Critical Hdwy Stg 1	5.5	-	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	4	3.3	2.218	-
Pot Cap-1 Maneuver	611	1083	-	-
Stage 1	665	-	-	-
Stage 2	-	-	-	-
Platoon blocked, %				-
Mov Cap-1 Maneuver	0	1083	-	-
Mov Cap-2 Maneuver	0	-	-	-
Stage 1	0	-	-	-
Stage 2	0	-	-	-

Approach	EB	WB
HCM Ctrl Dly, s/v	8.4	
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBL	WBT
Capacity (veh/h)	1083	-	-
HCM Lane V/C Ratio	0.021	-	-
HCM Ctrl Dly (s/v)	8.4	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	50	20	198	29	19	138
Future Vol, veh/h	50	20	198	29	19	138
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	140	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	2	-	-	-2
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	56	22	222	33	21	155

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	437	239	0	0	255	0
Stage 1	239	-	-	-	-	-
Stage 2	198	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	581	805	-	-	1322	-
Stage 1	806	-	-	-	-	-
Stage 2	840	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	572	805	-	-	1322	-
Mov Cap-2 Maneuver	572	-	-	-	-	-
Stage 1	806	-	-	-	-	-
Stage 2	827	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	11.61	0	0.94
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	623	1322	-
HCM Lane V/C Ratio	-	-	0.126	0.016	-
HCM Ctrl Dly (s/v)	-	-	11.6	7.8	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	104	80	211	180	3
Future Vol, veh/h	9	104	80	211	180	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	110	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	4	-4	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	4	2	0	1	0
Mvmt Flow	10	113	87	229	196	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	601	197	199	0	-	0
Stage 1	197	-	-	-	-	-
Stage 2	403	-	-	-	-	-
Critical Hdwy	6.8	6.44	4.12	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	2.218	-	-	-
Pot Cap-1 Maneuver	437	830	1373	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	649	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	409	830	1373	-	-	-
Mov Cap-2 Maneuver	409	-	-	-	-	-
Stage 1	771	-	-	-	-	-
Stage 2	649	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	10.59	2.14	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1373	-	767	-	-
HCM Lane V/C Ratio	0.063	-	0.16	-	-
HCM Ctrl Dly (s/v)	7.8	-	10.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.6	-	-



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	224	19	269	298	22	266
Future Volume (veh/h)	224	19	269	298	22	266
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1979	1979	1791	1806	2057	2012
Adj Flow Rate, veh/h	238	10	286	0	23	283
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	1	0	0	3
Cap, veh/h	346	308	564		514	1024
Arrive On Green	0.18	0.18	0.31	0.00	0.02	0.51
Sat Flow, veh/h	1884	1677	1791	1530	1959	2012
Grp Volume(v), veh/h	238	10	286	0	23	283
Grp Sat Flow(s),veh/h/ln	1884	1677	1791	1530	1959	2012
Q Serve(g_s), s	3.5	0.1	3.8	0.0	0.2	2.4
Cycle Q Clear(g_c), s	3.5	0.1	3.8	0.0	0.2	2.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	346	308	564		514	1024
V/C Ratio(X)	0.69	0.03	0.51		0.04	0.28
Avail Cap(c_a), veh/h	2316	2061	2140		1471	3779
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	11.2	9.8	8.2	0.0	5.8	4.1
Incr Delay (d2), s/veh	2.4	0.0	1.5	0.0	0.0	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	2.4	0.1	2.1	0.0	0.1	0.7
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	13.6	9.9	9.7	0.0	5.8	4.3
LnGrp LOS	B	A	A		A	A
Approach Vol, veh/h	248		286			306
Approach Delay, s/veh	13.4		9.7			4.4
Approach LOS	B		A			A

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	5.7	14.2			19.9	9.4
Change Period (Y+Rc), s	5.0	5.0			5.0	4.0
Max Green Setting (Gmax), s	15.0	35.0			55.0	36.0
Max Q Clear Time (g_c+I1), s	2.2	5.8			4.4	5.5
Green Ext Time (p_c), s	0.0	3.4			2.3	0.8

Intersection Summary	
HCM 7th Control Delay, s/veh	8.9
HCM 7th LOS	A

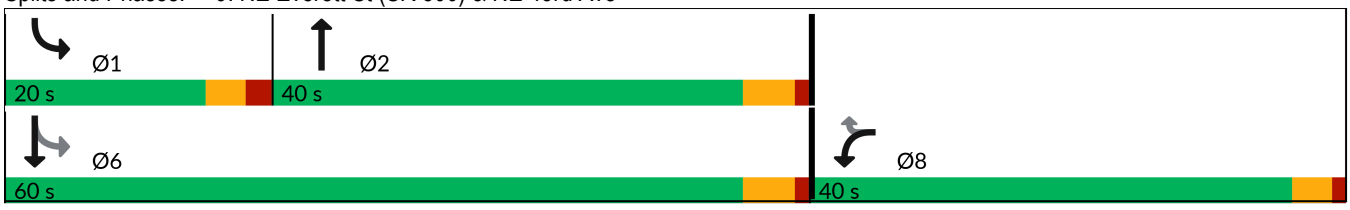
Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	224	19	269	298	22	266
Future Volume (vph)	224	19	269	298	22	266
Turn Type	Prot	Perm	NA	Free	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		Free	6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	5.0		4.0	5.0
Minimum Split (s)	23.0	23.0	30.0		10.0	50.0
Total Split (s)	40.0	40.0	40.0		20.0	60.0
Total Split (%)	40.0%	40.0%	40.0%		20.0%	60.0%
Yellow Time (s)	3.0	3.0	4.0		3.0	4.0
All-Red Time (s)	1.0	1.0	1.0		2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	Min		None	Min
Act Effct Green (s)	12.1	12.1	17.7	40.9	19.2	19.2
Actuated g/C Ratio	0.30	0.30	0.43	1.00	0.47	0.47
v/c Ratio	0.46	0.04	0.37	0.21	0.04	0.33
Control Delay (s/veh)	15.6	7.0	11.6	0.3	6.7	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	15.6	7.0	11.6	0.3	6.7	8.5
LOS	B	A	B	A	A	A
Approach Delay (s/veh)	15.0		5.7			8.3
Approach LOS	B		A			A

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 40.9	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.46	
Intersection Signal Delay (s/veh): 8.4	Intersection LOS: A
Intersection Capacity Utilization 38.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 9: NE Everett St (SR 500) & NE 43rd Ave



MOVEMENT SUMMARY

Site: 10 [NE Everett St & NW Lake Rd_ExistingPM (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	281	0.0	281	0.0	0.264	11.5	LOS B	1.6	39.6	0.53	0.66	0.53	32.0
8	T1	All MCs	359	1.0	359	1.0	0.295	4.9	LOS A	1.9	47.1	0.53	0.50	0.53	35.3
Approach			639	0.6	639	0.6	0.295	7.8	LOS A	1.9	47.1	0.53	0.57	0.53	33.7
North: NE Everett Street															
4	T1	All MCs	289	2.0	289	2.0	0.234	4.9	LOS A	1.4	35.9	0.48	0.48	0.48	35.3
14	R2	All MCs	265	0.0	265	0.0	0.208	4.9	LOS A	1.2	31.1	0.46	0.52	0.46	35.3
Approach			554	1.0	554	1.0	0.234	4.9	LOS A	1.4	35.9	0.47	0.50	0.47	35.3
West: NW Lake Road															
5	L2	All MCs	323	1.0	323	1.0	0.258	11.1	LOS B	1.6	39.8	0.49	0.64	0.49	32.0
12	R2	All MCs	371	0.0	371	0.0	0.292	5.0	LOS A	1.8	46.2	0.50	0.53	0.50	35.2
Approach			695	0.5	695	0.5	0.292	7.8	LOS A	1.8	46.2	0.49	0.58	0.49	33.6
All Vehicles			1888	0.7	1888	0.7	0.295	6.9	LOS A	1.9	47.1	0.50	0.55	0.50	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.

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Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	50	18	56	400	425	43
Future Vol, veh/h	50	18	56	400	425	43
Conflicting Peds, #/hr	0	0	6	0	0	6
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	4	0	0	2
Mvmt Flow	53	19	59	421	447	45

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1015	476	499	0	-	0
Stage 1	476	-	-	-	-	-
Stage 2	539	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.236	-	-	-
Pot Cap-1 Maneuver	266	593	1055	-	-	-
Stage 1	629	-	-	-	-	-
Stage 2	589	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	249	590	1050	-	-	-
Mov Cap-2 Maneuver	382	-	-	-	-	-
Stage 1	591	-	-	-	-	-
Stage 2	586	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	15.29	1.06	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1050	-	421	-	-
HCM Lane V/C Ratio	0.056	-	0.17	-	-
HCM Ctrl Dly (s/v)	8.6	-	15.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.6	-	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	10	33	6	8	28	12	383	3	40	325	78
Future Vol, veh/h	45	10	33	6	8	28	12	383	3	40	325	78
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	10	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	48	11	35	6	9	30	13	407	3	43	346	83

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	912	909	387	871	948	411	429	0	0	411	0	0
Stage 1	472	472	-	435	435	-	-	-	-	-	-	-
Stage 2	439	436	-	436	514	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.6	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.09	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	257	267	665	274	263	645	1142	-	-	1159	-	-
Stage 1	576	546	-	604	584	-	-	-	-	-	-	-
Stage 2	600	566	-	603	539	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	225	254	665	237	250	644	1142	-	-	1159	-	-
Mov Cap-2 Maneuver	225	254	-	237	250	-	-	-	-	-	-	-
Stage 1	555	525	-	597	578	-	-	-	-	-	-	-
Stage 2	557	560	-	539	519	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	21.95	14.67	0.25	0.74
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1142	-	-	305	417	1159	-	-
HCM Lane V/C Ratio	0.011	-	-	0.307	0.107	0.037	-	-
HCM Ctrl Dly (s/v)	8.2	-	-	22	14.7	8.2	-	-
HCM Lane LOS	A	-	-	C	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.3	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	14.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↱			↕			↕	
Traffic Vol, veh/h	73	31	0	0	24	301	0	1	0	325	0	44
Future Vol, veh/h	73	31	0	0	24	301	0	1	0	325	0	44
Conflicting Peds, #/hr	3	0	2	2	0	3	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	3	0	0	0	2	0	0	0	1	0	0
Mvmt Flow	79	34	0	0	26	327	0	1	0	353	0	48

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	748	733	26	-	756	5	48	0	0	2	0	0
Stage 1	730	730	-	-	2	-	-	-	-	-	-	-
Stage 2	17	2	-	-	754	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.53	6.2	-	6.5	6.22	4.1	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.53	-	-	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.53	-	-	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.027	3.3	-	4	3.318	2.2	-	-	2.209	-	-
Pot Cap-1 Maneuver	331	347	1056	0	340	1078	1572	-	-	1627	-	-
Stage 1	417	426	-	0	898	-	-	-	-	-	-	-
Stage 2	1007	892	-	0	420	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	164	269	1054	-	263	1074	1572	-	-	1625	-	-
Mov Cap-2 Maneuver	164	269	-	-	263	-	-	-	-	-	-	-
Stage 1	323	330	-	-	897	-	-	-	-	-	-	-
Stage 2	678	891	-	-	326	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	50.65	11.87	0	6.9
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1572	-	-	186	875	1321	-	-
HCM Lane V/C Ratio	-	-	-	0.609	0.404	0.217	-	-
HCM Ctrl Dly (s/v)	0	-	-	50.7	11.9	7.8	0	-
HCM Lane LOS	A	-	-	F	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	3.4	2	0.8	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	165	686	568	28	8	111
Future Vol, veh/h	165	686	568	28	8	111
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-8	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	0	0	1
Mvmt Flow	174	722	598	29	8	117

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	630	0	-	0	1324	317
Stage 1	-	-	-	-	616	-
Stage 2	-	-	-	-	708	-
Critical Hdwy	4.12	-	-	-	5.2	6.12
Critical Hdwy Stg 1	-	-	-	-	4.2	-
Critical Hdwy Stg 2	-	-	-	-	4.2	-
Follow-up Hdwy	2.21	-	-	-	3.5	3.31
Pot Cap-1 Maneuver	955	-	-	-	270	732
Stage 1	-	-	-	-	667	-
Stage 2	-	-	-	-	623	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	952	-	-	-	207	730
Mov Cap-2 Maneuver	-	-	-	-	207	-
Stage 1	-	-	-	-	513	-
Stage 2	-	-	-	-	621	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	3.06	0	11.69
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	698	-	-	-	207	730
HCM Lane V/C Ratio	0.182	-	-	-	0.041	0.16
HCM Ctrl Dly (s/v)	9.6	1.5	-	-	23.1	10.9
HCM Lane LOS	A	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	-	-	-	0.1	0.6

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	601	3	78	436	10	60
Future Vol, veh/h	601	3	78	436	10	60
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	105	-	85	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	-6	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	639	3	83	464	11	64

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	643	0	1271	642
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	630	-
Critical Hdwy	-	-	4.1	-	5.2	5.6
Critical Hdwy Stg 1	-	-	-	-	4.2	-
Critical Hdwy Stg 2	-	-	-	-	4.2	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	952	-	286	532
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	660	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	952	-	261	531
Mov Cap-2 Maneuver	-	-	-	-	261	-
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	602	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.39	13.66
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	261	531	-	-	952	-
HCM Lane V/C Ratio	0.041	0.12	-	-	0.087	-
HCM Ctrl Dly (s/v)	19.4	12.7	-	-	9.1	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.4	-	-	0.3	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	511	145	95	340	72	100
Future Vol, veh/h	511	145	95	340	72	100
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	110	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	3	1
Mvmt Flow	538	153	100	358	76	105

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	691	0	1172	614
Stage 1	-	-	-	-	614	-
Stage 2	-	-	-	-	558	-
Critical Hdwy	-	-	4.11	-	6.43	6.21
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.209	-	3.527	3.309
Pot Cap-1 Maneuver	-	-	909	-	212	494
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	571	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	909	-	188	494
Mov Cap-2 Maneuver	-	-	-	-	188	-
Stage 1	-	-	-	-	538	-
Stage 2	-	-	-	-	508	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.06	23.54
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	188	494	-	-	909	-
HCM Lane V/C Ratio	0.403	0.213	-	-	0.11	-
HCM Ctrl Dly (s/v)	36.4	14.3	-	-	9.5	-
HCM Lane LOS	E	B	-	-	A	-
HCM 95th %tile Q(veh)	1.8	0.8	-	-	0.4	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	527	6	70	337	6	3	5	115	10	7	13
Future Vol, veh/h	7	527	6	70	337	6	3	5	115	10	7	13
Conflicting Peds, #/hr	0	0	3	3	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	90	-	-	130	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	1	0	0	0	0	0	0	8
Mvmt Flow	8	573	7	76	366	7	3	5	125	11	8	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	373	0	0	582	0	0	1118	1119	579	1113	1119	371
Stage 1	-	-	-	-	-	-	594	594	-	522	522	-
Stage 2	-	-	-	-	-	-	523	525	-	591	598	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.372
Pot Cap-1 Maneuver	1197	-	-	1002	-	-	186	208	519	188	208	662
Stage 1	-	-	-	-	-	-	495	496	-	542	534	-
Stage 2	-	-	-	-	-	-	541	533	-	497	494	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1197	-	-	999	-	-	160	191	517	127	191	661
Mov Cap-2 Maneuver	-	-	-	-	-	-	160	191	-	127	191	-
Stage 1	-	-	-	-	-	-	490	491	-	500	494	-
Stage 2	-	-	-	-	-	-	481	492	-	370	490	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.1	1.51	16	23.96
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	460	1197	-	-	999	-	-	222
HCM Lane V/C Ratio	0.291	0.006	-	-	0.076	-	-	0.147
HCM Ctrl Dly (s/v)	16	8	-	-	8.9	-	-	24
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.2	0	-	-	0.2	-	-	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	415	136	43	295	25	181	120	98	43	90	17
Future Volume (veh/h)	19	415	136	43	295	25	181	120	98	43	90	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.99		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1900	1885	1900	1885	1885	1900	1900	1885	1900
Adj Flow Rate, veh/h	21	456	100	47	324	18	199	132	87	47	99	14
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	1	0	1	0	1	1	0	0	1	0
Cap, veh/h	579	558	468	284	514	28	375	182	120	209	175	25
Arrive On Green	0.24	0.29	0.29	0.09	0.15	0.15	0.10	0.17	0.17	0.05	0.11	0.11
Sat Flow, veh/h	1810	1900	1592	1810	3449	191	1795	1059	698	1810	1613	228
Grp Volume(v), veh/h	21	456	100	47	168	174	199	0	219	47	0	113
Grp Sat Flow(s),veh/h/ln	1810	1900	1592	1810	1791	1849	1795	0	1757	1810	0	1842
Q Serve(g_s), s	0.0	12.7	2.7	0.0	5.0	5.1	0.0	0.0	6.7	0.0	0.0	3.3
Cycle Q Clear(g_c), s	0.0	12.7	2.7	0.0	5.0	5.1	0.0	0.0	6.7	0.0	0.0	3.3
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.40	1.00		0.12
Lane Grp Cap(c), veh/h	579	558	468	284	267	276	375	0	302	209	0	200
V/C Ratio(X)	0.04	0.82	0.21	0.17	0.63	0.63	0.53	0.00	0.72	0.22	0.00	0.56
Avail Cap(c_a), veh/h	579	1307	1095	737	1551	1602	498	0	741	424	0	764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.9	18.8	15.2	23.8	22.8	22.8	22.5	0.0	22.4	26.0	0.0	24.2
Incr Delay (d2), s/veh	0.0	1.1	0.1	0.1	0.9	0.9	1.2	0.0	1.2	0.5	0.0	0.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.3	8.7	1.6	1.0	3.6	3.7	4.2	0.0	4.7	1.1	0.0	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.9	19.9	15.3	23.9	23.7	23.7	23.7	0.0	23.6	26.5	0.0	25.1
LnGrp LOS	B	B	B	C	C	C	C		C	C		C
Approach Vol, veh/h		577			389			418			160	
Approach Delay, s/veh		19.0			23.8			23.7			25.5	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	22.5	8.2	15.7	19.2	14.0	11.5	12.5
Change Period (Y+Rc), s	5.7	5.7	* 5.6	5.9	5.7	* 5.5	5.6	* 6.3
Max Green Setting (Gmax), s	19.3	39.3	* 9.4	24.1	9.5	* 50	9.8	* 24
Max Q Clear Time (g_c+I1), s	2.0	14.7	2.0	8.7	2.0	7.1	2.0	5.3
Green Ext Time (p_c), s	0.0	1.9	0.0	0.7	0.0	1.2	0.3	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	22.1
HCM 7th LOS	C

Notes

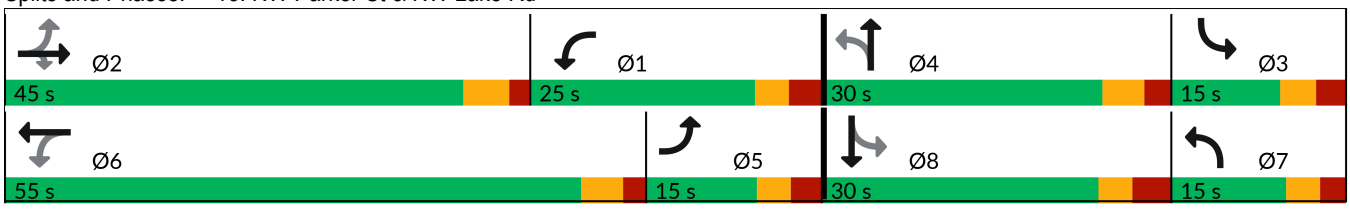
User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	19	415	136	43	295	181	120	43	90
Future Volume (vph)	19	415	136	43	295	181	120	43	90
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2		1	6	7	4	3	8
Permitted Phases	2		2	6		4		8	
Detector Phase	5	2	2	1	6	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.5	26.7	26.7	10.7	20.5	10.2	29.2	10.6	33.3
Total Split (s)	15.0	45.0	45.0	25.0	55.0	15.0	30.0	15.0	30.0
Total Split (%)	13.0%	39.1%	39.1%	21.7%	47.8%	13.0%	26.1%	13.0%	26.1%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.6	3.0	3.6	3.0	3.0
All-Red Time (s)	2.5	1.7	1.7	2.7	1.9	2.2	2.3	2.6	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.7	5.7	5.7	5.5	5.2	5.9	5.6	6.3
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min	Min	None	Min	None	None	None	None
Act Effct Green (s)	26.5	22.4	22.4	28.1	24.1	22.5	16.5	14.7	9.7
Actuated g/C Ratio	0.42	0.35	0.35	0.44	0.38	0.36	0.26	0.23	0.15
v/c Ratio	0.04	0.68	0.22	0.13	0.26	0.37	0.50	0.15	0.41
Control Delay (s/veh)	14.6	25.8	2.3	14.0	17.7	19.9	25.8	18.7	33.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	14.6	25.8	2.3	14.0	17.7	19.9	25.8	18.7	33.3
LOS	B	C	A	B	B	B	C	B	C
Approach Delay (s/veh)		19.9			17.3		23.1		29.2
Approach LOS		B			B		C		C

Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 63.2	
Natural Cycle: 85	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay (s/veh): 21.0	Intersection LOS: C
Intersection Capacity Utilization 62.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 18: NW Parker St & NW Lake Rd



Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	46	50	129	36	37	127
Future Vol, veh/h	46	50	129	36	37	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	-3	-	2	-	-	-2
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	4	6	4	14	5	4
Mvmt Flow	52	57	147	41	42	144

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	395	167	0	0	188	0
Stage 1	167	-	-	-	-	-
Stage 2	228	-	-	-	-	-
Critical Hdwy	5.84	5.96	-	-	4.15	-
Critical Hdwy Stg 1	4.84	-	-	-	-	-
Critical Hdwy Stg 2	4.84	-	-	-	-	-
Follow-up Hdwy	3.536	3.354	-	-	2.245	-
Pot Cap-1 Maneuver	647	879	-	-	1369	-
Stage 1	882	-	-	-	-	-
Stage 2	836	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	625	879	-	-	1369	-
Mov Cap-2 Maneuver	625	-	-	-	-	-
Stage 1	882	-	-	-	-	-
Stage 2	808	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	10.74	0	1.74
HCM LOS	B		

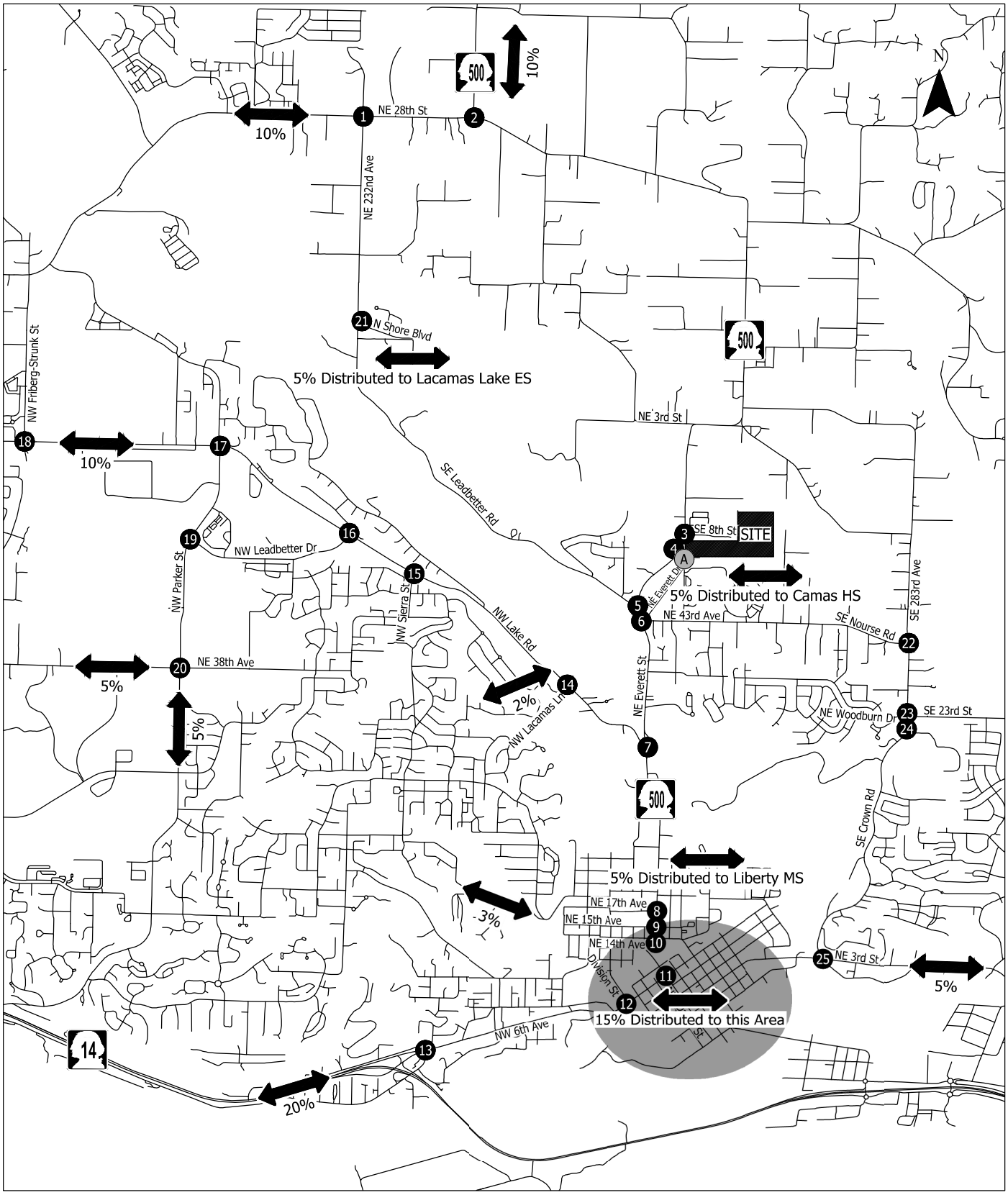
Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	736	406	-
HCM Lane V/C Ratio	-	-	0.148	0.031	-
HCM Ctrl Dly (s/v)	-	-	10.7	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	-

Appendix E: In-Process Data

0% Build-Out

Camas Woods

October 2024



Estimated Residential Site Trip Distribution Pattern Camas, Washington

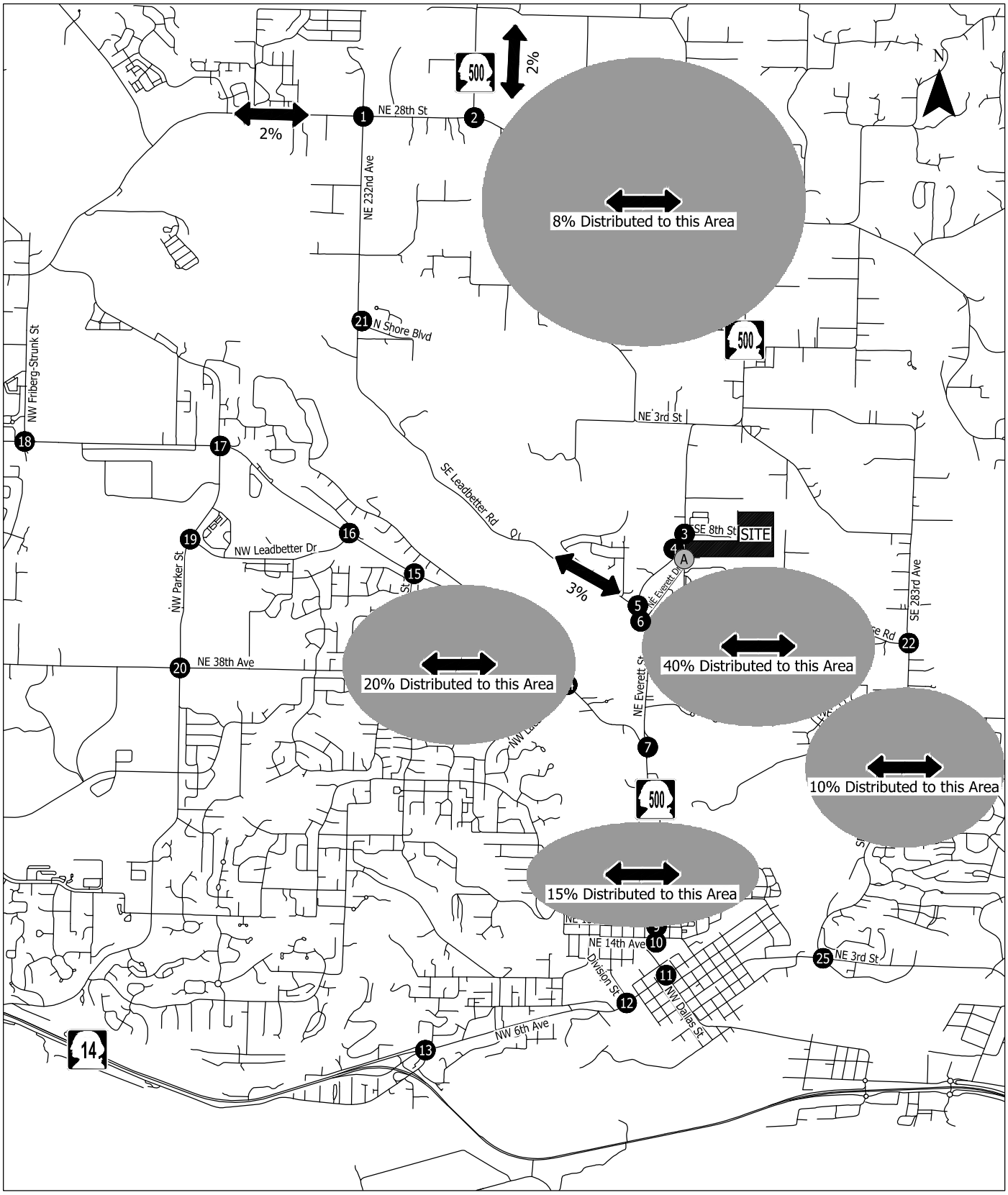
Figure 10

- # — Study Intersections
- A — Site Driveway
- XX% — Trip Distribution Percentage

C:\Users\rdoubleday\appdata\local\temp\AcPublish_23824\30088_figureset.dwg Oct 10, 2024 - 3:29pm - rdoubleday Layout Tab: Fig10 Residential Trip Distribution

KITTELSON & ASSOCIATES

0% Build-Out



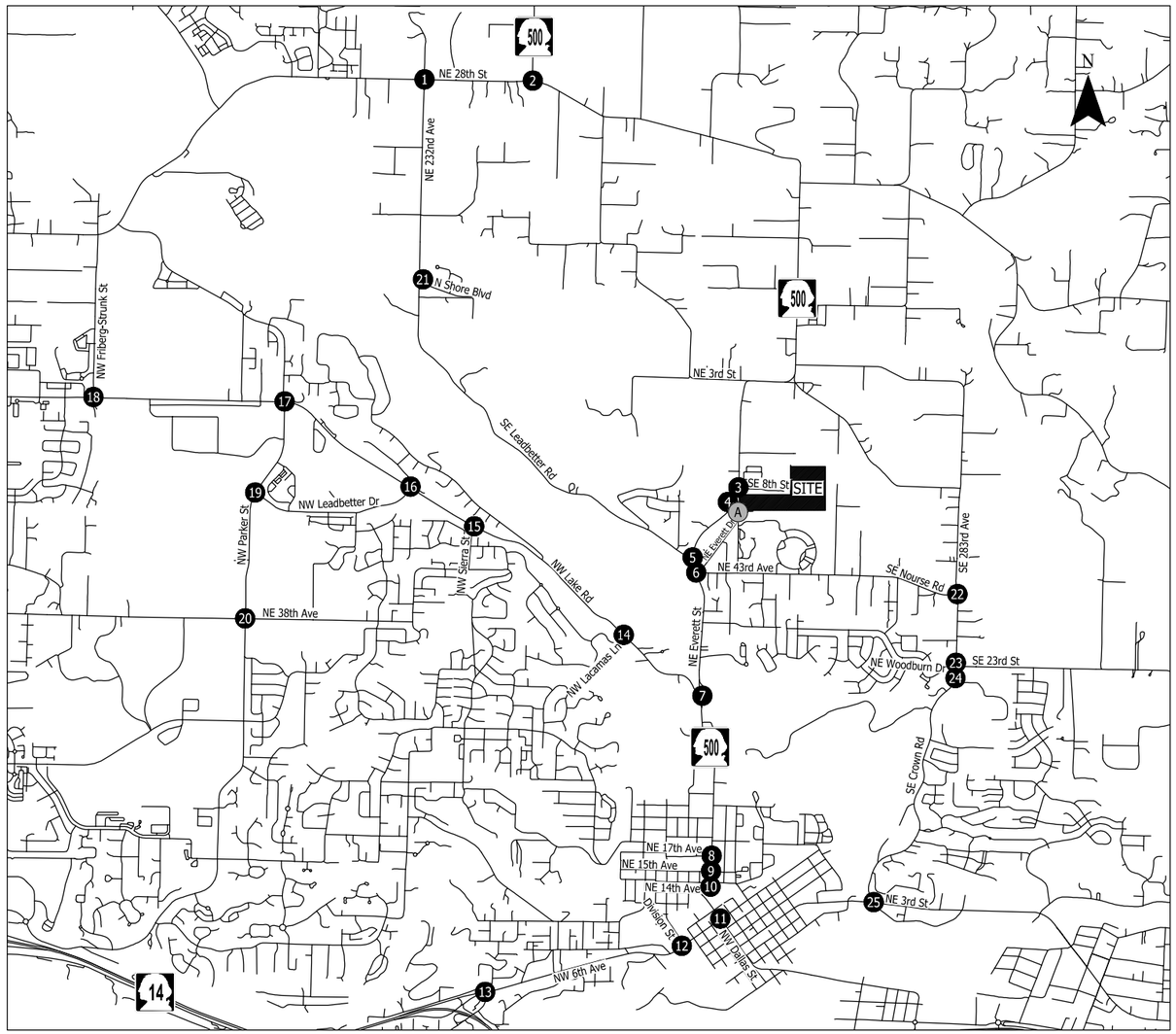
Estimated Commercial Site Trip Distribution Pattern Camas, Washington

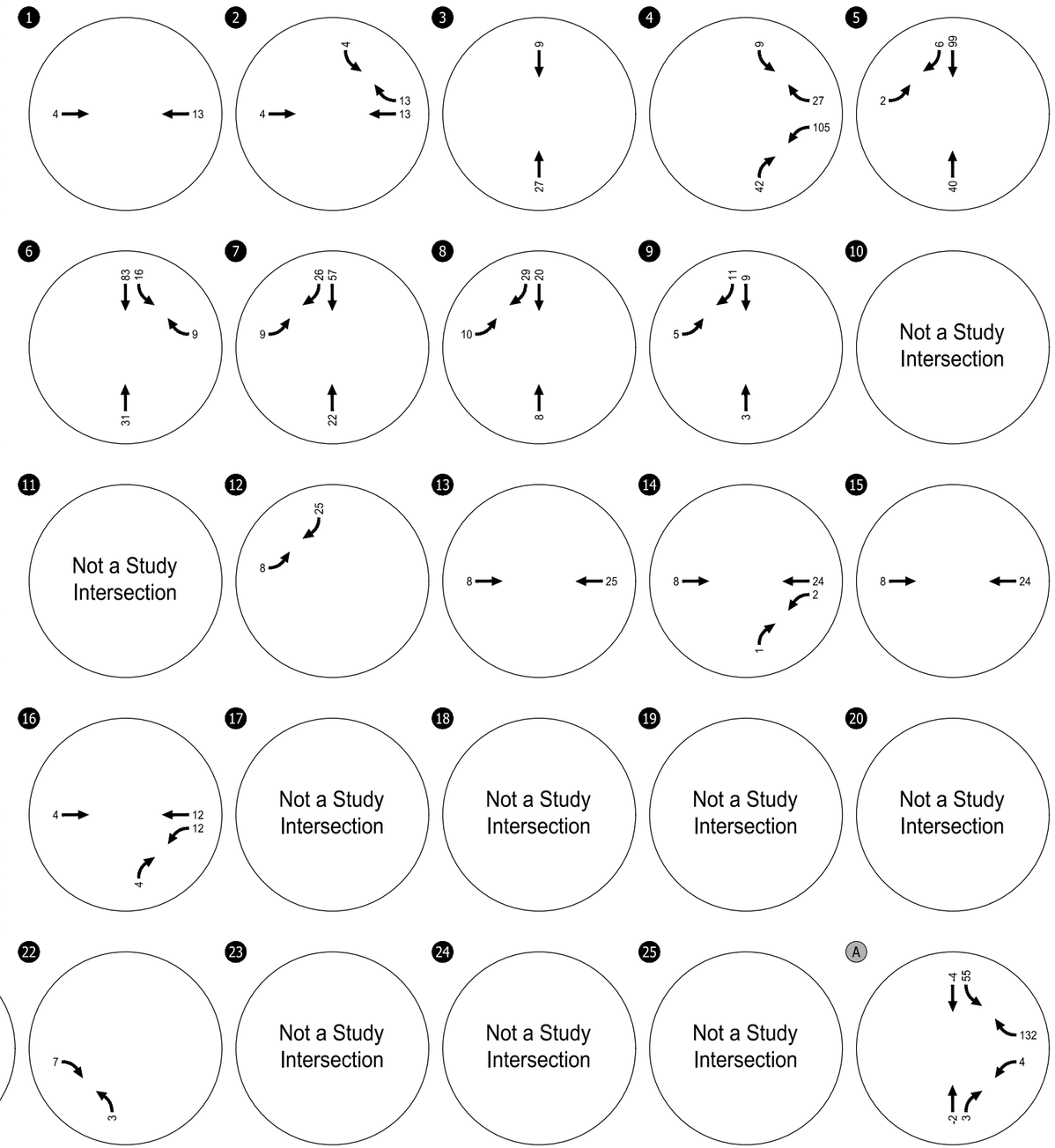
Figure 11

- # Study Intersections
- A Site Driveway
- XX% Trip Distribution Percentage

C:\Users\rdoubleday\appdata\local\temp\AcPublish_23824\30088_figureset.dwg Oct 10, 2024 - 3:29pm - rdoubleday Layout Tab: Fig11 Commercial Trip Distribution

0% Build-Out





Note: Negative volumes reflact pass-by trips

(#) Study Intersections

(A) Site Driveway

Weekday AM Peak Hour
Site-Generated Trip Assignment
Camas, Washington

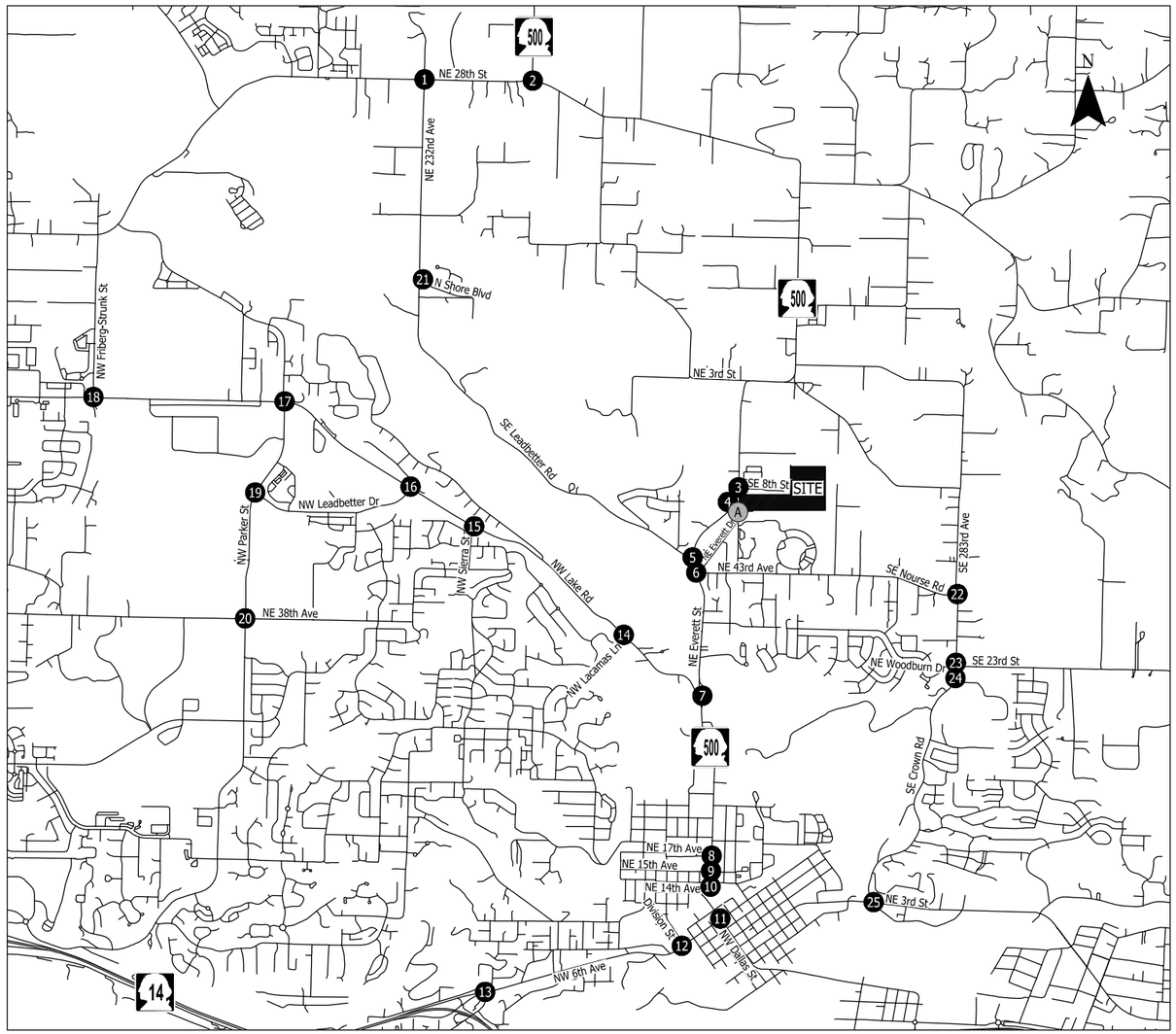
Figure
12

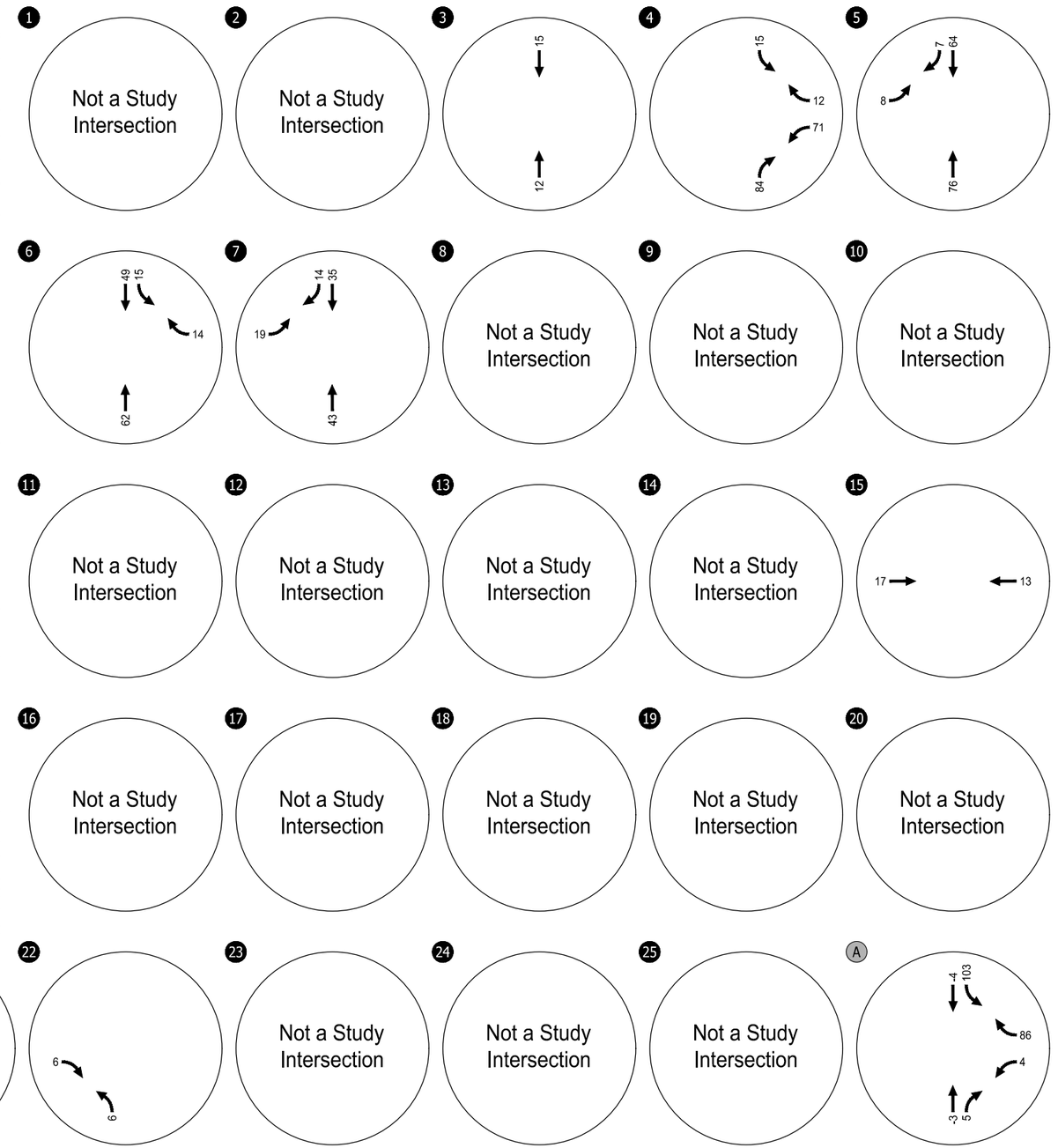
C:\Users\rdoubleday\appdata\local\temp\AcPublish_23824\30088_figureset.dwg Oct 10, 2024 - 3:29pm - rdoubleday Layout Tab: Fig12 AM Trip Assignment

0% Build-Out

Camas Woods

October 2024





Note: Negative volumes reflact pass-by trips

(#) Study Intersections

(A) Site Driveway

Weekday School PM Peak Hour
Site-Generated Trip Assignment
Camas, Washington

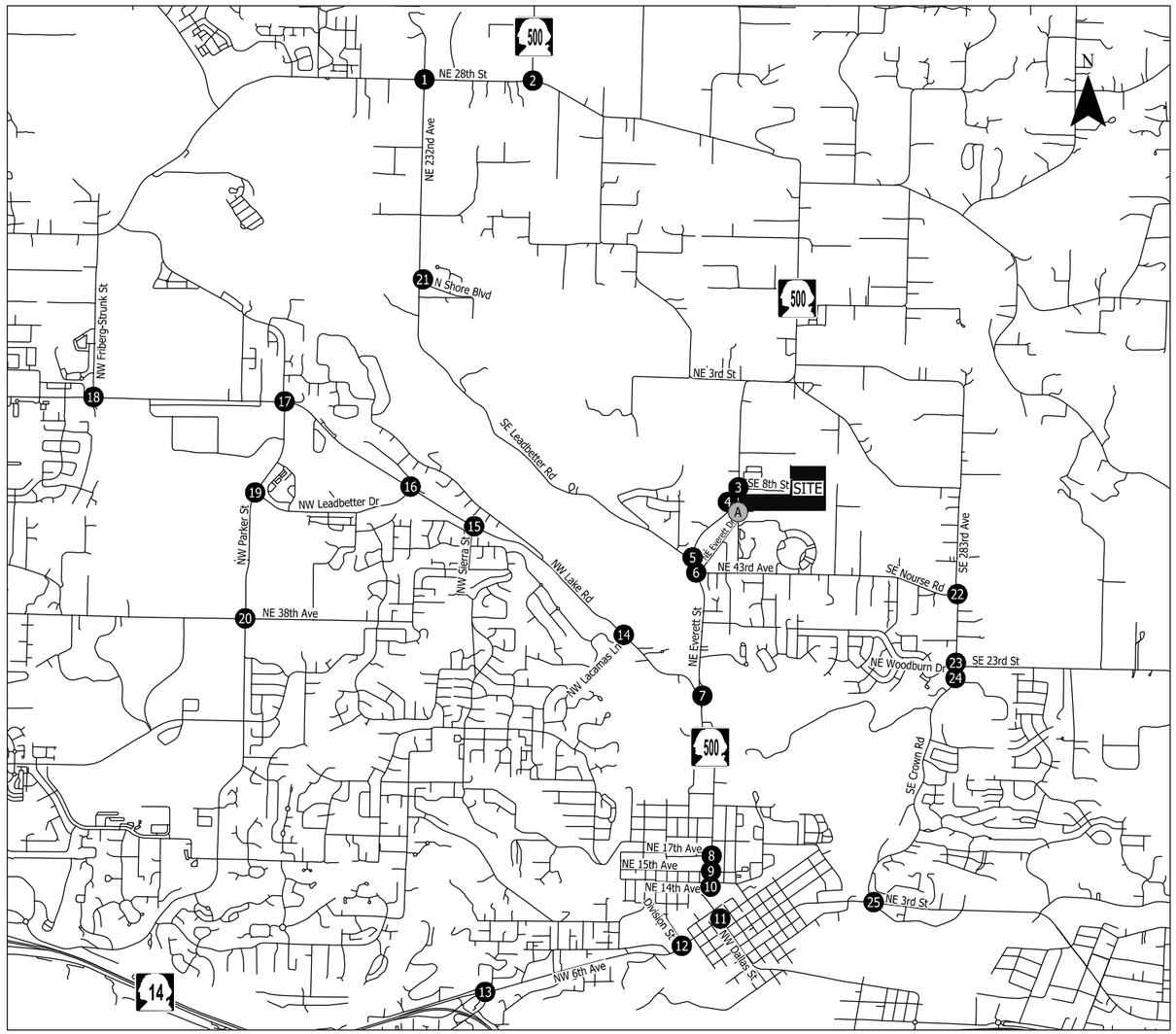
Figure
13

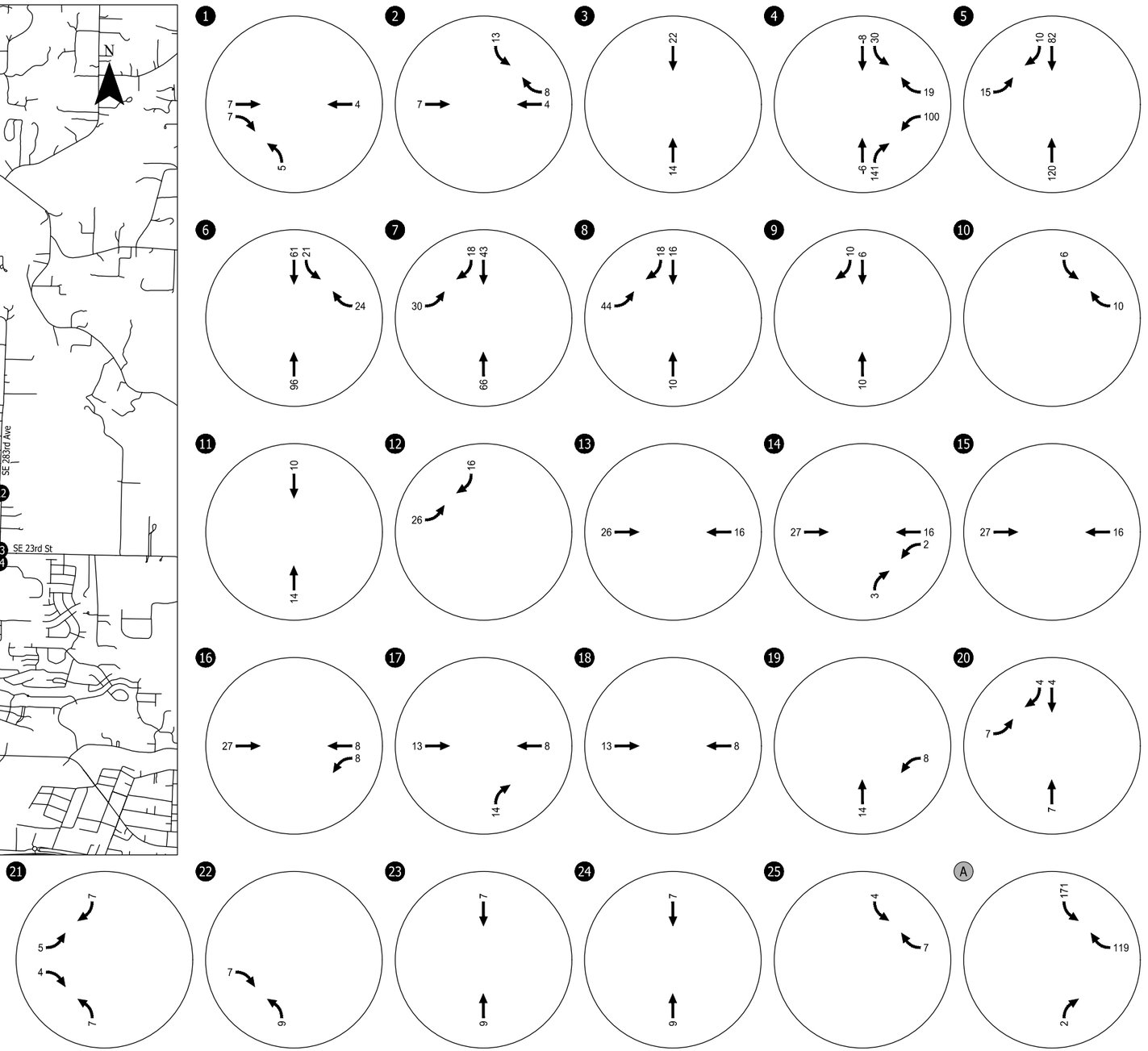
C:\Users\rdoubleday\appdata\local\temp\AcPublish_23824\30088_figureset.dwg Oct 10, 2024 - 3:30pm - rdoubleday Layout Tab: Fig13 School PM Trip Assignment

KITTELSON & ASSOCIATES

0% Build-Out

Camas Woods *October 2024*





Note: Negative volumes reflact pass-by trips

Study Intersections

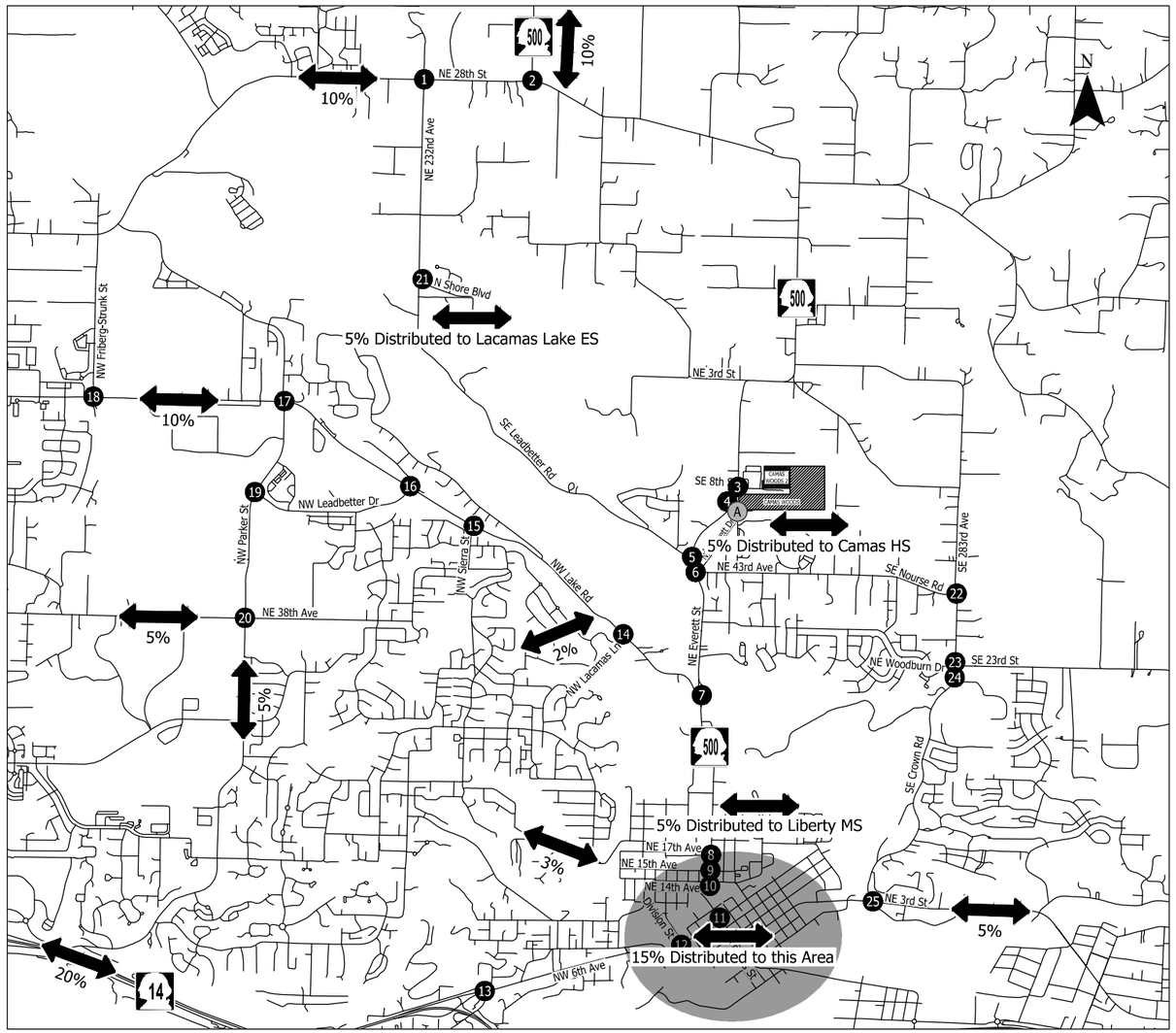
A Site Driveway

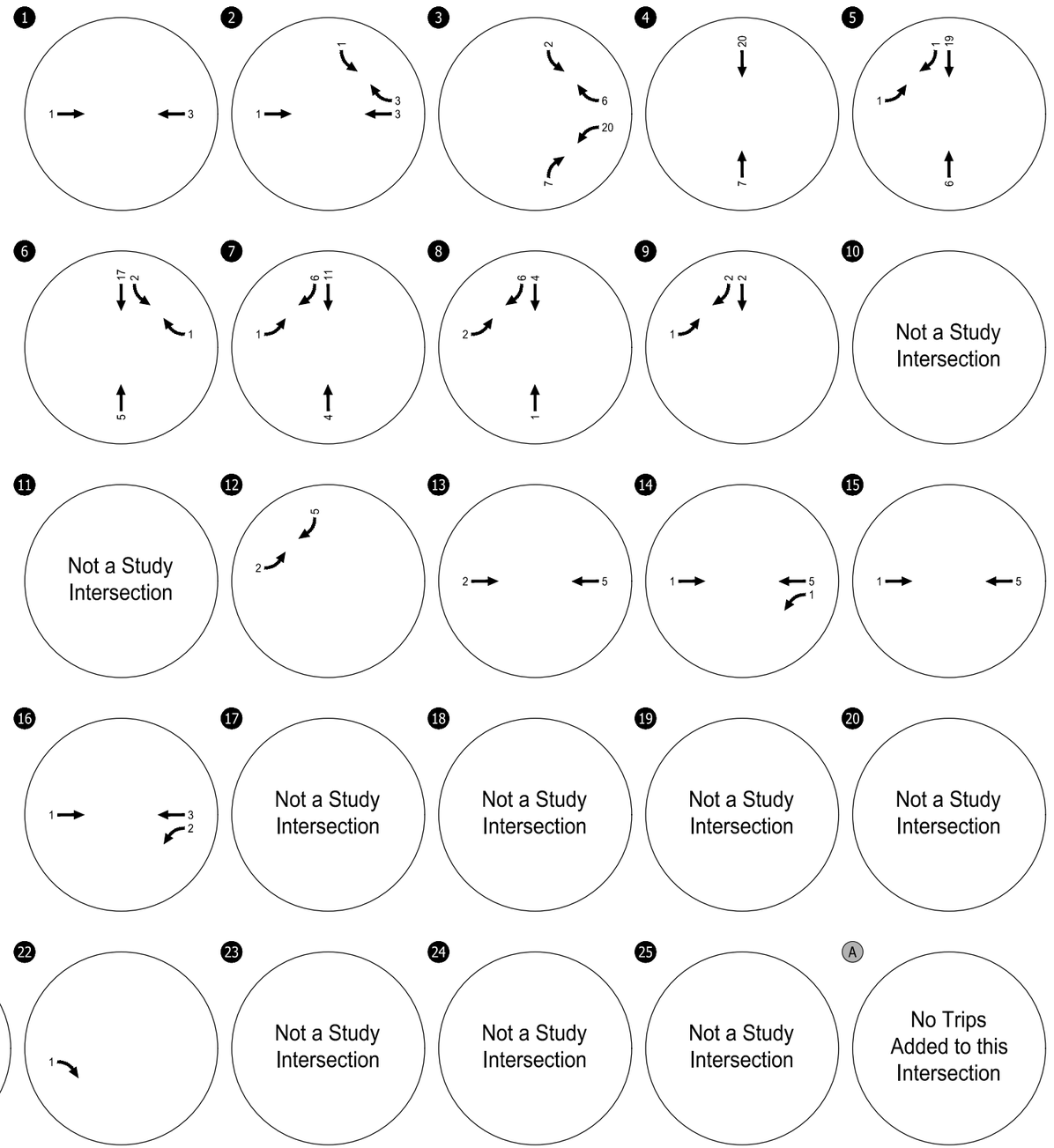
Weekday PM Peak Hour Site-Generated Trip Assignment Camas, Washington

Figure 14

C:\Users\rdoubleday\appdata\local\temp\AcPublish_23824\30088_figureset.dwg Oct 10, 2024 - 3:30pm - rdoubleday Layout Tab: Fig14 PM Trip

0% Build-Out





Site-Generated Trip Assignment
Weekday AM Peak Hour
Camas, Washington

Figure 3

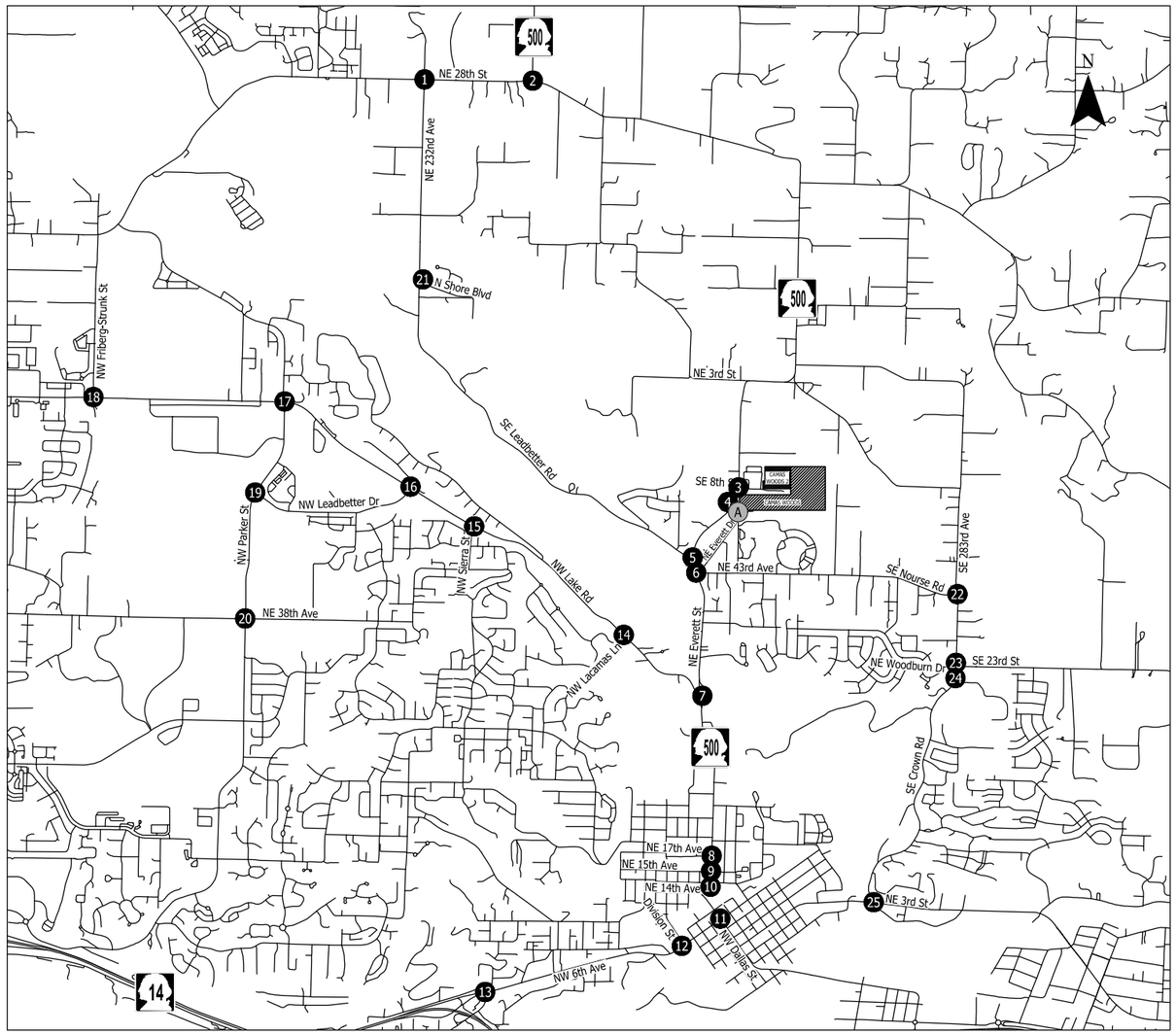
- # Study Intersections
- A Site Driveway
- XX% Trip Distribution Percentage

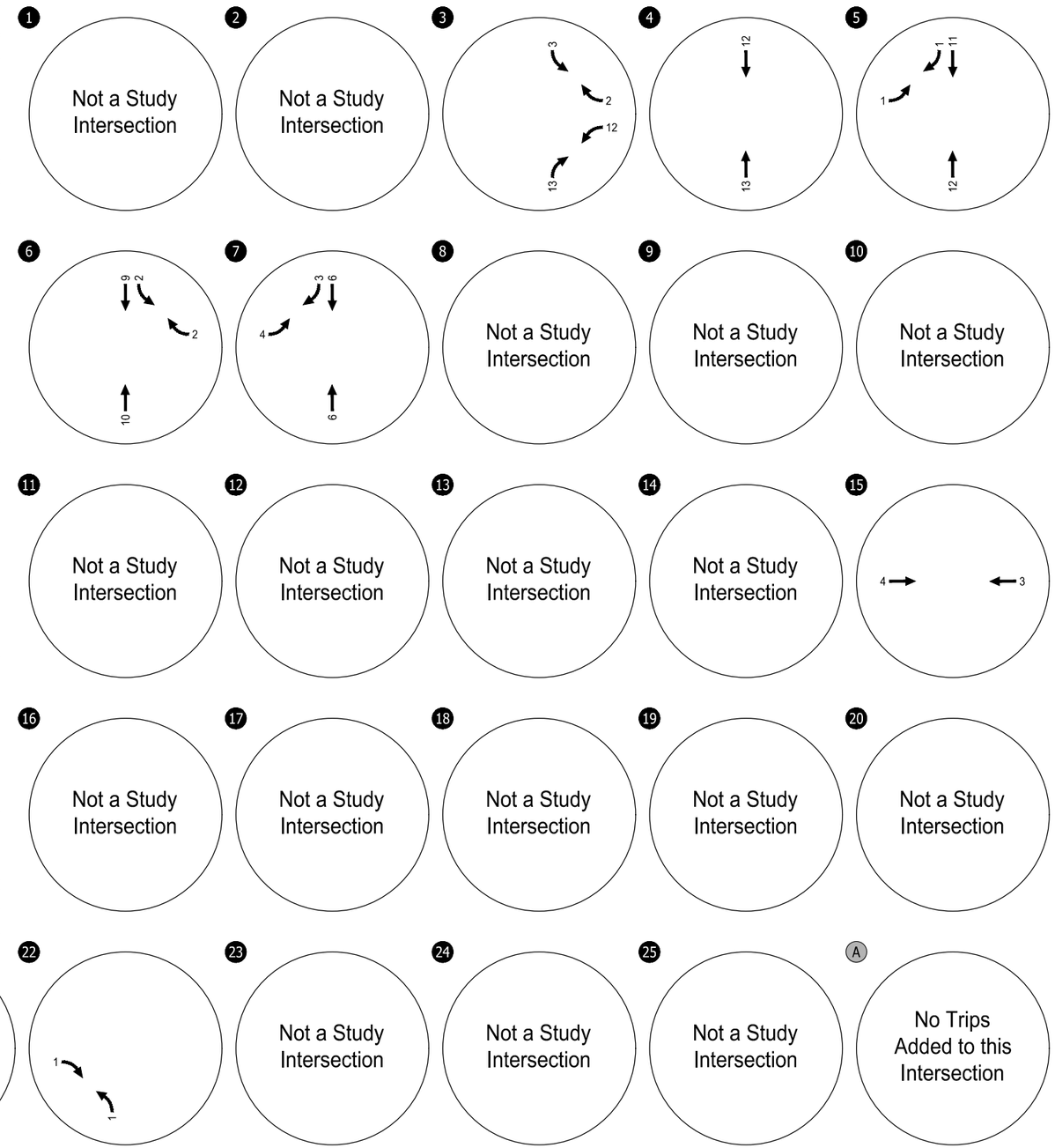
H:\30\30088 - Camas Woods\report\figs\30088_figureset_Phase3.dwg Mar 04, 2025 - 9:12am - rdoubleday Layout Tab: Fig3 Phase 3 AM Trips

0% Build-Out

Camas Woods 2

March 2025





Site-Generated Trip Assignment
Weekday School PM Peak Hour
Camas, Washington

Figure 4

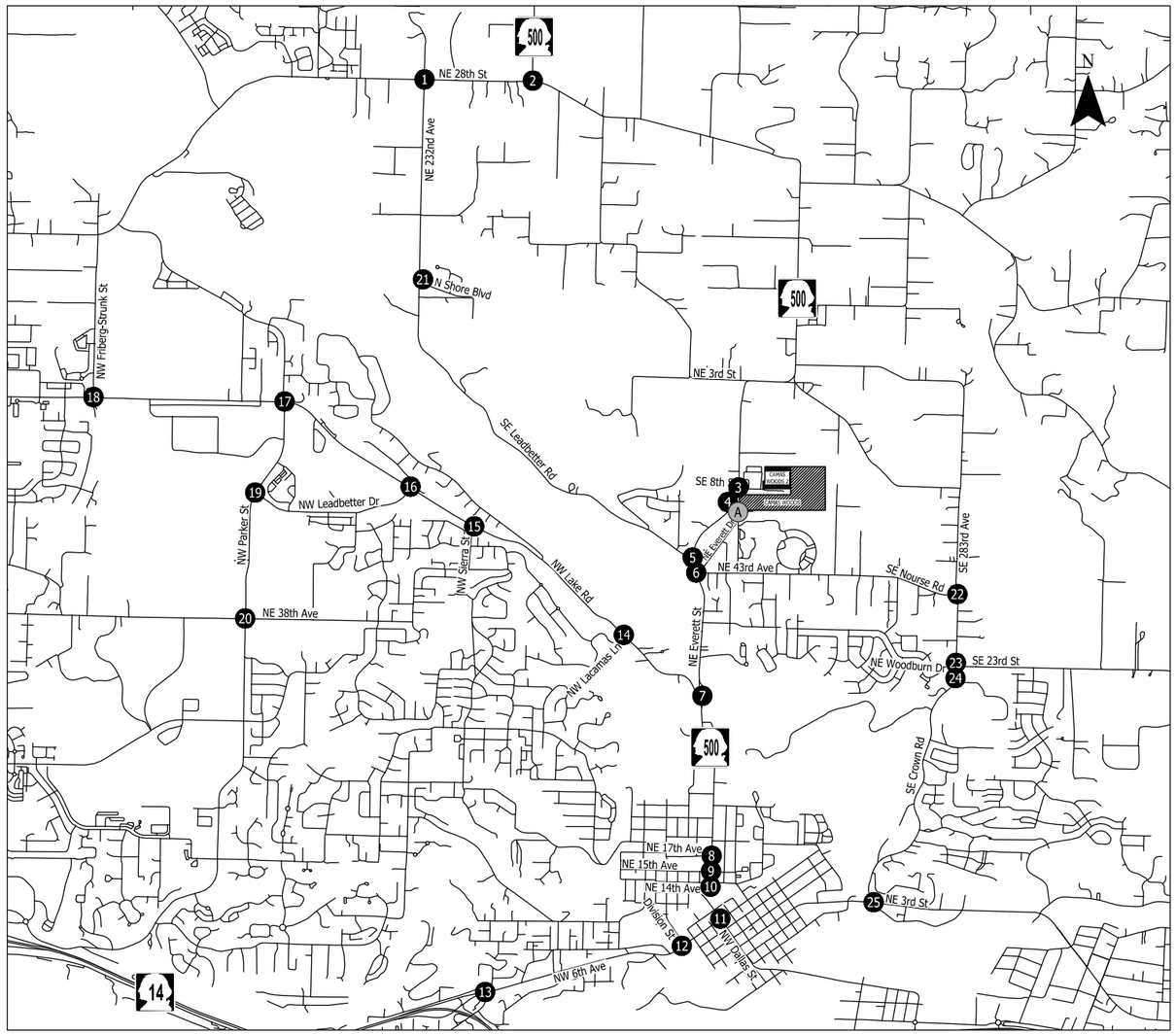
- # Study Intersections
- A Site Driveway
- XX% Trip Distribution Percentage

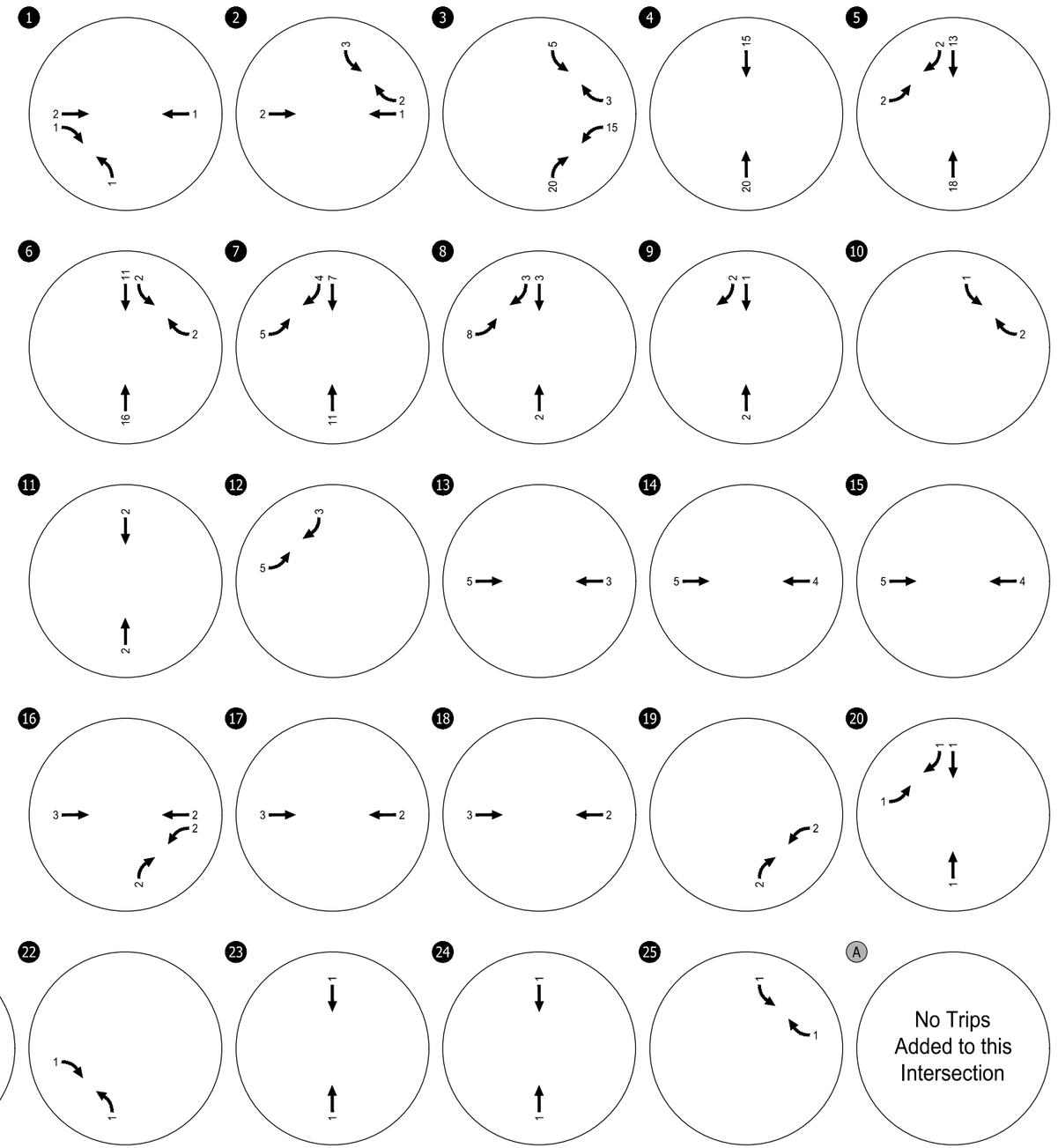
H:\30\30088 - Camas Woods\report\figs\30088_figureset_Phase3.dwg Mar 04, 2025 - 9:13am - rdoubleday Layout Tab: Fig4 Phase 3 School PM Trips

0% Build-Out

Camas Woods 2

March 2025





Site-Generated Trip Assignment
Weekday PM Peak Hour
Camas, Washington

Figure 5

- # Study Intersections
- A Site Driveway
- XX% Trip Distribution Percentage

H:\30\30088 - Camas Woods\report\figs\30088_figureset_Phase3.dwg Mar 04, 2025 - 9:13am - rdoubleday Layout Tab: Fig5 Phase 3 PM Trips

KITTELSON & ASSOCIATES

0% Build-Out

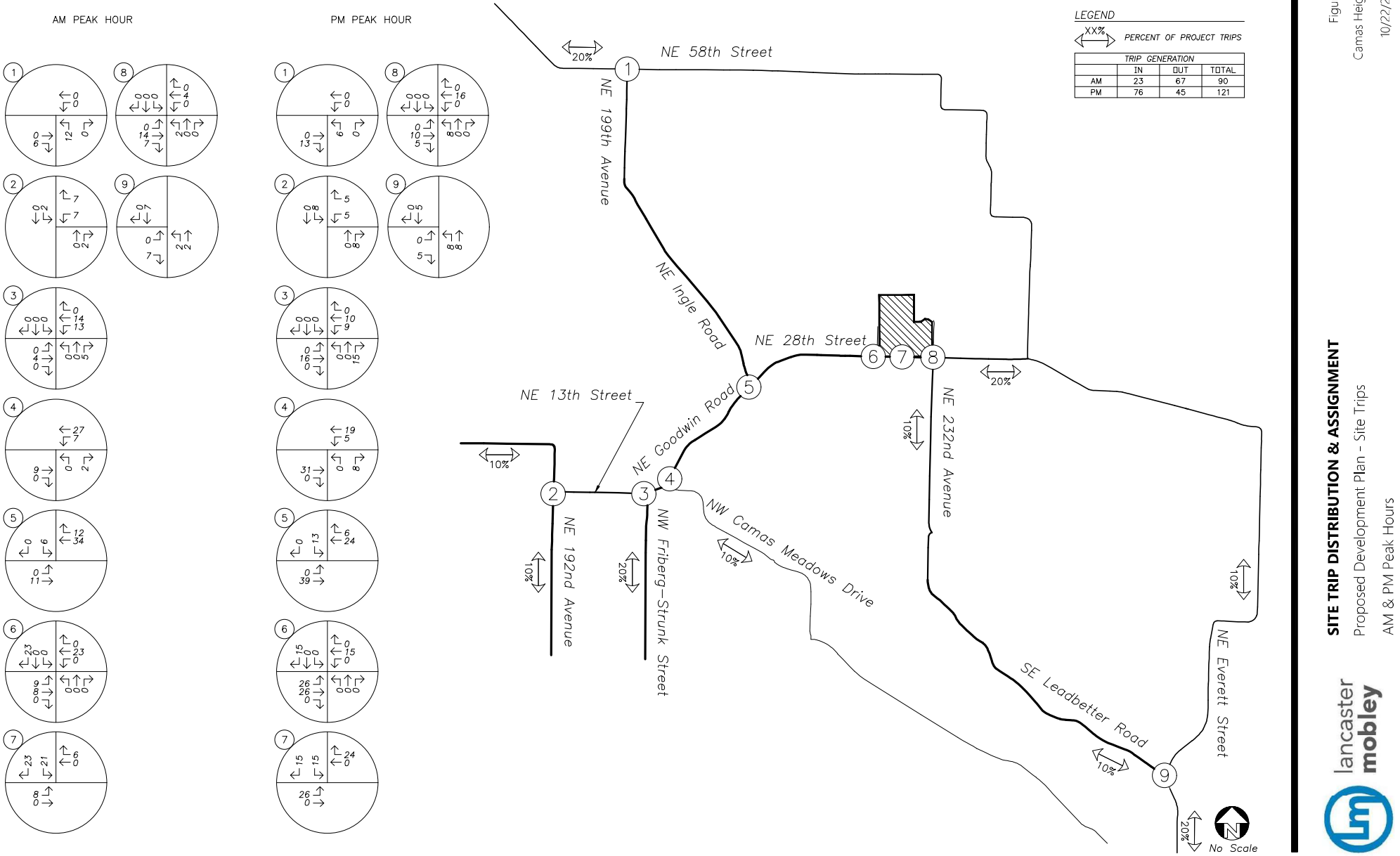


Figure 3
Camas Heights
10/22/2021

SITE TRIP DISTRIBUTION & ASSIGNMENT
Proposed Development Plan - Site Trips
AM & PM Peak Hours

lancaster mobley

80% Build-Out

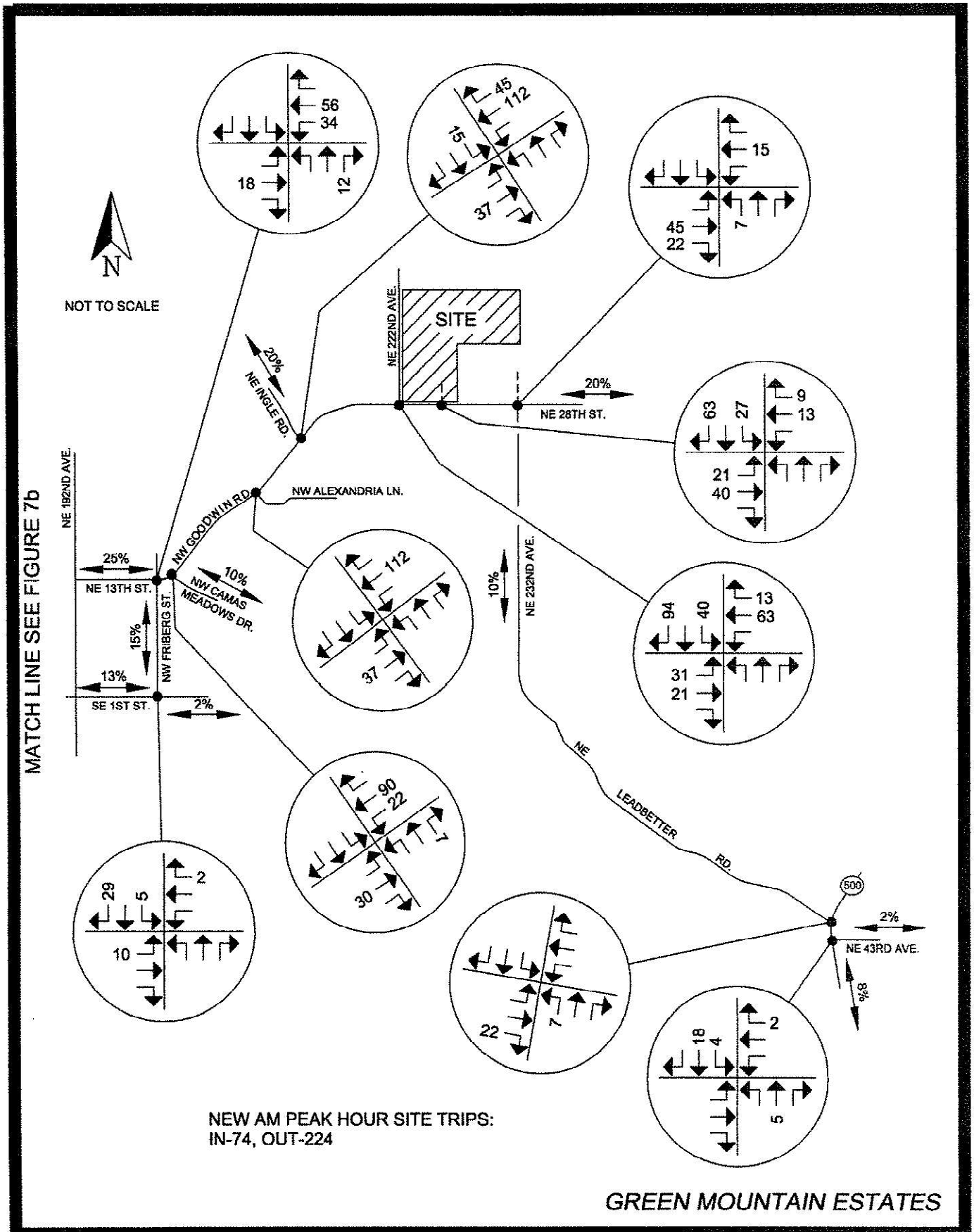


FIGURE 7a
SITE TRAFFIC DISTRIBUTION/ ASSIGNMENT, AM PEAK HOUR

KELLY ENGINEERING
316 E. Fourth Plain, A-2, Vancouver, WA 98663
Phone: 360-433-7530

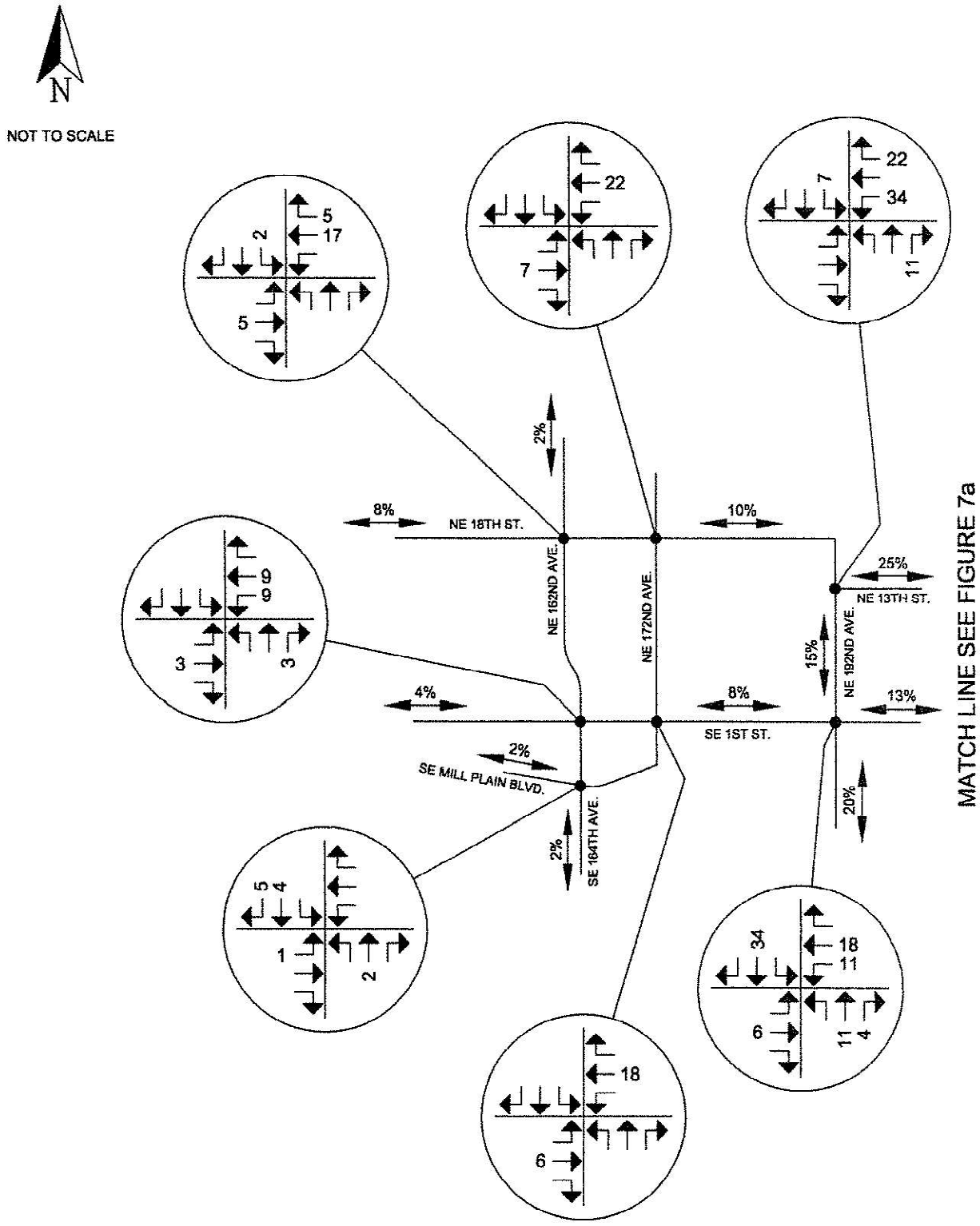


FIGURE 7b
SITE TRAFFIC DISTRIBUTION/
ASSIGNMENT, AM PEAK HOUR

KELLY ENGINEERING
316 E. Fourth Plain, A-2, Vancouver, WA 98663
Phone: 360-433-7530

80% Build-Out

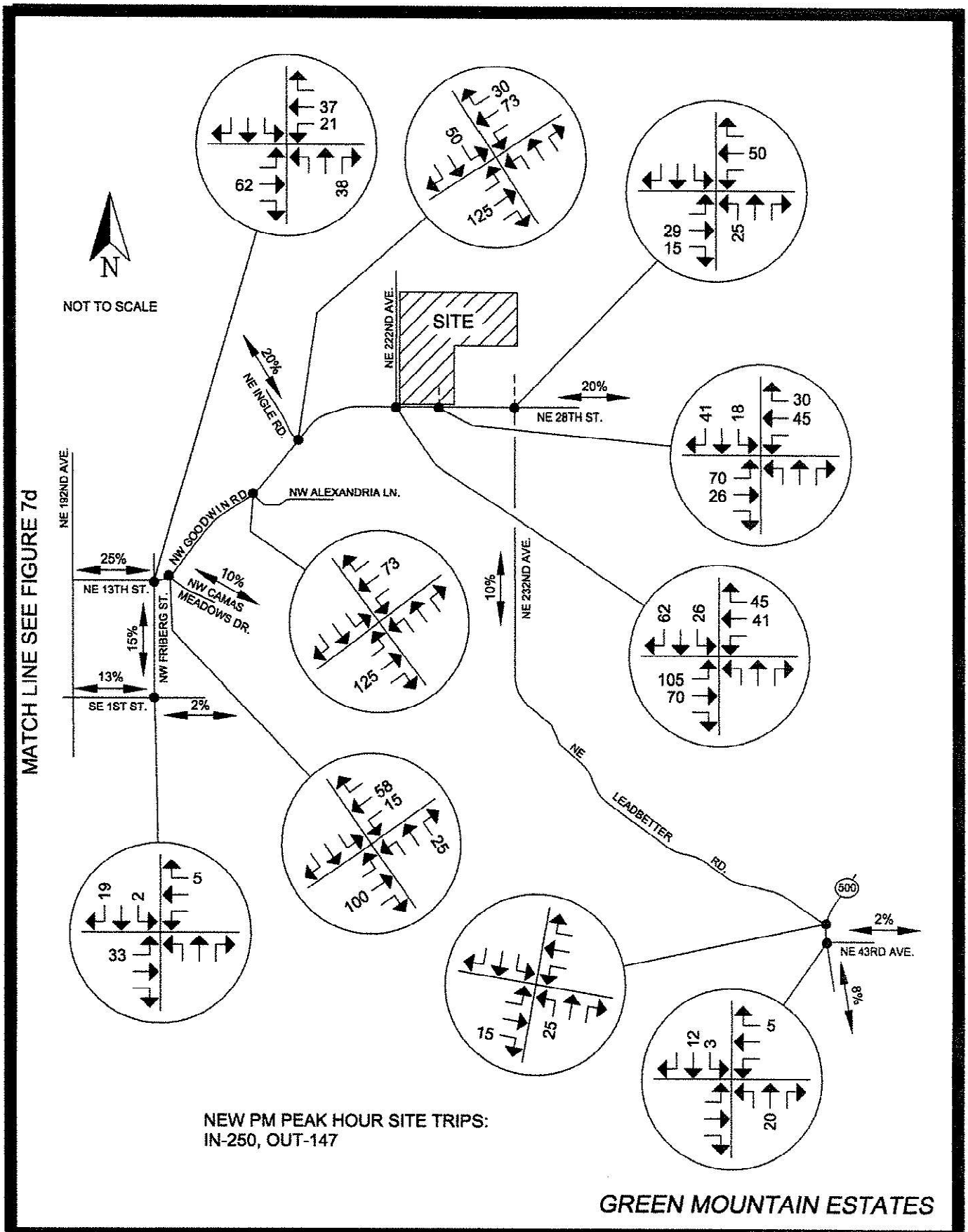


FIGURE 7c
SITE TRAFFIC DISTRIBUTION/
ASSIGNMENT, PM PEAK HOUR

KELLY ENGINEERING
316 E. Fourth Plain, A-2, Vancouver, WA 98663
Phone: 360-433-7530

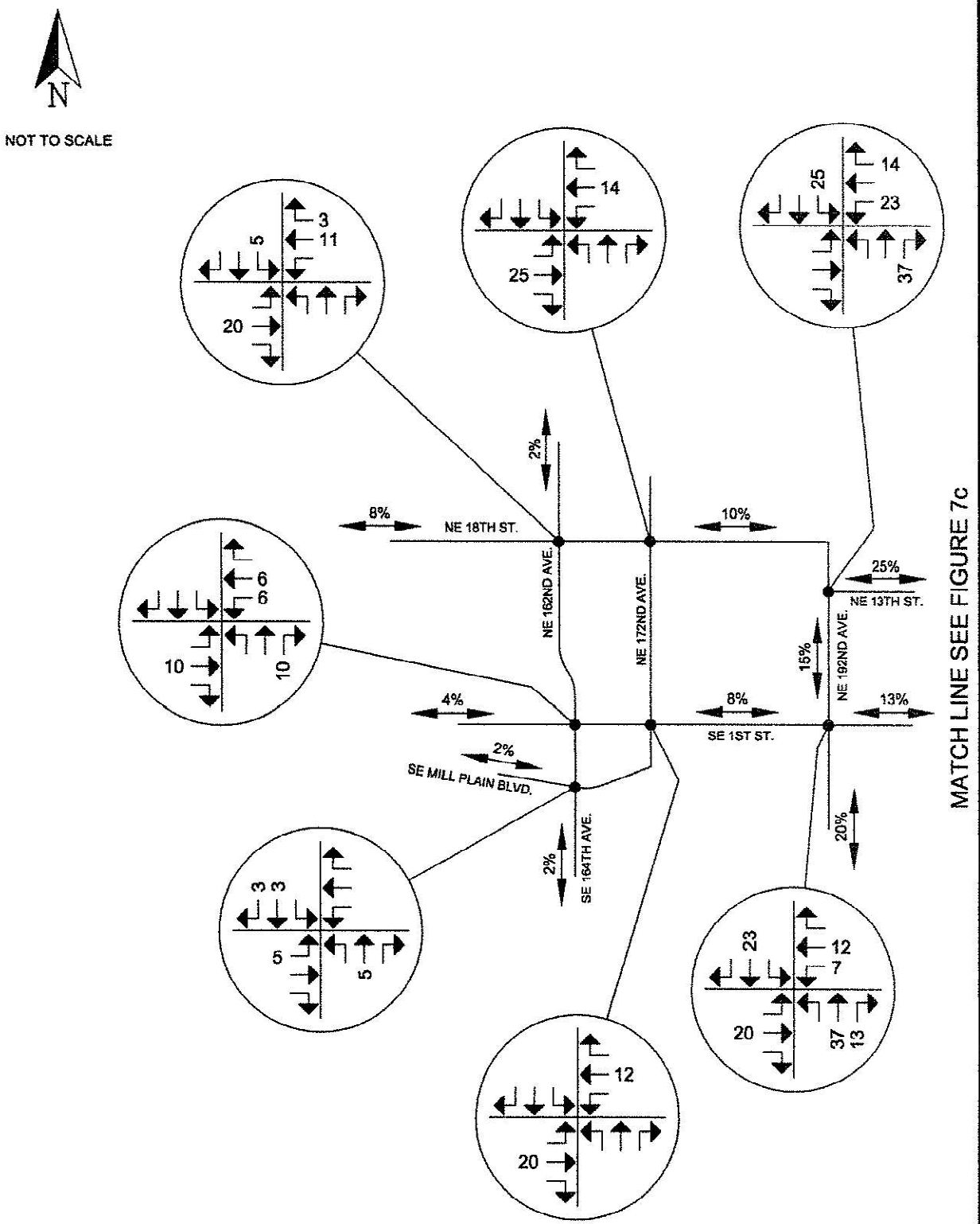
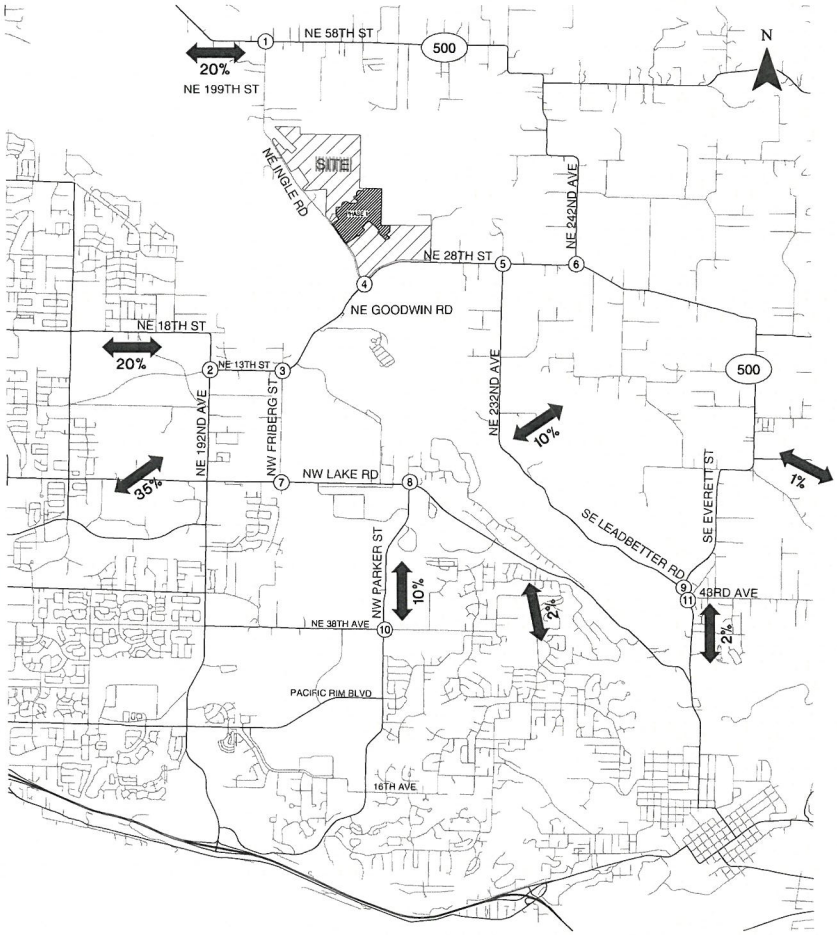


FIGURE 7d
SITE TRAFFIC DISTRIBUTION/ ASSIGNMENT, PM PEAK HOUR

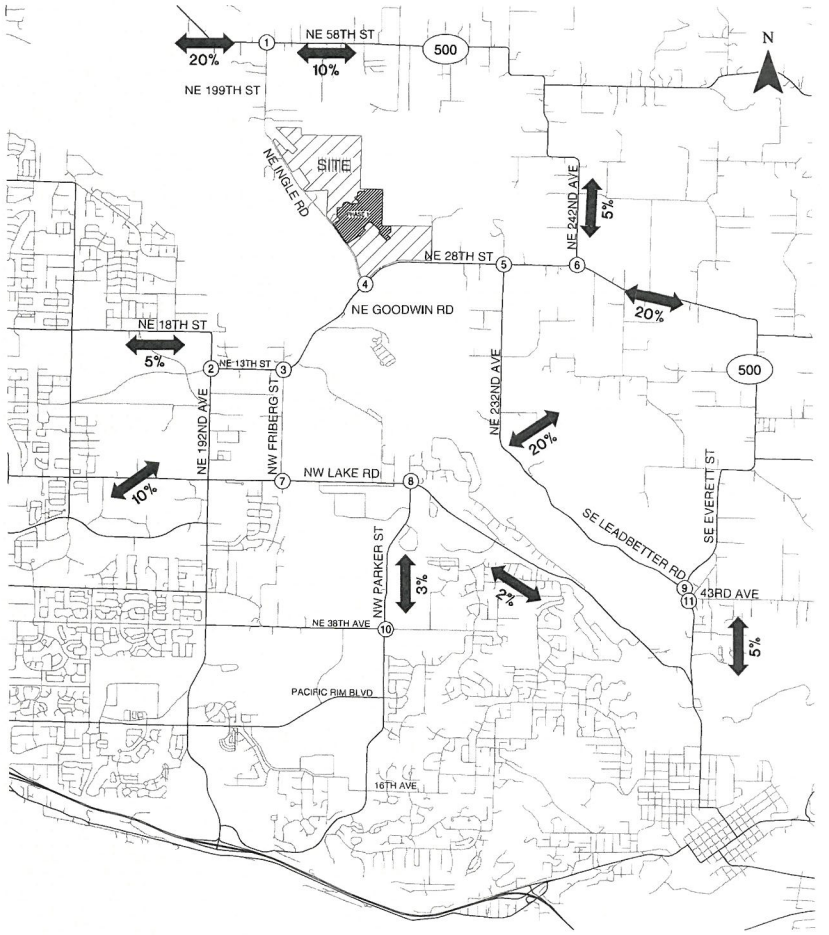
KELLY ENGINEERING
316 E. Fourth Plain, A-2, Vancouver, WA 98663
Phone: 360-433-7530

80% Build-Out

RESIDENTIAL DISTRIBUTION:



RETAIL DISTRIBUTION:

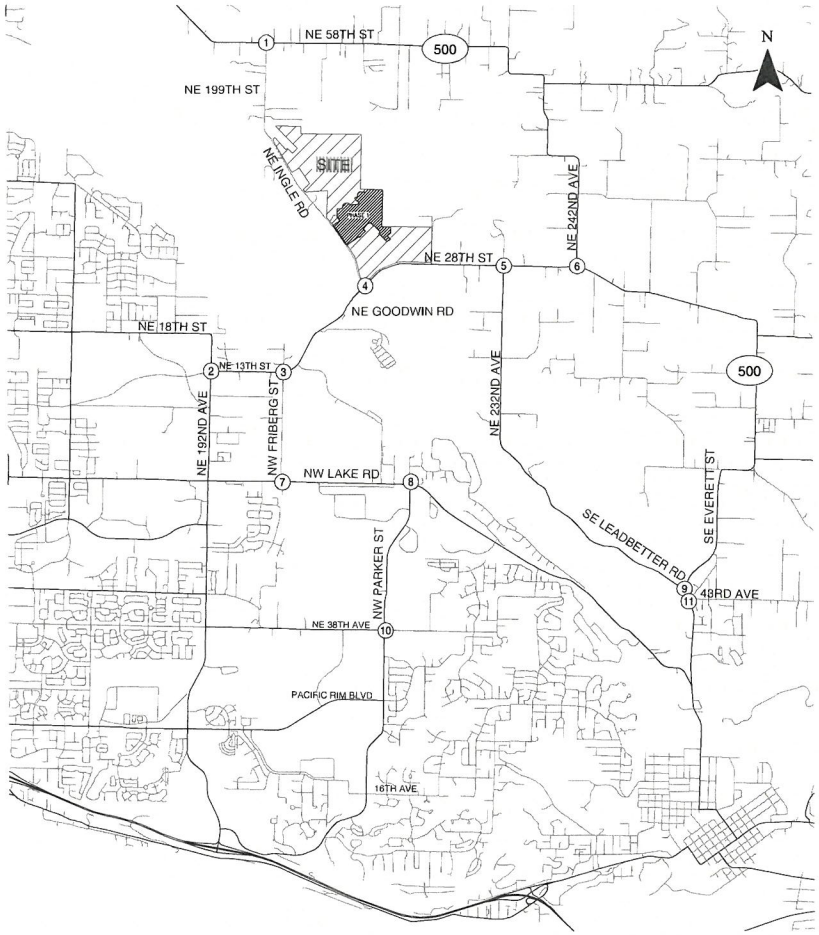


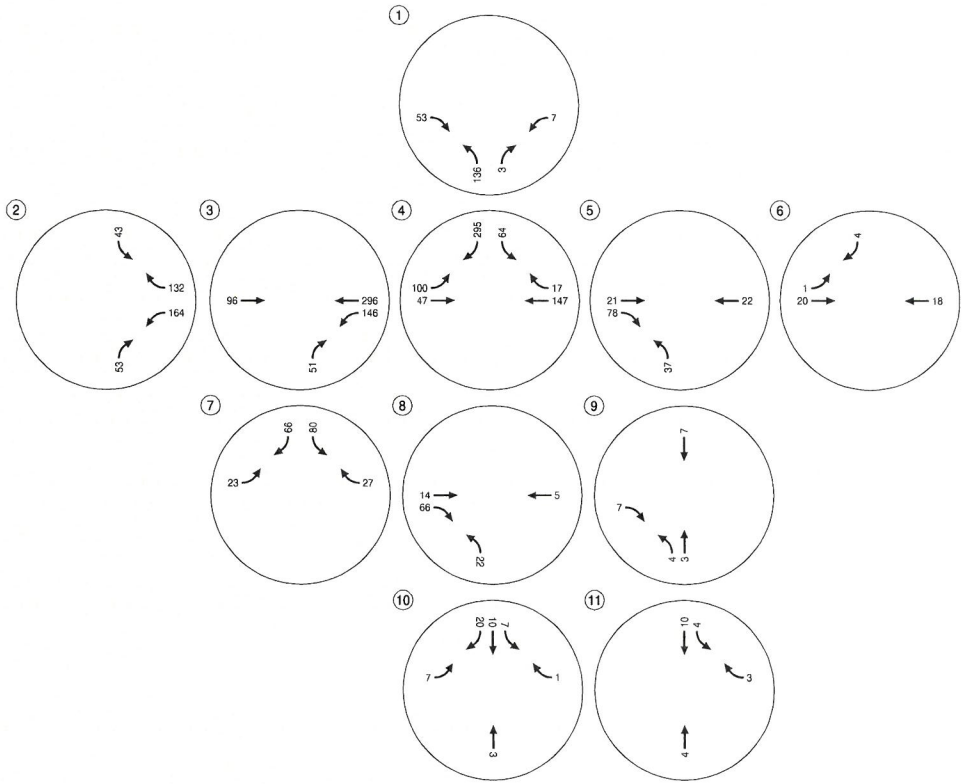
Estimated Trip Distribution Pattern
Camas, Washington

Figure 6

H:\proj\file13865 - Green Mountain Master Plan\dwg\all\gel13865_traffic study -Nov update.dwg Nov 20, 2014 - 2:27pm - kkustsen Layout Tab: 6_Dist

75% Build-Out





Total Estimated Trip Assignment - Full Build-Out
Weekday AM Peak Hour
Camas, Washington

Figure 9

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING, PLANNING

75% Build-Out

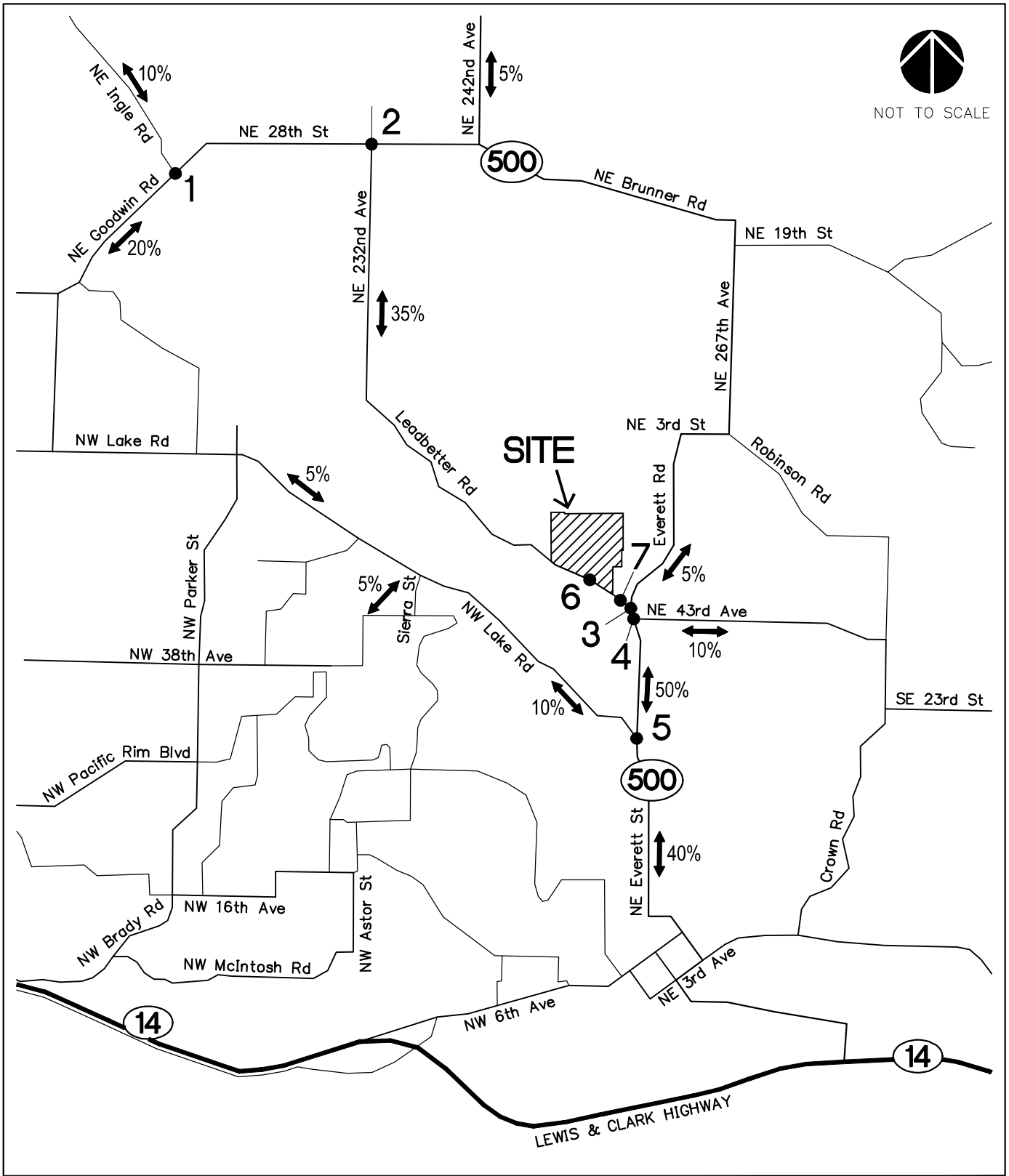


Total Estimated Trip Assignment - Full Build-Out
Weekday PM Peak Hour
Camas, Washington

Figure
10

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

H:\projfile\13865 - Green Mountain Master Plan\dwgs\figs\13865_traffic study -Nov update.dwg Nov 20, 2014 - 2:29pm - klaustsen Layout Tab: 10_tBoPM



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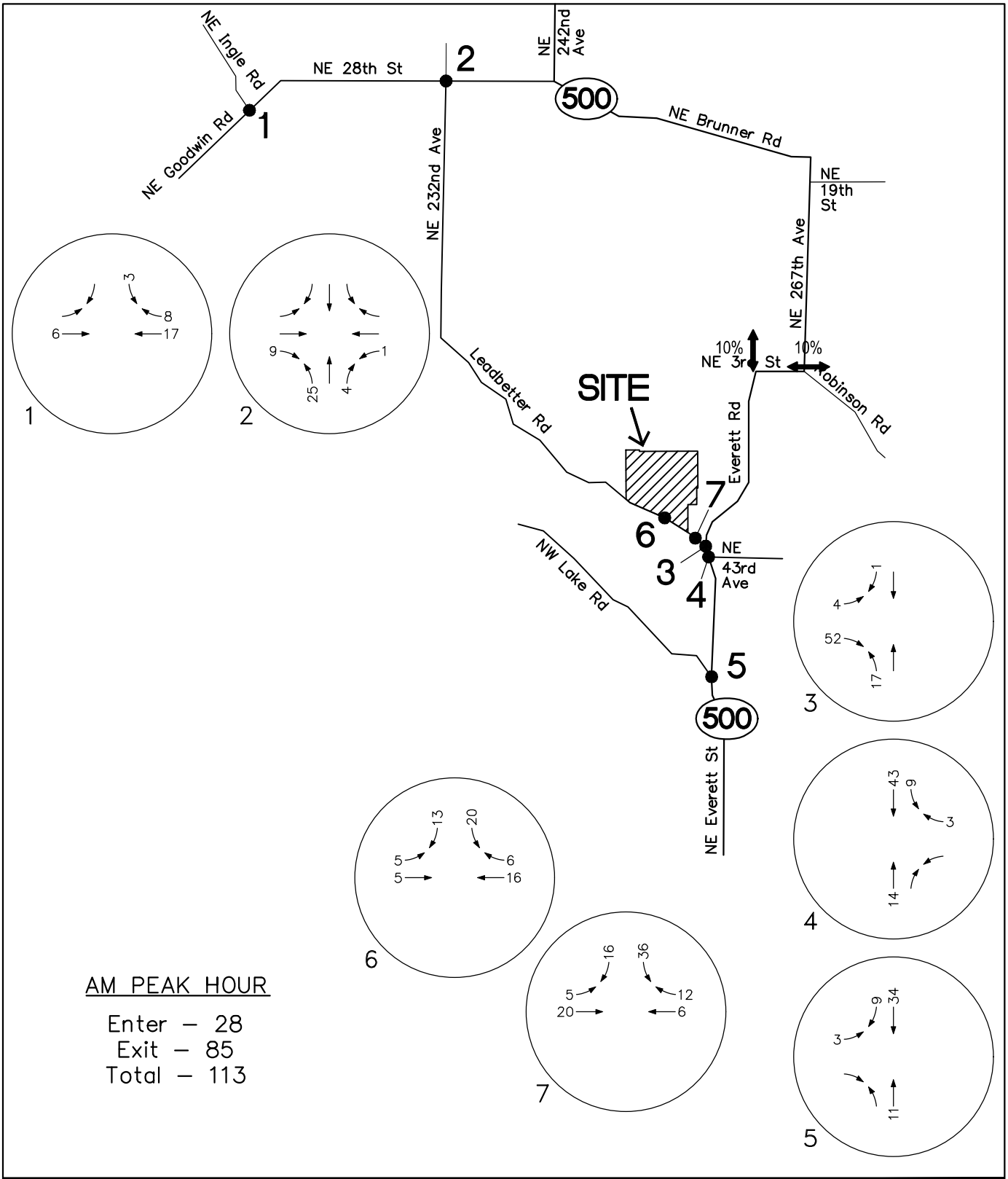
TRIP DISTRIBUTION

CJ DENS EAST SUBDIVISION
CAMAS, WASHINGTON

FIGURE 1



AM PEAK HOUR

Enter – 28
Exit – 85
Total – 113

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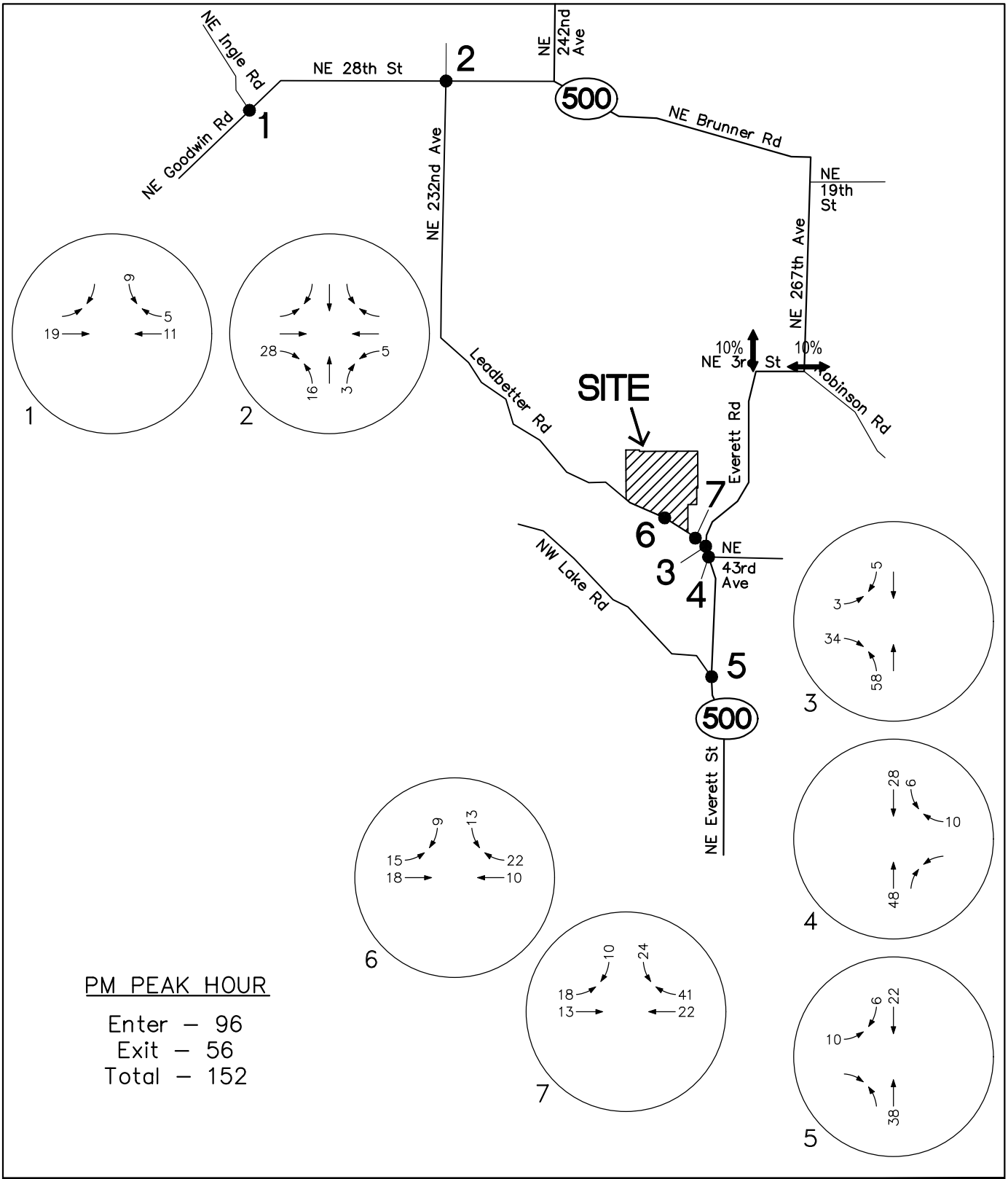
PROJECT TRIP ASSIGNMENT
AM PEAK HOUR

CJ DENS EAST SUBDIVISION
CAMAS, WASHINGTON

FIGURE
2A



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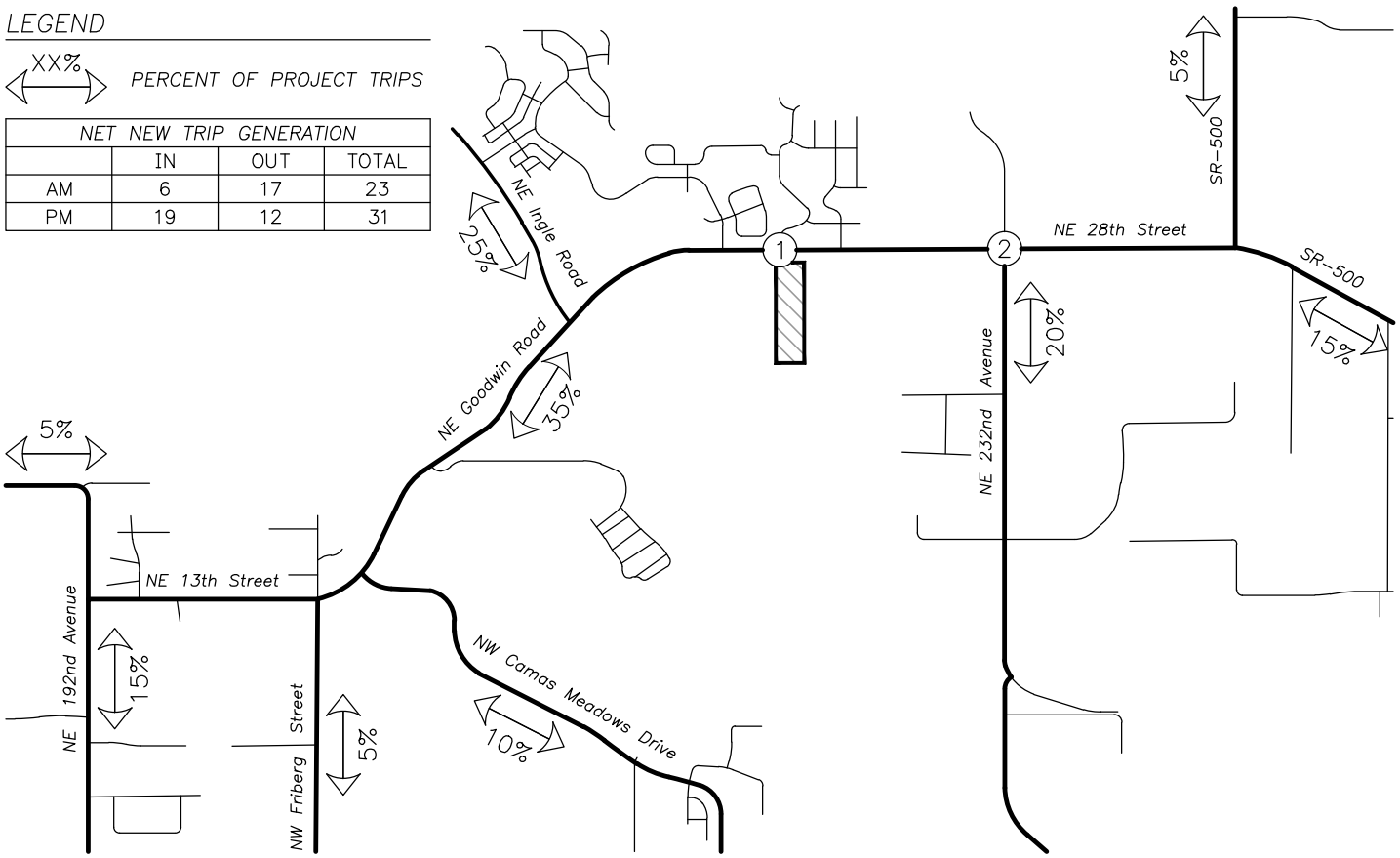
PROJECT TRIP ASSIGNMENT
PM PEAK HOUR

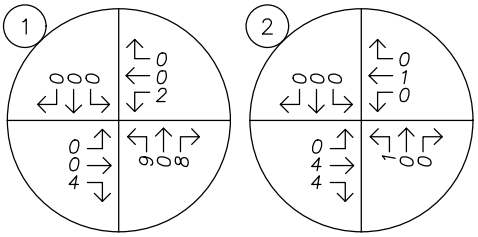
CJ DENS EAST SUBDIVISION
CAMAS, WASHINGTON

FIGURE
2B

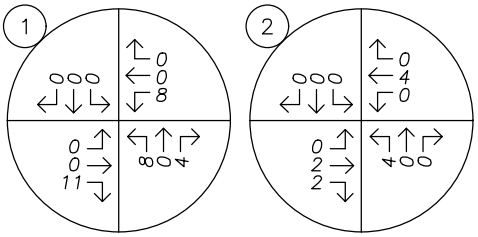
0% Build-Out



AM PEAK HOUR



PM PEAK HOUR



no scale

lancaster mobley

SITE TRIP DISTRIBUTION & ASSIGNMENT
Proposed Development Plan - Site Trips
AM & PM Peak Hours

Figure 3
Monte Verde Subdiv
7/13/2022

Appendix F: Year 2030 Background Traffic Conditions Analysis Worksheets

Intersection	
Int Delay, s/veh	9.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	158	153	55	264	2	115	2	34	1	3	6
Future Vol, veh/h	2	158	153	55	264	2	115	2	34	1	3	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	0	6	12	10	7	0	6	0	21	0	0	20
Mvmt Flow	3	219	213	76	367	3	160	3	47	1	4	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	369	0	0	432	0	0	853	853	326	747	958	368
Stage 1	-	-	-	-	-	-	331	331	-	521	521	-
Stage 2	-	-	-	-	-	-	522	522	-	226	438	-
Critical Hdwy	4.1	-	-	4.2	-	-	7.16	6.5	6.41	7.1	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.29	-	-	3.554	4	3.489	3.5	4	3.48
Pot Cap-1 Maneuver	1200	-	-	1086	-	-	275	298	674	331	259	639
Stage 1	-	-	-	-	-	-	674	649	-	542	535	-
Stage 2	-	-	-	-	-	-	531	534	-	781	582	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1200	-	-	1086	-	-	242	271	674	277	236	639
Mov Cap-2 Maneuver	-	-	-	-	-	-	242	271	-	277	236	-
Stage 1	-	-	-	-	-	-	672	646	-	494	488	-
Stage 2	-	-	-	-	-	-	474	487	-	721	581	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.05	1.47	46.53	14.61
HCM LOS			E	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	284	10	-	-	308	-	-	389
HCM Lane V/C Ratio	0.739	0.002	-	-	0.07	-	-	0.036
HCM Ctrl Dly (s/v)	46.5	8	0	-	8.6	0	-	14.6
HCM Lane LOS	E	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	5.4	0	-	-	0.2	-	-	0.1

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	31	165	0	0	234	111	0	0	0	103	0	87
Future Vol, veh/h	31	165	0	0	234	111	0	0	0	103	0	87
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	13	9	0	0	6	6	0	0	0	4	0	5
Mvmt Flow	36	194	0	0	275	131	0	0	0	121	0	102

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	406	0	0	194	0	0	542	673	194	608	608	341
Stage 1	-	-	-	-	-	-	267	267	-	341	341	-
Stage 2	-	-	-	-	-	-	275	406	-	267	267	-
Critical Hdwy	4.23	-	-	4.1	-	-	7.1	6.5	6.2	7.14	6.5	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Follow-up Hdwy	2.317	-	-	2.2	-	-	3.5	4	3.3	3.536	4	3.345
Pot Cap-1 Maneuver	1096	-	-	1391	-	-	454	379	852	405	413	695
Stage 1	-	-	-	-	-	-	743	692	-	670	642	-
Stage 2	-	-	-	-	-	-	735	601	-	734	692	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1096	-	-	1391	-	-	373	365	852	390	398	695
Mov Cap-2 Maneuver	-	-	-	-	-	-	373	365	-	390	398	-
Stage 1	-	-	-	-	-	-	715	666	-	670	642	-
Stage 2	-	-	-	-	-	-	627	601	-	707	666	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.33	0	0	18.46
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	285	-	-	1391	-	-	488
HCM Lane V/C Ratio	-	0.033	-	-	-	-	-	0.458
HCM Ctrl Dly (s/v)	0	8.4	0	-	0	-	-	18.5
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	2.4

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	253	26	2	294	32	0
Future Vol, veh/h	253	26	2	294	32	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	10	4	100	6	7	0
Mvmt Flow	278	29	2	323	35	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	307	0	620	292
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	327	-
Critical Hdwy	-	-	5.1	-	6.47	6.2
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	-	-	3.1	-	3.563	3.3
Pot Cap-1 Maneuver	-	-	856	-	444	752
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	719	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	856	-	442	752
Mov Cap-2 Maneuver	-	-	-	-	442	-
Stage 1	-	-	-	-	746	-
Stage 2	-	-	-	-	717	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.06	13.84
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	442	-	-	12	-
HCM Lane V/C Ratio	0.079	-	-	0.003	-
HCM Ctrl Dly (s/v)	13.8	-	-	9.2	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	6	1	12	26	3
Future Vol, veh/h	12	6	1	12	26	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	9	0	0	0	8	33
Mvmt Flow	17	9	1	17	38	4

Major/Minor	Minor2		Major2	
Conflicting Flow All	10	10	-	0
Stage 1	10	10	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.49	6.5	-	-
Critical Hdwy Stg 1	5.49	5.5	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.581	4	-	-
Pot Cap-1 Maneuver	992	889	-	-
Stage 1	995	891	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	992	0	-	-
Mov Cap-2 Maneuver	992	0	-	-
Stage 1	995	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Ctrl Dly, s/v	8.73	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	992	-	-
HCM Lane V/C Ratio	0.026	-	-
HCM Ctrl Dly (s/v)	8.7	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	3	6	9	36	1
Future Vol, veh/h	0	3	6	9	36	1
Conflicting Peds, #/hr	0	0	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	3	3	-	-3	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	100	40	0	9	0
Mvmt Flow	0	4	8	12	49	1

Major/Minor	Minor2		Major2	
Conflicting Flow All	14	14	-	0
Stage 1	14	14	-	-
Stage 2	0	0	-	-
Critical Hdwy	7	8.1	-	-
Critical Hdwy Stg 1	6	7.1	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.5	4.9	-	-
Pot Cap-1 Maneuver	1007	719	-	-
Stage 1	1011	721	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	1007	0	-	-
Mov Cap-2 Maneuver	1007	0	-	-
Stage 1	1011	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Ctrl Dly, s/v		0
HCM LOS	-	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	-	-	-
HCM Lane V/C Ratio	-	-	-
HCM Ctrl Dly (s/v)	-	-	-
HCM Lane LOS	-	-	-
HCM 95th %tile Q(veh)	-	-	-

MOVEMENT SUMMARY

Site: 6 [NE Everett St & NE 3rd St_BackgroundAM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SR500/NE 3rd St
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															
3	L2	All MCs	11	0.0	11	0.0	0.178	9.6	LOS A	0.9	24.3	0.08	0.47	0.08	35.5
18	R2	All MCs	213	4.0	213	4.0	0.178	4.0	LOS A	0.9	24.3	0.08	0.47	0.08	35.8
Approach			224	3.8	224	3.8	0.178	4.3	LOS A	0.9	24.3	0.08	0.47	0.08	35.8
East: SR 500															
1	L2	All MCs	385	3.0	385	3.0	0.305	9.7	LOS A	1.6	42.1	0.08	0.63	0.08	32.8
6	T1	All MCs	3	67.0	3	67.0	0.305	4.4	LOS A	1.6	42.1	0.08	0.63	0.08	32.6
Approach			388	3.5	388	3.5	0.305	9.6	LOS A	1.6	42.1	0.08	0.63	0.08	32.8
West: NE 3rd St															
2	T1	All MCs	7	60.0	7	60.0	0.054	8.5	LOS A	0.2	6.3	0.46	0.58	0.46	34.0
12	R2	All MCs	40	6.0	40	6.0	0.054	6.0	LOS A	0.2	6.3	0.46	0.58	0.46	34.8
Approach			46	13.7	46	13.7	0.054	6.3	LOS A	0.2	6.3	0.46	0.58	0.46	34.7
All Vehicles			658	4.3	658	4.3	0.305	7.6	LOS A	1.6	42.1	0.10	0.57	0.10	33.9

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.

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MOVEMENT SUMMARY

Site: 7 [NE Everett St & NE Everett Dr_BackgroundAM (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	264	3.0	264	3.0	0.493	5.7	LOS A	3.6	93.0	0.51	0.52	0.51	34.8
18	R2	All MCs	256	3.0	256	3.0	0.493	5.6	LOS A	3.6	93.0	0.51	0.52	0.51	34.5
Approach			520	3.0	520	3.0	0.493	5.6	LOS A	3.6	93.0	0.51	0.52	0.51	34.6
East: NE Everett Drive															
1	L2	All MCs	226	10.0	226	10.0	0.330	11.3	LOS B	1.9	50.9	0.52	0.65	0.52	32.4
16	R2	All MCs	77	3.0	77	3.0	0.330	6.0	LOS A	1.9	50.9	0.52	0.65	0.52	32.9
Approach			302	8.2	302	8.2	0.330	9.9	LOS A	1.9	50.9	0.52	0.65	0.52	32.5
North: SR500															
7	L2	All MCs	164	1.0	164	1.0	0.589	11.6	LOS B	4.8	121.2	0.64	0.62	0.66	33.1
4	T1	All MCs	421	3.0	421	3.0	0.589	6.8	LOS A	4.8	121.2	0.64	0.62	0.66	33.7
Approach			585	2.4	585	2.4	0.589	8.1	LOS A	4.8	121.2	0.64	0.62	0.66	33.5
All Vehicles			1407	3.9	1407	3.9	0.589	7.6	LOS A	4.8	121.2	0.56	0.59	0.57	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.

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Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	155	97	345	471	23
Future Vol, veh/h	31	155	97	345	471	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	110	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	4	-4	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	7	10	3	5	6
Mvmt Flow	38	191	120	426	581	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1261	596	610	0	-	0
Stage 1	596	-	-	-	-	-
Stage 2	665	-	-	-	-	-
Critical Hdwy	6.8	6.47	4.2	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.363	2.29	-	-	-
Pot Cap-1 Maneuver	165	478	931	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	144	478	931	-	-	-
Mov Cap-2 Maneuver	144	-	-	-	-	-
Stage 1	452	-	-	-	-	-
Stage 2	478	-	-	-	-	-

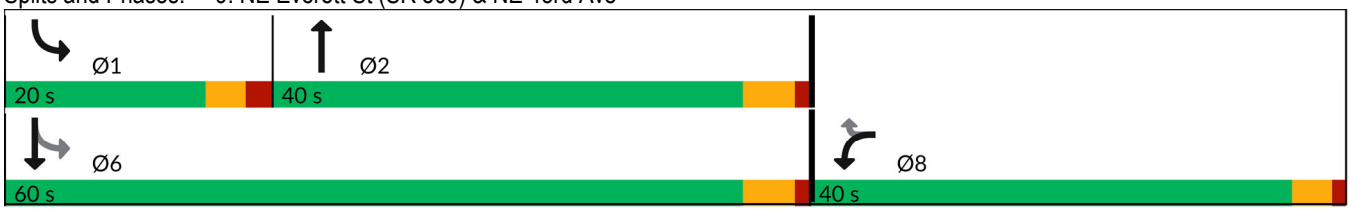
Approach	EB	NB	SB
HCM Ctrl Dly, s/v	34.01	2.07	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	931	-	345	-	-
HCM Lane V/C Ratio	0.129	-	0.666	-	-
HCM Ctrl Dly (s/v)	9.4	-	34	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.4	-	4.6	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	333	71	375	485	93	537
Future Volume (vph)	333	71	375	485	93	537
Turn Type	Prot	Perm	NA	Free	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		Free	6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	5.0		4.0	5.0
Minimum Split (s)	23.0	23.0	30.0		10.0	50.0
Total Split (s)	40.0	40.0	40.0		20.0	60.0
Total Split (%)	40.0%	40.0%	40.0%		20.0%	60.0%
Yellow Time (s)	3.0	3.0	4.0		3.0	4.0
All-Red Time (s)	1.0	1.0	1.0		2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	Min		None	Min
Act Effct Green (s)	23.3	23.3	26.3	70.0	36.4	36.4
Actuated g/C Ratio	0.33	0.33	0.38	1.00	0.52	0.52
v/c Ratio	0.73	0.15	0.66	0.39	0.29	0.66
Control Delay (s/veh)	31.8	5.7	27.0	0.8	11.6	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	31.8	5.7	27.0	0.8	11.6	16.8
LOS	C	A	C	A	B	B
Approach Delay (s/veh)	27.2		12.2			16.0
Approach LOS	C		B			B

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 70	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay (s/veh): 16.7	Intersection LOS: B
Intersection Capacity Utilization 55.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 9: NE Everett St (SR 500) & NE 43rd Ave





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	333	71	375	485	93	537
Future Volume (veh/h)	333	71	375	485	93	537
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1799	1814	1746	1732	1802	1997
Adj Flow Rate, veh/h	383	59	431	0	107	617
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	12	11	4	5	17	4
Cap, veh/h	479	430	632		402	1060
Arrive On Green	0.28	0.28	0.36	0.00	0.06	0.53
Sat Flow, veh/h	1713	1537	1746	1468	1716	1997
Grp Volume(v), veh/h	383	59	431	0	107	617
Grp Sat Flow(s),veh/h/ln	1713	1537	1746	1468	1716	1997
Q Serve(g_s), s	9.8	1.4	9.9	0.0	1.7	10.0
Cycle Q Clear(g_c), s	9.8	1.4	9.9	0.0	1.7	10.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	479	430	632		402	1060
V/C Ratio(X)	0.80	0.14	0.68		0.27	0.58
Avail Cap(c_a), veh/h	1299	1166	1288		835	2315
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	15.9	12.8	12.8	0.0	8.9	7.6
Incr Delay (d2), s/veh	3.1	0.1	2.8	0.0	0.4	0.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.4	3.6	0.0	0.5	3.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	19.0	13.0	15.6	0.0	9.2	8.2
LnGrp LOS	B	B	B		A	A
Approach Vol, veh/h	442		431			724
Approach Delay, s/veh	18.2		15.6			8.3
Approach LOS	B		B			A

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	8.0	22.2			30.2	17.3
Change Period (Y+Rc), s	5.0	5.0			5.0	4.0
Max Green Setting (Gmax), s	15.0	35.0			55.0	36.0
Max Q Clear Time (g_c+I1), s	3.7	11.9			12.0	11.8
Green Ext Time (p_c), s	0.2	5.1			6.1	1.5

Intersection Summary	
HCM 7th Control Delay, s/veh	13.0
HCM 7th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

MOVEMENT SUMMARY

Site: 10 [NE Everett St & NW Lake Rd_BackgroundAM (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	7.0	238	7.0	0.367	14.2	LOS B	2.4	64.0	0.80	0.76	0.80	31.0
8	T1	All MCs	417	7.0	417	7.0	0.504	7.9	LOS A	4.3	113.6	0.87	0.73	0.94	34.1
Approach			655	7.0	655	7.0	0.504	10.2	LOS B	4.3	113.6	0.84	0.74	0.89	32.9
North: NE Everett Street															
4	T1	All MCs	585	10.0	585	10.0	0.525	5.5	LOS A	4.2	114.5	0.64	0.53	0.64	34.6
14	R2	All MCs	390	2.0	390	2.0	0.316	5.0	LOS A	2.2	54.9	0.51	0.53	0.51	35.1
Approach			975	6.8	975	6.8	0.525	5.3	LOS A	4.2	114.5	0.59	0.53	0.59	34.8
West: NW Lake Road															
5	L2	All MCs	574	3.0	574	3.0	0.642	16.7	LOS B	7.0	179.3	0.93	0.87	1.16	30.1
12	R2	All MCs	250	6.0	250	6.0	0.293	7.3	LOS A	2.0	52.2	0.76	0.67	0.76	34.4
Approach			824	3.9	824	3.9	0.642	13.9	LOS B	7.0	179.3	0.88	0.81	1.04	31.2
All Vehicles			2454	5.9	2454	5.9	0.642	9.5	LOS A	7.0	179.3	0.75	0.68	0.82	33.0

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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.

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Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	75	14	24	328	495	78
Future Vol, veh/h	75	14	24	328	495	78
Conflicting Peds, #/hr	0	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	7	7	0	6	2	0
Mvmt Flow	82	15	26	360	544	86

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1003	590	633	0	-	0
Stage 1	590	-	-	-	-	-
Stage 2	413	-	-	-	-	-
Critical Hdwy	6.47	6.27	4.1	-	-	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.363	2.2	-	-	-
Pot Cap-1 Maneuver	263	498	960	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	254	497	957	-	-	-
Mov Cap-2 Maneuver	381	-	-	-	-	-
Stage 1	528	-	-	-	-	-
Stage 2	655	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	17.08	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	957	-	395	-	-
HCM Lane V/C Ratio	0.028	-	0.248	-	-
HCM Ctrl Dly (s/v)	8.9	-	17.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	25	19	4	25	78	8	243	6	81	300	127
Future Vol, veh/h	45	25	19	4	25	78	8	243	6	81	300	127
Conflicting Peds, #/hr	13	0	3	3	0	13	0	0	6	6	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	11	0	5	0	0	0	25	6	17	1	4	0
Mvmt Flow	52	29	22	5	29	90	9	279	7	93	345	146

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	929	915	421	856	984	302	491	0	0	292	0	0
Stage 1	604	604	-	307	307	-	-	-	-	-	-	-
Stage 2	325	311	-	548	677	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.25	7.1	6.5	6.2	4.35	-	-	4.11	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.345	3.5	4	3.3	2.425	-	-	2.209	-	-
Pot Cap-1 Maneuver	239	275	626	280	250	743	963	-	-	1275	-	-
Stage 1	470	491	-	707	664	-	-	-	-	-	-	-
Stage 2	669	662	-	524	455	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	168	251	625	220	229	730	963	-	-	1269	-	-
Mov Cap-2 Maneuver	168	251	-	220	229	-	-	-	-	-	-	-
Stage 1	436	455	-	697	655	-	-	-	-	-	-	-
Stage 2	549	652	-	438	422	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	33.98	15.77	0.27	1.29
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	963	-	-	224	457	1269	-	-
HCM Lane V/C Ratio	0.01	-	-	0.457	0.269	0.073	-	-
HCM Ctrl Dly (s/v)	8.8	-	-	34	15.8	8.1	-	-
HCM Lane LOS	A	-	-	D	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	2.2	1.1	0.2	-	-

Intersection	
Int Delay, s/veh	10.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	54	23	1	0	18	202	1	0	0	258	0	63
Future Vol, veh/h	54	23	1	0	18	202	1	0	0	258	0	63
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	8	4	0	0	0	7	0	0	0	4	0	3
Mvmt Flow	64	27	1	0	21	238	1	0	0	304	0	74

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	658	647	37	-	685	2	74	0	0	1	0	0
Stage 1	644	644	-	-	3	-	-	-	-	-	-	-
Stage 2	14	3	-	-	681	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.54	6.2	-	6.5	6.27	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.18	5.54	-	-	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.54	-	-	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.036	3.3	-	4	3.363	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	369	387	1041	0	373	1068	1538	-	-	1609	-	-
Stage 1	451	465	-	0	897	-	-	-	-	-	-	-
Stage 2	991	889	-	0	453	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	216	310	1041	-	299	1066	1538	-	-	1607	-	-
Mov Cap-2 Maneuver	216	310	-	-	299	-	-	-	-	-	-	-
Stage 1	362	372	-	-	896	-	-	-	-	-	-	-
Stage 2	750	888	-	-	363	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	28.97	10.78	7.34	6.24
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1538	-	-	240	881	1206	-	-
HCM Lane V/C Ratio	0.001	-	-	0.382	0.294	0.189	-	-
HCM Ctrl Dly (s/v)	7.3	0	-	29	10.8	7.8	0	-
HCM Lane LOS	A	A	-	D	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	1.7	1.2	0.7	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	156	412	606	20	11	255
Future Vol, veh/h	156	412	606	20	11	255
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-8	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	7	5	10	0	1
Mvmt Flow	170	448	659	22	12	277

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	680	0	-	0	1233	340
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	563	-
Critical Hdwy	4.2	-	-	-	5.2	6.12
Critical Hdwy Stg 1	-	-	-	-	4.2	-
Critical Hdwy Stg 2	-	-	-	-	4.2	-
Follow-up Hdwy	2.25	-	-	-	3.5	3.31
Pot Cap-1 Maneuver	888	-	-	-	298	710
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	692	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	888	-	-	-	233	710
Mov Cap-2 Maneuver	-	-	-	-	233	-
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	692	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	3.65	0	13.61
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	778	-	-	-	233	710
HCM Lane V/C Ratio	0.191	-	-	-	0.051	0.39
HCM Ctrl Dly (s/v)	10	1.2	-	-	21.3	13.3
HCM Lane LOS	B	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	-	-	-	0.2	1.9

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	581	3	65	501	4	173
Future Vol, veh/h	581	3	65	501	4	173
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	105	-	85	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	-6	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	6	0	3	3	0	0
Mvmt Flow	668	3	75	576	5	199

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	671	0	1395	670
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	725	-
Critical Hdwy	-	-	4.13	-	5.2	5.6
Critical Hdwy Stg 1	-	-	-	-	4.2	-
Critical Hdwy Stg 2	-	-	-	-	4.2	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	915	-	251	515
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	615	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	915	-	230	515
Mov Cap-2 Maneuver	-	-	-	-	230	-
Stage 1	-	-	-	-	641	-
Stage 2	-	-	-	-	565	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.07	16.42
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	230	515	-	-	915	-
HCM Lane V/C Ratio	0.02	0.386	-	-	0.082	-
HCM Ctrl Dly (s/v)	21	16.3	-	-	9.3	-
HCM Lane LOS	C	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	1.8	-	-	0.3	-

Intersection	
Int Delay, s/veh	5.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	405	88	73	412	93	165
Future Vol, veh/h	405	88	73	412	93	165
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	110	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	7	11	2	3	7
Mvmt Flow	450	98	81	458	103	183

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	548	0	1119	499
Stage 1	-	-	-	-	499	-
Stage 2	-	-	-	-	620	-
Critical Hdwy	-	-	4.21	-	6.43	6.27
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.299	-	3.527	3.363
Pot Cap-1 Maneuver	-	-	978	-	228	562
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	535	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	978	-	209	562
Mov Cap-2 Maneuver	-	-	-	-	209	-
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	490	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.36	22.97
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	209	562	-	-	978	-
HCM Lane V/C Ratio	0.495	0.326	-	-	0.083	-
HCM Ctrl Dly (s/v)	38	14.5	-	-	9	-
HCM Lane LOS	E	B	-	-	A	-
HCM 95th %tile Q(veh)	2.5	1.4	-	-	0.3	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	311	12	117	394	6	3	9	175	8	9	8
Future Vol, veh/h	7	311	12	117	394	6	3	9	175	8	9	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	90	-	-	130	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	18	2	2	33	0	22	8	0	0	12
Mvmt Flow	8	338	13	127	428	7	3	10	190	9	10	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	435	0	0	351	0	0	1047	1049	345	1044	1052	432
Stage 1	-	-	-	-	-	-	360	360	-	686	686	-
Stage 2	-	-	-	-	-	-	688	689	-	358	366	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.1	6.72	6.28	7.1	6.5	6.32
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.72	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.72	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.5	4.198	3.372	3.5	4	3.408
Pot Cap-1 Maneuver	1136	-	-	1208	-	-	208	210	685	209	228	603
Stage 1	-	-	-	-	-	-	663	593	-	441	451	-
Stage 2	-	-	-	-	-	-	440	417	-	664	626	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1136	-	-	1208	-	-	174	186	685	128	203	603
Mov Cap-2 Maneuver	-	-	-	-	-	-	174	186	-	128	203	-
Stage 1	-	-	-	-	-	-	658	589	-	394	404	-
Stage 2	-	-	-	-	-	-	379	373	-	468	622	-

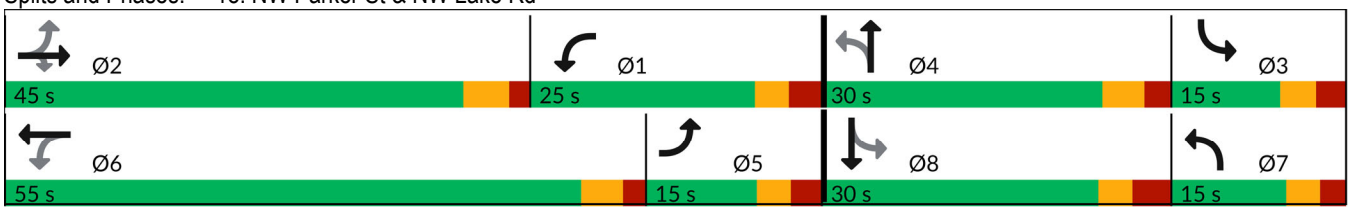
Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.17	1.89	14.46	24.9
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	582	1136	-	-	1208	-	-	208
HCM Lane V/C Ratio	0.349	0.007	-	-	0.105	-	-	0.131
HCM Ctrl Dly (s/v)	14.5	8.2	-	-	8.3	-	-	24.9
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	1.6	0	-	-	0.4	-	-	0.4

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	9	186	171	102	274	143	59	44	116
Future Volume (vph)	9	186	171	102	274	143	59	44	116
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2		1	6	7	4	3	8
Permitted Phases	2		2	6		4		8	
Detector Phase	5	2	2	1	6	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.5	26.7	26.7	10.7	20.5	10.2	29.2	10.6	33.3
Total Split (s)	15.0	45.0	45.0	25.0	55.0	15.0	30.0	15.0	30.0
Total Split (%)	13.0%	39.1%	39.1%	21.7%	47.8%	13.0%	26.1%	13.0%	26.1%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.6	3.0	3.6	3.0	3.0
All-Red Time (s)	2.5	1.7	1.7	2.7	1.9	2.2	2.3	2.6	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.7	5.7	5.7	5.5	5.2	5.9	5.6	6.3
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	None	None	None	None
Act Effct Green (s)	18.5	12.5	12.5	20.8	18.7	21.8	16.9	16.7	9.8
Actuated g/C Ratio	0.33	0.22	0.22	0.37	0.33	0.39	0.30	0.30	0.17
v/c Ratio	0.03	0.55	0.41	0.26	0.32	0.31	0.36	0.13	0.49
Control Delay (s/veh)	13.7	27.0	6.5	15.1	16.3	14.5	15.8	13.3	28.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	13.7	27.0	6.5	15.1	16.3	14.5	15.8	13.3	28.4
LOS	B	C	A	B	B	B	B	B	C
Approach Delay (s/veh)		17.1			16.0		15.2		24.6
Approach LOS		B			B		B		C

Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 56.1	
Natural Cycle: 85	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.55	
Intersection Signal Delay (s/veh): 17.3	Intersection LOS: B
Intersection Capacity Utilization 49.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 18: NW Parker St & NW Lake Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	186	171	102	274	36	143	59	101	44	116	15
Future Volume (veh/h)	9	186	171	102	274	36	143	59	101	44	116	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1574	1841	1856	1900	1870	1826	1885	1856	1841	1796	1856	1900
Adj Flow Rate, veh/h	11	224	129	123	330	24	172	71	87	53	140	16
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	22	4	3	0	2	5	1	3	4	7	3	0
Cap, veh/h	387	323	276	384	550	40	404	121	148	384	250	29
Arrive On Green	0.12	0.18	0.18	0.10	0.16	0.16	0.09	0.16	0.16	0.09	0.15	0.15
Sat Flow, veh/h	1499	1841	1572	1810	3360	243	1795	754	924	1711	1632	186
Grp Volume(v), veh/h	11	224	129	123	174	180	172	0	158	53	0	156
Grp Sat Flow(s),veh/h/ln	1499	1841	1572	1810	1777	1827	1795	0	1679	1711	0	1818
Q Serve(g_s), s	0.0	5.6	3.6	0.0	4.4	4.5	0.0	0.0	4.3	0.0	0.0	3.9
Cycle Q Clear(g_c), s	0.0	5.6	3.6	0.0	4.4	4.5	0.0	0.0	4.3	0.0	0.0	3.9
Prop In Lane	1.00		1.00	1.00		0.13	1.00		0.55	1.00		0.10
Lane Grp Cap(c), veh/h	387	323	276	384	291	299	404	0	269	384	0	278
V/C Ratio(X)	0.03	0.69	0.47	0.32	0.60	0.60	0.43	0.00	0.59	0.14	0.00	0.56
Avail Cap(c_a), veh/h	501	1480	1265	914	1800	1850	598	0	828	554	0	882
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.2	18.9	18.1	19.2	18.9	19.0	19.2	0.0	19.0	18.1	0.0	19.2
Incr Delay (d2), s/veh	0.0	1.0	0.5	0.2	0.7	0.7	0.7	0.0	0.8	0.2	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.1	1.2	1.1	1.6	1.7	1.7	0.0	1.5	0.5	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.2	19.9	18.5	19.4	19.7	19.7	19.9	0.0	19.8	18.3	0.0	19.8
LnGrp LOS	B	B	B	B	B	B	B		B	B		B
Approach Vol, veh/h		364			477			330			209	
Approach Delay, s/veh		19.3			19.6			19.8			19.4	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	14.3	10.2	13.7	11.5	13.5	10.1	13.8
Change Period (Y+Rc), s	5.7	5.7	* 5.6	5.9	5.7	* 5.5	5.6	* 6.3
Max Green Setting (Gmax), s	19.3	39.3	* 9.4	24.1	9.5	* 50	9.8	* 24
Max Q Clear Time (g_c+I1), s	2.0	7.6	2.0	6.3	2.0	6.5	2.0	5.9
Green Ext Time (p_c), s	0.1	1.0	0.0	0.5	0.0	1.3	0.3	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	19.6
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	48	106	216	43	54	137
Future Vol, veh/h	48	106	216	43	54	137
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	13	6	3	18	8	9
Mvmt Flow	54	119	243	48	61	154

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	542	267	0	0	291	0
Stage 1	267	-	-	-	-	-
Stage 2	275	-	-	-	-	-
Critical Hdwy	6.53	6.26	-	-	4.18	-
Critical Hdwy Stg 1	5.53	-	-	-	-	-
Critical Hdwy Stg 2	5.53	-	-	-	-	-
Follow-up Hdwy	3.617	3.354	-	-	2.272	-
Pot Cap-1 Maneuver	483	762	-	-	1237	-
Stage 1	753	-	-	-	-	-
Stage 2	746	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	457	762	-	-	1237	-
Mov Cap-2 Maneuver	457	-	-	-	-	-
Stage 1	753	-	-	-	-	-
Stage 2	706	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	12.85	0	2.28
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	631	509	-
HCM Lane V/C Ratio	-	-	0.274	0.049	-
HCM Ctrl Dly (s/v)	-	-	12.8	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.2	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	373	132	10	222	0	124	0	9	1	1	3
Future Vol, veh/h	6	373	132	10	222	0	124	0	9	1	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	1	0	0	3	0	3	0	0	100	0	0
Mvmt Flow	6	397	140	11	236	0	132	0	10	1	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	236	0	0	537	0	0	738	737	467	667	807	236
Stage 1	-	-	-	-	-	-	480	480	-	257	257	-
Stage 2	-	-	-	-	-	-	258	257	-	410	550	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.13	6.5	6.2	8.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.5	-	7.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.5	-	7.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.527	4	3.3	4.4	4	3.3
Pot Cap-1 Maneuver	1343	-	-	1041	-	-	333	348	600	267	317	808
Stage 1	-	-	-	-	-	-	565	558	-	574	698	-
Stage 2	-	-	-	-	-	-	744	698	-	464	519	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1343	-	-	1041	-	-	324	342	600	258	311	808
Mov Cap-2 Maneuver	-	-	-	-	-	-	324	342	-	258	311	-
Stage 1	-	-	-	-	-	-	561	554	-	567	690	-
Stage 2	-	-	-	-	-	-	732	690	-	453	516	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.09	0.37	23.44	12.87
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	334	20	-	-	78	-	-	463
HCM Lane V/C Ratio	0.423	0.005	-	-	0.01	-	-	0.011
HCM Ctrl Dly (s/v)	23.4	7.7	0	-	8.5	0	-	12.9
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	2	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	10.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	93	285	0	0	172	121	0	0	0	157	0	62
Future Vol, veh/h	93	285	0	0	172	121	0	0	0	157	0	62
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	1	0	0	2	6	0	0	0	3	0	0
Mvmt Flow	103	317	0	0	191	134	0	0	0	174	0	69

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	326	0	0	317	0	0	714	849	317	782	782	258
Stage 1	-	-	-	-	-	-	523	523	-	258	258	-
Stage 2	-	-	-	-	-	-	191	326	-	523	523	-
Critical Hdwy	4.13	-	-	4.1	-	-	7.1	6.5	6.2	7.13	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.13	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.13	5.5	-
Follow-up Hdwy	2.227	-	-	2.2	-	-	3.5	4	3.3	3.527	4	3.3
Pot Cap-1 Maneuver	1229	-	-	1255	-	-	349	300	729	311	328	785
Stage 1	-	-	-	-	-	-	541	534	-	744	698	-
Stage 2	-	-	-	-	-	-	815	652	-	535	534	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1229	-	-	1255	-	-	286	270	729	279	295	785
Mov Cap-2 Maneuver	-	-	-	-	-	-	286	270	-	279	295	-
Stage 1	-	-	-	-	-	-	485	479	-	744	698	-
Stage 2	-	-	-	-	-	-	744	652	-	481	479	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	2.02	0	0	37.9
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	443	-	-	1255	-	-	341
HCM Lane V/C Ratio	-	0.084	-	-	-	-	-	0.713
HCM Ctrl Dly (s/v)	0	8.2	0	-	0	-	-	37.9
HCM Lane LOS	A	A	A	-	A	-	-	E
HCM 95th %tile Q(veh)	-	0.3	-	-	0	-	-	5.2

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	422	32	2	276	17	4
Future Vol, veh/h	422	32	2	276	17	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	3	50	4	7	0
Mvmt Flow	480	36	2	314	19	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	516	0	816	498
Stage 1	-	-	-	-	498	-
Stage 2	-	-	-	-	318	-
Critical Hdwy	-	-	4.6	-	6.47	6.2
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	-	-	2.65	-	3.563	3.3
Pot Cap-1 Maneuver	-	-	845	-	340	577
Stage 1	-	-	-	-	601	-
Stage 2	-	-	-	-	726	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	845	-	339	577
Mov Cap-2 Maneuver	-	-	-	-	339	-
Stage 1	-	-	-	-	601	-
Stage 2	-	-	-	-	724	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.07	15.47
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	368	-	-	13	-
HCM Lane V/C Ratio	0.065	-	-	0.003	-
HCM Ctrl Dly (s/v)	15.5	-	-	9.3	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	6	8	15	19	13
Future Vol, veh/h	6	6	8	15	19	13
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	20	0	0	0	0	8
Mvmt Flow	9	9	12	22	28	19

Major/Minor	Minor2		Major2	
Conflicting Flow All	23	23	-	0
Stage 1	23	23	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.6	6.5	-	-
Critical Hdwy Stg 1	5.6	5.5	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.68	4	-	-
Pot Cap-1 Maneuver	949	875	-	-
Stage 1	955	880	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	949	0	-	-
Mov Cap-2 Maneuver	949	0	-	-
Stage 1	955	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Ctrl Dly, s/v	8.86	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	949	-	-
HCM Lane V/C Ratio	0.019	-	-
HCM Ctrl Dly (s/v)	8.9	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	0	0	23	19	0
Future Vol, veh/h	1	0	0	23	19	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	3	3	-	-3	-
Peak Hour Factor	65	65	65	65	65	65
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	2	0	0	35	29	0

Major/Minor	Minor2		Major2	
Conflicting Flow All	18	18	-	0
Stage 1	18	18	-	-
Stage 2	0	0	-	-
Critical Hdwy	7	7.1	-	-
Critical Hdwy Stg 1	6	6.1	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.5	4	-	-
Pot Cap-1 Maneuver	1002	878	-	-
Stage 1	1007	882	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	1002	0	-	-
Mov Cap-2 Maneuver	1002	0	-	-
Stage 1	1007	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Ctrl Dly, s/v	8.6	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	1002	-	-
HCM Lane V/C Ratio	0.002	-	-
HCM Ctrl Dly (s/v)	8.6	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0	-	-

MOVEMENT SUMMARY

Site: 6 [NE Everett St & NE 3rd St_BackgroundPM (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															
3	L2	All MCs	20	6.0	20	6.0	0.227	9.7	LOS A	1.2	30.5	0.06	0.48	0.06	35.2
18	R2	All MCs	272	1.0	272	1.0	0.227	4.0	LOS A	1.2	30.5	0.06	0.48	0.06	35.9
Approach			292	1.4	292	1.4	0.227	4.4	LOS A	1.2	30.5	0.06	0.48	0.06	35.8
East: SR 500															
1	L2	All MCs	208	2.0	208	2.0	0.168	9.7	LOS A	0.8	19.4	0.10	0.63	0.10	32.9
6	T1	All MCs	7	0.0	7	0.0	0.168	3.9	LOS A	0.8	19.4	0.10	0.63	0.10	33.7
Approach			215	1.9	215	1.9	0.168	9.5	LOS A	0.8	19.4	0.10	0.63	0.10	32.9
West: NE 3rd St															
2	T1	All MCs	7	0.0	7	0.0	0.022	4.9	LOS A	0.1	2.3	0.31	0.48	0.31	35.6
12	R2	All MCs	19	0.0	19	0.0	0.022	4.8	LOS A	0.1	2.3	0.31	0.48	0.31	35.3
Approach			26	0.0	26	0.0	0.022	4.8	LOS A	0.1	2.3	0.31	0.48	0.31	35.4
All Vehicles			533	1.5	533	1.5	0.227	6.5	LOS A	1.2	30.5	0.09	0.54	0.09	34.5

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.

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MOVEMENT SUMMARY

Site: 7 [NE Everett St & NE Everett Dr_BackgroundPM (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	279	1.0	279	1.0	0.395	4.8	LOS A	2.6	64.1	0.25	0.45	0.25	35.5
18	R2	All MCs	194	0.0	194	0.0	0.395	4.6	LOS A	2.6	64.1	0.25	0.45	0.25	35.2
Approach			473	0.6	473	0.6	0.395	4.7	LOS A	2.6	64.1	0.25	0.45	0.25	35.4
East: NE Everett Drive															
1	L2	All MCs	174	0.0	174	0.0	0.217	10.7	LOS B	1.1	27.4	0.44	0.65	0.44	32.7
16	R2	All MCs	46	0.0	46	0.0	0.217	5.7	LOS A	1.1	27.4	0.44	0.65	0.44	33.0
Approach			220	0.0	220	0.0	0.217	9.7	LOS A	1.1	27.4	0.44	0.65	0.44	32.8
North: SR500															
7	L2	All MCs	57	0.0	57	0.0	0.231	10.2	LOS B	1.2	31.1	0.37	0.53	0.37	33.9
4	T1	All MCs	191	2.0	191	2.0	0.231	5.3	LOS A	1.2	31.1	0.37	0.53	0.37	34.5
Approach			248	1.5	248	1.5	0.231	6.4	LOS A	1.2	31.1	0.37	0.53	0.37	34.4
All Vehicles			942	0.7	942	0.7	0.395	6.3	LOS A	2.6	64.1	0.33	0.51	0.33	34.5

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.

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Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	28	131	125	363	283	18
Future Vol, veh/h	28	131	125	363	283	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	110	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	4	-4	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	4	2	0	1	0
Mvmt Flow	30	142	136	395	308	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	984	317	327	0	-	0
Stage 1	317	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Critical Hdwy	6.8	6.44	4.12	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	2.218	-	-	-
Pot Cap-1 Maneuver	249	706	1232	-	-	-
Stage 1	717	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	222	706	1232	-	-	-
Mov Cap-2 Maneuver	222	-	-	-	-	-
Stage 1	638	-	-	-	-	-
Stage 2	478	-	-	-	-	-

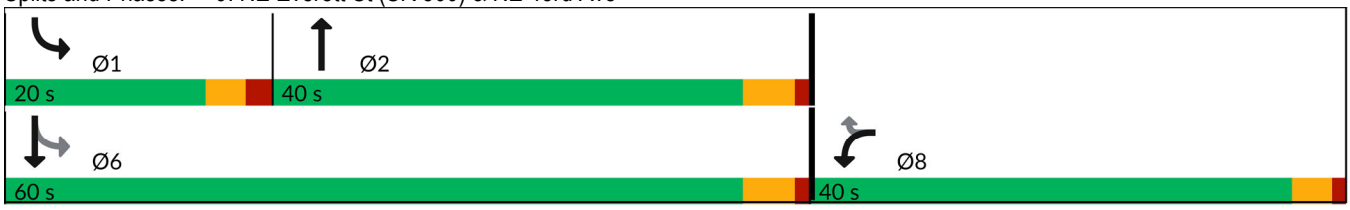
Approach	EB	NB	SB
HCM Ctrl Dly, s/v	15.64	2.12	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1232	-	510	-	-
HCM Lane V/C Ratio	0.11	-	0.339	-	-
HCM Ctrl Dly (s/v)	8.3	-	15.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	1.5	-	-

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	224	57	428	298	51	367
Future Volume (vph)	224	57	428	298	51	367
Turn Type	Prot	Perm	NA	Free	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		Free	6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	5.0		4.0	5.0
Minimum Split (s)	23.0	23.0	30.0		10.0	50.0
Total Split (s)	40.0	40.0	40.0		20.0	60.0
Total Split (%)	40.0%	40.0%	40.0%		20.0%	60.0%
Yellow Time (s)	3.0	3.0	4.0		3.0	4.0
All-Red Time (s)	1.0	1.0	1.0		2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	Min		None	Min
Act Effct Green (s)	14.3	14.3	25.9	55.8	31.9	31.9
Actuated g/C Ratio	0.26	0.26	0.46	1.00	0.57	0.57
v/c Ratio	0.53	0.13	0.55	0.21	0.11	0.38
Control Delay (s/veh)	24.9	7.2	16.1	0.3	6.1	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.9	7.2	16.1	0.3	6.1	7.9
LOS	C	A	B	A	A	A
Approach Delay (s/veh)	21.3		9.6			7.6
Approach LOS	C		A			A

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 55.8	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.55	
Intersection Signal Delay (s/veh): 11.3	Intersection LOS: B
Intersection Capacity Utilization 49.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 9: NE Everett St (SR 500) & NE 43rd Ave





Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	224	57	428	298	51	367
Future Volume (veh/h)	224	57	428	298	51	367
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1979	1979	1791	1806	2057	2012
Adj Flow Rate, veh/h	238	51	455	0	54	390
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	1	0	0	3
Cap, veh/h	348	309	723		484	1168
Arrive On Green	0.18	0.18	0.40	0.00	0.05	0.58
Sat Flow, veh/h	1884	1677	1791	1530	1959	2012
Grp Volume(v), veh/h	238	51	455	0	54	390
Grp Sat Flow(s),veh/h/ln	1884	1677	1791	1530	1959	2012
Q Serve(g_s), s	4.5	1.0	7.8	0.0	0.5	3.9
Cycle Q Clear(g_c), s	4.5	1.0	7.8	0.0	0.5	3.9
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	348	309	723		484	1168
V/C Ratio(X)	0.68	0.16	0.63		0.11	0.33
Avail Cap(c_a), veh/h	1773	1578	1639		1163	2893
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	14.6	13.1	9.1	0.0	6.2	4.2
Incr Delay (d2), s/veh	2.4	0.2	1.9	0.0	0.1	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.3	2.5	0.0	0.1	0.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	16.9	13.4	11.0	0.0	6.3	4.4
LnGrp LOS	B	B	B		A	A
Approach Vol, veh/h	289		455			444
Approach Delay, s/veh	16.3		11.0			4.6
Approach LOS	B		B			A

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	6.7	20.4			27.2	11.1
Change Period (Y+Rc), s	5.0	5.0			5.0	4.0
Max Green Setting (Gmax), s	15.0	35.0			55.0	36.0
Max Q Clear Time (g_c+I1), s	2.5	9.8			5.9	6.5
Green Ext Time (p_c), s	0.1	5.7			3.3	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	9.9
HCM 7th LOS	A

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

MOVEMENT SUMMARY

Site: 10 [NE Everett St & NW Lake Rd_BackgroundPM (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	282	0.0	282	0.0	0.292	11.9	LOS B	1.8	44.9	0.59	0.68	0.59	31.8
8	T1	All MCs	485	1.0	485	1.0	0.414	5.3	LOS A	3.0	74.7	0.62	0.55	0.62	35.0
Approach			767	0.6	767	0.6	0.414	7.7	LOS A	3.0	74.7	0.61	0.59	0.61	33.7
North: NE Everett Street															
4	T1	All MCs	370	2.0	370	2.0	0.301	5.0	LOS A	1.9	49.4	0.51	0.49	0.51	35.1
14	R2	All MCs	291	0.0	291	0.0	0.230	4.9	LOS A	1.4	35.5	0.48	0.53	0.48	35.3
Approach			662	1.1	662	1.1	0.301	4.9	LOS A	1.9	49.4	0.49	0.50	0.49	35.2
West: NW Lake Road															
5	L2	All MCs	366	1.0	366	1.0	0.310	11.5	LOS B	2.0	50.9	0.57	0.66	0.57	31.8
12	R2	All MCs	371	0.0	371	0.0	0.310	5.4	LOS A	2.0	50.8	0.57	0.57	0.57	35.1
Approach			737	0.5	737	0.5	0.310	8.5	LOS A	2.0	50.9	0.57	0.61	0.57	33.3
All Vehicles			2166	0.7	2166	0.7	0.414	7.1	LOS A	3.0	74.7	0.56	0.57	0.56	34.0

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.

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Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	112	18	56	445	464	70
Future Vol, veh/h	112	18	56	445	464	70
Conflicting Peds, #/hr	0	0	6	0	0	6
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	4	0	0	2
Mvmt Flow	118	19	59	468	488	74

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1118	531	568	0	-	0
Stage 1	531	-	-	-	-	-
Stage 2	586	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.236	-	-	-
Pot Cap-1 Maneuver	231	552	994	-	-	-
Stage 1	594	-	-	-	-	-
Stage 2	560	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	215	549	989	-	-	-
Mov Cap-2 Maneuver	352	-	-	-	-	-
Stage 1	555	-	-	-	-	-
Stage 2	557	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	20.3	0.99	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	989	-	370	-	-
HCM Lane V/C Ratio	0.06	-	0.369	-	-
HCM Ctrl Dly (s/v)	8.9	-	20.3	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.7	-	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	10	33	6	8	28	12	420	3	40	347	95
Future Vol, veh/h	53	10	33	6	8	28	12	420	3	40	347	95
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	10	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	56	11	35	6	9	30	13	447	3	43	369	101

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	983	980	420	934	1029	450	470	0	0	450	0	0
Stage 1	505	505	-	474	474	-	-	-	-	-	-	-
Stage 2	479	476	-	460	555	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.6	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.09	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	230	242	638	248	236	613	1102	-	-	1121	-	-
Stage 1	553	527	-	575	561	-	-	-	-	-	-	-
Stage 2	572	544	-	585	516	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	200	230	638	213	224	612	1102	-	-	1121	-	-
Mov Cap-2 Maneuver	200	230	-	213	224	-	-	-	-	-	-	-
Stage 1	532	507	-	568	555	-	-	-	-	-	-	-
Stage 2	528	537	-	521	497	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	26.67	15.63	0.23	0.69
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1102	-	-	266	383	1121	-	-
HCM Lane V/C Ratio	0.012	-	-	0.383	0.117	0.038	-	-
HCM Ctrl Dly (s/v)	8.3	-	-	26.7	15.6	8.3	-	-
HCM Lane LOS	A	-	-	D	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.7	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	17.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	77	31	0	0	24	334	0	1	0	344	0	47
Future Vol, veh/h	77	31	0	0	24	334	0	1	0	344	0	47
Conflicting Peds, #/hr	3	0	2	2	0	3	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	3	0	0	0	2	0	0	0	1	0	0
Mvmt Flow	84	34	0	0	26	363	0	1	0	374	0	51

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	791	775	28	-	801	5	51	0	0	2	0	0
Stage 1	773	773	-	-	2	-	-	-	-	-	-	-
Stage 2	17	2	-	-	799	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.53	6.2	-	6.5	6.22	4.1	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.53	-	-	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.53	-	-	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.027	3.3	-	4	3.318	2.2	-	-	2.209	-	-
Pot Cap-1 Maneuver	310	328	1054	0	320	1078	1568	-	-	1627	-	-
Stage 1	395	407	-	0	898	-	-	-	-	-	-	-
Stage 2	1007	892	-	0	401	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	143	249	1052	-	244	1074	1568	-	-	1625	-	-
Mov Cap-2 Maneuver	143	249	-	-	244	-	-	-	-	-	-	-
Stage 1	301	310	-	-	897	-	-	-	-	-	-	-
Stage 2	646	891	-	-	305	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	69.78	12.38	0	6.93
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1568	-	-	163	874	1320	-	-
HCM Lane V/C Ratio	-	-	-	0.721	0.445	0.23	-	-
HCM Ctrl Dly (s/v)	0	-	-	69.8	12.4	7.9	0	-
HCM Lane LOS	A	-	-	F	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	4.4	2.3	0.9	-	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	218	696	574	28	8	144
Future Vol, veh/h	218	696	574	28	8	144
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-8	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	0	0	1
Mvmt Flow	229	733	604	29	8	152

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	637	0	-	0	1447	320
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	825	-
Critical Hdwy	4.12	-	-	-	5.2	6.12
Critical Hdwy Stg 1	-	-	-	-	4.2	-
Critical Hdwy Stg 2	-	-	-	-	4.2	-
Follow-up Hdwy	2.21	-	-	-	3.5	3.31
Pot Cap-1 Maneuver	950	-	-	-	237	729
Stage 1	-	-	-	-	663	-
Stage 2	-	-	-	-	571	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	947	-	-	-	164	727
Mov Cap-2 Maneuver	-	-	-	-	164	-
Stage 1	-	-	-	-	460	-
Stage 2	-	-	-	-	569	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	3.81	0	12.14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	754	-	-	-	164	727
HCM Lane V/C Ratio	0.242	-	-	-	0.051	0.209
HCM Ctrl Dly (s/v)	10	1.9	-	-	28.1	11.3
HCM Lane LOS	B	A	-	-	D	B
HCM 95th %tile Q(veh)	0.9	-	-	-	0.2	0.8

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	637	4	80	460	11	64
Future Vol, veh/h	637	4	80	460	11	64
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	105	-	85	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	-6	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	678	4	85	489	12	68

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	682	0	1339	681
Stage 1	-	-	-	-	680	-
Stage 2	-	-	-	-	660	-
Critical Hdwy	-	-	4.1	-	5.2	5.6
Critical Hdwy Stg 1	-	-	-	-	4.2	-
Critical Hdwy Stg 2	-	-	-	-	4.2	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	920	-	266	509
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	645	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	920	-	241	508
Mov Cap-2 Maneuver	-	-	-	-	241	-
Stage 1	-	-	-	-	636	-
Stage 2	-	-	-	-	586	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.38	14.28
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	241	508	-	-	920	-
HCM Lane V/C Ratio	0.049	0.134	-	-	0.092	-
HCM Ctrl Dly (s/v)	20.7	13.2	-	-	9.3	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.5	-	-	0.3	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	546	146	96	364	73	102
Future Vol, veh/h	546	146	96	364	73	102
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	110	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	3	1
Mvmt Flow	575	154	101	383	77	107

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	728	0	1237	652
Stage 1	-	-	-	-	652	-
Stage 2	-	-	-	-	585	-
Critical Hdwy	-	-	4.11	-	6.43	6.21
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.209	-	3.527	3.309
Pot Cap-1 Maneuver	-	-	880	-	193	470
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	555	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	880	-	171	470
Mov Cap-2 Maneuver	-	-	-	-	171	-
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	491	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.01	26.27
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	171	470	-	-	880	-
HCM Lane V/C Ratio	0.449	0.228	-	-	0.115	-
HCM Ctrl Dly (s/v)	42.1	14.9	-	-	9.6	-
HCM Lane LOS	E	B	-	-	A	-
HCM 95th %tile Q(veh)	2.1	0.9	-	-	0.4	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	560	7	81	351	6	4	5	118	10	7	13
Future Vol, veh/h	7	560	7	81	351	6	4	5	118	10	7	13
Conflicting Peds, #/hr	0	0	3	3	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	90	-	-	130	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	1	0	0	0	0	0	0	8
Mvmt Flow	8	609	8	88	382	7	4	5	128	11	8	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	388	0	0	619	0	0	1193	1195	616	1188	1195	386
Stage 1	-	-	-	-	-	-	631	631	-	561	561	-
Stage 2	-	-	-	-	-	-	562	564	-	627	635	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.372
Pot Cap-1 Maneuver	1181	-	-	971	-	-	165	188	495	167	188	649
Stage 1	-	-	-	-	-	-	473	478	-	516	513	-
Stage 2	-	-	-	-	-	-	515	512	-	475	476	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1181	-	-	968	-	-	139	169	493	108	169	648
Mov Cap-2 Maneuver	-	-	-	-	-	-	139	169	-	108	169	-
Stage 1	-	-	-	-	-	-	468	473	-	469	467	-
Stage 2	-	-	-	-	-	-	450	465	-	345	471	-

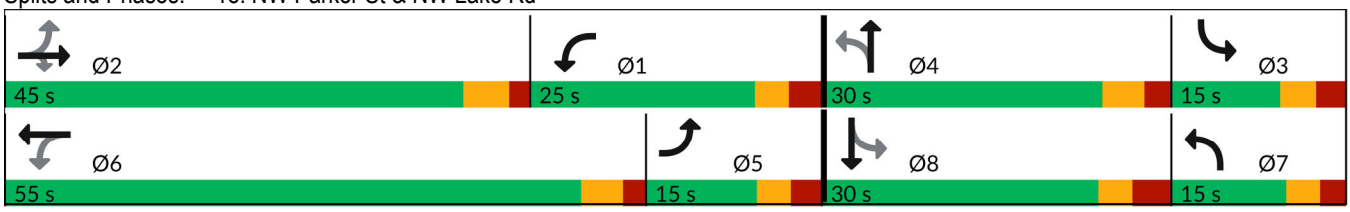
Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.1	1.68	17.41	27.14
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	427	1181	-	-	968	-	-	195
HCM Lane V/C Ratio	0.323	0.006	-	-	0.091	-	-	0.167
HCM Ctrl Dly (s/v)	17.4	8.1	-	-	9.1	-	-	27.1
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1.4	0	-	-	0.3	-	-	0.6

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	19	435	147	43	310	200	120	43	90
Future Volume (vph)	19	435	147	43	310	200	120	43	90
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2		1	6	7	4	3	8
Permitted Phases	2		2	6		4		8	
Detector Phase	5	2	2	1	6	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.5	26.7	26.7	10.7	20.5	10.2	29.2	10.6	33.3
Total Split (s)	15.0	45.0	45.0	25.0	55.0	15.0	30.0	15.0	30.0
Total Split (%)	13.0%	39.1%	39.1%	21.7%	47.8%	13.0%	26.1%	13.0%	26.1%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.6	3.0	3.6	3.0	3.0
All-Red Time (s)	2.5	1.7	1.7	2.7	1.9	2.2	2.3	2.6	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.7	5.7	5.7	5.5	5.2	5.9	5.6	6.3
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min	Min	None	Min	None	None	None	None
Act Effct Green (s)	28.0	24.0	24.0	29.4	25.4	23.3	17.1	14.8	9.7
Actuated g/C Ratio	0.43	0.37	0.37	0.45	0.39	0.36	0.26	0.23	0.15
v/c Ratio	0.04	0.69	0.23	0.13	0.27	0.41	0.53	0.15	0.42
Control Delay (s/veh)	14.5	26.0	2.9	14.3	18.1	21.5	26.9	19.7	34.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	14.5	26.0	2.9	14.3	18.1	21.5	26.9	19.7	34.9
LOS	B	C	A	B	B	C	C	B	C
Approach Delay (s/veh)		20.0			17.7		24.4		30.6
Approach LOS		B			B		C		C

Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 65.5	
Natural Cycle: 85	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay (s/veh): 21.7	Intersection LOS: C
Intersection Capacity Utilization 64.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 18: NW Parker St & NW Lake Rd



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	435	147	43	310	25	200	120	112	43	90	17
Future Volume (veh/h)	19	435	147	43	310	25	200	120	112	43	90	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.99		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1900	1885	1900	1885	1885	1900	1900	1885	1900
Adj Flow Rate, veh/h	21	478	113	47	341	18	220	132	102	47	99	14
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	1	0	1	0	1	1	0	0	1	0
Cap, veh/h	580	577	484	274	527	28	384	177	137	204	173	24
Arrive On Green	0.24	0.30	0.30	0.08	0.15	0.15	0.11	0.18	0.18	0.05	0.11	0.11
Sat Flow, veh/h	1810	1900	1592	1810	3460	182	1795	984	761	1810	1613	228
Grp Volume(v), veh/h	21	478	113	47	176	183	220	0	234	47	0	113
Grp Sat Flow(s),veh/h/ln	1810	1900	1592	1810	1791	1851	1795	0	1745	1810	0	1842
Q Serve(g_s), s	0.0	13.9	3.2	0.0	5.5	5.5	0.4	0.0	7.5	0.0	0.0	3.5
Cycle Q Clear(g_c), s	0.0	13.9	3.2	0.0	5.5	5.5	0.4	0.0	7.5	0.0	0.0	3.5
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.44	1.00		0.12
Lane Grp Cap(c), veh/h	580	577	484	274	273	282	384	0	314	204	0	198
V/C Ratio(X)	0.04	0.83	0.23	0.17	0.64	0.65	0.57	0.00	0.75	0.23	0.00	0.57
Avail Cap(c_a), veh/h	580	1261	1057	711	1497	1547	481	0	710	409	0	737
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.4	19.2	15.5	24.8	23.6	23.6	23.0	0.0	23.0	27.0	0.0	25.1
Incr Delay (d2), s/veh	0.0	1.2	0.1	0.1	1.0	0.9	1.3	0.0	1.3	0.6	0.0	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	5.5	1.1	0.6	2.2	2.3	2.7	0.0	2.9	0.6	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.4	20.4	15.5	24.9	24.5	24.6	24.3	0.0	24.3	27.6	0.0	26.1
LnGrp LOS	B	C	B	C	C	C	C		C	C		C
Approach Vol, veh/h		612			406			454			160	
Approach Delay, s/veh		19.3			24.6			24.3			26.5	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	23.7	8.3	16.6	19.9	14.5	12.2	12.7
Change Period (Y+Rc), s	5.7	5.7	* 5.6	5.9	5.7	* 5.5	5.6	* 6.3
Max Green Setting (Gmax), s	19.3	39.3	* 9.4	24.1	9.5	* 50	9.8	* 24
Max Q Clear Time (g_c+I1), s	2.0	15.9	2.0	9.5	2.0	7.5	2.4	5.5
Green Ext Time (p_c), s	0.0	2.0	0.0	0.7	0.0	1.3	0.4	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	22.7
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	51	55	164	40	41	154
Future Vol, veh/h	51	55	164	40	41	154
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	4	6	4	14	5	4
Mvmt Flow	58	63	186	45	47	175

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	477	209	0	0	232	0
Stage 1	209	-	-	-	-	-
Stage 2	268	-	-	-	-	-
Critical Hdwy	6.44	6.26	-	-	4.15	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.354	-	-	2.245	-
Pot Cap-1 Maneuver	543	821	-	-	1318	-
Stage 1	821	-	-	-	-	-
Stage 2	772	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	522	821	-	-	1318	-
Mov Cap-2 Maneuver	522	-	-	-	-	-
Stage 1	821	-	-	-	-	-
Stage 2	742	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	11.88	0	1.65
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	644	378	-
HCM Lane V/C Ratio	-	-	0.187	0.035	-
HCM Ctrl Dly (s/v)	-	-	11.9	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Appendix G: Year 2030 Total Traffic Conditions Analysis Worksheets

Intersection	
Int Delay, s/veh	11

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	162	153	59	278	2	115	2	36	1	3	6
Future Vol, veh/h	2	162	153	59	278	2	115	2	36	1	3	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	0	6	12	10	7	0	6	0	21	0	0	20
Mvmt Flow	3	225	213	82	386	3	160	3	50	1	4	8

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	389	0	0	438	0	0	889	890	331	783	994	388
Stage 1	-	-	-	-	-	-	337	337	-	551	551	-
Stage 2	-	-	-	-	-	-	552	553	-	232	443	-
Critical Hdwy	4.1	-	-	4.2	-	-	7.16	6.5	6.41	7.1	6.5	6.4
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.29	-	-	3.554	4	3.489	3.5	4	3.48
Pot Cap-1 Maneuver	1181	-	-	1081	-	-	260	284	669	313	247	623
Stage 1	-	-	-	-	-	-	669	645	-	522	518	-
Stage 2	-	-	-	-	-	-	511	518	-	776	579	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1181	-	-	1081	-	-	227	256	669	259	222	623
Mov Cap-2 Maneuver	-	-	-	-	-	-	227	256	-	259	222	-
Stage 1	-	-	-	-	-	-	667	643	-	472	468	-
Stage 2	-	-	-	-	-	-	451	468	-	712	577	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.05	1.5	54.71	15.1
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	269	10	-	-	313	-	-	370
HCM Lane V/C Ratio	0.79	0.002	-	-	0.076	-	-	0.037
HCM Ctrl Dly (s/v)	54.7	8.1	0	-	8.6	0	-	15.1
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	6.1	0	-	-	0.2	-	-	0.1

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	31	171	0	0	252	120	0	0	0	106	0	87
Future Vol, veh/h	31	171	0	0	252	120	0	0	0	106	0	87
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	13	9	0	0	6	6	0	0	0	4	0	5
Mvmt Flow	36	201	0	0	296	141	0	0	0	125	0	102

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	438	0	0	201	0	0	571	712	201	641	641	367
Stage 1	-	-	-	-	-	-	274	274	-	367	367	-
Stage 2	-	-	-	-	-	-	296	438	-	274	274	-
Critical Hdwy	4.23	-	-	4.1	-	-	7.1	6.5	6.2	7.14	6.5	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.14	5.5	-
Follow-up Hdwy	2.317	-	-	2.2	-	-	3.5	4	3.3	3.536	4	3.345
Pot Cap-1 Maneuver	1066	-	-	1383	-	-	435	360	845	385	395	672
Stage 1	-	-	-	-	-	-	736	687	-	648	626	-
Stage 2	-	-	-	-	-	-	716	582	-	728	687	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1066	-	-	1383	-	-	354	346	845	370	380	672
Mov Cap-2 Maneuver	-	-	-	-	-	-	354	346	-	370	380	-
Stage 1	-	-	-	-	-	-	708	660	-	648	626	-
Stage 2	-	-	-	-	-	-	607	582	-	700	660	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.3	0	0	19.98
HCM LOS			A	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	276	-	-	1383	-	-	464
HCM Lane V/C Ratio	-	0.034	-	-	-	-	-	0.49
HCM Ctrl Dly (s/v)	0	8.5	0	-	0	-	-	20
HCM Lane LOS	A	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	2.6

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	255	33	2	299	54	0
Future Vol, veh/h	255	33	2	299	54	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	10	4	100	6	7	0
Mvmt Flow	280	36	2	329	59	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	316	0	631	298
Stage 1	-	-	-	-	298	-
Stage 2	-	-	-	-	333	-
Critical Hdwy	-	-	5.1	-	6.47	6.2
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	-	-	3.1	-	3.563	3.3
Pot Cap-1 Maneuver	-	-	847	-	437	746
Stage 1	-	-	-	-	742	-
Stage 2	-	-	-	-	715	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	847	-	435	746
Mov Cap-2 Maneuver	-	-	-	-	435	-
Stage 1	-	-	-	-	742	-
Stage 2	-	-	-	-	713	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.06	14.57
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	435	-	-	12	-
HCM Lane V/C Ratio	0.136	-	-	0.003	-
HCM Ctrl Dly (s/v)	14.6	-	-	9.3	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	0.5	-	-	0	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	6	1	34	33	3
Future Vol, veh/h	12	6	1	34	33	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	69	69	69	69	69	69
Heavy Vehicles, %	9	0	0	0	8	33
Mvmt Flow	17	9	1	49	48	4

Major/Minor	Minor2		Major2	
Conflicting Flow All	26	26	-	0
Stage 1	26	26	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.49	6.5	-	-
Critical Hdwy Stg 1	5.49	5.5	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.581	4	-	-
Pot Cap-1 Maneuver	972	871	-	-
Stage 1	979	877	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	972	0	-	-
Mov Cap-2 Maneuver	972	0	-	-
Stage 1	979	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Ctrl Dly, s/v	8.81	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	972	-	-
HCM Lane V/C Ratio	0.027	-	-
HCM Ctrl Dly (s/v)	8.8	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	22	75	30	9	36	8
Future Vol, veh/h	22	75	30	9	36	8
Conflicting Peds, #/hr	0	0	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	3	3	-	-3	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	0	4	7	0	9	0
Mvmt Flow	30	101	41	12	49	11

Major/Minor	Minor2		Major2	
Conflicting Flow All	47	47	-	0
Stage 1	47	47	-	-
Stage 2	0	0	-	-
Critical Hdwy	7	7.14	-	-
Critical Hdwy Stg 1	6	6.14	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.5	4.036	-	-
Pot Cap-1 Maneuver	961	835	-	-
Stage 1	973	846	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	961	0	-	-
Mov Cap-2 Maneuver	961	0	-	-
Stage 1	973	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Ctrl Dly, s/v	9.34	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	961	-	-
HCM Lane V/C Ratio	0.136	-	-
HCM Ctrl Dly (s/v)	9.3	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.5	-	-

MOVEMENT SUMMARY

Site: 6 [NE Everett St & NE 3rd St_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															
3	L2	All MCs	35	0.0	35	0.0	0.198	9.7	LOS A	1.1	27.5	0.10	0.49	0.10	35.1
18	R2	All MCs	213	4.0	213	4.0	0.198	4.1	LOS A	1.1	27.5	0.10	0.49	0.10	35.4
Approach			248	3.4	248	3.4	0.198	4.9	LOS A	1.1	27.5	0.10	0.49	0.10	35.4
East: SR 500															
1	L2	All MCs	385	3.0	385	3.0	0.313	9.9	LOS A	1.7	43.8	0.16	0.61	0.16	32.7
6	T1	All MCs	5	50.0	5	50.0	0.313	4.5	LOS A	1.7	43.8	0.16	0.61	0.16	32.7
Approach			390	3.7	390	3.7	0.313	9.8	LOS A	1.7	43.8	0.16	0.61	0.16	32.7
West: NE 3rd St															
2	T1	All MCs	12	27.0	12	27.0	0.136	7.2	LOS A	0.6	16.8	0.48	0.58	0.48	34.7
12	R2	All MCs	113	6.0	113	6.0	0.136	6.1	LOS A	0.6	16.8	0.48	0.58	0.48	34.8
Approach			125	8.0	125	8.0	0.136	6.2	LOS A	0.6	16.8	0.48	0.58	0.48	34.8
All Vehicles			764	4.3	764	4.3	0.313	7.6	LOS A	1.7	43.8	0.19	0.57	0.19	33.8

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.

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MOVEMENT SUMMARY

Site: 7 [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	289	3.0	289	3.0	0.523	5.8	LOS A	4.0	103.6	0.54	0.53	0.54	34.7
18	R2	All MCs	256	3.0	256	3.0	0.523	5.7	LOS A	4.0	103.6	0.54	0.53	0.54	34.4
Approach			544	3.0	544	3.0	0.523	5.7	LOS A	4.0	103.6	0.54	0.53	0.54	34.5
East: NE Everett Drive															
1	L2	All MCs	226	10.0	226	10.0	0.343	11.5	LOS B	2.0	53.4	0.55	0.66	0.55	32.3
16	R2	All MCs	79	3.0	79	3.0	0.343	6.1	LOS A	2.0	53.4	0.55	0.66	0.55	32.9
Approach			305	8.2	305	8.2	0.343	10.1	LOS B	2.0	53.4	0.55	0.66	0.55	32.5
North: SR500															
7	L2	All MCs	170	1.0	170	1.0	0.677	12.6	LOS B	6.8	174.0	0.73	0.66	0.79	32.8
4	T1	All MCs	498	3.0	498	3.0	0.677	7.8	LOS A	6.8	174.0	0.73	0.66	0.79	33.4
Approach			668	2.5	668	2.5	0.677	9.0	LOS A	6.8	174.0	0.73	0.66	0.79	33.2
All Vehicles			1517	3.8	1517	3.8	0.677	8.1	LOS A	6.8	174.0	0.62	0.61	0.65	33.5

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.

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Intersection	
Int Delay, s/veh	7.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	155	97	365	533	23
Future Vol, veh/h	31	155	97	365	533	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	110	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	4	-4	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	0	7	10	3	5	6
Mvmt Flow	38	191	120	451	658	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1362	672	686	0	-	0
Stage 1	672	-	-	-	-	-
Stage 2	690	-	-	-	-	-
Critical Hdwy	6.8	6.47	4.2	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.363	2.29	-	-	-
Pot Cap-1 Maneuver	142	431	871	-	-	-
Stage 1	474	-	-	-	-	-
Stage 2	464	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	122	431	871	-	-	-
Mov Cap-2 Maneuver	122	-	-	-	-	-
Stage 1	409	-	-	-	-	-
Stage 2	464	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	46.17	2.06	0
HCM LOS	E		

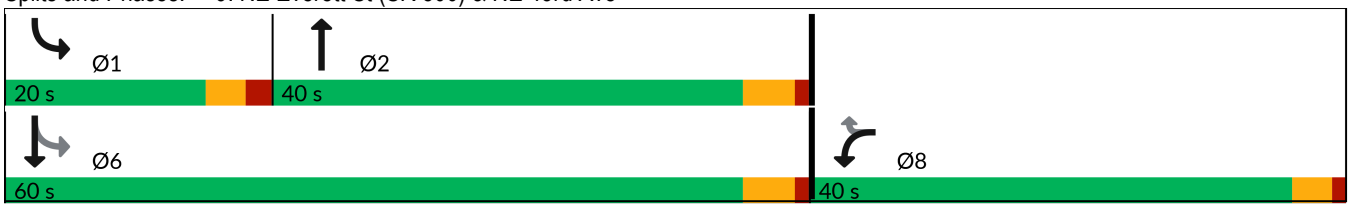
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	871	-	303	-	-
HCM Lane V/C Ratio	0.137	-	0.758	-	-
HCM Ctrl Dly (s/v)	9.8	-	46.2	-	-
HCM Lane LOS	A	-	E	-	-
HCM 95th %tile Q(veh)	0.5	-	5.8	-	-

Timings
9: NE Everett St (SR 500) & NE 43rd Ave 06/23/2025

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	333	71	395	485	96	596
Future Volume (vph)	333	71	395	485	96	596
Turn Type	Prot	Perm	NA	Free	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		Free	6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	5.0		4.0	5.0
Minimum Split (s)	23.0	23.0	30.0		10.0	50.0
Total Split (s)	40.0	40.0	40.0		20.0	60.0
Total Split (%)	40.0%	40.0%	40.0%		20.0%	60.0%
Yellow Time (s)	3.0	3.0	4.0		3.0	4.0
All-Red Time (s)	1.0	1.0	1.0		2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	Min		None	Min
Act Effct Green (s)	23.8	23.8	28.6	72.7	38.9	38.9
Actuated g/C Ratio	0.33	0.33	0.39	1.00	0.54	0.54
v/c Ratio	0.75	0.15	0.67	0.39	0.30	0.71
Control Delay (s/veh)	34.0	6.0	26.8	0.8	11.6	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	34.0	6.0	26.8	0.8	11.6	18.3
LOS	C	A	C	A	B	B
Approach Delay (s/veh)	29.0		12.5			17.3
Approach LOS	C		B			B

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 72.7	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay (s/veh): 17.6	Intersection LOS: B
Intersection Capacity Utilization 57.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 9: NE Everett St (SR 500) & NE 43rd Ave



HCM 7th Signalized Intersection Summary
9: NE Everett St (SR 500) & NE 43rd Ave 06/23/2025



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	333	71	395	485	96	596
Future Volume (veh/h)	333	71	395	485	96	596
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1799	1814	1746	1732	1802	1997
Adj Flow Rate, veh/h	383	59	454	0	110	685
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	12	11	4	5	17	4
Cap, veh/h	476	427	651		393	1075
Arrive On Green	0.28	0.28	0.37	0.00	0.06	0.54
Sat Flow, veh/h	1713	1537	1746	1468	1716	1997
Grp Volume(v), veh/h	383	59	454	0	110	685
Grp Sat Flow(s),veh/h/ln	1713	1537	1746	1468	1716	1997
Q Serve(g_s), s	10.2	1.4	10.8	0.0	1.8	11.8
Cycle Q Clear(g_c), s	10.2	1.4	10.8	0.0	1.8	11.8
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	476	427	651		393	1075
V/C Ratio(X)	0.80	0.14	0.70		0.28	0.64
Avail Cap(c_a), veh/h	1260	1130	1249		810	2244
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	16.4	13.3	13.0	0.0	9.1	7.9
Incr Delay (d2), s/veh	3.2	0.1	2.9	0.0	0.4	0.8
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.5	4.0	0.0	0.5	3.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	19.7	13.4	15.9	0.0	9.4	8.7
LnGrp LOS	B	B	B		A	A
Approach Vol, veh/h	442		454			795
Approach Delay, s/veh	18.9		15.9			8.8
Approach LOS	B		B			A

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	8.1	23.2			31.4	17.6
Change Period (Y+Rc), s	5.0	5.0			5.0	4.0
Max Green Setting (Gmax), s	15.0	35.0			55.0	36.0
Max Q Clear Time (g_c+I1), s	3.8	12.8			13.8	12.2
Green Ext Time (p_c), s	0.2	5.4			7.0	1.5

Intersection Summary	
HCM 7th Control Delay, s/veh	13.3
HCM 7th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

MOVEMENT SUMMARY

Site: 10 [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	7.0	238	7.0	0.376	14.3	LOS B	2.5	66.4	0.81	0.76	0.81	31.0
8	T1	All MCs	432	7.0	432	7.0	0.530	8.3	LOS A	4.8	125.8	0.89	0.75	0.99	34.0
Approach			670	7.0	670	7.0	0.530	10.5	LOS B	4.8	125.8	0.86	0.76	0.93	32.9
North: NE Everett Street															
4	T1	All MCs	625	10.0	625	10.0	0.562	5.6	LOS A	4.7	127.9	0.67	0.54	0.67	34.5
14	R2	All MCs	414	2.0	414	2.0	0.336	5.0	LOS A	2.3	59.5	0.52	0.53	0.52	35.1
Approach			1039	6.8	1039	6.8	0.562	5.4	LOS A	4.7	127.9	0.61	0.54	0.61	34.7
West: NW Lake Road															
5	L2	All MCs	582	3.0	582	3.0	0.684	18.4	LOS B	8.1	208.5	0.97	0.92	1.29	29.5
12	R2	All MCs	250	6.0	250	6.0	0.309	7.7	LOS A	2.2	56.5	0.80	0.69	0.80	34.2
Approach			832	3.9	832	3.9	0.684	15.2	LOS B	8.1	208.5	0.92	0.85	1.14	30.7
All Vehicles			2540	5.9	2540	5.9	0.684	9.9	LOS A	8.1	208.5	0.78	0.70	0.87	32.8

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.

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Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	77	14	24	339	526	82
Future Vol, veh/h	77	14	24	339	526	82
Conflicting Peds, #/hr	0	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	7	7	0	6	2	0
Mvmt Flow	85	15	26	373	578	90

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1051	626	671	0	-	0
Stage 1	626	-	-	-	-	-
Stage 2	425	-	-	-	-	-
Critical Hdwy	6.47	6.27	4.1	-	-	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.363	2.2	-	-	-
Pot Cap-1 Maneuver	246	475	929	-	-	-
Stage 1	524	-	-	-	-	-
Stage 2	649	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	237	474	926	-	-	-
Mov Cap-2 Maneuver	365	-	-	-	-	-
Stage 1	507	-	-	-	-	-
Stage 2	647	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	17.89	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	926	-	379	-	-
HCM Lane V/C Ratio	0.028	-	0.264	-	-
HCM Ctrl Dly (s/v)	9	-	17.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	1	-	-

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	47	25	19	4	25	78	8	252	6	81	327	131
Future Vol, veh/h	47	25	19	4	25	78	8	252	6	81	327	131
Conflicting Peds, #/hr	13	0	3	3	0	13	0	0	6	6	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	11	0	5	0	0	0	25	6	17	1	4	0
Mvmt Flow	54	29	22	5	29	90	9	290	7	93	376	151

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	973	958	454	897	1030	312	526	0	0	303	0	0
Stage 1	637	637	-	317	317	-	-	-	-	-	-	-
Stage 2	335	321	-	579	713	-	-	-	-	-	-	-
Critical Hdwy	7.21	6.5	6.25	7.1	6.5	6.2	4.35	-	-	4.11	-	-
Critical Hdwy Stg 1	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.21	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.599	4	3.345	3.5	4	3.3	2.425	-	-	2.209	-	-
Pot Cap-1 Maneuver	223	259	600	263	235	733	933	-	-	1264	-	-
Stage 1	450	474	-	698	658	-	-	-	-	-	-	-
Stage 2	660	655	-	504	439	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	155	236	598	204	215	721	933	-	-	1257	-	-
Mov Cap-2 Maneuver	155	236	-	204	215	-	-	-	-	-	-	-
Stage 1	417	439	-	688	648	-	-	-	-	-	-	-
Stage 2	541	645	-	419	406	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	39.09	16.4	0.27	1.22
HCM LOS	E	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	933	-	-	206	438	1257	-	-
HCM Lane V/C Ratio	0.01	-	-	0.507	0.281	0.074	-	-
HCM Ctrl Dly (s/v)	8.9	-	-	39.1	16.4	8.1	-	-
HCM Lane LOS	A	-	-	E	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	2.6	1.1	0.2	-	-

Intersection	
Int Delay, s/veh	11.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↱			↕			↕	
Traffic Vol, veh/h	56	23	1	0	18	209	1	0	0	274	0	74
Future Vol, veh/h	56	23	1	0	18	209	1	0	0	274	0	74
Conflicting Peds, #/hr	1	0	0	0	0	1	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	8	4	0	0	0	7	0	0	0	4	0	3
Mvmt Flow	66	27	1	0	21	246	1	0	0	322	0	87

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	702	692	44	-	735	2	87	0	0	1	0	0
Stage 1	688	688	-	-	3	-	-	-	-	-	-	-
Stage 2	14	3	-	-	732	-	-	-	-	-	-	-
Critical Hdwy	7.18	6.54	6.2	-	6.5	6.27	4.1	-	-	4.14	-	-
Critical Hdwy Stg 1	6.18	5.54	-	-	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.18	5.54	-	-	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.572	4.036	3.3	-	4	3.363	2.2	-	-	2.236	-	-
Pot Cap-1 Maneuver	345	365	1032	0	349	1068	1522	-	-	1609	-	-
Stage 1	427	444	-	0	897	-	-	-	-	-	-	-
Stage 2	991	889	-	0	430	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	196	287	1032	-	274	1066	1522	-	-	1607	-	-
Mov Cap-2 Maneuver	196	287	-	-	274	-	-	-	-	-	-	-
Stage 1	336	349	-	-	896	-	-	-	-	-	-	-
Stage 2	743	888	-	-	338	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	33.56	10.99	7.37	6.14
HCM LOS	D	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1522	-	-	218	867	1181	-	-
HCM Lane V/C Ratio	0.001	-	-	0.432	0.308	0.201	-	-
HCM Ctrl Dly (s/v)	7.4	0	-	33.6	11	7.8	0	-
HCM Lane LOS	A	A	-	D	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	2	1.3	0.7	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	159	413	610	20	11	265
Future Vol, veh/h	159	413	610	20	11	265
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-8	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	5	7	5	10	0	1
Mvmt Flow	173	449	663	22	12	288

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	685	0	-	0	1244	342
Stage 1	-	-	-	-	674	-
Stage 2	-	-	-	-	570	-
Critical Hdwy	4.2	-	-	-	5.2	6.12
Critical Hdwy Stg 1	-	-	-	-	4.2	-
Critical Hdwy Stg 2	-	-	-	-	4.2	-
Follow-up Hdwy	2.25	-	-	-	3.5	3.31
Pot Cap-1 Maneuver	885	-	-	-	294	708
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	689	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	885	-	-	-	228	708
Mov Cap-2 Maneuver	-	-	-	-	228	-
Stage 1	-	-	-	-	496	-
Stage 2	-	-	-	-	689	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	3.71	0	13.84
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	774	-	-	-	228	708
HCM Lane V/C Ratio	0.195	-	-	-	0.052	0.407
HCM Ctrl Dly (s/v)	10.1	1.3	-	-	21.6	13.5
HCM Lane LOS	B	A	-	-	C	B
HCM 95th %tile Q(veh)	0.7	-	-	-	0.2	2

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	587	3	68	520	4	174
Future Vol, veh/h	587	3	68	520	4	174
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	105	-	85	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	-6	-
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	6	0	3	3	0	0
Mvmt Flow	675	3	78	598	5	200

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	678	0	1430	676
Stage 1	-	-	-	-	676	-
Stage 2	-	-	-	-	754	-
Critical Hdwy	-	-	4.13	-	5.2	5.6
Critical Hdwy Stg 1	-	-	-	-	4.2	-
Critical Hdwy Stg 2	-	-	-	-	4.2	-
Follow-up Hdwy	-	-	2.227	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	909	-	241	511
Stage 1	-	-	-	-	638	-
Stage 2	-	-	-	-	602	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	909	-	220	511
Mov Cap-2 Maneuver	-	-	-	-	220	-
Stage 1	-	-	-	-	638	-
Stage 2	-	-	-	-	550	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.08	16.62
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	220	511	-	-	909	-
HCM Lane V/C Ratio	0.021	0.391	-	-	0.086	-
HCM Ctrl Dly (s/v)	21.7	16.5	-	-	9.3	-
HCM Lane LOS	C	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	1.8	-	-	0.3	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	410	88	76	428	93	166
Future Vol, veh/h	410	88	76	428	93	166
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	110	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	7	11	2	3	7
Mvmt Flow	456	98	84	476	103	184

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	553	0	1149	504
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	644	-
Critical Hdwy	-	-	4.21	-	6.43	6.27
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.299	-	3.527	3.363
Pot Cap-1 Maneuver	-	-	973	-	218	558
Stage 1	-	-	-	-	604	-
Stage 2	-	-	-	-	521	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	973	-	200	558
Mov Cap-2 Maneuver	-	-	-	-	200	-
Stage 1	-	-	-	-	604	-
Stage 2	-	-	-	-	476	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.36	24.07
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	200	558	-	-	973	-
HCM Lane V/C Ratio	0.518	0.331	-	-	0.087	-
HCM Ctrl Dly (s/v)	40.9	14.6	-	-	9.1	-
HCM Lane LOS	E	B	-	-	A	-
HCM 95th %tile Q(veh)	2.6	1.4	-	-	0.3	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	315	12	120	407	6	3	9	176	8	9	8
Future Vol, veh/h	7	315	12	120	407	6	3	9	176	8	9	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	90	-	-	130	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	4	18	2	2	33	0	22	8	0	0	12
Mvmt Flow	8	342	13	130	442	7	3	10	191	9	10	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	449	0	0	355	0	0	1072	1074	349	1069	1077	446
Stage 1	-	-	-	-	-	-	364	364	-	707	707	-
Stage 2	-	-	-	-	-	-	708	710	-	362	371	-
Critical Hdwy	4.1	-	-	4.12	-	-	7.1	6.72	6.28	7.1	6.5	6.32
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.72	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.72	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.218	-	-	3.5	4.198	3.372	3.5	4	3.408
Pot Cap-1 Maneuver	1122	-	-	1203	-	-	200	203	681	201	221	592
Stage 1	-	-	-	-	-	-	659	590	-	430	441	-
Stage 2	-	-	-	-	-	-	429	408	-	660	623	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1122	-	-	1203	-	-	167	179	681	122	195	592
Mov Cap-2 Maneuver	-	-	-	-	-	-	167	179	-	122	195	-
Stage 1	-	-	-	-	-	-	655	586	-	383	394	-
Stage 2	-	-	-	-	-	-	367	364	-	464	619	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.17	1.88	14.66	25.87
HCM LOS			B	D

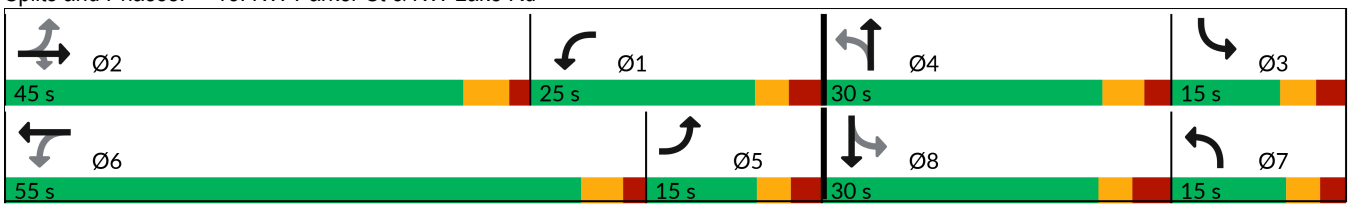
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	576	1122	-	-	1203	-	-	200
HCM Lane V/C Ratio	0.355	0.007	-	-	0.108	-	-	0.136
HCM Ctrl Dly (s/v)	14.7	8.2	-	-	8.4	-	-	25.9
HCM Lane LOS	B	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1.6	0	-	-	0.4	-	-	0.5

Timings
18: NW Parker St & NW Lake Rd 06/23/2025

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	9	189	171	106	283	143	59	44	116
Future Volume (vph)	9	189	171	106	283	143	59	44	116
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2		1	6	7	4	3	8
Permitted Phases	2		2	6		4		8	
Detector Phase	5	2	2	1	6	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.5	26.7	26.7	10.7	20.5	10.2	29.2	10.6	33.3
Total Split (s)	15.0	45.0	45.0	25.0	55.0	15.0	30.0	15.0	30.0
Total Split (%)	13.0%	39.1%	39.1%	21.7%	47.8%	13.0%	26.1%	13.0%	26.1%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.6	3.0	3.6	3.0	3.0
All-Red Time (s)	2.5	1.7	1.7	2.7	1.9	2.2	2.3	2.6	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.7	5.7	5.7	5.5	5.2	5.9	5.6	6.3
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	None	None	None	None
Act Effct Green (s)	18.7	12.6	12.6	21.0	18.8	21.8	17.0	16.7	9.9
Actuated g/C Ratio	0.33	0.22	0.22	0.37	0.33	0.39	0.30	0.30	0.18
v/c Ratio	0.03	0.56	0.40	0.27	0.33	0.31	0.36	0.13	0.49
Control Delay (s/veh)	13.7	27.1	6.5	15.3	16.3	14.6	15.9	13.4	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	13.7	27.1	6.5	15.3	16.3	14.6	15.9	13.4	28.6
LOS	B	C	A	B	B	B	B	B	C
Approach Delay (s/veh)		17.2			16.0		15.3		24.8
Approach LOS		B			B		B		C

Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 56.3	
Natural Cycle: 85	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay (s/veh): 17.4	Intersection LOS: B
Intersection Capacity Utilization 50.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 18: NW Parker St & NW Lake Rd



HCM 7th Signalized Intersection Summary
18: NW Parker St & NW Lake Rd 06/23/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	9	189	171	106	283	36	143	59	102	44	116	15
Future Volume (veh/h)	9	189	171	106	283	36	143	59	102	44	116	15
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.99	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1574	1841	1856	1900	1870	1826	1885	1856	1841	1796	1856	1900
Adj Flow Rate, veh/h	11	228	129	128	341	24	172	71	88	53	140	16
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Percent Heavy Veh, %	22	4	3	0	2	5	1	3	4	7	3	0
Cap, veh/h	386	327	279	380	550	39	403	120	149	381	249	29
Arrive On Green	0.12	0.18	0.18	0.10	0.16	0.16	0.09	0.16	0.16	0.09	0.15	0.15
Sat Flow, veh/h	1499	1841	1572	1810	3369	236	1795	749	929	1711	1632	186
Grp Volume(v), veh/h	11	228	129	128	179	186	172	0	159	53	0	156
Grp Sat Flow(s),veh/h/ln	1499	1841	1572	1810	1777	1828	1795	0	1678	1711	0	1818
Q Serve(g_s), s	0.0	5.7	3.6	0.0	4.6	4.6	0.0	0.0	4.3	0.0	0.0	3.9
Cycle Q Clear(g_c), s	0.0	5.7	3.6	0.0	4.6	4.6	0.0	0.0	4.3	0.0	0.0	3.9
Prop In Lane	1.00		1.00	1.00		0.13	1.00		0.55	1.00		0.10
Lane Grp Cap(c), veh/h	386	327	279	380	290	298	403	0	270	381	0	278
V/C Ratio(X)	0.03	0.70	0.46	0.34	0.62	0.62	0.43	0.00	0.59	0.14	0.00	0.56
Avail Cap(c_a), veh/h	496	1476	1261	908	1794	1846	596	0	825	551	0	879
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.3	18.9	18.1	19.3	19.1	19.1	19.3	0.0	19.1	18.2	0.0	19.2
Incr Delay (d2), s/veh	0.0	1.0	0.4	0.2	0.8	0.8	0.7	0.0	0.8	0.2	0.0	0.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	2.2	1.2	1.2	1.7	1.8	1.7	0.0	1.5	0.5	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.3	19.9	18.5	19.5	19.9	19.9	20.0	0.0	19.8	18.4	0.0	19.9
LnGrp LOS	B	B	B	B	B	B	B		B	B		B
Approach Vol, veh/h		368			493			331			209	
Approach Delay, s/veh		19.3			19.8			19.9			19.5	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	14.4	10.1	13.8	11.6	13.5	10.1	13.8
Change Period (Y+Rc), s	5.7	5.7	* 5.6	5.9	5.7	* 5.5	5.6	* 6.3
Max Green Setting (Gmax), s	19.3	39.3	* 9.4	24.1	9.5	* 50	9.8	* 24
Max Q Clear Time (g_c+I1), s	2.0	7.7	2.0	6.3	2.0	6.6	2.0	5.9
Green Ext Time (p_c), s	0.1	1.0	0.0	0.5	0.0	1.3	0.3	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	19.7
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	48	106	216	43	54	140
Future Vol, veh/h	48	106	216	43	54	140
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	89	89	89	89	89	89
Heavy Vehicles, %	14	9	3	18	8	9
Mvmt Flow	54	119	243	48	61	157

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	546	267	0	0	291	0
Stage 1	267	-	-	-	-	-
Stage 2	279	-	-	-	-	-
Critical Hdwy	6.54	6.29	-	-	4.18	-
Critical Hdwy Stg 1	5.54	-	-	-	-	-
Critical Hdwy Stg 2	5.54	-	-	-	-	-
Follow-up Hdwy	3.626	3.381	-	-	2.272	-
Pot Cap-1 Maneuver	479	755	-	-	1237	-
Stage 1	751	-	-	-	-	-
Stage 2	742	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	453	755	-	-	1237	-
Mov Cap-2 Maneuver	453	-	-	-	-	-
Stage 1	751	-	-	-	-	-
Stage 2	702	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	12.94	0	2.24
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	625	501	-
HCM Lane V/C Ratio	-	-	0.277	0.049	-
HCM Ctrl Dly (s/v)	-	-	12.9	8.1	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.2	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	6	387	132	13	231	0	124	0	14	1	1	3
Future Vol, veh/h	6	387	132	13	231	0	124	0	14	1	1	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	3	-	-	-3	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	1	0	0	3	0	3	0	0	100	0	0
Mvmt Flow	6	412	140	14	246	0	132	0	15	1	1	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	246	0	0	552	0	0	769	768	482	698	838	246
Stage 1	-	-	-	-	-	-	495	495	-	273	273	-
Stage 2	-	-	-	-	-	-	274	273	-	424	565	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.13	6.5	6.2	8.1	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.13	5.5	-	7.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.5	-	7.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.527	4	3.3	4.4	4	3.3
Pot Cap-1 Maneuver	1332	-	-	1028	-	-	317	334	588	253	304	798
Stage 1	-	-	-	-	-	-	555	549	-	561	687	-
Stage 2	-	-	-	-	-	-	730	687	-	454	511	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1332	-	-	1028	-	-	308	327	588	241	298	798
Mov Cap-2 Maneuver	-	-	-	-	-	-	308	327	-	241	298	-
Stage 1	-	-	-	-	-	-	551	546	-	553	677	-
Stage 2	-	-	-	-	-	-	715	677	-	439	508	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.09	0.46	25.08	13.21
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	323	20	-	-	96	-	-	444
HCM Lane V/C Ratio	0.454	0.005	-	-	0.013	-	-	0.012
HCM Ctrl Dly (s/v)	25.1	7.7	0	-	8.5	0	-	13.2
HCM Lane LOS	D	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	2.3	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	12.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	93	304	0	0	184	127	0	0	0	167	0	62
Future Vol, veh/h	93	304	0	0	184	127	0	0	0	167	0	62
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	1	0	0	2	6	0	0	0	3	0	0
Mvmt Flow	103	338	0	0	204	141	0	0	0	186	0	69

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	346	0	0	338	0	0	749	890	338	819	819	275
Stage 1	-	-	-	-	-	-	544	544	-	275	275	-
Stage 2	-	-	-	-	-	-	204	346	-	544	544	-
Critical Hdwy	4.13	-	-	4.1	-	-	7.1	6.5	6.2	7.13	6.5	6.2
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.13	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.13	5.5	-
Follow-up Hdwy	2.227	-	-	2.2	-	-	3.5	4	3.3	3.527	4	3.3
Pot Cap-1 Maneuver	1208	-	-	1233	-	-	331	284	709	293	312	769
Stage 1	-	-	-	-	-	-	527	522	-	729	686	-
Stage 2	-	-	-	-	-	-	802	639	-	521	522	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1208	-	-	1233	-	-	269	254	709	262	279	769
Mov Cap-2 Maneuver	-	-	-	-	-	-	269	254	-	262	279	-
Stage 1	-	-	-	-	-	-	471	467	-	729	686	-
Stage 2	-	-	-	-	-	-	730	639	-	466	467	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.93	0	0	49
HCM LOS			A	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	422	-	-	1233	-	-	319
HCM Lane V/C Ratio	-	0.086	-	-	-	-	-	0.798
HCM Ctrl Dly (s/v)	0	8.3	0	-	0	-	-	49
HCM Lane LOS	A	A	A	-	A	-	-	E
HCM 95th %tile Q(veh)	-	0.3	-	-	0	-	-	6.5

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	428	55	2	280	31	4
Future Vol, veh/h	428	55	2	280	31	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	1	3	50	4	7	0
Mvmt Flow	486	63	2	318	35	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	549	0	840	518
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	323	-
Critical Hdwy	-	-	4.6	-	6.47	6.2
Critical Hdwy Stg 1	-	-	-	-	5.47	-
Critical Hdwy Stg 2	-	-	-	-	5.47	-
Follow-up Hdwy	-	-	2.65	-	3.563	3.3
Pot Cap-1 Maneuver	-	-	819	-	329	562
Stage 1	-	-	-	-	588	-
Stage 2	-	-	-	-	723	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	819	-	328	562
Mov Cap-2 Maneuver	-	-	-	-	328	-
Stage 1	-	-	-	-	588	-
Stage 2	-	-	-	-	720	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.07	16.83
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	344	-	-	13	-
HCM Lane V/C Ratio	0.116	-	-	0.003	-
HCM Ctrl Dly (s/v)	16.8	-	-	9.4	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	0.4	-	-	0	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	6	8	29	42	13
Future Vol, veh/h	6	6	8	29	42	13
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	20	0	0	0	0	8
Mvmt Flow	9	9	12	43	62	19

Major/Minor	Minor2		Major2	
Conflicting Flow All	33	33	-	0
Stage 1	33	33	-	-
Stage 2	0	0	-	-
Critical Hdwy	6.6	6.5	-	-
Critical Hdwy Stg 1	5.6	5.5	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.68	4	-	-
Pot Cap-1 Maneuver	936	863	-	-
Stage 1	945	871	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	936	0	-	-
Mov Cap-2 Maneuver	936	0	-	-
Stage 1	945	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Ctrl Dly, s/v	8.92	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	936	-	-
HCM Lane V/C Ratio	0.019	-	-
HCM Ctrl Dly (s/v)	8.9	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	46	74	23	19	23
Future Vol, veh/h	15	46	74	23	19	23
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	3	3	-	-3	-
Peak Hour Factor	65	65	65	65	65	65
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	23	71	114	35	29	35

Major/Minor	Minor2		Major2	
Conflicting Flow All	132	132	-	0
Stage 1	132	132	-	-
Stage 2	0	0	-	-
Critical Hdwy	7	7.1	-	-
Critical Hdwy Stg 1	6	6.1	-	-
Critical Hdwy Stg 2	-	-	-	-
Follow-up Hdwy	3.5	4	-	-
Pot Cap-1 Maneuver	848	746	-	-
Stage 1	880	774	-	-
Stage 2	-	-	-	-
Platoon blocked, %			-	-
Mov Cap-1 Maneuver	848	0	-	-
Mov Cap-2 Maneuver	848	0	-	-
Stage 1	880	0	-	-
Stage 2	-	0	-	-

Approach	EB	WB
HCM Ctrl Dly, s/v	9.77	0
HCM LOS	A	

Minor Lane/Major Mvmt	EBLn1	WBT	WBR
Capacity (veh/h)	848	-	-
HCM Lane V/C Ratio	0.111	-	-
HCM Ctrl Dly (s/v)	9.8	-	-
HCM Lane LOS	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-

MOVEMENT SUMMARY

Site: 6 [NE Everett St & NE 3rd St_TotalPM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

SR500/NE 3rd St
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															
3	L2	All MCs	98	6.0	98	6.0	0.291	9.7	LOS A	1.7	42.5	0.09	0.52	0.09	34.7
18	R2	All MCs	272	1.0	272	1.0	0.291	4.0	LOS A	1.7	42.5	0.09	0.52	0.09	35.2
Approach			369	2.3	369	2.3	0.291	5.5	LOS A	1.7	42.5	0.09	0.52	0.09	35.1
East: SR 500															
1	L2	All MCs	208	2.0	208	2.0	0.185	10.1	LOS B	0.9	21.9	0.25	0.61	0.25	32.7
6	T1	All MCs	14	0.0	14	0.0	0.185	4.3	LOS A	0.9	21.9	0.25	0.61	0.25	33.4
Approach			222	1.9	222	1.9	0.185	9.8	LOS A	0.9	21.9	0.25	0.61	0.25	32.7
West: NE 3rd St															
2	T1	All MCs	11	0.0	11	0.0	0.067	4.9	LOS A	0.3	7.6	0.33	0.50	0.33	35.6
12	R2	All MCs	67	0.0	67	0.0	0.067	4.9	LOS A	0.3	7.6	0.33	0.50	0.33	35.3
Approach			78	0.0	78	0.0	0.067	4.9	LOS A	0.3	7.6	0.33	0.50	0.33	35.3
All Vehicles			669	1.9	669	1.9	0.291	6.9	LOS A	1.7	42.5	0.17	0.55	0.17	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).
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.

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MOVEMENT SUMMARY

Site: 7 [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	349	1.0	349	1.0	0.458	4.8	LOS A	3.3	81.9	0.29	0.44	0.29	35.4
18	R2	All MCs	194	0.0	194	0.0	0.458	4.7	LOS A	3.3	81.9	0.29	0.44	0.29	35.1
Approach			544	0.6	544	0.6	0.458	4.8	LOS A	3.3	81.9	0.29	0.44	0.29	35.3
East: NE Everett Drive															
1	L2	All MCs	174	0.0	174	0.0	0.237	11.2	LOS B	1.2	30.8	0.50	0.67	0.50	32.6
16	R2	All MCs	52	0.0	52	0.0	0.237	6.2	LOS A	1.2	30.8	0.50	0.67	0.50	33.0
Approach			226	0.0	226	0.0	0.237	10.0	LOS B	1.2	30.8	0.50	0.67	0.50	32.7
North: SR500															
7	L2	All MCs	61	2.0	61	2.0	0.274	10.3	LOS B	1.5	38.7	0.39	0.52	0.39	33.9
4	T1	All MCs	235	0.0	235	0.0	0.274	5.3	LOS A	1.5	38.7	0.39	0.52	0.39	34.6
Approach			296	0.4	296	0.4	0.274	6.3	LOS A	1.5	38.7	0.39	0.52	0.39	34.4
All Vehicles			1065	0.4	1065	0.4	0.458	6.3	LOS A	3.3	81.9	0.36	0.51	0.36	34.5

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.

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Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	28	131	125	426	322	18
Future Vol, veh/h	28	131	125	426	322	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	110	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	2	-	-	4	-4	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	4	2	0	1	0
Mvmt Flow	30	142	136	463	350	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1095	360	370	0	-	0
Stage 1	360	-	-	-	-	-
Stage 2	735	-	-	-	-	-
Critical Hdwy	6.8	6.44	4.12	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.336	2.218	-	-	-
Pot Cap-1 Maneuver	211	667	1189	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	441	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	187	667	1189	-	-	-
Mov Cap-2 Maneuver	187	-	-	-	-	-
Stage 1	605	-	-	-	-	-
Stage 2	441	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	17.48	1.91	0
HCM LOS	C		

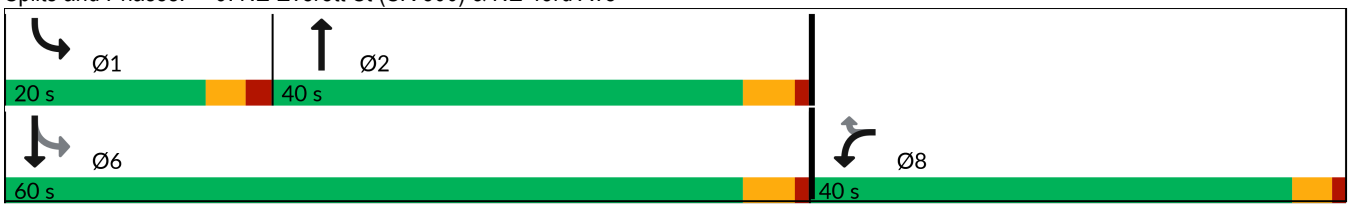
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1189	-	460	-	-
HCM Lane V/C Ratio	0.114	-	0.376	-	-
HCM Ctrl Dly (s/v)	8.4	-	17.5	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.4	-	1.7	-	-

Timings
9: NE Everett St (SR 500) & NE 43rd Ave 06/23/2025

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	224	60	488	298	53	404
Future Volume (vph)	224	60	488	298	53	404
Turn Type	Prot	Perm	NA	Free	pm+pt	NA
Protected Phases	8		2		1	6
Permitted Phases		8		Free	6	
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	5.0		4.0	5.0
Minimum Split (s)	23.0	23.0	30.0		10.0	50.0
Total Split (s)	40.0	40.0	40.0		20.0	60.0
Total Split (%)	40.0%	40.0%	40.0%		20.0%	60.0%
Yellow Time (s)	3.0	3.0	4.0		3.0	4.0
All-Red Time (s)	1.0	1.0	1.0		2.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	5.0		5.0	5.0
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	Min		None	Min
Act Effct Green (s)	14.5	14.5	29.3	59.4	35.3	35.3
Actuated g/C Ratio	0.24	0.24	0.49	1.00	0.59	0.59
v/c Ratio	0.55	0.14	0.59	0.21	0.12	0.40
Control Delay (s/veh)	27.1	7.4	16.5	0.3	5.9	7.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	27.1	7.4	16.5	0.3	5.9	7.8
LOS	C	A	B	A	A	A
Approach Delay (s/veh)	22.9		10.4			7.6
Approach LOS	C		B			A

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 59.4	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay (s/veh): 11.9	Intersection LOS: B
Intersection Capacity Utilization 53.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 9: NE Everett St (SR 500) & NE 43rd Ave



HCM 7th Signalized Intersection Summary
9: NE Everett St (SR 500) & NE 43rd Ave 06/23/2025



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	224	60	488	298	53	404
Future Volume (veh/h)	224	60	488	298	53	404
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No		No			No
Adj Sat Flow, veh/h/ln	1979	1979	1791	1806	2057	2012
Adj Flow Rate, veh/h	238	54	519	0	56	430
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	0	1	0	0	3
Cap, veh/h	342	305	779		462	1210
Arrive On Green	0.18	0.18	0.44	0.00	0.05	0.60
Sat Flow, veh/h	1884	1677	1791	1530	1959	2012
Grp Volume(v), veh/h	238	54	519	0	56	430
Grp Sat Flow(s),veh/h/ln	1884	1677	1791	1530	1959	2012
Q Serve(g_s), s	4.9	1.1	9.6	0.0	0.6	4.5
Cycle Q Clear(g_c), s	4.9	1.1	9.6	0.0	0.6	4.5
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	342	305	779		462	1210
V/C Ratio(X)	0.70	0.18	0.67		0.12	0.36
Avail Cap(c_a), veh/h	1635	1455	1511		1080	2667
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	15.9	14.4	9.3	0.0	6.4	4.2
Incr Delay (d2), s/veh	2.5	0.3	2.1	0.0	0.1	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.4	3.1	0.0	0.2	1.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	18.4	14.6	11.4	0.0	6.6	4.4
LnGrp LOS	B	B	B		A	A
Approach Vol, veh/h	292		519			486
Approach Delay, s/veh	17.7		11.4			4.7
Approach LOS	B		B			A

Timer - Assigned Phs	1	2			6	8
Phs Duration (G+Y+Rc), s	6.9	23.1			30.0	11.5
Change Period (Y+Rc), s	5.0	5.0			5.0	4.0
Max Green Setting (Gmax), s	15.0	35.0			55.0	36.0
Max Q Clear Time (g_c+I1), s	2.6	11.6			6.5	6.9
Green Ext Time (p_c), s	0.1	6.5			3.7	0.9

Intersection Summary	
HCM 7th Control Delay, s/veh	10.3
HCM 7th LOS	B

Notes

Unsignalized Delay for [NBR] is excluded from calculations of the approach delay and intersection delay.

MOVEMENT SUMMARY

Site: 10 [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	282	0.0	282	0.0	0.304	12.1	LOS B	1.9	47.3	0.61	0.69	0.61	31.8
8	T1	All MCs	524	1.0	524	1.0	0.457	5.5	LOS A	3.4	86.2	0.67	0.57	0.67	34.8
Approach			806	0.7	806	0.7	0.457	7.8	LOS A	3.4	86.2	0.65	0.61	0.65	33.7
North: NE Everett Street															
4	T1	All MCs	395	2.0	395	2.0	0.321	5.0	LOS A	2.1	54.0	0.52	0.49	0.52	35.1
14	R2	All MCs	306	0.0	306	0.0	0.243	4.9	LOS A	1.5	38.0	0.49	0.53	0.49	35.2
Approach			701	1.1	701	1.1	0.321	5.0	LOS A	2.1	54.0	0.50	0.51	0.50	35.2
West: NW Lake Road															
5	L2	All MCs	390	1.0	390	1.0	0.337	11.7	LOS B	2.3	56.9	0.60	0.67	0.60	31.8
12	R2	All MCs	371	0.0	371	0.0	0.315	5.6	LOS A	2.1	52.4	0.59	0.58	0.59	35.0
Approach			762	0.5	762	0.5	0.337	8.7	LOS A	2.3	56.9	0.60	0.62	0.60	33.2
All Vehicles			2269	0.8	2269	0.8	0.457	7.2	LOS A	3.4	86.2	0.59	0.58	0.59	34.0

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.

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Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	119	18	56	463	484	72
Future Vol, veh/h	119	18	56	463	484	72
Conflicting Peds, #/hr	0	0	6	0	0	6
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	1	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	4	0	0	2
Mvmt Flow	125	19	59	487	509	76

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1159	553	591	0	-	0
Stage 1	553	-	-	-	-	-
Stage 2	605	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.14	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.236	-	-	-
Pot Cap-1 Maneuver	219	536	975	-	-	-
Stage 1	580	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	203	533	970	-	-	-
Mov Cap-2 Maneuver	341	-	-	-	-	-
Stage 1	542	-	-	-	-	-
Stage 2	546	-	-	-	-	-

Approach	EB	NB	SB
HCM Ctrl Dly, s/v	21.68	0.97	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	970	-	358	-	-
HCM Lane V/C Ratio	0.061	-	0.403	-	-
HCM Ctrl Dly (s/v)	9	-	21.7	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.9	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	10	33	6	8	28	12	438	3	40	365	97
Future Vol, veh/h	53	10	33	6	8	28	12	438	3	40	365	97
Conflicting Peds, #/hr	2	0	0	0	0	2	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	50	-	-	50	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	10	0	0	0	0	0	1	0	0	1	0
Mvmt Flow	56	11	35	6	9	30	13	466	3	43	388	103

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1023	1020	440	972	1070	470	491	0	0	469	0	0
Stage 1	525	525	-	493	493	-	-	-	-	-	-	-
Stage 2	498	495	-	479	577	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.6	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.6	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.09	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	216	229	621	234	223	598	1082	-	-	1103	-	-
Stage 1	540	516	-	561	550	-	-	-	-	-	-	-
Stage 2	558	533	-	572	505	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	187	218	621	200	212	597	1082	-	-	1103	-	-
Mov Cap-2 Maneuver	187	218	-	200	212	-	-	-	-	-	-	-
Stage 1	519	497	-	555	544	-	-	-	-	-	-	-
Stage 2	515	527	-	507	486	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	28.81	16.19	0.22	0.67
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1082	-	-	251	366	1103	-	-
HCM Lane V/C Ratio	0.012	-	-	0.407	0.122	0.039	-	-
HCM Ctrl Dly (s/v)	8.4	-	-	28.8	16.2	8.4	-	-
HCM Lane LOS	A	-	-	D	C	A	-	-
HCM 95th %tile Q(veh)	0	-	-	1.9	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	18.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↱			↕			↕	
Traffic Vol, veh/h	77	31	0	0	24	352	0	1	0	355	0	54
Future Vol, veh/h	77	31	0	0	24	352	0	1	0	355	0	54
Conflicting Peds, #/hr	3	0	2	2	0	3	0	0	1	1	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	3	0	0	0	2	0	0	0	1	0	0
Mvmt Flow	84	34	0	0	26	383	0	1	0	386	0	59

Major/Minor	Minor2		Minor1			Major1				Major2		
Conflicting Flow All	818	803	31	-	833	5	59	0	0	2	0	0
Stage 1	801	801	-	-	2	-	-	-	-	-	-	-
Stage 2	17	2	-	-	830	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.53	6.2	-	6.5	6.22	4.1	-	-	4.11	-	-
Critical Hdwy Stg 1	6.1	5.53	-	-	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.53	-	-	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.027	3.3	-	4	3.318	2.2	-	-	2.209	-	-
Pot Cap-1 Maneuver	297	316	1048	0	307	1078	1558	-	-	1627	-	-
Stage 1	381	395	-	0	898	-	-	-	-	-	-	-
Stage 2	1007	892	-	0	388	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	131	237	1046	-	231	1074	1558	-	-	1625	-	-
Mov Cap-2 Maneuver	131	237	-	-	231	-	-	-	-	-	-	-
Stage 1	287	298	-	-	897	-	-	-	-	-	-	-
Stage 2	628	891	-	-	292	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	83.81	12.74	0	6.86
HCM LOS	F	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1558	-	-	150	871	1302	-	-
HCM Lane V/C Ratio	-	-	-	0.781	0.469	0.237	-	-
HCM Ctrl Dly (s/v)	0	-	-	83.8	12.7	7.9	0	-
HCM Lane LOS	A	-	-	F	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	4.9	2.5	0.9	-	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	228	700	578	28	8	149
Future Vol, veh/h	228	700	578	28	8	149
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	-8	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	1	1	2	0	0	1
Mvmt Flow	240	737	608	29	8	157

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	641	0	-	0	1475	322
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	848	-
Critical Hdwy	4.12	-	-	-	5.2	6.12
Critical Hdwy Stg 1	-	-	-	-	4.2	-
Critical Hdwy Stg 2	-	-	-	-	4.2	-
Follow-up Hdwy	2.21	-	-	-	3.5	3.31
Pot Cap-1 Maneuver	946	-	-	-	230	727
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	561	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	944	-	-	-	156	725
Mov Cap-2 Maneuver	-	-	-	-	156	-
Stage 1	-	-	-	-	449	-
Stage 2	-	-	-	-	560	-

Approach	EB	WB	SB
HCM Ctrl Dly, s/v	3.96	0	12.26
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	750	-	-	-	156	725
HCM Lane V/C Ratio	0.254	-	-	-	0.054	0.216
HCM Ctrl Dly (s/v)	10.1	2	-	-	29.5	11.3
HCM Lane LOS	B	A	-	-	D	B
HCM 95th %tile Q(veh)	1	-	-	-	0.2	0.8

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	657	4	82	472	11	67
Future Vol, veh/h	657	4	82	472	11	67
Conflicting Peds, #/hr	0	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	105	-	85	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	-6	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	699	4	87	502	12	71

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	703	0	1378	702
Stage 1	-	-	-	-	701	-
Stage 2	-	-	-	-	677	-
Critical Hdwy	-	-	4.1	-	5.2	5.6
Critical Hdwy Stg 1	-	-	-	-	4.2	-
Critical Hdwy Stg 2	-	-	-	-	4.2	-
Follow-up Hdwy	-	-	2.2	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	904	-	255	496
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	637	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	904	-	231	496
Mov Cap-2 Maneuver	-	-	-	-	231	-
Stage 1	-	-	-	-	626	-
Stage 2	-	-	-	-	576	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1.39	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	231	496	-	-	904	-
HCM Lane V/C Ratio	0.051	0.144	-	-	0.097	-
HCM Ctrl Dly (s/v)	21.4	13.5	-	-	9.4	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.5	-	-	0.3	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	564	146	98	374	73	104
Future Vol, veh/h	564	146	98	374	73	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	110	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	3	1
Mvmt Flow	594	154	103	394	77	109

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	747	0	1271	671
Stage 1	-	-	-	-	671	-
Stage 2	-	-	-	-	600	-
Critical Hdwy	-	-	4.11	-	6.43	6.21
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.209	-	3.527	3.309
Pot Cap-1 Maneuver	-	-	866	-	184	458
Stage 1	-	-	-	-	506	-
Stage 2	-	-	-	-	546	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	866	-	163	458
Mov Cap-2 Maneuver	-	-	-	-	163	-
Stage 1	-	-	-	-	506	-
Stage 2	-	-	-	-	481	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	2.02	27.79
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	163	458	-	-	866	-
HCM Lane V/C Ratio	0.473	0.239	-	-	0.119	-
HCM Ctrl Dly (s/v)	45.6	15.3	-	-	9.7	-
HCM Lane LOS	E	C	-	-	A	-
HCM 95th %tile Q(veh)	2.2	0.9	-	-	0.4	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	575	7	83	359	6	4	5	121	10	7	13
Future Vol, veh/h	7	575	7	83	359	6	4	5	121	10	7	13
Conflicting Peds, #/hr	0	0	3	3	0	0	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	90	-	-	130	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	0	1	0	0	0	0	0	0	8
Mvmt Flow	8	625	8	90	390	7	4	5	132	11	8	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	397	0	0	636	0	0	1222	1224	632	1217	1225	394
Stage 1	-	-	-	-	-	-	647	647	-	574	574	-
Stage 2	-	-	-	-	-	-	575	577	-	643	651	-
Critical Hdwy	4.1	-	-	4.1	-	-	7.1	6.5	6.2	7.1	6.5	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.1	5.5	-	6.1	5.5	-
Follow-up Hdwy	2.2	-	-	2.2	-	-	3.5	4	3.3	3.5	4	3.372
Pot Cap-1 Maneuver	1173	-	-	957	-	-	158	181	484	159	180	642
Stage 1	-	-	-	-	-	-	463	470	-	508	507	-
Stage 2	-	-	-	-	-	-	507	505	-	465	468	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1173	-	-	955	-	-	132	162	483	101	162	641
Mov Cap-2 Maneuver	-	-	-	-	-	-	132	162	-	101	162	-
Stage 1	-	-	-	-	-	-	459	465	-	460	459	-
Stage 2	-	-	-	-	-	-	441	457	-	332	463	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.1	1.7	17.99	28.64
HCM LOS			C	D

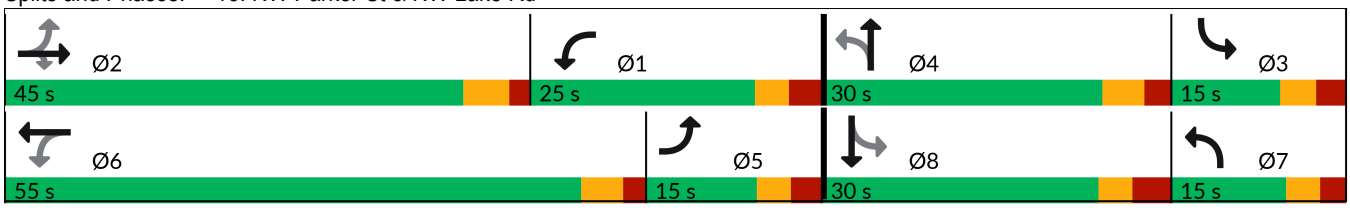
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	417	1173	-	-	955	-	-	185
HCM Lane V/C Ratio	0.339	0.006	-	-	0.094	-	-	0.177
HCM Ctrl Dly (s/v)	18	8.1	-	-	9.2	-	-	28.6
HCM Lane LOS	C	A	-	-	A	-	-	D
HCM 95th %tile Q(veh)	1.5	0	-	-	0.3	-	-	0.6

Timings
18: NW Parker St & NW Lake Rd 06/23/2025

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	19	445	147	45	316	200	120	43	90
Future Volume (vph)	19	445	147	45	316	200	120	43	90
Turn Type	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2		1	6	7	4	3	8
Permitted Phases	2		2	6		4		8	
Detector Phase	5	2	2	1	6	7	4	3	8
Switch Phase									
Minimum Initial (s)	5.0	8.0	8.0	5.0	8.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.5	26.7	26.7	10.7	20.5	10.2	29.2	10.6	33.3
Total Split (s)	15.0	45.0	45.0	25.0	55.0	15.0	30.0	15.0	30.0
Total Split (%)	13.0%	39.1%	39.1%	21.7%	47.8%	13.0%	26.1%	13.0%	26.1%
Yellow Time (s)	3.0	4.0	4.0	3.0	3.6	3.0	3.6	3.0	3.0
All-Red Time (s)	2.5	1.7	1.7	2.7	1.9	2.2	2.3	2.6	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.5	5.7	5.7	5.7	5.5	5.2	5.9	5.6	6.3
Lead/Lag	Lag	Lead	Lead	Lag	Lead	Lag	Lead	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes		Yes	Yes	
Recall Mode	None	Min	Min	None	Min	None	None	None	None
Act Effct Green (s)	28.7	24.7	24.7	30.0	26.0	23.6	17.3	14.9	9.8
Actuated g/C Ratio	0.43	0.37	0.37	0.45	0.39	0.36	0.26	0.22	0.15
v/c Ratio	0.04	0.69	0.23	0.14	0.27	0.41	0.54	0.15	0.42
Control Delay (s/veh)	14.5	26.2	2.9	14.6	18.3	21.8	27.3	20.1	35.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	14.5	26.2	2.9	14.6	18.3	21.8	27.3	20.1	35.5
LOS	B	C	A	B	B	C	C	C	D
Approach Delay (s/veh)		20.2			17.9		24.8		31.1
Approach LOS		C			B		C		C

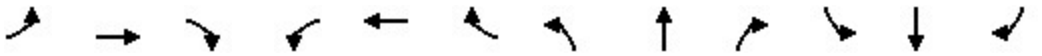
Intersection Summary	
Cycle Length: 115	
Actuated Cycle Length: 66.4	
Natural Cycle: 85	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay (s/veh): 22.0	Intersection LOS: C
Intersection Capacity Utilization 64.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 18: NW Parker St & NW Lake Rd



HCM 7th Signalized Intersection Summary
18: NW Parker St & NW Lake Rd

06/23/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	445	147	45	316	25	200	120	117	43	90	17
Future Volume (veh/h)	19	445	147	45	316	25	200	120	117	43	90	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	0.99		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1900	1900	1885	1900	1885	1900	1885	1885	1900	1900	1885	1900
Adj Flow Rate, veh/h	21	489	113	49	347	18	220	132	108	47	99	14
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Percent Heavy Veh, %	0	0	1	0	1	0	1	1	0	0	1	0
Cap, veh/h	583	586	491	270	531	27	381	175	143	201	172	24
Arrive On Green	0.24	0.31	0.31	0.08	0.15	0.15	0.11	0.18	0.18	0.05	0.11	0.11
Sat Flow, veh/h	1810	1900	1592	1810	3463	179	1795	958	783	1810	1613	228
Grp Volume(v), veh/h	21	489	113	49	179	186	220	0	240	47	0	113
Grp Sat Flow(s),veh/h/ln	1810	1900	1592	1810	1791	1852	1795	0	1741	1810	0	1842
Q Serve(g_s), s	0.0	14.4	3.2	0.0	5.7	5.7	0.7	0.0	7.9	0.0	0.0	3.5
Cycle Q Clear(g_c), s	0.0	14.4	3.2	0.0	5.7	5.7	0.7	0.0	7.9	0.0	0.0	3.5
Prop In Lane	1.00		1.00	1.00		0.10	1.00		0.45	1.00		0.12
Lane Grp Cap(c), veh/h	583	586	491	270	275	284	381	0	318	201	0	196
V/C Ratio(X)	0.04	0.83	0.23	0.18	0.65	0.66	0.58	0.00	0.75	0.23	0.00	0.58
Avail Cap(c_a), veh/h	583	1240	1039	700	1472	1522	468	0	697	402	0	725
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	16.5	19.4	15.5	25.3	24.0	24.0	23.3	0.0	23.3	27.4	0.0	25.6
Incr Delay (d2), s/veh	0.0	1.2	0.1	0.1	1.0	1.0	1.4	0.0	1.4	0.6	0.0	1.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	5.8	1.1	0.6	2.3	2.4	2.7	0.0	3.1	0.6	0.0	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	16.5	20.6	15.6	25.4	24.9	25.0	24.7	0.0	24.7	28.0	0.0	26.6
LnGrp LOS	B	C	B	C	C	C	C		C	C		C
Approach Vol, veh/h		623			414			460			160	
Approach Delay, s/veh		19.6			25.0			24.7			27.0	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.7	24.3	8.3	16.9	20.2	14.7	12.5	12.7
Change Period (Y+Rc), s	5.7	5.7	* 5.6	5.9	5.7	* 5.5	5.6	* 6.3
Max Green Setting (Gmax), s	19.3	39.3	* 9.4	24.1	9.5	* 50	9.8	* 24
Max Q Clear Time (g_c+I1), s	2.0	16.4	2.0	9.9	2.0	7.7	2.7	5.5
Green Ext Time (p_c), s	0.0	2.1	0.0	0.7	0.0	1.3	0.3	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	23.1
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	51	55	167	40	41	156
Future Vol, veh/h	51	55	167	40	41	156
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	88	88	88	88	88	88
Heavy Vehicles, %	4	6	4	14	5	4
Mvmt Flow	58	63	190	45	47	177

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	483	213	0	0	235	0
Stage 1	213	-	-	-	-	-
Stage 2	270	-	-	-	-	-
Critical Hdwy	6.44	6.26	-	-	4.15	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.354	-	-	2.245	-
Pot Cap-1 Maneuver	539	818	-	-	1315	-
Stage 1	818	-	-	-	-	-
Stage 2	770	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	518	818	-	-	1315	-
Mov Cap-2 Maneuver	518	-	-	-	-	-
Stage 1	818	-	-	-	-	-
Stage 2	740	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	11.93	0	1.63
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	639	375	-
HCM Lane V/C Ratio	-	-	0.188	0.035	-
HCM Ctrl Dly (s/v)	-	-	11.9	7.8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1	-

Appendix H:Year 2030 Mitigated Total Traffic Conditions Analysis Worksheets

Intersection	
Intersection Delay, s/veh	12.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	171	0	0	252	120	0	0	0	106	0	87
Future Vol, veh/h	31	171	0	0	252	120	0	0	0	106	0	87
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Heavy Vehicles, %	13	9	0	0	6	6	0	0	0	4	0	5
Mvmt Flow	36	201	0	0	296	141	0	0	0	125	0	102
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	11.4	14.5	0	11.4
HCM LOS	B	B	-	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	15%	0%	55%
Vol Thru, %	100%	85%	68%	0%
Vol Right, %	0%	0%	32%	45%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	202	372	193
LT Vol	0	31	0	106
Through Vol	0	171	252	0
RT Vol	0	0	120	87
Lane Flow Rate	0	238	438	227
Geometry Grp	1	1	1	1
Degree of Util (X)	0	0.355	0.588	0.345
Departure Headway (Hd)	6.055	5.383	4.836	5.474
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	668	753	658
Service Time	4.102	3.411	2.836	3.505
HCM Lane V/C Ratio	0	0.356	0.582	0.345
HCM Control Delay, s/veh	9.1	11.4	14.5	11.4
HCM Lane LOS	N	B	B	B
HCM 95th-tile Q	0	1.6	3.9	1.5

Intersection	
Intersection Delay, s/veh	15
Intersection LOS	B

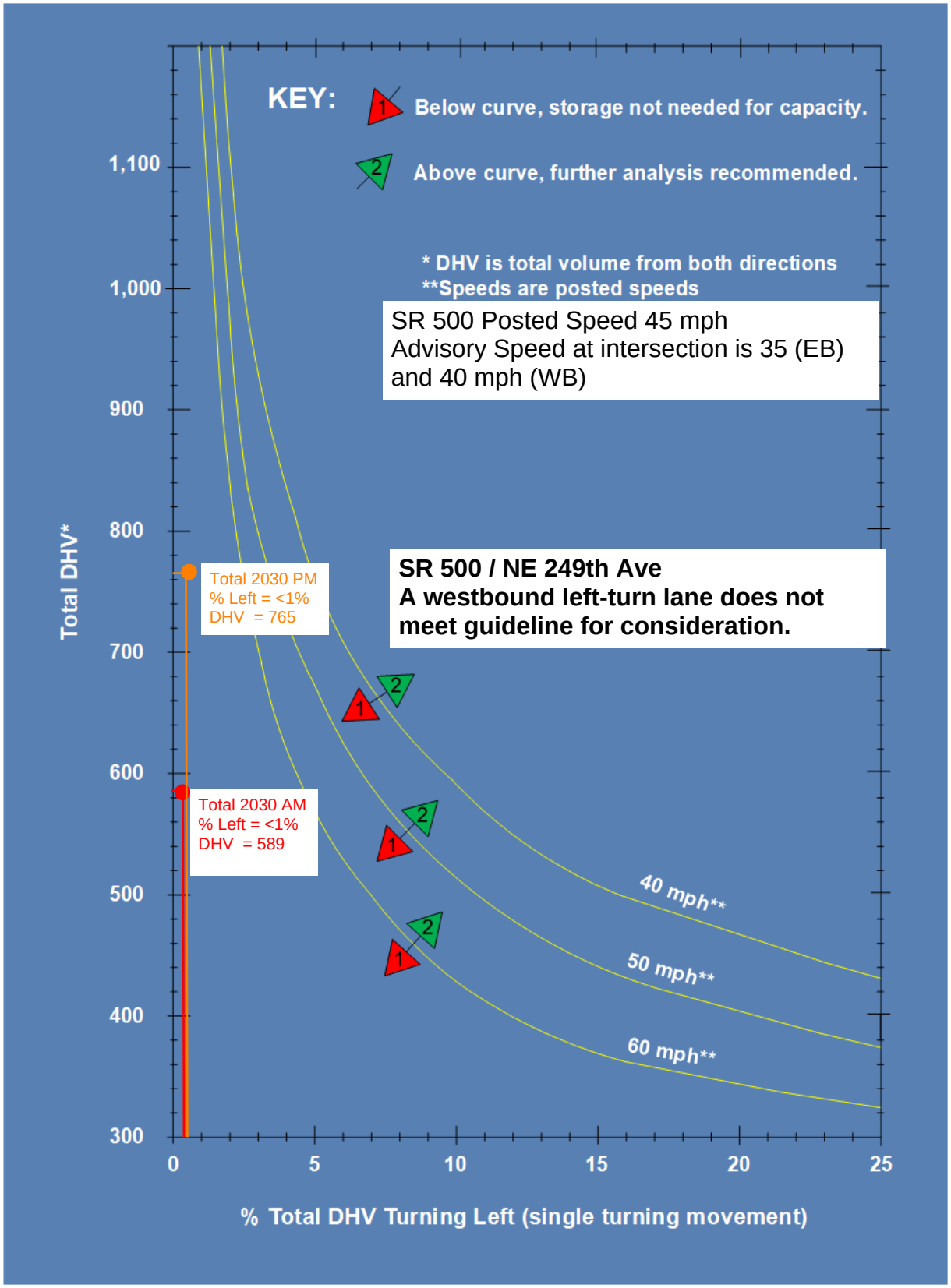
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	93	304	0	0	184	127	0	0	0	167	0	62
Future Vol, veh/h	93	304	0	0	184	127	0	0	0	167	0	62
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	3	1	0	0	2	6	0	0	0	3	0	0
Mvmt Flow	103	338	0	0	204	141	0	0	0	186	0	69
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	17.5	13.1	0	13.1
HCM LOS	C	B	-	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	23%	0%	73%
Vol Thru, %	100%	77%	59%	0%
Vol Right, %	0%	0%	41%	27%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	0	397	311	229
LT Vol	0	93	0	167
Through Vol	0	304	184	0
RT Vol	0	0	127	62
Lane Flow Rate	0	441	346	254
Geometry Grp	1	1	1	1
Degree of Util (X)	0	0.647	0.492	0.417
Departure Headway (Hd)	6.521	5.282	5.122	5.898
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	0	684	701	611
Service Time	4.594	3.319	3.162	3.942
HCM Lane V/C Ratio	0	0.645	0.494	0.416
HCM Control Delay, s/veh	9.6	17.5	13.1	13.1
HCM Lane LOS	N	C	B	B
HCM 95th-tile Q	0	4.7	2.7	2.1

Appendix I: Turn Lane Worksheets

Exhibit 1310-9 Left-Turn Storage Guidelines: Two-Lane, Unsignalized



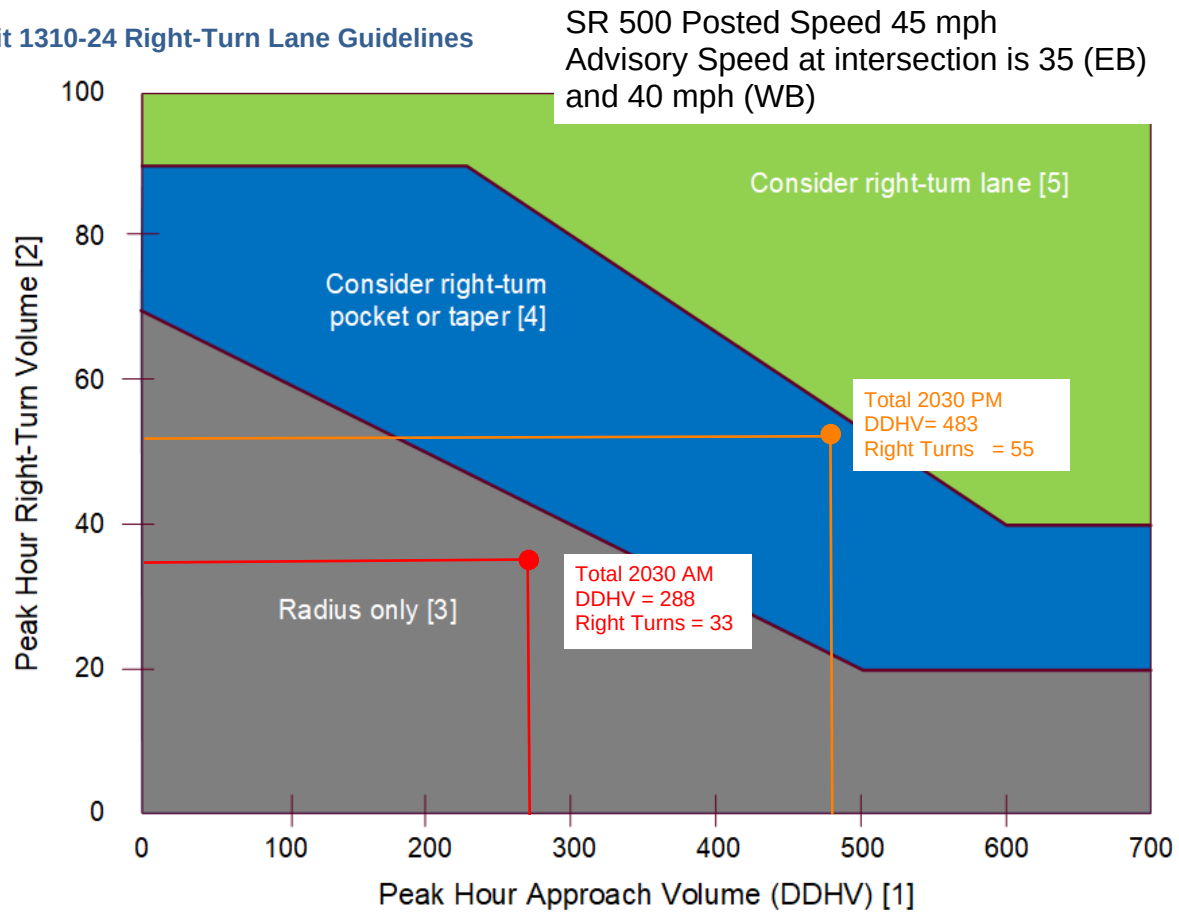
A capacity analysis may be used to determine whether right-turn lanes are needed to maintain the desired level of service.

Where adequate right of way exists, providing right-turn lanes is relatively inexpensive and can provide increased operational efficiency.

The right-turn pocket or the right-turn taper (see Exhibit 1310-25) may be used at any minor intersection where a right-turn lane is not provided. These designs reduce interference and delay to the through movement by offering an earlier exit to right-turning vehicles.

If the right-turn pocket is used, Exhibit 1310-25 shows taper lengths for various posted speeds.

Exhibit 1310-24 Right-Turn Lane Guidelines



Notes:

[1] For two-lane highways, use the peak hour DDHV (through + right-turn). For multilane, highways (posted speed 45 mph or above), use the right-lane peak hour approach volume (through + right-turn).

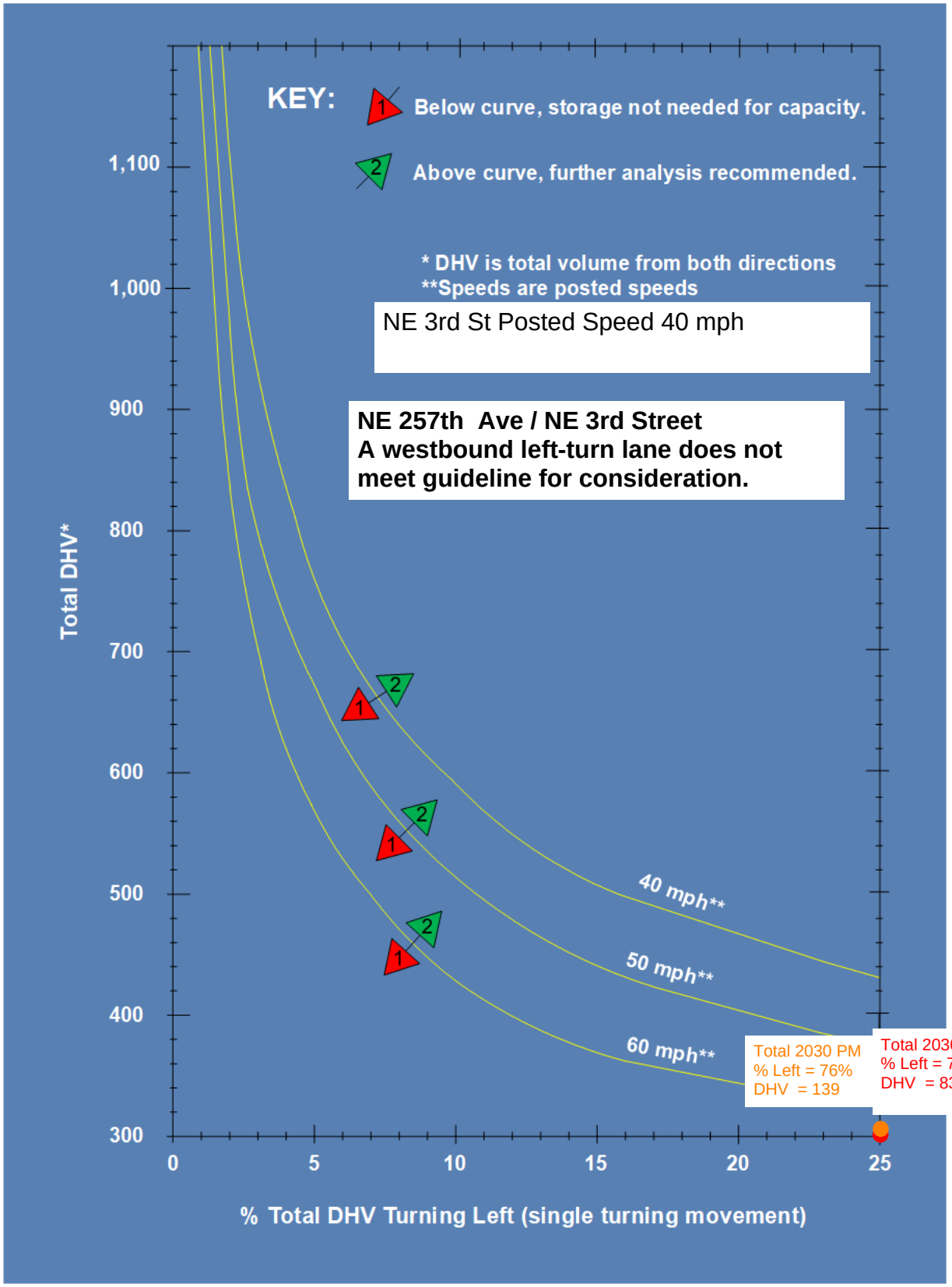
[2] When all three of the following conditions are met, reduce the right-turn DDHV by 20:
- The posted speed is 45 mph or below
- The right-turn volume is greater than 40 VPH
- The peak hour approach volume (DDHV) is less than 300 VPH

[3] For right-turn corner design, see Exhibit 1310-8.

[4] For right-turn pocket or taper design, see Exhibit 1310-25.

[5] For right-turn lane design, see Exhibit 1310-26.

Exhibit 1310-9 Left-Turn Storage Guidelines: Two-Lane, Unsignalized



11. Tree Report

Village at North Shore
Preliminary Tree Report

Date: July 2025

Prepared For:
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Site Information:
313 SE Leadbetter Road
Camas, WA 98607
Parcel #177885-000, 178175-000

AKS ENGINEERING & FORESTRY
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Technical Appendices

Appendix A: Detailed Tree Inventory Table
Appendix B: Tree Preservation and Removal Plan
Appendix C: Tree Planting Plan

Tables

Table 1: Summary of Tree Units **2**

Tree Report

VILLAGE AT NORTH SHORE
CAMAS, WASHINGTON

Location

The project site is located at 313 SE Leadbetter, (Parcel Serial No.177885-000, 178175-000) 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 (23.60 acres) of the proposed residential subdivision. The heavily wooded site characterized by grades of 0 to 15 percent with some steeper areas with slopes up to 25 percent. Several homes and structures are present along SE 252nd Avenue and gravel roads wind through the eastern portion of the site. The eastern portion of the site consists of a planted Douglas-fir stand and Oregon Ash wetland. The western portion of the site is dominated by a mature conifer-deciduous forest. Several small Oregon White Oak clusters are perched on rocky outcrops in the center of the site. The proposed development will result in 102 single-family residential lots, 140 multifamily apartment units, and commercial space with tracts set aside for open space, public roadways, stormwater facilities, 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 1104 surveyed on-site trees over 6 inches in diameter. Due to the planned site development and high potential for extensive root impacts from site grading, 546 surveyed on-site trees are proposed for removal & 558 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

The interior portion of the site consists of a dense forested area. A fixed-radius plot cruise was performed in this stand as an alternative to a topographic survey and detailed evaluation of individual trees. Ten plots were randomly located throughout the site to determine the average density, size, and condition of the trees. Based on the characteristics of the forested areas, the site was split into two unique stands. Stand #1 consists of mature Douglas-fir trees planted in rows with a density of approximately 125 trees per acre. The trees are generally in good health and condition with an average Diameter at Breast Height (DBH) of ±16". Stand #2 consists of a mature mixed species conifer-deciduous forest with a density of approximately 100 trees per acre. The dominant species are Douglas-fir and Bigleaf Maple, with some Western Redcedar and Red Alder. The average DBH of trees in the stand is ±15". The health and condition of individual trees varies; however, the stand as a whole is generally in good condition. There are some small clusters of large diameter dead standing trees scattered throughout the stand. Trees around the perimeter of the development area were individually evaluated. Trees along the western and southern property lines are consistent with the conditions of Stand #2 as described above. The northern portion of the site contains a forested wetland area with Black Cottonwood, Western Redcedar, and Western Hemlock. A forested wetland dominated by Oregon Ash is in the northeastern corner of the site. The health and structure of on-site trees range from poor to good based on conditions observed during site visits in February and March of 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.

There are also a number of dead/dying trees located within the open space tracts associated with the critical areas and their buffers. These trees were surveyed and evaluated and planned for retention to the greatest extent possible for habitat purposes. These trees will need to be more closely evaluated during the final engineering construction plan design development for hazard assessment and may need to be removed for safety purposes. If this becomes a recommendation, the trees should be felled and retained for mitigation uses in coordination with the project biologist. No tree units were associated with these trees.

Off-Site Trees

The on-site forest extends off-site onto parcels to the south, east and west of the project site. Several trees along the boundary of the site are proposed for removal due to impacts from road and lot grading. Additionally, an access road and utility connections are proposed from SE Leadbetter Road, requiring the removal of off-site trees southwest of the project site. The off-site trees proposed for preservation will be protected with tree protection measures as further described in this report and on the Preliminary Tree Preservation Plans (Appendix B).

Tree Density Calculations

The total site area is 36.04 acres with 12.44 acres of open space for a net site area of 23.60 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 708 tree units (30*23.60 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	23.60	708	5023	2787	2236	322	2,558

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, will be a potential concern to closely monitor. With the shallow soils and newly exposed “edge” trees, it is anticipated that windthrow is going to occur. Monitoring during and following site construction is highly recommended and additional trees may be recommended following initial site grading for risk hazard abatement.

Soils

Soils on-site are comprised of Olympic Stony Clay Loam, Vader Silt Loam, and Lauren Very Gravelly Loam with slopes ranging from 0 to 30 percent. These soils are described as deep, well-drained soils per the USDA Natural Resources Conservation Service’s Web Soil Survey. However, based on visual observations and review of the project geotechnical studies, the site is more characterized by shallow soils over the top of bedrock.

Tree Protection Plan

See the plans found in Appendix B.

Planting Plan

234 street trees and 88 site trees are proposed to be planted to meet landscape requirements. The total number of trees to be planted will be 322, which, when added to the 2236 tree units being retained, results in 2,558 tree units and meets the tree density requirement of 708 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 23.60-acre site proposes to remove 546 on-site trees. Of the existing on-site trees, 558 will be retained. 322 street trees and 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 or the construction of the multifamily and commercial structures. 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.



Appendix A: Detailed Tree Inventory Table

Detailed Tree Inventory for Village at North Shore

AKS Job No. 9095 - Evaluation Date: 02/12/2025 - 03/14/2025 - 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
11280	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
11281	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11282	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
11283	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11284	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
11285	14	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
11286	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11287	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11288	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Significant impacts from site grading	0
11289	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
11290	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
11291	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
11292	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
11293	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
11294	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
11295	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11296	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11297	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11298	37	Bigleaf Maple (*Acer macrophyllum*)	15	Large bulges; Broken limbs	B	Significant impacts from site grading	0
11299	38	Bigleaf Maple (*Acer macrophyllum*)	15	Large bulges; Broken limbs	B	Significant impacts from site grading	0
11300	47	Bigleaf Maple (*Acer macrophyllum*)	20	Large bulges; Broken limbs	B	Direct conflict with site improvements	0
11301	24	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Direct conflict with site improvements	0
11302	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11303	24	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Direct conflict with site improvements	0
11304	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11305	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11306	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Direct conflict with site improvements	0
11307	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11308	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11309	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11310	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11311	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Direct conflict with site improvements	0
11312	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11313	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11314	23	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Preserve	8
11315	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Direct conflict with site improvements	0
11316	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11317	43	Bigleaf Maple (*Acer macrophyllum*)	18	Large broken limbs	B	Preserve	18
11318	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11319	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Significant impacts from site grading	0
11320	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Significant impacts from site grading	0
11321	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Significant impacts from site grading	0
11322	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11323	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11324	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11325	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11326	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11327	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11328	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11329	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5

Detailed Tree Inventory for Village at North Shore

AKS Job No. 9095 - Evaluation Date: 02/12/2025 - 03/14/2025 - 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
11330	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11331	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
11332	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11333	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
11334	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
11335	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
11336	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
11337	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
11338	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11339	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11340	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
11341	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11342	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11343	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11344	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
11345	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Significant impacts from site grading	0
11346	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11347	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11348	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11349	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11350	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
11351	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
11352	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Significant impacts from site grading	0
11353	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Significant impacts from site grading	0
11354	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Codominant top with included bark	B	Direct conflict with site improvements	0
11355	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11356	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11357	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
11358	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Direct conflict with site improvements	0
11359	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
11360	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
11361	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11362	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
11363	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
11364	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
11365	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
11366	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
11367	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
11368	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11369	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11370	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
11371	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
11372	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
11373	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
11374	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
11375	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Significant impacts from site grading	0
11376	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Significant impacts from site grading	0
11377	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
11378	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4

Detailed Tree Inventory for Village at North Shore

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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
11379	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Significant impacts from site grading	0
11380	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
11381	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Significant impacts from site grading	0
11382	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Significant impacts from site grading	0
11383	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Significant impacts from site grading	0
11384	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11385	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
11386	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11387	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11388	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
11389	12	Douglas-fir (*Pseudotsuga menziesii*)	0	Dead	A	Preserve	0
11390	15	Douglas-fir (*Pseudotsuga menziesii*)	0	Dead	A	Preserve	0
11391	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
11393	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11394	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
11395	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11396	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11397	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11398	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11399	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Codominant top with included bark	B	Preserve	2
11400	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
11401	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11402	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11403	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
11404	24	Douglas-fir (*Pseudotsuga menziesii*)	8	Codominant top with included bark	B	Preserve	8
11405	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11406	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11407	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11408	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11409	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11410	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Preserve	7
11411	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11412	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11413	24	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Preserve	8
11414	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11415	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11416	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11417	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11418	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11419	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11420	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11421	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11422	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Historically failed top; Epicormic leaders	A	Significant impacts from site grading	0
11423	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Significant impacts from site grading	0
11424	23	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Direct conflict with site improvements	0
11425	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11426	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11427	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11428	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	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
11429	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11430	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
11431	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Significant impacts from site grading	0
11432	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Significant impacts from site grading	0
11433	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11434	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11435	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11436	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11437	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11438	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11439	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11440	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11441	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11442	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11443	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Preserve	7
11444	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11445	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11446	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11447	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11448	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Significant impacts from site grading	0
11449	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
11450	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11451	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11452	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11453	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11454	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11455	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Preserve	7
11456	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11457	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11458	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11459	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11460	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11461	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11462	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11463	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11464	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11465	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11466	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11467	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
11468	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11469	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
11470	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11471	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
11472	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
11473	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
11474	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11475	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
11476	10	Douglas-fir (*Pseudotsuga menziesii*)	0	Dead	A	Direct conflict with site improvements	0
11477	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	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
11478	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
11479	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
11480	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
11481	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
11482	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
11483	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with public road construction	0
11484	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with public road construction	0
11485	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11486	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with public road construction	0
11487	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with public road construction	0
11488	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
11489	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with public road construction	0
11490	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with public road construction	0
11491	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with public road construction	0
11492	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with public road construction	0
11493	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with public road construction	0
11494	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with public road construction	0
11495	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with public road construction	0
11496	8	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11497	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11498	10	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11499	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11500	9	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11501	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
11502	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
11503	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
11548	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11549	10	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11550	13	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11551	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with public road construction	0
11552	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with public road construction	0
11557	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with public road construction	0
11558	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with public road construction	0
11559	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11560	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11561	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11562	7	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11563	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11564	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11565	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11566	13	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11567	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11568	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with public road construction	0
11569	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with public road construction	0
11570	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with public road construction	0
11571	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Historically failed top; Epicormic leaders	A	Direct conflict with public road construction	0
11572	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11573	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11574	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with 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
11575	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11576	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11577	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with public road construction	0
11578	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with public road construction	0
11579	23	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11580	6	English Hawthorn (*Crataegus monogyna*)	0	OFFSITE; Broken limbs	B	Direct conflict with public road construction	0
11581	21	Douglas-fir (*Pseudotsuga menziesii*)	7		C	Direct conflict with public road construction	0
11582	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11583	22	Douglas-fir (*Pseudotsuga menziesii*)	7		C	Direct conflict with public road construction	0
11584	9	Douglas-fir (*Pseudotsuga menziesii*)	2		C	Direct conflict with public road construction	0
11585	21	Douglas-fir (*Pseudotsuga menziesii*)	7		C	Direct conflict with public road construction	0
11586	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11587	25	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11588	22	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11589	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11590	19	Douglas-fir (*Pseudotsuga menziesii*)	6	LINE TREE; Good condition	C	Direct conflict with public road construction	0
11591	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11592	7	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11593	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with public road construction	0
11594	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with public road construction	0
11595	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11596	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11597	7	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11598	10	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11599	29	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11600	28	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Direct conflict with public road construction	0
11602	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with public road construction	0
11603	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with public road construction	0
11604	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Crooked bole	B	Direct conflict with public road construction	0
11605	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with public road construction	0
11606	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with public road construction	0
11607	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with public road construction	0
11608	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with public road construction	0
11609	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with public road construction	0
11610	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with public road construction	0
11611	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Broken top; In decline	A	Direct conflict with public road construction	0
11612	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with public road construction	0
11613	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Broken top; In decline	A	Direct conflict with public road construction	0
11614	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with public road construction	0
11617	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Direct conflict with public road construction	0
11618	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with public road construction	0
11619	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with public road construction	0
11620	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Significant impacts from site grading	0
11621	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Significant impacts from site grading	0
11622	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Dead; Lean (N)	A	Preserve	2
11623	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Significant impacts from site grading	0
11624	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Significant impacts from site grading	0
11625	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
11626	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3

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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
11627	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Low vigor	B	Preserve	2
11628	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Low vigor	B	Preserve	2
11629	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Low vigor; In decline	A	Preserve	4
11630	15	Douglas-fir (*Pseudotsuga menziesii*)	0	Dead	A	Direct conflict with site improvements	0
11631	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Codominant top with included bark	B	Direct conflict with public road construction	0
11841	12,11,9,7,7	Bigleaf Maple (*Acer macrophyllum*)	7	Clustered base; Small cavities	B	Direct conflict with public road construction	0
11846	20	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
11847	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
11848	20	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
11849	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
11850	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
11855	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Sweep (W)	B	Direct conflict with public road construction	0
11856	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with public road construction	0
11857	26	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
11858	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
11859	20	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
11860	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
11861	14	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
11862	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
11863	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
11864	21	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
11865	7	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
11866	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11867	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Dead top	B	Direct conflict with site improvements	0
11868	10,7,7,7	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with site improvements	0
11869	9,9,9	Bigleaf Maple (*Acer macrophyllum*)	4	Dead codominant stem	B	Direct conflict with site improvements	0
11870	9	Bigleaf Maple (*Acer macrophyllum*)	2	Clustered base with included bark	B	Direct conflict with public road construction	0
11871	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11872	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
11927	9	Bigleaf Maple (*Acer macrophyllum*)	2	Butt sweep (W)	B	Direct conflict with site improvements	0
11928	9	Bigleaf Maple (*Acer macrophyllum*)	2	Butt sweep (W)	B	Direct conflict with site improvements	0
11929	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
11930	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Direct conflict with site improvements	0
11931	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Lean (W)	B	Direct conflict with site improvements	0
11932	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
11933	14,11,11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Cavities in base; Decay	B	Preserve	0
11936	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
11937	6	Willow (*Salix spp.*)	0	OFFSITE; Good condition	C	Preserve	0
11938	8	Pine (*Pinus spp.*)	0	OFFSITE; Good condition	C	Preserve	0
11939	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
11940	10	Pine (*Pinus spp.*)	0	OFFSITE; Good condition	C	Preserve	0
11941	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead branches	B	Preserve	0
11942	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead branches	B	Preserve	0
11943	8	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Preserve	0
11944	17	Western Hemlock (*Tsuga heterophylla*)	0	OFFSITE; Codominant top	B	Significant impacts from site grading	0
11945	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
11946	12	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches; Sweep	B	Preserve	0
11947	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches; Sweep	B	Preserve	0
11948	12	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches; Sweep	B	Preserve	0

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11949	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11950	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Direct conflict with site improvements	0
11951	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11952	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
11953	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Direct conflict with site improvements	0
11954	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11955	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
11956	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
11957	24	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
11958	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead	A	Preserve	0
11959	11	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead	A	Preserve	0
11960	11	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches	B	Preserve	0
11961	11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
11962	7	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
11963	20	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
11964	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
11965	9	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
11966	8	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
11967	11,7	Bigleaf Maple (*Acer macrophyllum*)	3	7" stem dead; Lean (N)	B	Direct conflict with site improvements	0
11969	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
11970	24	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Direct conflict with site improvements	0
11971	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11972	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
11973	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
11974	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Suppressed	B	Direct conflict with site improvements	0
11975	30	Douglas-fir (*Pseudotsuga menziesii*)	11	Good condition	C	Direct conflict with site improvements	0
11976	10	Bigleaf Maple (*Acer macrophyllum*)	2	Lean (S)	B	Direct conflict with site improvements	0
11977	15	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with site improvements	0
11978	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11979	25	Douglas-fir (*Pseudotsuga menziesii*)	9	Good condition	C	Direct conflict with site improvements	0
11980	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11981	24	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Direct conflict with site improvements	0
11982	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11983	28	Douglas-fir (*Pseudotsuga menziesii*)	10	Good condition	C	Direct conflict with site improvements	0
11984	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11985	26	Douglas-fir (*Pseudotsuga menziesii*)	9	Good condition	C	Direct conflict with site improvements	0
11986	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
11987	9	Red Alder (*Alnus rubra*)	2	Good condition	C	Direct conflict with site improvements	0
11988	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
11989	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11990	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11991	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
11992	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
11993	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11994	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
11995	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Significant impacts from site grading	0
11996	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Significant impacts from site grading	0
11997	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
11998	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	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
11999	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Direct conflict with site improvements	0
12078	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Direct conflict with site improvements	0
12079	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Direct conflict with site improvements	0
12080	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Significant impacts from site grading	0
12081	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12082	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
12083	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
12084	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12085	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
12086	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
12087	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
12088	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12089	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Significant impacts from site grading	0
12090	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12091	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12092	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
12093	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12094	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12095	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
12096	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12097	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12098	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12099	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
12100	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12101	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12102	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
12103	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
12104	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12105	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
12106	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12107	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
12108	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
12109	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12110	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
12111	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Preserve	7
12112	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
12113	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12114	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
12115	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12116	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
12117	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
12118	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
12119	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
12120	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
12121	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
12122	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
12123	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
12124	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
12125	29	Douglas-fir (*Pseudotsuga menziesii*)	11	Good condition	C	Preserve	11

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Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
12126	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Preserve	7
12127	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
12128	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
12129	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
12130	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
12131	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Preserve	7
12132	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12133	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
12134	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
12135	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
12136	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Sweep (W)	B	Preserve	3
12137	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
12138	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
12139	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
12140	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
12141	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
12142	24	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Preserve	8
12143	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
12144	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with public road construction	0
12145	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
12146	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
12147	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
12148	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
12149	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
12150	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
12151	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
12152	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
12153	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
12154	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
12155	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
12156	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
12157	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
12158	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
12159	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
12160	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
12161	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
12162	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Sweep (E)	B	Direct conflict with site improvements	0
12163	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
12164	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
12165	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
12166	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
12167	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
12168	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
12169	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
12170	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
12171	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
12243	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
12244	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
12245	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Low vigor	B	Direct conflict with site improvements	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
12246	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
12247	36	Black Cottonwood (*Populus trichocarpa*)	14	Some decay and sluffing bark around root flare	B	Preserve	14
12248	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
12249	18	Douglas-fir (*Pseudotsuga menziesii*)	0	Dead	A	Preserve	0
12250	36	Black Cottonwood (*Populus trichocarpa*)	14	Codominant with included bark; Failed limbs	B	Preserve	14
12251	47	Bigleaf Maple (*Acer macrophyllum*)	20	Cavity in base with decay; Bore holes; Some dead limbs	B	Direct conflict with site grading	0
12298	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Suppressed	B	Direct conflict with site improvements	0
12299	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Crooked bole	B	Direct conflict with site improvements	0
12300	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
12301	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
12302	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Codominant top; Suppressed	B	Direct conflict with site improvements	0
12303	28	Douglas-fir (*Pseudotsuga menziesii*)	10	Good condition	C	Direct conflict with site improvements	0
12304	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Codominant top; Suppressed	B	Direct conflict with site improvements	0
12305	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Codominant top; Suppressed	B	Direct conflict with site improvements	0
12306	24	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Direct conflict with site improvements	0
12307	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
12308	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
12309	34	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
12310	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead limbs	B	Preserve	0
12311	36	Douglas-fir (*Pseudotsuga menziesii*)	14	Good condition	C	Direct conflict with site improvements	0
12312	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
12368	10	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with site improvements	0
12369	16	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with site improvements	0
12370	12	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with site improvements	0
12371	10	Bigleaf Maple (*Acer macrophyllum*)	2	Lean (N)	B	Direct conflict with site improvements	0
12372	10	Douglas-fir (*Pseudotsuga menziesii*)	2	Suppressed	B	Direct conflict with site improvements	0
12373	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
12374	30	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Codominant top	B	Preserve	0
12375	7	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
12376	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
12377	28	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; 2 dead codominant stems; Remaining stem lean (N)	A	Significant impacts from site grading	0
12378	6	English Holly (*Ilex aquifolium*)	0	OFFSITE; Good condition	C	Preserve	0
12379	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
12380	14	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Dead (~30')	A	Preserve	0
12381	28	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
12382	11	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with site improvements	0
12383	20	Bigleaf Maple (*Acer macrophyllum*)	6	Some failed limbs; Low vigor	B	Direct conflict with site improvements	0
12384	28	Douglas-fir (*Pseudotsuga menziesii*)	10	Lean (E); Codominant top	B	Direct conflict with site grading	0
12385	28	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
12386	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
12388	16	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with site grading	0
12389	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site grading	0
12390	34	Douglas-fir (*Pseudotsuga menziesii*)	13	Good condition	C	Direct conflict with site grading	0
12391	39	Douglas-fir (*Pseudotsuga menziesii*)	16	Good condition	C	Direct conflict with site grading	0
12392	34	Douglas-fir (*Pseudotsuga menziesii*)	13	Good condition	C	Direct conflict with site grading	0
12393	8	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site grading	0
12394	22,20,19	Bigleaf Maple (*Acer macrophyllum*)	14	Good condition	C	Direct conflict with site grading	0
12395	16	Bigleaf Maple (*Acer macrophyllum*)	4	Lean (E)	B	Direct conflict with site grading	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
12396	17	Bigleaf Maple (*Acer macrophyllum*)	5	Good condition	C	Direct conflict with site grading	0
12397	19	Bigleaf Maple (*Acer macrophyllum*)	6	Lean (S)	B	Direct conflict with site grading	0
12398	11	Bigleaf Maple (*Acer macrophyllum*)	2	Lean (S); Sparse canopy; In decline	A	Direct conflict with site grading	0
12399	7	Willow (*Salix spp.*)	0	OFFSITE; Dead; Lean (E)	A	Preserve	0
12400	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead (~50'); Sweep (S)	A	Preserve	0
12401	8	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead (~50'); Sweep (S)	A	Preserve	0
12402	8	Red Alder (*Alnus rubra*)	0	OFFSITE; In decline; Dead branches	A	Preserve	0
12403	7	Red Alder (*Alnus rubra*)	0	OFFSITE; In decline; Dead branches; Sweep (S)	A	Preserve	0
12404	9	Red Alder (*Alnus rubra*)	0	OFFSITE; In decline; Dead branches; Sweep (S)	A	Preserve	0
12405	8	Red Alder (*Alnus rubra*)	0	OFFSITE; In decline; Dead branches; Sweep (S)	A	Preserve	0
12406	11	Red Alder (*Alnus rubra*)	0	OFFSITE; In decline; Dead branches; Sweep (W)	A	Preserve	0
12407	8	Red Alder (*Alnus rubra*)	0	OFFSITE; In decline; Dead branches; Sweep (W)	A	Preserve	0
12408	11	Red Alder (*Alnus rubra*)	0	OFFSITE; In decline; Dead branches; Sweep (W)	A	Significant impacts from site grading	0
12409	11	Red Alder (*Alnus rubra*)	0	Dead (~50')	A	Direct conflict with site grading	0
12410	9	Red Alder (*Alnus rubra*)	2	In decline; Low vigor; Dead branches	A	Direct conflict with site grading	0
12411	46	Douglas-fir (*Pseudotsuga menziesii*)	19	Good condition	C	Direct conflict with site grading	0
12412	15	Bigleaf Maple (*Acer macrophyllum*)	4	Butt sweep (W)	B	Direct conflict with site improvements	0
12441	7	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with site grading	0
12442	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Direct conflict with site grading	0
12443	8	Red Alder (*Alnus rubra*)	2	Sparse canopy; Many dead branches; In decline	A	Direct conflict with site grading	0
12444	10	Red Alder (*Alnus rubra*)	2	Sparse canopy; Many dead branches; In decline	A	Direct conflict with site grading	0
12445	8	Red Alder (*Alnus rubra*)	2	Sparse canopy; Many dead branches; In decline	A	Direct conflict with site grading	0
12446	12	Red Alder (*Alnus rubra*)	2	LINE TREE; Sparse canopy; Many dead branches; In decline	A	Direct conflict with site grading	0
12447	11	Red Alder (*Alnus rubra*)	2	Sparse canopy; Many dead branches; In decline	A	Direct conflict with site grading	0
12448	11	Red Alder (*Alnus rubra*)	0	OFFSITE; Sparse canopy; Many dead branches; In decline	A	Preserve	0
12449	12	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (W)	B	Preserve	0
12450	11	Red Alder (*Alnus rubra*)	0	OFFSITE; Sparse canopy; Many dead branches; In decline	A	Preserve	0
12451	11	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (E)	B	Preserve	0
12452	8	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (E)	B	Preserve	0
12453	8	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead (~50'); Sweep (N)	A	Preserve	0
12454	7	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead (~50'); Sweep (N)	A	Preserve	0
12455	8	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches; Sweep (W)	B	Preserve	0
12456	12	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches; Sweep (W)	B	Preserve	0
12457	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches; Sweep (W)	B	Preserve	0
12458	8	English Holly (*Ilex aquifolium*)	0	OFFSITE; Good condition	C	Preserve	0
12459	7	English Holly (*Ilex aquifolium*)	0	OFFSITE; Good condition	C	Preserve	0
12460	10	Red Alder (*Alnus rubra*)	2	Dead branches; Cavity with decay	B	Direct conflict with site grading	0
12461	12	Red Alder (*Alnus rubra*)	2	Dead branches	B	Direct conflict with site grading	0
12462	8	Red Alder (*Alnus rubra*)	2	Dead branches	B	Direct conflict with site grading	0
12463	12	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches	B	Significant impacts from site grading	0
12464	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Many dead branches; In decline	B	Preserve	0
12465	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead; Lean (SW)	A	Preserve	0
12466	12	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches	B	Significant impacts from site grading	0
12467	11	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches	B	Preserve	0
12468	13	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (S)	B	Preserve	0
12469	11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
12470	22	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
12471	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead primary stem; Remaining stems lean (E)	A	Preserve	0
12472	9	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead (~50'); Lean (S)	A	Preserve	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
12473	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead (~10'); Lean (W)	A	Preserve	0
12474	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead (~10'); Lean (S)	A	Preserve	0
12475	7	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Crooked bole	B	Preserve	0
12476	16	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with site grading	0
12477	15	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with site grading	0
12478	10	Bigleaf Maple (*Acer macrophyllum*)	2	Dead limbs; Lean (S)	B	Direct conflict with site grading	0
12479	12	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches; Lea (W)	B	Preserve	0
12480	9	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches; Lea (W)	B	Preserve	0
12481	38	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
12482	22	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
12483	26	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Cavity with decay in base; Dead limbs	B	Significant impacts from site grading	0
12484	20	Western Hemlock (*Tsuga heterophylla*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
12485	31	Douglas-fir (*Pseudotsuga menziesii*)	12	Good condition	C	Direct conflict with site grading	0
12486	36	Douglas-fir (*Pseudotsuga menziesii*)	14	Good condition	C	Direct conflict with site grading	0
12487	26	Douglas-fir (*Pseudotsuga menziesii*)	9	Good condition	C	Direct conflict with site grading	0
12488	11	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with site grading	0
12489	12	Bigleaf Maple (*Acer macrophyllum*)	0	Dead (~30')	A	Direct conflict with site grading	0
12490	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site grading	0
12491	10	Bigleaf Maple (*Acer macrophyllum*)	0	Dead (~30')	A	Direct conflict with site grading	0
12492	20	Bigleaf Maple (*Acer macrophyllum*)	0	Dead (~40')	A	Direct conflict with site improvements	0
12493	13	Bigleaf Maple (*Acer macrophyllum*)	3	Broken codominant stem	B	Direct conflict with site grading	0
12494	10	Bigleaf Maple (*Acer macrophyllum*)	2	Lean (S)	B	Direct conflict with site grading	0
12495	14	Bigleaf Maple (*Acer macrophyllum*)	3	Good condition	C	Direct conflict with site grading	0
12496	39	Douglas-fir (*Pseudotsuga menziesii*)	16	Good condition	C	Direct conflict with site grading	0
12497	36	Douglas-fir (*Pseudotsuga menziesii*)	14	Good condition	C	Direct conflict with site grading	0
12498	30	Bigleaf Maple (*Acer macrophyllum*)	11	Some dead branches	B	Direct conflict with site grading	0
12499	18	Bigleaf Maple (*Acer macrophyllum*)	5	Good condition	C	Direct conflict with site grading	0
12500	13	Bigleaf Maple (*Acer macrophyllum*)	3	Lean (N)	B	Direct conflict with site improvements	0
12501	15	Bigleaf Maple (*Acer macrophyllum*)	4	Lean (N)	B	Direct conflict with site improvements	0
12502	40	Bigleaf Maple (*Acer macrophyllum*)	16	Lean (N); Some dead branches	B	Direct conflict with site grading	0
12503	15	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with site grading	0
12504	11	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with site grading	0
12505	16	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with site grading	0
12535	6	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
12536	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
12537	9	Red Alder (*Alnus rubra*)	0	OFFSITE; Lean (S)	B	Preserve	0
12538	8	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site grading	0
12539	40	Douglas-fir (*Pseudotsuga menziesii*)	16	Good condition	C	Direct conflict with site grading	0
12540	36	Douglas-fir (*Pseudotsuga menziesii*)	14	Good condition	C	Direct conflict with site grading	0
12541	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site grading	0
12542	10	Bigleaf Maple (*Acer macrophyllum*)	2	Lean (S); Dead branches	B	Direct conflict with site grading	0
12543	16	Red Alder (*Alnus rubra*)	0	Dead (~50')	A	Direct conflict with site improvements	0
12544	46	Douglas-fir (*Pseudotsuga menziesii*)	19	Good condition	C	Direct conflict with site grading	0
12545	34	Douglas-fir (*Pseudotsuga menziesii*)	13	Good condition	C	Direct conflict with site grading	0
12546	47	Douglas-fir (*Pseudotsuga menziesii*)	20	Good condition	C	Direct conflict with site grading	0
12547	24	Western Hemlock (*Tsuga heterophylla*)	0	Dead (~120')	A	Direct conflict with site grading	0
12548	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site grading	0
12549	43	Douglas-fir (*Pseudotsuga menziesii*)	18	Good condition	C	Direct conflict with site grading	0
12550	9	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	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
12551	7	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Broken top half	A	Significant impacts from site grading	0
12552	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
12566	22	Bigleaf Maple (*Acer macrophyllum*)	7	Good condition	C	Direct conflict with site grading	0
12567	38	Douglas-fir (*Pseudotsuga menziesii*)	15	Good condition	C	Direct conflict with site improvements	0
12568	22	Bigleaf Maple (*Acer macrophyllum*)	7	LINE TREE; Broken top; Sparse canopy; In decline	A	Direct conflict with access road construction	0
12569	20	Bigleaf Maple (*Acer macrophyllum*)	6	Butt sweep (N)	B	Direct conflict with access road construction	0
12570	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
12571	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Many dead branches; In decline; Sweep (S)	A	Preserve	0
12572	11	Red Alder (*Alnus rubra*)	0	OFFSITE; Many dead branches; In decline; Sweep (S)	A	Preserve	0
12573	11	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead (~50')	A	Preserve	0
12574	11	Red Alder (*Alnus rubra*)	0	OFFSITE; Many dead branches; In decline	A	Direct conflict with access road construction	0
12575	11	Red Alder (*Alnus rubra*)	0	OFFSITE; Many dead branches; In decline	A	Direct conflict with access road construction	0
12576	36	Western Redcedar (*Thuja plicata*)	0	OFFSITE; Good condition	C	Preserve	0
12578	8	Western Redcedar (*Thuja plicata*)	0	OFFSITE; Good condition	C	Preserve	0
12579	36	Western Redcedar (*Thuja plicata*)	0	OFFSITE; Good condition	C	Preserve	0
12580	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead (~20')	A	Direct conflict with site improvements	0
12581	28	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
12582	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
12583	16	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with site improvements	0
12584	17	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (S)	B	Direct conflict with site improvements	0
12585	15	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Large broken limbs; Sparse canopy	B	Direct conflict with site improvements	0
12586	8	English Holly (*Ilex aquifolium*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
12587	11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Lean (S)	B	Direct conflict with site improvements	0
12588	24	Bigleaf Maple (*Acer macrophyllum*)	8	Bulges; Some dead branches	B	Direct conflict with public road construction	0
12589	12	Bigleaf Maple (*Acer macrophyllum*)	2	Butt sweep; Dead branches	B	Direct conflict with public road construction	0
12590	18	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches	B	Direct conflict with site improvements	0
12591	13	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches	B	Significant impacts from site grading	0
12592	19	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches	B	Significant impacts from site grading	0
12593	16	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Lean (S)	B	Preserve	0
12594	16	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead (~50')	A	Direct conflict with site improvements	0
12595	17	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Lean (S)	B	Significant impacts from site grading	0
12644	47	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
12645	17	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
12646	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
12647	24,24,25,26	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead limbs	B	Significant impacts from site grading	0
12651	12	Red Alder (*Alnus rubra*)	2	Low vigor	B	Direct conflict with public road construction	0
12652	13	Bigleaf Maple (*Acer macrophyllum*)	3	Good condition	C	Direct conflict with public road construction	0
12653	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Lean (E); Dead branches	B	Direct conflict with site improvements	0
12654	16	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
12655	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead; Lean (W)	A	Poor condition	0
12656	10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Lean (E)	B	Significant impacts from site grading	0
12657	7	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
12658	13	Bigleaf Maple (*Acer macrophyllum*)	3	Good condition	C	Direct conflict with public road construction	0
12659	12,12	Red Alder (*Alnus rubra*)	0	Dead (~20')	A	Direct conflict with public road construction	0
12746	10	Oregon White Oak (*Quercus garryana*)	2	Good condition	C	Direct conflict with site improvements	0
12747	9	Oregon White Oak (*Quercus garryana*)	2	Good condition	C	Direct conflict with site improvements	0
12748	11	Oregon White Oak (*Quercus garryana*)	2	Good condition	C	Direct conflict with site improvements	0
12749	6	Oregon White Oak (*Quercus garryana*)	2	Good condition	C	Direct conflict with site improvements	0
12750	6	Oregon White Oak (*Quercus garryana*)	2	Good condition	C	Direct conflict with site improvements	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
12751	7	Oregon White Oak (*Quercus garryana*)	2	Good condition	C	Direct conflict with site improvements	0
12752	9	Oregon White Oak (*Quercus garryana*)	2	Good condition	C	Direct conflict with site improvements	0
12753	9	Oregon White Oak (*Quercus garryana*)	2	Lean (W)	B	Direct conflict with site improvements	0
12754	8	Oregon White Oak (*Quercus garryana*)	2	Good condition	C	Preserve	2
12755	9	Oregon White Oak (*Quercus garryana*)	2	Good condition	C	Preserve	2
12756	7	Oregon White Oak (*Quercus garryana*)	2	Good condition	C	Preserve	2
12757	8	Oregon White Oak (*Quercus garryana*)	2	Good condition	C	Preserve	2
12758	9	Oregon White Oak (*Quercus garryana*)	2	Good condition	C	Preserve	2
12780	16	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with site improvements	0
12781	15	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with public road construction	0
12782	11	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
12783	14	Bigleaf Maple (*Acer macrophyllum*)	3	Good condition	C	Direct conflict with public road construction	0
12784	8	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with site improvements	0
12785	24	Western Redcedar (*Thuja plicata*)	8	Dead top; In decline	A	Preserve	8
12786	9	Western Redcedar (*Thuja plicata*)	2	Low vigor	B	Preserve	2
12787	6	Western Redcedar (*Thuja plicata*)	2	Low vigor	B	Preserve	2
12788	10	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Preserve	2
12789	7	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Preserve	2
12790	12	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with site improvements	0
12791	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Epicormic sprouts	B	Direct conflict with public road construction	0
12792	28	Douglas-fir (*Pseudotsuga menziesii*)	10	Good condition	C	Direct conflict with public road construction	0
12793	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with public road construction	0
12794	15	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with public road construction	0
12795	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
12796	6,6,6,6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
12797	7,6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with site improvements	0
12798	6,6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Preserve	2
12799	33	Western Redcedar (*Thuja plicata*)	13	Significant dieback; In decline	A	Preserve	13
12800	32	Western Redcedar (*Thuja plicata*)	12	Dead top half; In decline	A	Preserve	12
12801	9	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Preserve	2
12802	10	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Preserve	2
12803	12	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Preserve	2
12804	13	Bigleaf Maple (*Acer macrophyllum*)	3	Good condition	C	Preserve	3
12805	28	Douglas-fir (*Pseudotsuga menziesii*)	10	Good condition	C	Significant impacts from site grading	0
12806	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with public road construction	0
12807	13	Bigleaf Maple (*Acer macrophyllum*)	3	Good condition	C	Direct conflict with public road construction	0
12808	14	Bigleaf Maple (*Acer macrophyllum*)	3	Good condition	C	Direct conflict with public road construction	0
12809	13,11	Bigleaf Maple (*Acer macrophyllum*)	5	Good condition	C	Direct conflict with site improvements	0
12811	15,13	Bigleaf Maple (*Acer macrophyllum*)	6	Good condition	C	Direct conflict with site improvements	0
12813	14	Bigleaf Maple (*Acer macrophyllum*)	3	Good condition	C	Direct conflict with site improvements	0
12814	7,7,11,6,6,10,7	Bigleaf Maple (*Acer macrophyllum*)	7	Good condition	C	Direct conflict with site improvements	0
12821	18	Bigleaf Maple (*Acer macrophyllum*)	5	Good condition	C	Direct conflict with public road construction	0
12822	8	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with site improvements	0
12823	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
12824	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
12825	16	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with site improvements	0
12826	28	Douglas-fir (*Pseudotsuga menziesii*)	10	Good condition	C	Direct conflict with site improvements	0
12827	6	Willow (*Salix spp.*)	2	Dead top; In decline	A	Direct conflict with site improvements	0
12828	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with 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
12829	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Direct conflict with site improvements	0
12830	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Direct conflict with site improvements	0
12831	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Direct conflict with public road construction	0
12832	13	Oregon Ash (*Fraxinus latifolia*)	3	Good condition	C	Direct conflict with public road construction	0
12833	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Direct conflict with site improvements	0
12834	11	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Direct conflict with site improvements	0
12835	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Direct conflict with site improvements	0
12836	14	Oregon Ash (*Fraxinus latifolia*)	3	Good condition	C	Direct conflict with site improvements	0
12837	7	Sweet Cherry (*Prunus avium*)	2	Good condition	C	Direct conflict with site improvements	0
12838	16,19,17,10	Bigleaf Maple (*Acer macrophyllum*)	12	Low vigor; Dead branches	B	Direct conflict with public road construction	0
12842	16	Oregon Ash (*Fraxinus latifolia*)	4	Good condition	C	Direct conflict with site improvements	0
12843	6	Oregon White Oak (*Quercus garryana*)	2	Good condition	C	Preserve	2
12844	7	Oregon White Oak (*Quercus garryana*)	2	Good condition	C	Preserve	2
12845	10	Oregon White Oak (*Quercus garryana*)	2	Good condition	C	Preserve	2
12846	22,15	Oregon White Oak (*Quercus garryana*)	10	Good condition	C	Preserve	10
12855	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Direct conflict with site improvements	0
12925	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Some epicormic sprouting	B	Direct conflict with site improvements	0
12929	25	Western Hemlock (*Tsuga heterophylla*)	9	Some dieback	B	Direct conflict with public road construction	0
12930	23	Western Redcedar (*Thuja plicata*)	8	Good condition	C	Direct conflict with public road construction	0
12931	6	Douglas-fir (*Pseudotsuga menziesii*)	2	Dead; Lean (N)	A	Direct conflict with public road construction	0
12932	24	Western Redcedar (*Thuja plicata*)	8	Good condition	C	Direct conflict with public road construction	0
12933	24	Douglas-fir (*Pseudotsuga menziesii*)	0	Dead	A	Direct conflict with public road construction	0
12934	26	Bigleaf Maple (*Acer macrophyllum*)	9	Butt sweep (W)	B	Direct conflict with public road construction	0
12935	26	Western Redcedar (*Thuja plicata*)	9	Dead top half; In decline	A	Direct conflict with public road construction	0
12936	12	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
12937	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
12938	7	Sweet Cherry (*Prunus avium*)	2	Good condition	C	Direct conflict with public road construction	0
12939	47	Western Redcedar (*Thuja plicata*)	20	Some dieback in upper canopy	B	Direct conflict with site improvements	0
12940	33	Western Redcedar (*Thuja plicata*)	13	Some dieback in upper canopy	B	Direct conflict with site improvements	0
12941	30	Western Redcedar (*Thuja plicata*)	0	Dead	A	Significant impacts from site grading	0
12942	27	Douglas-fir (*Pseudotsuga menziesii*)	10	Good condition	C	Significant impacts from site grading	0
12943	7	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
12944	8	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
12945	16	Western Redcedar (*Thuja plicata*)	4	Good condition	C	Significant impacts from site grading	0
12946	50	Western Redcedar (*Thuja plicata*)	21	Dieback and yellowing foliage throughout canopy	B	Significant impacts from site grading	0
12947	13	Bigleaf Maple (*Acer macrophyllum*)	3	Lean (S)	B	Preserve	3
12948	22	Western Redcedar (*Thuja plicata*)	7	Dead; Broken at 6'	A	Significant impacts from site grading	0
12949	30	Western Redcedar (*Thuja plicata*)	0	Dead	A	Preserve	0
12950	12	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Preserve	2
12951	30	Western Redcedar (*Thuja plicata*)	11	Significant dieback; Top death; In decline	A	Preserve	11
12952	13	Western Redcedar (*Thuja plicata*)	3	Some dieback	B	Preserve	3
12953	18	Western Redcedar (*Thuja plicata*)	0	Dead	A	Preserve	0
12954	26	Western Redcedar (*Thuja plicata*)	9	Dead top half; In decline	A	Preserve	9
12955	20	Bigleaf Maple (*Acer macrophyllum*)	6	Good condition	C	Preserve	6
12956	14	Bigleaf Maple (*Acer macrophyllum*)	3	Lean (W)	B	Preserve	3
12957	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
12958	24	Western Redcedar (*Thuja plicata*)	8	Good condition	C	Direct conflict with public road construction	0
12959	25	Western Redcedar (*Thuja plicata*)	9	Good condition	C	Direct conflict with public road construction	0
12960	32	Western Redcedar (*Thuja plicata*)	12	Good condition	C	Direct conflict with public road construction	0

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12961	26	Western Redcedar (*Thuja plicata*)	9	Good condition	C	Direct conflict with public road construction	0
12962	12	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Direct conflict with public road construction	0
12963	48	Western Redcedar (*Thuja plicata*)	20	Good condition	C	Direct conflict with public road construction	0
12964	30	Western Redcedar (*Thuja plicata*)	11	Dead top; In decline	A	Direct conflict with public road construction	0
12965	30	Western Redcedar (*Thuja plicata*)	11	Broken top; Decay	A	Direct conflict with public road construction	0
12966	30	Western Redcedar (*Thuja plicata*)	11	Good condition	C	Direct conflict with site improvements	0
12967	28	Western Redcedar (*Thuja plicata*)	10	Top death; Dieback; In decline	A	Preserve	10
12968	16	Oregon Ash (*Fraxinus latifolia*)	4	Tree fallen on top	B	Preserve	4
12969	24	Oregon Ash (*Fraxinus latifolia*)	8	large cavity with decay up bole	A	Preserve	8
12970	25	Oregon Ash (*Fraxinus latifolia*)	9	Failed (NW)	A	Preserve	9
12971	21	Oregon Ash (*Fraxinus latifolia*)	7	Failed codominant stem; Large cavity with decay; In decline	A	Preserve	7
12972	25	Oregon Ash (*Fraxinus latifolia*)	9	Lean (N)	B	Preserve	9
12973	14	Oregon Ash (*Fraxinus latifolia*)	3	Tree fallen on top; Broken codominant stem; Decay	B	Preserve	3
12974	22	English Walnut (*Juglans regia*)	7	Good condition	C	Preserve	7
12975	12	Western Redcedar (*Thuja plicata*)	2	Butt sweep (N)	B	Preserve	2
12976	34	Western Redcedar (*Thuja plicata*)	13	Broken half way up; Significant decay; Epicormic leaders	A	Preserve	13
12977	16	Oregon Ash (*Fraxinus latifolia*)	4	Some broken limbs	B	Preserve	4
12978	16	Western Redcedar (*Thuja plicata*)	4	Broken top; Deacy; New epicormic leaders	A	Preserve	4
12979	26	Western Redcedar (*Thuja plicata*)	9	Good condition	C	Direct conflict with site improvements	0
12980	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Uprooting (W)	A	Significant impacts from site grading	0
12981	12	Western Redcedar (*Thuja plicata*)	2	Some dieback	B	Significant impacts from site grading	0
12982	12	Douglas-fir (*Pseudotsuga menziesii*)	0	Dead	A	Direct conflict with site improvements	0
12983	44	Western Redcedar (*Thuja plicata*)	18	Good condition	C	Direct conflict with site improvements	0
12984	30	Western Redcedar (*Thuja plicata*)	11	Good condition	C	Direct conflict with site improvements	0
12985	42	Western Redcedar (*Thuja plicata*)	17	Good condition	C	Direct conflict with public road construction	0
12986	33	Western Redcedar (*Thuja plicata*)	13	Dead top; in decline	A	Preserve	13
12987	6	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Preserve	2
12988	44	Western Redcedar (*Thuja plicata*)	18	Good condition	C	Preserve	18
12989	10	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Preserve	2
12990	20	Oregon Ash (*Fraxinus latifolia*)	6	Good condition	C	Preserve	6
12991	7	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Preserve	2
12992	32	Bigleaf Maple (*Acer macrophyllum*)	12	Good condition	C	Preserve	12
12993	26	Bigleaf Maple (*Acer macrophyllum*)	9	Good condition	C	Preserve	9
12994	10	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with site improvements	0
12995	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
12996	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
12997	8	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Significant impacts from site grading	0
12998	38	Western Redcedar (*Thuja plicata*)	15	Some dieback	B	Significant impacts from site grading	0
12999	9	Western Hemlock (*Tsuga heterophylla*)	2	Good condition	C	Preserve	2
13000	15	Western Hemlock (*Tsuga heterophylla*)	4	Crooked bole	B	Direct conflict with public road construction	0
13019	36	Western Hemlock (*Tsuga heterophylla*)	14	Good condition	C	Significant impacts from site grading	0
13020	30	Western Hemlock (*Tsuga heterophylla*)	0	Dead	A	Preserve	0
13021	7	Bigleaf Maple (*Acer macrophyllum*)	2	Sweep (E)	B	Direct conflict with public road construction	0
13022	16	Western Redcedar (*Thuja plicata*)	4	Top death; Dieback; In decline	A	Direct conflict with public road construction	0
13023	14	Western Redcedar (*Thuja plicata*)	3	Good condition	C	Direct conflict with public road construction	0
13024	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with public road construction	0
13025	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
13026	17	Western Redcedar (*Thuja plicata*)	5	Good condition	C	Direct conflict with 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
13027	26	Western Hemlock (*Tsuga heterophylla*)	9	Dead; Broken at 20'	A	Direct conflict with public road construction	0
13028	12,14	Bigleaf Maple (*Acer macrophyllum*)	5	Good condition	C	Direct conflict with public road construction	0
13030	7	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
13031	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
13032	16	Western Redcedar (*Thuja plicata*)	4	Good condition	C	Direct conflict with public road construction	0
13033	10	Western Redcedar (*Thuja plicata*)	2	Butt sweep (S)	B	Direct conflict with public road construction	0
13034	35	Western Hemlock (*Tsuga heterophylla*)	0	Dead	A	Preserve	0
13035	18	Western Hemlock (*Tsuga heterophylla*)	5	Dead top; Many dead limbs	A	Significant impacts from site grading	0
13036	7	English Holly (*Ilex aquifolium*)	2	Good condition	C	Preserve	2
13037	8	English Holly (*Ilex aquifolium*)	2	Good condition	C	Preserve	2
13038	14	Oregon Ash (*Fraxinus latifolia*)	3	Broken limbs	B	Preserve	3
13039	17	Oregon Ash (*Fraxinus latifolia*)	5	Broken limbs	B	Preserve	5
13042	11	Western Hemlock (*Tsuga heterophylla*)	2	Good condition	C	Direct conflict with public road construction	0
13043	26	Western Redcedar (*Thuja plicata*)	9	Codominant top; Some dieback	B	Direct conflict with public road construction	0
13044	6	English Holly (*Ilex aquifolium*)	2	Good condition	C	Direct conflict with public road construction	0
13045	8	English Holly (*Ilex aquifolium*)	2	Good condition	C	Direct conflict with public road construction	0
13046	30	Western Hemlock (*Tsuga heterophylla*)	11	Some dieback	B	Direct conflict with public road construction	0
13047	12	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Direct conflict with public road construction	0
13048	23	Western Hemlock (*Tsuga heterophylla*)	8	Good condition	C	Direct conflict with public road construction	0
13049	14	Western Hemlock (*Tsuga heterophylla*)	3	Good condition	C	Direct conflict with public road construction	0
13050	6	English Holly (*Ilex aquifolium*)	2	Good condition	C	Direct conflict with public road construction	0
13051	9	English Holly (*Ilex aquifolium*)	2	Good condition	C	Preserve	2
13052	6	English Holly (*Ilex aquifolium*)	2	Good condition	C	Preserve	2
13053	15	Western Hemlock (*Tsuga heterophylla*)	0	Dead	A	Preserve	0
13054	10	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Direct conflict with public road construction	0
13055	12	English Holly (*Ilex aquifolium*)	2	Lean (S)	B	Preserve	2
13056	9	English Holly (*Ilex aquifolium*)	2	Good condition	C	Preserve	2
13057	6,6	Western Redcedar (*Thuja plicata*)	2	Large cavity with decay	B	Preserve	2
13058	7	English Holly (*Ilex aquifolium*)	2	Good condition	C	Preserve	2
13066	6	English Holly (*Ilex aquifolium*)	2	Good condition	C	Preserve	2
13067	10	English Holly (*Ilex aquifolium*)	2	Good condition	C	Preserve	2
13068	10	English Holly (*Ilex aquifolium*)	2	Good condition	C	Preserve	2
13069	7	English Holly (*Ilex aquifolium*)	2	Good condition	C	Preserve	2
13070	9	English Holly (*Ilex aquifolium*)	2	Dead top; In decline	A	Preserve	2
13071	11	Incense Cedar (*Calocedrus decurrens*)	2	Large cavity with decay	B	Preserve	2
13072	30	Bigleaf Maple (*Acer macrophyllum*)	11	Good condition	C	Direct conflict with public road construction	0
13073	47	Western Redcedar (*Thuja plicata*)	20	Some exposed roots with decay; Significant dieback in upper canopy; In decline	A	Direct conflict with public road construction	0
13074	9	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Preserve	2
13075	13	Western Redcedar (*Thuja plicata*)	3	Dead top; In decline	A	Preserve	3
13076	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Broken top; Sweep (S); Sparse canopy; In decline	A	Preserve	5
13077	13	Oregon Ash (*Fraxinus latifolia*)	3	Broken top; Decay	A	Preserve	3
13078	30	Oregon Ash (*Fraxinus latifolia*)	11	Large dead and broken limbs	B	Preserve	11
13079	22	Oregon Ash (*Fraxinus latifolia*)	7	Good condition	C	Preserve	7
13080	26	Oregon Ash (*Fraxinus latifolia*)	9	Failed limb with decay; Codominant base with included bark	B	Preserve	9
13081	13,20	Oregon Ash (*Fraxinus latifolia*)	8	Good condition	C	Preserve	8
13083	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
13084	16	Oregon Ash (*Fraxinus latifolia*)	4	Good condition	C	Preserve	4

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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
13085	20	Oregon Ash (*Fraxinus latifolia*)	6	Good condition	C	Preserve	6
13087	32	Black Cottonwood (*Populus trichocarpa*)	12	large dead limbs	B	Preserve	12
13088	11	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
13089	12	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
13090	20	Black Cottonwood (*Populus trichocarpa*)	6	Dead and broken limbs	B	Preserve	6
13093	11	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
13094	20	Oregon Ash (*Fraxinus latifolia*)	6	Good condition	C	Preserve	6
13095	22	Oregon Ash (*Fraxinus latifolia*)	7	Good condition	C	Preserve	7
13096	24	Oregon Ash (*Fraxinus latifolia*)	8	Good condition	C	Preserve	8
13097	18	Oregon Ash (*Fraxinus latifolia*)	5	Good condition	C	Preserve	5
13098	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
13099	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
13104	41	Western Redcedar (*Thuja plicata*)	17	Codominant with included bark; Deacy	B	Direct conflict with site improvements	0
13105	10	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Direct conflict with site improvements	0
13106	10	Willow (*Salix spp.*)	2	Good condition	C	Direct conflict with site improvements	0
13107	13	Western Redcedar (*Thuja plicata*)	3	Low vigor	B	Preserve	3
13108	12,10	Western Redcedar (*Thuja plicata*)	4	Low vigor	B	Preserve	4
13110	35	Bigleaf Maple (*Acer macrophyllum*)	14	Good condition	C	Direct conflict with public road construction	0
13111	51	Douglas-fir (*Pseudotsuga menziesii*)	FALSE	Some dead limbs in upper canopy; Some bore holes	B	Direct conflict with site improvements	0
13112	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
13113	18	Western Redcedar (*Thuja plicata*)	0	Dead	A	Direct conflict with site improvements	0
13114	22	Giant Sequoia (*Sequoiadendron giganteum*)	7	Good condition	C	Significant impacts from site grading	0
13116	8	Oak (*Quercus spp.*)	0	OFFSITE; Good condition	C	Preserve	0
13118	12	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
13119	15	Oregon Ash (*Fraxinus latifolia*)	4	Good condition	C	Preserve	4
13120	19	Oregon Ash (*Fraxinus latifolia*)	6	Good condition	C	Preserve	6
13123	13	Oregon Ash (*Fraxinus latifolia*)	3	Good condition	C	Preserve	3
13124	13	Oregon Ash (*Fraxinus latifolia*)	3	Good condition	C	Preserve	3
13125	24	Oregon Ash (*Fraxinus latifolia*)	8	Good condition	C	Preserve	8
13126	11	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
13128	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
13133	7	Oak (*Quercus spp.*)	2	Good condition	C	Preserve	2
13135	7	Oak (*Quercus spp.*)	0	OFFSITE; Good condition	C	Preserve	0
13137	10	Oak (*Quercus spp.*)	0	OFFSITE; Good condition	C	Preserve	0
13143	7	English Hawthorn (*Crataegus monogyna*)	0	Dead	A	Direct conflict with parking lot grading	0
13144	6	English Hawthorn (*Crataegus monogyna*)	0	Dead	A	Direct conflict with parking lot grading	0
13145	25	Ponderosa Pine (*Pinus ponderosa*)	9	Codominant top with included bark	B	Preserve	9
13146	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Direct conflict with parking lot grading	0
13147	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with parking lot grading	0
13148	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with parking lot grading	0
13149	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with parking lot grading	0
13150	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with parking lot grading	0
13151	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Significant impacts from site grading	0
13152	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with parking lot grading	0
13153	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with parking lot grading	0
13154	26	Douglas-fir (*Pseudotsuga menziesii*)	9	Good condition	C	Direct conflict with parking lot grading	0
13155	31	Bigleaf Maple (*Acer macrophyllum*)	12	Good condition	C	Direct conflict with parking lot grading	0
13156	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Significant impacts from site grading	0
13157	20	Western Redcedar (*Thuja plicata*)	6	Some dieback in upper canopy	B	Preserve	6

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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
13158	38	Western Redcedar (*Thuja plicata*)	15	Some dieback in upper canopy	B	Significant impacts from site grading	0
13159	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Significant impacts from site grading	0
13160	15	Western Redcedar (*Thuja plicata*)	0	Dead	A	Preserve	0
13161	7	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
13162	10	Western Redcedar (*Thuja plicata*)	2	Low vigor; Some dieback	B	Preserve	2
13163	22	Oregon Ash (*Fraxinus latifolia*)	7	Good condition	C	Preserve	7
13165	28	Douglas-fir (*Pseudotsuga menziesii*)	10	Good condition	C	Preserve	10
13166	8	Western Redcedar (*Thuja plicata*)	2	Suppressed; Lean (N)	B	Preserve	2
13167	12	Western Redcedar (*Thuja plicata*)	2	Dead top half; In decline	A	Preserve	2
13168	24	Western Redcedar (*Thuja plicata*)	8	Dead top half; In decline	A	Preserve	8
13169	10	Western Redcedar (*Thuja plicata*)	2	Dead top half; In decline	A	Preserve	2
13170	13	Western Redcedar (*Thuja plicata*)	0	Dead	A	Preserve	0
13171	8	Douglas-fir (*Pseudotsuga menziesii*)	2	Some dieback; Broken at very top	B	Preserve	2
13174	10	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Preserve	2
13175	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
13176	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Crooked bole	B	Preserve	2
13177	21	Oregon Ash (*Fraxinus latifolia*)	7	Broken half way up; Significant decay; Epicormic leaders	A	Preserve	7
13182	22	Oregon Ash (*Fraxinus latifolia*)	7	Good condition	C	Preserve	7
13184	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
13185	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Preserve	2
13188	14	Oregon Ash (*Fraxinus latifolia*)	3	Good condition	C	Preserve	3
13189	17	Oregon Ash (*Fraxinus latifolia*)	5	Dead and broken branches	B	Preserve	5
13194	21	Bigleaf Maple (*Acer macrophyllum*)	7	Good condition	C	Preserve	7
13195	30	Western Redcedar (*Thuja plicata*)	11	Broken top half; In decline	A	Preserve	11
13196	12	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Preserve	2
13197	12	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Preserve	2
13198	17	Bigleaf Maple (*Acer macrophyllum*)	5	Good condition	C	Preserve	5
13199	26	Douglas-fir (*Pseudotsuga menziesii*)	9	Sweep (W)	B	Preserve	9
13201	18	Oregon Ash (*Fraxinus latifolia*)	5	Failed (NW)	A	Preserve	5
13202	12	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
13204	13	Oregon Ash (*Fraxinus latifolia*)	3	Good condition	C	Preserve	3
13207	25	Oregon Ash (*Fraxinus latifolia*)	9	Good condition	C	Preserve	9
13212	24	Bigleaf Maple (*Acer macrophyllum*)	8	Codominant base; Broken limbs	B	Preserve	8
13223	13	Western Redcedar (*Thuja plicata*)	0	Dead	A	Preserve	0
13224	37	Western Redcedar (*Thuja plicata*)	15	Dead top half; In decline	A	Preserve	15
13225	7	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Preserve	2
13226	36	Western Redcedar (*Thuja plicata*)	14	Dead top half; In decline	A	Preserve	14
13227	46	Western Redcedar (*Thuja plicata*)	19	Low vigor	B	Preserve	19
13228	41	Western Redcedar (*Thuja plicata*)	17	Some dieback in upper canopy	B	Preserve	17
13229	45	Western Redcedar (*Thuja plicata*)	19	Codominant with included bark; Low vigor	B	Preserve	19
13230	37	Western Redcedar (*Thuja plicata*)	15	Significant dieback; Top death; In decline	A	Poor condition	0
13231	30	Western Redcedar (*Thuja plicata*)	11	Codominant with included bark; Cavity with decay; Low vigor; In decline	A	Poor condition	0
13232	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
13233	30	Douglas-fir (*Pseudotsuga menziesii*)	11	Some epicormic sprouting	B	Direct conflict with parking lot grading	0
13234	20	Western Redcedar (*Thuja plicata*)	6	Good condition	C	Direct conflict with parking lot grading	0
13235	6	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Direct conflict with parking lot grading	0
13236	9	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Direct conflict with parking lot grading	0
13237	13	Western Redcedar (*Thuja plicata*)	3	Good condition	C	Direct conflict with parking lot grading	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
13238	29	Western Redcedar (*Thuja plicata*)	11	Significant dieback; Top death; In decline	A	Preserve	11
13239	39	Western Redcedar (*Thuja plicata*)	16	Good condition	C	Preserve	16
13240	7	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Preserve	2
13241	29	Western Redcedar (*Thuja plicata*)	11	Some sluffing bark; Significant dieback; In decline	A	Preserve	11
13242	25	Western Redcedar (*Thuja plicata*)	9	Codominant with included bark; Decay	B	Preserve	9
13243	25	Western Redcedar (*Thuja plicata*)	0	Dead	A	Preserve	0
13244	35	Western Redcedar (*Thuja plicata*)	14	Significant dieback; Top death; In decline	A	Preserve	14
13245	23	Western Redcedar (*Thuja plicata*)	8	Dead top half; In decline	A	Preserve	8
13246	26	Bigleaf Maple (*Acer macrophyllum*)	9	Large broken limbs	B	Preserve	9
13248	13	Western Redcedar (*Thuja plicata*)	3	Dead top half; In decline	A	Preserve	3
13249	38	Western Redcedar (*Thuja plicata*)	15	Codominant with included bark	B	Preserve	15
13250	11	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Preserve	2
13251	8	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Preserve	2
13252	11	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Preserve	2
13253	11	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Preserve	2
13254	30	Western Redcedar (*Thuja plicata*)	11	Some dieback in upper canopy	B	Preserve	11
13255	41	Western Redcedar (*Thuja plicata*)	17	Some dieback in upper canopy	B	Preserve	17
13256	12	Western Redcedar (*Thuja plicata*)	2	Codominant stems	B	Preserve	2
13257	12	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Preserve	2
13258	18	Western Redcedar (*Thuja plicata*)	0	Dead	A	Preserve	0
13259	26	Western Redcedar (*Thuja plicata*)	9	Significant dieback; Top death; In decline	A	Preserve	9
13260	7	Western Redcedar (*Thuja plicata*)	2	Dead top; In decline	A	Preserve	2
13261	23	Bigleaf Maple (*Acer macrophyllum*)	8	Lean (S); Dead limbs	B	Preserve	8
13273	15	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
13274	6	English Holly (*Ilex aquifolium*)	0	OFFSITE; Good condition	C	Preserve	0
13275	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
13276	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Lean (W); Suppressed	B	Preserve	0
13277	19	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Lean (W)	B	Significant impacts from site grading	0
13278	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches; In decline	A	Preserve	0
13279	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches; In decline	A	Preserve	0
13280	14	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
13281	23	Western Hemlock (*Tsuga heterophylla*)	0	OFFSITE; Dead; Broken at 50'	A	Poor condition	0
13282	8	Western Redcedar (*Thuja plicata*)	0	Dead (~20')	A	Direct conflict with public road construction	0
13283	21	Bigleaf Maple (*Acer macrophyllum*)	7	Good condition	C	Direct conflict with public road construction	0
13284	15	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with public road construction	0
13285	9	Western Redcedar (*Thuja plicata*)	0	Dead (~20')	A	Direct conflict with public road construction	0
13286	26	Douglas-fir (*Pseudotsuga menziesii*)	9	Good condition	C	Direct conflict with public road construction	0
13287	26	Douglas-fir (*Pseudotsuga menziesii*)	9	Good condition	C	Direct conflict with public road construction	0
13288	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
13289	12,10	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with public road construction	0
13290	7	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
13291	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
13292	23	Douglas-fir (*Pseudotsuga menziesii*)	8	Good condition	C	Direct conflict with public road construction	0
13293	32	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
13294	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Suppressed; Dead limbs	B	Preserve	0
13295	22	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Dead (~150')	A	Preserve	0
13296	24	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
13297	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
13298	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with 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
13299	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with public road construction	0
13300	13	Bigleaf Maple (*Acer macrophyllum*)	3	Lean (E)	B	Direct conflict with public road construction	0
13301	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with public road construction	0
13302	13,14	Bigleaf Maple (*Acer macrophyllum*)	6	13" stem lean (E)	B	Direct conflict with public road construction	0
13304	13	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Lean (S)	B	Direct conflict with site improvements	0
13320	23	Bigleaf Maple (*Acer macrophyllum*)	8	Good condition	C	Direct conflict with public road construction	0
13346	25	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
13347	11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
13348	16	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (W)	B	Preserve	0
13349	14	Red Alder (*Alnus rubra*)	3	Dead (~60')	A	Direct conflict with public road construction	0
13350	36	Douglas-fir (*Pseudotsuga menziesii*)	14	Good condition	C	Direct conflict with site improvements	0
13351	24	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead (~50')	A	Direct conflict with site improvements	0
13378	25	Douglas-fir (*Pseudotsuga menziesii*)	9	Dead branches; Low vigor	B	Direct conflict with site improvements	0
13379	22	Western Redcedar (*Thuja plicata*)	0	Dead (~50')	A	Direct conflict with site improvements	0
13380	10	English Holly (*Ilex aquifolium*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
13381	7	English Holly (*Ilex aquifolium*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
13382	6	English Holly (*Ilex aquifolium*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
13383	10	English Holly (*Ilex aquifolium*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
13384	18	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Lean (N)	B	Direct conflict with site improvements	0
13385	20	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Lean (N)	B	Direct conflict with site improvements	0
13386	24	Bigleaf Maple (*Acer macrophyllum*)	8	Broken limbs; Sweep (N)	B	Direct conflict with site improvements	0
13387	30	Douglas-fir (*Pseudotsuga menziesii*)	11	Good condition	C	Direct conflict with site improvements	0
13388	26	Douglas-fir (*Pseudotsuga menziesii*)	9	Low vigor; Many dead branches; IN decline	A	Direct conflict with site improvements	0
13389	24	Douglas-fir (*Pseudotsuga menziesii*)	8	LINE TREE; Low vigor; Dead branches	B	Direct conflict with site improvements	0
13390	32	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
13391	22	Douglas-fir (*Pseudotsuga menziesii*)	7	LINE TREE; Low vigor; Dead branches	B	Direct conflict with site improvements	0
13392	32	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from site grading	0
13393	13	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
13394	13	Bigleaf Maple (*Acer macrophyllum*)	3	Lean (W)	B	Direct conflict with public road construction	0
13395	14	Bigleaf Maple (*Acer macrophyllum*)	3	Broken top; lean (W); In decline	A	Direct conflict with public road construction	0
13396	20	Bigleaf Maple (*Acer macrophyllum*)	6	Broken limbs; Low vigor	B	Direct conflict with public road construction	0
13397	12	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with site improvements	0
13486	30,20,20,18	Bigleaf Maple (*Acer macrophyllum*)	19	Dead primary stem; In decline	A	Direct conflict with public road construction	0
13490	24	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Crooked bole; Some sap flow	B	Significant impacts from site grading	0
13491	15	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
13511	13	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
13512	10	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
13513	10	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
13808	37	Grand Fir (*Abies grandis*)	15	Some dead and broken limbs in upper canopy	B	Direct conflict with public road construction	0
13955	12	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Direct conflict with site improvements	0
13956	34	Western Redcedar (*Thuja plicata*)	13	Codominant top	B	Direct conflict with site improvements	0
13957	7	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Direct conflict with site improvements	0
13959	11,11	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with site improvements	0
13961	16	Bigleaf Maple (*Acer macrophyllum*)	4	Good condition	C	Direct conflict with site improvements	0
13962	6	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Direct conflict with site improvements	0
13963	36	Western Hemlock (*Tsuga heterophylla*)	14	Some large dead limbs	B	Direct conflict with public road construction	0
14007	12	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Direct conflict with public road construction	0
14008	28	European White Birch (*Betula pendula*)	0	Dead	A	Direct conflict with public road construction	0
14009	26	European White Birch (*Betula pendula*)	9	Broken and dead primary stem; Significant decay	A	Direct conflict with 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
14010	32	Bigleaf Maple (*Acer macrophyllum*)	12	Dead top; Large cavity with decay in base; In decline	A	Poor condition	0
14011	34	Bigleaf Maple (*Acer macrophyllum*)	13	Root rot extending up base; Large cavities with decay; Dead top	A	Poor condition	0
14012	24	European White Birch (*Betula pendula*)	0	Dead (~20')	A	Direct conflict with public road construction	0
14013	25	Douglas-fir (*Pseudotsuga menziesii*)	9	Good condition	C	Direct conflict with public road construction	0
14014	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Some large dead limbs	B	Direct conflict with public road construction	0
14015	8	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
14016	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with public road construction	0
14068	8	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Preserve	2
14069	8	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Preserve	2
14070	8	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Preserve	2
14071	12	Willow (*Salix spp.*)	2	Good condition	C	Significant impacts from site grading	0
14072	8	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Direct conflict with site improvements	0
14073	8	Western Redcedar (*Thuja plicata*)	2	Good condition	C	Direct conflict with site improvements	0
14074	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
14078	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
14079	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
14080	13,12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
14103	6	Bigleaf Maple (*Acer macrophyllum*)	2	Good condition	C	Direct conflict with site improvements	0
14153	28	Black Locust (*Robinia pseudoacacia*)	0	OFFSITE; Some dead branches	B	Preserve	0
14448	33	Black Locust (*Robinia pseudoacacia*)	0	OFFSITE; Good condition	C	Preserve	0
14454	24	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	0
14660	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Topped for overhead wires; Decay	A	Preserve	0
14687	32	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Codominant with included bark	B	Preserve	0
14692	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
14693	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
14744	10	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
14923	27	Douglas-fir (*Pseudotsuga menziesii*)	10	Good condition	C	Significant impacts from site grading	0
14924	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
14925	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Preserve	7
14927	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
14928	30	Western Redcedar (*Thuja plicata*)	11	Split codominant stem down entire bole	A	Direct conflict with parking lot grading	0
14929	18	Western Redcedar (*Thuja plicata*)	0	Dead	A	Poor condition	0
14930	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
14931	15	Western Redcedar (*Thuja plicata*)	0	Dead	A	Poor condition	0
14932	16	Western Redcedar (*Thuja plicata*)	4	Dead top half; In decline	A	Poor condition	0
14933	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
14934	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Significant impacts from site grading	0
14935	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with parking lot grading	0
14936	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with parking lot grading	0
14937	30	Douglas-fir (*Pseudotsuga menziesii*)	11	Good condition	C	Direct conflict with parking lot grading	0
14938	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Direct conflict with parking lot grading	0
14939	16	Western Redcedar (*Thuja plicata*)	4	Good condition	C	Direct conflict with parking lot grading	0
14940	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
14941	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
14942	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
14943	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Sweep (W)	B	Significant impacts from site grading	0
14944	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Top death; Dieback; In decline	A	Significant impacts from site grading	0
14945	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	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
15062	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
15063	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Direct conflict with site improvements	0
15064	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
15065	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
15066	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Dead top half; In decline	A	Direct conflict with site improvements	0
15067	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
15068	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Direct conflict with site improvements	0
15069	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Direct conflict with site improvements	0
15070	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Direct conflict with site improvements	0
15071	11	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
15072	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
15073	12	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
15074	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Direct conflict with site improvements	0
15075	9	Douglas-fir (*Pseudotsuga menziesii*)	2	Good condition	C	Direct conflict with site improvements	0
15545	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15546	11	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15547	11	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15548	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15549	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15550	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15551	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15552	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15553	13	Oregon Ash (*Fraxinus latifolia*)	3	Good condition	C	Preserve	3
15554	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15556	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15557	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15558	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15559	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15560	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15561	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15562	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15563	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15564	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15565	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15566	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15567	11	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15568	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15569	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15570	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15571	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15573	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15574	11	Oregon Ash (*Fraxinus latifolia*)	2	LINE TREE; Good condition	C	Preserve	2
15575	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15576	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15577	11	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15578	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15579	17	Oregon Ash (*Fraxinus latifolia*)	5	Good condition	C	Preserve	5
15580	14	Oregon Ash (*Fraxinus latifolia*)	3	Good condition	C	Preserve	3
15581	8	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	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
15582	9	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	0
15583	17	Oregon Ash (*Fraxinus latifolia*)	5	Good condition	C	Preserve	5
15584	11	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15588	16	Oregon Ash (*Fraxinus latifolia*)	4	Good condition	C	Preserve	4
15589	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15590	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15592	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15593	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15594	11	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15595	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15596	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15597	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15598	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15599	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15600	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15601	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15602	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15603	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15604	11,9	Oregon Ash (*Fraxinus latifolia*)	3	Good condition	C	Preserve	3
15605	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15606	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15607	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15608	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15609	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15610	11	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15615	12	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15616	11	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15617	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15618	12	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15619	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15620	11	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15621	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15622	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15623	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15624	11	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15625	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15626	13	Oregon Ash (*Fraxinus latifolia*)	3	Good condition	C	Preserve	3
15627	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15628	12	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15630	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15631	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15632	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15639	11	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	0
15640	10	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	0
15641	10	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	0
15642	6	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	0
15643	9,8,8,6	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	0
15644	8	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	0
15645	6	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	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
15647	8	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	0
15648	8	Oregon Ash (*Fraxinus latifolia*)	2	LINE TREE; Good condition	C	Preserve	2
15649	12	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	0
15689	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15690	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15691	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15692	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15693	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15694	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15695	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15696	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15697	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15698	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15699	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15700	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15701	12	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15702	12	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15703	12	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15704	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15705	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15706	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15707	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15708	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15709	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15710	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15711	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15712	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15713	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15714	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15715	13	Oregon Ash (*Fraxinus latifolia*)	3	Good condition	C	Preserve	3
15716	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15717	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15718	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15719	10	Oregon Ash (*Fraxinus latifolia*)	2	Broken top half; In decline	A	Preserve	2
15720	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15721	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15728	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15729	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15730	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15731	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15732	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15733	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15734	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15735	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15736	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15737	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15738	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15739	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15740	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2

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Tree #	DBH (in.)	Tree Species Common Name (*Scientific name*)	Tree Units Initial	Condition/Comments	Windthrow Rating	Reason for Removal	Tree Units Retained
15741	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15742	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15743	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15744	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15745	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15746	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15747	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15748	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15749	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15750	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15751	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15752	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15753	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15754	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15755	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15756	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15757	7	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15771	6,6,6,6	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	0
15772	7	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	0
15773	13	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	0
15774	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15775	6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15776	13	Oregon Ash (*Fraxinus latifolia*)	3	Good condition	C	Preserve	3
15777	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15778	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15779	11	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15780	13	Oregon Ash (*Fraxinus latifolia*)	3	Good condition	C	Preserve	3
15781	13	Oregon Ash (*Fraxinus latifolia*)	3	Good condition	C	Preserve	3
15782	10	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15783	9	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15784	14	Oregon Ash (*Fraxinus latifolia*)	3	Good condition	C	Preserve	3
15787	8,6	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15788	8,7	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Preserve	0
15800	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15801	8	Oregon Ash (*Fraxinus latifolia*)	2	Good condition	C	Preserve	2
15823	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
15824	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15825	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15826	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
15827	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
15828	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15829	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15830	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
15831	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15832	14	Red Alder (*Alnus rubra*)	3	Good condition	C	Preserve	3
15833	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
15834	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15835	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
15836	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Preserve	7

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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
15837	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
15838	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
15839	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15840	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15841	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Preserve	7
15842	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
15843	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
15844	13	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
15845	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
15846	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
15847	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15848	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
15849	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
15850	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
15851	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15852	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15853	19	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
15854	22	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Preserve	7
15855	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15856	16	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
15857	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15858	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
15859	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15860	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15861	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15862	21	Douglas-fir (*Pseudotsuga menziesii*)	7	Good condition	C	Preserve	7
15863	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
15864	20	Douglas-fir (*Pseudotsuga menziesii*)	6	Good condition	C	Preserve	6
15865	18	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15866	13	Red Alder (*Alnus rubra*)	3	Sluffing bark; In decline	A	Preserve	3
15873	15	Douglas-fir (*Pseudotsuga menziesii*)	4	Good condition	C	Preserve	4
15874	17	Douglas-fir (*Pseudotsuga menziesii*)	5	Good condition	C	Preserve	5
15875	14	Douglas-fir (*Pseudotsuga menziesii*)	3	Good condition	C	Preserve	3
15877	9	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
15878	6	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
15879	13	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead branches; Sweep (E)	B	Preserve	0
15880	7	Western Hemlock (*Tsuga heterophylla*)	0	OFFSITE; Good condition	C	Preserve	0
15881	19	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Preserve	0
15882	13	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (S)	B	Direct conflict with access road construction	0
15883	17	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (S)	B	Direct conflict with access road construction	0
15884	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead branches; Sweep (E)	A	Direct conflict with access road construction	0
15885	8	Red Alder (*Alnus rubra*)	0	OFFSITE; Very sparse canopy; Lean (S); In decline	A	Direct conflict with access road construction	0
15886	13	Red Alder (*Alnus rubra*)	0	OFFSITE; Lean (S)	B	Direct conflict with access road construction	0
15887	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Very sparse canopy; Lean (S); In decline	A	Direct conflict with access road construction	0
15888	11	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
15889	15	Red Alder (*Alnus rubra*)	0	OFFSITE; Very sparse canopy; In decline	A	Direct conflict with access road construction	0
15890	8	Red Alder (*Alnus rubra*)	0	OFFSITE; Very sparse canopy; In decline	A	Significant impacts from access road grading	0
15891	13	Red Alder (*Alnus rubra*)	0	OFFSITE; Lean (S); Cavity with decay	B	Significant impacts from access road grading	0
15892	12	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (S)	B	Direct conflict with access 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
15893	17	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (S)	B	Preserve	0
15894	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Sparse canopy; Sweep (S); In decline	A	Preserve	0
15895	12	Red Alder (*Alnus rubra*)	0	OFFSITE; Sparse canopy; Sweep (S)	B	Preserve	0
15896	9	Red Alder (*Alnus rubra*)	0	OFFSITE; Sparse canopy; In decline	A	Preserve	0
15897	10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Broken and dead limbs	B	Preserve	0
15898	12 7	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Broken and dead limbs	B	Preserve	0
15899	8	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
15900	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (S)	B	Direct conflict with access road construction	0
15912	13	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (S)	B	Preserve	0
15913	16	Sweet Cherry (*Prunus avium*)	0	OFFSITE; Uprooting (S)	A	Preserve	0
15914	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
15915	11	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Preserve	0
15916	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
15917	28	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
15918	15	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
15919	23	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
15920	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
15921	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Tree fallen on top; Lean (S)	A	Direct conflict with access road construction	0
15922	16	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
15923	14	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
15924	24	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
15925	8	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
15926	36	Black Cottonwood (*Populus trichocarpa*)	0	OFFSITE; Good condition	C	Preserve	0
15927	11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
15928	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Lean (S)	B	Preserve	0
15929	13	Red Alder (*Alnus rubra*)	0	OFFSITE; Some dead branches; Sweep (S)	B	Significant impacts from access road grading	0
15930	8	Red Alder (*Alnus rubra*)	0	OFFSITE; Some dead branches; Sweep (S)	B	Direct conflict with access road construction	0
15931	11	Red Alder (*Alnus rubra*)	0	OFFSITE; Some dead branches; Sweep (S)	B	Direct conflict with access road construction	0
15932	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Broken top half	A	Direct conflict with access road construction	0
15933	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
15934	9	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Dead top; In decline	A	Significant impacts from access road grading	0
15935	13	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
15936	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
15937	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Sweep (N)	B	Preserve	0
15938	14	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
15939	36	Black Cottonwood (*Populus trichocarpa*)	0	OFFSITE; Low vigor; Some dead limbs	B	Preserve	0
15940	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
15941	21	Black Cottonwood (*Populus trichocarpa*)	0	OFFSITE; Good condition	C	Preserve	0
15942	17	Sweet Cherry (*Prunus avium*)	0	OFFSITE; Crooked bole; Low vigor	B	Preserve	0
15943	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead	A	Preserve	0
15944	10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
15945	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead	C	Preserve	0
15946	13	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
15947	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead	A	Preserve	0
15948	14	Black Cottonwood (*Populus trichocarpa*)	0	OFFSITE; Good condition	C	Preserve	0
15949	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead	A	Preserve	0
15950	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead limbs	B	Preserve	0
15951	9	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
15952	9	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Direct conflict with access 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
15953	11 11	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (S); Dead branches	B	Direct conflict with access road construction	0
15954	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
15955	13	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
15956	8	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Preserve	0
15957	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Preserve	0
15958	11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Cavity in base with decay	B	Preserve	0
15959	15	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Preserve	0
15961	14 7	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; 7" stem dead	A	Significant impacts from access road grading	0
15962	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (S)	B	Direct conflict with access road construction	0
15963	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (N)	B	Direct conflict with access road construction	0
15964	13	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (N)	B	Direct conflict with access road construction	0
15965	11	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (N)	B	Significant impacts from access road grading	0
15966	12,13,12,11,6,6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Large cavity in base with decay; Many dead limbs; In decline	A	Significant impacts from access road grading	0
15969	13	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Preserve	0
15970	12	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Preserve	0
15971	13	Red Alder (*Alnus rubra*)	0	OFFSITE; Sparse canopy; Dead branches	B	Preserve	0
15972	32	Black Cottonwood (*Populus trichocarpa*)	0	OFFSITE; Good condition	C	Preserve	0
15973	11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead	A	Preserve	0
15974	10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead	A	Preserve	0
15975	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead	A	Preserve	0
15976	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
15977	21	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
15978	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
15979	12	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Preserve	0
15980	16	Sweet Cherry (*Prunus avium*)	0	OFFSITE; Good condition	C	Preserve	0
15981	13	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Preserve	0
15982	10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Lean (W)	B	Preserve	0
15983	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead	A	Preserve	0
15984	10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Crooked bole	B	Preserve	0
15985	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Crooked bole	B	Preserve	0
15986	16 16 10 11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
15987	19 14	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Some dead limbs	B	Preserve	0
15988	8,7,6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Many dead limbs; In decline	A	Preserve	0
15991	23	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
15993	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
15994	20	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
15995	20	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
15996	10	Red Alder (*Alnus rubra*)	0	OFFSITE; Very sparse canopy; In decline	A	Significant impacts from access road grading	0
15997	12	Red Alder (*Alnus rubra*)	0	OFFSITE; Good condition	C	Preserve	0
15998	8	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (E)	B	Significant impacts from access road grading	0
15999	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Half dead; In decline	A	Direct conflict with access road construction	0
16000	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16001	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16002	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16003	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16004	13	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with site improvements	0
16005	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
16006	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access 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
16007	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Broken top; In decline	A	Direct conflict with access road construction	0
16008	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Broken top; In decline	A	Direct conflict with access road construction	0
16009	23	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16010	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16011	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16012	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16013	26	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16014	6,6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead; Lean (S)	A	Preserve	0
16015	14 10 10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Codominant base with included bark; Dead limbs	B	Preserve	0
16016	13	Red Alder (*Alnus rubra*)	0	OFFSITE; Sweep (N)	B	Preserve	0
16017	12	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead (~30')	A	Preserve	0
16018	23	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16019	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16020	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Lean (S)	B	Preserve	0
16021	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16022	25	Black Cottonwood (*Populus trichocarpa*)	0	OFFSITE; Good condition	C	Preserve	0
16023	7	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead	A	Preserve	0
16024	13	Red Alder (*Alnus rubra*)	0	OFFSITE; Dead top; In decline	A	Significant impacts from access road grading	0
16025	11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16026	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
16027	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16028	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16029	13	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16030	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16031	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16032	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16033	14	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16034	10	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16035	14	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16036	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16037	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16053	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16054	28	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16055	10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead	A	Direct conflict with access road construction	0
16056	7,8,8,8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead	A	Preserve	0
16060	11	Sweet Cherry (*Prunus avium*)	0	OFFSITE; Failing (N)	A	Preserve	0
16061	16	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16062	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead	A	Preserve	0
16063	14	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16064	23	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16065	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16066	22	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16067	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16068	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Slight lean (N); Good condition	C	Preserve	0
16069	21	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16070	15	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Bulges at base; Dead branches	B	Preserve	0
16071	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16072	10 9 10 7 9 8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16073	13	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0

Detailed Tree Inventory for Village at North Shore

AKS Job No. 9095 - Evaluation Date: 02/12/2025 - 03/14/2025 - 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
16074	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
16075	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Lean (S)	B	Significant impacts from access road grading	0
16076	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
16077	11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16078	14	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16079	14	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16080	7	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Low vigor	B	Significant impacts from access road grading	0
16086	34,12,13,12,10,10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16087	9,8,7,9,10,10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Cavities with decay; Dead codominant stems; Failed codominant stem leaving large cavity	A	Preserve	0
16092	14	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16093	23	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16094	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16095	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16096	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16097	20	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16098	22	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16099	20	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16100	14,11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Many dead limbs; Dead top; Sluffing bark; In decline	A	Preserve	0
16102	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16103	9,11,12,9,10,12,8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Clustered base; Some dead leaders; Broken limbs	B	Preserve	0
16109	22	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16110	12,10,9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16113	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16114	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16115	6,6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead limbs	B	Significant impacts from access road grading	0
16117	13	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16118	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16119	10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead and broken top; In decline	A	Preserve	0
16120	13	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16121	9	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16122	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16123	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16126	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Dead (~100')	A	Direct conflict with access road construction	0
16127	11	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16133	13	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
16135	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
16136	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16137	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16164	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16165	10	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16166	13	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Epicormic sprouting; Low vigor	B	Preserve	0
16167	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16168	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Dead (~20')	A	Preserve	0
16169	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16170	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0

Detailed Tree Inventory for Village at North Shore

AKS Job No. 9095 - Evaluation Date: 02/12/2025 - 03/14/2025 - 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
16171	21	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16172	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16173	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16174	6	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Suppressed	B	Preserve	0
16175	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead; Lean (N)	A	Preserve	0
16176	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16177	14	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16178	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
16179	13	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
16180	9	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16181	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Dead top; In decline	A	Preserve	0
16182	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16183	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Dead limbs; Low vigor; In decline	A	Preserve	0
16184	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Dead limbs; Low vigor; In decline	A	Preserve	0
16185	16	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16186	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Lean (S)	B	Preserve	0
16187	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16188	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16189	6	Oregon Ash (*Fraxinus latifolia*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16190	22	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Some dead branches; Low vigor	B	Direct conflict with access road construction	0
16191	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16192	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Epicormic sprouting; Low vigor	B	Direct conflict with access road construction	0
16193	10,10,10,10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Low vigor	B	Direct conflict with access road construction	0
16197	7	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16198	19	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Low vigor; Dead limbs; In decline	A	Preserve	0
16199	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16200	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16201	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16202	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16232	10	Sweet Cherry (*Prunus avium*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16233	20	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Dead	A	Significant impacts from access road grading	0
16234	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
16235	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
16236	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16237	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16238	7	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Low vigor	B	Direct conflict with access road construction	0
16239	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
16240	8 12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; 100% ivy coverage; Lean (S)	B	Significant impacts from access road grading	0
16241	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16242	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16243	7	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
16244	9	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16245	22	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16246	8	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16247	14	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16248	14	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16249	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16250	22	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Many broken limbs	B	Preserve	0
16251	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	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
16271	23	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16272	9	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16273	10	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16274	10	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Dead	A	Preserve	0
16275	7	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16276	6	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16277	9	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16278	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16279	9	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16280	9	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16281	7	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16282	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16283	7	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16284	10	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16285	7	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16286	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16287	6	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16288	7	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16289	10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16290	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16291	17	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16292	26	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Codominant top	B	Preserve	0
16293	6 7	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16294	6 6 6 7 8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16295	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16296	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16297	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16298	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16299	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16300	15	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Dead top; In decline	A	Preserve	0
16301	12	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Dead top; In decline	A	Preserve	0
16302	16,14,12,12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16321	21	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Preserve	0
16559	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16560	8	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16561	12	Pacific Madrone (*Arbutus menziesii*)	0	OFFSITE; Lean (W)	B	Direct conflict with access road construction	0
16562	18	Lodgepole Pine (*Pinus contorta*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16563	23,9,14	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16566	19	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16567	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16568	18	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16569	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Some dead branches; Low vigor	B	Direct conflict with access road construction	0
16570	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Some dead branches; Low vigor	B	Direct conflict with access road construction	0
16571	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Sweep (E)	B	Direct conflict with access road construction	0
16572	9	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16573	13,10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16575	23	Black Cottonwood (*Populus trichocarpa*)	0	OFFSITE; Dead (~60')	A	Direct conflict with access road construction	0
16576	6,6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
16578	11	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	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
16589	10	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Some dead branches	B	Preserve	0
16590	13	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16591	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16592	12	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16593	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Preserve	0
16594	6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Large scar at base; Good condition	C	Preserve	0
16676	6 6	Bigleaf Maple (*Acer macrophyllum*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
16677	42	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Significant impacts from access road grading	0
16678	3	Pacific Madrone (*Arbutus menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16679	6	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16680	7	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16681	6	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0
16682	7	Douglas-fir (*Pseudotsuga menziesii*)	0	OFFSITE; Good condition	C	Direct conflict with access road construction	0

Total # of Existing Trees Inventoried = 1669

Net Site Area = 23.60

Total # of Existing Onsite Trees = 1104
- **Total Onsite Existing Tree Units = 5023**
- **Total # of Onsite Trees Retained = 558**
- **Total # of Tree Units Retained = 2236**

Minimum Tree Units Required per City Code = 708
- *(23.60 acres * 30 trees/acre)*
- **Minimum # Trees to Replant = -1764**

Total # of Existing Trees Removed = 764
- **Total Existing Onsite Tree Units Removed = 2787**

Windthrow Rating

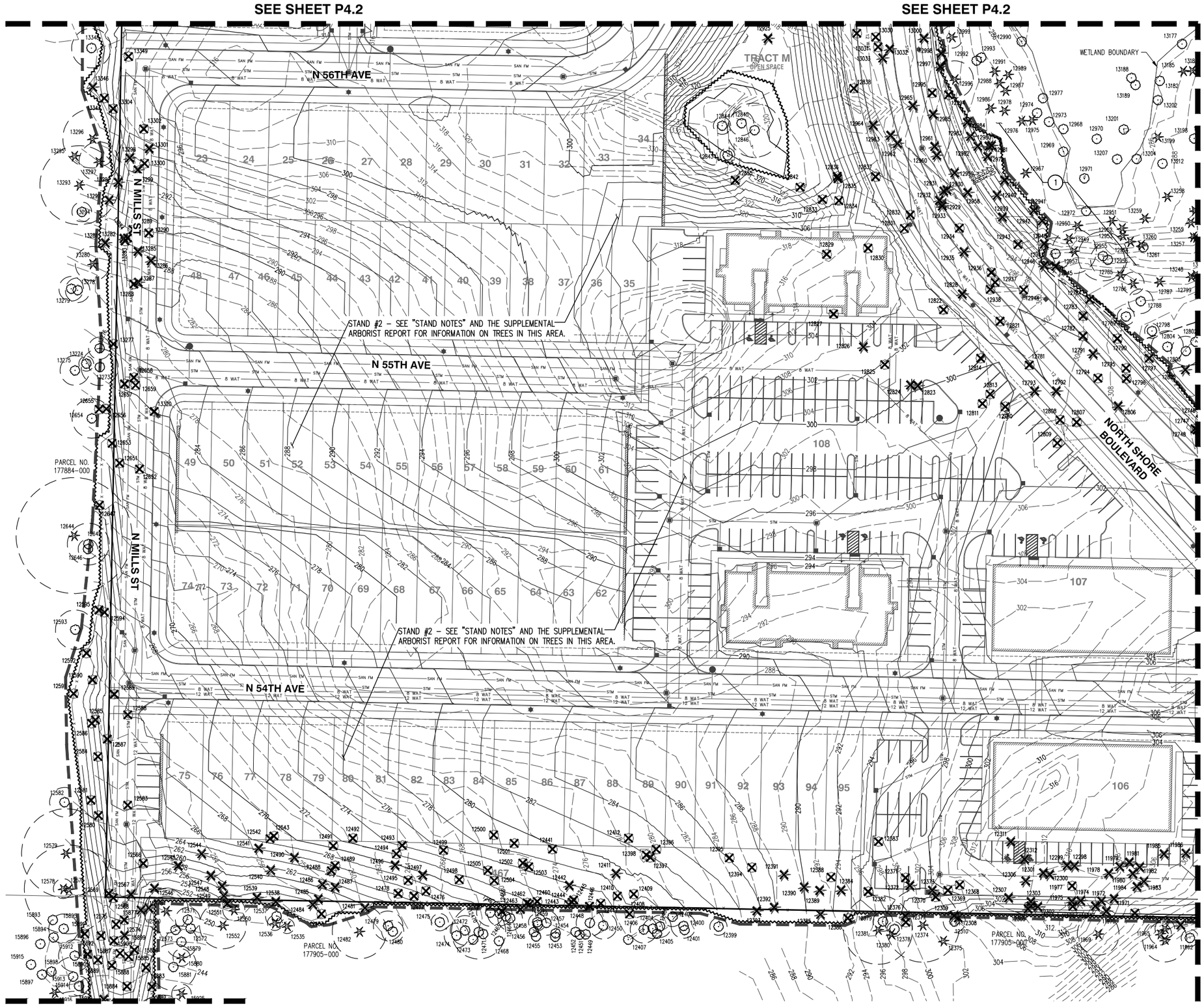
A=Least windthrow resistant
B=Moderate windthrow resistant
C=Most windthrow resistant

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

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NOTE: OFF-SITE TREES PROPOSED FOR REMOVAL ON PARCEL 177884-00 TO BE REMOVED UNDER THE CONSTRUCTION EASEMENT TO BE RECORDED.

TREE PROTECTION KEYED NOTES:

(1) TREES TO BE REEVALUATED DURING FINAL ENGINEERING. TREES REMOVED FOR HAZARD ABATEMENT SHALL BE FELLED AND RETAINED WITHIN THE CRITICAL AREA BUFFER.

TREE PLAN

SITE AREA:	±36.04 AC
SITE AREA EXCLUDING OPEN SPACE:	23.60 AC
TOTAL TREE UNITS REQUIRED (23.60 AC X 30):	708
EXISTING TREES RETAINED/(TREE UNITS):	558/(2236)
PROPOSED SITE TREES/(TREE UNITS):	322/(322)
TOTAL TREE UNITS: (RETAINED AND PROPOSED)	2,558

NOTE: SEE LANDSCAPE PLAN (P11.0–P11.3) 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 P4.12.
2. SEE PROJECT SUPPLEMENTAL ARBORIST REPORT FOR THE DETAILED TREE INVENTORY (DATED JULY 2025).
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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.

STAND #1
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N

SCALE: 1"=40 FEET

40 0 8 20 40

ORIGINAL PAGE SIZE: 22" x 34"

PRELIMINARY NOT FOR CONSTRUCTION

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CERTIFICATE NUMBER: PH 8877A
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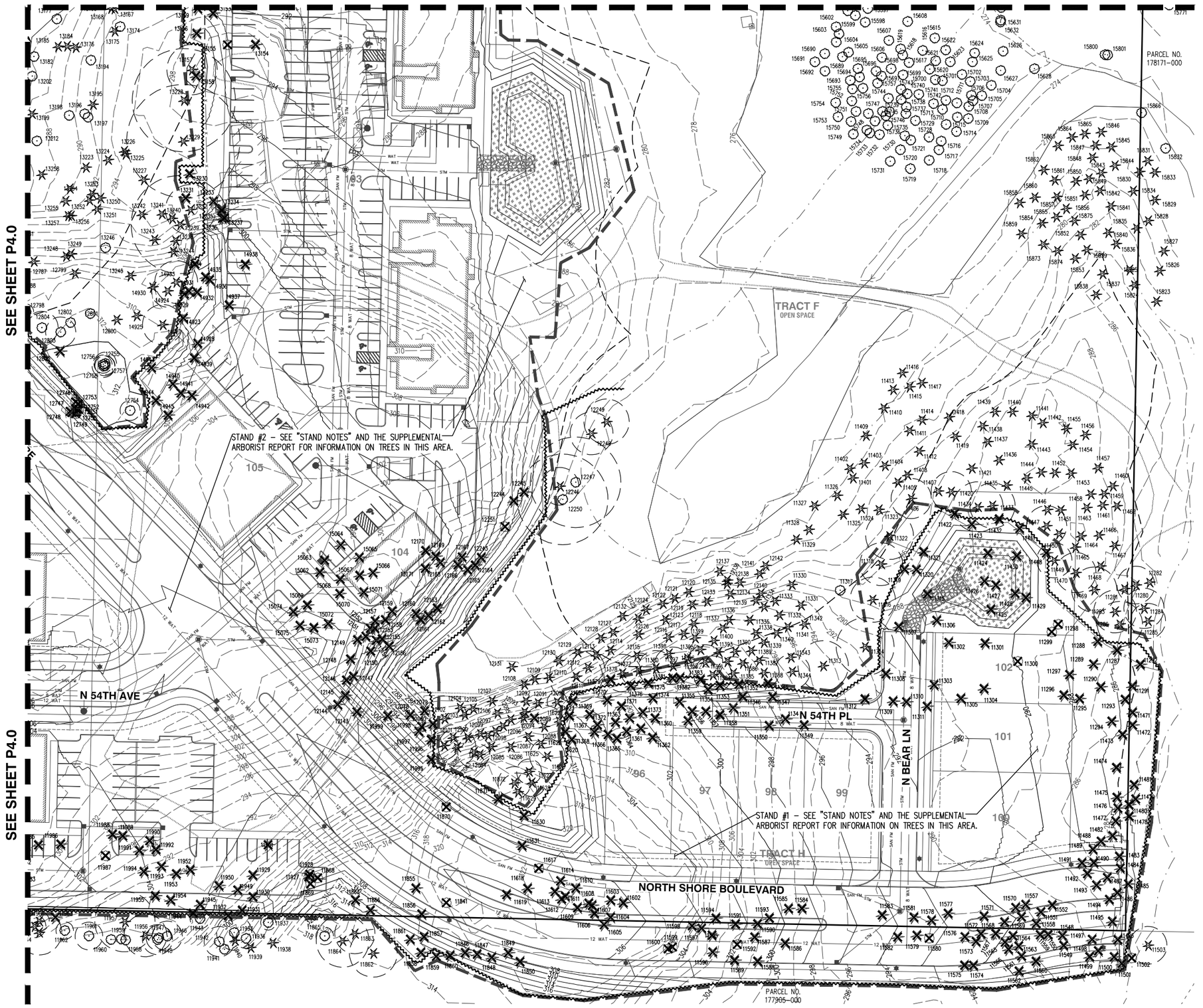
PRELIMINARY TREE PRESERVATION & REMOVAL PLAN OVERVIEW
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

BRUCE D. HANNA — STATE OF WASHINGTON — 17079 — REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	9095
DATE:	7/22/2025
DESIGNED BY:	BRK
DRAWN BY:	BRK
CHECKED BY:	BDH

P4 763

AKS DRAWING FILE: 9095 PLO TREE.DWG | LAYOUT: P4.0



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PRELIMINARY TREE PRESERVATION & REMOVAL PLAN

VILLAGE AT NORTH SHORE

HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

BRUCE D. HANAN — STATE OF WASHINGTON — PRELIMINARY NOT FOR CONSTRUCTION — 21079 — REGISTERED PROFESSIONAL ENGINEER

JOB NUMBER:	9095
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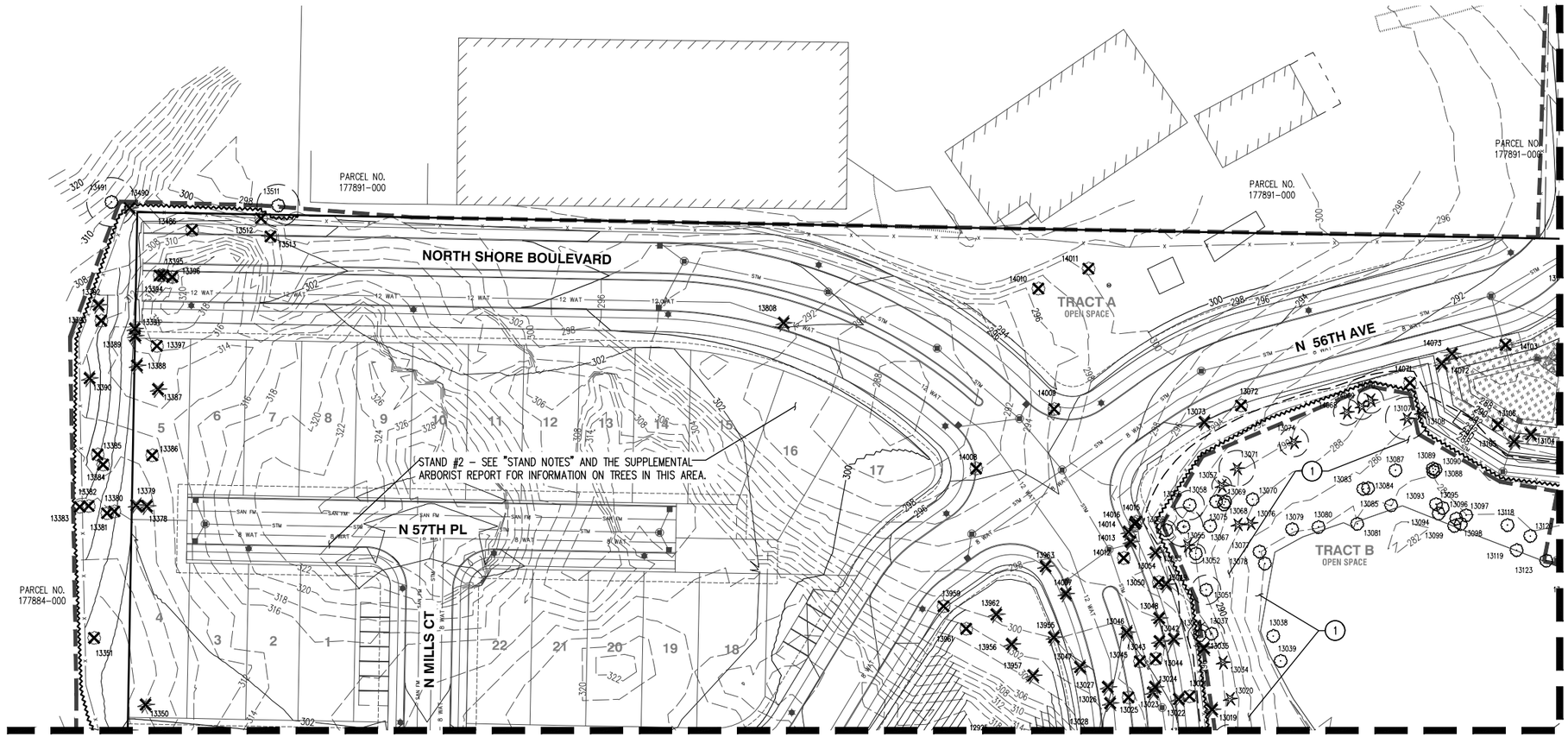
DESIGNED BY:	BRK
DRAWN BY:	BRK
CHECKED BY:	BDH

AKS DRAWING FILE: 9095 PLO TREE.DWG | LAYOUT: P4.1



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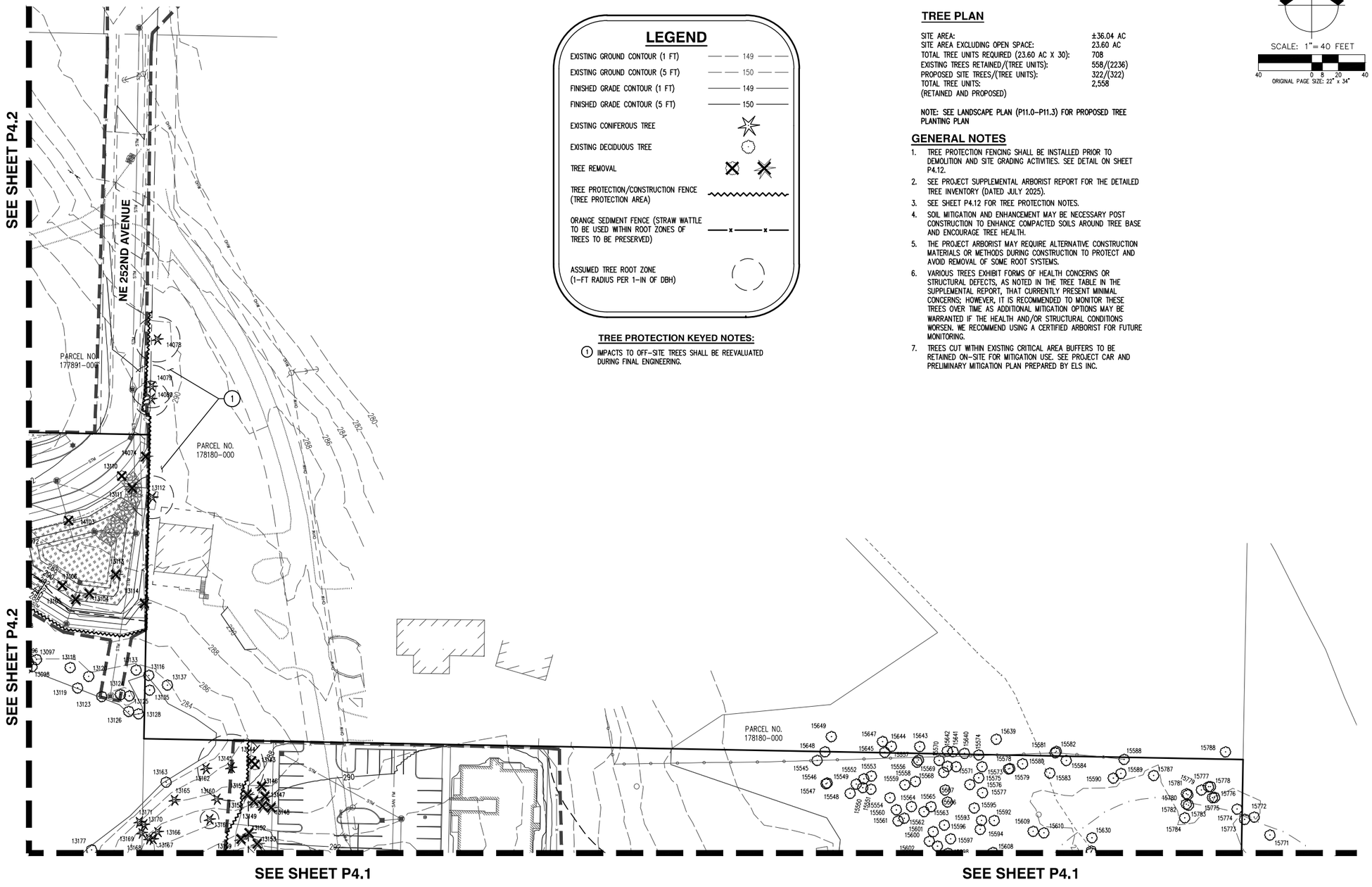
BRYCE D. HANNAH
STATE OF WASHINGTON
21079
REGISTERED PROFESSIONAL ENGINEER

JOB NUMBER:	9095
DATE:	7/22/2025
DESIGNED BY:	BRK
DRAWN BY:	BRK
CHECKED BY:	BDH

P4 765

AKS DRAWING FILE: 9095 PX.0 TREE.DWG | LAYOUT: P4.2



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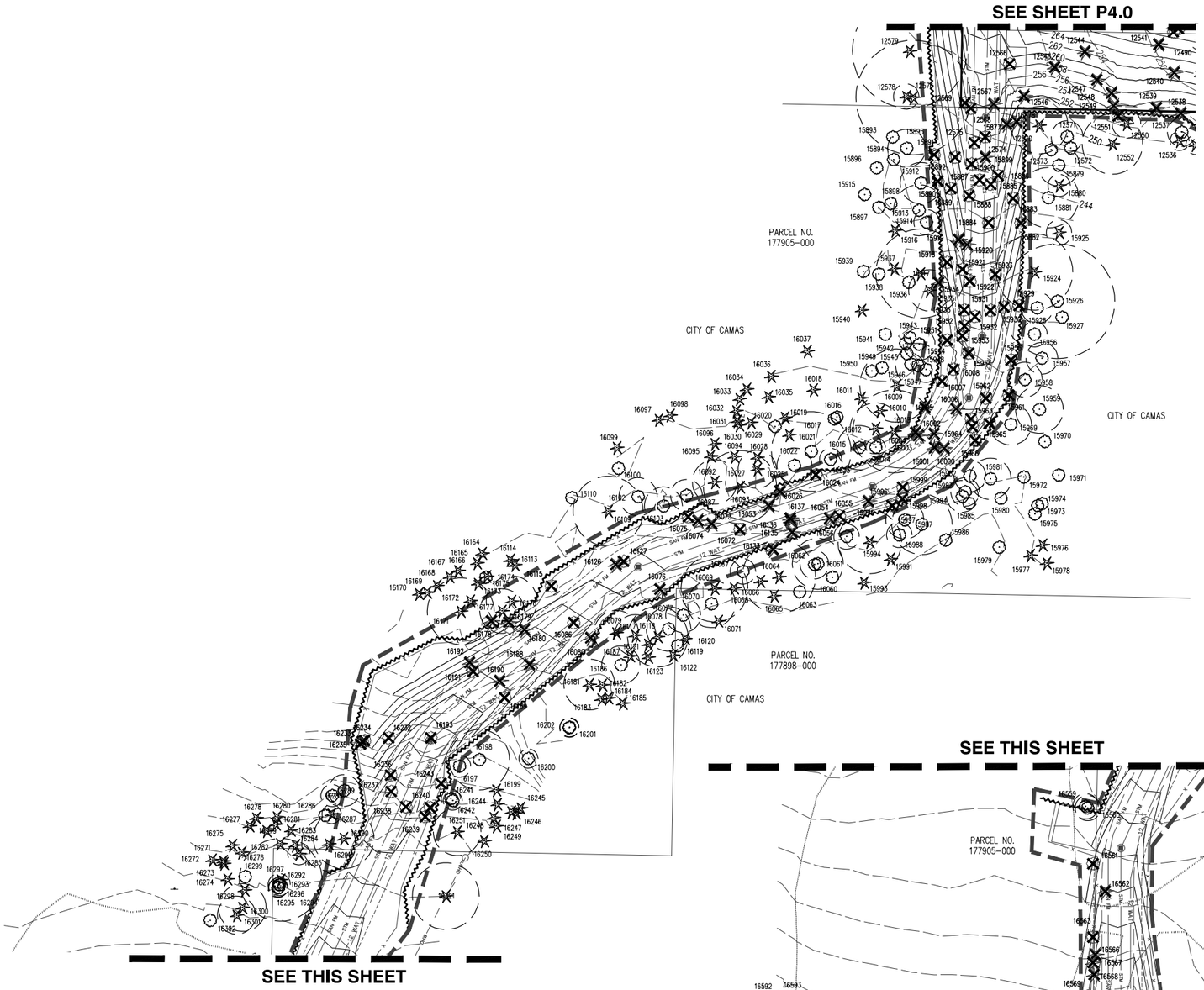
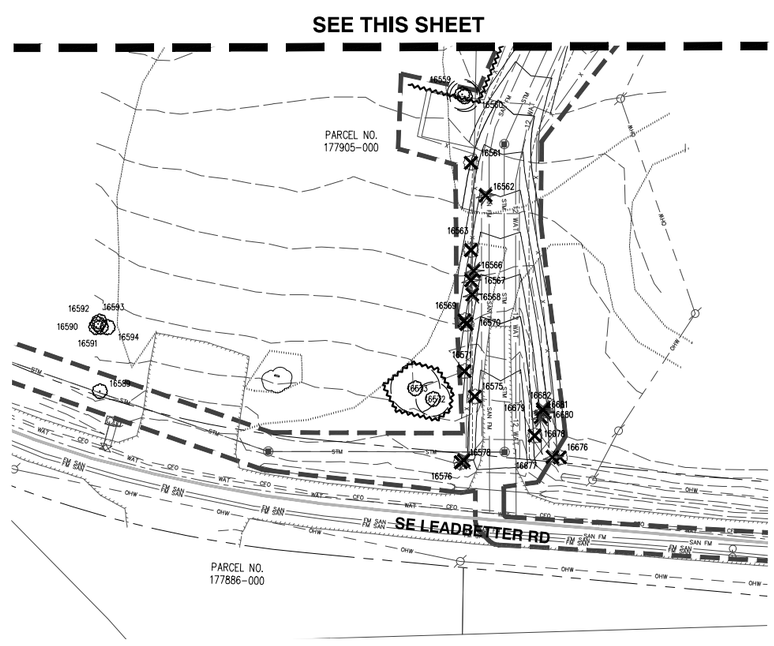
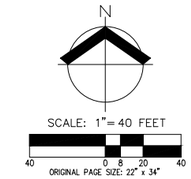
AKS DRAWING FILE: 9095 PLO TREE.DWG | LAYOUT: P4.3







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CHECKED BY:	BDH

P4

767

AKS DRAWING FILE: 9095 PX.0 TREE.DWG | LAYOUT: P4.4

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 CITY OF CAMAS CODE OF ORDINANCES CHAPTERS 14.02 AND 14.06.

E. DIRECTIONAL FELLING OF TREES SHALL BE USED TO AVOID DAMAGE TO TREES DESIGNATED FOR RETENTION.

F. ADDITIONAL REQUIREMENTS – THE PROJECT ARBORIST MAY REQUIRE ADDITIONAL TREE PROTECTION MEASURES WHICH ARE CONSISTENT WITH ACCEPTED URBAN FORESTRY PRACTICES.

G. ENCROACHMENT INTO THE ROOT PROTECTION ZONE IS ALLOWED WITH PROJECT ARBORIST APPROVAL AS DESCRIBED IN THE FOLLOWING NOTES:

G.A. EXCAVATION IN THE TOP 24 INCHES OF THE SOIL IN THE CRITICAL ROOT ZONE AREA SHOULD BEGIN AT THE EXCAVATION LINE THAT IS CLOSEST TO THE TREE.

G.B. THE EXCAVATION SHOULD BE DONE BY HAND/SHOVEL OR WITH A BACKHOE AND A MAN WITH A SHOVEL, PRUNING SHEARS, AND A PRUNING SAW.

G.C. IF DONE BY HAND, ALL ROOTS 1 INCH OR LARGER SHOULD BE PRUNED AT THE EXCAVATION LINE.

G.D. IF DONE WITH BACKHOE (MOST LIKELY SCENARIO), THEN THE OPERATOR SHALL START THE CUT AT THE EXCAVATION LINE AND CAREFULLY "FEEL" FOR ROOT/RESISTANCE. WHEN THERE IS RESISTANCE, THE MAN WITH THE SHOVEL HAND DIGS AROUND THE ROOTS AND PRUNES THE ROOTS LARGER THAN 1 INCH DIAMETER.

G.E. THE BACKHOE IS TO REMAIN OFF OF THE TREE ROOTS TO BE PRESERVED AT ALL TIMES.

G.F. ALL ROOTS SHALL BE CUT CLEANLY WITH PRUNING SHEARS OR A PRUNING SAW.

G.G. PROJECT ARBORIST MUST BE ONSITE DURING ANY WORK WITHIN THE TREE ROOT PROTECTION ZONE.

G.H. THE CITY OFFICIAL 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.

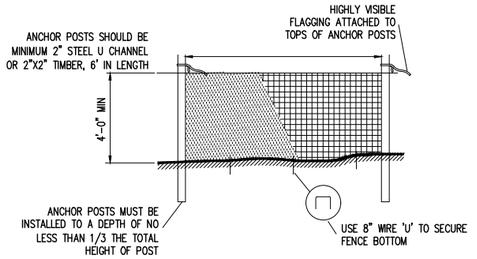
J.I. ANY BRUSH CLEARING REQUIRED WITHIN THE TREE PROTECTION ZONE SHALL BE ACCOMPLISHED WITH HAND OPERATED EQUIPMENT.

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.

BENNETT R. KOCSIS
CERTIFICATE NUMBER: PN 8877A
EXPIRATION DATE: 12/31/2025

PRELIMINARY
NOT FOR CONSTRUCTION

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PRELIMINARY TREE PRESERVATION & REMOVAL PLAN
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

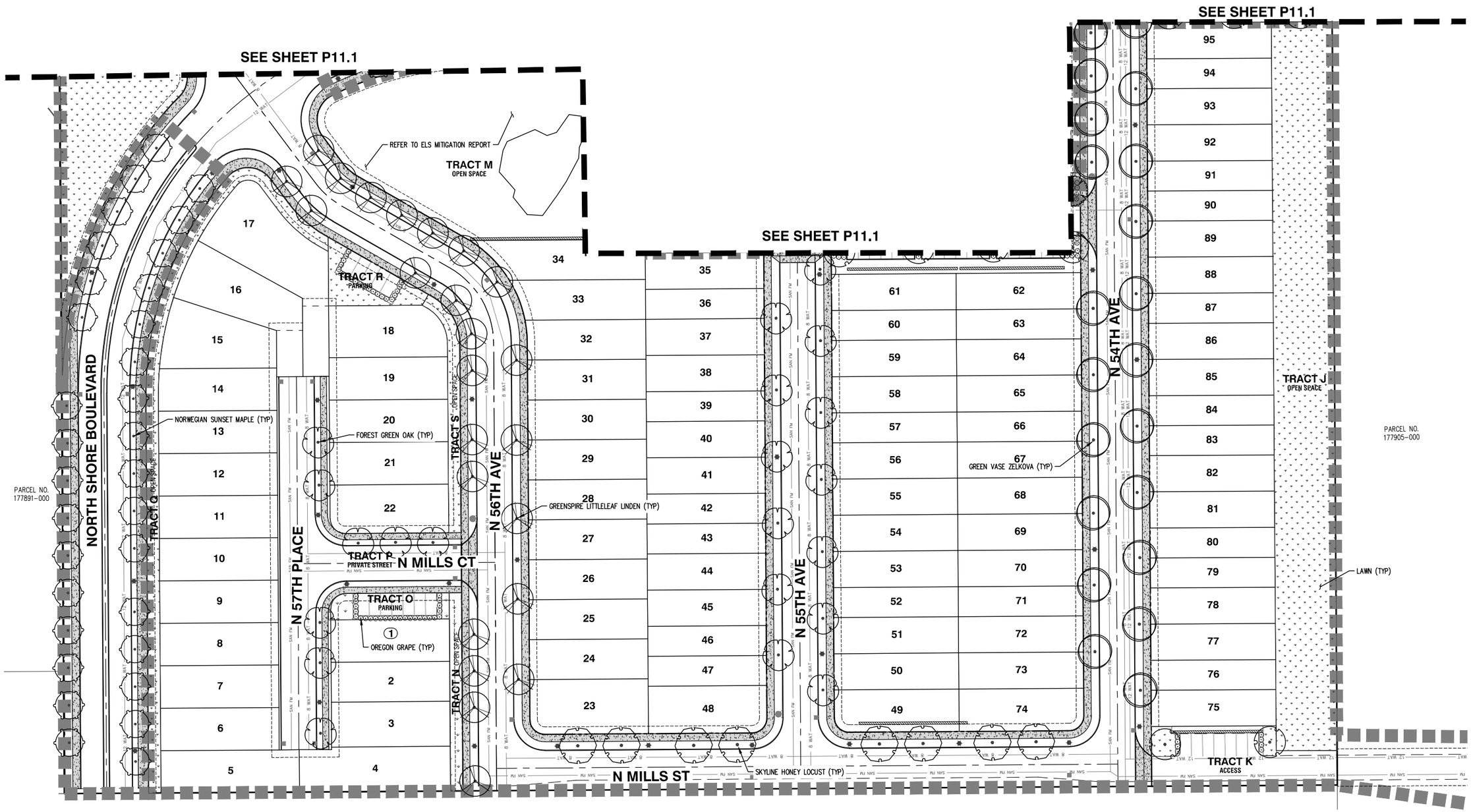
BRUCE D. HAMILTON
STATE OF WASHINGTON
21079
REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	9095
DATE:	7/22/2025
DESIGNED BY:	BRK
DRAWN BY:	BRK
CHECKED BY:	BDH

P4

AKS DRAWING FILE: 9095 PLO TREEDWG | LAYOUT: P4.12

Appendix C: Tree Planting Plan



GENERAL NOTE

REFER TO SHEET P11.3 FOR PRELIMINARY PLANT SCHEDULE AND LANDSCAPE NOTES.

TREE PLAN

TOTAL SITE AREA:	36.04 AC
SITE AREA EXCLUDING OPEN SPACE:	23.60 AC
TOTAL TREE UNITS REQUIRED (36.04 AC X 30):	708
EXISTING TREES RETAINED/(TREE UNITS):	558/(2,236)
PROPOSED SITE TREES/(TREE UNITS):	322/(322)
TOTAL TREE UNITS (RETAINED AND PROPOSED):	2,558

SCALE: 1"=40 FEET

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ORIGINAL PAGE SIZE: 22" x 34"

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PRELIMINARY LANDSCAPE PLAN OVERVIEW
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

STATE OF WASHINGTON
TIMOTHY E. BAUER
LICENSED LANDSCAPE ARCHITECT
PRELIMINARY NOT FOR CONSTRUCTION

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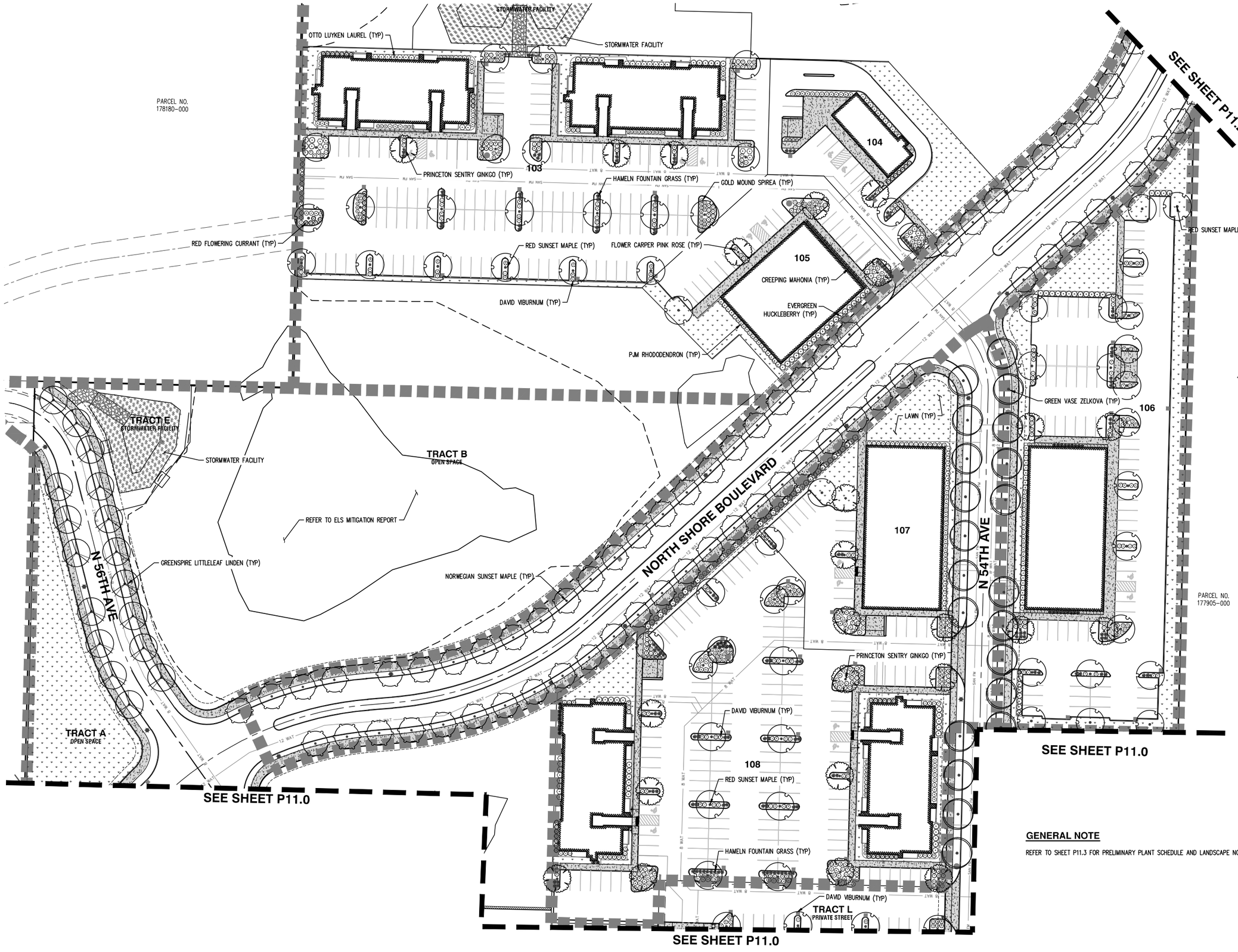

GENERAL NOTE

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PRELIMINARY LANDSCAPE PLAN
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
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STATE OF WASHINGTON
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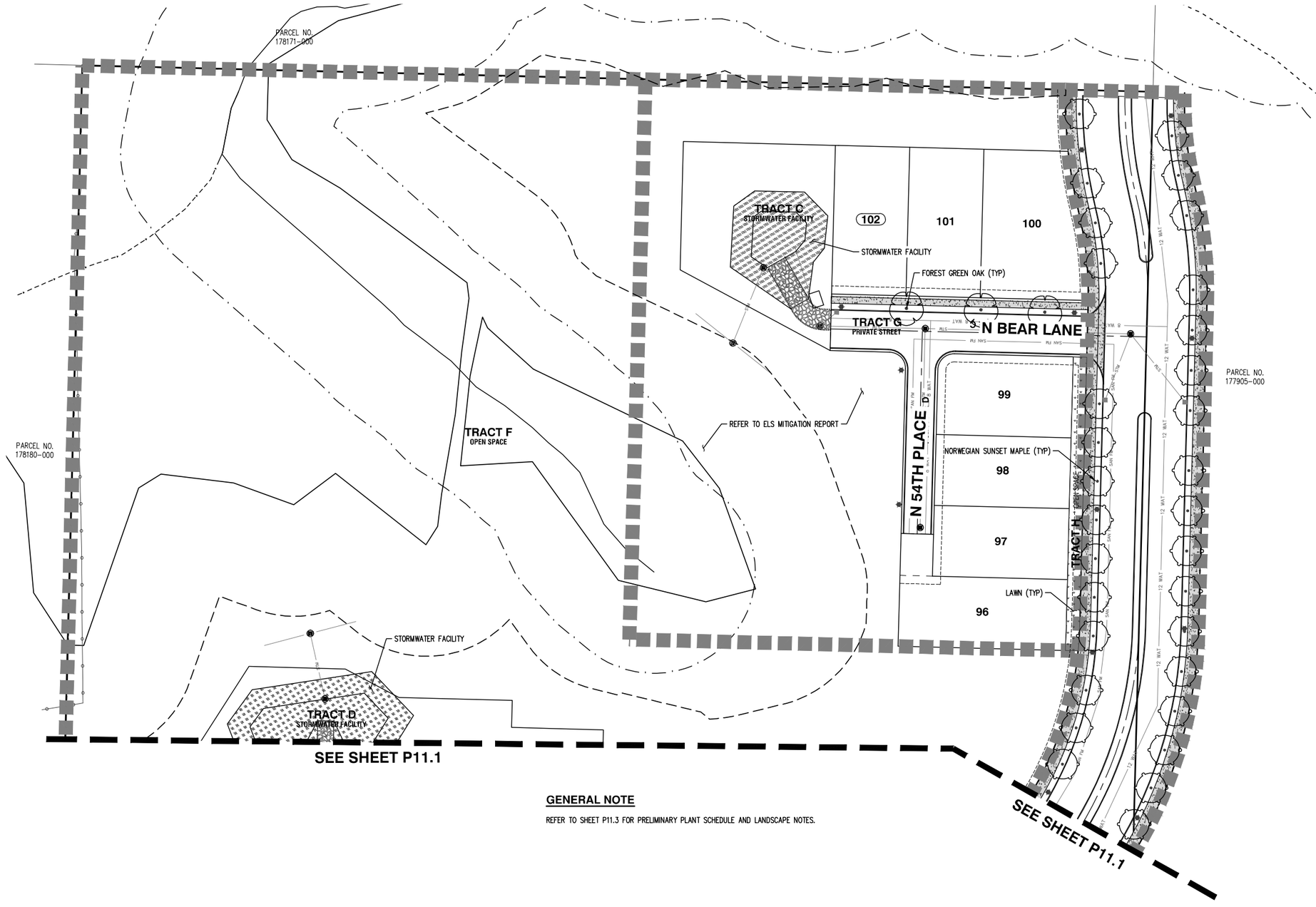

GENERAL NOTE

REFER TO SHEET P11.3 FOR PRELIMINARY PLANT SCHEDULE AND LANDSCAPE NOTES.

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SCALE: 1"= 40 FEET

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ORIGINAL PAGE SIZE: 22" x 34"

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PRELIMINARY LANDSCAPE PLAN
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LICENSED LANDSCAPE ARCHITECT
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PRELIMINARY PLANT SCHEDULE

SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
TREES					
	64	ACER RUBRUM 'FRANKSRED'	RED SUNSET MAPLE	2" CAL. B&B	AS SHOWN
	24	GINKGO BILOBA 'PRINCETON SENTRY'	PRINCETON SENTRY GINKGO	2" CAL. B&B	AS SHOWN
STREET TREES					
	124	ACER TRUNCATUM X PLATANOIDES 'NORWEGIAN SUNSET'	NORWEGIAN SUNSET MAPLE	2" CAL. B&B	AS SHOWN
	8	GLEDITSIA TRIACANTHOS INERMIS 'SKYLINE'	SKYLINE HONEY LOCUST	2" CAL. B&B	AS SHOWN
	24	QUERCUS FRAINETTO 'FOREST GREEN'	FOREST GREEN OAK	2" CAL. B&B	AS SHOWN
	41	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LINDEN	2" CAL. B&B	AS SHOWN
	37	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	2" CAL. B&B	AS SHOWN
SYMBOL	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE/CONTAINER**	**SPACING**
SHRUBS					
	174	MAHONIA AQUIFOLIUM	OREGON GRAPE	3 GAL. CONT.	48" o.c.
	62	MAHONIA REPENS	CREEPING MAHONIA	1 GAL. CONT.	36" o.c.
	140	PENNISETUM ALOPECUROIDES 'HAMELN'	HAMELN FOUNTAIN GRASS	1 GAL. CONT.	36" o.c.
	98	PRUNUS LAUROCERASUS 'OTTO LUYKEN'	OTTO LUYKEN ENGLISH LAUREL	2 GAL. CONT.	60" o.c.
	97	RHODODENDRON X 'P.J.M.'	PJM RHODODENDRON	3 GAL CONT.	48" o.c.
	49	RIBES SANGUINEUM	RED FLOWERING CURRANT	1 GAL. CONT.	48" o.c.
	94	ROSA X 'NOATRAUM'	FLOWER CARPET PINK ROSE	2 GAL. CONT.	42" o.c.
	143	SPIRAEA X BUMALDA 'GOLDMOUND'	GOLD MOUND SPIREA	2 GAL CONT.	36" o.c.
	10	THUJA OCCIDENTALIS 'SMARAGD'	EMERALD GREEN ARBORVITAE	4'-5' HT. CONT.	36" o.c.
	118	VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	3 GAL. CONT.	60" o.c.
	310	VIBURNUM DAVIDII	DAVID VIBURNUM	2 GAL. CONT.	48" o.c.

GROUND COVERS

106,232 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.

STORMWATER FACILITY TO BE DESIGNED PER CITY OF CAMAS STANDARDS

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 (EXCLUDING STORMWATER FACILITIES). 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.

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CHECKED BY:	BDH

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5. Preliminary Stormwater Technical Information Report (TIR)

Villages at North Shore
Camas, Washington

Preliminary Stormwater Technical Information Report

Date: July 2025

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

Applicant:
HSR Dev – Mills, LLC (Andy Swanson)
19120 SE 34th Street, Suite #103
Vancouver, WA 98683
(503) 936-8514 | andy@hsr-capital.com

Engineering Contact:
Bryce Hanson, PE
(360) 882-0419 | bryceh@aks-eng.com

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

AKS Job Number: 9095

AKS ENGINEERING & FORESTRY

www.aks-eng.com

Certificate of the Engineer

Villages at North Shore
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.



Bryce D. Hans[illegible]ally signed by
[illegible]yce D. Hanson
2025.07.22
[illegible]:21:30-07'00'

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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)

VILLAGES AT NORTH SHORE
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 102-lot subdivision, several Tracts and 6 mixed-use lots for development composed of commercial stores on the bottom floor with residential units above (Villages at North Shore).

Section A.1 – Site Location

The Villages at North Shore is located on two parcels of land, totaling approximately 36.04 acres. Parcels 177885-000 and 178175-000 have a site address 313 SE Leadbetter Road, Camas, WA 98607, and 305 SE 252nd Ave, Camas, WA 98607, respectively. Access to the site will be from NE 252nd Avenue. The project is located within the Northeast ¼ of Section 34, 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), North Shore Low Density Residential (LD-NS) & North Shore Commercial (C-NS).

Section A.2 – Site Topography and Critical Areas

The site has a single house and detached shop on it with a combination of asphalt and gravel driveways that access from NE 252nd Avenue. The site has significant variability with regards to the topography. There is a series of high points that create a ridge line that goes from the southeast portion of the site towards the northwest. The grades vary from sloping hills to exposed rock out croppings. There is an isolated pond in the north center of the site with a creek valley that flows north from the south-center of the site. According to Clark County Geographic Information Services (GIS), portions of the site have slopes up to 40 percent. However, the majority of the grades on site range from 10 to 25 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). The ridgeline is the divider between these 2 TDAs. The isolated pond is a subarea that overflows the runoff to combine with the valley stream and mix with that TDA. South of the ridgeline runoff travels along the surface to shallow concentrated flows in route to Lacamas Lake. 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 Villages at North Shore project site consists of (OmE) Olympic Stony Clay loam, 3-30% slopes, well drained, non-hydric, WWHMSoil Group 3 soil, (VaB) Vadar Silt Loam, 3-8% Slopes, well drained, non-hydric, WWHMSoil Group 2 soil, (LiB) Lauren very gravelly loam, 0-8% slopes, somewhat excessively drained, non-Hydric, WWHMSoil Group 1 soil, & (ThA) Tisch silt loam, 0-3% slopes, poorly drained, Hydric, WWHMSoil Group 5 soil. A Geotechnical report was issued by Columbia West Engineering, Inc in November 2023. It is recommended to grade the site such that infiltration is inhibited from buildings and pavement areas. Therefore, infiltration facilities will not be proposed. 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. Stormwater runoff 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 generally drain away from the site.

Section A.6 – Adjacent Site Areas

The site is bound by existing farm estates to the north. Properties to the east and west are zoned North Shore Lower Density Residential (LD-NS). The property bordering the south side of the site is zoned North Shore Park/open space (POS-NS).

Section A.7 – General Project Stormwater Description

Proposed site improvements for the development include sidewalks, public streets, open space tracts, 102 detached single-family homes & 6 mixed-use apartment complexes. Construction will take place in several phases with the North Shore Collector being a separate capital improvement project. Stormwater is proposed to follow the existing drainage pattern and maintain the 2 separate TDAs. Each of the detention ponds 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 facilities. Stormwater from each water quality structure will then be discharged into a detention pond where runoff will be stored and released through the overflow/emergency outlet into its natural drainage outfall location. This TDA will meet MR #5 utilizing List #2 for each surface type to demonstrate compliance of feasibility. The post-developed discharge rates from the site will not exceed the pre-developed discharge rates as determined by a continuous simulation model for the range of rates from 50% of the 2-year peak flow to of the 50-year peak flow. The water quality structures, and detention ponds are located in Tract B & F. Stormwater from pollution generating surfaces will be treated by mechanical filtration to meet MR #6 guidelines for water quality. Roof run off from the buildings and rear yard pervious landscaped areas may be routed directly to the detention pond. The roof areas that bypass WQ facilities will not be included in the impervious surface mitigated basin area to calculate the WQ flow (Appendix D).

TDA 2 – Runoff from driveways, parking areas, sidewalks, roadways, roof tops, buildings and any landscaped areas that contribute runoff to the roadways, will be collected and conveyed to a water quality/filter media facility. Stormwater from the water quality structure will then be discharged into a piped conveyance system following an access road down the hill to the south to connect with Leadbetter Road, the natural drainage direction for this basin. This TDA will discharge directly to Lacamas Lake and is therefore flow control exempt from MR #7. The water quality structure is located in Tract J and will be owned and maintained by the HOA. Stormwater from pollution generating surfaces will be treated by mechanical filtration to meet MR #6 guidelines for water quality. The assumed pollution generating areas are 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	2.801	0.000	1.328	4.128
1B	0.000	0.141	0.000	0.152	0.292
2A	0.000	2.336	0.000	0.728	3.063
2B	0.000	2.932	0.000	0.776	3.708
3A	0.000	12.331	0.000	3.495	15.827
3B	0.000	0.486	0.000	0.268	0.753

Note: Assumes Single Residence and mixed-use lots are 85% impervious.

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	2.801	1.328	4.128
1B	0.141	0.152	0.292
2A	2.336	0.728	3.063
2B	2.932	0.776	3.708
3A	12.331	3.495	15.827
3B	0.000	0.000	0.000

Note: Assumes Single Residence and mixed-use lots are 85% impervious.

Table B-3: Non-Pollution-Generating Surfaces

Sub-Basin	Hard Surfaces (acres)	Pervious Surfaces (acres)	Total Surface Area (acres)
1A	0.000	0.000	0.000
1B	0.000	0.000	0.000
2A	0.000	0.000	0.000
2B	0.000	0.000	0.000
3A	0.000	0.000	0.000
3B	0.486	0.268	0.753

Note: Assumes Single Residence and mixed-use lots are 85% impervious.

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	8.210	Y	Y	Y
2	12.331	Y*	N	N

** Excludes WQ requirement for subbasin 3B (Emergency Access Road).*

Section C – Soils Evaluation

Section C.1 – Soil Suitability for Low Impact Development BMPs

The Villages at North Shore development is not suitable for infiltration of stormwater. The project geotechnical report dated November 17, 2023, and within Appendix G, and states, "Based on subsurface exploration, infiltration of concentrated stormwater is infeasible due to the presence of shallow bedrock and clayey residual soils."

Section C.2 – Water Table Information

Per the project geotechnical report, groundwater seepage was not specifically encountered. Seeps and springs within the basalt formation have been observed on surrounding sites and have been associated with regional rain events. Therefore, drainage design may need to be altered during the course of construction as seeps and springs become evident over time. 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:

- LIB (Lauren very gravelly loam, 0 to 8 percent slopes), 11.5 percent of the site (Type B soil / WWHM Soil Group 1)
- OmE (Olympic stony clay loam, 3 to 30 percent slopes), 49.4 percent of the site (Type C soil / WWHM Soil Group 3)
- ThA (Tisch silt loam, 0 to 3 percent slopes), 10.0 percent of the site (Type C/D soil / WWHM Soil group 5)
- VaB (Vader silt loam, 3 to 8 percent slopes), 27.2 percent of the site (Type B soil / WWHM Soil Group 2)

Soil parameters are further explained by the soils report provided by Columbia West Engineering, dated November 2023 (Appendix G). "*Although soil conditions may vary from the broad USDA descriptions, Lauren soils are generally coarse-textured sands and gravels with moderate permeability, moderate shear strength and low shrink-swell potential. Olympic and Vader series soils are more fine textured silt and clay with variable amounts of gravel. Olympic and Vader soils are typically fine-textured, poorly drained soils that develop over bedrock and exhibit slow permeability and have a low shear strength.* "

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 testing was not conducted due to the minor amount of clayey gravel soil encountered at the site that sits on top of the bedrock. Due to the relatively impermeable nature of the basalt bedrock and residual soils, infiltration of concentrated stormwater onsite is not recommended.

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. Bedrock likely is not complex by definition, but precludes any feasible infiltration.

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 List #2 to satisfy MR #5. Table I-3.2, Lawn and Landscaped areas will meet post-construction soil quality and quantity requirements per BMP T5.13. Roofs and other hard surfaces cannot utilize "full dispersion", downspout infiltration, or permeable pavement due the lack of infiltration of the existing soils. The sites topography, space limitations & lack of infiltration prevent the use of surface bioretention facilities.

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 treatment 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 structures before leaving the site or entering each of the site's stormwater detention ponds.

The Villages of North Shore 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 1A	3.820	2.530	0.5817	0.5880	14 (27”)
WQ Vault 1B	0.141	0.147	0.0243	0.0420	1 (27”)
WQ Vault 2A	2.336	0.728	0.3340	0.3360	8 (27”)
WQ Vault 2B	2.932	0.776	0.4142	0.4200	10 (27”)
WQ Vault 3A	12.331	3.495	1.7512	1.7640	42 (27”)

**Note: Provided water quality flow rate is determined by using off-line BMP approved flow rates for Contech Phosphosorb media (0.042 cfs per 27” cartridge).*

Section G – Flow Control Analysis and Design

The Villages at North Shore development consists of 2 TDAs. The site will be required to meet flow control standards as stated above. The project proposes detention ponds BMP D.1 to meet the flow control requirements. The ponds will be equipped with an 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 4 subbasins (subbasin 1A, 1B, 2A & 2B). Subbasins 1A, 2A & 2B propose to use a detention pond per BMP D.1 to meet the flow control requirements. Subbasin 1B is a small off-site basin for site access involving pavement widening only. There will be no mitigation of flows from this basin but flows from the other 3 subbasins will over detain such that TDA-1, as a whole, meets the flow requirement. The proposed discharge from each detention pond will be through a flow spreader dispersion BMP towards the natural discharge location of a wetland stream located in the northeast corner of the site. Discharge from TDA 1 has been analyzed and designed to meet MR #7.

TDA 2 is split into two subbasins (subbasin 3A & 3B). This TDA will capture all runoff to be discharged into a piped conveyance system following the access road down the hill to the south to connect with Leadbetter Road, the natural drainage direction for these subbasins. This TDA will discharge directly to Lacamas Lake which has a large water body flow exemption and is therefore flow control exempt from MR #7.

All facilities were sized with the use of WWHM 2012 (see Appendix F) for flow control WWHM output.

Section H – Wetland Protection

The site contains two category III wetlands associated with natural drainage on-site (wetland A & wetland B). The wetlands are to be protected by a buffer. A wetland hydroperiod analysis (Method 2), general protection and protection from pollutants are required for this project based on Figure I-3.5 of the SWMMWW, and is included in Appendix H of this report. To meet protection from pollutants, site discharge will be treated before entering the wetlands. Discharge to the wetland will meet the requirements for MR #8 by not altering flow to the wetland by more than 20% on a monthly basis for the

months of October, November, and December, and 15% for the remaining months. Additionally, discharge to the wetland will meet the requirements by not altering flow to the wetland by more than 20% on a daily basis, MR #8 should be considered met.

The wetland basin maps, Included in Appendix H, delineate the pre-developed and post-developed impervious, field, forest, and pond areas upstream of the wetland. The wetland basin areas shown below in Table H.1 & H.2 are separated into areas draining to the wetlands from off-site, and areas onsite flowing to the wetland.

Table H-1: Wetland A Category III Basin Areas

Surface Type	Pre-developed Off-site Flow Area (acres)	Pre-developed On-site Flow Area (acres)	Post-developed Off-site Flow Area (acres)	Post-developed On-site Flow Area (acres)
Impervious	1.022	0.000	1.022	2.615
Field	0.853	1.350	0.853	1.677
Forest	0.000	2.813	0.000	0.000
Pond	0.000	0.000	0.000	0.182
Total	**1.875**	**4.163**	**1.875**	**4.474**

*Note: Post-developed pervious areas to follow BMP T5.13 and are modeled as Field. The total wetland basin area is approximately 6.349 acres excluding the wetland buffer and wetland boundary.

Table H-2: Wetland B Category III Basin Areas

Surface Type	Pre-developed Off-site Flow Area (acres)	Pre-developed On-site Flow Area (acres)	Post-developed Off-site Flow Area (acres)	Post-developed On-site Flow Area (acres)
Impervious	6.585	0.070	6.585	4.497
Field	129.833	1.407	129.833	1.363
Forest	21.904	5.486	21.904	0.000
Pond	0.057	0.000	0.057	0.771
Total	**158.379**	**6.963**	**158.379**	**6.631**

*Note: Post-developed pervious areas to follow BMP T5.13 and are modeled as Field. The total wetland basin area is approximately 165.010 acres excluding the wetland buffer and wetland boundary.

Wetland Hydroperiod Protection (Method 2) requires that the runoff entering the wetlands after development will remain similar to the pre-development condition. WWHM was used to obtain resultant flow rates (Appendix H). This model is separate and standalone from the flow control model discussed in MR #7. The final stormwater design will follow the requirements contained in Section I-C of the SWMMWW.

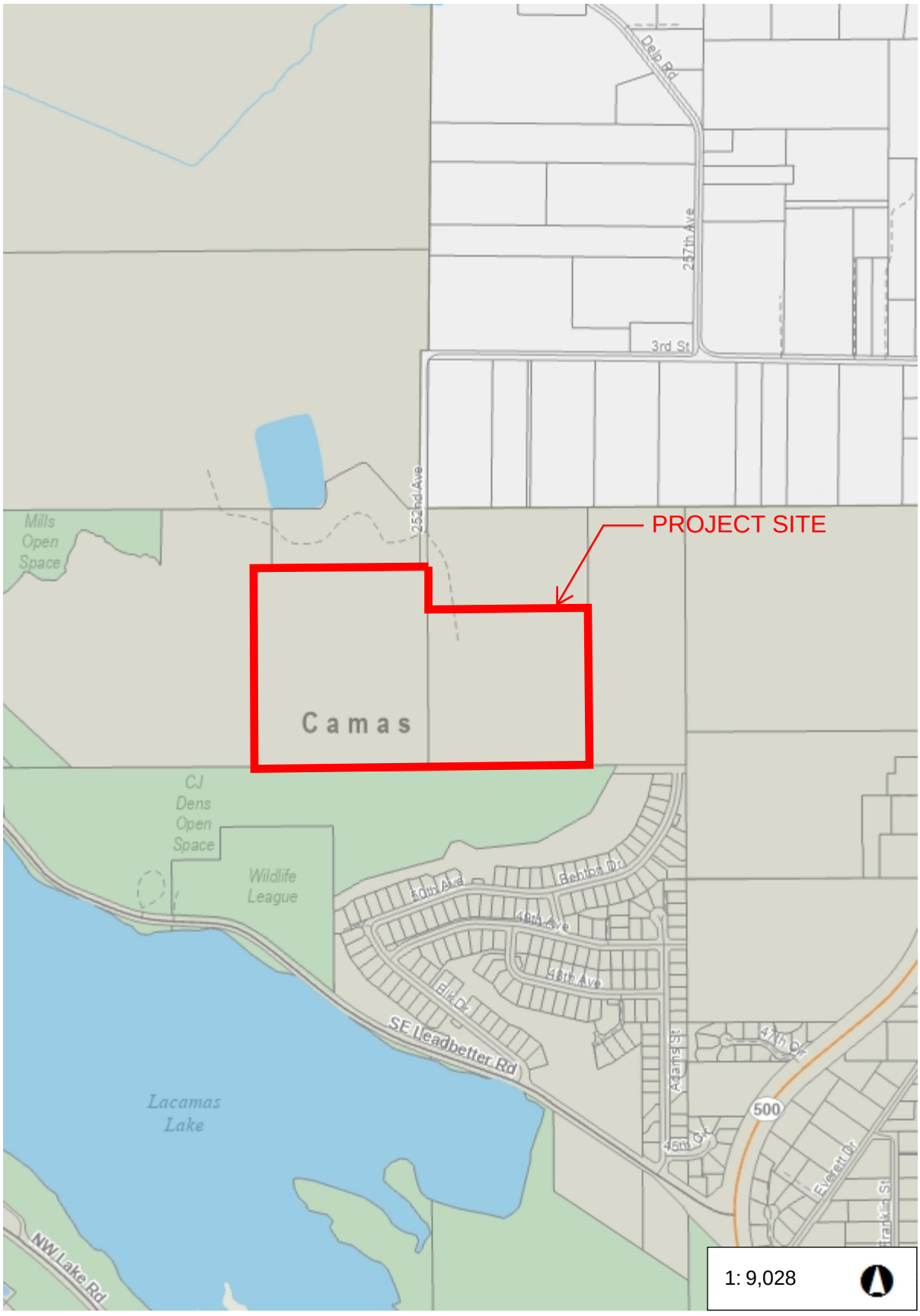
The two wetlands located within the project site are category III wetlands (Wetland A & Wetland B). Historically, TDA #1 contributes runoff into these wetlands. Wetland A is an isolated depression. Subbasin 1A will discharge runoff, after treatment and flow control, to wetland A. Due to the required street layout for access and the North Shore Boulevard alignment, wetland A will have a significant buffer reduction after development. The model for wetland A demonstrates an excess amount of runoff into the buffer failing to meet the historic runoff volumes per MR #8 requirements. Pond 1A is modeled with a flow splitter such that a 0.5” orifice will route runoff to the wetland A buffer with the remainder of flows to discharge to subbasin 1B. Based on historic stormwater maintenance guidance, a 0.5” orifice is the smallest diameter that can be utilized without a high risk of plugging. Given the site conditions (City

required alignment for North Shore Blvd) and SWMWW guidelines, it is infeasible to reduce flows any further to meet MR #8 requirements. An added proposal is to provide a high flow overflow to the existing wetland A depression (located approximately 3" above the OHWL). Since the model exceeds the historic flows to the wetland, the proposed overflow will limit the excess quantity that remains within the wetland as well as provide an emergency spillway during flooding events. Therefore, the maximum extent practicable to meet MR #8 for wetland A has been provided.

The remainder of TDA-1 will discharge to wetland B. The detention ponds for subbasins 1A, 2A and 2B have been designed to discharge runoff at a rate to meet the flow control requirements of MR #7. These ponds were used to model the hydroperiod for wetland B along with the existing off-site base flow. The runoff volumes for the monthly basis are satisfied per MR #8 requirements. There are only a select number of days that exceed the MR #8 threshold. A sensitivity analysis was performed using the WWHM model to see what effect further pond modifications would have to the wetland B runoff volumes. Pond 2B was quadrupled in size, with the flow control orifice reduced by half in an attempt to severely restrict runoff to wetland B. The results were very minimal with the runoff volumes still exceeding the hydroperiod threshold. This suggests that pond alterations beyond the flow control requirement will not have a significant impact on the wetland runoff volumes. Furthermore, the nature of wetland B is that of a stream with a shallow wetland ponding area at the upstream location. Any excess runoff that enters the wetland "pond" will quickly leave the wetland as steam flow following the natural downstream route of historic runoff. In effect, this reduces the impacts that may result from exceeding the minimum number of daily flow volumes as demonstrated in the WWHM model. Therefore, the maximum extent practicable to meet MR #8 for wetland B has been provided.

Appendix A: Map Submittals

Villages at North Shore





Legend

- Taxlots

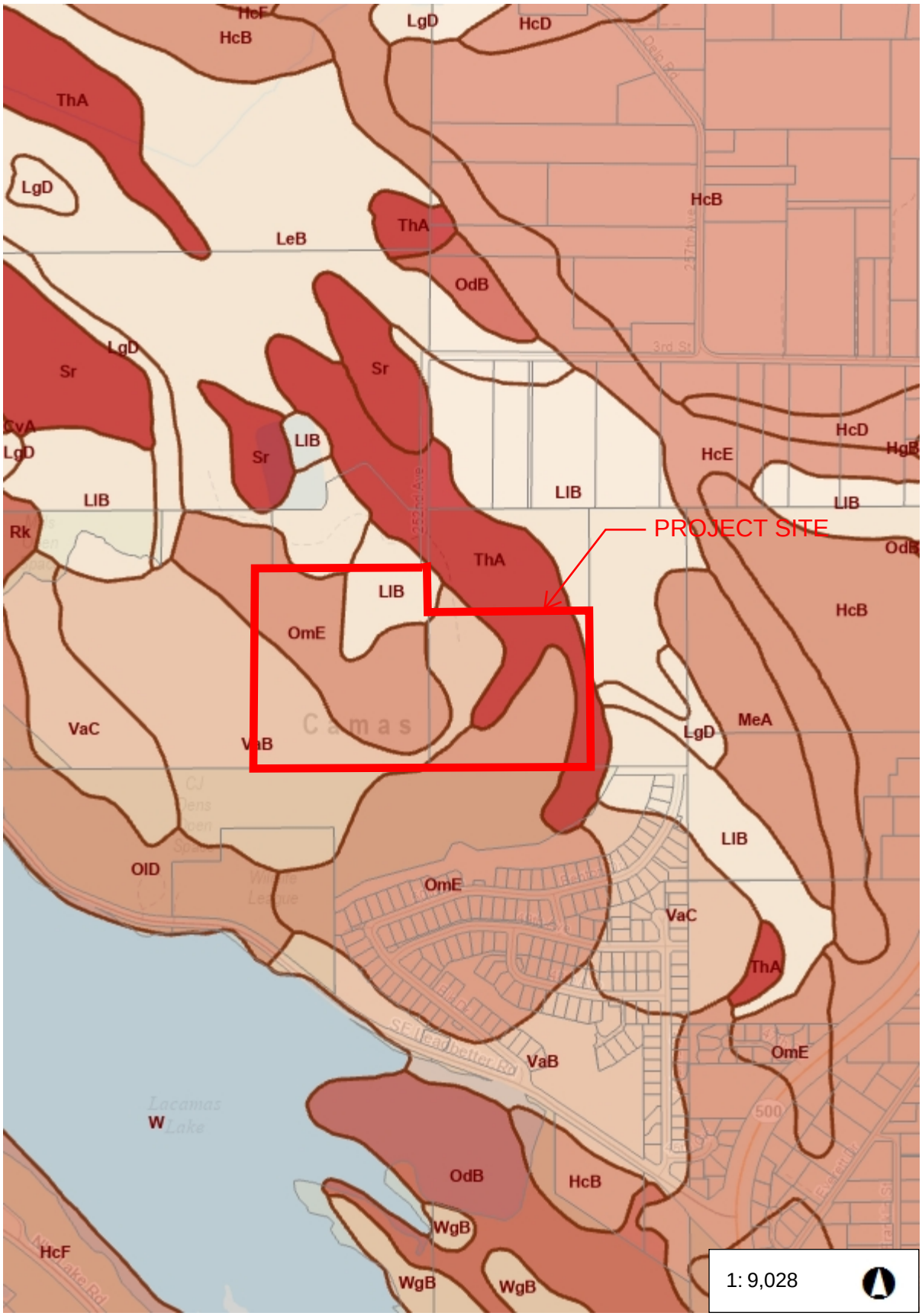
Notes:

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. Tax lot (i.e., parcel) boundaries cannot be used to determine the location of property lines on the ground.

Villages at North Shore - Soils Map





Legend

- Taxlots
- Soil Type
- WWHM Soil Group
  - 1 - Excessively drained soils
  - 2 - Well drained soils
  - 3 - Moderately drained soils
  - 4 - Poorly drained soils
  - 5 - Wetland soils
  - Unknown

Notes:

1,504.7 0 752.33 1,504.7 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

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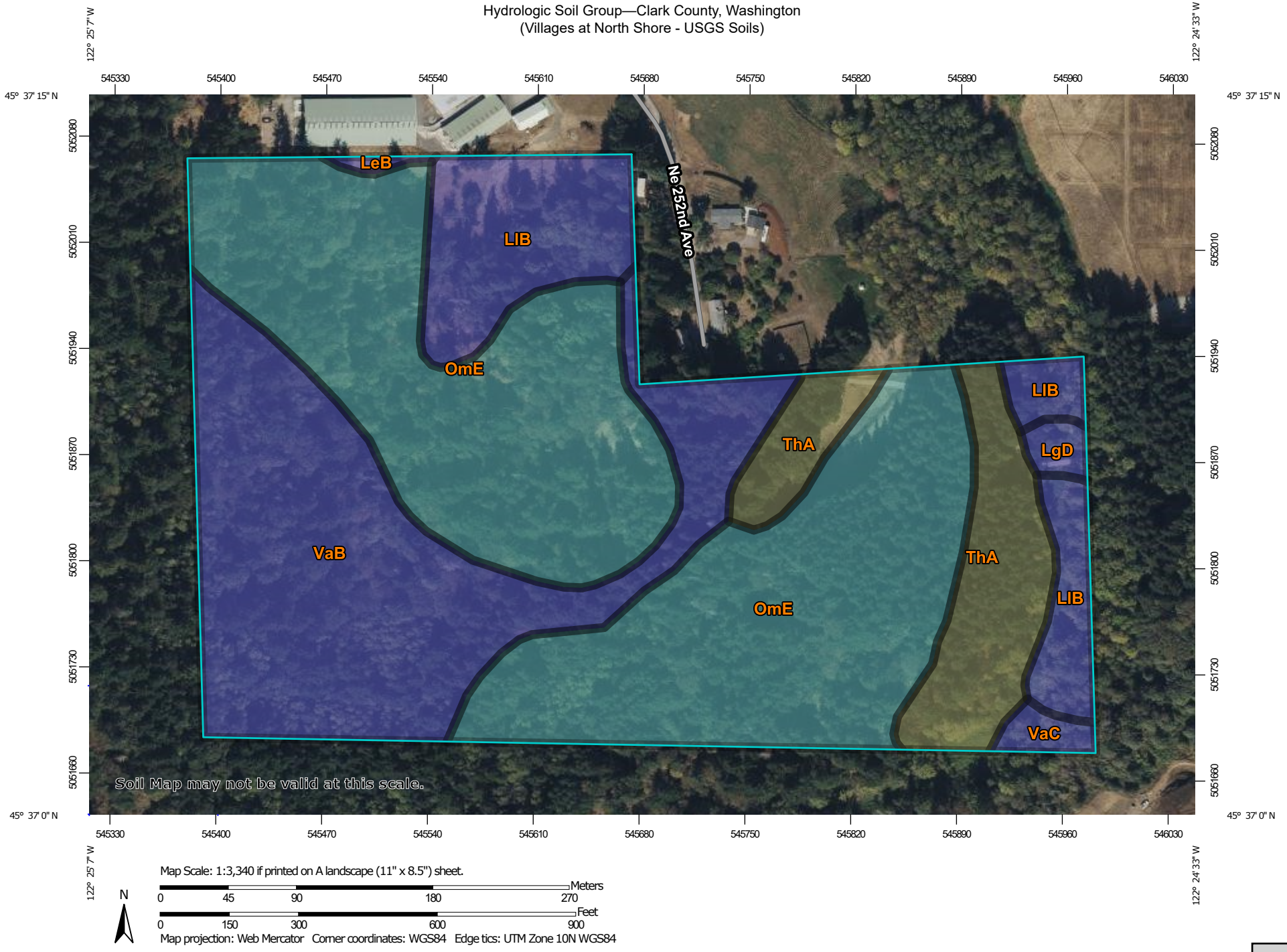
Hydrologic Soil Group—Clark County, Washington
(Villages at North Shore - USGS Soils)



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Lines

A
A/D
B
B/D
C
C/D
D
Not rated or not available

Soil Rating Points

A
A/D
B
B/D
C
C/D
D
Not rated or not available

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
LeB	Lauren loam, 0 to 8 percent slopes	B	0.1	0.3%
LgD	Lauren gravelly loam, 8 to 20 percent slopes	B	0.4	0.8%
LlB	Lauren very gravelly loam, 0 to 8 percent slopes	B	5.3	11.5%
OmE	Olympic stony clay loam, 3 to 30 percent slopes	C	23.0	49.4%
ThA	Tisch silt loam, 0 to 3 percent slopes	C/D	4.6	10.0%
VaB	Vader silt loam, 3 to 8 percent slopes	B	12.6	27.2%
VaC	Vader silt loam, 8 to 15 percent slopes	B	0.4	0.9%
Totals for Area of Interest			**46.5**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix B: New Development Flow Chart

Figure I-3.1: Flow Chart for Determining Requirements for New Development

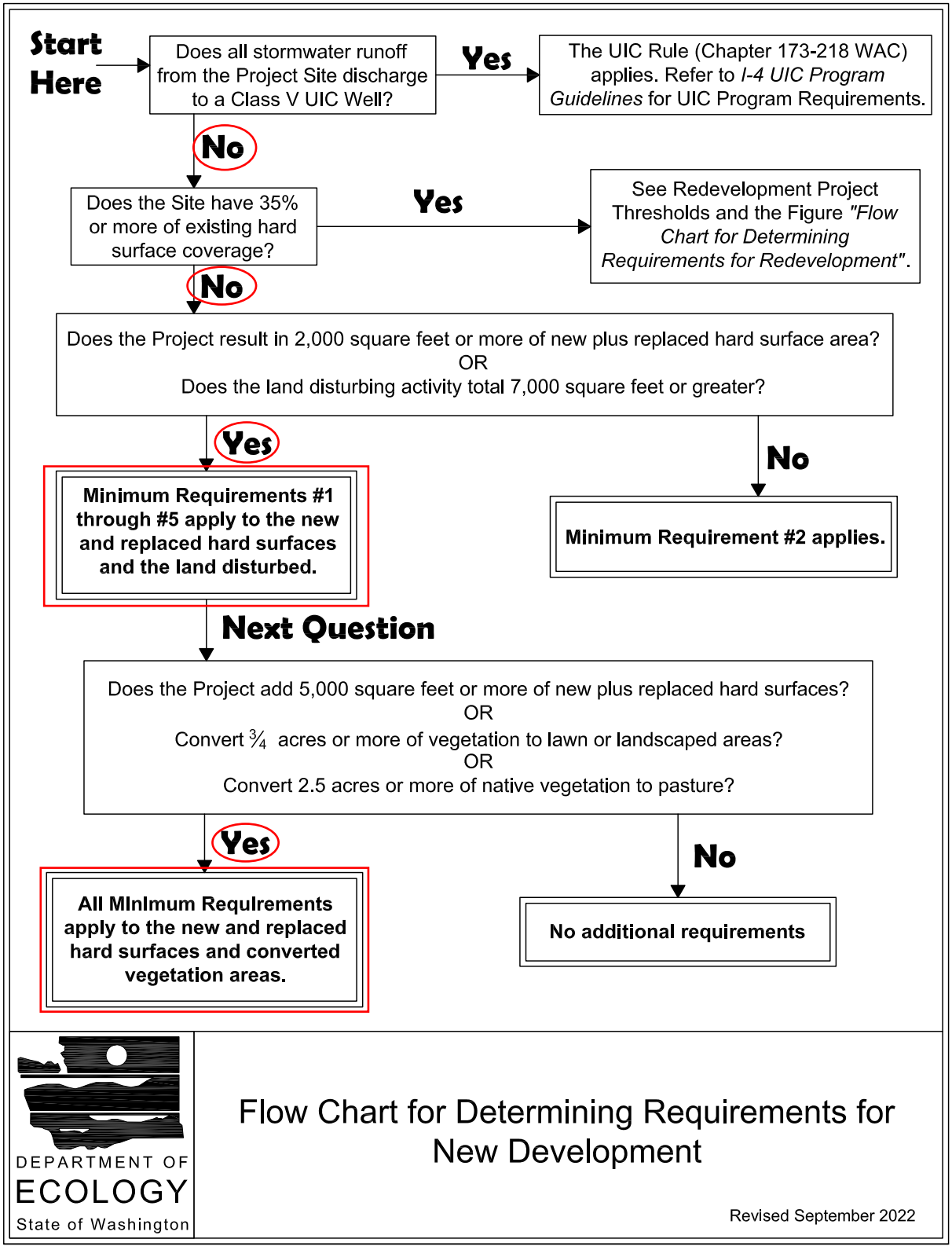
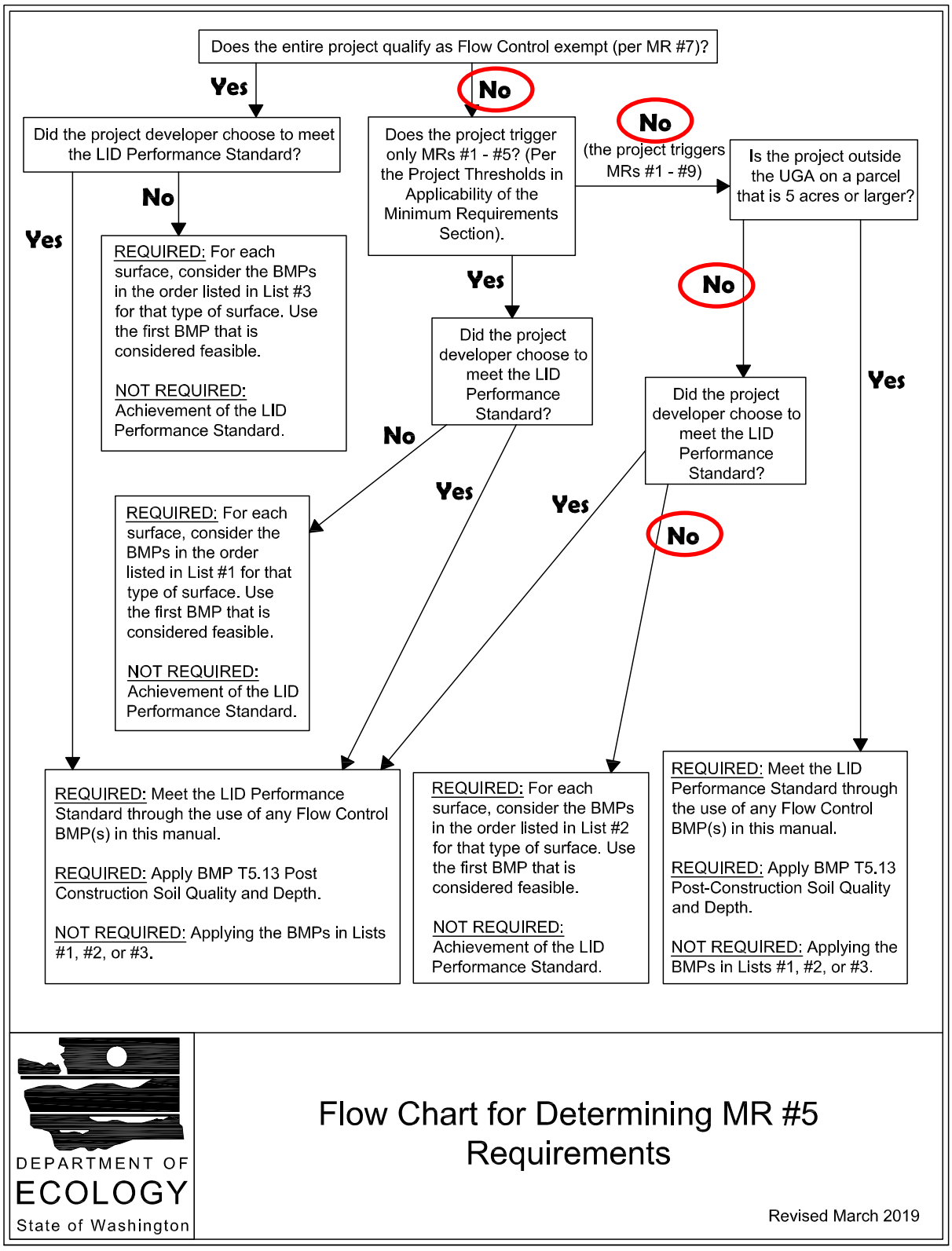


Figure I-3.3: Flow Chart for Determining MR #5 Requirements



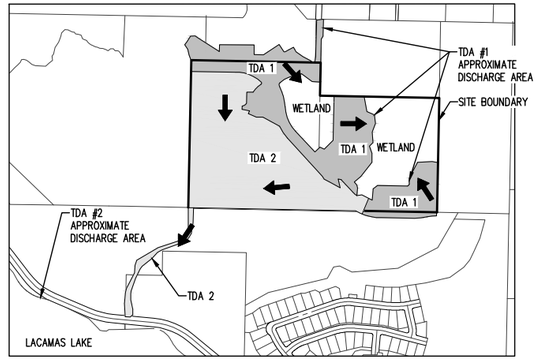
Appendix C: Development Plans

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	

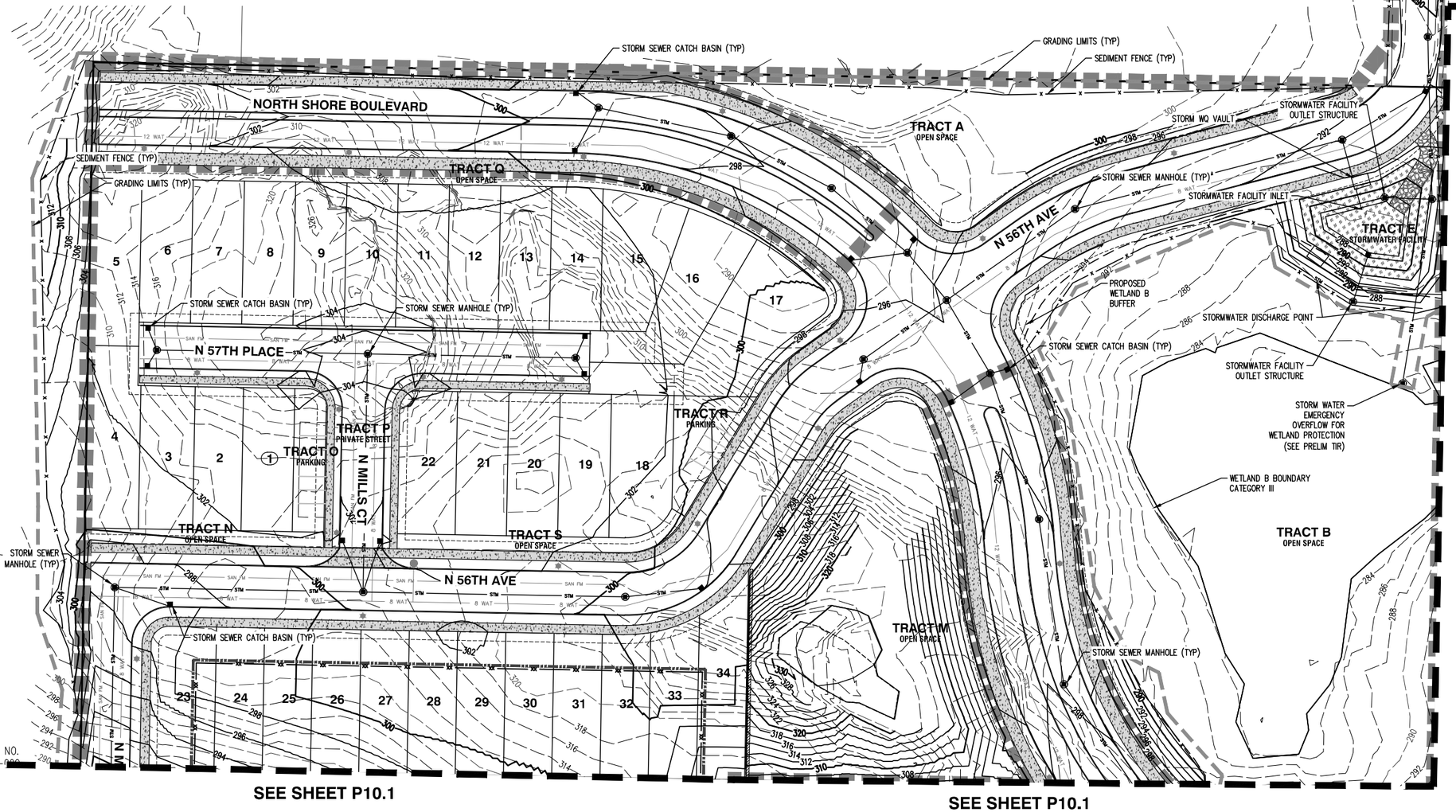
GENERAL NOTES

1. CONTOUR INTERVAL IS 2 FEET.
2. TREES ARE NOT SHOWN.
3. STORMWATER TREATMENT AND DETENTION FACILITIES FOR THIS DEVELOPMENT ARE TO BE PRIVATELY OWNED AND MAINTAINED.
4. ACCORDING TO CLARK COUNTY GIS, THE SITE IS NOT WITHIN OR ADJACENT TO A 100-YEAR FLOODPLAIN. THE SITE IS ADJACENT TO A SHORELINE MANAGEMENT AREA TO THE SOUTH.
5. THERE ARE NO KNOWN EXISTING ON-SITE STORMWATER FACILITIES.
6. ACCORDING TO CLARK GIS, NO FLOODPLAIN, FLOODWAYS, OR SHORELINE EXIST ON-SITE.
7. THE EXISTING SITE CONTAINS TWO THRESHOLD DISCHARGE AREAS (TDAs). THE DRAINAGE IS SPLIT INTO THESE TWO TDAs DIAGONALLY AT APPROXIMATELY THE CENTER OF THE SITE BY A RIDGE. THE NORTHERN TDA (#1) SURFACE FLOWS NORTHEAST INTO EXISTING WETLANDS, AND THE SOUTH TDA (#2) SURFACE FLOWS SOUTHWEST INTO SHALLOW CONCENTRATED FLOWS, ULTIMATELY INTO LACAMAS LAKE.
8. PROPOSED DRAINAGE FLOW ROUTES TO FOLLOW EXISTING FLOW ROUTES TO EXTENT POSSIBLE, MAINTAINING THE ULTIMATE DISCHARGE POINTS FOR BOTH ON SITE TDAs IN THE POST DEVELOPED CONDITION..
9. ROOF AREAS FOR ALL LOTS DRAIN TO STORM SEWER MAIN AND SUBSEQUNETLY TO PRIVATE STORMWATER FACILITIES.
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



TDA VICINITY MAP

N.T.S.



SCALE: 1"= 40 FEET

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ORIGINAL PAGE SIZE: 22" x 34"

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PRELIMINARY STORMWATER PLAN OVERVIEW
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

BRUCE D HANNA
STATE OF WASHINGTON
PRELIMINARY
NOT FOR
CONSTRUCTION
10175
REGISTERED
PROFESSIONAL ENGINEER

JOB NUMBER:	9095
DATE:	7/22/2025
DESIGNED BY:	BDH
DRAWN BY:	LPM
CHECKED BY:	BDH

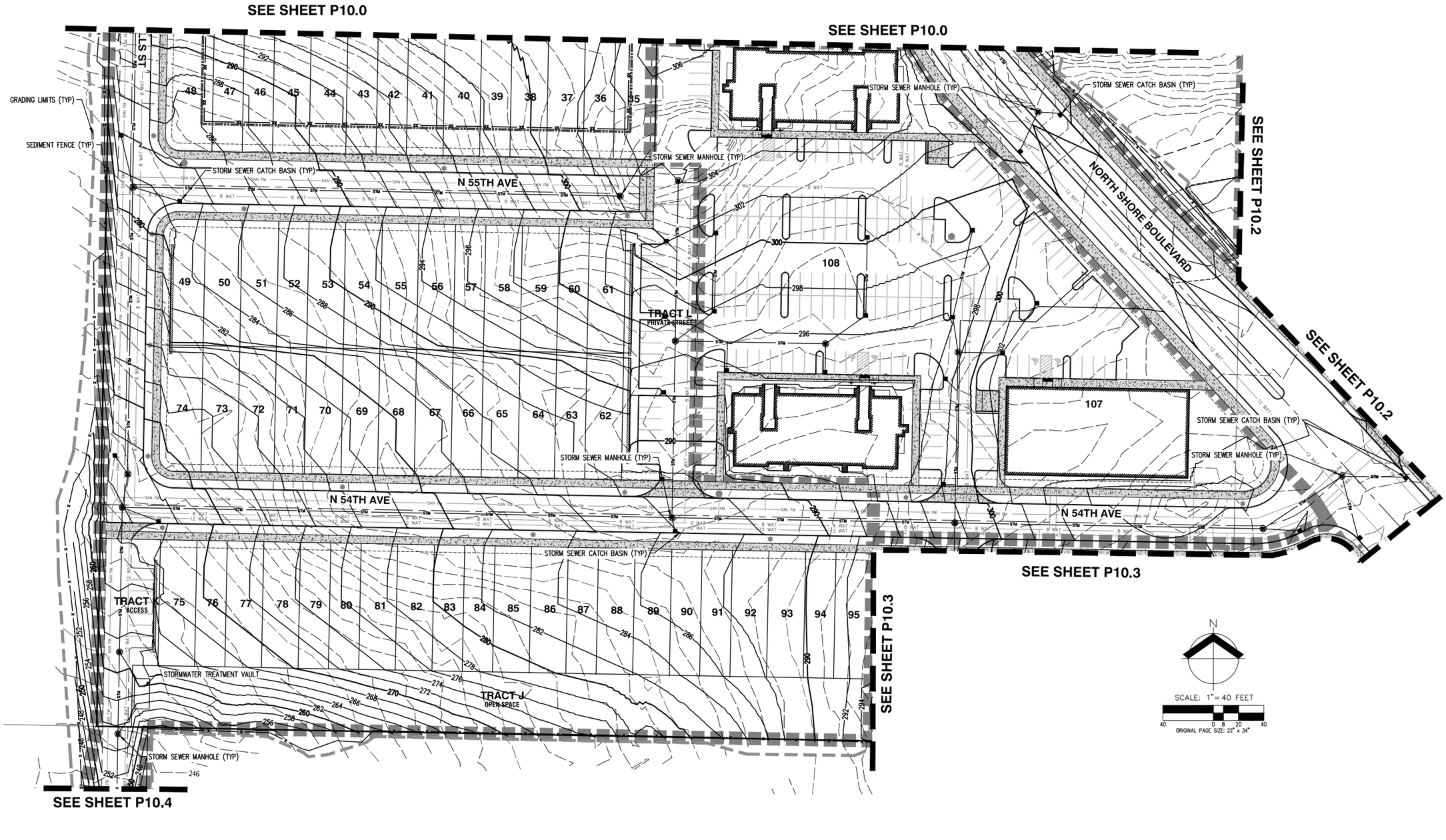
AKS DRAWING FILE: 9095 P10.0 STNDWG | LAYOUT: P10.0

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	

GENERAL NOTES

1. SEE SHEET P10.0 FOR STORMWATER NOTES.



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PRELIMINARY STORMWATER PLAN
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P1 799

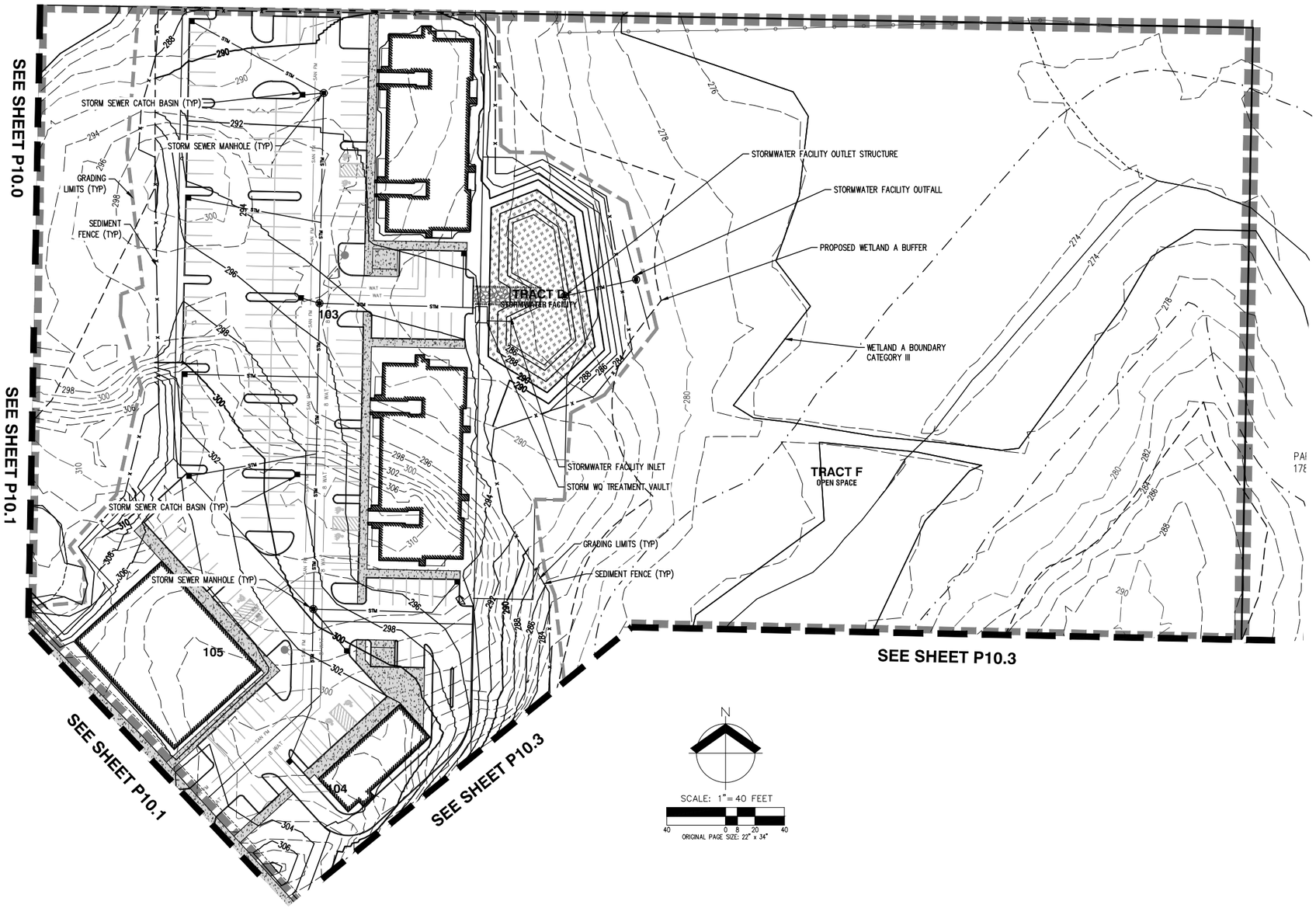
AKS DRAWING FILE: 9095 P10.0 STNDWG | LAYOUT: P10.1

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

GENERAL NOTES

1. SEE SHEET P10.0 FOR STORMWATER NOTES.



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CHECKED BY:	BDH

P1 800

AKS DRAWING FILE: 9095 P10.0 STMDWG | LAYOUT: P10.2

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	

GENERAL NOTES

1. SEE SHEET P10.0 FOR STORMWATER NOTES.

N

SCALE: 1"= 40 FEET

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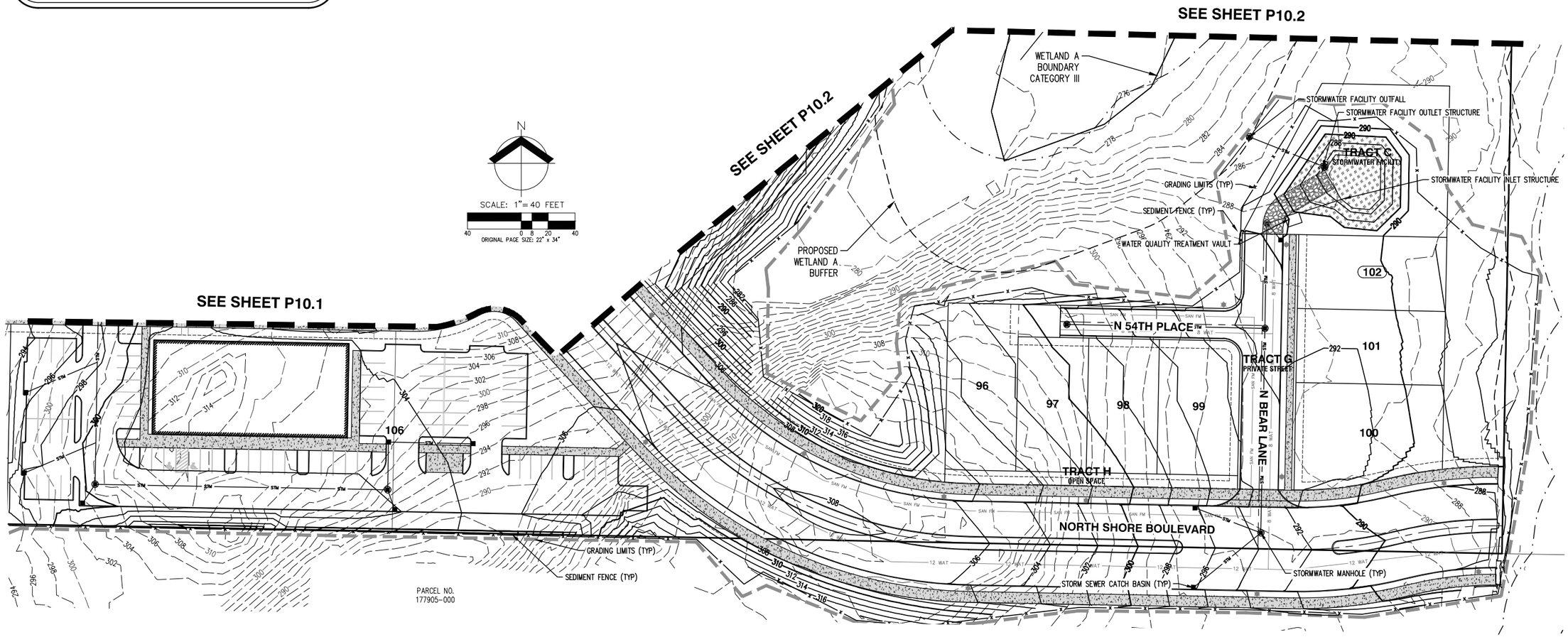
ORIGINAL PAGE SIZE: 22" x 34"



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CHECKED BY:	BDH

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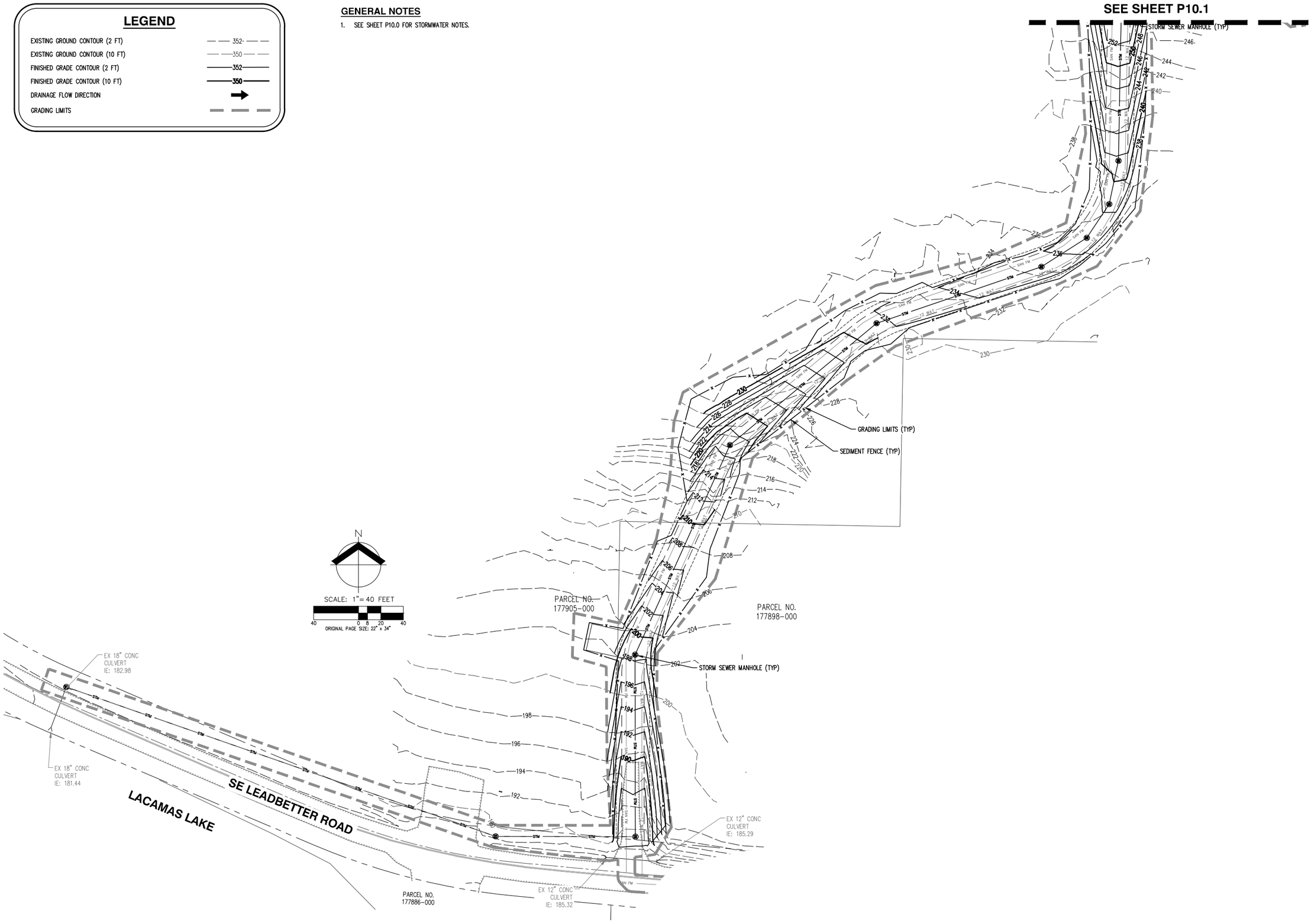
LEGEND

- 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

GENERAL NOTES

1. SEE SHEET P10.0 FOR STORMWATER NOTES.



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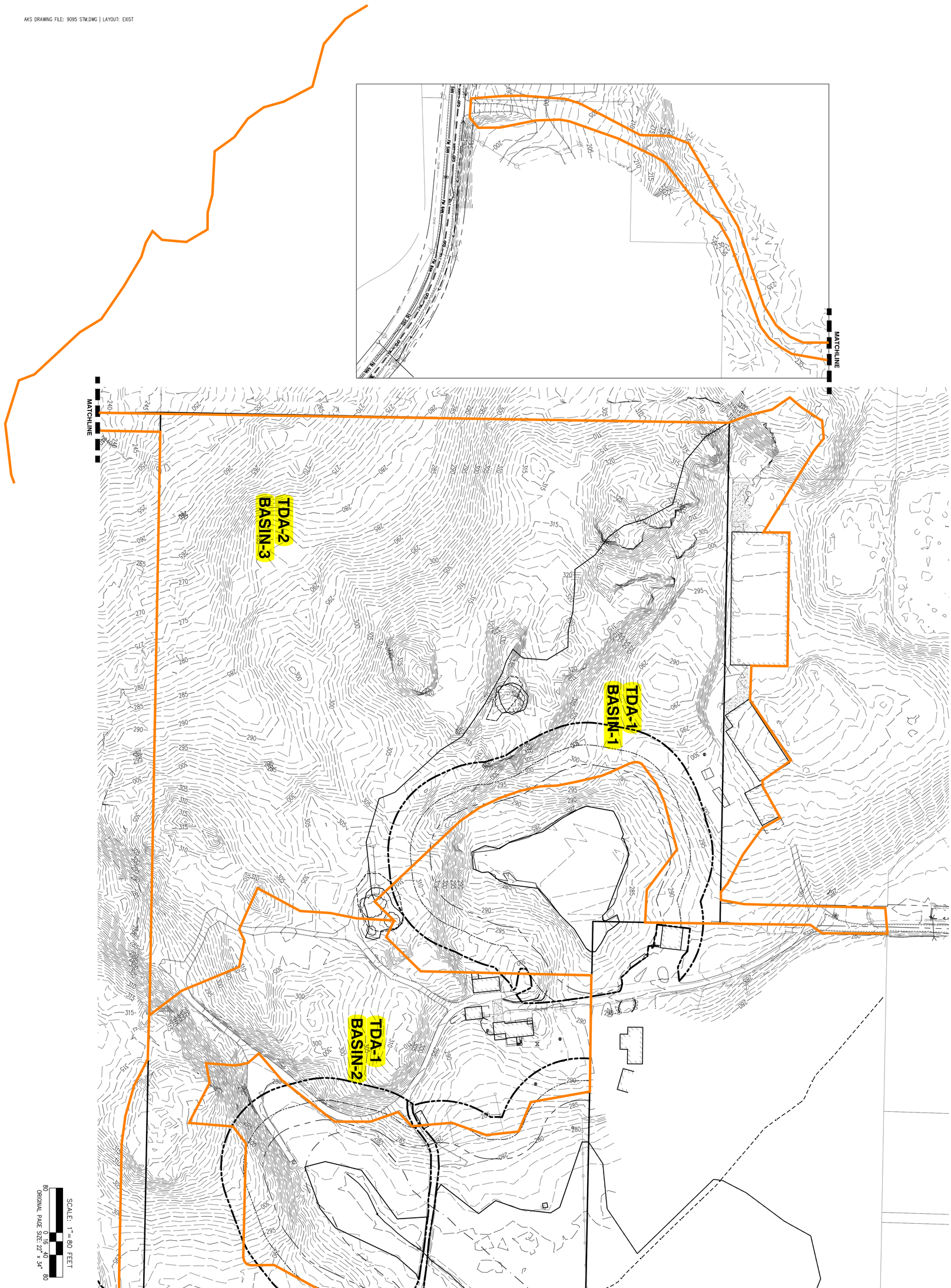
Appendix D: Stormwater Basin Maps



EXISTING STORM BASIN MAP
VILLAGE AT NORTH SHORE
HSR
CAMAS WASHINGTON

C-01

JOB NUMBER:	9095
DATE:	
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CHECKED BY:	BHH

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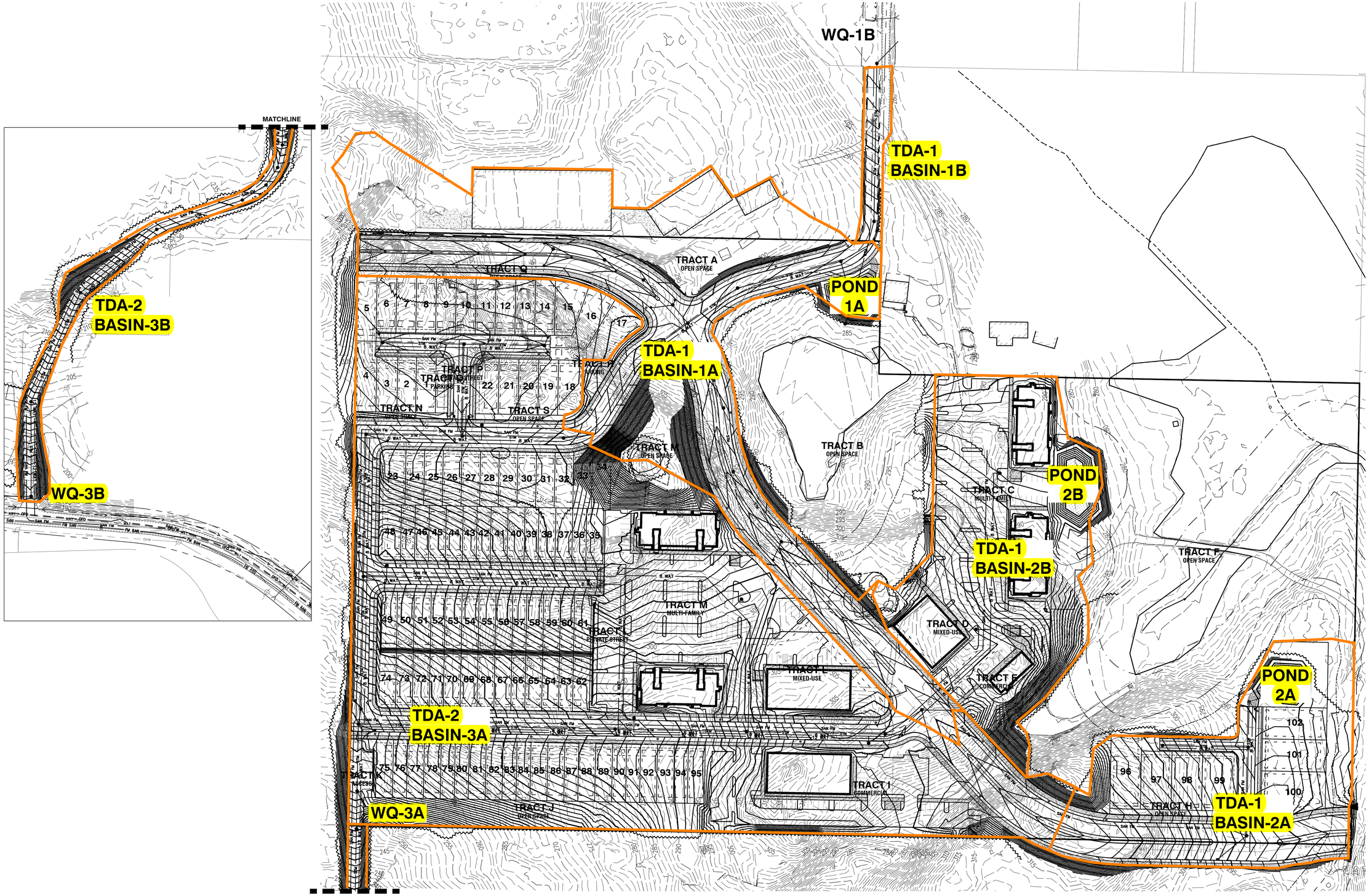

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DEVELOPED STORM BASIN MAP
VILLAGE AT NORTH SHORE
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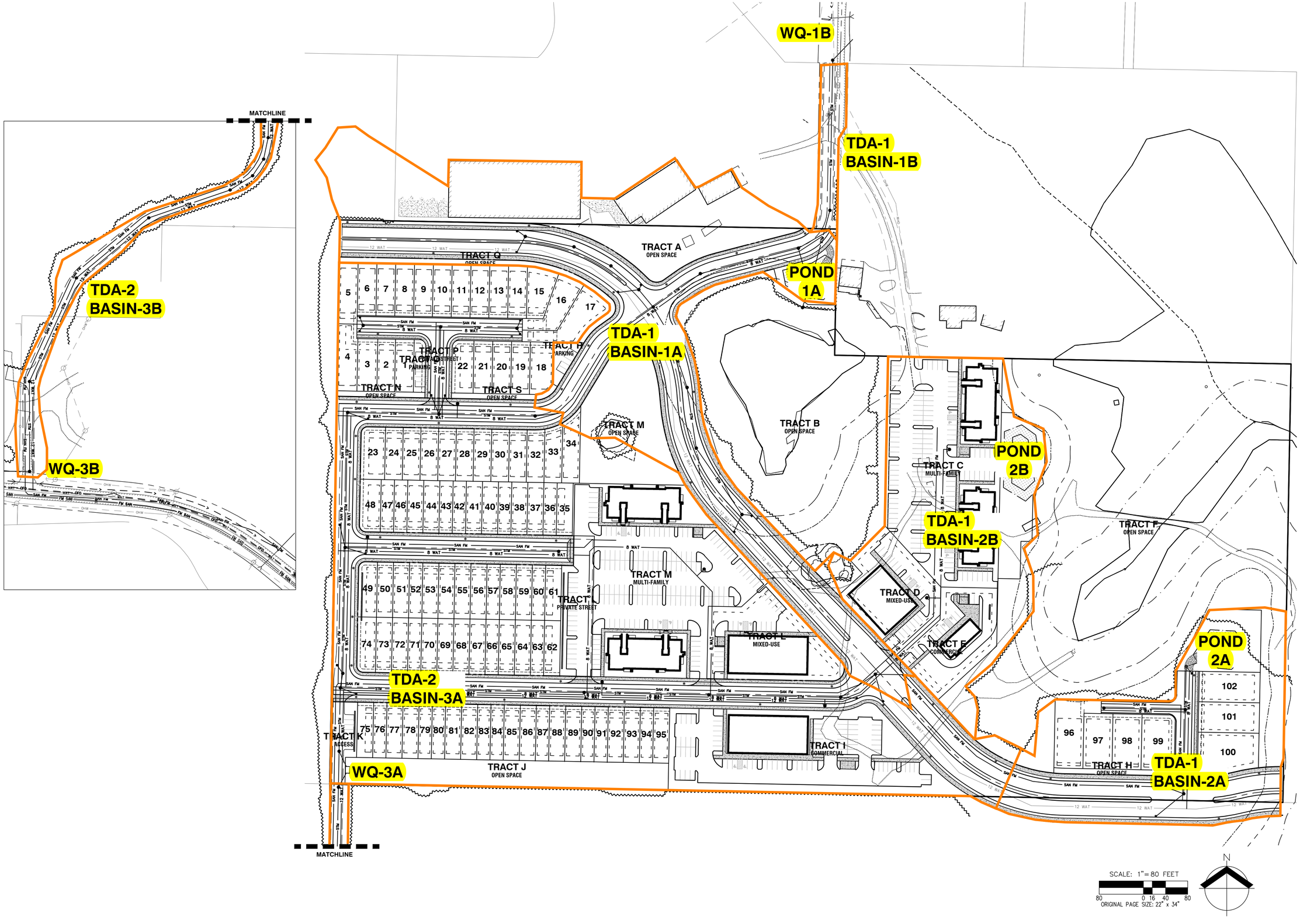
C-02

805

AKS DRAWING FILE: 9095 STNLDWG | LAYOUT: DEVEL



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DEVELOPED STORM BASIN MAP
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DATE:	
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CHECKED BY:	BHH

C-02

AKS DRAWING FILE: 9095 STNLDWG | LAYOUT: DEVEL (2)

Appendix E: BMP Details

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.

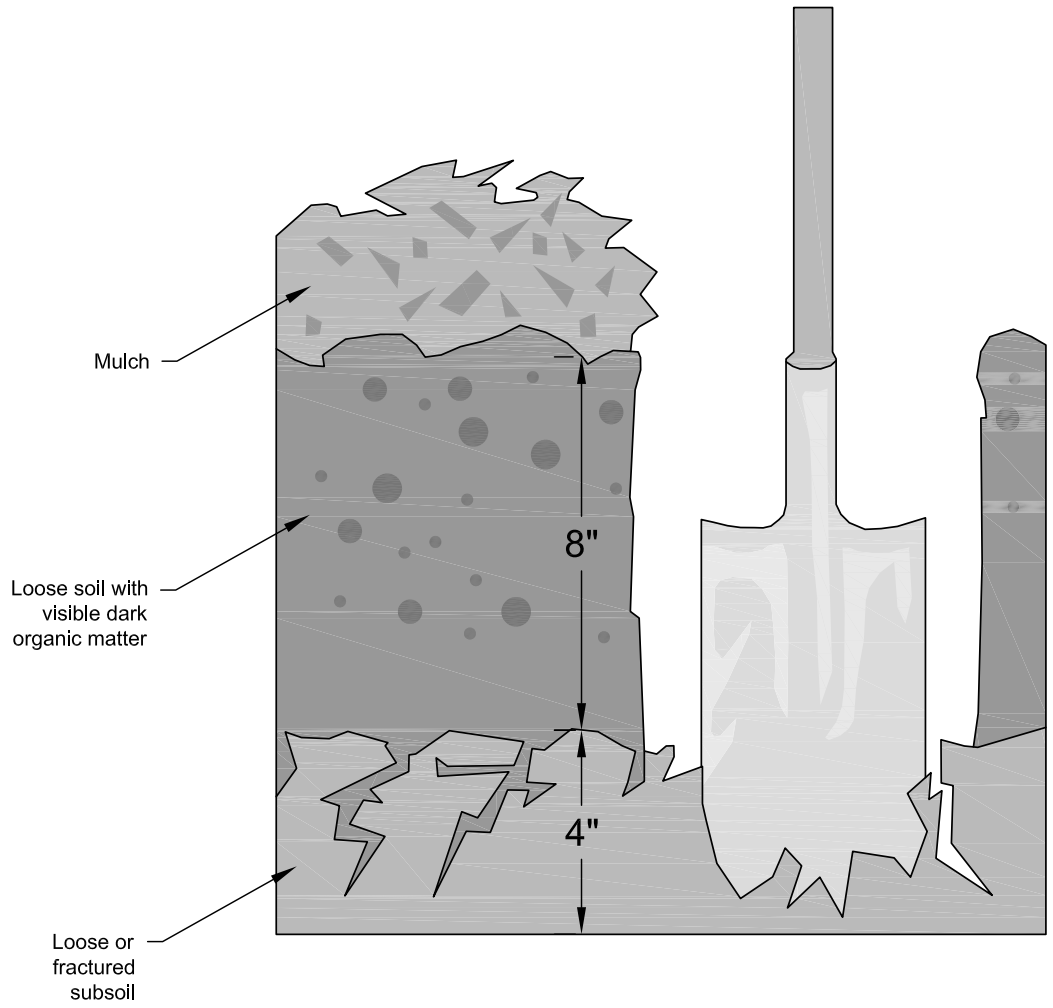
Operation and Maintenance Criteria

- 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).

V-13.3 Other Detention Design Options

This section presents options beyond the BMPs provided in this manual that the designer may want to consider incorporating into the project design for detaining flows to meet Flow Control requirements.

Use of Parking Lots for Additional Detention

Parking lots may be used to provide additional detention volume, provided that all of the following criteria are met:

1. The depth of water detained does not exceed 1 foot (or other depth established by the permitting authority or local jurisdiction) at any location in the parking lot for runoff events up to and including the 100 year event.
2. The gradient of the parking lot area subject to ponding is 1 percent or greater.
3. The emergency overflow path is identified and noted on the engineering plan(s). The overflow must not create a significant adverse impact to downstream properties or drainage system(s).
4. Fire lanes used for emergency equipment must be free of ponding water for all runoff events up to and including the 100 year event.
5. A downstream Runoff Treatment BMP with sorptive oil removal is needed prior to discharge to surface or groundwater.

Use of Roofs for Detention

Detention ponding on roofs of structures may be used to meet Flow Control requirements provided all of the following are met:

1. The roof support structure is analyzed by a structural engineer to address the weight of ponded water (including an appropriate safety factor).
2. The roof area subject to ponding is sufficiently waterproofed to achieve a minimum service life of 30 years.
3. The minimum pitch of the roof area subject to ponding is 1/4 inch per foot.
4. An overflow system is included in the design to safely convey the 100 year peak flow from the roof.
5. A mechanism is included in the design to allow the ponding area to be drained for maintenance purposes or in the event the restrictor device is plugged.

BMP D.1: Detention Ponds

The design criteria in this section are for detention ponds (this BMP). However, many of the criteria also apply to BMP T7.10: Infiltration Ponds, BMP T10.10: Wetponds - Basic and Large, and

BMP T10.40: Combined Detention and Wetpool Facilities.

Dam Safety for Detention BMPs

Stormwater detention BMPs that can impound 10 acre-feet (435,600 cubic feet; 3.26 million gallons) or more with the water level measured at the embankment crest are subject to the state's dam safety requirements, even if water storage is intermittent and infrequent (WAC 173-175-020 (1)). The principal safety concern is for the downstream population at risk if the dam should breach and allow an uncontrolled release of the pond contents. Peak flows from dam failures are typically much larger than the 100-year flows which detention BMPs are typically designed to accommodate.

Dam safety considerations generally apply only to the volume of water stored above natural ground level. Per the definition of dam height in WAC 173-175-030, natural ground elevation is measured from the downstream toe of the dam. If a trench is cut through natural ground to install an outlet pipe for a spillway or low-level drain, the natural ground elevation is measured from the base of the trench where the natural ground remains undisturbed.

With regard to the engineering design of stormwater detention BMPs, the primary effect of the state's dam safety requirements is in sizing the emergency spillway to accommodate the runoff from the dam safety design storm without overtopping the dam. The hydrologic computation procedures are the same as for the original pond design, except that the computations must use more extreme precipitation values and the appropriate dam safety design storm hyetographs. This information is described in detail within guidance documents developed by and available from Ecology's Dam Safety Office. In addition to the other design requirements for stormwater detention BMPs, dam safety requirements should be an integral part of planning and design for stormwater detention ponds. It is most cost-effective to consider these requirements from the beginning of the project.

In addition to the hydrologic and hydraulic issues related to precipitation and runoff, other dam safety requirements include geotechnical issues, construction inspection and documentation, dam breach analysis, inundation mapping, emergency action planning, and periodic inspections by project owners and by Dam Safety engineers. All of these requirements, plus procedural requirements for plan review and approval and payment of construction permit fees are described in detail in guidance documents developed by and available from the Dam Safety Office.

In addition to the written guidance documents, Dam Safety engineers are available to provide technical assistance to project owners and designers in understanding and addressing the dam safety requirements for their specific project. In the interest of providing a smooth integration of dam safety requirements into the stormwater detention project and streamlining Dam Safety's engineering review and issuance of the construction permit, it is recommended and requested that Dam Safety be contacted early in the project's planning process. The Dam Safety Office is located in the Ecology headquarters building in Lacey.

For more information about dam safety, please refer to Ecology's Dam Safety Office's Website at:

https://www.ecology.wa.gov/Water-Shorelines/Water-supply/Dams

Design Criteria

Standard details for detention ponds are shown in Figure V-13.9: Typical Detention Pond, Figure V-13.10: Typical Detention Pond Sections, and Figure V-13.11: Overflow Structure. Control structure details and design guidance are provided in V-13.2 Control Structure Design.

General

1. Detention ponds must be designed as flow through systems (however, parking lot storage may be utilized through a back up system; see V-13.3 Other Detention Design Options). Developed flows must enter through a conveyance system separate from the control structure and outflow conveyance system. Maximizing distance between the inlet and outlet is encouraged to promote sedimentation.
2. Detention pond bottoms should be level and be located a minimum of 0.5 foot (preferably 1 foot) below the inlet and outlet to provide sediment storage.
3. Design guidelines for outflow control structures are specified in V-13.2 Control Structure Design.
4. A geotechnical analysis and report must be prepared for slopes over 15%, or if located within 200 feet of the top of a slope steeper than 40%, or landslide hazard area. The scope of the geotechnical report should include the assessment of impoundment seepage on the stability of the natural slope where the pond will be located within the setback limits set forth in this section.

Figure V-13.9: Typical Detention Pond

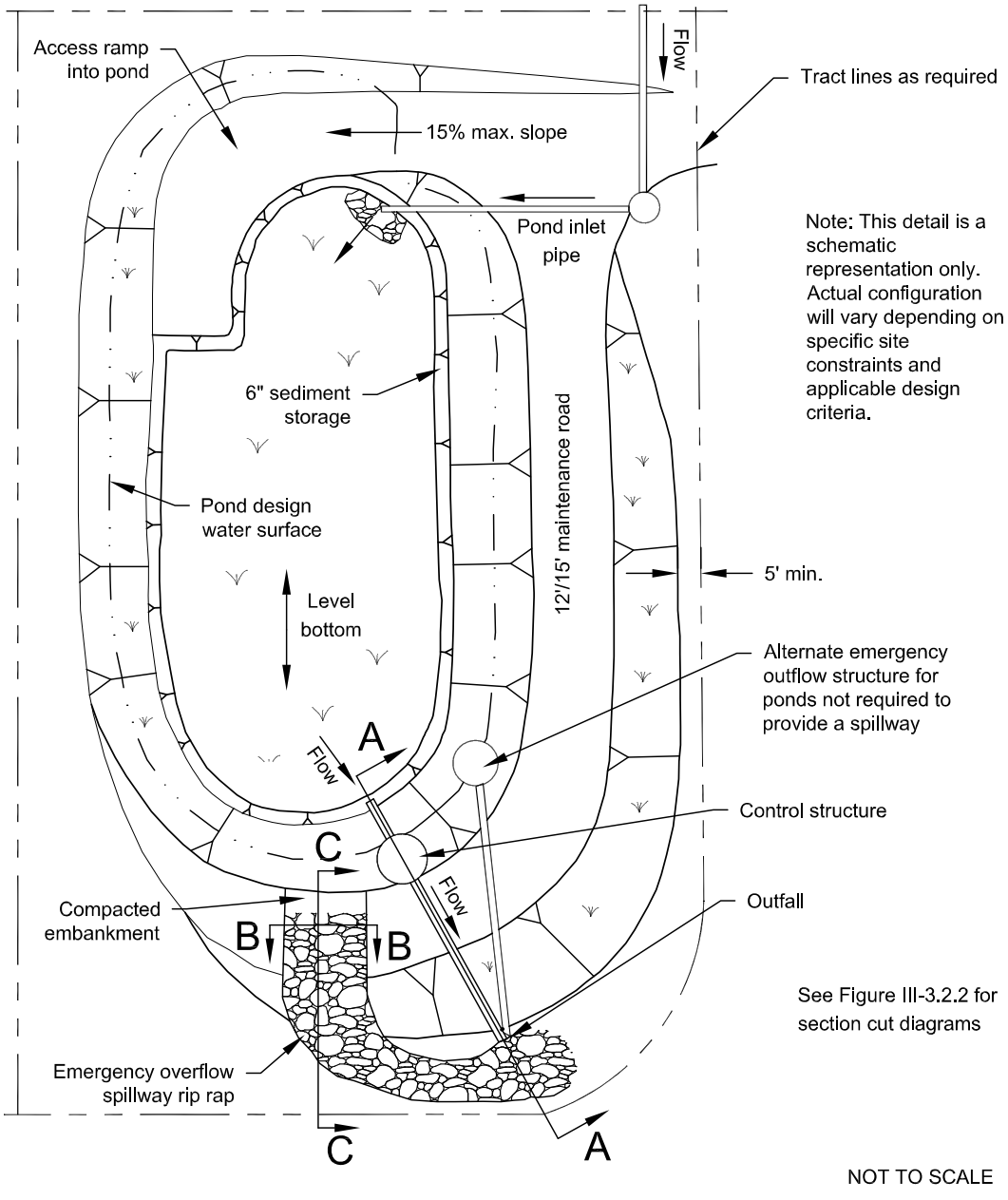


Figure V-13.10: Typical Detention Pond Sections

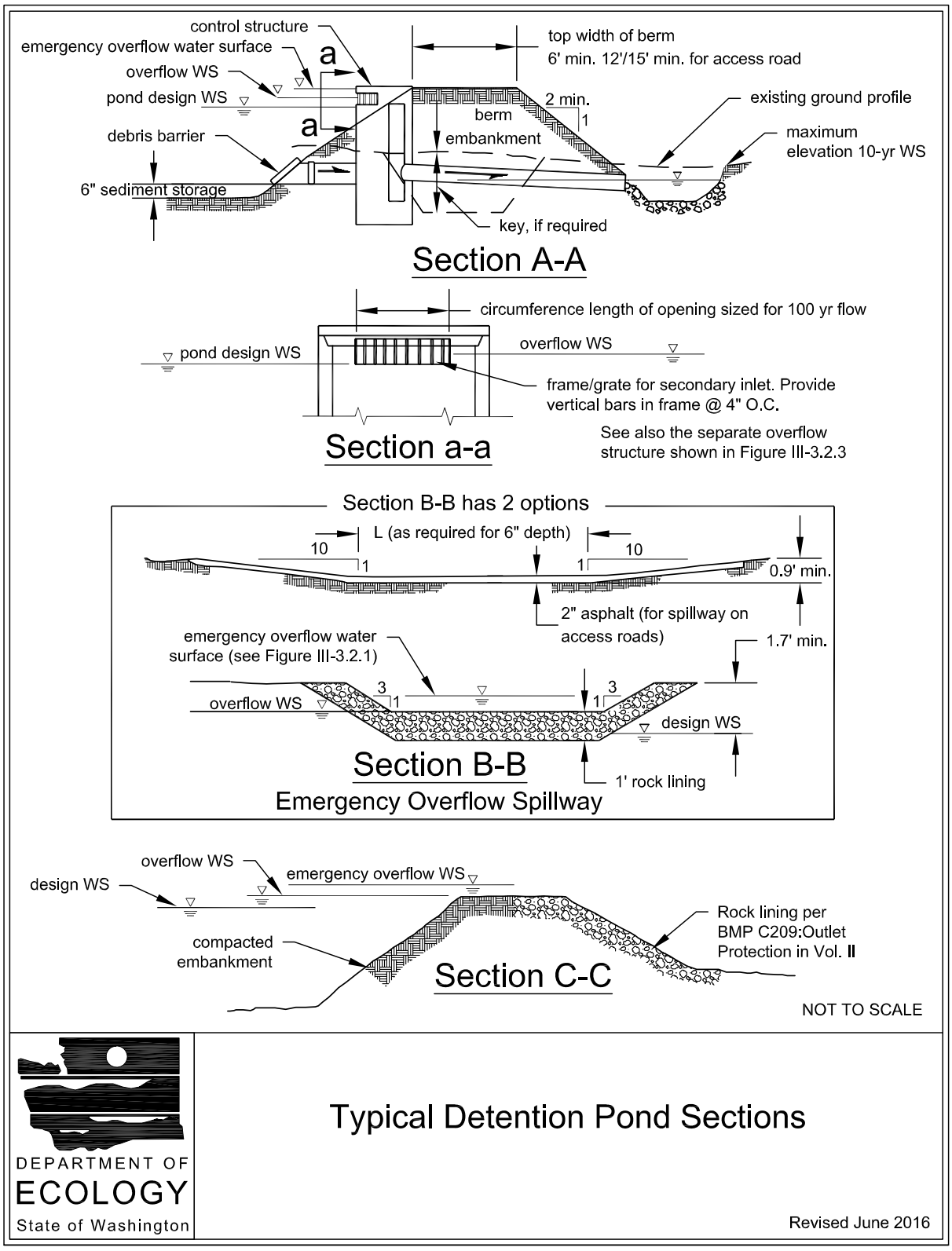
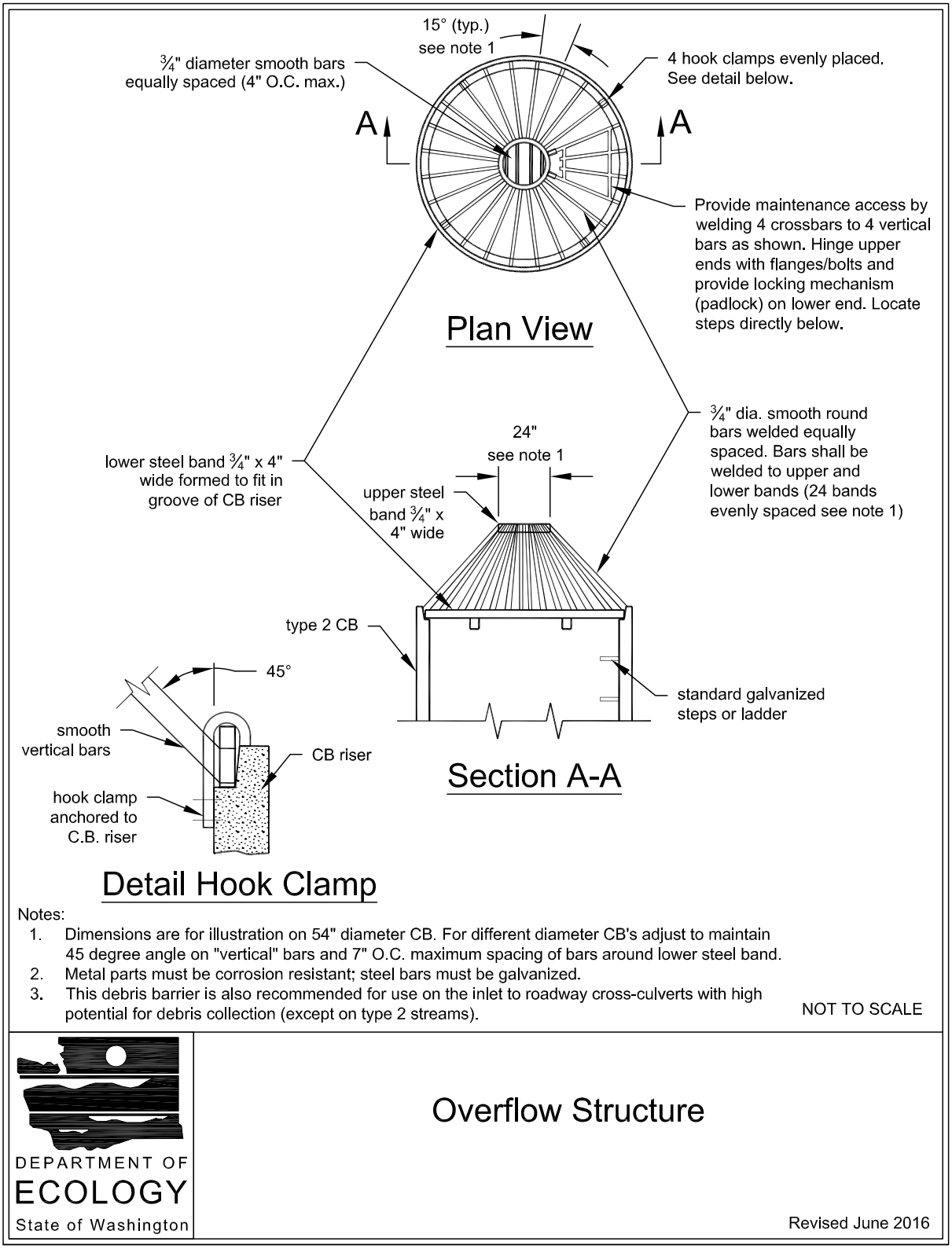


Figure V-13.11: Overflow Structure



Notes:

1. Dimensions are for illustration on 54" diameter CB. For different diameter CB's adjust to maintain 45 degree angle on "vertical" bars and 7" O.C. maximum spacing of bars around lower steel band.
2. Metal parts must be corrosion resistant; steel bars must be galvanized.
3. This debris barrier is also recommended for use on the inlet to roadway cross-culverts with high potential for debris collection (except on type 2 streams).

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State of Washington

Overflow Structure

Revised June 2016

Side Slopes

1. Interior side slopes up to the emergency overflow water surface should not be steeper than 3H:1V unless a fence is provided (see Fencing below).
2. Exterior side slopes must not be steeper than 2H:1V, unless analyzed for stability by a geotechnical engineer.
3. Detention pond walls may be vertical retaining walls, provided:
    - They are constructed of reinforced concrete per BMP D.3: Detention Vaults.
    - A fence is provided along the top of the wall.
    - The entire detention pond perimeter may be retaining walls, however, it is recommended that at least 25 percent of the pond perimeter be a vegetated soil slope not steeper than 3H:1V. If the entire pond perimeter is to be retaining walls, provide ladders on the walls for safety reasons.
    - The design is stamped by a licensed engineer in the state of Washington with structural expertise.

    Other retaining walls such as rockeries, concrete, masonry unit walls, and keystone type walls may be used if designed by a geotechnical engineer or a civil engineer with structural expertise.

Inlet

Reduce flow velocities of the discharge to the pond from the inlet pipe by using the methods described in V-1.4.3 Outfall Systems.

Embankments

1. Pond berm embankments higher than 6 feet must be designed by a licensed engineer in the state of Washington with geotechnical expertise
2. For berm embankments 6 feet or less, the minimum top width should be 6 feet, or as recommended by a geotechnical engineer.
3. Construct pond berm embankments on native consolidated soil (or adequately compacted and stable fill soils analyzed by a geotechnical engineer) free of loose surface soil materials, roots, and other organic debris.
4. Construct pond berm embankments greater than 4 feet in height by excavating a key equal to 50 percent of the berm embankment cross sectional height and width, unless specified otherwise by a geotechnical engineer.
5. Embankment compaction should be accomplished in such a manner as to produce a dense, low permeability engineered fill that can tolerate post-construction settlements with a minimum of cracking. Place the embankment fill on a stable subgrade and compact to a minimum of 95% of the Standard Proctor Maximum Density (ASTM Procedure D698) or

95% of the Modified Proctor Maximum Density (ASTM Procedure D1557). Placement moisture content should lie within 1% dry to 3% wet of the optimum moisture content. The referenced compaction standard may have to be increased to comply with local regulations.

Construct the berm embankment of soils with the following characteristics: a minimum of 20% silt and clay, a maximum of 60% sand, a maximum of 60% silt, with nominal gravel and cobble content. Soils outside this specified range can be used, provided the design satisfactorily addresses the engineering concerns posed by these soils. The paramount concerns with these soils are their susceptibility to internal erosion or piping, and to surface erosion from wave action and runoff on the upstream and downstream slopes, respectively. Note: In general, excavated glacial till is well suited for berm embankment material.

6. Place anti seepage filter-drain diaphragms on outflow pipes in berm embankments impounding water with depths greater than 8 feet at the design water surface. See *Dam Safety Guidelines Part IV: Dam Design and Construction*, (Ecology, 1993) Section 3.3.B on pages 3-27 to 3-30.

Primary Overflow

1. Provide a primary overflow (usually a riser pipe within the control structure; see V-13.2 Control Structure Design) in all detention ponds, tanks, and vaults to bypass the 50 year developed peak flow over or around the restrictor system. This assumes the facility will be full due to plugged orifices or high inflows. The primary overflow is intended to protect against breaching of a pond embankment (or overflows of the upstream conveyance system in the case of a detention tank or vault). The design must provide controlled discharge directly into the downstream conveyance system or another acceptable discharge point.

2. Provide a secondary inlet to the control structure in ponds as additional protection against overtopping should the inlet pipe to the control structure become plugged. A grated opening ("jailhouse window") in the control structure manhole functions as a weir (see Figure V-13.10: Typical Detention Pond Sections) when used as a secondary inlet.

   Note: The maximum circumferential length of this opening must not exceed one half the control structure circumference. The "birdcage" overflow structure as shown in Figure V-13.11: Overflow Structure may also be used as a secondary inlet.

Emergency Overflow Spillway

- In addition to the primary overflow (described above), ponds, tanks, and vaults must have an emergency overflow spillway. Emergency overflow spillways are intended to control the location of overtopping in the event of total control structure failure (e.g. blockage of the control structure outlet pipe) or extreme inflows, and direct overflows back into the downstream conveyance system or other acceptable discharge point.
- For impoundments of 10 acre-feet or greater, the emergency overflow spillway must meet the state's dam safety requirements (see Dam Safety for Detention BMPs above).
- For impoundments under 10 acre-feet, ponds must have an emergency overflow spillway that is sized to pass the 100 year developed peak flow in the event of total control structure failure (e.g. blockage of the control structure outlet pipe) or extreme inflows.

- As an option for ponds with berms less than 2 feet in height and located at grades less than 5 percent, emergency overflow may be provided by an emergency overflow structure, such as a Type II manhole fitted with a birdcage as shown in Figure V-13.11: Overflow Structure. The emergency overflow structure must be designed to pass the 100 year developed peak flow, with a minimum 6 inches of freeboard, directly to the downstream conveyance system or another acceptable discharge point. Where an emergency overflow spillway would discharge to a slope steeper than 15%, consideration should be given to providing an emergency overflow structure in addition to the spillway.
- Armor the emergency overflow spillway with riprap in conformance with BMP C209: Outlet Protection. The spillway must be armored full width, beginning at a point midway across the berm embankment and extending downstream to where emergency overflows reenter the conveyance system (see Figure V-13.10: Typical Detention Pond Sections).
- Emergency overflow spillway designs must be analyzed as broad crested trapezoidal weirs as described in Methods of Analysis (below). Either one of the weir sections shown in Figure V-13.10: Typical Detention Pond Sections may be used.
- Design the emergency overflow spillway to allow a minimum of 1 foot of freeboard above the maximum design storm (100-year, 24-hour storm) water surface level.

Access

1. Provide maintenance access road(s) to the control structure and other drainage structures associated with the pond (e.g. inlet or bypass structures). It is recommended that manhole and catch basin lids be in or at the edge of the access road and at least 3 feet from a property line.
2. An access ramp is needed for removal of sediment with a trackhoe and truck. Extend the ramp to the pond bottom if the pond bottom is greater than 1,500 square feet (measured without the ramp). If the pond bottom is less than 1,500 square feet (measured without the ramp), the ramp may end at an elevation 4 feet above the pond bottom.

   On large, deep ponds, provide truck access to the pond bottom via an access ramp so loading can be done in the pond bottom. On small deep ponds, the truck can remain on the ramp for loading. On small shallow ponds, a ramp to the bottom may not be required if the trackhoe can load a truck parked at the pond edge or on the internal berm of a wetpond or combined pond (trackhoes can negotiate interior pond side slopes).
3. The internal berm of BMP T10.10: Wetponds - Basic and Large or BMP T10.40: Combined Detention and Wetpool Facilities may be used for access if all of the following apply:
   - The internal berm is no more than 4 feet above the first wetpool cell.
   - The first wetpool cell is less than 1,500 square feet (measured without the ramp).
   - The internal berm is designed to support a loaded truck, considering the berm is normally submerged and saturated.
4. If a fence is required, access should be limited by a double posted gate or by bollards – two fixed bollards on each side of the access road and two removable bollards equally located

between the fixed bollards.

5. The design guidelines for access roads and ramps:
    - A maximum grade of 15%.
    - A minimum of 40 feet outside turning radius.
    - Locate fence gates only on straight sections of road.
    - 15 feet in width on curves and 12 feet on straight sections.
    - The drivable surface should have a 20-year design life to carry the load of a 24-ton truck; assume three trips per year.
    - Provide a paved apron where access roads connect to paved public roadways.
    - A truck turnaround is required at the terminus of the road.
6. Construct access roads and ramps with asphalt pavement, permeable pavement, gravel surface, or modular grid pavement. All surfaces must conform to the jurisdictional standards and manufacturer's specifications.

Fencing

1. A fence is needed at the emergency overflow water surface elevation, or higher, where a pond interior side slope is steeper than 3H:1V, or where the impoundment is a wall greater than 24 inches in height. The fence need only be constructed for those slopes steeper than 3H:1V. Other regulations such as the International Building Code or Uniform Building Code may require fencing of vertical walls. If more than 10 percent of slopes are steeper 3H:1V, it is recommended that the entire pond be fenced.

    Fences discourage access to portions of a pond where steep side slopes (steeper than 3:1) increase the potential for slipping into the pond. Fences also serve to guide those who have fallen into a pond to side slopes that are flat enough (flatter than 3:1 and unfenced) to allow for easy escape.
2. It is recommended that fences be 6 feet in height. For example designs, see WSDOT Standard Plan L-2, Type 1 or Type 3 chain link fence. The fence may be a minimum of 4 feet in height if the depth of the impoundment (measured from the lowest elevation in the bottom of the impoundment, directly adjacent to the bottom of the fenced slope, up to the emergency overflow water surface) is 5 feet or less. For example designs, see WSDOT Standard Plan L-2, Type 4 or Type 6 chain link fence.
3. Access road gates may be 16 feet in width consisting of two swinging sections 8 feet in width. Provide additional vehicular access gates as needed to facilitate maintenance access.
4. Pedestrian access gates (if needed) should be 4 feet in width.
5. Vertical metal balusters or 9 gauge galvanized steel fabric with bonded vinyl coating can be used as fence material. For steel fabric fences, consider the following aesthetic features:

   a. Vinyl coating that is compatible with the surrounding environment (e.g. green in open, grassy areas and black or brown in wooded areas). All posts, cross bars, and gates may be painted or coated the same color as the vinyl clad fence fabric.

   b. Fence posts and rails that conform to WSDOT Standard Plan L 2 for Types 1, 3, or 4 chain link fence.

6. For metal baluster fences, Uniform Building Code standards apply.
7. Wood fences may be used in subdivisions where the fence will be maintained by homeowners associations or adjacent lot owners.
8. Wood fences should have pressure treated posts (ground contact rated) either set in 24 inch deep concrete footings or attached to footings by galvanized brackets. Rails and fence boards may be cedar, pressure treated fir, or hemlock.
9. Where only short stretches of the pond perimeter (< 10 percent) have side slopes steeper than 3:1, use split rail fences (3 foot minimum height) or densely planted thorned hedges (e.g., barberry, holly) in place of a standard fence.

Sediment Depth Marker

Consider providing a fixed vertical sediment depth marker installed in the BMP to measure sediment deposition over time.

Signage

Detention ponds (this BMP), BMP T7.10: Infiltration Ponds, BMP T10.10: Wetponds - Basic and Large, and BMP T10.40: Combined Detention and Wetpool Facilities should have a sign placed for maximum visibility from adjacent streets, sidewalks, and paths. An example of sign specifications for a permanent surface water control pond is illustrated in Figure V-13.12: Example of Permanent Surface Water Control Pond Sign.

Appendix F: Flow Control & Water Quality Analysis

WWHM2012

PROJECT REPORT

TDA #1 FLOW CONTROL WITH OVERFLOW/EMERGECY OUTLET

General Model Information

WWHM2012 Project Name: 9095 Villages
Site Name:
Site Address:
City:
Report Date: 7/11/2025
Gage: Lacamas
Data Start: 1948/10/01
Data End: 2008/09/30
Timestep: 15 Minute
Precip Scale: 1.300
Version Date: 2025/05/13
Version: 4.3.2

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

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Landuse Basin Data

Predeveloped Land Use

Basin 1

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Forest, Steep	5.236
SG4, Field, Mod	1.203
Pervious Total	6.439

Impervious Land Use	acre
ROADS FLAT	0.178
ROOF TOPS FLAT	0.844
Impervious Total	1.022
Basin Total	7.461

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

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Basin 2

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Forest, Steep	7.979
Pervious Total	7.979

Impervious Land Use	acre
Impervious Total	0
Basin Total	7.979

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

POC 1	POC 1

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Basin 3

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
SG4, Forest, Steep	14.548
Pervious Total	14.548
Impervious Land Use	acre
Impervious Total	0
Basin Total	14.548

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

POC 2	POC 2

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Mitigated Land Use

Basin 1A

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Mod	2.53
Pervious Total	2.53

Impervious Land Use	acre
ROADS FLAT	0.178
ROADS MOD	2.798
ROOF TOPS FLAT	0.844
Impervious Total	3.82
Basin Total	6.35

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Trapezoidal Pond 1A	Trapezoidal Pond 1A	

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Basin 1B

Bypass:	Yes
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Mod	0.147
Pervious Total	0.147

Impervious Land Use	acre
ROADS MOD	0.141
Impervious Total	0.141
Basin Total	0.288

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 1	POC 1	

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Basin 2A

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Mod	0.728
Pervious Total	0.728

Impervious Land Use	acre
ROADS MOD	2.336
Impervious Total	2.336
Basin Total	3.064

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Trapezoidal Pond 2A	Trapezoidal Pond 2A	

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Basin 2B

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Mod	0.776
Pervious Total	0.776

Impervious Land Use	acre
ROADS MOD	2.932
Impervious Total	2.932
Basin Total	3.708

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Trapezoidal Pond 2B	Trapezoidal Pond 2B	

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Basin 3A

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Mod	3.495
Pervious Total	3.495

Impervious Land Use	acre
ROADS MOD	12.331
Impervious Total	12.331
Basin Total	15.826

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 2	POC 2	

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Basin 3B

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Mod	0.268
Pervious Total	0.268

Impervious Land Use	acre
ROADS MOD	0.486
Impervious Total	0.486
Basin Total	0.754

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 2	POC 2	

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Routing Elements
Predeveloped Routing

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Mitigated Routing

Trapezoidal Pond 1A

Bottom Length: 40.00 ft.
Bottom Width: 40.00 ft.
Depth: 4 ft.
Volume at riser head: 0.1689 acre-feet.
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure
Riser Height: 3 ft.
Riser Diameter: 18 in.
Notch Type: Rectangular
Notch Width: 0.500 ft.
Notch Height: 1.200 ft.
Orifice 1 Diameter: 4.000 in. Elevation:-0.387083333333333 ft.
Element Outlets:
Outlet 1 Outlet 2
Outlet Flows To:

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Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.036	0.000	0.270	0.000
0.0444	0.037	0.001	0.285	0.000
0.0889	0.037	0.003	0.299	0.000
0.1333	0.038	0.005	0.313	0.000
0.1778	0.038	0.006	0.326	0.000
0.2222	0.039	0.008	0.338	0.000
0.2667	0.039	0.010	0.351	0.000
0.3111	0.040	0.012	0.362	0.000
0.3556	0.040	0.013	0.374	0.000
0.4000	0.041	0.015	0.385	0.000
0.4444	0.041	0.017	0.395	0.000
0.4889	0.042	0.019	0.406	0.000
0.5333	0.042	0.021	0.416	0.000
0.5778	0.043	0.023	0.426	0.000
0.6222	0.043	0.025	0.436	0.000
0.6667	0.044	0.027	0.445	0.000
0.7111	0.045	0.029	0.455	0.000
0.7556	0.045	0.031	0.464	0.000
0.8000	0.046	0.033	0.473	0.000
0.8444	0.046	0.035	0.481	0.000
0.8889	0.047	0.037	0.490	0.000
0.9333	0.047	0.039	0.498	0.000
0.9778	0.048	0.041	0.507	0.000
1.0222	0.048	0.043	0.515	0.000
1.0667	0.049	0.045	0.523	0.000
1.1111	0.050	0.048	0.531	0.000
1.1556	0.050	0.050	0.539	0.000
1.2000	0.051	0.052	0.547	0.000
1.2444	0.051	0.054	0.554	0.000
1.2889	0.052	0.057	0.562	0.000
1.3333	0.052	0.059	0.569	0.000

1.3778	0.053	0.061	0.576	0.000
1.4222	0.054	0.064	0.584	0.000
1.4667	0.054	0.066	0.591	0.000
1.5111	0.055	0.069	0.598	0.000
1.5556	0.055	0.071	0.605	0.000
1.6000	0.056	0.074	0.612	0.000
1.6444	0.057	0.076	0.618	0.000
1.6889	0.057	0.079	0.625	0.000
1.7333	0.058	0.081	0.632	0.000
1.7778	0.058	0.084	0.638	0.000
1.8222	0.059	0.086	0.650	0.000
1.8667	0.060	0.089	0.680	0.000
1.9111	0.060	0.092	0.718	0.000
1.9556	0.061	0.095	0.763	0.000
2.0000	0.062	0.097	0.813	0.000
2.0444	0.062	0.100	0.868	0.000
2.0889	0.063	0.103	0.926	0.000
2.1333	0.064	0.106	0.988	0.000
2.1778	0.064	0.109	1.052	0.000
2.2222	0.065	0.111	1.119	0.000
2.2667	0.066	0.114	1.188	0.000
2.3111	0.066	0.117	1.259	0.000
2.3556	0.067	0.120	1.331	0.000
2.4000	0.067	0.123	1.405	0.000
2.4444	0.068	0.126	1.481	0.000
2.4889	0.069	0.129	1.557	0.000
2.5333	0.070	0.132	1.634	0.000
2.5778	0.070	0.136	1.712	0.000
2.6222	0.071	0.139	1.790	0.000
2.6667	0.072	0.142	1.869	0.000
2.7111	0.072	0.145	1.948	0.000
2.7556	0.073	0.148	2.027	0.000
2.8000	0.074	0.152	2.107	0.000
2.8444	0.074	0.155	2.202	0.000
2.8889	0.075	0.158	2.299	0.000
2.9333	0.076	0.162	2.398	0.000
2.9778	0.076	0.165	2.499	0.000
3.0222	0.077	0.168	2.605	0.000
3.0667	0.078	0.172	2.831	0.000
3.1111	0.079	0.175	3.150	0.000
3.1556	0.079	0.179	3.538	0.000
3.2000	0.080	0.183	3.977	0.000
3.2444	0.081	0.186	4.455	0.000
3.2889	0.081	0.190	4.958	0.000
3.3333	0.082	0.193	5.471	0.000
3.3778	0.083	0.197	5.979	0.000
3.4222	0.084	0.201	6.470	0.000
3.4667	0.084	0.205	6.929	0.000
3.5111	0.085	0.208	7.345	0.000
3.5556	0.086	0.212	7.710	0.000
3.6000	0.087	0.216	8.019	0.000
3.6444	0.087	0.220	8.272	0.000
3.6889	0.088	0.224	8.476	0.000
3.7333	0.089	0.228	8.646	0.000
3.7778	0.090	0.232	8.886	0.000
3.8222	0.090	0.236	9.067	0.000
3.8667	0.091	0.240	9.243	0.000
3.9111	0.092	0.244	9.415	0.000

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3.9556	0.093	0.248	9.583	0.000
4.0000	0.094	0.252	9.747	0.000
4.0444	0.094	0.256	9.907	0.000

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Trapezoidal Pond 2A

Bottom Length:	40.00 ft.
Bottom Width:	40.00 ft.
Depth:	4 ft.
Volume at riser head:	0.1689 acre-feet.
Side slope 1:	3 To 1
Side slope 2:	3 To 1
Side slope 3:	3 To 1
Side slope 4:	3 To 1
Discharge Structure	
Riser Height:	3 ft.
Riser Diameter:	18 in.
Notch Type:	Rectangular
Notch Width:	0.330 ft.
Notch Height:	1.333 ft.
Orifice 1 Diameter:	4.000 in. Elevation:-0.333333333333333 ft.
Element Outlets:	
Outlet 1	Outlet 2
Outlet Flows To:	

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Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.036	0.000	0.250	0.000
0.0444	0.037	0.001	0.266	0.000
0.0889	0.037	0.003	0.282	0.000
0.1333	0.038	0.005	0.296	0.000
0.1778	0.038	0.006	0.310	0.000
0.2222	0.039	0.008	0.323	0.000
0.2667	0.039	0.010	0.336	0.000
0.3111	0.040	0.012	0.348	0.000
0.3556	0.040	0.013	0.360	0.000
0.4000	0.041	0.015	0.371	0.000
0.4444	0.041	0.017	0.382	0.000
0.4889	0.042	0.019	0.393	0.000
0.5333	0.042	0.021	0.404	0.000
0.5778	0.043	0.023	0.414	0.000
0.6222	0.043	0.025	0.424	0.000
0.6667	0.044	0.027	0.434	0.000
0.7111	0.045	0.029	0.443	0.000
0.7556	0.045	0.031	0.453	0.000
0.8000	0.046	0.033	0.462	0.000
0.8444	0.046	0.035	0.471	0.000
0.8889	0.047	0.037	0.480	0.000
0.9333	0.047	0.039	0.488	0.000
0.9778	0.048	0.041	0.497	0.000
1.0222	0.048	0.043	0.505	0.000
1.0667	0.049	0.045	0.513	0.000
1.1111	0.050	0.048	0.521	0.000
1.1556	0.050	0.050	0.529	0.000
1.2000	0.051	0.052	0.537	0.000
1.2444	0.051	0.054	0.545	0.000
1.2889	0.052	0.057	0.553	0.000
1.3333	0.052	0.059	0.560	0.000
1.3778	0.053	0.061	0.568	0.000
1.4222	0.054	0.064	0.575	0.000

1.4667	0.054	0.066	0.582	0.000
1.5111	0.055	0.069	0.589	0.000
1.5556	0.055	0.071	0.596	0.000
1.6000	0.056	0.074	0.603	0.000
1.6444	0.057	0.076	0.610	0.000
1.6889	0.057	0.079	0.620	0.000
1.7333	0.058	0.081	0.642	0.000
1.7778	0.058	0.084	0.670	0.000
1.8222	0.059	0.086	0.702	0.000
1.8667	0.060	0.089	0.737	0.000
1.9111	0.060	0.092	0.776	0.000
1.9556	0.061	0.095	0.817	0.000
2.0000	0.062	0.097	0.860	0.000
2.0444	0.062	0.100	0.904	0.000
2.0889	0.063	0.103	0.951	0.000
2.1333	0.064	0.106	0.998	0.000
2.1778	0.064	0.109	1.047	0.000
2.2222	0.065	0.111	1.097	0.000
2.2667	0.066	0.114	1.148	0.000
2.3111	0.066	0.117	1.200	0.000
2.3556	0.067	0.120	1.253	0.000
2.4000	0.067	0.123	1.305	0.000
2.4444	0.068	0.126	1.359	0.000
2.4889	0.069	0.129	1.413	0.000
2.5333	0.070	0.132	1.467	0.000
2.5778	0.070	0.136	1.521	0.000
2.6222	0.071	0.139	1.575	0.000
2.6667	0.072	0.142	1.630	0.000
2.7111	0.072	0.145	1.695	0.000
2.7556	0.073	0.148	1.761	0.000
2.8000	0.074	0.152	1.828	0.000
2.8444	0.074	0.155	1.896	0.000
2.8889	0.075	0.158	1.966	0.000
2.9333	0.076	0.162	2.036	0.000
2.9778	0.076	0.165	2.108	0.000
3.0222	0.077	0.168	2.200	0.000
3.0667	0.078	0.172	2.426	0.000
3.1111	0.079	0.175	2.746	0.000
3.1556	0.079	0.179	3.133	0.000
3.2000	0.080	0.183	3.573	0.000
3.2444	0.081	0.186	4.051	0.000
3.2889	0.081	0.190	4.553	0.000
3.3333	0.082	0.193	5.066	0.000
3.3778	0.083	0.197	5.575	0.000
3.4222	0.084	0.201	6.065	0.000
3.4667	0.084	0.205	6.524	0.000
3.5111	0.085	0.208	6.941	0.000
3.5556	0.086	0.212	7.306	0.000
3.6000	0.087	0.216	7.614	0.000
3.6444	0.087	0.220	7.867	0.000
3.6889	0.088	0.224	8.072	0.000
3.7333	0.089	0.228	8.242	0.000
3.7778	0.090	0.232	8.482	0.000
3.8222	0.090	0.236	8.663	0.000
3.8667	0.091	0.240	8.839	0.000
3.9111	0.092	0.244	9.011	0.000
3.9556	0.093	0.248	9.179	0.000
4.0000	0.094	0.252	9.342	0.000

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4.0444	0.094	0.256	9.503	0.000

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Trapezoidal Pond 2B

Bottom Length:	60.00 ft.
Bottom Width:	60.00 ft.
Depth:	4 ft.
Volume at riser head:	0.3329 acre-feet.
Side slope 1:	3 To 1
Side slope 2:	3 To 1
Side slope 3:	3 To 1
Side slope 4:	3 To 1
Discharge Structure	
Riser Height:	3 ft.
Riser Diameter:	18 in.
Notch Type:	Rectangular
Notch Width:	0.330 ft.
Notch Height:	1.333 ft.
Orifice 1 Diameter:	4.000 in. Elevation:0 ft.
Element Outlets:	
Outlet 1	Outlet 2
Outlet Flows To:	

DRAFT

Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.082	0.000	0.000	0.000
0.0444	0.083	0.003	0.091	0.000
0.0889	0.084	0.007	0.129	0.000
0.1333	0.084	0.011	0.158	0.000
0.1778	0.085	0.015	0.183	0.000
0.2222	0.086	0.018	0.204	0.000
0.2667	0.087	0.022	0.224	0.000
0.3111	0.087	0.026	0.242	0.000
0.3556	0.088	0.030	0.258	0.000
0.4000	0.089	0.034	0.274	0.000
0.4444	0.090	0.038	0.289	0.000
0.4889	0.090	0.042	0.303	0.000
0.5333	0.091	0.046	0.317	0.000
0.5778	0.092	0.050	0.330	0.000
0.6222	0.093	0.054	0.342	0.000
0.6667	0.094	0.058	0.354	0.000
0.7111	0.094	0.063	0.366	0.000
0.7556	0.095	0.067	0.377	0.000
0.8000	0.096	0.071	0.388	0.000
0.8444	0.097	0.075	0.399	0.000
0.8889	0.098	0.080	0.409	0.000
0.9333	0.098	0.084	0.419	0.000
0.9778	0.099	0.089	0.429	0.000
1.0222	0.100	0.093	0.439	0.000
1.0667	0.101	0.097	0.448	0.000
1.1111	0.102	0.102	0.457	0.000
1.1556	0.102	0.107	0.466	0.000
1.2000	0.103	0.111	0.475	0.000
1.2444	0.104	0.116	0.484	0.000
1.2889	0.105	0.120	0.492	0.000
1.3333	0.106	0.125	0.501	0.000
1.3778	0.107	0.130	0.509	0.000
1.4222	0.107	0.135	0.517	0.000

1.4667	0.108	0.139	0.525	0.000
1.5111	0.109	0.144	0.533	0.000
1.5556	0.110	0.149	0.541	0.000
1.6000	0.111	0.154	0.549	0.000
1.6444	0.112	0.159	0.556	0.000
1.6889	0.112	0.164	0.567	0.000
1.7333	0.113	0.169	0.590	0.000
1.7778	0.114	0.174	0.618	0.000
1.8222	0.115	0.179	0.651	0.000
1.8667	0.116	0.184	0.687	0.000
1.9111	0.117	0.190	0.726	0.000
1.9556	0.118	0.195	0.767	0.000
2.0000	0.119	0.200	0.811	0.000
2.0444	0.119	0.205	0.856	0.000
2.0889	0.120	0.211	0.903	0.000
2.1333	0.121	0.216	0.951	0.000
2.1778	0.122	0.222	1.001	0.000
2.2222	0.123	0.227	1.051	0.000
2.2667	0.124	0.233	1.102	0.000
2.3111	0.125	0.238	1.155	0.000
2.3556	0.126	0.244	1.208	0.000
2.4000	0.127	0.249	1.261	0.000
2.4444	0.128	0.255	1.315	0.000
2.4889	0.128	0.261	1.369	0.000
2.5333	0.129	0.266	1.423	0.000
2.5778	0.130	0.272	1.478	0.000
2.6222	0.131	0.278	1.533	0.000
2.6667	0.132	0.284	1.588	0.000
2.7111	0.133	0.290	1.653	0.000
2.7556	0.134	0.296	1.719	0.000
2.8000	0.135	0.302	1.787	0.000
2.8444	0.136	0.308	1.855	0.000
2.8889	0.137	0.314	1.925	0.000
2.9333	0.138	0.320	1.996	0.000
2.9778	0.139	0.326	2.068	0.000
3.0222	0.140	0.332	2.160	0.000
3.0667	0.141	0.339	2.387	0.000
3.1111	0.142	0.345	2.706	0.000
3.1556	0.143	0.351	3.094	0.000
3.2000	0.144	0.358	3.534	0.000
3.2444	0.145	0.364	4.012	0.000
3.2889	0.145	0.371	4.515	0.000
3.3333	0.146	0.377	5.028	0.000
3.3778	0.147	0.384	5.537	0.000
3.4222	0.148	0.390	6.028	0.000
3.4667	0.149	0.397	6.487	0.000
3.5111	0.150	0.404	6.904	0.000
3.5556	0.151	0.410	7.269	0.000
3.6000	0.152	0.417	7.578	0.000
3.6444	0.153	0.424	7.831	0.000
3.6889	0.154	0.431	8.035	0.000
3.7333	0.155	0.438	8.206	0.000
3.7778	0.156	0.445	8.447	0.000
3.8222	0.157	0.452	8.628	0.000
3.8667	0.158	0.459	8.804	0.000
3.9111	0.159	0.466	8.976	0.000
3.9556	0.161	0.473	9.144	0.000
4.0000	0.162	0.480	9.308	0.000

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4.0444	0.163	0.487	9.468	0.000

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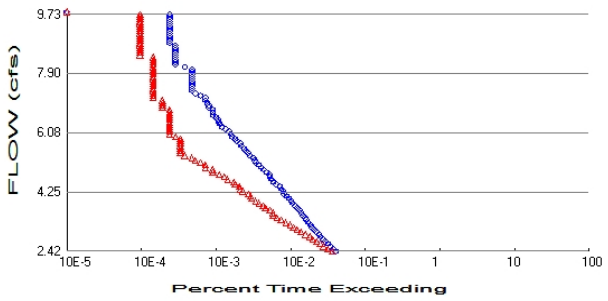
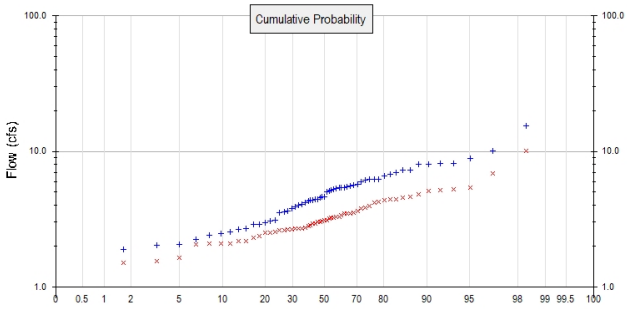
Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 7.979
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 4.181
Total Impervious Area: 9.229

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	4.837897
5 year	6.947841
10 year	8.034248
25 year	9.107557
50 year	9.732275
100 year	10.239391

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	3.084473
5 year	4.233885
10 year	5.048842
25 year	6.140893
50 year	7.000336
100 year	7.899697

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	3.593	3.118
1950	4.421	2.948
1951	6.179	2.628
1952	4.019	3.832
1953	5.045	2.719
1954	8.075	3.492
1955	3.891	2.177
1956	6.998	5.273
1957	6.564	3.037
1958	5.357	4.646

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1959	3.082	1.634
1960	2.904	2.500
1961	6.257	3.627
1962	4.587	3.296
1963	5.082	3.036
1964	4.589	2.845
1965	4.156	2.944
1966	5.645	3.196
1967	5.246	2.608
1968	5.928	4.349
1969	6.256	5.373
1970	15.456	10.105
1971	2.657	2.083
1972	4.048	2.666
1973	4.377	3.487
1974	6.164	5.191
1975	3.624	2.514
1976	5.535	3.241
1977	0.451	1.487
1978	8.138	4.430
1979	5.478	4.430
1980	3.045	2.187
1981	7.223	4.209
1982	5.163	3.507
1983	8.826	4.248
1984	2.963	2.093
1985	2.059	2.792
1986	2.685	2.710
1987	4.424	2.542
1988	2.537	2.100
1989	2.899	2.373
1990	2.234	2.051
1991	5.384	2.648
1992	5.362	2.706
1993	6.809	4.533
1994	4.528	3.296
1995	3.804	3.773
1996	8.058	6.840
1997	10.011	5.109
1998	8.158	3.956
1999	5.362	3.124
2000	3.540	1.505
2001	2.021	1.545
2002	7.263	3.251
2003	5.728	3.494
2004	1.877	2.682
2005	2.393	2.300
2006	4.323	3.074
2007	2.481	3.366
2008	4.347	4.817

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Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	15.4560	10.1050
2	10.0109	6.8403
3	8.8256	5.3726
4	8.1581	5.2730

5	8.1380	5.1906
6	8.0751	5.1093
7	8.0581	4.8166
8	7.2629	4.6456
9	7.2234	4.5327
10	6.9977	4.4299
11	6.8085	4.4297
12	6.5639	4.3486
13	6.2573	4.2480
14	6.2557	4.2095
15	6.1788	3.9559
16	6.1640	3.8319
17	5.9284	3.7727
18	5.7277	3.6274
19	5.6449	3.5069
20	5.5352	3.4940
21	5.4777	3.4916
22	5.3835	3.4872
23	5.3624	3.3665
24	5.3622	3.2965
25	5.3572	3.2963
26	5.2462	3.2512
27	5.1633	3.2412
28	5.0819	3.1964
29	5.0455	3.1240
30	4.5893	3.1182
31	4.5868	3.0740
32	4.5281	3.0374
33	4.4240	3.0356
34	4.4209	2.9482
35	4.3766	2.9445
36	4.3469	2.8450
37	4.3229	2.7917
38	4.1565	2.7194
39	4.0476	2.7099
40	4.0191	2.7058
41	3.8909	2.6815
42	3.8038	2.6660
43	3.6240	2.6484
44	3.5933	2.6282
45	3.5396	2.6083
46	3.0822	2.5416
47	3.0451	2.5139
48	2.9628	2.4999
49	2.9041	2.3728
50	2.8993	2.2996
51	2.6845	2.1868
52	2.6570	2.1767
53	2.5367	2.1001
54	2.4815	2.0935
55	2.3933	2.0833
56	2.2335	2.0515
57	2.0587	1.6340
58	2.0208	1.5448
59	1.8771	1.5049
60	0.4514	1.4867

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Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
2.4189	843	751	89	Pass
2.4928	779	659	84	Pass
2.5667	715	581	81	Pass
2.6406	668	525	78	Pass
2.7144	609	464	76	Pass
2.7883	572	417	72	Pass
2.8622	532	379	71	Pass
2.9361	506	335	66	Pass
3.0099	462	288	62	Pass
3.0838	429	256	59	Pass
3.1577	405	228	56	Pass
3.2315	386	207	53	Pass
3.3054	365	181	49	Pass
3.3793	341	156	45	Pass
3.4532	324	138	42	Pass
3.5270	306	123	40	Pass
3.6009	291	121	41	Pass
3.6748	274	110	40	Pass
3.7486	259	96	37	Pass
3.8225	241	90	37	Pass
3.8964	225	79	35	Pass
3.9703	212	71	33	Pass
4.0441	199	63	31	Pass
4.1180	186	61	32	Pass
4.1919	170	57	33	Pass
4.2657	167	48	28	Pass
4.3396	159	44	27	Pass
4.4135	151	43	28	Pass
4.4874	135	38	28	Pass
4.5612	123	36	29	Pass
4.6351	116	30	25	Pass
4.7090	111	27	24	Pass
4.7829	108	23	21	Pass
4.8567	99	19	19	Pass
4.9306	91	19	20	Pass
5.0045	85	15	17	Pass
5.0783	78	15	19	Pass
5.1522	72	13	18	Pass
5.2261	70	11	15	Pass
5.3000	67	10	14	Pass
5.3738	59	8	13	Pass
5.4477	56	7	12	Pass
5.5216	52	7	13	Pass
5.5954	50	7	14	Pass
5.6693	46	7	15	Pass
5.7432	44	7	15	Pass
5.8171	40	7	17	Pass
5.8909	38	7	18	Pass
5.9648	34	6	17	Pass
6.0387	33	5	15	Pass
6.1125	31	5	16	Pass
6.1864	28	5	17	Pass
6.2603	25	5	20	Pass

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6.3342	24	5	20	Pass
6.4080	23	5	21	Pass
6.4819	22	5	22	Pass
6.5558	21	5	23	Pass
6.6297	19	5	26	Pass
6.7035	19	5	26	Pass
6.7774	19	5	26	Pass
6.8513	17	4	23	Pass
6.9251	17	4	23	Pass
6.9990	16	4	25	Pass
7.0729	15	4	26	Pass
7.1468	15	3	20	Pass
7.2206	13	3	23	Pass
7.2945	11	3	27	Pass
7.3684	10	3	30	Pass
7.4422	10	3	30	Pass
7.5161	10	3	30	Pass
7.5900	10	3	30	Pass
7.6639	10	3	30	Pass
7.7377	10	3	30	Pass
7.8116	10	3	30	Pass
7.8855	10	3	30	Pass
7.9593	10	3	30	Pass
8.0332	10	3	30	Pass
8.1071	8	3	37	Pass
8.1810	6	3	50	Pass
8.2548	6	3	50	Pass
8.3287	6	3	50	Pass
8.4026	6	3	50	Pass
8.4765	6	2	33	Pass
8.5503	6	2	33	Pass
8.6242	6	2	33	Pass
8.6981	6	2	33	Pass
8.7719	6	2	33	Pass
8.8458	5	2	40	Pass
8.9197	5	2	40	Pass
8.9936	5	2	40	Pass
9.0674	5	2	40	Pass
9.1413	5	2	40	Pass
9.2152	5	2	40	Pass
9.2890	5	2	40	Pass
9.3629	5	2	40	Pass
9.4368	5	2	40	Pass
9.5107	5	2	40	Pass
9.5845	5	2	40	Pass
9.6584	5	2	40	Pass
9.7323	5	2	40	Pass

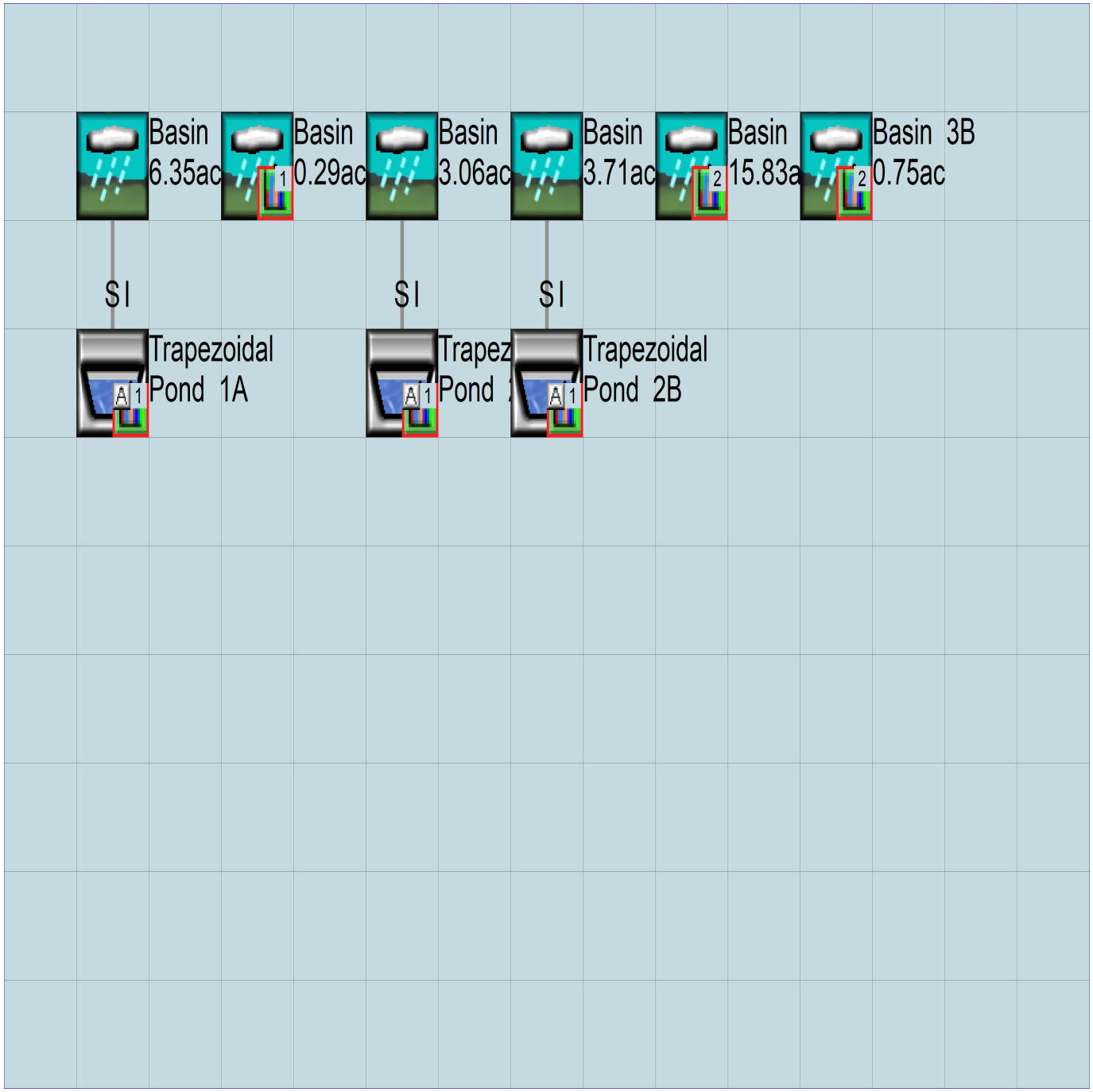
DRAFT

Appendix

Predeveloped Schematic



Mitigated Schematic



WWHM2012

PROJECT REPORT

TDAs 1 & 2 Water Quality for Basins 1A, 1B, 2A, 2B & 3A (Mechanical Filter Structure)

General Model Information

WWHM2012 Project Name: 9095 Villages-WQ
Site Name:
Site Address:
City:
Report Date: 7/11/2025
Gage: Lacamas
Data Start: 1948/10/01
Data End: 2008/09/30
Timestep: 15 Minute
Precip Scale: 1.300
Version Date: 2025/05/13
Version: 4.3.2

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
Low Flow Threshold for POC3:	50 Percent of the 2 Year
High Flow Threshold for POC3:	50 Year
Low Flow Threshold for POC4:	50 Percent of the 2 Year
High Flow Threshold for POC4:	50 Year
Low Flow Threshold for POC5:	50 Percent of the 2 Year
High Flow Threshold for POC5:	50 Year

DRAFT

Mitigated Land Use

Basin 1A

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Mod	2.53
Pervious Total	2.53

Impervious Land Use	acre
ROADS FLAT	0.178
ROADS MOD	2.798
ROOF TOPS FLAT	0.844
Impervious Total	3.82
Basin Total	6.35

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

POC 1	POC 1

DRAFT

Basin 1B

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Mod	0.147
Pervious Total	0.147

Impervious Land Use	acre
ROADS MOD	0.141
Impervious Total	0.141
Basin Total	0.288

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

POC 2	POC 2

DRAFT

Basin 2A

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Mod	0.728
Pervious Total	0.728

Impervious Land Use	acre
ROADS MOD	2.336
Impervious Total	2.336
Basin Total	3.064

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 3	POC 3	

DRAFT

Basin 2B

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Mod	0.776
Pervious Total	0.776

Impervious Land Use	acre
ROADS MOD	2.932
Impervious Total	2.932
Basin Total	3.708

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 4	POC 4	

DRAFT

Basin 3A

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Mod	3.495
Pervious Total	3.495

Impervious Land Use	acre
ROADS MOD	12.331
Impervious Total	12.331
Basin Total	15.826

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 5	POC 5	

DRAFT

Basin 3B

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Mod	0.268
Pervious Total	0.268

Impervious Land Use	acre
ROADS MOD	0.486
Impervious Total	0.486
Basin Total	0.754

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		

DRAFT

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0.7448 acre-feet
On-line facility target flow:	1.07 cfs.
Adjusted for 15 min:	1.07 cfs.
Off-line facility target flow:	0.5817 cfs.
Adjusted for 15 min:	0.5817 cfs.

DRAFT

Water Quality

Water Quality BMP Flow and Volume for POC #2

On-line facility volume:	0.0314 acre-feet
On-line facility target flow:	0.0456 cfs.
Adjusted for 15 min:	0.0456 cfs.
Off-line facility target flow:	0.0243 cfs.
Adjusted for 15 min:	0.0243 cfs.

DRAFT

Water Quality

Water Quality BMP Flow and Volume for POC #3

On-line facility volume:	0.3928 acre-feet
On-line facility target flow:	0.6039 cfs.
Adjusted for 15 min:	0.6039 cfs.
Off-line facility target flow:	0.334 cfs.
Adjusted for 15 min:	0.334 cfs.

DRAFT

Water Quality

Water Quality BMP Flow and Volume for POC #4

On-line facility volume:	0.4805 acre-feet
On-line facility target flow:	0.7457 cfs.
Adjusted for 15 min:	0.7457 cfs.
Off-line facility target flow:	0.4142 cfs.
Adjusted for 15 min:	0.4142 cfs.

DRAFT

Water Quality

Water Quality BMP Flow and Volume for POC #5

On-line facility volume:	2.0424 acre-feet
On-line facility target flow:	3.159 cfs.
Adjusted for 15 min:	3.159 cfs.
Off-line facility target flow:	1.7512 cfs.
Adjusted for 15 min:	1.7512 cfs.

DRAFT

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.

DRAFT

Mitigated Schematic



Appendix G: Soils Report

Geotechnical Site Investigation

Mills Property

Camas, Washington

November 17, 2023

Geotechnical ■ Environmental ■ Special Inspections

Columbia West

Engineering, Inc






Geotechnical ■ Environmental ■ Special Inspections
Columbia West Engineering, Inc

November 17, 2023

HSR Development
500 E. Broadway, Suite 120
Vancouver, Washington 98660

Attn: Steven Waugh

Geotechnical Site Investigation
Mills Property
Camas, Washington
Columbia West Project: HSR-1-01-1

Columbia West is pleased to present this geotechnical site investigation report for the Mills Property in Camas, Washington. Our services were conducted in accordance with our proposal dated August 14, 2023.

We appreciate the opportunity to work on the project. Please contact us if you have any questions regarding this document.

Sincerely,

Columbia West

Daniel Lehto, PE, GE
Principal Engineer

DEL:ASR
Attachments
Document ID:Mills Property Geotechnical Report.docx

EXECUTIVE SUMMARY

This executive summary presents the primary geotechnical considerations associated with the proposed Mills Property project located in Camas, Washington. Our conclusions and recommendations are based upon the subsurface information presented in this report and proposed development information provided by the design team. Detailed discussion of the geotechnical considerations summarized here is presented in respective sections of the report.

- The site is characterized by pinnacled basalt and basalt outcrops. Thin soil profiles were observed in some areas. Based on subsurface exploration, infiltration of concentrated stormwater is infeasible due to the presence of shallow bedrock and clayey residual soils.

- Although site reconnaissance and Clark County GIS Mapping indicate the presence of slopes greater than 15 percent in the southern boundary of the parcel, site slopes do not meet the definition of a landslide hazard according to *Camas Municipal Code, Section 16.59*.

- Excavator refusal was encountered in all test pits in the proposed development area at depths ranging from 0 to 10 Below Ground Surface (BGS). Excavations at the site will require rock excavation techniques to install necessary elements. Though not specifically encountered, seeps and springs within the basalt formation have been observed on surrounding sites and have been associated with regional rain events. Therefore, drainage design may need to be altered during the course of construction as seeps and springs become evident over time.

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GEOTECHNICAL SITE INVESTIGATION
MILLS PROPERTY
CAMAS, WASHINGTON

1.0 INTRODUCTION

Columbia West Engineering, Inc. (Columbia West) was retained by HSR Development to conduct a geotechnical site investigation for the proposed Mills Property project located in Camas, Washington. The purpose of the investigation was to provide geotechnical engineering recommendations for use in design and construction of the proposed development. This report summarizes the investigation and provides field assessment documentation and laboratory analytical test reports. This report is subject to the limitations expressed in Section 11.0, *Conclusion and Limitations*, and Appendix C.

1.1 GENERAL SITE INFORMATION

As indicated on Figures 1 and 2, the subject site is located north of Lacamas Lake with an address of 313 SE Leadbetter Road in Camas, Washington. The site is accessed via SE 252nd Avenue, as there is no access to the site directly from SE Leadbetter Road. The site is comprised of tax parcel 177885000 totaling approximately 21 acres. The approximate latitude and longitude are N 45° 37' 09" and W 122° 24' 57", and the legal description is a portion of the NE ¼ of Section 34, T2N, R3E, Willamette Meridian. The regulatory jurisdictional agency is the City of Camas.

1.2 PROJECT UNDERSTANDING

Based on design team correspondence, proposed development is likely to include construction of a residential subdivision. A layout of the planned infrastructure was not available at the time of this writing. Proposed development will likely include paved neighborhood access roads, essential underground utilities, and stormwater management facilities.

We anticipate maximum loads for the residential buildings will be less than 20 kips per column and 3 kips per foot for perimeter footings. Allowable total and differential static settlement tolerances for the structures are 1 inch and 0.5 inch over a 50-foot span, respectively. We also anticipate that proposed structures will be Risk Category II with a fundamental period less than 0.5 second. We should be contacted to revise our recommendations if the assumptions stated above are incorrect.

2.0 SCOPE OF SERVICES

Columbia West's scope of services was outlined in a proposal dated August 14, 2023. In accordance with our proposal, we performed the following geotechnical services:

- Reviewed information available in our files from previous geological and geotechnical studies conducted at and in the vicinity of the site.
- Reviewed preliminary site plans and structural information provided by the design team.
- Conducted subsurface exploration at the site, to include:
  - Excavated 13 test pits to depths ranging from 4 to 10 feet BGS due to excavator refusal. Two shovel pits were also explored in an area proposed for the off-site sewer alignment.
- Collected disturbed soil samples from test pits for laboratory analysis.
- Classified and logged observed soil and groundwater conditions.
- Prepared this geotechnical site investigation report for the proposed development, which includes:

- Summary of soil index properties, regional geology, soil conditions, and observed groundwater conditions.
- Summary of geologic and seismic literature research used to evaluate relevant seismic risks, including locations of faults, earthquake magnitudes, and seismic factors from the *2018 IBC* and *ASCE 7-16*
- Summary of City of Camas Code Chapter 16.59 – Geologically Hazardous Areas research
- Liquefaction potential
- Fill- and load-induced settlement potential
- Geotechnical design and construction recommendations for:
  - Shallow foundations
  - Lateral earth pressures
  - Site preparation and grading, organic stripping, fill placement and compaction, over-excavation, and construction monitoring and testing.
  - Structural fill materials, onsite soil suitability, and import aggregate specifications.
  - Utility trench excavation and backfill.
  - Drainage and management of groundwater conditions
  - Asphaltic concrete pavement construction for access roads and parking lots
  - Seismic design parameters in accordance with *ASCE 7-16*

3.0 REGIONAL GEOLOGY AND SOIL CONDITIONS

The subject 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-eastern portion of the Portland/Vancouver Basin, an open, somewhat elliptical, northwest-trending syncline approximately 60 miles wide.

According to the *Geologic Map of the Camas Quadrangle, Clark County, Washington, and Multnomah County, Oregon* (US Geological Survey, Scientific Investigations Map 3017, 2008), near-surface geology is expected to primarily consist of upper-Oligocene basaltic-andesite of Elkhorn Mountain (Tbem). The Elkhorn Mountain Formation is comprised of a series of lava flows and flow breccia consisting of dark grey basalt and andesite.

The *Web Soil Survey* (United States Department of Agriculture, Natural Resource Conservation Service [USDA NRCS], 2022 Website) identifies surface soils as primarily Lauren very gravelly loam, Olympic Stoney Clay Loam, Vader Silt Loam, and a small pocket of Lauren loam along the north property boundary. Although soil conditions may vary from the broad USDA descriptions, Lauren soils are generally coarse-textured sands and gravels with moderate permeability, moderate shear strength, and low shrink-swell potential. Olympic and Vader series soils are more fine textured silt and clay with variable amounts of gravel. Olympic and Vader soils are typically fine-textured, poorly drained soils that develop over bedrock and exhibit slow permeability and have low shear strength.

4.0 REGIONAL SEISMOLOGY

Recent research and subsurface mapping investigations within the Pacific Northwest appear to suggest the historic 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. Liquefaction is discussed later in Section 7.0, *Geologic Hazards*

Three scenario earthquakes are possible with the local seismic setting. Two of the possible earthquake sources are associated with the Cascadia Subduction Zone (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.

Cascadia Subduction Zone

The Cascadia Subduction Zone is a potential source of strong earthquake activity in the Portland/Vancouver Basin. This phenomenon is the result of the earth's large tectonic plate movement. Geologic evidence indicates that volcanic ocean floor activity along the Juan de Fuca ridge in the Pacific Ocean causes the Juan de Fuca Plate to perpetually move east and subduct under the North American Continental Plate. The subduction zone results in historic volcanic and potential earthquake activity in proximity to the plate interface, believed to lie approximately 20 to 50 miles west of the general location of the Oregon and Washington coast (Geomatrix Consultants, 1995).

Evidence suggests 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).

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 moment magnitude 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 moment magnitude of up to 8.0.

Crustal Events

There are at least six major known fault zones in the vicinity of the site that may be capable of generating potentially destructive horizontal accelerations. These fault zones are described briefly in Table 1.

Table 1. Faults Within the Site Vicinity

Fault Name	Proximity to Site (km) per USGS	Mapped Length (km) per USGS
Beaverton fault zone	26	15
Helvetia fault zone	24	7
Oatfield fault zone	18	29
Portland Hills fault zone	13	49
East Bank fault	13	29
Lacamas Lake fault	1	24

5.0 GEOTECHNICAL AND GEOLOGIC FIELD INVESTIGATION

Subsurface conditions were explored by excavating thirteen test pits (TP-1 through TP-13) using a track-mounted excavator at the approximate locations shown on Figure 2. The test pits were excavated on October 13, 2023 to a maximum depth of 10 feet BGS. Two supplemental excavations (S-1 and S-2) were explored by shovel in an area proposed for sanitary sewer alignment which will connect the subdivision sewer to SE Leadbetter Road. No soil logs were produced for explorations S-1 and S-2, as bedrock was encountered within a few inches of the surface.

Subsurface conditions were logged in accordance with the Unified Soil Classification System (USCS). Disturbed soil samples were collected at representative depth intervals. Test pit logs are presented in Appendix A. Soil descriptions and classification information are also provided in Appendix A. Analytical laboratory test results are presented in Appendix B.

5.1 SURFACE INVESTIGATION AND SITE DESCRIPTION

The site is located north of Lacamas Lake with address 313 SE Leadbetter Road in Camas, Washington and consists of tax parcel 177885000 which totals approximately 21 acres. The site is accessed via SE 252nd Avenue and is bound by a dairy farm to the north, wooded private and public land to the west and south, and residential acreage parcels to the east. The site is currently undeveloped and heavily wooded. Site terrain is undulating and characterized by grades of 0 to 15 percent with some steeper areas existing where basalt outcrops create short slopes of up to 25 percent. A gravel access road has been constructed into the site and remnant overgrown logging trails were observed in a few locations.

5.2 SUBSURFACE CONDITIONS

The test pits were excavated through up to 10 inches of forest duff and organic topsoil zone. Underlying the surface vegetation, residual soils and basalt bedrock were encountered. Subsurface lithology may generally be described by the soil units identified in the following text.

5.2.1 Silty and Clayey Gravel Residual Soils

Underlying the surface vegetation, medium dense to dense silty SAND with gravel, clayey GRAVEL or SILT with minor gravel was observed to a maximum depth of 10 feet BGS. The moisture content of the residual soils ranged from 20 to 41 percent at the time of exploration. Atterberg limits analysis indicates a range of plasticity index from 8 to 15, indicating minor to moderate plasticity.

5.2.2 Weathered to Bright Basalt Bedrock

Underlying the residual soils, dense to very dense weathered basalt or intact basalt was encountered and caused excavator refusal at depths ranging from ground surface to 10 feet BGS. Digging was extremely slow, and the formation will likely require blasting to move significant quantities of the material.

5.2.3 Groundwater

Groundwater was not observed in the test pits at the time of exploration. However, our experience on adjacent sites underlain by the Elkhorn Mountain Basalt has shown that significant seeps and springs may manifest during rain events, sometimes several days after a rain. The formation may have connectivity to a more regional aquifer.

6.0 INFILTRATION INFEASIBILITY

Infiltration testing was not conducted due to the minor amount of clayey gravel soil encountered at the stie. Due to the relatively impermeable nature of the basalt bedrock and residual soils, infiltration of concentrated stormwater onsite is not recommended, as this would likely result in uncontrolled runoff as the water travels along the undulated surface of the bedrock and finds new places to discharge.

7.0 GEOLOGIC HAZARDS

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 have been identified: (1) erosion hazard areas, (2) landslide hazard areas, and (3) seismic hazard areas. Hazard mapping provided by *Clark County Maps Online* indicates potential landslide hazard areas (slopes greater than 15 percent) in a few areas, primarily in the central portion of the property.

Columbia West conducted a geologic hazard review to assess whether these hazards are present at the subject property proposed for development, and if so, to provide mitigation recommendations. The geologic hazard review was based upon physical and visual reconnaissance, subsurface exploration, laboratory analysis 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.

7.1 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 upon review of slope grade mapping published by *Clark County Maps Online,* maximum slope grades of 15 to 25 percent are mapped at the site. Therefore, site slopes do not meet the definition of an erosion hazard according to *Camas Municipal Code*. However, implementation of proper erosion control BMPs are recommended for the site during construction and in the finished grade condition.

7.2 LANDSLIDE HAZARDS

Columbia West conducted a review of available mapping, *Clark County GIS data*, and site reconnaissance to evaluate the potential presence of a landslide hazard on or near the subject site.

7.2.1 Geologic Literature Review

Columbia West reviewed *Slope Stability, Clark County, Washington* (Fiksdal, 1975) to assess site slope characteristics. The Fiksdal report identifies four levels of potential instability within Clark County: (1) stable areas – no slides or unstable slopes, (2) areas of potential instability because of underlying geologic conditions and physical characteristics associated with steepness, (3) areas of historical or still active landslides, and (4) older landslide debris. The site is mapped as (1) stable – no slides or unstable slopes.

Columbia West also reviewed the *Geologic Map of the Camas Quadrangle, Clark County, Washington, and Multnomah County, Oregon (US Geological Survey, Scientific Investigations Map 3017, 2008)* which indicates that no active landslides or historic landslide deposits are mapped at the subject site or in the surrounding vicinity.

7.2.1 Slope Reconnaissance and Slope Stability Assessment

To observe geomorphic conditions, Columbia West personnel conducted visual and physical reconnaissance of slopes on the property. Subsurface native soils at the locations observed generally consisted of clayey gravel or silty SAND with gravel. Soil horizons appeared firm and well developed. Shallow and surficial basalt bedrock was observed throughout the site.

Site reconnaissance and review of topographic mapping published by *Clark County Maps Online* indicates that site topography is undulated and characterized by pinnacled basalt flows. Short slopes between 15 and 25 percent are present in a few areas throughout the site. Slopes appear planar with no observed evidence of instability. Most bedrock encountered was slightly to moderately weathered or intact. There was no observed direct evidence of large-scale, mass slope movements or historic landslides. No landslide debris was observed within explored site soils and groundwater seeps or springs within the face of the slopes were not observed.

Camas Municipal Code defines a landslide hazard as slopes mapped by Fiksdal as 'areas of potential instability' or areas meeting all three of the following characteristics: 1) slopes steeper than 15 percent; 2) hillsides intersecting geologic contacts with permeable sediment overlying low permeability sediment or bedrock, and; 3) any springs or groundwater seepage. The above-mentioned criteria were not observed during our field investigation or site research. Based upon the results of slope reconnaissance, subsurface exploration, and site research, in Columbia West's opinion slopes on the subject site do not meet the definition of a landslide hazard according to *Camas Municipal Code*.

7.3 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.

7.3.1 Soil Liquefaction and Dynamic Settlement

According to *the Liquefaction Susceptibility Map of Clark County, Washington* (Washington State Department of Natural Resources, 2004), the site is mapped as very low susceptibility for liquefaction due to basalt bedrock. 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.

Soils most susceptible to liquefaction are recent geologic deposits, such as river and floodplain sediments. These soils are generally saturated, cohesionless, loose to medium dense sands within 50 feet of ground surface. Potentially liquefiable soils located above the existing, historic, or expected ground water levels do not generally pose a liquefaction hazard. It is important to note that changes in perched ground water elevation may occur due to project development or other factors not observed at the time of investigation.

Based upon the results of subsurface exploration, literature review, and laboratory analysis, the above-mentioned criteria were not observed during the geotechnical site investigation. Therefore, the potential for soil liquefaction is considered to be very low.

7.3.2 Ground Shaking Amplification

Review of the *Site Class Map of Clark County, Washington* (Washington State Department of Natural Resources, 2004), indicates that site soils may be represented by Site Class B as defined in *2018 IBC Section 1613.3.2*. A designation of Site Class B indicates that minimal amplification of seismic energy may occur during a seismic event due to subsurface conditions. This designation 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 8.2, *Seismic Design Considerations*.

7.3.3 Fault Rupture

Because there are no known geologic seismic faults within the site boundaries, fault rupture is unlikely.

8.0 DESIGN RECOMMENDATIONS

The geotechnical site investigation suggests the proposed development is generally compatible with surface and subsurface soils, provided the recommendations presented in this report are incorporated in design and implemented during construction. Design and construction recommendations are presented in the following sections.

8.1 Shallow Foundation Support

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 footing subgrade soils are above their optimum moisture content, we recommend that a minimum of 6 inches of compacted aggregate be placed over exposed subgrade soils. The aggregate pad should extend 6 inches beyond the edge of the foundations and consist of imported granular material as described in Section 9.6.1, *Structural Fill*. Columbia West should observe exposed subgrade conditions prior to placement of crushed aggregate to verify adequate subgrade support.

8.1.1 Footing Dimensions and Bearing Capacity

Continuous perimeter wall and isolated spread footings should have minimum width dimensions of 18 and 24 inches, respectively. The base of exterior footings should bear at least 18 inches below the lowest adjacent exterior grade. The base of interior footings should bear at least 12 inches below the base of the floor.

Footings bearing on subgrade prepared as recommended above should be sized based on an allowable bearing pressure of 2,500 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.

8.1.2 Shallow Foundation Settlement

Foundation settlement is a significant structural design consideration. Provided subgrade soils are prepared as described above and in Section 9.1, *Site Preparation and Grading*, 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. The risk of differential settlement may increase where structural elements are founded upon both bedrock and soil beneath the same linear footing. Therefore, Columbia West recommends foundations be constructed on a uniform material whenever possible.

8.1.3 Resistance to Sliding

Lateral foundation loads can be resisted by passive earth pressure on the sides of the footing and by friction at the base of the 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 downgradient 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.

8.1.4 Subgrade Observation

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 tire 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.

8.1.5 Floor Slabs

Floor slabs can be supported on firm, competent, native soil or engineered structural fill prepared as described in this report. Disturbed soils and unsuitable fills in proposed slab locations, if encountered, should be removed and replaced with structural fill.

To provide a capillary break, slabs should be underlain by at least 6 inches of compacted crushed aggregate that contains less than 5 percent by weight passing the No. 200 Sieve. Geotextile may be used below the crushed aggregate layer to increase subgrade support. Recommendations for floor slab base aggregate and subgrade geotextile are discussed in Section 9.6, *Materials*.

Floor slabs with maximum floor load of 150 psf may be designed assuming a modulus of subgrade reaction, k, of 125 pci.

8.2 SEISMIC DESIGN CONSIDERATIONS

Seismic design for proposed structures is prescribed by *ASCE 7-16*. Based on literature review and results of subsurface exploration conducted by Columbia West, site soils meet the criteria for Site Class B. Seismic design parameters for Site Class B are presented in Table 2.

Table 2. ASCE 7-16 Seismic Design Parameters[1]

	Short Period	1 Second Period
MCE Spectral Acceleration	0.795	0.348
Site Class	B	
Site Coefficient	Fa = 1.0	Fv = 1.0
Adjusted Spectral Response Acceleration	S_{MS} = 0.795	S_{M1} = 0.348
Design Spectral Response Acceleration	S_{DS} = 0.53	S_{D1} = 0.232

1. *The structural engineer should evaluate ASCE 7-16 code requirements and exceptions to determine if these parameters are valid for design.*

As discussed in Section 7.3, *Seismic Hazards Area*, liquefaction and lateral spreading are not design considerations for the site.

8.3 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 specifications provided previously in Section 8.1, *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 soils 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 WSDOT 9.03.12(2), an equivalent fluid pressure of 34 pcf is applicable for active and 60 pcf for at rest is applicable.

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 pressures 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 $10H^2$ 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.

8.3.1 Wall Drainage and Backfill

A minimum 6-inch-diameter, perforated collector pipe should be placed at the base 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 provided in Section 9.6, *Materials*. The perforated collector pipes should discharge at an appropriate location away from the base of the wall. The discharge pipe(s) 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 the walls and extending a horizontal distance of ½ H, where H is the height of the retaining wall, should consist of select granular material placed and compacted as described in Section 9.6.1, *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.

8.4 PAVEMENT RECOMMENDATIONS

We understand that public roadways for the subdivision will be constructed in accordance with City of Camas standards. For dry weather construction, pavement surface sections should bear upon competent subgrade consisting of scarified and compacted native soil or engineered structural fill. Wet weather construction may require an increased thickness of base aggregate as discussed later in Section 9.2, *Construction Traffic and Staging*.

In general, AC paving is not recommended during cold weather (temperatures less than 40 degrees Fahrenheit). Compacting under these conditions can result in low compaction and premature pavement distress. Each AC mix design has a recommended compaction temperature range that is specific for the particular AC binder used. In colder temperatures, it is more difficult to maintain the temperature of the AC mix, as it can lose heat while stored in the delivery truck, as it is placed, and in the time between placement and compaction.

If AC paving must take place during cold-weather construction as defined in this section, the contractor and design team should discuss options for minimizing risk to pavement serviceability.

8.5 DRAINAGE

At a minimum, site drainage should include surface water collection and conveyance to properly designed stormwater management structures and facilities. Drainage design in general 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 presented in Section 9.6, *Materials*. Drains should be closely monitored after construction to assess their effectiveness. If additional surface or shallow subsurface seeps become evident, the drainage provisions may require modification or additional drains. We should be consulted to provide appropriate recommendations.

8.5.1 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 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 ½ percent. The drainpipe's invert elevation should be at least 18 inches below the elevation of the floor slab. Figure 4 presents a typical foundation drain detail.

8.5.2 Subdrains

Subdrains should be considered if portions of the site are cut below surrounding grades. Shallow groundwater or seeps should be conveyed via 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 sub-surface drainage may result in soil slumping or unanticipated settlement of structures exceeding tolerable limits. A typical perforated drainpipe trench detail is presented in Figure 5.

8.5.2 Drainage Mat

Site improvements construction in some areas may occur at or near the shallow groundwater table, particularly if work is conducted during wet-weather conditions. A drainage mat is typically required in areas that require structural fill placed on top of a natural drainage swale or known seep or spring area. Dewatering may be necessary, and a drainage mat may be required to achieve sufficient elevation for fill placement. A typical drainage mat is shown on Figure 6. Columbia West should determine drainage mat location, extent, and thickness when subsurface conditions are exposed. Drainage mats may need to be constructed in conjunction with subdrains to convey captured water to an approved discharge location

9.0 CONSTRUCTION RECOMMENDATIONS

9.1 SITE PREPARATION AND GRADING

Site vegetation primarily consisted of up to 10 inches of forest duff at the time of our exploration. Thicker root zones may be present in areas of mature trees and shrub growth. Where encountered, pavement, vegetation, organic material, unsuitable fill, and deleterious material should be cleared from areas identified for structures and site grading. Vegetation, root zones, organic material, and debris should be removed from the site. Stripped topsoil should also be removed or used only as landscape fill in nonstructural areas with slopes less than 25 percent. The post-construction maximum depth of landscape fill placed or spread at any location onsite should not exceed one foot. Actual stripping depths should be determined based upon visual observations made during construction when soil conditions are exposed.

9.1.1 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 tire 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.

9.2 CONSTRUCTION TRAFFIC AND STAGING

Where encountered, near-surface fine-textured soils will be easily disturbed during construction. This includes native clayey soils, as well as potential imported fine-textured soils. If not carefully executed, site preparation, excavation, and grading can create extensive soft areas resulting in significant repair costs. Earthwork planning should include considerations for minimizing subgrade disturbance, particularly during wet-weather conditions.

If construction occurs during wet-weather conditions, or if the moisture content of the surficial soil is more than a few percentage points above optimum, site stripping and cutting may need to be accomplished using track-mounted equipment. Under these conditions, granular haul roads and staging areas will also be necessary to provide a firm support base and sustain construction equipment.

The recommended base aggregate thickness for pavement sections is intended to support post-construction design traffic loads and will not provide adequate support for construction traffic. Staging areas and haul roads will require an increased base thickness during wet weather conditions. The configuration of staging and haul road areas, as well as the required thickness of granular material, will vary with the contractor's means and methods. Therefore, design and construction of staging areas and haul roads should be the responsibility of the contractor. Based on our experience, between 12 and 18 inches of imported granular material is generally required in staging areas and between 18 and 24 inches in haul road areas. In areas of heavy construction traffic, geotextile separation fabric may be placed between the subgrade soil and imported granular material to increase subgrade support and minimize fines migration into the base aggregate layer.

Project stakeholders should understand that wet weather construction is risky and costly. Proper construction methods and techniques are critical to overall project integrity and should be observed and documented by Columbia West.

9.3 CUT AND FILL SLOPES

Fill slopes should consist of structural fill material as discussed in Section 9.6.1, *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 six feet in height should be vertically keyed into existing subsurface soil. A typical fill slope cross-section is shown in Figure 7. 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. 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 top of cut or fill slope face or overall slope height divided by three (H/3), whichever is greater. A minimum slope setback detail for structures is presented in Figure 8.

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 two 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.

9.4 EXCAVATION

The site was explored to a maximum depth of 10 feet BGS with an excavator. Weathered and competent basalt bedrock was encountered as shallow as 1.5 feet BGS onsite (TP-11) and at the ground surface in the off-site sewer alignment (S-1 and S-2) and all test pits terminated by refusal on competent bedrock. Intact basalt was observed at or near the surface throughout the site. Excavation at the site will require blasting or special rock excavation techniques to alter the surface.

Groundwater was not encountered, however the basalt formation is known to have seeps and springs show themselves after periods of wet weather, sometimes several days after an event. Recommendations as described in Section 9.5, *Dewatering*, should be considered where subsurface construction activities intersect shallow groundwater table.

Temporary excavation sidewalls should maintain a vertical cut to a depth of approximately 4 feet in the near-surface clay, provided groundwater seepage is not present in the sidewalls. In sandy soil, excavations will likely slough and cave, even at shallow depths. Open-cut excavation techniques may be used to excavate trenches between 4 and 8 feet deep, provided the walls of the excavation are cut at a maximum slope of 1H:1V and groundwater seepage is not present. Excavation slopes should be reduced to 1.5H:1V or 2H:1V if excessive sloughing or raveling occurs.

Shoring may be required if open-cut excavations are infeasible or if excavations are proposed adjacent to existing infrastructure. Typical methods for stabilizing excavations consist of solider piles and timber lagging, sheet pile walls, tiebacks and shotcrete, or prefabricated hydraulic shoring. 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.

The contractor should be held responsible for site safety, sloping, and shoring. All excavation activity should be conducted in accordance with applicable OSHA requirements. Columbia West is not responsible for contractor activities and in no case should excavation be conducted in excess of applicable local, state, and federal laws.

9.5 DEWATERING

Groundwater was not observed at the time of our investigation. Seeps and springs are likely to be encountered during periods of wet weather. Generalized recommendations for temporary construction dewatering are presented in the following section.

9.5.1 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 soils. During rough and finished grading of building pad areas, the contractor should keep all footing excavations and slab subgrade soils free of standing water.

The contractor's proposed dewatering plan should be capable of maintaining groundwater levels at least two feet below the base 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 base 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 soils 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 presented in Section 9.6, *Materials*.

9.6 MATERIALS

9.6.1 Structural Fill

Areas proposed for fill placement should be appropriately prepared as described in Section 9.1, *Site Preparation and Grading*. Engineered fill placement should be observed by Columbia West. Compaction of engineered structural fill should be verified by nuclear gauge field compaction testing performed in accordance with *ASTM D6938*. Field compaction testing should be performed for each vertical foot of engineered fill placed.

Various materials may be acceptable for use as structural fill. Structural fill should be free of organic material or other unsuitable material and meet specifications provided in the following sections. Representative samples of proposed engineered structural fill should be submitted for laboratory analysis and approval by Columbia West prior to placement.

9.6.1.1 Onsite Soil

Minimal residual soil was encountered during the site investigation. Most onsite soil will be suitable for use as structural fill if adequately dried or moisture-conditioned to achieve recommended compaction specifications. Native clay soil with a plasticity index greater than 25, if encountered, should be evaluated and approved by Columbia West prior to use as structural fill. Laboratory analysis indicated that the moisture content of the near-surface clay was above optimum at the time of exploration. Moisture conditioning will likely be necessary to dry the soil prior to applying compaction effort. In addition, the near-surface clay will be moisture sensitive and difficult, if not impossible, to compact during wet weather conditions. Therefore, structural fill placement using onsite soil should be performed during dry summer months if possible. Onsite soil may also require addition of moisture during extended periods of dry weather.

If significant grading is proposed, blasting or specialized rock excavation techniques will be required in areas of shallow bedrock. Due to the minor weathering of much of the basalt encountered, blast

spoils will likely require further crushing to reduce particle size and produce a well-graded product suitable for reuse as structural fill.

Onsite soil used as structural fill should be placed in loose lifts not exceeding 8 inches in depth 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 the modified Proctor moisture-density relationship test *(ASTM D1557).* Compacted onsite fill soils should be covered shortly after placement.

9.6.1.2 Imported Granular Material

Imported granular material should consist of pit- or quarry-run rock, crushed rock, or crushed gravel and sand. The imported granular material should also be durable, angular, and fairly well graded between coarse and fine material; should have less than 5 percent fines (material passing the U.S. Standard No. 200 sieve) by dry weight; and should have at least two mechanically fractured faces. Imported granular material should be placed in loose lifts not exceeding 12 inches in depth and compacted to at least 95 percent of maximum dry density as determined by the modified Proctor moisture-density relationship test *(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.

9.6.1.3 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 organics 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 be compacted to a firm, unyielding condition. Equipment with vibratory action should not be used when compacting stabilization material over wet, fine-textured soils. 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.

9.6.1.4 Trench Backfill

Trench backfill placed below, adjacent to, and up to at least 12 inches above utility lines (i.e., the pipe zone) should consist of well-graded granular material meeting *WSDOT 9-03.12(3)* specifications for *Gravel Backfill for Pipe Zone Bedding*. Pipe zone backfill should be compacted to at least 90 percent of maximum dry density, as determined by the modified Proctor moisture-density relationship test *(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 *WSDOT 9-03.19 Bank Run Gravel for Trench Backfill* or *WSDOT 9-03.14(2) Select Borrow* with a maximum particle size of 2 ½-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 the maximum dry density as

determined by the modified Proctor moisture-density relationship test *(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 the maximum dry density as determined by the modified Proctor moisture-density relationship test *(ASTM D1557),* or as required by the local jurisdictional agency or pipe manufacturer.

9.6.1.5 Floor Slab Base Aggregate

Base aggregate for building floor slabs should consist of 1 ¼"-minus crushed aggregate meeting *WSDOT 9-03.9(3)* specifications for *Crushed Surfacing*. Slab base aggregate should be compacted to at least at least 95 percent of the maximum dry density as determined by the modified Proctor moisture-density relationship test *(ASTM D1557).*

9.6.2 Pavement Base Aggregate

Base aggregate for pavement should consist of 1 ¼"-minus crushed aggregate meeting *WSDOT 9-03.9(3)* specifications for *Crushed Surfacing*. Pavement base aggregate should be compacted to at least at least 95 percent of the maximum dry density as determined by the modified Proctor moisture-density relationship test *(ASTM D1557).*

9.6.2.1 Retaining Wall Backfill

Backfill material placed behind retaining walls and extending a horizontal distance of ½ H, where H is the height of the retaining wall, should consist of free-draining granular material meeting *WSDOT 9-03.12(2)* specifications for *Gravel Backfill for Walls*. The wall backfill should be separated from structural fill, native soil, and/or topsoil using a geotextile fabric that meets the specifications provided below for drainage geotextiles.

Wall backfill located within a horizontal distance of 3 feet from the face of a retaining wall should be compacted to 90 percent of the maximum dry density, as determined by *ASTM D1557*. Backfill placed within 3 feet of the wall should be compacted in loose lifts less than 6 inches thick using hand-operated tamping equipment (such as a jumping jack or vibratory plate compactor). Remaining wall backfill should be compacted to at least 95 percent of the maximum dry density, as determined by *ASTM D1557*.

9.6.2.2 Retaining Wall Leveling Pad

Crushed aggregate used as a leveling pad for retaining wall footings should consist of 1 ¼"-minus crushed aggregate meeting *WSDOT 9-03.9(3)* specifications for *Crushed Surfacing*. The leveling pad material should be compacted to at least 95 percent of the maximum dry density as determined by the modified Proctor moisture-density relationship test *(ASTM D1557).*

9.6.2.3 Drain Rock

Drain rock should consist of angular, granular material with a maximum particle size of 2 inches and less than 2 percent by weight passing the No. 200 sieve. Drain rock should be free of roots, organic debris, and other unsuitable material and should have at least two mechanically fractured faces. Drain rock should be compacted to a firm, unyielding condition. Drain rock should be completely wrapped in a geotextile drainage fabric meeting the requirements presented below.

9.6.3 Geotextile Fabric

9.6.3.1 Subgrade Geotextile

Subgrade geotextile should meet the specifications provided in *WSDOT 9-33.2(1), Table 3, Geotextile for Separation or Soil Stabilization*. The geotextile should be installed in accordance with the manufacturer's recommendations. A minimum initial aggregate base lift of 6 inches is required over geotextiles. All stabilization material should be underlain by a subgrade geotextile.

9.6.3.2 Drainage Geotextile

Subgrade geotextile should meet the specifications provided in *WSDOT 9-33.2(1), Table 2, Geotextile for Underground Drainage Filtration Properties*. The AOS should be between the No. 70 and No. 100 sieve. 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.

9.6.4 Geotextile Fabric

9.6.4.1 Subgrade Geotextile

Subgrade geotextile should meet the specifications provided in *WSDOT 9-33.2(1), Table 3, Geotextile for Separation or Soil Stabilization*. The geotextile should be installed in accordance with the manufacturer's recommendations. A minimum initial aggregate base lift of 6 inches is required over geotextiles. All stabilization material should be underlain by a subgrade geotextile.

9.6.4.2 Drainage Geotextile

Subgrade geotextile should meet the specifications provided in *WSDOT 9-33.2(1), Table 2, Geotextile for Underground Drainage Filtration Properties*. The AOS should be between the No. 70 and No. 100 sieve. 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.

9.6.5 Pavement

9.6.5.1 Asphaltic Concrete

Asphaltic concrete should consist of HMA Class ½" adhering to *WSDOT 9-03.8(6), HMA Proportions of Materials*. The asphalt binder should consist of PG 58-22 meeting *WSDOT 9-02.1(4), Performance Graded (PG) Asphalt Binder*. Asphalt should be compacted to 91 percent of the theoretical maximum density as determined by *ASTM D2041*. Minimum and maximum asphalt lift thicknesses should be 2 and 3 inches, respectively. Nuclear gauge density testing should be conducted to verify adherence to recommended specifications. Testing frequency should be in accordance with WSDOT and City of Camas specifications.

9.7 EROSION CONTROL MEASURES

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.

10.0 OBSERVATION OF CONSTRUCTION

Satisfactory earthwork and foundation performance depends to a large degree on the quality of construction. Subsurface conditions observed during construction should be compared with those encountered during the subsurface explorations. Recognition of changed conditions often requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect whether subsurface conditions change significantly from those anticipated. In addition, 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.

11.0 CONCLUSIONS AND LIMITATIONS

This geotechnical site investigation report was prepared in accordance with accepted standard conventional principles and practices of geotechnical engineering. This investigation pertains only to material tested and observed as of the date of this report and is based upon proposed site development as described in the text herein. This report is a professional opinion containing recommendations established by engineering interpretations of subsurface soils based upon conditions observed during site exploration. Soil conditions may differ between tested locations or over time. Slight variations may produce impacts to the performance of structural facilities if not adequately addressed. This underscores the importance of diligent QA/QC construction observation and testing to verify soil conditions are as anticipated in this report.

Therefore, this report contains several recommendations for field observation and testing by Columbia West personnel during construction activities. Columbia West cannot accept responsibility for deviations from recommendations described in this report. Future performance of structural facilities is often related to the degree of construction observation by qualified personnel. These services should be performed to the full extent recommended.

This report is not an environmental assessment and should not be construed as a representative warranty of site subsurface conditions. The discovery of adverse environmental conditions, or subsurface soils that deviate from those described in this report, should immediately prompt further investigation. The above statements are in lieu of all other statements expressed or implied.

♦ ♦ ♦

Sincerely,
Columbia West Engineering, Inc.

Daniel E. Lehto, PE, GE
Principal

DEL:ASR
Document ID: Mills Property Geotechnical Report.docx



11-17-23

Expires: 6-5-25

Geotechnical ▪ Environmental ▪ Special Inspections
Columbia West Engineering, Inc

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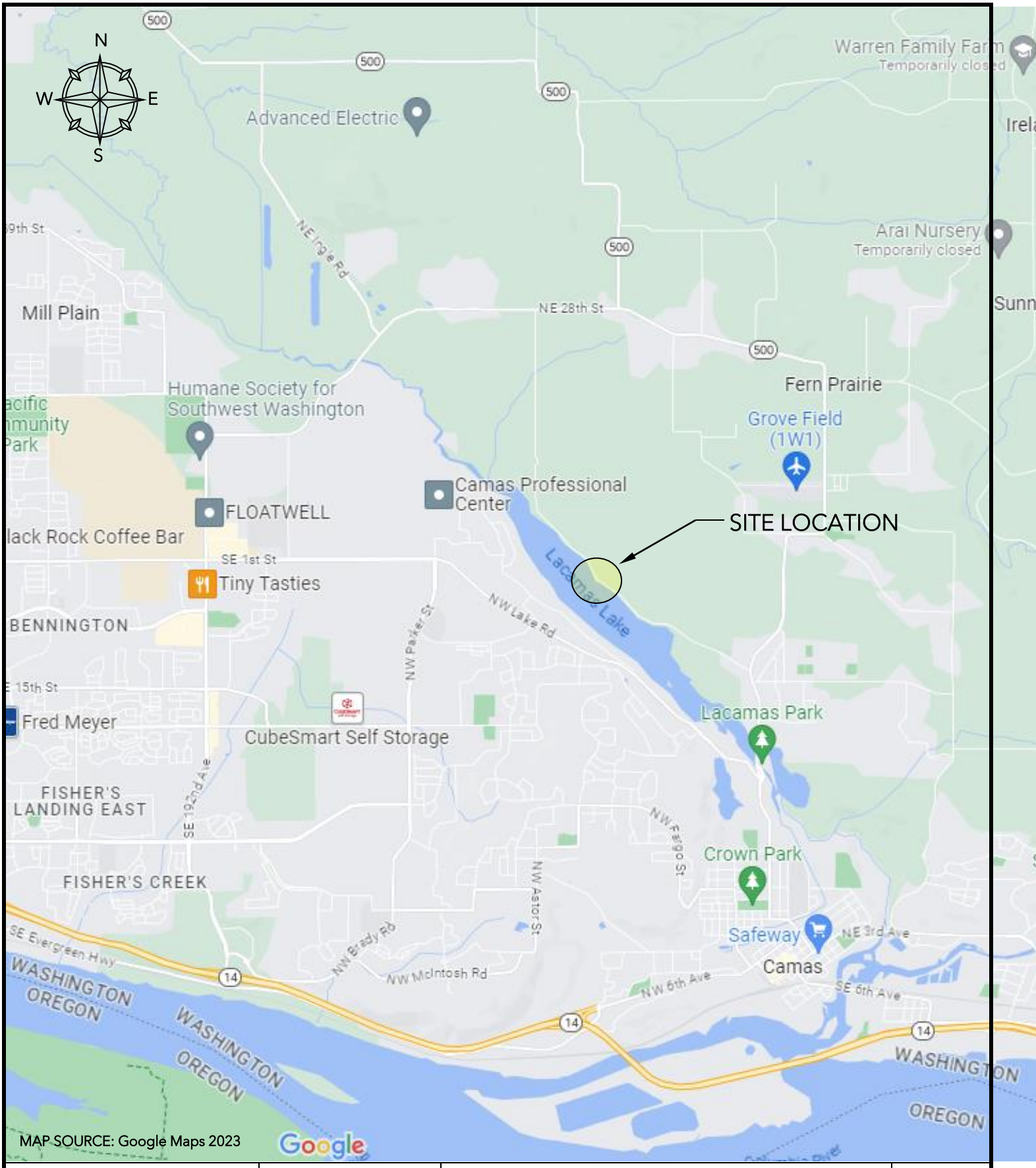
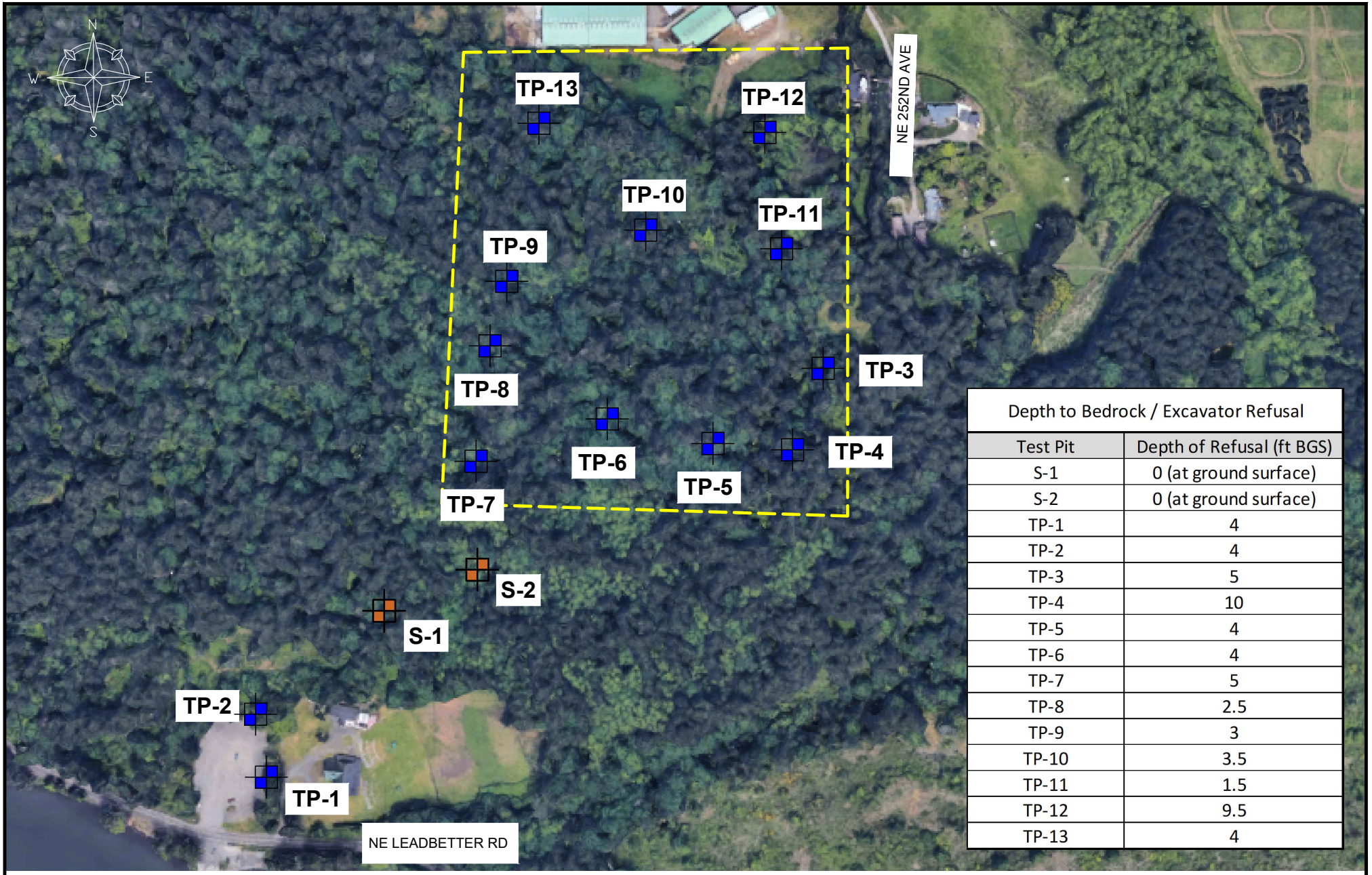
FIGURES



Geotechnical ▪ Environmental ▪ Special Inspections Columbia West Engineering, Inc	Job No: HSR-1-01-1 Date: 10/16/2023 Drawn: SMF/SSC Checked: ASR	SITE LOCATION MAP MILLS CAMAS CAMAS, WASHINGTON	FIGURE 1



Depth to Bedrock / Excavator Refusal	
Test Pit	Depth of Refusal (ft BGS)
S-1	0 (at ground surface)
S-2	0 (at ground surface)
TP-1	4
TP-2	4
TP-3	5
TP-4	10
TP-5	4
TP-6	4
TP-7	5
TP-8	2.5
TP-9	3
TP-10	3.5
TP-11	1.5
TP-12	9.5
TP-13	4

SCALE BAR 1:5000

0 100 200 300 400 500 1000

APPROXIMATE SITE BOUNDARY

APPROXIMATE TEST PIT LOCATION

APPROXIMATE SUPPLEMENTAL SHOVEL PIT

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Job No: HSR-1-01-1
Date: 10/19/23
Drawn: SMF/SSC
Checked: ASR

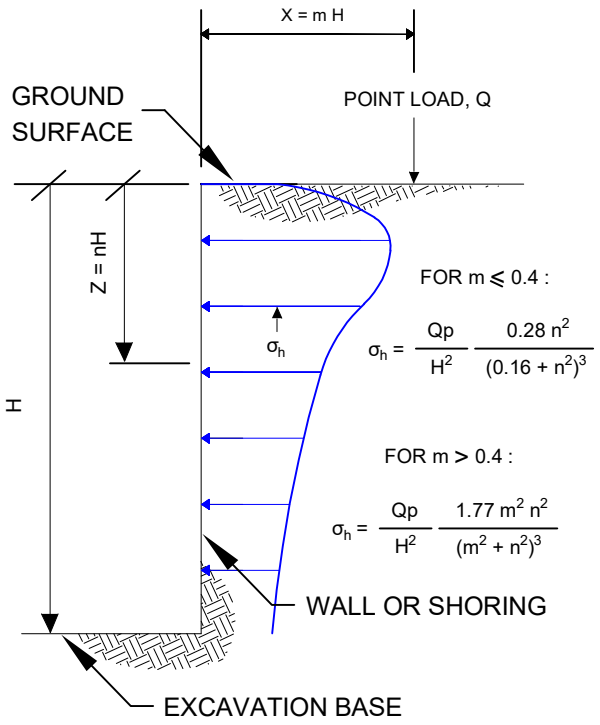
EXPLORATION LOCATION MAP

MILLS PROPERTY

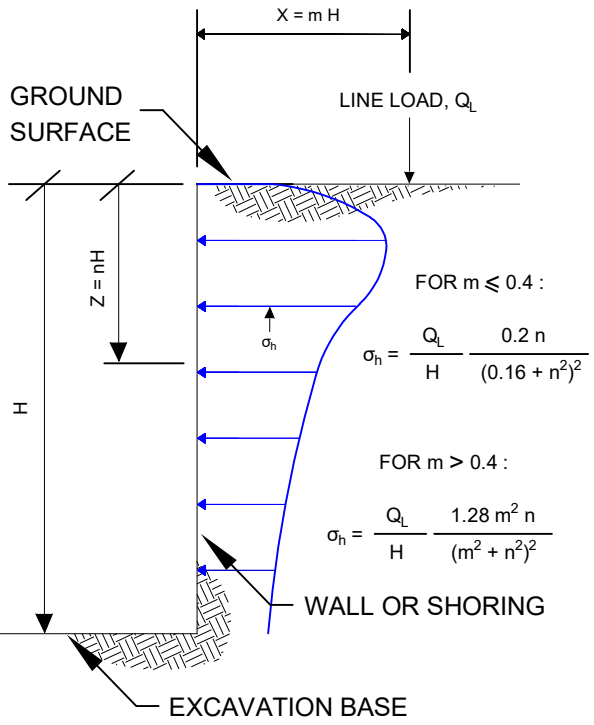
NOTES:
1. APPROXIMATE SITE LOCATION: 313 SE LEADBETTER ROAD IN CAMAS, WASHINGTON.
2. AERIAL PHOTO SOURCED FROM GOOGLE EARTH.
3. EXPLORATION LOCATIONS ARE APPROXIMATE AND NOT SURVEYED.
4. TEST PITS BACKFILLED WITH LOOSELY ONSITE SOILS ON OCTOBER 13, 2023.

FIGURE
898

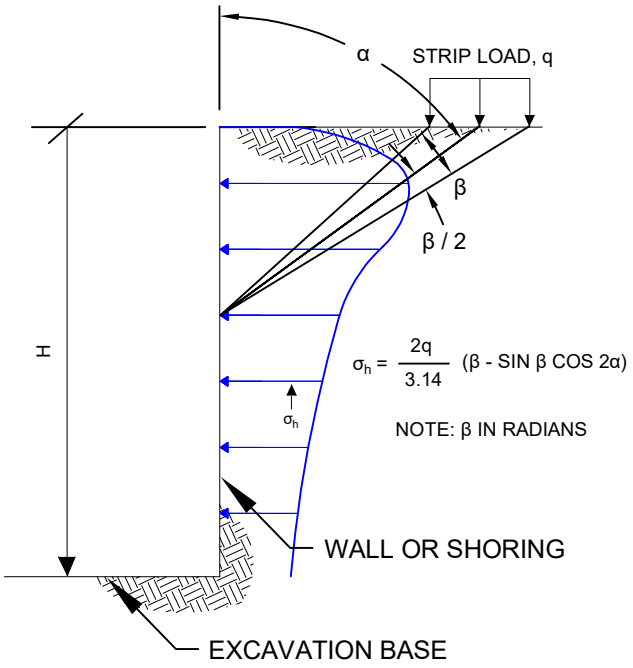
VERTICAL POINT LOAD



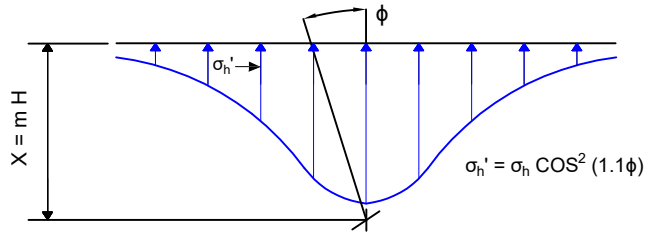
LINE LOAD PARALLEL TO WALL



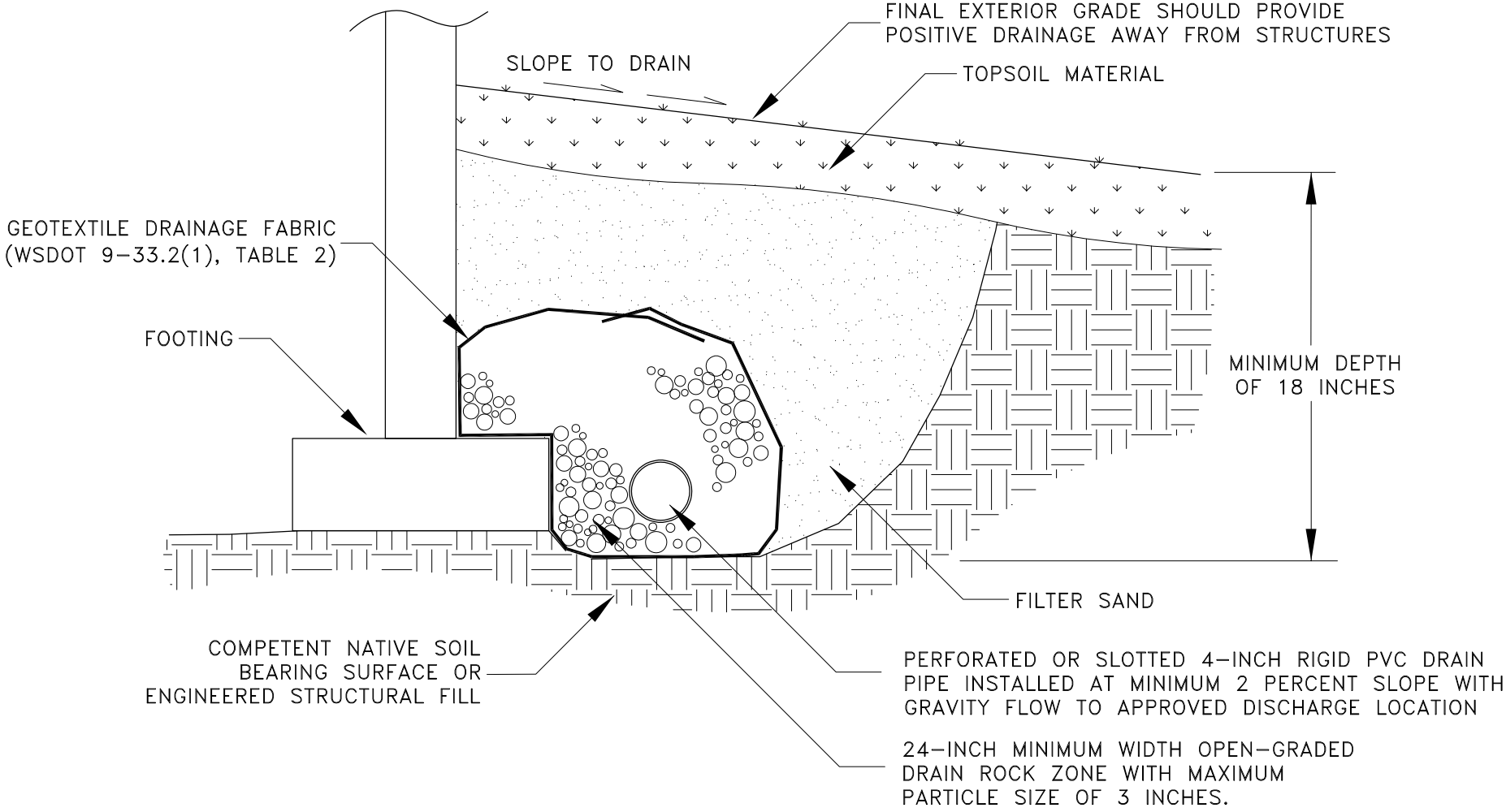
STRIP LOAD PARALLEL TO WALL



VERTICAL POINT LOAD HORIZONTAL PRESSURE DISTRIBUTION



NOTES:
1. FIGURE SHOULD BE USED JOINTLY WITH RECOMMENDATIONS PRESENTED IN THE REPORT TEXT.
2. LATERAL EARTH PRESSURES ASSUME RIGID WALLS WITH BACKFILL MATERIALS HAVING A POISSON'S RATIO OF 0.5.
3. TOTAL LATERAL EARTH PRESSURES RESULTING FROM COMBINED LOADS MAY BE CALCULATED USING SUPERPOSITION.
4. DRAWING IS NOT TO SCALE.



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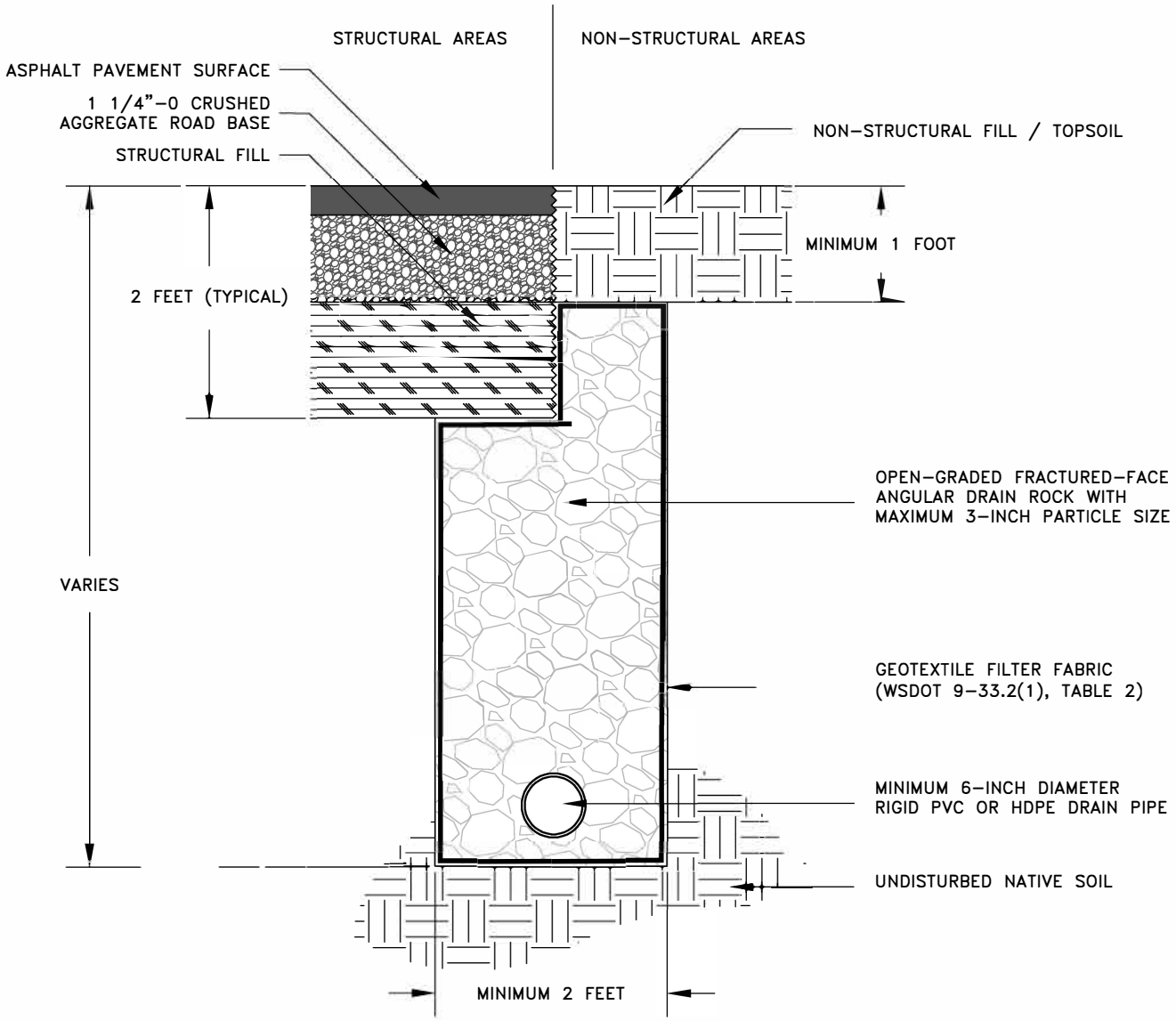
TYPICAL PERIMETER FOOTING
DRAIN DETAIL

NOTES:
1. DRAWING IS NOT TO SCALE.
2. DRAWING REPRESENTS TYPICAL PERIMETER FOOTING DRAIN DETAIL AND MAY NOT BE SITE-SPECIFIC.

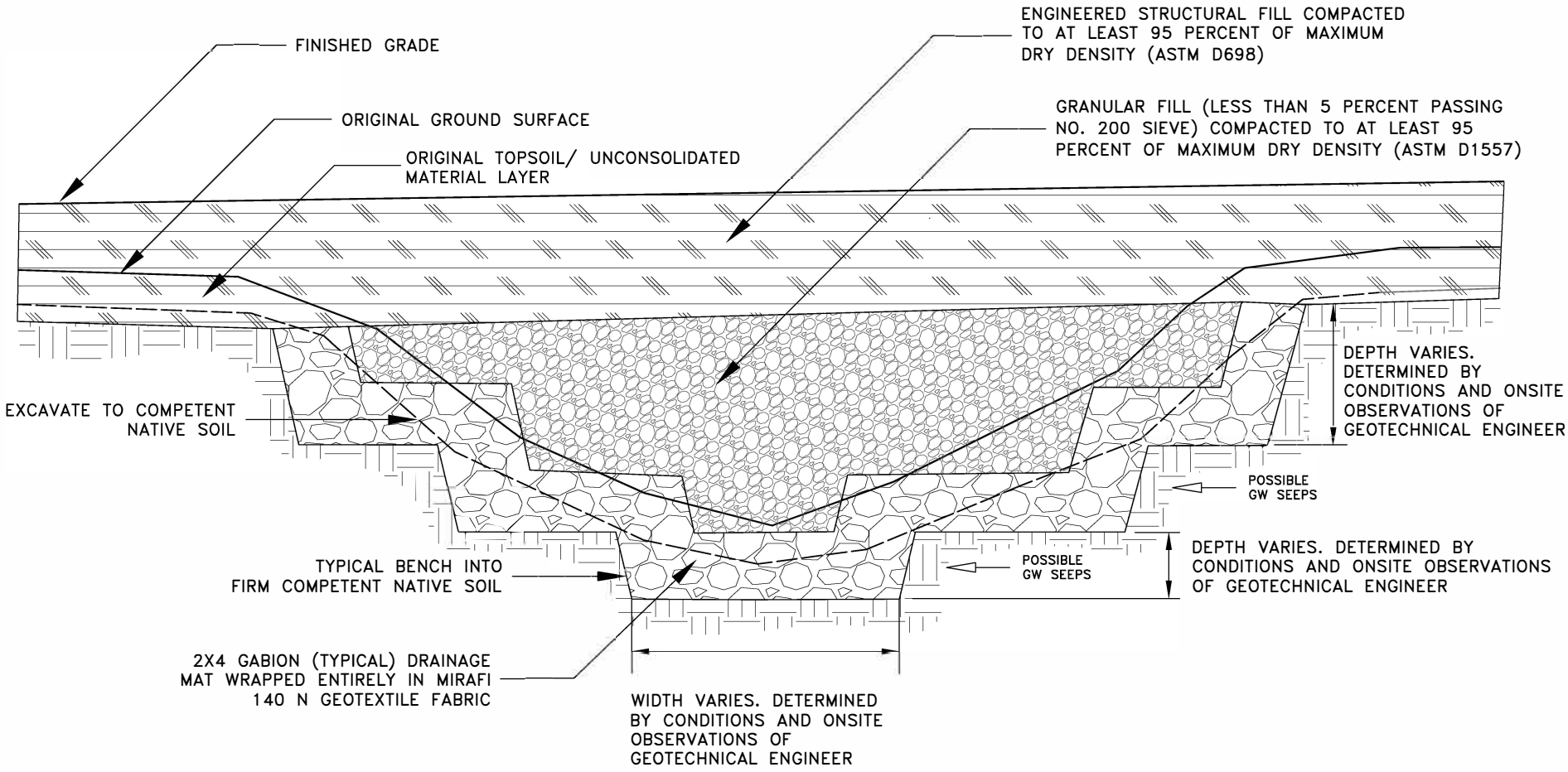
FIGURE
4



NOTE: LOCATION, INVERT ELEVATION, DEPTH OF TRENCH, AND EXTENT OF PERFORATED PIPE REQUIRED MAY BE MODIFIED BY THE GEOTECHNICAL ENGINEER DURING CONSTRUCTION BASED UPON FIELD OBSERVATION AND SITE–SPECIFIC SOIL CONDITIONS.

Geotechnical ▪ Environmental ▪ Special Inspections Columbia West Engineering, Inc	TYPICAL PERFORATED DRAINPIPE TRENCH DETAIL	NOTES: 1. DRAWING IS NOT TO SCALE. 2. DRAWING REPRESENTS TYPICAL PERFORATED DRAIN PIPE TRENCH DETAIL AND MAY NOT BE SITE–SPECIFIC.	FIGURE 5

TYPICAL DRAINAGE MAT CROSS-SECTION



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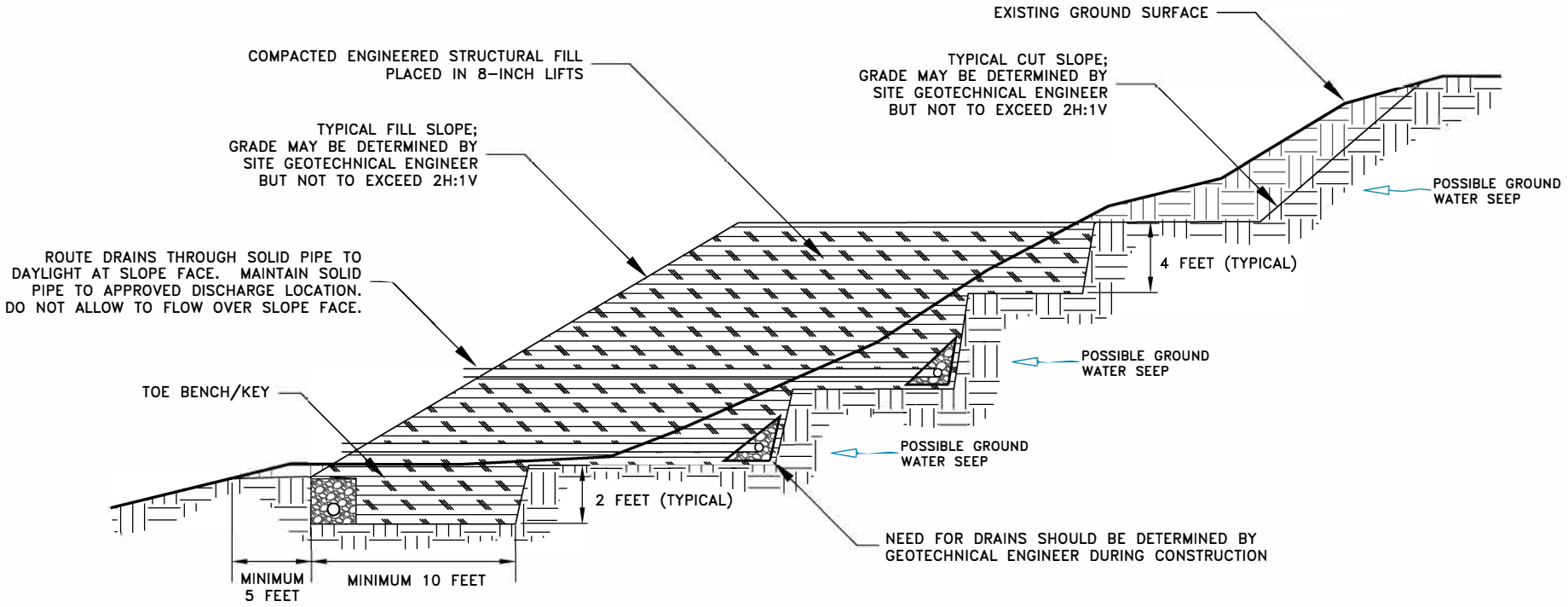
TYPICAL DRAINAGE MAT CROSS SECTION

NOTES:
1. DRAWING IS NOT TO SCALE.
2. DRAWING REPRESENTS TYPICAL DRAINAGE MAT SECTION AND MAY NOT BE SITE–SPECIFIC.

FIGURE
902

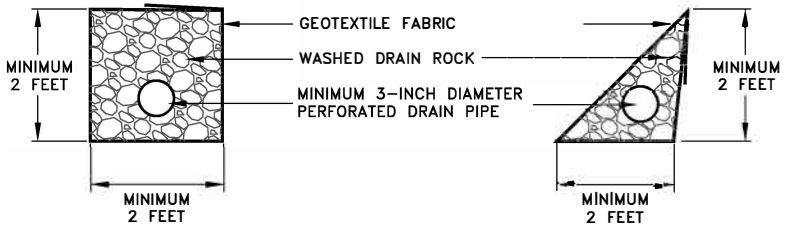


DRAIN SPECIFICATIONS

GEOTEXTILE FABRIC SHALL MEET WSDOT 9-33.2(1), TABLE 2, GEOTEXTILE FOR UNDERGROUND DRAINAGE FILTRATION PROPERTIES WITH AOS BETWEEN No. 70 AND No. 100 SIEVE. WATER PERMITIVITY SHOULD BE GREATER THAN 1.5/SEC.

WASHED DRAIN ROCK SHALL BE OPEN-GRADED ANGULAR DRAIN ROCK WITH LESS THAN 2 PERCENT PASSING THE No. 200 SIEVE AND A MAXIMUM PARTICLE SIZE OF 2 INCHES.

TYPICAL DRAIN SECTION DETAIL



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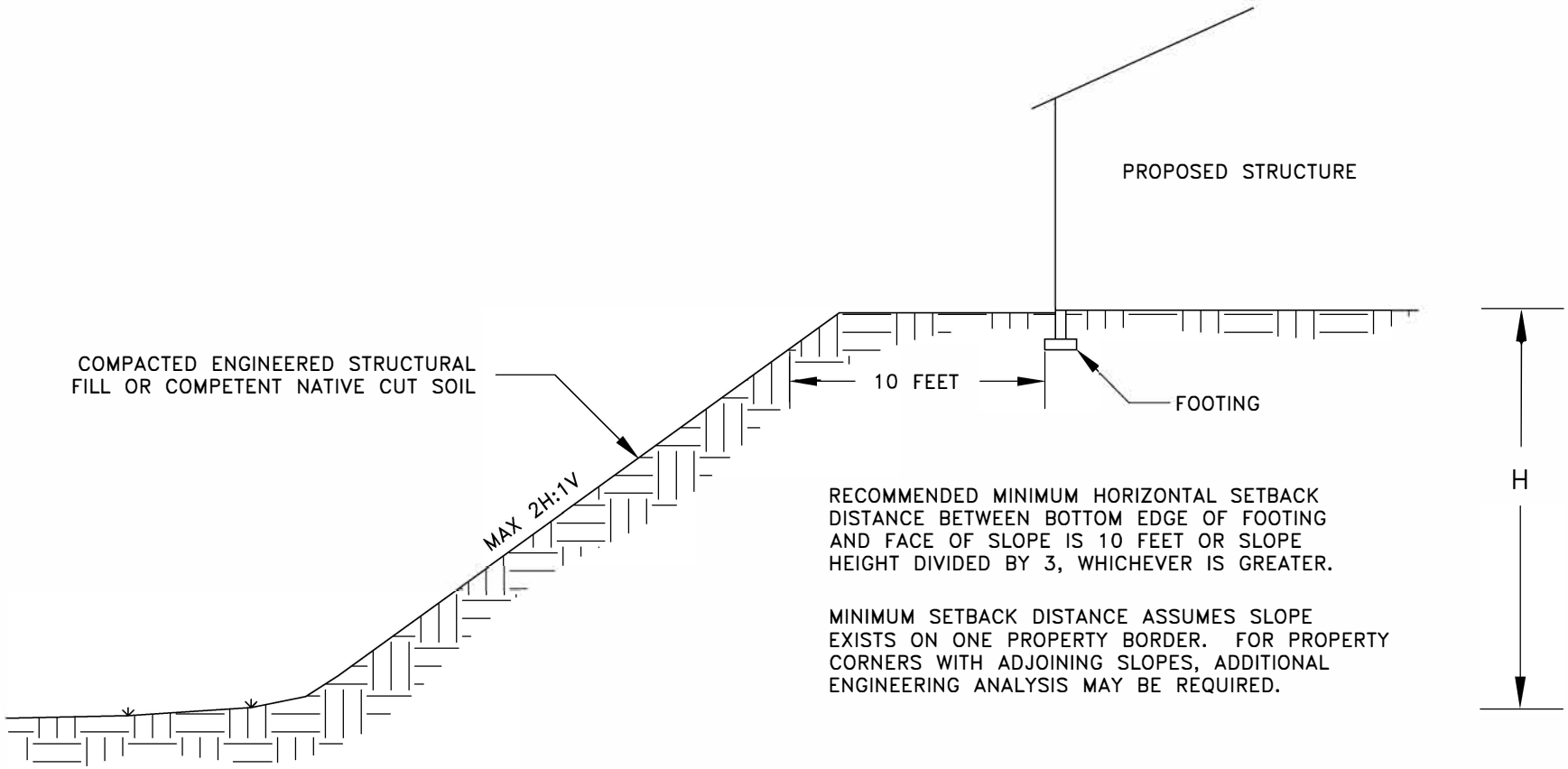
TYPICAL CUT AND FILL SLOPE CROSS SECTION

NOTES:
1. DRAWING IS NOT TO SCALE.
2. DRAWING REPRESENTS TYPICAL CUT AND FILL SLOPE CROSS SECTION AND MAY NOT BE SITE-SPECIFIC.

FIGURE 7



RECOMMENDED MINIMUM HORIZONTAL SETBACK DISTANCE BETWEEN BOTTOM EDGE OF FOOTING AND FACE OF SLOPE IS 10 FEET OR SLOPE HEIGHT DIVIDED BY 3, WHICHEVER IS GREATER.

MINIMUM SETBACK DISTANCE ASSUMES SLOPE EXISTS ON ONE PROPERTY BORDER. FOR PROPERTY CORNERS WITH ADJOINING SLOPES, ADDITIONAL ENGINEERING ANALYSIS MAY BE REQUIRED.

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TYPICAL MINIMUM FOUNDATION SLOPE SETBACK DETAIL

NOTES:
1. DRAWING IS NOT TO SCALE.
2. SLOPES AND PROFILES SHOWN ARE APPROXIMATE.
3. DRAWING REPRESENTS TYPICAL FOUNDATION SETBACK DETAIL AND MAY NOT BE SITE-SPECIFIC.

FIGURE 8

APPENDIX A
SUBSURFACE EXPLORATION PROGRAM
FIELD EXPLORATIONS

GENERAL

We explored subsurface conditions at the site by excavating thirteen test pits (TP-1 through TP-13) to depths between 1.5 and 10 feet BGS. Excavation services were provided by L&S Contractors of Battle Ground, Washington on October 13, 2023. The test pit locations are shown in Figures 2. The test pit logs are presented in this appendix.

SOIL SAMPLING

Representative grab samples of the soil observed in the test pit explorations were obtained from the walls and/or base of the test pits using the excavator bucket.

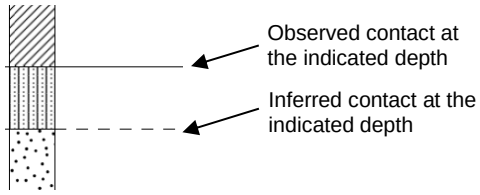
SOIL CLASSIFICATION

The soil samples were classified in accordance with the Unified Soil Classification System presented in Appendix A. The exploration log indicates 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 log.

EXPLORATION LEGEND

Symbol	Description
SPT	Sample obtained from the indicated depth in general accordance with ASTM D1586, *Standard Penetration Test and Split-Barrel Sampling of Soils*
SHELBY	Sample obtained from the indicated depth using thin-wall Shelby tube in general accordance with ASTM D1587, *Thin-Walled Tube Sampling of Fine-Grained Soils*
D&M 300	Sample obtained from the indicated depth using Dames & Moore sampler and 300-pound hammer or pushed
D&M 140	Sample obtained from the indicated depth using Dames & Moore sampler and 140-pound hammer or pushed
CSS	Sample obtained from the indicated depth using 3-inch-outer-diameter California split-spoon sampler and 140-pound hammer
GRAB	Grab sample obtained from the indicated depth
CORE	Rock core interval at the indicated depth
▼	Water level observed during exploration

Graphical Log of Subsurface Lithology



Geotechnical Acronyms			
AASHTO	American Association of State Highway and Transportation Officials	P	Push Sample
ASTM	American Society for Testing and Materials	PP	Pocket Penetrometer
ATT	Atterberg Limits	PSF	Pounds Per Square Foot
BGS	Below Ground Surface	P200	Percent Passing No. 200 Sieve
CBR	California Bearing Ratio	RES	Resilient Modulus
CON	Consolidation Test	SIEV	Sieve Analysis
DCPT	Dynamic Cone Penetration Test	SPT	Standard Penetration Test
DD	Dry Density	TS	Torvane Shear
DS	Direct Shear	UC	Unconfined Compressive Strength
HYD	Hydrometer	UU	Unconsolidated Undrained Triaxial Test
IR	Infiltration Rate	USCS	United Soil Classification System
MC	Moisture Content	VS	Vane Shear
MD	Moisture-Density Relationship	WD	Wet Density
OC	Organic Content		

SOIL DESCRIPTION AND CLASSIFICATION

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	Less than 2	Less than 3	Less than 0.25
Soft	2 to 4	3 to 6	0.25 to 0.50
Medium Stiff	4 to 8	6 to 12	0.50 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	30 to 60	65 to 145	Greater than 4.0
Very Hard	Greater than 60	Greater than 145	-

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	No moisture. Dusty or dry.
Damp	Some moisture. Cohesive soils are usually below plastic limit and are moldable.
Moist	Grains appear darkened, but no visible water is present. Cohesive soils will clump. Sand will bulk. Soils are often at or near plastic limit.
Wet	Visible water on larger grains. Sand and silt exhibit dilatancy. Cohesive soil can be readily remolded. Soil leaves wetness on the hand when squeezed. Soil is much wetter than optimum moisture content and is above plastic limit.

Additional Constituents

Percent	Silt and Clay In:		Percent	Sand and Gravel In:	
	Fine-Grained Soil	Coarse-Grained Soil		Fine-Grained Soil	Coarse-Grained Soil
< 5	trace	trace	< 5	trace	trace
5 – 12	minor	with	5 – 15	minor	minor
> 12	some	silty/clayey	15 – 30	with	with
			> 30	sandy/gravelly	with (approx. percentage)

AASHTO SOIL CLASSIFICATION SYSTEM

TABLE 1. Classification of Soils and Soil-Aggregate Mixtures

General Classification	Granular Materials (35 Percent or Less Passing .075 mm)				Silt-Clay Materials (More than 35 Percent Passing 0.075)		
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	N.P.		10 max	10 max	11 min	11 min
General rating as subgrade	Excellent to good			Fair to poor			

Note: 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.

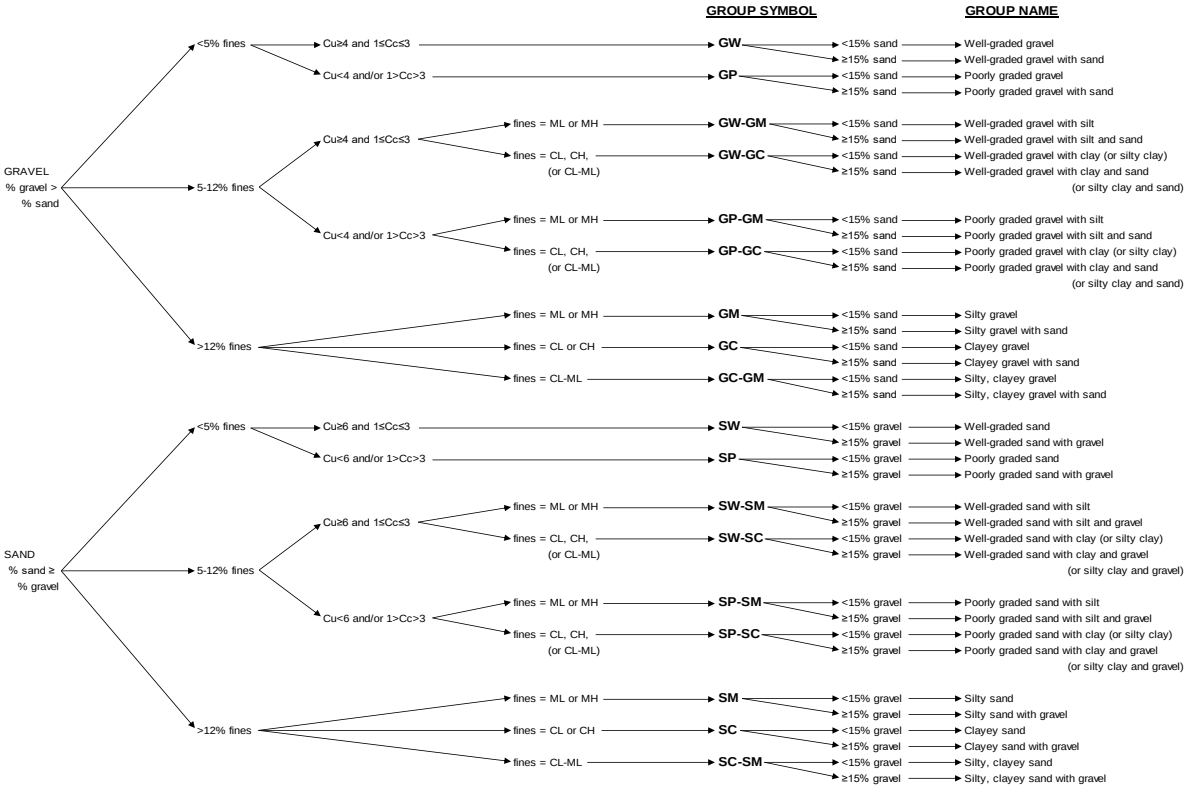
TABLE 2. Classification of Soils and Soil-Aggregate Mixtures

General Classification	Granular Materials (35 Percent or Less Passing 0.075 mm)							Silt-Clay Materials (More than 35 Percent Passing 0.075 mm)			
	A-1			A-2							A-7
Group Classification	A-1-a	A-1-b	A-3	A-2-4	A-2-5	A-2-6	A-2-7	A-4	A-5	A-6	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		N.P.	10 max	10 max	11 min	11 min	10 max	10 max	11 min	11min
Usual types of significant constituent materials	Stone fragments, gravel and sand		Fine sand	Silty or clayey gravel and sand				Silty soils		Clayey soils	
General ratings as subgrade	Excellent to Good							Fair to poor			

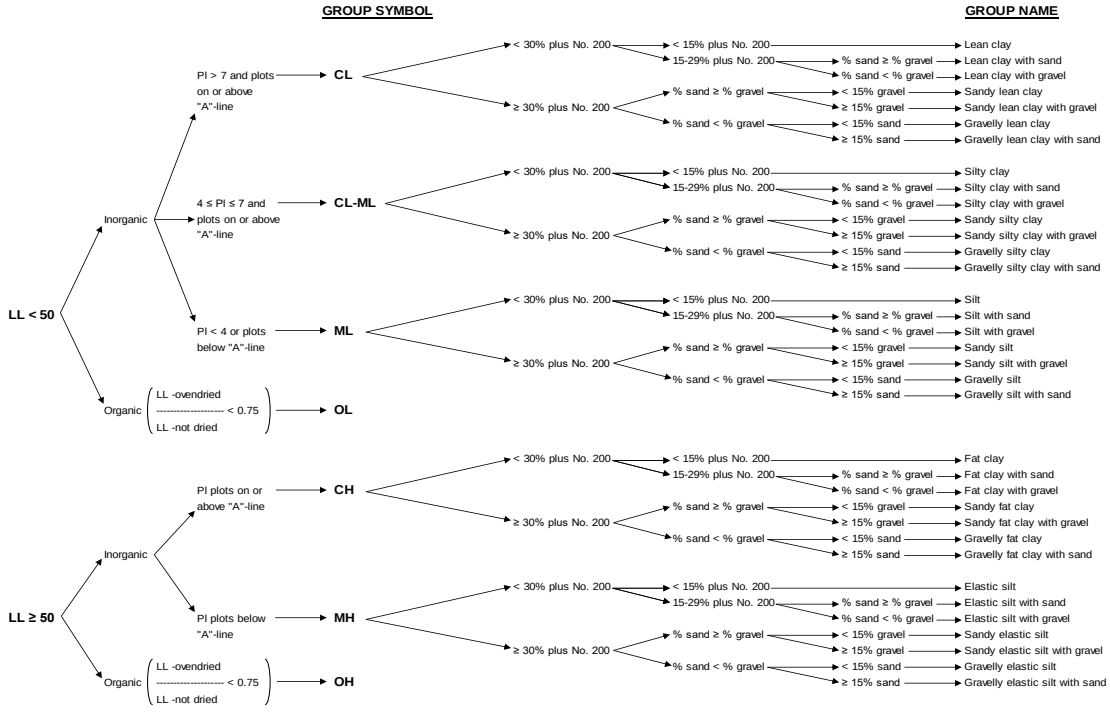
Note: Plasticity index of A-7-5 subgroup is equal to or less than LL minus 30. Plasticity index of A-7-6 subgroup is greater than LL minus 30 (see Figure 2).

AASHTO = American Association of State Highway and Transportation Officials

UNIFIED SOIL CLASSIFICATION SYSTEM



Flow Chart for Classifying Coarse-Grained Soils (More Than 50% Retained on No. 200 Sieve)



Flow Chart for Classifying Fine-Grained Soil (50% or More Passes No. 200 Sieve)

ROCK CLASSIFICATION SYSTEM

STRENGTH	DESCRIPTION	UNCONFINED COMPRESSIVE STRENGTH (PSI)
Extremely Weak (R0)	Easily indented by thumbnail	35 to 150
Very Weak (R1)	Scratched with fingernail, peeled by knife, indented by rock pick	150 to 275
Weak (R2)	Peeled by knife, indented by rock pick	725 to 3,500
Medium Strong (R3)	Cannot be peeled or scraped with a knife	3,500 to 7,250
Strong (R4)	Requires more than one blow with a rock hammer to fracture it	7,250 to 14,500
Very Strong (R5)	Requires many blows with a rock hammer to fracture it	14,500 to 36,250
Extremely Strong (R6)	Can only be chipped with a rock hammer	Greater than 36,250

WEATHERING	DESCRIPTION
Decomposed	A soil formed in place with original texture of rock destroyed
Completely Weathered	Rock wholly weathered but rock texture preserved
Highly Weathered	Rock weakened so that large pieces can be broken by hand
Moderately Weathered	Rock mass is decomposed locally
Slightly Weathered	Discoloration along discontinuities
Fresh	No visible signs of weathering or discoloring

JOINT SPACING	DESCRIPTION
Very Close	Less than 0.2 foot
Close	0.2 foot to 1 foot
Moderately Close	1 foot to 3 feet
Wide	3 feet to 10 feet
Very Wide	Greater than 10 feet

FRACTURING	FRACTURE SPACING
Very Intensely Fractured	Chips, fragments, with scattered short core lengths
Intensely Fractured	0.1 foot to 0.3 foot with scattered fragments
Moderately Fractured	0.3 foot to 1 foot
Slightly Fractured	1 foot to 3 feet
Very Slightly Fractured	Greater than 3 feet
Unfractured	No fractures observed

HEALING	DESCRIPTION
Not Healed	Discontinued surface, fractured zone, sheared material, filling is not cemented
Partly Healed	Less than 50% of fractures or sheared zone bonding
Moderately Healed	Greater than 50% fractures or sheared zone bonding
Totally Healed	All fragments are bonded

QUALITY	RQD (%)
Very poor	Less than 25%
Poor	25 to 50%
Fair	51 to 75%
Good	76 to 90%

Rock Quality Designation (RQD) is a measure of quality of rock core taken from a borehole. The length of core pieces is measured along center line of the pieces. All pieces of intact rock core equal to or greater than 100 mm (4 in.) long are summed and divided by the total length of the core run to obtain RQD value

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-1
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		0755	0820

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0	TP1.1			GW		Grey GRAVEL and cobbles, moist, dense, angular aggregate (0.25 to 10 inches). Shoulder of haul road built for site access.					
				GW-GM		Brown GRAVEL with silt, moist, medium dense to dense, fine angular aggregate (0.1 to 0.25 inch).					
5						Bottom of test pit at 4 feet due to practical refusal on bedrock.					
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-2
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		0822	0835

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						2 to 3 inches forest duff (topsoil). Fine tree roots extend to 8 inches in depth.					
				GW-GM		Brown GRAVEL with silt, moist, dense, fine angular aggregate (0.1 to 0.25 inch).					
				GC		Decomposed/weathered bedrock, very dense clayey gravel.					
5						Bottom of test pit at 4 feet due to practical refusal on bedrock.					
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-3
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		0909	0917

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						6 to 8 inches forest duff with fine tree roots.					
				GC		Grey weathered bedrock, moist, dense to very dense clayey gravel.					
						Difficult digging from 1 to 5 feet.					
5						Bottom of test pit at 5 feet due to practical refusal on bedrock.					
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-4
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		0918	0935

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						6 to 8 inches forest duff with fine tree roots.					
				ML		Brown SILT with trace gravel (0.1 to 0.25 inch), moist, medium stiff to stiff.					
	TP4.1										
5						Difficult digging from 8 to 10 feet. Intermixed weathered bedrock gravel and boulders at 8 feet.					
	TP4.2		A-7-6(4)	SM		Brown silty SAND with gravel, moist, medium dense.	41	45	41	15	
10						Bottom of test pit at 10 feet due to practical refusal on bedrock.					
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-5
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		0950	1005

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						8 to 10 inches forest duff with tree roots.					
				GC		Grey weathered bedrock, moist, dense to very dense clayey gravel. Fine tree roots extend to 2 feet in depth. Difficult digging from 2 to 4 feet.					
5						Bottom of test pit at 4 feet due to practical refusal on bedrock.					
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-6
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1007	1015

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						8 to 10 inches forest duff with tree roots. Fine tree roots extend to 1.5 feet in depth.					
				GC		Grey weathered bedrock, moist, dense to very dense clayey gravel. Difficult digging from 1.5 to 4 feet.					
5						Bottom of test pit at 4 feet due to practical refusal on bedrock.					
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-7
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1020	1033

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						8 to 10 inches forest duff with tree roots. Fine tree roots extend to 1.5 feet in depth.					
				GC		Grey weathered bedrock, moist, dense to very dense clayey gravel. Difficult digging from 3 to 5 feet.					
5						Bottom of test pit at 5 feet due to practical refusal on bedrock.					
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-8
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1040	1045

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						8 to 10 inches forest duff with tree roots. Fine tree roots extend to 1.5 feet in depth.					
				GC		Grey weathered bedrock, moist, dense to very dense clayey gravel.					
						Bottom of test pit at 2.5 feet due to practical refusal on bedrock.					
5											
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-9
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1100	1108

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						8 to 10 inches forest duff with tree roots. Fine tree roots extend to 1.5 feet in depth.					
	TP9.1		A-4(1)	SM		Brownish red silty SAND with gravel (0.1 to 0.25 inch), moist, dense to very dense, low to medium plasticity.	20	44	39	8	
						Bottom of test pit at 3 feet due to practical refusal on bedrock.					
5											
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-10
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1130	1146

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						8 to 10 inches forest duff with tree roots.					
						Fine tree roots extend to 1.5 feet in depth.					
				GC		Grey-brown weathered bedrock, moist, dense to very dense clayey gravel.					
						Difficult digging from 1.5 to 3.5 feet.					
						Bottom of test pit at 3.5 feet due to practical refusal on bedrock.					
5											
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-11
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1150	1155

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						8 inches forest duff with tree roots.					
				GC		Grey weathered bedrock, moist, dense to very dense clayey gravel.					
						Bottom of test pit at 1.5 feet due to practical refusal on bedrock.					
5											
10											
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-12
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1210	1230

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0						2 to 3 inches root zone underlain by 6 inches topsoil.					
				ML		Brown SILT with gravel (0.1 to 3 inches), moist, medium stiff, low plasticity.					
	TP12.1										
5						Increase in gravel and weathered bedrock at 6 feet.					
						Difficult digging from 6 feet to 9.5 feet.					
	TP12.2					Weathered bedrock boulders at 9 feet.					
10						Bottom of test pit at 9.5 feet due to practical refusal on bedrock.					
15											

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TEST PIT LOG

PROJECT NAME	CLIENT		PROJECT NO.	TEST PIT NO.
Mills Camas	HSR Development		HSR-1-01-1	TP-13
PROJECT LOCATION	**CONTRACTOR**	**EQUIPMENT**	**TECHNICIAN**	**DATE**
Camas, Washington	L&S Contractors Inc.	Excavator	SSC	10-13-2023
TEST PIT LOCATION	**GROUNDWATER DEPTH**		**START TIME**	**FINISH TIME**
See Figure 2	Groundwater not observed.		1245	1300

Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIPTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0	TP13.1					8 to 10 inches forest duff with tree roots. Tree roots extend to 1.5 feet in depth.					
				ML		Brown SILT intermixed with weathered bedrock, moist, stiff, low plasticity.					
				GC		Grey weathered bedrock, moist, dense to very dense clayey gravel. Difficult digging from 2.5 feet to 4 feet.					
5						Bottom of test pit at 4 feet due to practical refusal on bedrock.					
10											
15											

APPENDIX B
LABORATORY TESTING

CLASSIFICATION

The soil samples were classified in the laboratory to confirm field classifications. The laboratory classifications are shown on the exploration log if those classifications differed from the field classifications.

ATTERBERG LIMITS

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. The test results are presented in this appendix.

MOISTURE CONTENT

We determined the natural moisture content of select soil samples in general accordance with ASTM D2216. The natural moisture content is a ratio of the weight of the water to soil in a test sample and is expressed as a percentage. The test results are presented in this appendix.

PARTICLE-SIZE ANALYSIS

We completed particle-size analysis on select soil samples 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.

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PARTICLE-SIZE ANALYSIS REPORT

PROJECT	CLIENT	PROJECT NO.	LAB ID
Mills Camas 313 SE Leadbetter Road Camas, Washington 98607	HSR Development 500 E. Broadway, Suite 120 Vancouver, Washington 98660	HSR-1-01-1	S23-1356
		REPORT DATE: 10/30/23	FIELD ID: TP4.2
		DATE SAMPLED: 10/13/23	SAMPLED BY: SSC

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
brown Silty SAND with Gravel	Test Pit TP-04 depth = 8 feet	SM, Silty Sand with Gravel
SPECIFICATIONS none		**AASHTO CLASSIFICATION** A-7-6(4)

LABORATORY TEST DATA

LABORATORY EQUIPMENT
Rainhart "Mary Ann" Sifter, air-dried prep, hand washed, composite sieve - #4 split

TEST PROCEDURE
ASTM D6913, Method A

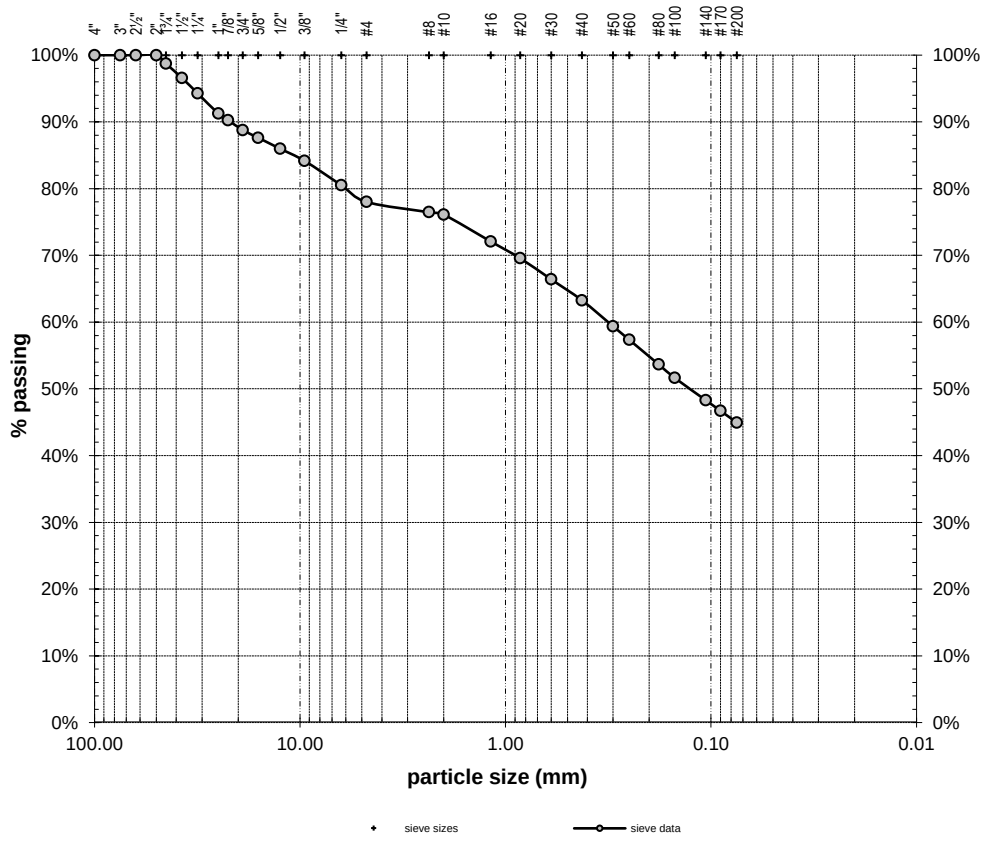
ADDITIONAL DATA

initial dry mass (g) =	1842.3		
as-received moisture content =	41%	coefficient of curvature, C_C =	n/a
liquid limit =	41	coefficient of uniformity, C_U =	n/a
plastic limit =	26	effective size, $D_{(10)}$ =	n/a
plasticity index =	15	$D_{(30)}$ =	n/a
fineness modulus =	n/a	$D_{(60)}$ =	0.317 mm

NOTE: Entire sample used for analysis; did not meet minimum size required.

SIEVE DATA

% gravel = 22.0%
% sand = 33.1%
% silt and clay = 45.0%



	SIEVE SIZE US	SIEVE SIZE mm	PERCENT PASSING SIEVE act.	SIEVE interp.	SPECS max	SPECS 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		99%		
	1.50"	37.5	97%			
	1.25"	31.5		94%		
	1.00"	25.0	91%			
	7/8"	22.4		90%		
	3/4"	19.0	89%			
	5/8"	16.0		88%		
	1/2"	12.5		86%		
	3/8"	9.50	84%			
	1/4"	6.30		81%		
	#4	4.75	78%			
SAND	#8	2.36		76%		
	#10	2.00	76%			
	#16	1.18		72%		
	#20	0.850	70%			
	#30	0.600		66%		
	#40	0.425	63%			
	#50	0.300		59%		
	#60	0.250	57%			
	#80	0.180		54%		
	#100	0.150	52%			
	#140	0.106		48%		
	#170	0.090		47%		
	#200	0.075	45%			

DATE TESTED	TESTED BY
10/26/23	MRS

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ATTERBERG LIMITS REPORT

PROJECT	CLIENT	PROJECT NO.	LAB ID
Mills Camas 313 SE Leadbetter Road Camas, Washington 98607	HSR Development 500 E. Broadway, Suite 120 Vancouver, Washington 98660	HSR-1-01-1	S23-1356
		REPORT DATE: 10/30/23	FIELD ID: TP4.2
		DATE SAMPLED: 10/13/23	SAMPLED BY: SSC

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
brown Silty SAND with Gravel	Test Pit TP-04 depth = 8 feet	SM, Silty Sand with Gravel

LABORATORY TEST DATA

LABORATORY EQUIPMENT: Liquid Limit Machine, Hand Rolled

TEST PROCEDURE: ASTM D4318

ATTERBERG LIMITS

liquid limit =	41
plastic limit =	26
plasticity index =	15

LIQUID LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	32.63	33.85	33.77	33.71
dry soil + pan weight, g =	29.16	29.98	29.91	29.83
pan weight, g =	20.42	20.56	20.67	20.77
N (blows) =	33	26	22	16
moisture, % =	39.7 %	41.1 %	41.8 %	42.8 %

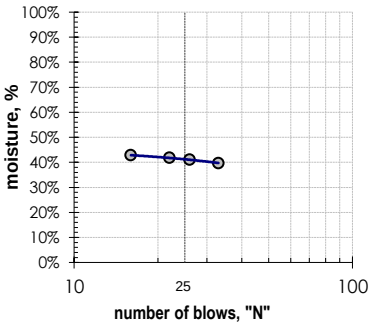
SHRINKAGE

shrinkage limit =	n/a
shrinkage ratio =	n/a

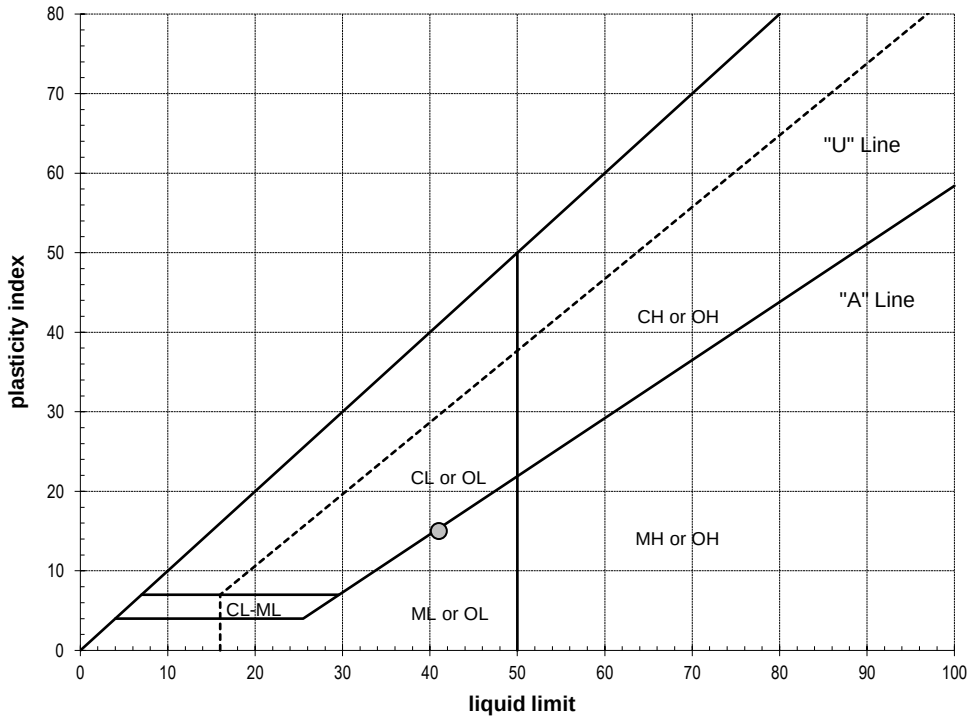
PLASTIC LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	27.58	27.20		
dry soil + pan weight, g =	26.23	25.81		
pan weight, g =	20.93	20.42		
moisture, % =	25.5 %	25.8 %		

LIQUID LIMIT



PLASTICITY CHART



ADDITIONAL DATA

% gravel =	22.0%
% sand =	33.1%
% silt and clay =	45.0%
% silt =	n/a
% clay =	n/a
moisture content =	41%

DATE TESTED	TESTED BY
10/27/23	MRS

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PARTICLE-SIZE ANALYSIS REPORT

PROJECT	CLIENT	PROJECT NO.	LAB ID
Mills Camas 313 SE Leadbetter Road Camas, Washington 98607	HSR Development 500 E. Broadway, Suite 120 Vancouver, Washington 98660	HSR-1-01-1	S23-1357
		REPORT DATE: 10/30/23	FIELD ID: TP9.1
		DATE SAMPLED: 10/13/23	SAMPLED BY: SSC

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
brownish red Silty SAND with Gravel	Test Pit TP-09 depth = 2 feet	SM, Silty Sand with Gravel

SPECIFICATIONS	AASHTO CLASSIFICATION
none	A-4(1)

LABORATORY TEST DATA

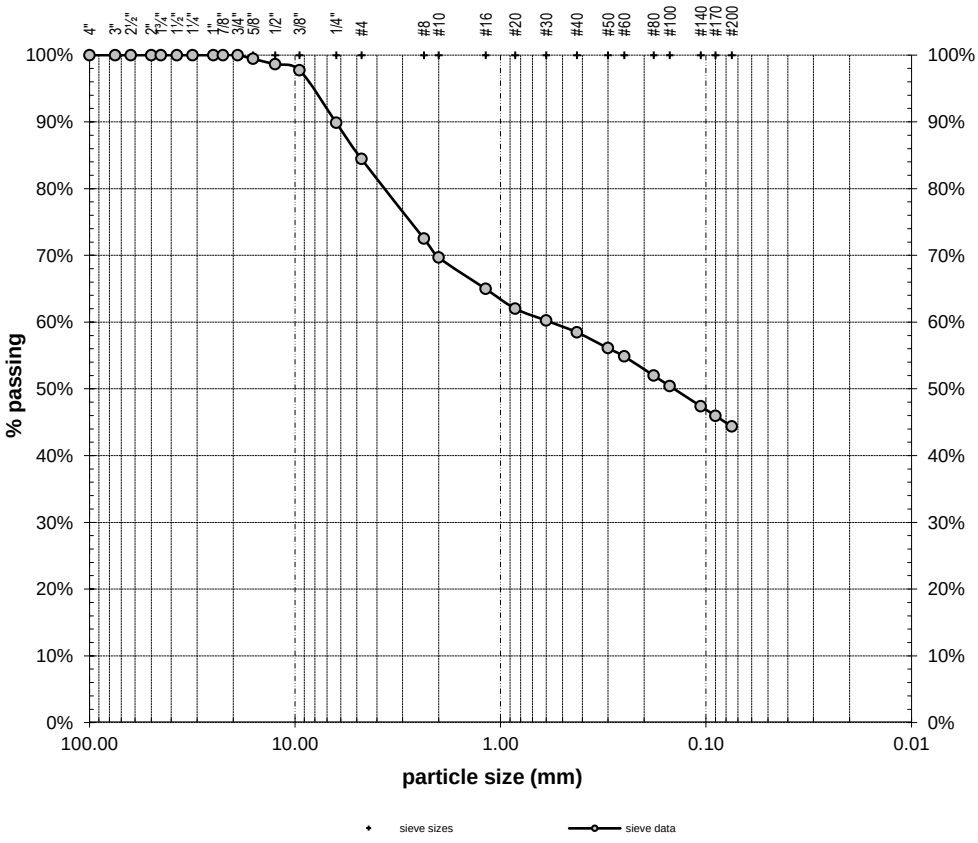
LABORATORY EQUIPMENT	TEST PROCEDURE
Rainhart "Mary Ann" Sifter, air-dried prep, hand washed, composite sieve - #4 split	ASTM D6913, Method A

ADDITIONAL DATA

initial dry mass (g) =	1551.4		
as-received moisture content =	20%	coefficient of curvature, C_C =	n/a
liquid limit =	39	coefficient of uniformity, C_U =	n/a
plastic limit =	31	effective size, $D_{(10)}$ =	n/a
plasticity index =	8	$D_{(30)}$ =	n/a
fineness modulus =	n/a	$D_{(60)}$ =	0.573 mm

SIEVE DATA

% gravel = 15.6%
% sand = 40.1%
% silt and clay = 44.4%



	SIEVE SIZE US	SIEVE SIZE mm	PERCENT PASSING SIEVE act.	PERCENT PASSING SIEVE interp.	SPECS max	SPECS 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		100%		
	1.00"	25.0		100%		
	7/8"	22.4		100%		
	3/4"	19.0	100%			
	5/8"	16.0		99%		
	1/2"	12.5		99%		
	3/8"	9.50	98%			
	1/4"	6.30		90%		
	#4	4.75	84%			
SAND	#8	2.36		73%		
	#10	2.00	70%			
	#16	1.18		65%		
	#20	0.850	62%			
	#30	0.600		60%		
	#40	0.425	58%			
	#50	0.300		56%		
	#60	0.250	55%			
	#80	0.180		52%		
	#100	0.150	50%			
	#140	0.106		47%		
	#170	0.090		46%		
	#200	0.075	44%			

DATE TESTED	TESTED BY
10/26/23	MRS

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ATTERBERG LIMITS REPORT

PROJECT	CLIENT	PROJECT NO.	LAB ID
Mills Camas 313 SE Leadbetter Road Camas, Washington 98607	HSR Development 500 E. Broadway, Suite 120 Vancouver, Washington 98660	HSR-1-01-1	S23-1357
		REPORT DATE: 10/30/23	FIELD ID: TP9.1
		DATE SAMPLED: 10/13/23	SAMPLED BY: SSC

MATERIAL DATA

MATERIAL SAMPLED	MATERIAL SOURCE	USCS SOIL TYPE
brownish red Silty SAND with Gravel	Test Pit TP-09 depth = 2 feet	SM, Silty Sand with Gravel

LABORATORY TEST DATA

LABORATORY EQUIPMENT: Liquid Limit Machine, Hand Rolled

TEST PROCEDURE: ASTM D4318

ATTERBERG LIMITS

liquid limit =	39
plastic limit =	31
plasticity index =	8

LIQUID LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	35.74	32.23	34.46	32.25
dry soil + pan weight, g =	31.59	29.05	30.61	28.96
pan weight, g =	20.66	20.76	20.76	20.82
N (blows) =	35	28	21	17
moisture, % =	38.0 %	38.4 %	39.1 %	40.4 %

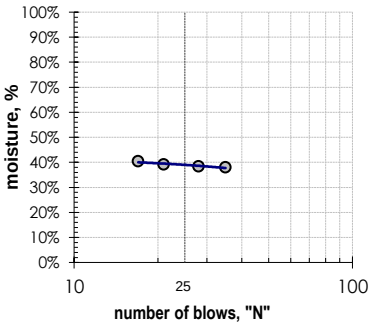
SHRINKAGE

shrinkage limit =	n/a
shrinkage ratio =	n/a

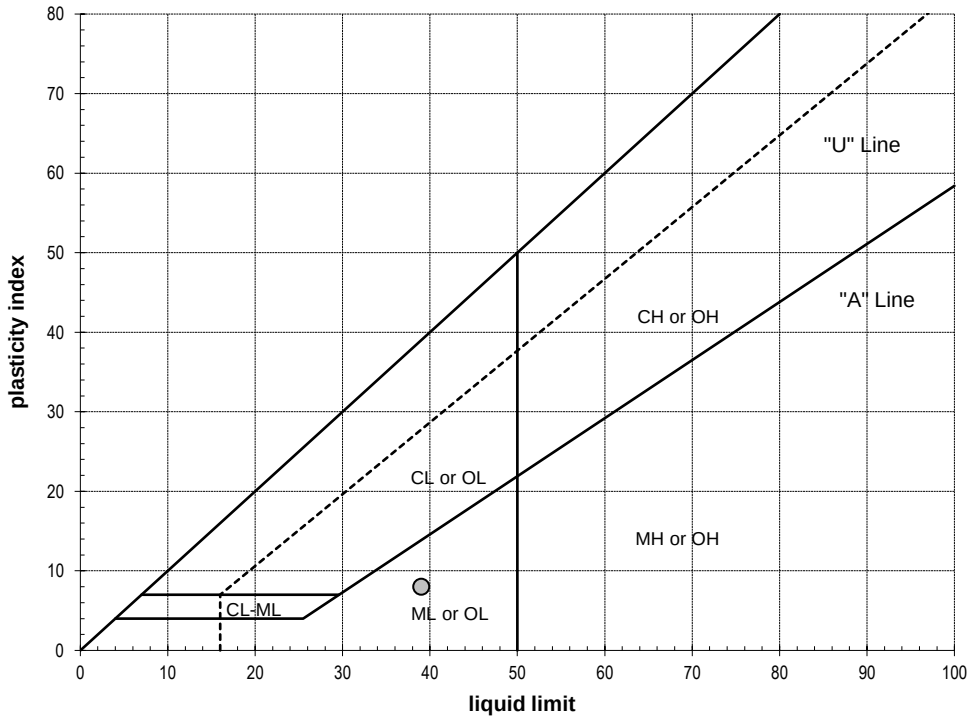
PLASTIC LIMIT DETERMINATION

	❶	❷	❸	❹
wet soil + pan weight, g =	27.76	27.39		
dry soil + pan weight, g =	26.10	25.87		
pan weight, g =	20.78	20.94		
moisture, % =	31.2 %	30.8 %		

LIQUID LIMIT



PLASTICITY CHART



ADDITIONAL DATA

% gravel =	15.6%
% sand =	40.1%
% silt and clay =	44.4%
% silt =	n/a
% clay =	n/a
moisture content =	20%

DATE TESTED	TESTED BY
10/27/23	MRS

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APPENDIX C
REPORT LIMITATIONS AND IMPORTANT INFORMATION

Geotechnical and Environmental 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 QA/QC

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 QA/QC construction observation and testing to verify soil conditions do not differ materially or significantly from the interpreted conditions utilized for preparation of this report.

Therefore, this report contains several recommendations for field observation and testing by Columbia West personnel during construction activities. Actual subsurface conditions are more readily observed and discerned during the earthwork phase of construction when soils are exposed. Columbia West cannot accept responsibility for deviations from recommendations described in this

report or future performance of structural facilities if another consultant is retained during the construction phase or Columbia West is not engaged to provide construction observation to the full extent recommended.

Collected Samples

Uncontaminated samples of soil or rock collected in connection with this report will be retained for thirty days. Retention of such samples beyond thirty days will occur only at client's request and in return for payment of storage charges incurred. All contaminated or environmentally impacted materials or samples are the sole property of the client. Client maintains responsibility for proper disposal.

Report Contents

This geotechnical or environmental report should not be copied or duplicated unless in full, and even then only under prior written consent by Columbia West, as indicated in further detail in the following text section entitled *Report Ownership*. The recommendations, interpretations, and suggestions presented in this report are only understandable in context of reference to the whole report. Under no circumstances should the soil boring or test pit excavation logs, monitor well logs, or laboratory analytical reports be separated from the remainder of the report. The logs or reports should not be redrawn or summarized by other entities for inclusion in architectural or civil drawings, or other relevant applications.

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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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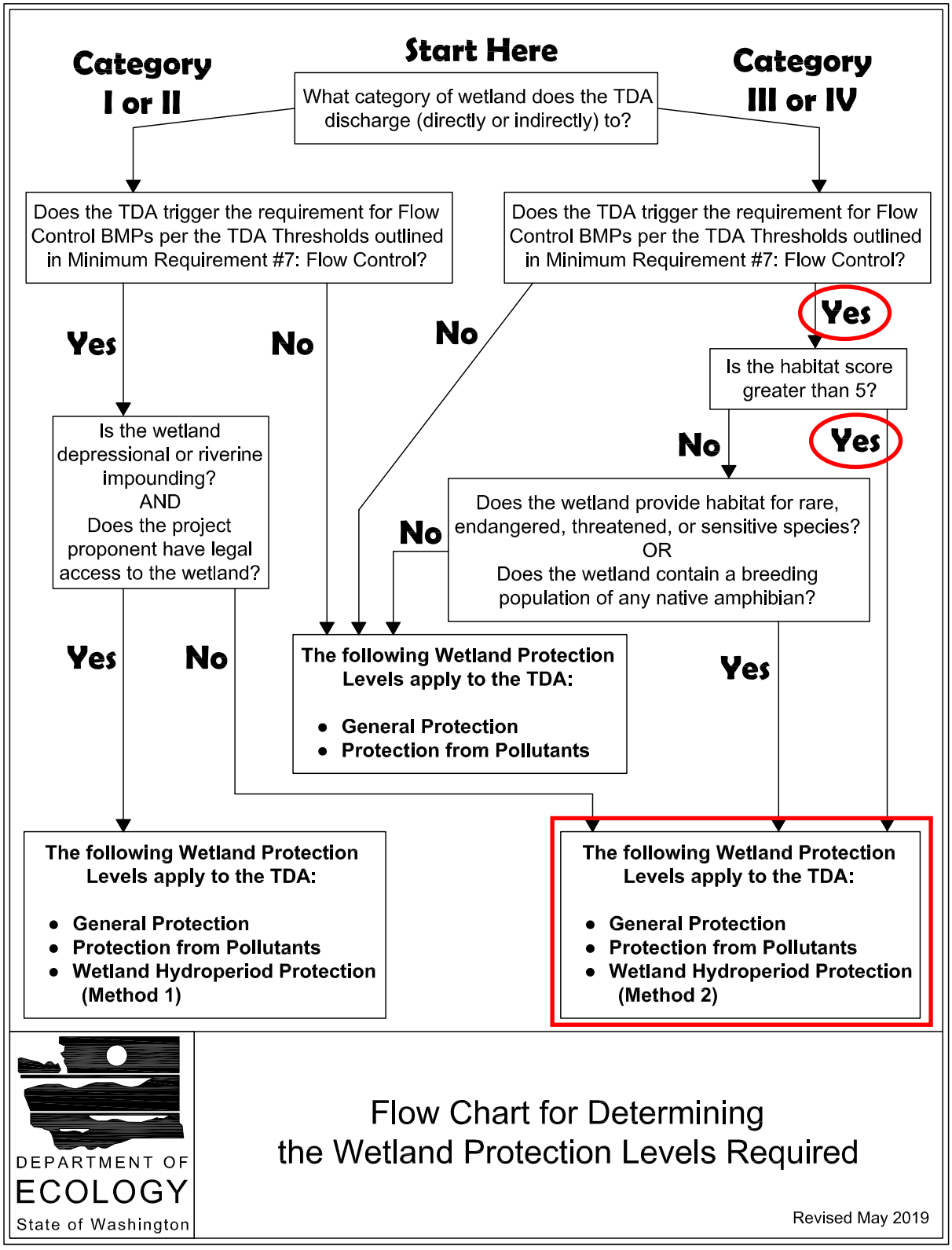
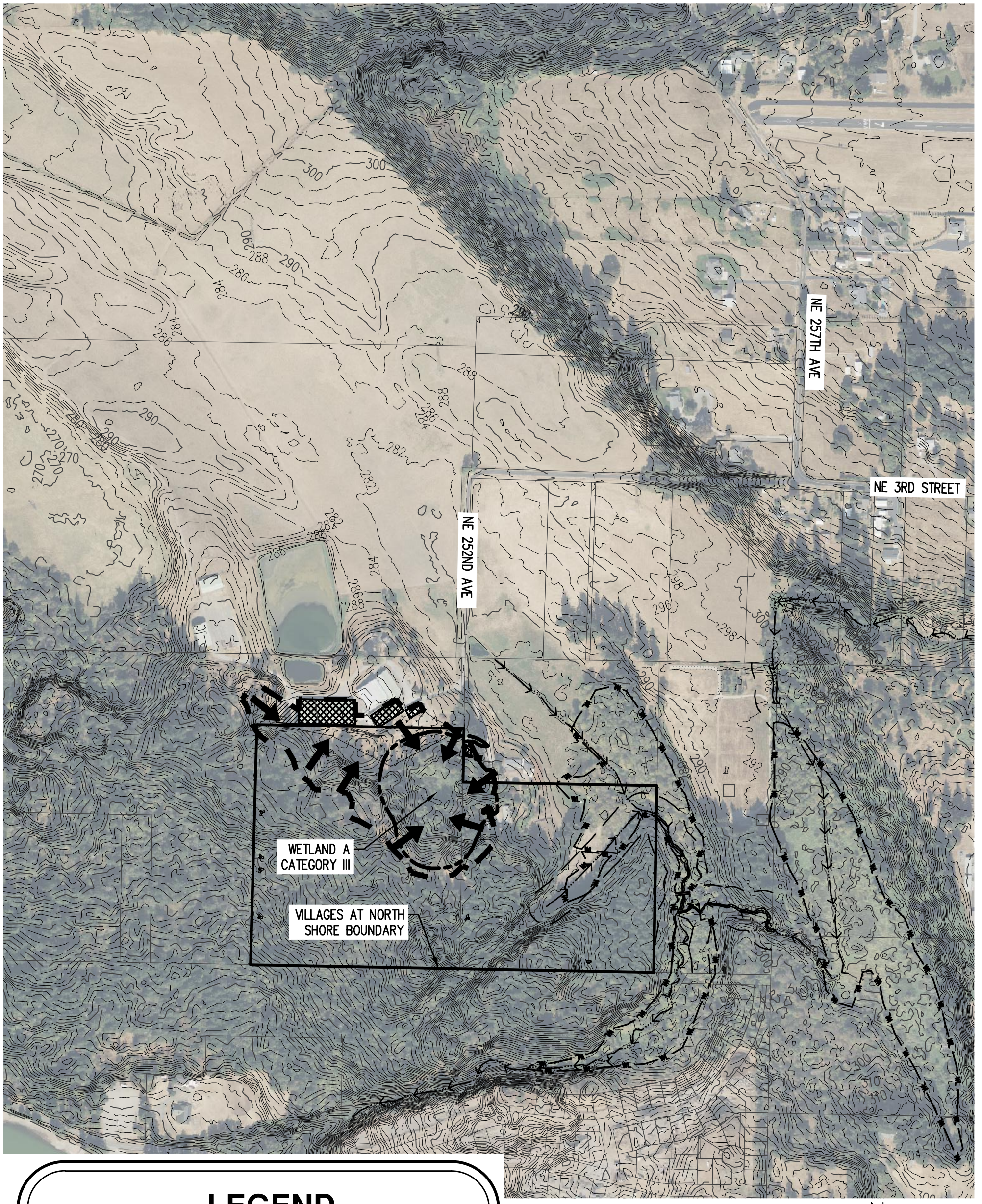
Consultant Responsibility

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.

Appendix H: Wetland Protection

Figure I-3.5: Flow Chart for Determining Wetland Protection Level Requirements





LEGEND

- EXISTING GROUND CONTOUR (2 FT) — 282 —
- EXISTING GROUND CONTOUR (10 FT) — 280 —
- PRE-DEVELOPED BASIN BOUNDARY
- CJ DENS/ENCLAVE
- EXISTING FIELD
- EXISTING ROOF
- EXISTING ROAD
- DRAINAGE FLOW DIRECTION

NOTES

1. UNHATCHED AREAS WITHIN THE WETLAND BASIN ARE FORESTED.
2. LATEST AVAILABLE AERIAL IMAGERY FROM BING LIVE MAPS.
3. VILLAGES AT NORTH SHORE BASIN IS BASED OFF OF PROPOSED SITE IMPROVEMENTS AS FOUND IN THE PRELIMINARY STORM TIR.
4. WETLAND BOUNDARY PER ELS.

N

SCALE: 1"= 400 FEET

400 0 80 200 400

DATE: 07/15/2025

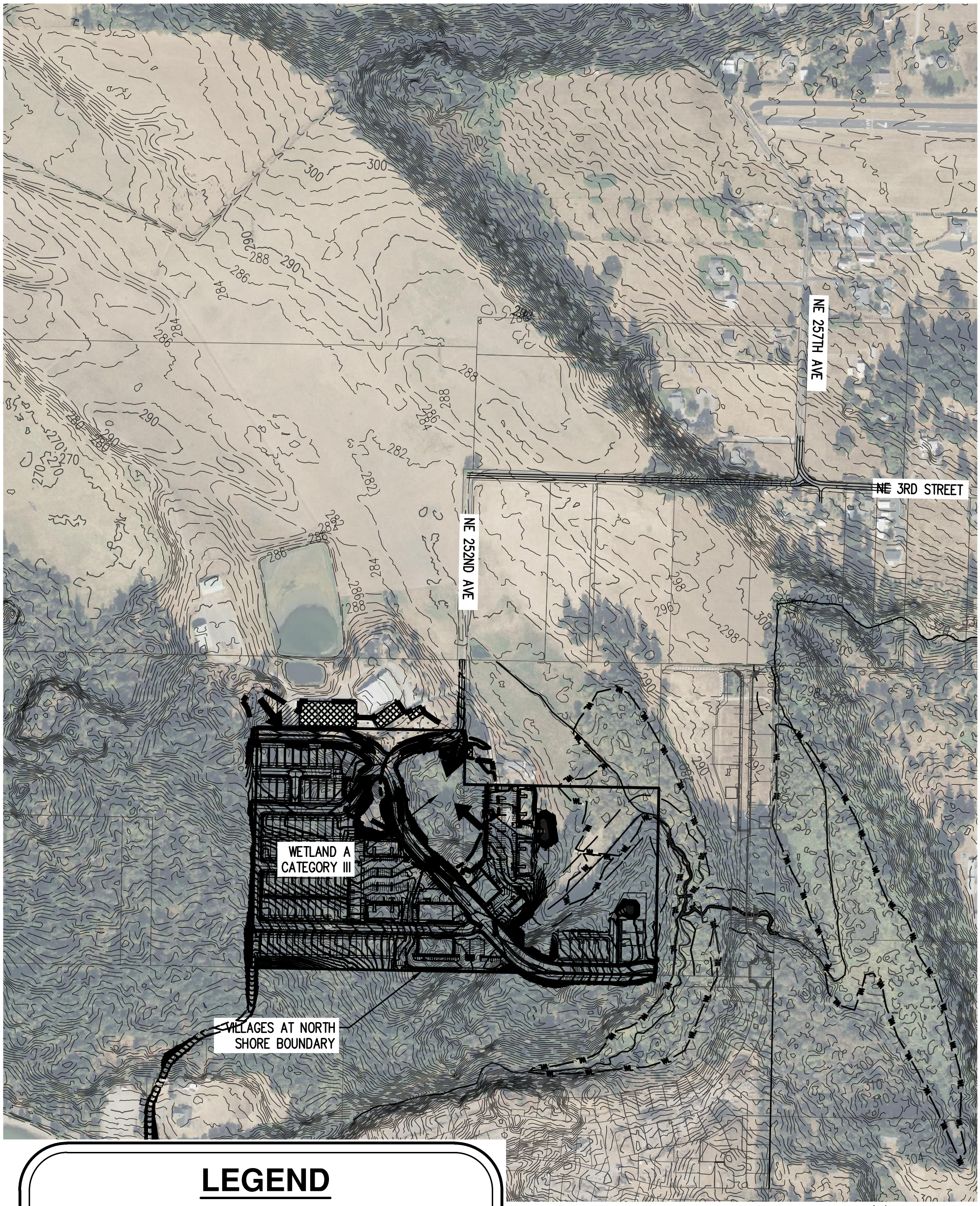
WETLAND A PRE-DEVELOPMENT BASIN MAP

EXHIBIT **A**

VILLAGES AT NORTH SHORE

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
360.882.0419 WWW.AKS-ENG.COM

DRWN: MAZ
CHKD: BDH
AKS JOB: 9095



LEGEND

- FINISHED GRADE CONTOUR (2 FT) — 282
- FINISHED GRADE CONTOUR (10 FT) — 280
- EXISTING GROUND CONTOUR (2 FT) — 282
- EXISTING GROUND CONTOUR (10 FT) — 280
- POST-DEVELOPED BASIN BOUNDARY
- CJ DENS/ENCLAVE
- EXISTING FIELD
- EXISTING ROOF
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NOTES

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4. WETLAND BOUNDARY PER ELS.

N

SCALE: 1"= 400 FEET

400 0 80 200 400

DATE: 07/15/2025

WETLAND A
POST-DEVELOPMENT BASIN MAP

VILLAGES AT NORTH SHORE

EXHIBIT **B**

AKS ENGINEERING & FORESTRY, LLC
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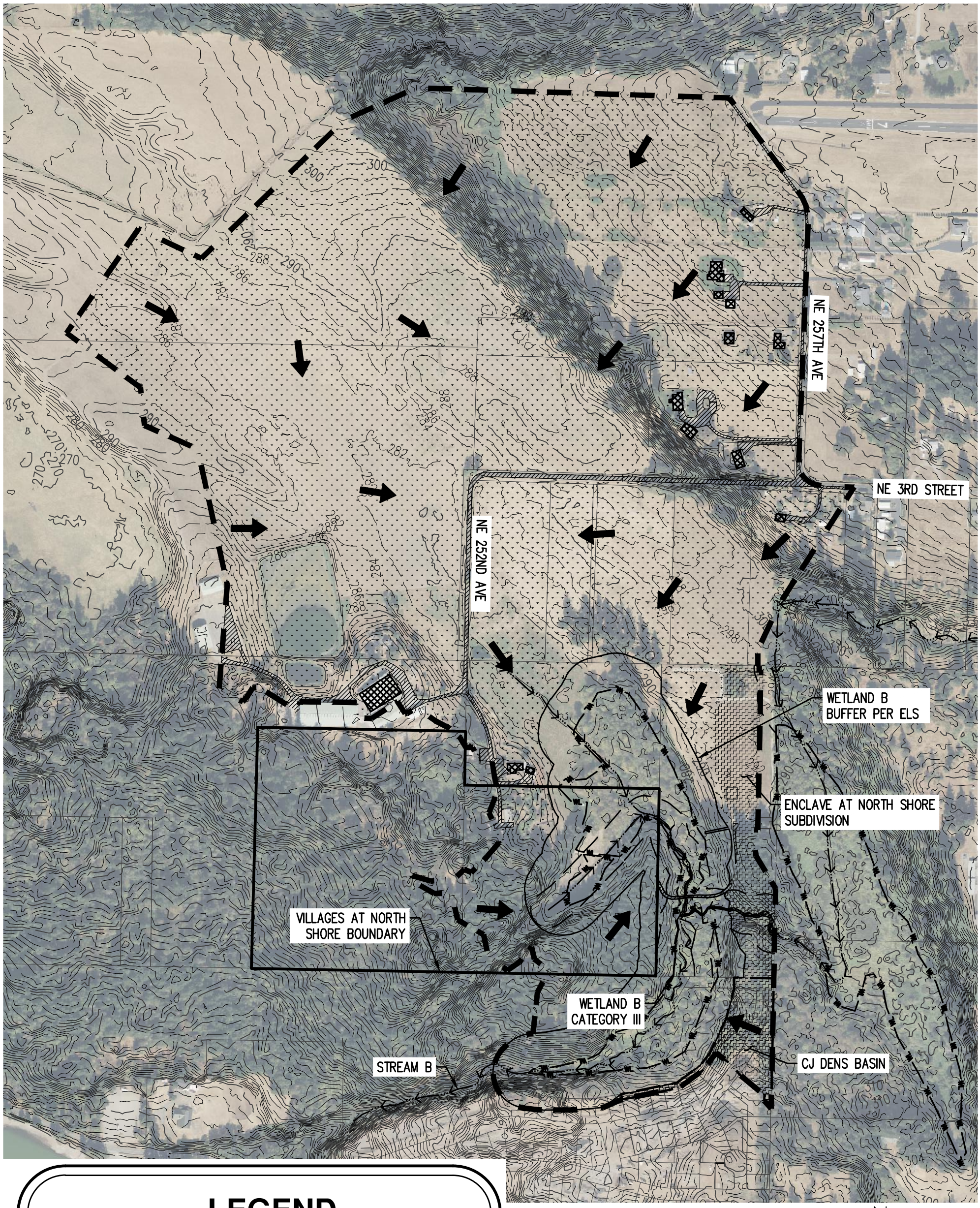
DRWN: MAZ
CHKD: BDH
AKS JOB: 9095

DWG: 8396 WETLAND A EXHIBIT | B



LEGEND

- EXISTING GROUND CONTOUR (2 FT) — 282-
- EXISTING GROUND CONTOUR (10 FT) — 280
- PRE-DEVELOPED BASIN BOUNDARY
- CJ DENS/ENCLAVE
- EXISTING FIELD
- EXISTING ROOF
- EXISTING ROAD
- DRAINAGE FLOW DIRECTION

NOTES

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3. VILLAGES AT NORTH SHORE BASIN IS BASED OFF OF PROPOSED SITE IMPROVEMENTS AS FOUND IN THE PRELIMINARY STORM TIR.
4. WETLAND BOUNDARY PER ELS.

N

SCALE: 1"= 400 FEET

400 0 80 200 400

DATE: 07/15/2025

WETLAND B PRE-DEVELOPMENT BASIN MAP

EXHIBIT C

VILLAGES AT NORTH SHORE

AKS ENGINEERING & FORESTRY, LLC
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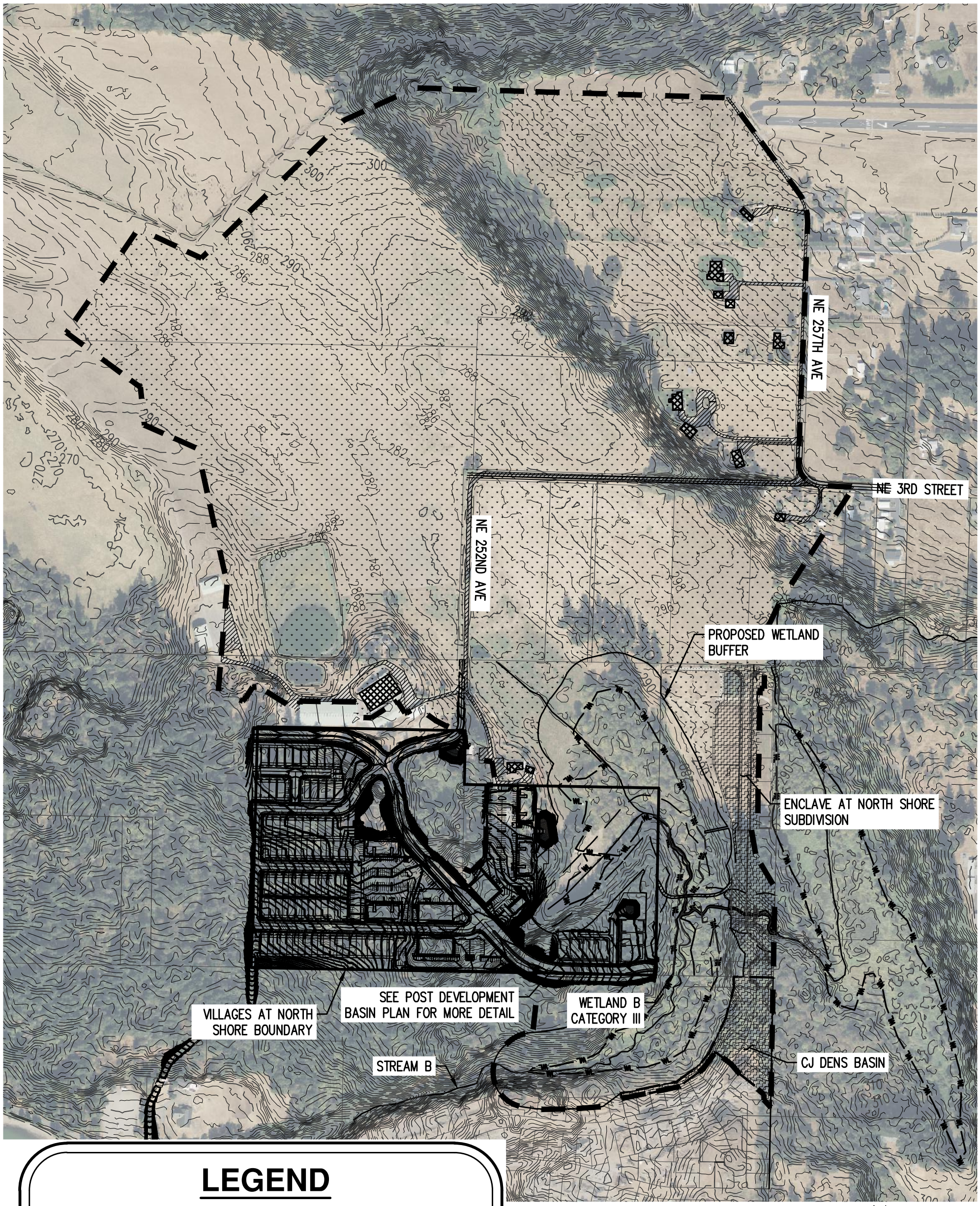
DWG: 8396 WETLAND B EXHIBIT | A



LEGEND

- FINISHED GRADE CONTOUR (2 FT) — 282
- FINISHED GRADE CONTOUR (10 FT) — 280
- EXISTING GROUND CONTOUR (2 FT) — 282
- EXISTING GROUND CONTOUR (10 FT) — 280
- POST-DEVELOPED BASIN BOUNDARY
- CJ DENS/ENCLAVE
- EXISTING FIELD
- EXISTING ROOF
- EXISTING ROAD
- DRAINAGE FLOW DIRECTION

NOTES

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4. WETLAND BOUNDARY PER ELS.

N

SCALE: 1"= 400 FEET

400 0 80 200 400

DATE: 07/15/2025

WETLAND B
POST-DEVELOPMENT BASIN MAP

VILLAGES AT NORTH SHORE

EXHIBIT **D**

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VANCOUVER, WA 98682
360.882.0419 WWW.AKS-ENG.COM

DRWN: MAZ
CHKD: BDH
AKS JOB: 9095

DWG: 8396 WETLAND B EXHIBIT | D

General Model Information

WWHM2012 Project Name: 9095 Wetland A
Site Name:
Site Address:
City:
Report Date: 7/11/2025
Gage: Lacamas
Data Start: 1948/10/01
Data End: 2008/09/30
Timestep: 15 Minute
Precip Scale: 1.300
Version Date: 2025/05/13
Version: 4.3.2

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

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Landuse Basin Data

Predeveloped Land Use

Lateral I Basin 1

Bypass:	No
Impervious Land Use	acre
ROOF TOPS FLAT	0.844

Element Flow Componant:
Surface
Componant Flows To:
Lateral Basin 1

DRAFT

Lateral I Basin 2

Bypass:	No
Impervious Land Use	acre
ROADS FLAT	0.1

Element Flow Componant:
Surface
Componant Flows To:
Lateral Basin 1

DRAFT

Lateral Basin 1

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Field, Flat	2.203

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 3	Lateral Basin 3	Lateral Basin 3

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Lateral Basin 2

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Forest, Steep	2.813

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 3	Lateral Basin 3	Lateral Basin 3

DRAFT

Lateral Basin 3

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Forest, Mod	3.963

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 8	Lateral Basin 8	Lateral Basin 8
POC 1		

DRAFT

Lateral I Basin 3

Bypass:	No
Impervious Land Use	acre
ROADS FLAT	1.36

Element Flow Componant:
Surface
Componant Flows To:
Lateral Basin 4

DRAFT

Lateral I Basin 4

Bypass:	No
Impervious Land Use	acre
ROOF TOPS FLAT	0.49

Element Flow Componant:
Surface
Componant Flows To:
Lateral Basin 4

DRAFT

Lateral Basin 4

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Field, Flat	29.61

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 5	Lateral Basin 5	Lateral Basin 5

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Lateral Basin 5

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Forest, Steep	19.19

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 7	Lateral Basin 7	Lateral Basin 7

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Lateral I Basin 5

Bypass:	No
Impervious Land Use	acre
ROADS STEEP	0.24

Element Flow Componant:
Surface
Componant Flows To:
Lateral Basin 7

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Lateral Basin 6

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Forest, Steep	2.31

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 7	Lateral Basin 7	Lateral Basin 7

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Lateral Basin 7

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Field, Flat	96.92

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 8	Lateral Basin 8	Lateral Basin 8

DRAFT

Lateral Basin 8

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Forest, Mod	17.503

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 2	POC 2	POC 2

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Lateral Basin 9

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Forest, Steep	.93

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 8	Lateral Basin 8	Lateral Basin 8

DRAFT

Lateral Basin 10

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Forest, Mod	3.9

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 8	Lateral Basin 8	Lateral Basin 8

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CJ Dens

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Flat	0.522
Pervious Total	0.522

Impervious Land Use	acre
ROADS FLAT	0.38
ROOF TOPS FLAT	0.413
DRIVEWAYS FLAT	0.096
SIDEWALKS FLAT	0.083
PARKING FLAT	0.034
POND	0.057
Impervious Total	1.063
Basin Total	1.585

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

CJ Dens Trapezoidal Pond	1	CJ Dens Trapezoidal Pond 1

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Lateral Basin 11

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Lawn, Flat	1.53

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 8	Lateral Basin 8	Lateral Basin 8

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Lateral Basin 12

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Forest, Steep	1.06

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 8	Lateral Basin 8	Lateral Basin 8

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Lateral Basin 13

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Field, Flat	2.15

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 8	Lateral Basin 8	Lateral Basin 8

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Gravel

Bypass:	No
Impervious Land Use	acre
ROADS FLAT	0.09

Element Flow Componant:
Surface
Componant Flows To:
Lateral Basin 8

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Basin 2

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Flat	1.119
Pervious Total	1.119

Impervious Land Use	acre
ROADS FLAT	0.992
ROOF TOPS FLAT	0.372
DRIVEWAYS FLAT	0.197
SIDEWALKS FLAT	0.283
Impervious Total	1.844
Basin Total	2.963

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
SSD Table 1	SSD Table 1	

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Lateral Basin 14

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Lawn, Steep	.21

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 8	Lateral Basin 8	Lateral Basin 8

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Lateral Basin 15

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Field, Flat	.82

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 8	Lateral Basin 8	Lateral Basin 8

DRAFT

Mitigated Land Use

Lateral Basin 1

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Forest, Steep	.322

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 2	Lateral Basin 2	Lateral Basin 2

DRAFT

Lateral Basin 2

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Forest, Mod	2.31

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 1	POC 1	POC 1

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Basin 1

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Lawn, Flat	1.327
SG4, Field, Flat	1.203
Pervious Total	2.53

Impervious Land Use	acre
ROADS FLAT	0.178
ROADS MOD	2.616
ROOF TOPS FLAT	0.844
POND	0.182
Impervious Total	3.82
Basin Total	6.35

Element Flow Componants:
Surface Interflow Groundwater
Componant Flows To:
Trapezoidal Pond 1A

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Lateral I Basin 1

Bypass:	No
Impervious Land Use	acre
ROADS FLAT	1.36

Element Flow Componant:
Surface
Componant Flows To:
Lateral Basin 3

DRAFT

Lateral I Basin 2

Bypass:	No
Impervious Land Use	acre
ROOF TOPS FLAT	0.49

Element Flow Componant:
Surface
Componant Flows To:
Lateral Basin 3

DRAFT

Lateral Basin 3

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Field, Flat	29.61

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 4	Lateral Basin 4	Lateral Basin 4

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Lateral Basin 4

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Forest, Steep	19.19

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 5	Lateral Basin 5	Lateral Basin 5

DRAFT

Lateral Basin 5

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Field, Flat	96.92

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 7	Lateral Basin 7	Lateral Basin 7

DRAFT

Lateral I Basin 3

Bypass:	No
Impervious Land Use	acre
ROADS STEEP	0.24

Element Flow Componant:
Surface
Componant Flows To:
Lateral Basin 5

DRAFT

Lateral Basin 6

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Forest, Steep	2.31

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 5	Lateral Basin 5	Lateral Basin 5

DRAFT

Lateral Basin 7

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Forest, Mod	16.852

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
POC 2	POC 2	POC 2

DRAFT

CJ Dens

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Flat	0.522
Pervious Total	0.522

Impervious Land Use	acre
ROADS FLAT	0.38
ROOF TOPS FLAT	0.413
DRIVEWAYS FLAT	0.096
SIDEWALKS FLAT	0.083
PARKING FLAT	0.034
POND	0.057
Impervious Total	1.063
Basin Total	1.585

Element Flow Componants:

Surface	Interflow	Groundwater

Componant Flows To:

CJ Dens Trapezoidal Pond 2	CJ Dens Trapezoidal Pond 2

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Lateral Basin 8

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Lawn, Flat	1.53

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 7	Lateral Basin 7	Lateral Basin 7

DRAFT

Lateral Basin 9

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Field, Flat	.94

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 7	Lateral Basin 7	Lateral Basin 7

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Lateral I Basin 4

Bypass:	No
Impervious Land Use	acre
ROADS FLAT	0.09

Element Flow Componant:
Surface
Componant Flows To:
Lateral Basin 7

DRAFT

Basin 3

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Flat	1.119
Pervious Total	1.119

Impervious Land Use	acre
ROADS FLAT	0.992
ROOF TOPS FLAT	0.372
DRIVEWAYS FLAT	0.197
SIDEWALKS FLAT	0.283
Impervious Total	1.844
Basin Total	2.963

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
SSD Table 1	SSD Table 1	

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Lateral Basin 10

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Lawn, Steep	.21

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 7	Lateral Basin 7	Lateral Basin 7

DRAFT

Lateral Basin 11

Bypass: No

GroundWater: No

Pervious Land Use	acre
SG4, Field, Flat	.82

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Lateral Basin 7	Lateral Basin 7	Lateral Basin 7

DRAFT

Basin 2A

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Mod	0.728
Pervious Total	0.728

Impervious Land Use	acre
ROADS MOD	2.336
Impervious Total	2.336
Basin Total	3.064

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Trapezoidal Pond 2A	Trapezoidal Pond 2A	

DRAFT

Basin 2B

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Mod	0.776
Pervious Total	0.776

Impervious Land Use	acre
ROADS MOD	2.932
Impervious Total	2.932
Basin Total	3.708

Element Flow Componants:

Surface	Interflow	Groundwater
Componant Flows To:		
Trapezoidal Pond 2B	Trapezoidal Pond 2B	

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Routing Elements

Predeveloped Routing

CJ Dens Trapezoidal Pond 1

Bottom Length: 31.50 ft.
Bottom Width: 31.50 ft.
Depth: 5 ft.
Volume at riser head: 0.1821 acre-feet.
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure
Riser Height: 4 ft.
Riser Diameter: 12 in.
Notch Type: Rectangular
Notch Width: 0.250 ft.
Notch Height: 2.000 ft.
Orifice 1 Diameter: 2.125 in. Elevation:0 ft.
Element Outlets:
Outlet 1 Outlet 2
Outlet Flows To:
Lateral Basin 8

DRAFT

Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.022	0.000	0.000	0.000
0.0556	0.023	0.001	0.028	0.000
0.1111	0.023	0.002	0.040	0.000
0.1667	0.024	0.003	0.050	0.000
0.2222	0.024	0.005	0.057	0.000
0.2778	0.025	0.006	0.064	0.000
0.3333	0.025	0.008	0.070	0.000
0.3889	0.026	0.009	0.076	0.000
0.4444	0.026	0.011	0.081	0.000
0.5000	0.027	0.012	0.086	0.000
0.5556	0.027	0.014	0.091	0.000
0.6111	0.028	0.015	0.095	0.000
0.6667	0.028	0.017	0.100	0.000
0.7222	0.029	0.018	0.104	0.000
0.7778	0.030	0.020	0.108	0.000
0.8333	0.030	0.022	0.111	0.000
0.8889	0.031	0.023	0.115	0.000
0.9444	0.031	0.025	0.119	0.000
1.0000	0.032	0.027	0.122	0.000
1.0556	0.032	0.029	0.125	0.000
1.1111	0.033	0.031	0.129	0.000
1.1667	0.034	0.032	0.132	0.000
1.2222	0.034	0.034	0.135	0.000
1.2778	0.035	0.036	0.138	0.000
1.3333	0.035	0.038	0.141	0.000
1.3889	0.036	0.040	0.144	0.000
1.4444	0.037	0.042	0.147	0.000
1.5000	0.037	0.044	0.150	0.000
1.5556	0.038	0.047	0.152	0.000

1.6111	0.038	0.049	0.155	0.000
1.6667	0.039	0.051	0.158	0.000
1.7222	0.040	0.053	0.160	0.000
1.7778	0.040	0.055	0.163	0.000
1.8333	0.041	0.058	0.165	0.000
1.8889	0.042	0.060	0.168	0.000
1.9444	0.042	0.062	0.170	0.000
2.0000	0.043	0.065	0.173	0.000
2.0556	0.044	0.067	0.186	0.000
2.1111	0.044	0.070	0.208	0.000
2.1667	0.045	0.072	0.235	0.000
2.2222	0.046	0.075	0.266	0.000
2.2778	0.046	0.077	0.300	0.000
2.3333	0.047	0.080	0.336	0.000
2.3889	0.048	0.082	0.375	0.000
2.4444	0.048	0.085	0.416	0.000
2.5000	0.049	0.088	0.458	0.000
2.5556	0.050	0.091	0.502	0.000
2.6111	0.051	0.094	0.547	0.000
2.6667	0.051	0.096	0.592	0.000
2.7222	0.052	0.099	0.639	0.000
2.7778	0.053	0.102	0.686	0.000
2.8333	0.054	0.105	0.734	0.000
2.8889	0.054	0.108	0.781	0.000
2.9444	0.055	0.111	0.830	0.000
3.0000	0.056	0.114	0.878	0.000
3.0556	0.057	0.118	0.936	0.000
3.1111	0.057	0.121	0.996	0.000
3.1667	0.058	0.124	1.057	0.000
3.2222	0.059	0.127	1.119	0.000
3.2778	0.060	0.131	1.183	0.000
3.3333	0.060	0.134	1.249	0.000
3.3889	0.061	0.137	1.315	0.000
3.4444	0.062	0.141	1.753	0.000
3.5000	0.063	0.144	1.844	0.000
3.5556	0.064	0.148	1.937	0.000
3.6111	0.064	0.151	2.031	0.000
3.6667	0.065	0.155	2.126	0.000
3.7222	0.066	0.159	2.223	0.000
3.7778	0.067	0.162	2.322	0.000
3.8333	0.068	0.166	2.422	0.000
3.8889	0.069	0.170	2.524	0.000
3.9444	0.069	0.174	2.627	0.000
4.0000	0.070	0.178	2.732	0.000
4.0556	0.071	0.182	2.872	0.000
4.1111	0.072	0.186	3.125	0.000
4.1667	0.073	0.190	3.440	0.000
4.2222	0.074	0.194	3.784	0.000
4.2778	0.075	0.198	4.124	0.000
4.3333	0.075	0.202	4.425	0.000
4.3889	0.076	0.206	4.664	0.000
4.4444	0.077	0.211	4.833	0.000
4.5000	0.078	0.215	4.950	0.000
4.5556	0.079	0.219	5.096	0.000
4.6111	0.080	0.224	5.212	0.000
4.6667	0.081	0.228	5.323	0.000
4.7222	0.082	0.233	5.429	0.000
4.7778	0.083	0.237	5.532	0.000

DRAFT

4.8333	0.084	0.242	5.631	0.000
4.8889	0.085	0.247	5.727	0.000
4.9444	0.085	0.252	5.820	0.000
5.0000	0.086	0.256	5.910	0.000
5.0556	0.087	0.261	5.998	0.000

Discharge Structure
Riser Height: 4 ft.
Riser Diameter: 12 in.
Notch Type: Rectangular
Notch Width: 0.250 ft.
Notch Height: 2.000 ft.
Orifice 1 Diameter: 2.125 in. Elevation:0 ft.
Element Flow Outlets:
Outlet 1 Outlet 2
Outlets Flow To:
Lateral Basin 8

Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.022	0.000	0.000	0.000
0.0556	0.023	0.001	0.028	0.000
0.1111	0.023	0.002	0.040	0.000
0.1667	0.024	0.003	0.050	0.000
0.2222	0.024	0.005	0.057	0.000
0.2778	0.025	0.006	0.064	0.000
0.3333	0.025	0.008	0.070	0.000
0.3889	0.026	0.009	0.076	0.000
0.4444	0.026	0.011	0.081	0.000
0.5000	0.027	0.012	0.086	0.000
0.5556	0.027	0.014	0.091	0.000
0.6111	0.028	0.015	0.095	0.000
0.6667	0.028	0.017	0.100	0.000
0.7222	0.029	0.018	0.104	0.000
0.7778	0.030	0.020	0.108	0.000
0.8333	0.030	0.022	0.111	0.000
0.8889	0.031	0.023	0.115	0.000
0.9444	0.031	0.025	0.119	0.000
1.0000	0.032	0.027	0.122	0.000
1.0556	0.032	0.029	0.125	0.000
1.1111	0.033	0.031	0.129	0.000
1.1667	0.034	0.032	0.132	0.000
1.2222	0.034	0.034	0.135	0.000
1.2778	0.035	0.036	0.138	0.000
1.3333	0.035	0.038	0.141	0.000
1.3889	0.036	0.040	0.144	0.000
1.4444	0.037	0.042	0.147	0.000
1.5000	0.037	0.044	0.150	0.000
1.5556	0.038	0.047	0.152	0.000
1.6111	0.038	0.049	0.155	0.000
1.6667	0.039	0.051	0.158	0.000
1.7222	0.040	0.053	0.160	0.000
1.7778	0.040	0.055	0.163	0.000
1.8333	0.041	0.058	0.165	0.000
1.8889	0.042	0.060	0.168	0.000
1.9444	0.042	0.062	0.170	0.000

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2.0000	0.043	0.065	0.173	0.000
2.0556	0.044	0.067	0.186	0.000
2.1111	0.044	0.070	0.208	0.000
2.1667	0.045	0.072	0.235	0.000
2.2222	0.046	0.075	0.266	0.000
2.2778	0.046	0.077	0.300	0.000
2.3333	0.047	0.080	0.336	0.000
2.3889	0.048	0.082	0.375	0.000
2.4444	0.048	0.085	0.416	0.000
2.5000	0.049	0.088	0.458	0.000
2.5556	0.050	0.091	0.502	0.000
2.6111	0.051	0.094	0.547	0.000
2.6667	0.051	0.096	0.592	0.000
2.7222	0.052	0.099	0.639	0.000
2.7778	0.053	0.102	0.686	0.000
2.8333	0.054	0.105	0.734	0.000
2.8889	0.054	0.108	0.781	0.000
2.9444	0.055	0.111	0.830	0.000
3.0000	0.056	0.114	0.878	0.000
3.0556	0.057	0.118	0.936	0.000
3.1111	0.057	0.121	0.996	0.000
3.1667	0.058	0.124	1.057	0.000
3.2222	0.059	0.127	1.119	0.000
3.2778	0.060	0.131	1.183	0.000
3.3333	0.060	0.134	1.249	0.000
3.3889	0.061	0.137	1.315	0.000
3.4444	0.062	0.141	1.753	0.000
3.5000	0.063	0.144	1.844	0.000
3.5556	0.064	0.148	1.937	0.000
3.6111	0.064	0.151	2.031	0.000
3.6667	0.065	0.155	2.126	0.000
3.7222	0.066	0.159	2.223	0.000
3.7778	0.067	0.162	2.322	0.000
3.8333	0.068	0.166	2.422	0.000
3.8889	0.069	0.170	2.524	0.000
3.9444	0.069	0.174	2.627	0.000
4.0000	0.070	0.178	2.732	0.000
4.0556	0.071	0.182	2.872	0.000
4.1111	0.072	0.186	3.125	0.000
4.1667	0.073	0.190	3.440	0.000
4.2222	0.074	0.194	3.784	0.000
4.2778	0.075	0.198	4.124	0.000
4.3333	0.075	0.202	4.425	0.000
4.3889	0.076	0.206	4.664	0.000
4.4444	0.077	0.211	4.833	0.000
4.5000	0.078	0.215	4.950	0.000
4.5556	0.079	0.219	5.096	0.000
4.6111	0.080	0.224	5.212	0.000
4.6667	0.081	0.228	5.323	0.000
4.7222	0.082	0.233	5.429	0.000
4.7778	0.083	0.237	5.532	0.000
4.8333	0.084	0.242	5.631	0.000
4.8889	0.085	0.247	5.727	0.000
4.9444	0.085	0.252	5.820	0.000
5.0000	0.086	0.256	5.910	0.000
5.0556	0.087	0.261	5.998	0.000

DRAFT

SSD Table 1

Depth: 6 ft.
Discharge Structure: 1
Riser Height: 5 ft.
Riser Diameter: 18 in.
Notch Type: Rectangular
Notch Width: 0.330 ft.
Notch Height: 1.250 ft.
Orifice 1 Diameter: 2.000 in. Elevation:0 ft.
Element Outlets:
Outlet 1 Outlet 2
Outlet Flows To:
Lateral Basin 8

SSD Table Hydraulic Table

Stage (feet)	Area (ac.)	Volume (ac-ft.)	Outlet Struct	NotUsed	NotUsed	NotUsed	NotUsed
0.000	0.058	0.000	0.000	0.000	0.000	0.000	0.000
0.170	0.058	0.005	0.045	0.000	0.000	0.000	0.000
0.330	0.058	0.011	0.062	0.000	0.000	0.000	0.000
0.500	0.058	0.018	0.077	0.000	0.000	0.000	0.000
0.670	0.058	0.024	0.089	0.000	0.000	0.000	0.000
0.830	0.058	0.032	0.099	0.000	0.000	0.000	0.000
1.000	0.058	0.039	0.109	0.000	0.000	0.000	0.000
1.170	0.058	0.047	0.117	0.000	0.000	0.000	0.000
1.330	0.058	0.054	0.125	0.000	0.000	0.000	0.000
1.500	0.058	0.062	0.133	0.000	0.000	0.000	0.000
1.670	0.058	0.070	0.140	0.000	0.000	0.000	0.000
1.830	0.058	0.079	0.147	0.000	0.000	0.000	0.000
2.000	0.058	0.087	0.154	0.000	0.000	0.000	0.000
2.170	0.058	0.095	0.160	0.000	0.000	0.000	0.000
2.330	0.058	0.104	0.166	0.000	0.000	0.000	0.000
2.500	0.058	0.112	0.172	0.000	0.000	0.000	0.000
2.670	0.058	0.121	0.177	0.000	0.000	0.000	0.000
2.830	0.058	0.129	0.183	0.000	0.000	0.000	0.000
3.000	0.058	0.138	0.188	0.000	0.000	0.000	0.000
3.170	0.058	0.146	0.193	0.000	0.000	0.000	0.000
3.330	0.058	0.155	0.198	0.000	0.000	0.000	0.000
3.500	0.058	0.164	0.203	0.000	0.000	0.000	0.000
3.670	0.058	0.172	0.208	0.000	0.000	0.000	0.000
3.830	0.058	0.181	0.237	0.000	0.000	0.000	0.000
4.000	0.058	0.189	0.348	0.000	0.000	0.000	0.000
4.170	0.058	0.197	0.496	0.000	0.000	0.000	0.000
4.330	0.058	0.205	0.655	0.000	0.000	0.000	0.000
4.500	0.058	0.214	0.837	0.000	0.000	0.000	0.000
4.670	0.058	0.222	1.026	0.000	0.000	0.000	0.000
4.830	0.058	0.229	1.225	0.000	0.000	0.000	0.000
5.000	0.058	0.237	1.471	0.000	0.000	0.000	0.000
5.170	0.058	0.244	2.582	0.000	0.000	0.000	0.000
5.330	0.058	0.251	4.324	0.000	0.000	0.000	0.000
5.500	0.058	0.258	6.122	0.000	0.000	0.000	0.000
5.670	0.058	0.265	7.256	0.000	0.000	0.000	0.000
5.830	0.058	0.271	7.947	0.000	0.000	0.000	0.000
6.000	0.058	0.276	8.581	0.000	0.000	0.000	0.000

DRAFT

Discharge Structure: 1

Riser Height: 5 ft.
Riser Diameter: 18 in.
Notch Type: Rectangular
Notch Width: 0.330 ft.
Notch Height: 1.250 ft.
Orifice 1 Diameter: 2.000 in. Elevation:0 ft.
Element Flow Outlets:
Outlet 1 Outlet 2
Outlets Flow To:
Lateral Basin 8

SSD Table Hydraulic Table

Stage (feet)	Area (ac.)	Volume (ac-ft.)	Outlet Struct	NotUsed	NotUsed	NotUsed	NotUsed
0.000	0.058	0.000	0.000	0.000	0.000	0.000	0.000
0.170	0.058	0.005	0.045	0.000	0.000	0.000	0.000
0.330	0.058	0.011	0.062	0.000	0.000	0.000	0.000
0.500	0.058	0.018	0.077	0.000	0.000	0.000	0.000
0.670	0.058	0.024	0.089	0.000	0.000	0.000	0.000
0.830	0.058	0.032	0.099	0.000	0.000	0.000	0.000
1.000	0.058	0.039	0.109	0.000	0.000	0.000	0.000
1.170	0.058	0.047	0.117	0.000	0.000	0.000	0.000
1.330	0.058	0.054	0.125	0.000	0.000	0.000	0.000
1.500	0.058	0.062	0.133	0.000	0.000	0.000	0.000
1.670	0.058	0.070	0.140	0.000	0.000	0.000	0.000
1.830	0.058	0.079	0.147	0.000	0.000	0.000	0.000
2.000	0.058	0.087	0.154	0.000	0.000	0.000	0.000
2.170	0.058	0.095	0.160	0.000	0.000	0.000	0.000
2.330	0.058	0.104	0.166	0.000	0.000	0.000	0.000
2.500	0.058	0.112	0.172	0.000	0.000	0.000	0.000
2.670	0.058	0.121	0.177	0.000	0.000	0.000	0.000
2.830	0.058	0.129	0.183	0.000	0.000	0.000	0.000
3.000	0.058	0.138	0.188	0.000	0.000	0.000	0.000
3.170	0.058	0.146	0.193	0.000	0.000	0.000	0.000
3.330	0.058	0.155	0.198	0.000	0.000	0.000	0.000
3.500	0.058	0.164	0.203	0.000	0.000	0.000	0.000
3.670	0.058	0.172	0.208	0.000	0.000	0.000	0.000
3.830	0.058	0.181	0.237	0.000	0.000	0.000	0.000
4.000	0.058	0.189	0.348	0.000	0.000	0.000	0.000
4.170	0.058	0.197	0.496	0.000	0.000	0.000	0.000
4.330	0.058	0.205	0.655	0.000	0.000	0.000	0.000
4.500	0.058	0.214	0.837	0.000	0.000	0.000	0.000
4.670	0.058	0.222	1.026	0.000	0.000	0.000	0.000
4.830	0.058	0.229	1.225	0.000	0.000	0.000	0.000
5.000	0.058	0.237	1.471	0.000	0.000	0.000	0.000
5.170	0.058	0.244	2.582	0.000	0.000	0.000	0.000
5.330	0.058	0.251	4.324	0.000	0.000	0.000	0.000
5.500	0.058	0.258	6.122	0.000	0.000	0.000	0.000
5.670	0.058	0.265	7.256	0.000	0.000	0.000	0.000
5.830	0.058	0.271	7.947	0.000	0.000	0.000	0.000
6.000	0.058	0.276	8.581	0.000	0.000	0.000	0.000

DRAFT

Mitigated Routing

Trapezoidal Pond 1A

Bottom Length: 40.00 ft.
Bottom Width: 40.00 ft.
Depth: 4 ft.
Volume at riser head: 0.1689 acre-feet.
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure
Riser Height: 3 ft.
Riser Diameter: 18 in.
Notch Type: Rectangular
Notch Width: 0.500 ft.
Notch Height: 1.200 ft.
Orifice 1 Diameter: 4.000 in. Elevation:0 ft.
Element Outlets:
Outlet 1 Outlet 2
Outlet Flows To:
Flow Splitter 1

Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.036	0.000	0.000	0.000
0.0444	0.037	0.001	0.091	0.000
0.0889	0.037	0.003	0.129	0.000
0.1333	0.038	0.005	0.158	0.000
0.1778	0.038	0.006	0.183	0.000
0.2222	0.039	0.008	0.204	0.000
0.2667	0.039	0.010	0.224	0.000
0.3111	0.040	0.012	0.242	0.000
0.3556	0.040	0.013	0.258	0.000
0.4000	0.041	0.015	0.274	0.000
0.4444	0.041	0.017	0.289	0.000
0.4889	0.042	0.019	0.303	0.000
0.5333	0.042	0.021	0.317	0.000
0.5778	0.043	0.023	0.330	0.000
0.6222	0.043	0.025	0.342	0.000
0.6667	0.044	0.027	0.354	0.000
0.7111	0.045	0.029	0.366	0.000
0.7556	0.045	0.031	0.377	0.000
0.8000	0.046	0.033	0.388	0.000
0.8444	0.046	0.035	0.399	0.000
0.8889	0.047	0.037	0.409	0.000
0.9333	0.047	0.039	0.419	0.000
0.9778	0.048	0.041	0.429	0.000
1.0222	0.048	0.043	0.439	0.000
1.0667	0.049	0.045	0.448	0.000
1.1111	0.050	0.048	0.457	0.000
1.1556	0.050	0.050	0.466	0.000
1.2000	0.051	0.052	0.475	0.000
1.2444	0.051	0.054	0.484	0.000
1.2889	0.052	0.057	0.492	0.000
1.3333	0.052	0.059	0.501	0.000

DRAFT

1.3778	0.053	0.061	0.509	0.000
1.4222	0.054	0.064	0.517	0.000
1.4667	0.054	0.066	0.525	0.000
1.5111	0.055	0.069	0.533	0.000
1.5556	0.055	0.071	0.541	0.000
1.6000	0.056	0.074	0.549	0.000
1.6444	0.057	0.076	0.556	0.000
1.6889	0.057	0.079	0.564	0.000
1.7333	0.058	0.081	0.571	0.000
1.7778	0.058	0.084	0.578	0.000
1.8222	0.059	0.086	0.591	0.000
1.8667	0.060	0.089	0.621	0.000
1.9111	0.060	0.092	0.660	0.000
1.9556	0.061	0.095	0.706	0.000
2.0000	0.062	0.097	0.757	0.000
2.0444	0.062	0.100	0.812	0.000
2.0889	0.063	0.103	0.871	0.000
2.1333	0.064	0.106	0.933	0.000
2.1778	0.064	0.109	0.998	0.000
2.2222	0.065	0.111	1.065	0.000
2.2667	0.066	0.114	1.134	0.000
2.3111	0.066	0.117	1.206	0.000
2.3556	0.067	0.120	1.279	0.000
2.4000	0.067	0.123	1.353	0.000
2.4444	0.068	0.126	1.429	0.000
2.4889	0.069	0.129	1.505	0.000
2.5333	0.070	0.132	1.583	0.000
2.5778	0.070	0.136	1.661	0.000
2.6222	0.071	0.139	1.740	0.000
2.6667	0.072	0.142	1.819	0.000
2.7111	0.072	0.145	1.899	0.000
2.7556	0.073	0.148	1.978	0.000
2.8000	0.074	0.152	2.058	0.000
2.8444	0.074	0.155	2.154	0.000
2.8889	0.075	0.158	2.251	0.000
2.9333	0.076	0.162	2.350	0.000
2.9778	0.076	0.165	2.451	0.000
3.0222	0.077	0.168	2.558	0.000
3.0667	0.078	0.172	2.785	0.000
3.1111	0.079	0.175	3.104	0.000
3.1556	0.079	0.179	3.492	0.000
3.2000	0.080	0.183	3.932	0.000
3.2444	0.081	0.186	4.410	0.000
3.2889	0.081	0.190	4.913	0.000
3.3333	0.082	0.193	5.426	0.000
3.3778	0.083	0.197	5.935	0.000
3.4222	0.084	0.201	6.426	0.000
3.4667	0.084	0.205	6.885	0.000
3.5111	0.085	0.208	7.301	0.000
3.5556	0.086	0.212	7.667	0.000
3.6000	0.087	0.216	7.976	0.000
3.6444	0.087	0.220	8.229	0.000
3.6889	0.088	0.224	8.433	0.000
3.7333	0.089	0.228	8.603	0.000
3.7778	0.090	0.232	8.844	0.000
3.8222	0.090	0.236	9.025	0.000
3.8667	0.091	0.240	9.202	0.000
3.9111	0.092	0.244	9.374	0.000

DRAFT

3.9556	0.093	0.248	9.541	0.000
4.0000	0.094	0.252	9.706	0.000
4.0444	0.094	0.256	9.866	0.000

DRAFT

Flow Splitter 1

Bottom Length: 10.00 ft.
Bottom Length: 10.00 ft.
Depth: 10 ft.
Side slope 1: 0 To 1
Side slope 2: 0 To 1
Side slope 3: 0 To 1
Side slope 4: 0 To 1
Control Structure Splitter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Primary(cfs)	Secondary(cfs)
0.000	0.002	0.000	0.000	0.000
0.111	0.002	0.000	0.002	0.144
0.222	0.002	0.000	0.003	0.204
0.333	0.002	0.000	0.003	0.250
0.444	0.002	0.001	0.004	0.289
0.555	0.002	0.001	0.005	0.323
0.666	0.002	0.001	0.005	0.354
0.777	0.002	0.001	0.006	0.382
0.888	0.002	0.002	0.006	0.409
1.000	0.002	0.002	0.006	0.434
1.111	0.002	0.002	0.007	0.457
1.222	0.002	0.002	0.007	0.480
1.333	0.002	0.003	0.007	0.501
1.444	0.002	0.003	0.008	0.521
1.555	0.002	0.003	0.008	0.541
1.666	0.002	0.003	0.008	0.560
1.777	0.002	0.004	0.009	0.578
1.888	0.002	0.004	0.009	0.640
2.000	0.002	0.004	0.009	0.757
2.111	0.002	0.004	0.009	0.901
2.222	0.002	0.005	0.010	1.065
2.333	0.002	0.005	0.010	1.242
2.444	0.002	0.005	0.010	1.429
2.555	0.002	0.005	0.010	1.622
2.666	0.002	0.006	0.011	1.819
2.777	0.002	0.006	0.011	2.018
2.888	0.002	0.006	0.011	2.251
3.000	0.002	0.006	0.011	2.503
3.111	0.002	0.007	0.012	3.104
3.222	0.002	0.007	0.012	4.167
3.333	0.002	0.007	0.012	5.426
3.444	0.002	0.007	0.012	6.660
3.555	0.002	0.008	0.012	7.667
3.666	0.002	0.008	0.013	8.336
3.777	0.002	0.008	0.013	8.844
3.888	0.002	0.008	0.013	9.288
4.000	0.002	0.009	0.013	9.706
4.111	0.002	0.009	0.013	10.10
4.222	0.002	0.009	0.013	10.47
4.333	0.002	0.009	0.014	10.83
4.444	0.002	0.010	0.014	11.18
4.555	0.002	0.010	0.014	11.51
4.666	0.002	0.010	0.014	11.83
4.777	0.002	0.011	0.014	12.14
4.888	0.002	0.011	0.015	12.45
5.000	0.002	0.011	0.015	12.74
5.111	0.002	0.011	0.015	13.02

DRAFT

5.222	0.002	0.012	0.015	13.30
5.333	0.002	0.012	0.015	13.57
5.444	0.002	0.012	0.015	13.84
5.555	0.002	0.012	0.016	14.10
5.666	0.002	0.013	0.016	14.35
5.777	0.002	0.013	0.016	14.60
5.888	0.002	0.013	0.016	14.85
6.000	0.002	0.013	0.016	15.08
6.111	0.002	0.014	0.016	15.32
6.222	0.002	0.014	0.016	15.55
6.333	0.002	0.014	0.017	15.78
6.444	0.002	0.014	0.017	16.00
6.555	0.002	0.015	0.017	16.22
6.666	0.002	0.015	0.017	16.44
6.777	0.002	0.015	0.017	16.65
6.888	0.002	0.015	0.017	16.86
7.000	0.002	0.016	0.017	17.07
7.111	0.002	0.016	0.018	17.27
7.222	0.002	0.016	0.018	17.48
7.333	0.002	0.016	0.018	17.67
7.444	0.002	0.017	0.018	17.87
7.555	0.002	0.017	0.018	18.07
7.666	0.002	0.017	0.018	18.26
7.777	0.002	0.017	0.018	18.45
7.888	0.002	0.018	0.019	18.64
8.000	0.002	0.018	0.019	18.82
8.111	0.002	0.018	0.019	19.00
8.222	0.002	0.018	0.019	19.19
8.333	0.002	0.019	0.019	19.37
8.444	0.002	0.019	0.019	19.54
8.555	0.002	0.019	0.019	19.72
8.666	0.002	0.019	0.020	19.89
8.777	0.002	0.020	0.020	20.07
8.888	0.002	0.020	0.020	20.24
9.000	0.002	0.020	0.020	20.41
9.111	0.002	0.020	0.205	20.58
9.222	0.002	0.021	0.389	20.74
9.333	0.002	0.021	0.475	20.91
9.444	0.002	0.021	0.545	21.07
9.555	0.002	0.021	0.607	21.23
9.666	0.002	0.022	0.664	21.39
9.777	0.002	0.022	0.715	21.55
9.888	0.002	0.022	0.763	21.71
10.00	0.002	0.023	0.808	21.87
10.11	0.002	0.023	0.851	22.02

DRAFT

Discharge Structure
Riser Height: 9 ft.
Riser Diameter: 6 in.
Orifice 1 Diameter: 0.500 in. Elevation:0 ft.
Element Outlets:
Outlet 1 Outlet 2
Outlet Flows To:
Lateral Basin 2 Lateral Basin 7

CJ Dens Trapezoidal Pond 2

Bottom Length: 31.50 ft.
Bottom Width: 31.50 ft.
Depth: 5 ft.
Volume at riser head: 0.1821 acre-feet.
Side slope 1: 3 To 1
Side slope 2: 3 To 1
Side slope 3: 3 To 1
Side slope 4: 3 To 1
Discharge Structure
Riser Height: 4 ft.
Riser Diameter: 12 in.
Notch Type: Rectangular
Notch Width: 0.250 ft.
Notch Height: 2.000 ft.
Orifice 1 Diameter: 2.125 in. Elevation:0 ft.
Element Outlets:
Outlet 1 Outlet 2
Outlet Flows To:
Lateral Basin 7

Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.022	0.000	0.000	0.000
0.0556	0.023	0.001	0.028	0.000
0.1111	0.023	0.002	0.040	0.000
0.1667	0.024	0.003	0.050	0.000
0.2222	0.024	0.005	0.057	0.000
0.2778	0.025	0.006	0.064	0.000
0.3333	0.025	0.008	0.070	0.000
0.3889	0.026	0.009	0.076	0.000
0.4444	0.026	0.011	0.081	0.000
0.5000	0.027	0.012	0.086	0.000
0.5556	0.027	0.014	0.091	0.000
0.6111	0.028	0.015	0.095	0.000
0.6667	0.028	0.017	0.100	0.000
0.7222	0.029	0.018	0.104	0.000
0.7778	0.030	0.020	0.108	0.000
0.8333	0.030	0.022	0.111	0.000
0.8889	0.031	0.023	0.115	0.000
0.9444	0.031	0.025	0.119	0.000
1.0000	0.032	0.027	0.122	0.000
1.0556	0.032	0.029	0.125	0.000
1.1111	0.033	0.031	0.129	0.000
1.1667	0.034	0.032	0.132	0.000
1.2222	0.034	0.034	0.135	0.000
1.2778	0.035	0.036	0.138	0.000
1.3333	0.035	0.038	0.141	0.000
1.3889	0.036	0.040	0.144	0.000
1.4444	0.037	0.042	0.147	0.000
1.5000	0.037	0.044	0.150	0.000
1.5556	0.038	0.047	0.152	0.000
1.6111	0.038	0.049	0.155	0.000
1.6667	0.039	0.051	0.158	0.000
1.7222	0.040	0.053	0.160	0.000
1.7778	0.040	0.055	0.163	0.000

DRAFT

1.8333	0.041	0.058	0.165	0.000
1.8889	0.042	0.060	0.168	0.000
1.9444	0.042	0.062	0.170	0.000
2.0000	0.043	0.065	0.173	0.000
2.0556	0.044	0.067	0.186	0.000
2.1111	0.044	0.070	0.208	0.000
2.1667	0.045	0.072	0.235	0.000
2.2222	0.046	0.075	0.266	0.000
2.2778	0.046	0.077	0.300	0.000
2.3333	0.047	0.080	0.336	0.000
2.3889	0.048	0.082	0.375	0.000
2.4444	0.048	0.085	0.416	0.000
2.5000	0.049	0.088	0.458	0.000
2.5556	0.050	0.091	0.502	0.000
2.6111	0.051	0.094	0.547	0.000
2.6667	0.051	0.096	0.592	0.000
2.7222	0.052	0.099	0.639	0.000
2.7778	0.053	0.102	0.686	0.000
2.8333	0.054	0.105	0.734	0.000
2.8889	0.054	0.108	0.781	0.000
2.9444	0.055	0.111	0.830	0.000
3.0000	0.056	0.114	0.878	0.000
3.0556	0.057	0.118	0.936	0.000
3.1111	0.057	0.121	0.996	0.000
3.1667	0.058	0.124	1.057	0.000
3.2222	0.059	0.127	1.119	0.000
3.2778	0.060	0.131	1.183	0.000
3.3333	0.060	0.134	1.249	0.000
3.3889	0.061	0.137	1.315	0.000
3.4444	0.062	0.141	1.753	0.000
3.5000	0.063	0.144	1.844	0.000
3.5556	0.064	0.148	1.937	0.000
3.6111	0.064	0.151	2.031	0.000
3.6667	0.065	0.155	2.126	0.000
3.7222	0.066	0.159	2.223	0.000
3.7778	0.067	0.162	2.322	0.000
3.8333	0.068	0.166	2.422	0.000
3.8889	0.069	0.170	2.524	0.000
3.9444	0.069	0.174	2.627	0.000
4.0000	0.070	0.178	2.732	0.000
4.0556	0.071	0.182	2.872	0.000
4.1111	0.072	0.186	3.125	0.000
4.1667	0.073	0.190	3.440	0.000
4.2222	0.074	0.194	3.784	0.000
4.2778	0.075	0.198	4.124	0.000
4.3333	0.075	0.202	4.425	0.000
4.3889	0.076	0.206	4.664	0.000
4.4444	0.077	0.211	4.833	0.000
4.5000	0.078	0.215	4.950	0.000
4.5556	0.079	0.219	5.096	0.000
4.6111	0.080	0.224	5.212	0.000
4.6667	0.081	0.228	5.323	0.000
4.7222	0.082	0.233	5.429	0.000
4.7778	0.083	0.237	5.532	0.000
4.8333	0.084	0.242	5.631	0.000
4.8889	0.085	0.247	5.727	0.000
4.9444	0.085	0.252	5.820	0.000
5.0000	0.086	0.256	5.910	0.000

DRAFT

5.0556	0.087	0.261	5.998	0.000

DRAFT

SSD Table 1

Depth: 6 ft.
Discharge Structure: 1
Riser Height: 5 ft.
Riser Diameter: 18 in.
Notch Type: Rectangular
Notch Width: 0.330 ft.
Notch Height: 1.250 ft.
Orifice 1 Diameter: 2.000 in. Elevation:0 ft.
Element Outlets:
Outlet 1 Outlet 2
Outlet Flows To:
Lateral Basin 7

SSD Table Hydraulic Table

Stage (feet)	Area (ac.)	Volume (ac-ft.)	Outlet Struct	NotUsed	NotUsed	NotUsed	NotUsed
0.000	0.058	0.000	0.000	0.000	0.000	0.000	0.000
0.170	0.058	0.005	0.045	0.000	0.000	0.000	0.000
0.330	0.058	0.011	0.062	0.000	0.000	0.000	0.000
0.500	0.058	0.018	0.077	0.000	0.000	0.000	0.000
0.670	0.058	0.024	0.089	0.000	0.000	0.000	0.000
0.830	0.058	0.032	0.099	0.000	0.000	0.000	0.000
1.000	0.058	0.039	0.109	0.000	0.000	0.000	0.000
1.170	0.058	0.047	0.117	0.000	0.000	0.000	0.000
1.330	0.058	0.054	0.125	0.000	0.000	0.000	0.000
1.500	0.058	0.062	0.133	0.000	0.000	0.000	0.000
1.670	0.058	0.070	0.140	0.000	0.000	0.000	0.000
1.830	0.058	0.079	0.147	0.000	0.000	0.000	0.000
2.000	0.058	0.087	0.154	0.000	0.000	0.000	0.000
2.170	0.058	0.095	0.160	0.000	0.000	0.000	0.000
2.330	0.058	0.104	0.166	0.000	0.000	0.000	0.000
2.500	0.058	0.112	0.172	0.000	0.000	0.000	0.000
2.670	0.058	0.121	0.177	0.000	0.000	0.000	0.000
2.830	0.058	0.129	0.183	0.000	0.000	0.000	0.000
3.000	0.058	0.138	0.188	0.000	0.000	0.000	0.000
3.170	0.058	0.146	0.193	0.000	0.000	0.000	0.000
3.330	0.058	0.155	0.198	0.000	0.000	0.000	0.000
3.500	0.058	0.164	0.203	0.000	0.000	0.000	0.000
3.670	0.058	0.172	0.208	0.000	0.000	0.000	0.000
3.830	0.058	0.181	0.237	0.000	0.000	0.000	0.000
4.000	0.058	0.189	0.348	0.000	0.000	0.000	0.000
4.170	0.058	0.197	0.496	0.000	0.000	0.000	0.000
4.330	0.058	0.205	0.655	0.000	0.000	0.000	0.000
4.500	0.058	0.214	0.837	0.000	0.000	0.000	0.000
4.670	0.058	0.222	1.026	0.000	0.000	0.000	0.000
4.830	0.058	0.229	1.225	0.000	0.000	0.000	0.000
5.000	0.058	0.237	1.471	0.000	0.000	0.000	0.000
5.170	0.058	0.244	2.582	0.000	0.000	0.000	0.000
5.330	0.058	0.251	4.324	0.000	0.000	0.000	0.000
5.500	0.058	0.258	6.122	0.000	0.000	0.000	0.000
5.670	0.058	0.265	7.256	0.000	0.000	0.000	0.000
5.830	0.058	0.271	7.947	0.000	0.000	0.000	0.000
6.000	0.058	0.276	8.581	0.000	0.000	0.000	0.000

DRAFT

Trapezoidal Pond 2A

Bottom Length:	40.00 ft.
Bottom Width:	40.00 ft.
Depth:	4 ft.
Volume at riser head:	0.1689 acre-feet.
Side slope 1:	3 To 1
Side slope 2:	3 To 1
Side slope 3:	3 To 1
Side slope 4:	3 To 1
Discharge Structure	
Riser Height:	3 ft.
Riser Diameter:	18 in.
Notch Type:	Rectangular
Notch Width:	0.330 ft.
Notch Height:	1.333 ft.
Orifice 1 Diameter:	4.000 in. Elevation:-0.33 ft.
Element Outlets:	
Outlet 1	Outlet 2
Outlet Flows To:	
Lateral Basin 7	

DRAFT

Pond Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.036	0.000	0.249	0.000
0.0444	0.037	0.001	0.265	0.000
0.0889	0.037	0.003	0.281	0.000
0.1333	0.038	0.005	0.295	0.000
0.1778	0.038	0.006	0.309	0.000
0.2222	0.039	0.008	0.322	0.000
0.2667	0.039	0.010	0.335	0.000
0.3111	0.040	0.012	0.347	0.000
0.3556	0.040	0.013	0.359	0.000
0.4000	0.041	0.015	0.371	0.000
0.4444	0.041	0.017	0.382	0.000
0.4889	0.042	0.019	0.392	0.000
0.5333	0.042	0.021	0.403	0.000
0.5778	0.043	0.023	0.413	0.000
0.6222	0.043	0.025	0.423	0.000
0.6667	0.044	0.027	0.433	0.000
0.7111	0.045	0.029	0.443	0.000
0.7556	0.045	0.031	0.452	0.000
0.8000	0.046	0.033	0.461	0.000
0.8444	0.046	0.035	0.470	0.000
0.8889	0.047	0.037	0.479	0.000
0.9333	0.047	0.039	0.488	0.000
0.9778	0.048	0.041	0.496	0.000
1.0222	0.048	0.043	0.504	0.000
1.0667	0.049	0.045	0.513	0.000
1.1111	0.050	0.048	0.521	0.000
1.1556	0.050	0.050	0.529	0.000
1.2000	0.051	0.052	0.537	0.000
1.2444	0.051	0.054	0.544	0.000
1.2889	0.052	0.057	0.552	0.000
1.3333	0.052	0.059	0.560	0.000
1.3778	0.053	0.061	0.567	0.000
1.4222	0.054	0.064	0.574	0.000

1.4667	0.054	0.066	0.582	0.000
1.5111	0.055	0.069	0.589	0.000
1.5556	0.055	0.071	0.596	0.000
1.6000	0.056	0.074	0.603	0.000
1.6444	0.057	0.076	0.610	0.000
1.6889	0.057	0.079	0.620	0.000
1.7333	0.058	0.081	0.642	0.000
1.7778	0.058	0.084	0.669	0.000
1.8222	0.059	0.086	0.701	0.000
1.8667	0.060	0.089	0.737	0.000
1.9111	0.060	0.092	0.775	0.000
1.9556	0.061	0.095	0.816	0.000
2.0000	0.062	0.097	0.859	0.000
2.0444	0.062	0.100	0.904	0.000
2.0889	0.063	0.103	0.950	0.000
2.1333	0.064	0.106	0.998	0.000
2.1778	0.064	0.109	1.047	0.000
2.2222	0.065	0.111	1.097	0.000
2.2667	0.066	0.114	1.148	0.000
2.3111	0.066	0.117	1.200	0.000
2.3556	0.067	0.120	1.252	0.000
2.4000	0.067	0.123	1.305	0.000
2.4444	0.068	0.126	1.358	0.000
2.4889	0.069	0.129	1.412	0.000
2.5333	0.070	0.132	1.466	0.000
2.5778	0.070	0.136	1.521	0.000
2.6222	0.071	0.139	1.575	0.000
2.6667	0.072	0.142	1.629	0.000
2.7111	0.072	0.145	1.694	0.000
2.7556	0.073	0.148	1.760	0.000
2.8000	0.074	0.152	1.827	0.000
2.8444	0.074	0.155	1.896	0.000
2.8889	0.075	0.158	1.965	0.000
2.9333	0.076	0.162	2.036	0.000
2.9778	0.076	0.165	2.108	0.000
3.0222	0.077	0.168	2.200	0.000
3.0667	0.078	0.172	2.426	0.000
3.1111	0.079	0.175	2.745	0.000
3.1556	0.079	0.179	3.133	0.000
3.2000	0.080	0.183	3.572	0.000
3.2444	0.081	0.186	4.050	0.000
3.2889	0.081	0.190	4.553	0.000
3.3333	0.082	0.193	5.065	0.000
3.3778	0.083	0.197	5.574	0.000
3.4222	0.084	0.201	6.065	0.000
3.4667	0.084	0.205	6.524	0.000
3.5111	0.085	0.208	6.940	0.000
3.5556	0.086	0.212	7.305	0.000
3.6000	0.087	0.216	7.614	0.000
3.6444	0.087	0.220	7.867	0.000
3.6889	0.088	0.224	8.071	0.000
3.7333	0.089	0.228	8.241	0.000
3.7778	0.090	0.232	8.482	0.000
3.8222	0.090	0.236	8.663	0.000
3.8667	0.091	0.240	8.839	0.000
3.9111	0.092	0.244	9.010	0.000
3.9556	0.093	0.248	9.178	0.000
4.0000	0.094	0.252	9.342	0.000

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4.0444	0.094	0.256	9.502	0.000

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Trapezoidal Pond 2B

Bottom Length:	600.00 ft.
Bottom Width:	60.00 ft.
Depth:	4 ft.
Volume at riser head:	2.9205 acre-feet.
Side slope 1:	3 To 1
Side slope 2:	3 To 1
Side slope 3:	3 To 1
Side slope 4:	3 To 1
Discharge Structure	
Riser Height:	3 ft.
Riser Diameter:	18 in.
Notch Type:	Rectangular
Notch Width:	0.330 ft.
Notch Height:	1.333 ft.
Orifice 1 Diameter:	4.000 in. Elevation:-0.333333333333333 ft.
Element Outlets:	
Outlet 1	Outlet 2
Outlet Flows To:	
Lateral Basin 7	

Pond Hydraulic Table

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Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.826	0.000	0.250	0.000
0.0444	0.830	0.036	0.266	0.000
0.0889	0.834	0.073	0.282	0.000
0.1333	0.838	0.111	0.296	0.000
0.1778	0.842	0.148	0.310	0.000
0.2222	0.846	0.185	0.323	0.000
0.2667	0.850	0.223	0.336	0.000
0.3111	0.854	0.261	0.348	0.000
0.3556	0.858	0.299	0.360	0.000
0.4000	0.862	0.337	0.371	0.000
0.4444	0.867	0.376	0.382	0.000
0.4889	0.871	0.414	0.393	0.000
0.5333	0.875	0.453	0.404	0.000
0.5778	0.879	0.492	0.414	0.000
0.6222	0.883	0.531	0.424	0.000
0.6667	0.887	0.571	0.434	0.000
0.7111	0.891	0.610	0.443	0.000
0.7556	0.895	0.650	0.453	0.000
0.8000	0.899	0.690	0.462	0.000
0.8444	0.903	0.730	0.471	0.000
0.8889	0.907	0.770	0.480	0.000
0.9333	0.912	0.811	0.488	0.000
0.9778	0.916	0.851	0.497	0.000
1.0222	0.920	0.892	0.505	0.000
1.0667	0.924	0.933	0.513	0.000
1.1111	0.928	0.974	0.521	0.000
1.1556	0.932	1.016	0.529	0.000
1.2000	0.936	1.057	0.537	0.000
1.2444	0.940	1.099	0.545	0.000
1.2889	0.945	1.141	0.553	0.000
1.3333	0.949	1.183	0.560	0.000
1.3778	0.953	1.225	0.568	0.000
1.4222	0.957	1.268	0.575	0.000

1.4667	0.961	1.310	0.582	0.000
1.5111	0.965	1.353	0.589	0.000
1.5556	0.969	1.396	0.596	0.000
1.6000	0.974	1.439	0.603	0.000
1.6444	0.978	1.483	0.610	0.000
1.6889	0.982	1.526	0.621	0.000
1.7333	0.986	1.570	0.642	0.000
1.7778	0.990	1.614	0.670	0.000
1.8222	0.994	1.658	0.702	0.000
1.8667	0.999	1.702	0.738	0.000
1.9111	1.003	1.747	0.776	0.000
1.9556	1.007	1.792	0.817	0.000
2.0000	1.011	1.836	0.860	0.000
2.0444	1.015	1.882	0.905	0.000
2.0889	1.020	1.927	0.951	0.000
2.1333	1.024	1.972	0.999	0.000
2.1778	1.028	2.018	1.048	0.000
2.2222	1.032	2.064	1.098	0.000
2.2667	1.036	2.110	1.149	0.000
2.3111	1.041	2.156	1.201	0.000
2.3556	1.045	2.202	1.253	0.000
2.4000	1.049	2.249	1.306	0.000
2.4444	1.053	2.295	1.359	0.000
2.4889	1.057	2.342	1.413	0.000
2.5333	1.062	2.389	1.467	0.000
2.5778	1.066	2.437	1.522	0.000
2.6222	1.070	2.484	1.576	0.000
2.6667	1.074	2.532	1.630	0.000
2.7111	1.079	2.580	1.695	0.000
2.7556	1.083	2.628	1.761	0.000
2.8000	1.087	2.676	1.828	0.000
2.8444	1.091	2.724	1.897	0.000
2.8889	1.096	2.773	1.966	0.000
2.9333	1.100	2.822	2.037	0.000
2.9778	1.104	2.871	2.109	0.000
3.0222	1.108	2.920	2.201	0.000
3.0667	1.113	2.969	2.427	0.000
3.1111	1.117	3.019	2.746	0.000
3.1556	1.121	3.069	3.134	0.000
3.2000	1.125	3.119	3.573	0.000
3.2444	1.130	3.169	4.051	0.000
3.2889	1.134	3.219	4.554	0.000
3.3333	1.138	3.270	5.066	0.000
3.3778	1.142	3.320	5.575	0.000
3.4222	1.147	3.371	6.066	0.000
3.4667	1.151	3.422	6.525	0.000
3.5111	1.155	3.474	6.941	0.000
3.5556	1.160	3.525	7.306	0.000
3.6000	1.164	3.577	7.615	0.000
3.6444	1.168	3.629	7.868	0.000
3.6889	1.173	3.681	8.072	0.000
3.7333	1.177	3.733	8.242	0.000
3.7778	1.181	3.785	8.483	0.000
3.8222	1.186	3.838	8.664	0.000
3.8667	1.190	3.891	8.840	0.000
3.9111	1.194	3.944	9.011	0.000
3.9556	1.199	3.997	9.179	0.000
4.0000	1.203	4.050	9.343	0.000

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4.0444	1.207	4.104	9.503	0.000

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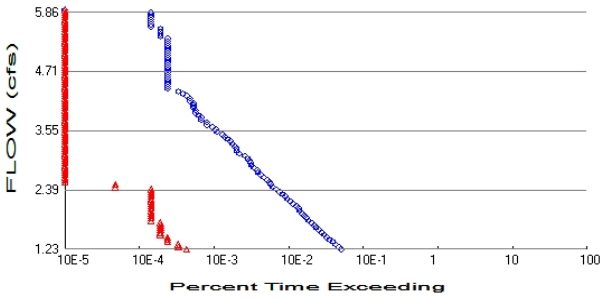
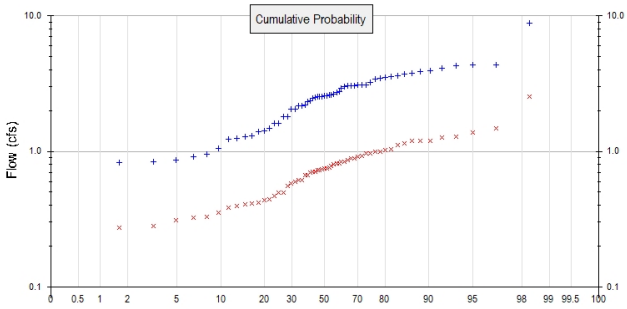
Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 8.979
Total Impervious Area: 0.944

Mitigated Landuse Totals for POC #1
Total Pervious Area: 5.162
Total Impervious Area: 3.82

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	2.460675
5 year	3.857876
10 year	4.621008
25 year	5.399987
50 year	5.863931
100 year	6.245905

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.739848
5 year	1.123217
10 year	1.32814
25 year	1.534826
50 year	1.656892
100 year	1.756871

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	1.796	0.559
1950	2.376	0.725
1951	3.209	0.972
1952	2.330	0.577
1953	2.645	0.800
1954	3.589	1.189
1955	2.034	0.612
1956	3.751	1.117
1957	3.061	1.000
1958	3.099	0.704

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1959	1.278	0.438
1960	1.308	0.408
1961	3.401	1.025
1962	2.778	0.745
1963	3.037	0.810
1964	2.457	0.751
1965	2.520	0.670
1966	2.992	0.906
1967	2.717	0.782
1968	3.076	0.962
1969	2.566	0.887
1970	8.867	2.529
1971	1.616	0.419
1972	2.179	0.664
1973	2.530	0.697
1974	3.558	1.033
1975	2.046	0.594
1976	2.938	0.883
1977	0.080	0.032
1978	4.119	1.275
1979	3.478	0.835
1980	1.614	0.496
1981	3.740	1.138
1982	2.545	0.764
1983	4.308	1.369
1984	1.392	0.442
1985	0.958	0.329
1986	1.223	0.412
1987	2.199	0.710
1988	0.827	0.326
1989	0.910	0.352
1990	1.048	0.310
1991	2.613	0.810
1992	3.065	0.833
1993	3.510	0.992
1994	2.514	0.736
1995	2.178	0.611
1996	4.339	1.270
1997	4.353	1.470
1998	3.893	1.203
1999	2.600	0.859
2000	1.241	0.467
2001	0.838	0.272
2002	3.953	1.197
2003	3.071	0.920
2004	0.858	0.280
2005	1.407	0.385
2006	2.571	0.731
2007	1.474	0.395
2008	1.812	0.499

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Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	8.8672	2.5294
2	4.3533	1.4702
3	4.3388	1.3691
4	4.3083	1.2748

5	4.1193	1.2700
6	3.9530	1.2026
7	3.8934	1.1965
8	3.7513	1.1886
9	3.7405	1.1379
10	3.5885	1.1166
11	3.5575	1.0327
12	3.5103	1.0249
13	3.4781	0.9999
14	3.4006	0.9921
15	3.2092	0.9724
16	3.0993	0.9618
17	3.0758	0.9196
18	3.0709	0.9065
19	3.0647	0.8869
20	3.0607	0.8826
21	3.0372	0.8587
22	2.9923	0.8347
23	2.9376	0.8333
24	2.7776	0.8098
25	2.7165	0.8096
26	2.6449	0.7997
27	2.6131	0.7817
28	2.6000	0.7638
29	2.5713	0.7507
30	2.5657	0.7453
31	2.5453	0.7360
32	2.5302	0.7309
33	2.5202	0.7253
34	2.5136	0.7095
35	2.4570	0.7038
36	2.3764	0.6967
37	2.3296	0.6700
38	2.1992	0.6641
39	2.1792	0.6122
40	2.1779	0.6111
41	2.0456	0.5941
42	2.0344	0.5772
43	1.8125	0.5585
44	1.7964	0.4991
45	1.6163	0.4958
46	1.6139	0.4670
47	1.4745	0.4416
48	1.4074	0.4376
49	1.3923	0.4187
50	1.3081	0.4120
51	1.2779	0.4082
52	1.2411	0.3953
53	1.2231	0.3848
54	1.0483	0.3520
55	0.9577	0.3294
56	0.9101	0.3258
57	0.8584	0.3096
58	0.8375	0.2800
59	0.8274	0.2724
60	0.0799	0.0323

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Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
1.2303	1060	9	0	Pass
1.2771	987	7	0	Pass
1.3239	894	7	0	Pass
1.3707	822	5	0	Pass
1.4176	741	5	0	Pass
1.4644	680	5	0	Pass
1.5112	626	4	0	Pass
1.5580	579	4	0	Pass
1.6048	531	4	0	Pass
1.6516	489	4	0	Pass
1.6984	459	4	0	Pass
1.7452	425	4	0	Pass
1.7920	391	3	0	Pass
1.8388	360	3	0	Pass
1.8856	342	3	0	Pass
1.9324	318	3	0	Pass
1.9792	297	3	1	Pass
2.0260	284	3	1	Pass
2.0728	266	3	1	Pass
2.1196	238	3	1	Pass
2.1664	221	3	1	Pass
2.2132	204	3	1	Pass
2.2600	190	3	1	Pass
2.3068	173	3	1	Pass
2.3536	159	3	1	Pass
2.4004	143	3	2	Pass
2.4472	130	1	0	Pass
2.4940	121	1	0	Pass
2.5408	115	0	0	Pass
2.5877	108	0	0	Pass
2.6345	97	0	0	Pass
2.6813	88	0	0	Pass
2.7281	81	0	0	Pass
2.7749	79	0	0	Pass
2.8217	71	0	0	Pass
2.8685	67	0	0	Pass
2.9153	65	0	0	Pass
2.9621	62	0	0	Pass
3.0089	59	0	0	Pass
3.0557	54	0	0	Pass
3.1025	46	0	0	Pass
3.1493	42	0	0	Pass
3.1961	42	0	0	Pass
3.2429	40	0	0	Pass
3.2897	37	0	0	Pass
3.3365	35	0	0	Pass
3.3833	32	0	0	Pass
3.4301	29	0	0	Pass
3.4769	27	0	0	Pass
3.5237	23	0	0	Pass
3.5705	22	0	0	Pass
3.6173	20	0	0	Pass
3.6641	17	0	0	Pass

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3.7109	17	0	0	Pass
3.7578	14	0	0	Pass
3.8046	14	0	0	Pass
3.8514	13	0	0	Pass
3.8982	12	0	0	Pass
3.9450	12	0	0	Pass
3.9918	11	0	0	Pass
4.0386	11	0	0	Pass
4.0854	11	0	0	Pass
4.1322	10	0	0	Pass
4.1790	10	0	0	Pass
4.2258	9	0	0	Pass
4.2726	8	0	0	Pass
4.3194	7	0	0	Pass
4.3662	5	0	0	Pass
4.4130	5	0	0	Pass
4.4598	5	0	0	Pass
4.5066	5	0	0	Pass
4.5534	5	0	0	Pass
4.6002	5	0	0	Pass
4.6470	5	0	0	Pass
4.6938	5	0	0	Pass
4.7406	5	0	0	Pass
4.7874	5	0	0	Pass
4.8342	5	0	0	Pass
4.8810	5	0	0	Pass
4.9279	5	0	0	Pass
4.9747	5	0	0	Pass
5.0215	5	0	0	Pass
5.0683	5	0	0	Pass
5.1151	5	0	0	Pass
5.1619	5	0	0	Pass
5.2087	5	0	0	Pass
5.2555	5	0	0	Pass
5.3023	5	0	0	Pass
5.3491	5	0	0	Pass
5.3959	4	0	0	Pass
5.4427	4	0	0	Pass
5.4895	4	0	0	Pass
5.5363	4	0	0	Pass
5.5831	3	0	0	Pass
5.6299	3	0	0	Pass
5.6767	3	0	0	Pass
5.7235	3	0	0	Pass
5.7703	3	0	0	Pass
5.8171	3	0	0	Pass
5.8639	3	0	0	Pass

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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.

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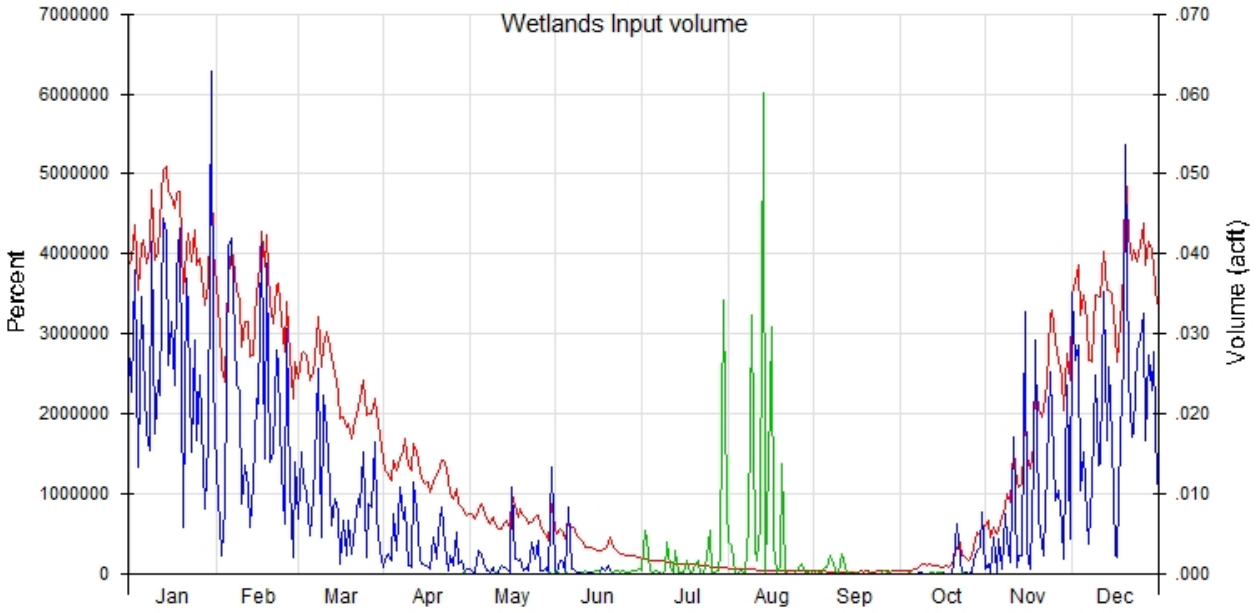
Wetland Input Volumes



- Percent - Predeveloped - Mitigated

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Wetlands Input Volume for POC 1
Average Annual Volume (acft)
Series 1: 501 POC 1 Predeveloped flow
Series 2: 801 POC 1 Mitigated flow

Month	Series 1	Series 2	Percent	Pass/Fail
Jan	0.8248	1.2957	157.1	Fail
Feb	0.5507	0.9491	172.4	Fail
Mar	0.2951	0.7276	246.6	Fail
Apr	0.1046	0.3728	356.5	Fail
May	0.0554	0.2142	386.9	Fail
Jun	0.0164	0.1127	688.6	Fail
Jul	0.0001	0.0405	29684.7	Fail
Aug	0.0001	0.0146	25093.2	Fail
Sep	0.0001	0.0084	7021.9	Fail
Oct	0.0260	0.0523	201.4	Fail
Nov	0.2495	0.4844	194.2	Fail
Dec	0.6353	1.1181	176.0	Fail

Day	Predevel	Mitigated	Percent	Pass/Fail
Jan1	0.0270	0.0387	143.7	Fail
2	0.0227	0.0393	172.8	Fail
3	0.0381	0.0437	114.8	Pass
4	0.0134	0.0355	264.7	Fail
5	0.0346	0.0410	118.4	Pass
6	0.0279	0.0418	149.6	Fail
7	0.0176	0.0387	219.6	Fail
8	0.0154	0.0408	264.6	Fail
9	0.0416	0.0481	115.6	Pass
10	0.0176	0.0392	223.5	Fail
11	0.0242	0.0403	166.4	Fail
12	0.0224	0.0439	196.0	Fail
13	0.0445	0.0504	113.5	Pass
14	0.0426	0.0510	119.7	Pass

15	0.0261	0.0477	183.0	Fail
16	0.0314	0.0473	150.4	Fail
17	0.0237	0.0458	193.5	Fail
18	0.0376	0.0475	126.2	Fail
19	0.0431	0.0477	110.7	Pass
20	0.0058	0.0350	601.4	Fail
21	0.0370	0.0405	109.7	Pass
22	0.0327	0.0425	130.1	Fail
23	0.0153	0.0391	255.8	Fail
24	0.0291	0.0429	147.4	Fail
25	0.0167	0.0386	230.8	Fail
26	0.0248	0.0395	159.6	Fail
27	0.0134	0.0355	264.2	Fail
28	0.0081	0.0335	412.6	Fail
29	0.0166	0.0363	219.1	Fail
30	0.0628	0.0500	79.6	Fail
31	0.0243	0.0405	166.7	Fail
Feb1	0.0127	0.0364	286.4	Fail
2	0.0063	0.0307	487.6	Fail
3	0.0023	0.0259	1149.2	Fail
4	0.0080	0.0240	298.9	Fail
5	0.0409	0.0370	90.7	Pass
6	0.0419	0.0405	96.5	Pass
7	0.0353	0.0397	112.3	Pass
8	0.0239	0.0354	148.3	Fail
9	0.0230	0.0342	148.8	Fail
10	0.0087	0.0283	324.9	Fail
11	0.0135	0.0314	233.6	Fail
12	0.0108	0.0315	292.1	Fail
13	0.0058	0.0271	468.2	Fail
14	0.0112	0.0274	244.6	Fail
15	0.0219	0.0354	161.6	Fail
16	0.0212	0.0358	168.8	Fail
17	0.0412	0.0427	103.7	Pass
18	0.0145	0.0384	265.9	Fail
19	0.0389	0.0423	108.8	Pass
20	0.0139	0.0340	244.6	Fail
21	0.0151	0.0314	207.2	Fail
22	0.0280	0.0359	128.3	Fail
23	0.0260	0.0363	139.6	Fail
24	0.0128	0.0318	248.7	Fail
25	0.0062	0.0278	450.3	Fail
26	0.0307	0.0339	110.3	Pass
27	0.0111	0.0273	247.0	Fail
28	0.0021	0.0219	1020.7	Fail
29	0.0140	0.0264	188.8	Fail
Mar1	0.0068	0.0244	357.8	Fail
2	0.0152	0.0274	179.8	Fail
3	0.0115	0.0278	242.4	Fail
4	0.0102	0.0273	268.2	Fail
5	0.0047	0.0242	510.2	Fail
6	0.0097	0.0249	258.3	Fail
7	0.0138	0.0269	194.6	Fail
8	0.0257	0.0321	124.7	Fail
9	0.0046	0.0258	563.3	Fail
10	0.0223	0.0284	127.4	Fail
11	0.0181	0.0303	167.5	Fail
12	0.0108	0.0284	261.7	Fail

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13	0.0061	0.0271	446.0	Fail
14	0.0093	0.0251	270.3	Fail
15	0.0079	0.0228	289.2	Fail
16	0.0012	0.0194	1559.0	Fail
17	0.0066	0.0195	293.6	Fail
18	0.0023	0.0184	790.4	Fail
19	0.0067	0.0189	280.8	Fail
20	0.0025	0.0170	678.2	Fail
21	0.0060	0.0191	320.1	Fail
22	0.0094	0.0207	220.3	Fail
23	0.0084	0.0219	259.7	Fail
24	0.0153	0.0241	157.9	Fail
25	0.0021	0.0198	957.1	Fail
26	0.0087	0.0201	231.9	Fail
27	0.0083	0.0199	239.3	Fail
28	0.0166	0.0218	131.6	Fail
29	0.0073	0.0203	278.4	Fail
30	0.0029	0.0173	593.2	Fail
31	0.0007	0.0145	2006.5	Fail
Apr1	0.0016	0.0130	835.9	Fail
2	0.0024	0.0124	517.4	Fail
3	0.0016	0.0116	718.0	Fail
4	0.0076	0.0142	188.0	Fail
5	0.0029	0.0129	438.4	Fail
6	0.0108	0.0144	133.9	Fail
7	0.0069	0.0154	224.1	Fail
8	0.0083	0.0169	204.5	Fail
9	0.0010	0.0137	1353.6	Fail
10	0.0007	0.0128	1727.3	Fail
11	0.0114	0.0162	141.8	Fail
12	0.0082	0.0154	187.2	Fail
13	0.0018	0.0130	724.7	Fail
14	0.0011	0.0119	1054.2	Fail
15	0.0010	0.0113	1173.2	Fail
16	0.0009	0.0115	1258.7	Fail
17	0.0006	0.0101	1650.8	Fail
18	0.0047	0.0116	247.3	Fail
19	0.0019	0.0124	636.9	Fail
20	0.0049	0.0126	256.4	Fail
21	0.0083	0.0142	171.6	Fail
22	0.0035	0.0140	402.6	Fail
23	0.0004	0.0119	2900.6	Fail
24	0.0023	0.0101	439.1	Fail
25	0.0010	0.0095	948.4	Fail
26	0.0052	0.0107	204.0	Fail
27	0.0012	0.0087	751.6	Fail
28	0.0016	0.0084	530.5	Fail
29	0.0001	0.0076	7743.0	Fail
30	0.0006	0.0073	1182.9	Fail
May1	0.0006	0.0075	1223.4	Fail
2	0.0003	0.0073	2623.9	Fail
3	0.0002	0.0069	2840.0	Fail
4	0.0030	0.0080	269.3	Fail
5	0.0024	0.0088	369.5	Fail
6	0.0014	0.0081	582.1	Fail
7	0.0004	0.0068	1737.4	Fail
8	0.0003	0.0062	2382.2	Fail
9	0.0009	0.0071	773.7	Fail

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10	0.0000	0.0063	16170.0	Fail
11	0.0001	0.0056	5072.0	Fail
12	0.0009	0.0057	620.1	Fail
13	0.0008	0.0063	798.6	Fail
14	0.0006	0.0066	1140.5	Fail
15	0.0001	0.0056	4543.8	Fail
16	0.0108	0.0101	92.8	Pass
17	0.0018	0.0085	463.1	Fail
18	0.0016	0.0071	441.1	Fail
19	0.0019	0.0081	420.1	Fail
20	0.0004	0.0073	1897.0	Fail
21	0.0008	0.0068	856.5	Fail
22	0.0005	0.0062	1306.6	Fail
23	0.0039	0.0066	168.4	Fail
24	0.0018	0.0070	380.5	Fail
25	0.0042	0.0072	171.8	Fail
26	0.0004	0.0062	1387.5	Fail
27	0.0003	0.0051	1501.1	Fail
28	0.0007	0.0048	674.4	Fail
29	0.0000	0.0042	24147.5	Fail
30	0.0134	0.0087	64.8	Fail
31	0.0003	0.0058	2041.5	Fail
Jun1	0.0000	0.0049	42860.3	Fail
2	0.0016	0.0056	348.0	Fail
3	0.0015	0.0053	356.9	Fail
4	0.0000	0.0044	18893.1	Fail
5	0.0082	0.0065	79.1	Fail
6	0.0006	0.0059	988.6	Fail
7	0.0004	0.0055	1300.3	Fail
8	0.0002	0.0048	2195.6	Fail
9	0.0002	0.0044	2324.2	Fail
10	0.0000	0.0039	11303.2	Fail
11	0.0000	0.0034	29606.2	Fail
12	0.0003	0.0034	1233.8	Fail
13	0.0002	0.0034	2121.4	Fail
14	0.0000	0.0032	22159.6	Fail
15	0.0000	0.0030	29992.7	Fail
16	0.0000	0.0028	23359.4	Fail
17	0.0007	0.0029	395.4	Fail
18	0.0005	0.0030	646.3	Fail
19	0.0011	0.0038	341.8	Fail
20	0.0003	0.0045	1418.7	Fail
21	0.0000	0.0034	21634.1	Fail
22	0.0000	0.0028	33785.7	Fail
23	0.0000	0.0026	8464.5	Fail
24	0.0000	0.0024	31750.3	Fail
25	0.0000	0.0023	10920.0	Fail
26	0.0000	0.0023	12676.9	Fail
27	0.0000	0.0022	7729.2	Fail
28	0.0000	0.0022	40093.2	Fail
29	0.0000	0.0021	30435.4	Fail
30	0.0000	0.0020	50248.7	Fail
Jul1	0.0000	0.0019	41262.5	Fail
2	0.0000	0.0019	532103.6	Fail
3	0.0000	0.0018	441379.1	Fail
4	0.0000	0.0017	38470.0	Fail
5	0.0000	0.0017	16123180.0	Fail
6	0.0000	0.0016	34868.5	Fail

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7	0.0000	0.0016	16734.5	Fail
8	0.0000	0.0016	5102.5	Fail
9	0.0000	0.0016	34871.8	Fail
10	0.0000	0.0015	386386.4	Fail
11	0.0000	0.0014	94733.8	Fail
12	0.0000	0.0013	57794300.0	Fail
13	0.0000	0.0013	279485.1	Fail
14	0.0000	0.0013	28298.7	Fail
15	0.0000	0.0012	12215.2	Fail
16	0.0000	0.0012	17137.3	Fail
17	0.0000	0.0012	172998.4	Fail
18	0.0000	0.0012	10786.1	Fail
19	0.0000	0.0012	4200.5	Fail
20	0.0000	0.0012	131451.4	Fail
21	0.0000	0.0011	155932.1	Fail
22	0.0000	0.0010	44311010.0	Fail
23	0.0000	0.0010	41661340.0	Fail
24	0.0000	0.0009	197869.4	Fail
25	0.0000	0.0009	536635.9	Fail
26	0.0000	0.0009	35580060.0	Fail
27	0.0000	0.0008	25492.9	Fail
28	0.0000	0.0008	34558.3	Fail
29	0.0000	0.0008	257157.2	Fail
30	0.0000	0.0008	3431471.0	Fail
31	0.0000	0.0007	859975.3	Fail
Aug1	0.0000	0.0007	392594.6	Fail
2	0.0000	0.0007	342383.5	Fail
3	0.0000	0.0007	18039200.0	Fail
4	0.0000	0.0006	28279980.0	Fail
5	0.0000	0.0006	40660.4	Fail
6	0.0000	0.0006	21767.8	Fail
7	0.0000	0.0006	18200210.0	Fail
8	0.0000	0.0005	607829.1	Fail
9	0.0000	0.0005	3238471.0	Fail
10	0.0000	0.0005	323507.1	Fail
11	0.0000	0.0005	172521.0	Fail
12	0.0000	0.0005	581330.2	Fail
13	0.0000	0.0005	6011631.0	Fail
14	0.0000	0.0005	12748.1	Fail
15	0.0000	0.0004	1357267.0	Fail
16	0.0000	0.0004	3088170.0	Fail
17	0.0000	0.0004	374067.3	Fail
18	0.0000	0.0004	13916.7	Fail
19	0.0000	0.0004	88600.0	Fail
20	0.0000	0.0004	1379876.0	Fail
21	0.0000	0.0004	11309.3	Fail
22	0.0000	0.0004	5188.1	Fail
23	0.0000	0.0004	5376.1	Fail
24	0.0000	0.0004	2223.8	Fail
25	0.0000	0.0004	29555.6	Fail
26	0.0000	0.0004	105147.4	Fail
27	0.0000	0.0003	128758.6	Fail
28	0.0000	0.0003	5843.6	Fail
29	0.0000	0.0003	12289.3	Fail
30	0.0000	0.0003	34867.2	Fail
31	0.0000	0.0003	7499.1	Fail
Sep1	0.0000	0.0003	36797.4	Fail
2	0.0000	0.0003	8513.4	Fail

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3	0.0000	0.0003	17166.0	Fail
4	0.0000	0.0003	75441.7	Fail
5	0.0000	0.0003	71818.8	Fail
6	0.0000	0.0003	228029.2	Fail
7	0.0000	0.0003	115495.9	Fail
8	0.0000	0.0003	7493.7	Fail
9	0.0000	0.0003	6661.5	Fail
10	0.0000	0.0003	247291.3	Fail
11	0.0000	0.0002	104797.9	Fail
12	0.0000	0.0002	16428.9	Fail
13	0.0000	0.0002	3847.3	Fail
14	0.0000	0.0003	4562.4	Fail
15	0.0000	0.0002	13882.6	Fail
16	0.0000	0.0002	4216.2	Fail
17	0.0000	0.0003	2878.7	Fail
18	0.0000	0.0003	3887.5	Fail
19	0.0000	0.0003	3794.2	Fail
20	0.0000	0.0003	11280.6	Fail
21	0.0000	0.0003	6283.5	Fail
22	0.0000	0.0003	3023.4	Fail
23	0.0000	0.0003	5013.7	Fail
24	0.0000	0.0003	2581.0	Fail
25	0.0000	0.0003	35945.2	Fail
26	0.0000	0.0003	8918.8	Fail
27	0.0000	0.0003	9140.8	Fail
28	0.0000	0.0003	4669.9	Fail
29	0.0000	0.0003	4533.1	Fail
30	0.0000	0.0004	4533.5	Fail
Oct1	0.0000	0.0004	6868.6	Fail
2	0.0000	0.0004	4947.6	Fail
3	0.0000	0.0004	3575.0	Fail
4	0.0000	0.0005	9521.6	Fail
5	0.0000	0.0005	2836.3	Fail
6	0.0000	0.0005	4457.9	Fail
7	0.0000	0.0006	1902.2	Fail
8	0.0003	0.0010	345.0	Fail
9	0.0000	0.0012	4295.0	Fail
10	0.0000	0.0011	3657.6	Fail
11	0.0001	0.0013	2069.5	Fail
12	0.0000	0.0011	24385.0	Fail
13	0.0000	0.0010	7051.3	Fail
14	0.0000	0.0009	14642.6	Fail
15	0.0000	0.0008	16062.5	Fail
16	0.0001	0.0009	1026.3	Fail
17	0.0000	0.0010	4001.4	Fail
18	0.0000	0.0009	3087.5	Fail
19	0.0000	0.0012	4407.0	Fail
20	0.0012	0.0016	136.2	Fail
21	0.0062	0.0032	51.8	Fail
22	0.0019	0.0039	202.7	Fail
23	0.0000	0.0023	12321.8	Fail
24	0.0001	0.0020	1493.0	Fail
25	0.0000	0.0017	5634.9	Fail
26	0.0002	0.0023	1074.9	Fail
27	0.0016	0.0032	203.5	Fail
28	0.0028	0.0051	181.1	Fail
29	0.0033	0.0047	142.2	Fail
30	0.0078	0.0061	78.0	Fail

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31	0.0005	0.0061	1214.4	Fail
Nov1	0.0013	0.0067	514.6	Fail
2	0.0001	0.0046	4550.4	Fail
3	0.0046	0.0059	128.8	Fail
4	0.0001	0.0050	5441.0	Fail
5	0.0045	0.0055	122.2	Fail
6	0.0006	0.0070	1152.8	Fail
7	0.0076	0.0084	111.1	Pass
8	0.0043	0.0101	231.5	Fail
9	0.0015	0.0090	599.5	Fail
10	0.0171	0.0154	90.0	Pass
11	0.0008	0.0115	1395.5	Fail
12	0.0022	0.0109	490.7	Fail
13	0.0024	0.0113	477.5	Fail
14	0.0328	0.0198	60.4	Fail
15	0.0030	0.0146	491.7	Fail
16	0.0006	0.0132	2115.6	Fail
17	0.0137	0.0160	116.7	Pass
18	0.0293	0.0248	84.7	Pass
19	0.0070	0.0206	292.9	Fail
20	0.0037	0.0197	528.9	Fail
21	0.0023	0.0204	884.6	Fail
22	0.0133	0.0240	180.6	Fail
23	0.0252	0.0321	127.1	Fail
24	0.0199	0.0331	166.2	Fail
25	0.0091	0.0293	322.4	Fail
26	0.0104	0.0268	257.9	Fail
27	0.0060	0.0246	406.8	Fail
28	0.0019	0.0204	1093.5	Fail
29	0.0236	0.0276	117.2	Pass
30	0.0044	0.0242	551.4	Fail
Dec1	0.0351	0.0350	99.7	Pass
2	0.0266	0.0366	137.5	Fail
3	0.0286	0.0386	135.1	Fail
4	0.0103	0.0323	313.2	Fail
5	0.0152	0.0349	229.7	Fail
6	0.0072	0.0318	443.2	Fail
7	0.0037	0.0268	720.9	Fail
8	0.0112	0.0265	236.1	Fail
9	0.0248	0.0348	140.5	Fail
10	0.0135	0.0346	256.0	Fail
11	0.0138	0.0347	251.3	Fail
12	0.0352	0.0402	114.1	Pass
13	0.0167	0.0355	212.1	Fail
14	0.0259	0.0354	136.8	Fail
15	0.0169	0.0350	207.5	Fail
16	0.0025	0.0300	1206.4	Fail
17	0.0020	0.0266	1335.1	Fail
18	0.0174	0.0313	180.1	Fail
19	0.0266	0.0377	141.9	Fail
20	0.0537	0.0507	94.5	Pass
21	0.0245	0.0421	172.0	Fail
22	0.0172	0.0392	228.2	Fail
23	0.0178	0.0405	227.7	Fail
24	0.0279	0.0390	139.9	Fail
25	0.0295	0.0411	139.4	Fail
26	0.0326	0.0438	134.5	Fail
27	0.0167	0.0387	232.1	Fail

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28	0.0274	0.0416	151.8	Fail
29	0.0229	0.0405	177.1	Fail
30	0.0277	0.0384	138.5	Fail
31	0.0110	0.0337	307.6	Fail

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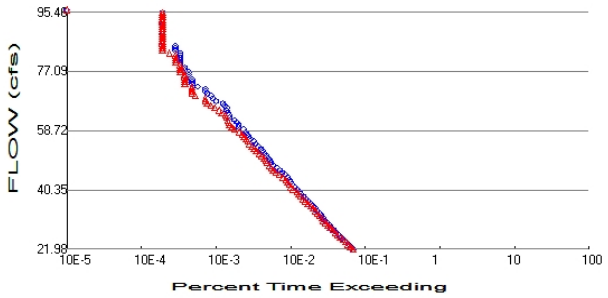
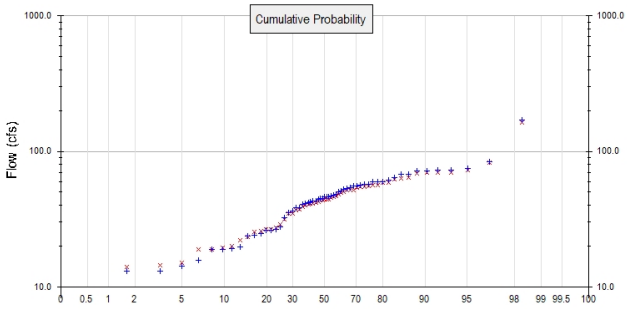
POC 2





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #2
Total Pervious Area: 186.753
Total Impervious Area: 6.031

Mitigated Landuse Totals for POC #2
Total Pervious Area: 174.057
Total Impervious Area: 14.175

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #2

Return Period	Flow(cfs)
2 year	43.965007
5 year	65.684116
10 year	77.169118
25 year	88.683932
50 year	95.455897
100 year	100.9882

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Flow Frequency Return Periods for Mitigated. POC #2

Return Period	Flow(cfs)
2 year	41.738753
5 year	62.023302
10 year	74.206754
25 year	88.086348
50 year	97.387256
100 year	105.880336

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #2

Year	Predeveloped	Mitigated
1949	35.338	34.540
1950	45.145	43.770
1951	55.818	51.989
1952	45.068	45.304
1953	44.237	42.418
1954	61.254	58.360
1955	36.300	34.569
1956	75.282	72.626
1957	56.489	53.775
1958	55.900	55.318
1959	19.674	19.864

1960	26.125	25.488
1961	59.327	56.260
1962	53.249	51.651
1963	50.030	47.926
1964	46.024	44.039
1965	46.114	43.870
1966	57.171	54.586
1967	40.811	38.800
1968	52.541	49.987
1969	42.780	41.484
1970	170.563	163.045
1971	27.592	27.209
1972	42.695	41.105
1973	50.765	49.635
1974	72.122	69.856
1975	38.531	37.419
1976	53.700	51.513
1977	4.359	6.878
1978	72.907	69.419
1979	59.381	58.409
1980	32.423	31.444
1981	71.763	68.757
1982	47.775	45.922
1983	72.798	69.316
1984	26.267	25.692
1985	18.914	22.099
1986	23.729	23.211
1987	38.300	36.677
1988	13.014	14.984
1989	15.751	19.544
1990	18.909	18.795
1991	41.084	39.888
1992	46.892	44.526
1993	63.956	61.968
1994	46.241	44.185
1995	41.631	41.607
1996	83.165	82.224
1997	68.172	64.395
1998	59.795	55.995
1999	43.046	40.560
2000	19.090	18.818
2001	12.986	14.033
2002	67.823	63.330
2003	57.267	54.764
2004	14.158	14.458
2005	26.422	26.529
2006	48.440	46.997
2007	23.971	26.452
2008	24.734	28.981

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Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #2

Rank	Predeveloped	Mitigated
1	170.5630	163.0450
2	83.1654	82.2237
3	75.2822	72.6257
4	72.9067	69.8557
5	72.7977	69.4191

6	72.1222	69.3162
7	71.7633	68.7566
8	68.1723	64.3947
9	67.8231	63.3300
10	63.9564	61.9678
11	61.2535	58.4088
12	59.7947	58.3597
13	59.3812	56.2595
14	59.3272	55.9947
15	57.2666	55.3178
16	57.1709	54.7637
17	56.4888	54.5863
18	55.9000	53.7747
19	55.8180	51.9889
20	53.6998	51.6510
21	53.2488	51.5126
22	52.5413	49.9873
23	50.7653	49.6345
24	50.0304	47.9259
25	48.4400	46.9966
26	47.7753	45.9220
27	46.8923	45.3035
28	46.2410	44.5256
29	46.1144	44.1845
30	46.0236	44.0393
31	45.1451	43.8699
32	45.0677	43.7703
33	44.2374	42.4184
34	43.0455	41.6065
35	42.7800	41.4840
36	42.6953	41.1052
37	41.6312	40.5596
38	41.0838	39.8878
39	40.8108	38.7999
40	38.5309	37.4194
41	38.3000	36.6771
42	36.2999	34.5693
43	35.3376	34.5402
44	32.4227	31.4437
45	27.5917	28.9812
46	26.4220	27.2091
47	26.2674	26.5292
48	26.1245	26.4515
49	24.7340	25.6922
50	23.9711	25.4883
51	23.7288	23.2108
52	19.6738	22.0989
53	19.0902	19.8642
54	18.9137	19.5439
55	18.9088	18.8182
56	15.7511	18.7946
57	14.1576	14.9843
58	13.0136	14.4583
59	12.9861	14.0327
60	4.3587	6.8782

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Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
21.9825	1438	1443	100	Pass
22.7247	1342	1332	99	Pass
23.4668	1250	1238	99	Pass
24.2090	1148	1144	99	Pass
24.9511	1061	1051	99	Pass
25.6933	993	971	97	Pass
26.4354	909	889	97	Pass
27.1776	855	831	97	Pass
27.9197	790	770	97	Pass
28.6619	733	710	96	Pass
29.4041	693	662	95	Pass
30.1462	647	620	95	Pass
30.8884	612	580	94	Pass
31.6305	574	551	95	Pass
32.3727	540	513	95	Pass
33.1148	511	476	93	Pass
33.8570	475	455	95	Pass
34.5991	449	421	93	Pass
35.3413	422	391	92	Pass
36.0835	388	359	92	Pass
36.8256	360	333	92	Pass
37.5678	338	307	90	Pass
38.3099	311	283	90	Pass
39.0521	287	267	93	Pass
39.7942	275	256	93	Pass
40.5364	259	227	87	Pass
41.2785	241	213	88	Pass
42.0207	218	201	92	Pass
42.7629	209	189	90	Pass
43.5050	200	181	90	Pass
44.2472	191	166	86	Pass
44.9893	175	147	84	Pass
45.7315	161	133	82	Pass
46.4736	151	122	80	Pass
47.2158	137	116	84	Pass
47.9579	123	110	89	Pass
48.7001	114	101	88	Pass
49.4423	111	97	87	Pass
50.1844	104	92	88	Pass
50.9266	99	87	87	Pass
51.6687	95	79	83	Pass
52.4109	89	73	82	Pass
53.1530	84	68	80	Pass
53.8952	76	63	82	Pass
54.6373	72	58	80	Pass
55.3795	67	56	83	Pass
56.1217	61	53	86	Pass
56.8638	57	50	87	Pass
57.6060	55	47	85	Pass
58.3481	53	43	81	Pass
59.0903	49	37	75	Pass
59.8324	42	34	80	Pass
60.5746	42	32	76	Pass

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61.3167	40	31	77	Pass
62.0589	37	30	81	Pass
62.8011	32	29	90	Pass
63.5432	31	28	90	Pass
64.2854	30	25	83	Pass
65.0275	29	23	79	Pass
65.7697	29	20	68	Pass
66.5118	27	18	66	Pass
67.2540	26	16	61	Pass
67.9961	21	15	71	Pass
68.7383	19	15	78	Pass
69.4805	18	11	61	Pass
70.2226	16	10	62	Pass
70.9648	15	10	66	Pass
71.7069	15	10	66	Pass
72.4491	12	10	83	Pass
73.1912	10	8	80	Pass
73.9334	10	8	80	Pass
74.6755	10	8	80	Pass
75.4177	9	8	88	Pass
76.1599	9	8	88	Pass
76.9020	9	7	77	Pass
77.6442	8	7	87	Pass
78.3863	8	7	87	Pass
79.1285	7	7	100	Pass
79.8706	7	6	85	Pass
80.6128	7	6	85	Pass
81.3549	7	6	85	Pass
82.0971	7	6	85	Pass
82.8393	7	5	71	Pass
83.5814	6	4	66	Pass
84.3236	6	4	66	Pass
85.0657	6	4	66	Pass
85.8079	4	4	100	Pass
86.5500	4	4	100	Pass
87.2922	4	4	100	Pass
88.0343	4	4	100	Pass
88.7765	4	4	100	Pass
89.5187	4	4	100	Pass
90.2608	4	4	100	Pass
91.0030	4	4	100	Pass
91.7451	4	4	100	Pass
92.4873	4	4	100	Pass
93.2294	4	4	100	Pass
93.9716	4	4	100	Pass
94.7137	4	4	100	Pass
95.4559	4	4	100	Pass

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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.

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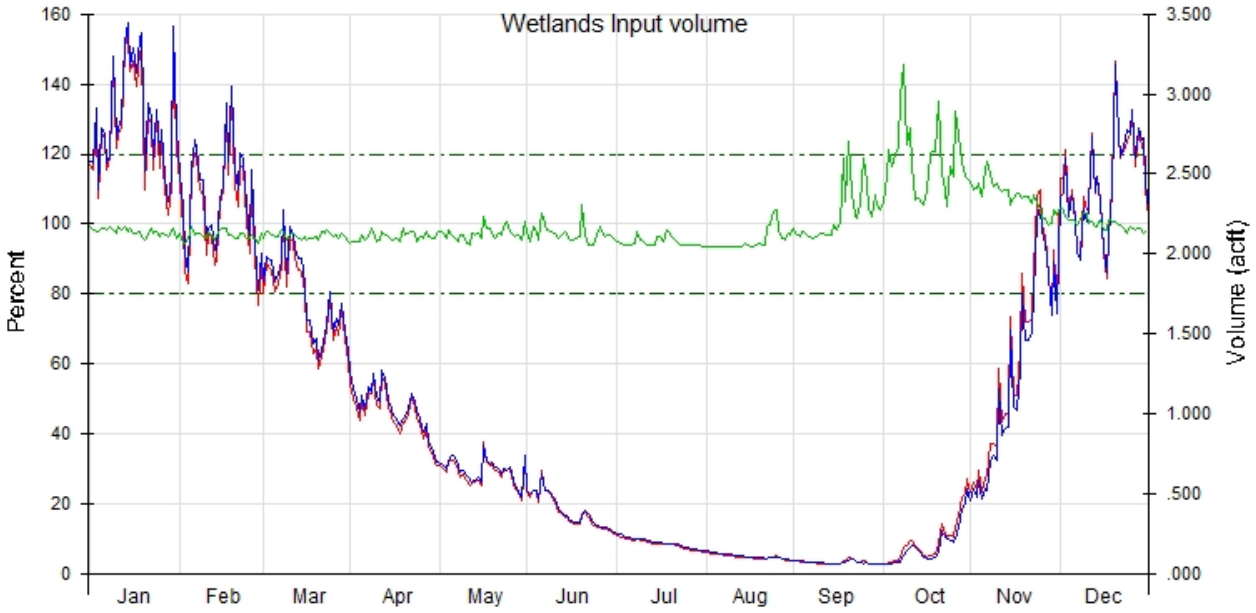
Wetland Input Volumes



- Percent - Predeveloped - Mitigated

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Wetlands Input Volume for POC 2
Average Annual Volume (acft)
Series 1: 502 POC 2 Predeveloped flow
Series 2: 802 POC 2 Mitigated flow

Month	Series 1	Series 2	Percent	Pass/Fail
Jan	88.1071	86.2552	97.9	Pass
Feb	67.7631	65.5827	96.8	Pass
Mar	54.5738	52.7595	96.7	Pass
Apr	31.2606	30.1183	96.3	Pass
May	20.0884	19.5539	97.3	Pass
Jun	11.9694	11.6579	97.4	Pass
Jul	6.1646	5.8536	95.0	Pass
Aug	3.4479	3.2776	95.1	Pass
Sep	2.1180	2.1724	102.6	Pass
Oct	5.1739	6.0632	117.2	Pass
Nov	36.5533	38.9519	106.6	Pass
Dec	75.3808	75.5580	100.2	Pass

Day	Predevel	Mitigated	Percent	Pass/Fail
Jan1	2.5793	2.5565	99.1	Pass
2	2.5646	2.5252	98.5	Pass
3	2.9150	2.8563	98.0	Pass
4	2.3967	2.3484	98.0	Pass
5	2.7856	2.7549	98.9	Pass
6	2.7557	2.7197	98.7	Pass
7	2.5696	2.5225	98.2	Pass
8	2.6180	2.5993	99.3	Pass
9	3.2331	3.1794	98.3	Pass
10	2.7283	2.6569	97.4	Pass
11	2.7861	2.7593	99.0	Pass
12	2.8470	2.7915	98.1	Pass
13	3.3301	3.2979	99.0	Pass
14	3.4471	3.3716	97.8	Pass

15	3.1705	3.1374	99.0	Pass
16	3.2887	3.2049	97.5	Pass
17	3.1290	3.0509	97.5	Pass
18	3.3528	3.2720	97.6	Pass
19	3.3855	3.2659	96.5	Pass
20	2.5173	2.4027	95.4	Pass
21	2.9450	2.8557	97.0	Pass
22	2.8462	2.8104	98.7	Pass
23	2.5991	2.5273	97.2	Pass
24	2.8993	2.8397	97.9	Pass
25	2.6296	2.5345	96.4	Pass
26	2.7745	2.6956	97.2	Pass
27	2.4779	2.4057	97.1	Pass
28	2.3261	2.2399	96.3	Pass
29	2.4838	2.4241	97.6	Pass
30	3.4209	3.3861	99.0	Pass
31	2.7736	2.6639	96.0	Pass
Feb1	2.5097	2.4383	97.2	Pass
2	2.2840	2.1580	94.5	Pass
3	2.0122	1.8999	94.4	Pass
4	1.8941	1.8133	95.7	Pass
5	2.5386	2.5200	99.3	Pass
6	2.7118	2.6320	97.1	Pass
7	2.6696	2.5946	97.2	Pass
8	2.4657	2.3991	97.3	Pass
9	2.4633	2.3744	96.4	Pass
10	2.0823	1.9958	95.8	Pass
11	2.1614	2.1168	97.9	Pass
12	2.1763	2.1064	96.8	Pass
13	2.0247	1.9338	95.5	Pass
14	2.0198	1.9598	97.0	Pass
15	2.3459	2.3028	98.2	Pass
16	2.4245	2.3986	98.9	Pass
17	2.9396	2.8981	98.6	Pass
18	2.5781	2.4973	96.9	Pass
19	3.0501	2.9612	97.1	Pass
20	2.5352	2.4344	96.0	Pass
21	2.4002	2.3006	95.8	Pass
22	2.6296	2.5563	97.2	Pass
23	2.6024	2.5340	97.4	Pass
24	2.3080	2.2110	95.8	Pass
25	2.0925	2.0052	95.8	Pass
26	2.5268	2.4460	96.8	Pass
27	2.0674	1.9826	95.9	Pass
28	1.7764	1.6808	94.6	Pass
29	2.0006	1.9457	97.3	Pass
Mar1	1.8294	1.7544	95.9	Pass
2	1.9800	1.9402	98.0	Pass
3	1.9648	1.9115	97.3	Pass
4	1.9616	1.9028	97.0	Pass
5	1.8222	1.7598	96.6	Pass
6	1.8831	1.8138	96.3	Pass
7	1.9526	1.9222	98.4	Pass
8	2.2719	2.2173	97.6	Pass
9	1.8771	1.7944	95.6	Pass
10	2.1657	2.0950	96.7	Pass
11	2.1339	2.0786	97.4	Pass
12	2.0382	1.9717	96.7	Pass

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13	1.9770	1.8968	95.9	Pass
14	1.9740	1.8869	95.6	Pass
15	1.8197	1.7565	96.5	Pass
16	1.5885	1.5155	95.4	Pass
17	1.5819	1.5175	95.9	Pass
18	1.4444	1.3822	95.7	Pass
19	1.4660	1.4095	96.2	Pass
20	1.3383	1.2783	95.5	Pass
21	1.3932	1.3600	97.6	Pass
22	1.4990	1.4612	97.5	Pass
23	1.5580	1.5284	98.1	Pass
24	1.7656	1.7198	97.4	Pass
25	1.5147	1.4605	96.4	Pass
26	1.5973	1.5456	96.8	Pass
27	1.5554	1.4897	95.8	Pass
28	1.6943	1.6467	97.2	Pass
29	1.5220	1.4682	96.5	Pass
30	1.4028	1.3294	94.8	Pass
31	1.2608	1.1915	94.5	Pass
Apr1	1.1600	1.0988	94.7	Pass
2	1.0985	1.0418	94.8	Pass
3	1.0121	0.9632	95.2	Pass
4	1.1150	1.0816	97.0	Pass
5	1.0337	0.9855	95.3	Pass
6	1.1634	1.1237	96.6	Pass
7	1.1391	1.1266	98.9	Pass
8	1.2479	1.2195	97.7	Pass
9	1.1070	1.0536	95.2	Pass
10	1.0755	1.0280	95.6	Pass
11	1.2714	1.2460	98.0	Pass
12	1.2343	1.1940	96.7	Pass
13	1.0844	1.0438	96.3	Pass
14	1.0320	0.9865	95.6	Pass
15	0.9888	0.9456	95.6	Pass
16	0.9654	0.9280	96.1	Pass
17	0.9242	0.8770	94.9	Pass
18	0.9653	0.9540	98.8	Pass
19	0.9771	0.9461	96.8	Pass
20	1.0328	1.0032	97.1	Pass
21	1.1316	1.1081	97.9	Pass
22	1.0770	1.0478	97.3	Pass
23	1.0238	0.9716	94.9	Pass
24	0.9703	0.9336	96.2	Pass
25	0.8838	0.8461	95.7	Pass
26	0.9378	0.9184	97.9	Pass
27	0.8220	0.7918	96.3	Pass
28	0.7931	0.7609	95.9	Pass
29	0.7330	0.7026	95.8	Pass
30	0.6996	0.6822	97.5	Pass
May1	0.6911	0.6754	97.7	Pass
2	0.6765	0.6589	97.4	Pass
3	0.6595	0.6338	96.1	Pass
4	0.7058	0.6948	98.4	Pass
5	0.7383	0.7139	96.7	Pass
6	0.7261	0.6957	95.8	Pass
7	0.6763	0.6430	95.1	Pass
8	0.6305	0.6093	96.6	Pass
9	0.6431	0.6244	97.1	Pass

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10	0.6185	0.5846	94.5	Pass
11	0.5897	0.5532	93.8	Pass
12	0.5753	0.5588	97.1	Pass
13	0.5857	0.5681	97.0	Pass
14	0.6007	0.5850	97.4	Pass
15	0.5756	0.5507	95.7	Pass
16	0.8044	0.8199	101.9	Pass
17	0.7049	0.6967	98.8	Pass
18	0.6847	0.6767	98.8	Pass
19	0.7030	0.6832	97.2	Pass
20	0.6722	0.6454	96.0	Pass
21	0.6581	0.6406	97.4	Pass
22	0.6237	0.6030	96.7	Pass
23	0.6520	0.6447	98.9	Pass
24	0.6427	0.6462	100.6	Pass
25	0.6677	0.6531	97.8	Pass
26	0.5930	0.5734	96.7	Pass
27	0.5543	0.5345	96.4	Pass
28	0.5232	0.5075	97.0	Pass
29	0.4751	0.4533	95.4	Pass
30	0.7371	0.7437	100.9	Pass
31	0.5187	0.5078	97.9	Pass
Jun1	0.5035	0.4789	95.1	Pass
2	0.5256	0.5209	99.1	Pass
3	0.5199	0.5082	97.7	Pass
4	0.4725	0.4501	95.3	Pass
5	0.6302	0.6483	102.9	Pass
6	0.5201	0.5203	100.0	Pass
7	0.5254	0.5173	98.5	Pass
8	0.5056	0.4948	97.9	Pass
9	0.4792	0.4653	97.1	Pass
10	0.4437	0.4293	96.8	Pass
11	0.4048	0.3881	95.9	Pass
12	0.3809	0.3698	97.1	Pass
13	0.3654	0.3567	97.6	Pass
14	0.3511	0.3383	96.3	Pass
15	0.3369	0.3210	95.3	Pass
16	0.3231	0.3084	95.4	Pass
17	0.3262	0.3135	96.1	Pass
18	0.3248	0.3135	96.5	Pass
19	0.3524	0.3708	105.2	Pass
20	0.3914	0.3798	97.1	Pass
21	0.3783	0.3553	93.9	Pass
22	0.3479	0.3266	93.9	Pass
23	0.3200	0.3015	94.2	Pass
24	0.3027	0.2927	96.7	Pass
25	0.2916	0.2889	99.1	Pass
26	0.2905	0.2838	97.7	Pass
27	0.2859	0.2757	96.4	Pass
28	0.2802	0.2718	97.0	Pass
29	0.2704	0.2604	96.3	Pass
30	0.2625	0.2521	96.0	Pass
Jul1	0.2532	0.2403	94.9	Pass
2	0.2452	0.2319	94.6	Pass
3	0.2382	0.2245	94.2	Pass
4	0.2324	0.2187	94.1	Pass
5	0.2274	0.2137	94.0	Pass
6	0.2229	0.2093	93.9	Pass

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7	0.2195	0.2079	94.7	Pass
8	0.2216	0.2172	98.0	Pass
9	0.2211	0.2112	95.5	Pass
10	0.2169	0.2056	94.7	Pass
11	0.2111	0.1989	94.2	Pass
12	0.2055	0.1931	94.0	Pass
13	0.2003	0.1881	93.9	Pass
14	0.1959	0.1844	94.1	Pass
15	0.1955	0.1888	96.6	Pass
16	0.1946	0.1871	96.1	Pass
17	0.1911	0.1814	95.0	Pass
18	0.1902	0.1869	98.3	Pass
19	0.1895	0.1856	97.9	Pass
20	0.1917	0.1851	96.6	Pass
21	0.1889	0.1800	95.3	Pass
22	0.1820	0.1717	94.3	Pass
23	0.1746	0.1641	94.0	Pass
24	0.1683	0.1580	93.9	Pass
25	0.1632	0.1534	94.0	Pass
26	0.1589	0.1491	93.8	Pass
27	0.1551	0.1455	93.8	Pass
28	0.1520	0.1428	94.0	Pass
29	0.1492	0.1401	93.9	Pass
30	0.1462	0.1370	93.7	Pass
31	0.1431	0.1340	93.7	Pass
Aug1	0.1401	0.1312	93.6	Pass
2	0.1373	0.1286	93.6	Pass
3	0.1345	0.1259	93.6	Pass
4	0.1318	0.1233	93.6	Pass
5	0.1291	0.1208	93.6	Pass
6	0.1271	0.1190	93.7	Pass
7	0.1252	0.1173	93.6	Pass
8	0.1227	0.1147	93.5	Pass
9	0.1199	0.1121	93.5	Pass
10	0.1173	0.1096	93.5	Pass
11	0.1147	0.1072	93.5	Pass
12	0.1123	0.1050	93.5	Pass
13	0.1099	0.1027	93.5	Pass
14	0.1081	0.1020	94.3	Pass
15	0.1070	0.1007	94.1	Pass
16	0.1047	0.0981	93.7	Pass
17	0.1021	0.0956	93.6	Pass
18	0.1000	0.0940	94.0	Pass
19	0.0999	0.0943	94.4	Pass
20	0.0979	0.0919	93.9	Pass
21	0.0954	0.0895	93.8	Pass
22	0.0957	0.0951	99.4	Pass
23	0.0980	0.0979	99.9	Pass
24	0.1022	0.1059	103.6	Pass
25	0.1071	0.1113	103.9	Pass
26	0.1035	0.1018	98.3	Pass
27	0.0971	0.0933	96.1	Pass
28	0.0913	0.0873	95.6	Pass
29	0.0880	0.0855	97.2	Pass
30	0.0848	0.0821	96.7	Pass
31	0.0830	0.0819	98.7	Pass
Sep1	0.0813	0.0786	96.7	Pass
2	0.0787	0.0757	96.2	Pass

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3	0.0772	0.0756	98.0	Pass
4	0.0758	0.0737	97.2	Pass
5	0.0737	0.0710	96.4	Pass
6	0.0715	0.0687	96.1	Pass
7	0.0696	0.0668	96.0	Pass
8	0.0682	0.0657	96.3	Pass
9	0.0674	0.0655	97.2	Pass
10	0.0668	0.0650	97.4	Pass
11	0.0653	0.0631	96.6	Pass
12	0.0639	0.0618	96.8	Pass
13	0.0628	0.0609	97.0	Pass
14	0.0638	0.0635	99.5	Pass
15	0.0639	0.0628	98.3	Pass
16	0.0628	0.0631	100.4	Pass
17	0.0723	0.0861	119.0	Pass
18	0.0769	0.0818	106.5	Pass
19	0.0833	0.1030	123.6	Fail
20	0.0890	0.0966	108.6	Pass
21	0.0820	0.0841	102.6	Pass
22	0.0742	0.0755	101.8	Pass
23	0.0682	0.0722	105.9	Pass
24	0.0664	0.0788	118.8	Pass
25	0.0669	0.0751	112.3	Pass
26	0.0635	0.0663	104.4	Pass
27	0.0599	0.0611	102.0	Pass
28	0.0598	0.0647	108.3	Pass
29	0.0600	0.0634	105.6	Pass
30	0.0593	0.0616	103.9	Pass
Oct1	0.0579	0.0613	105.8	Pass
2	0.0568	0.0646	113.7	Pass
3	0.0571	0.0692	121.3	Fail
4	0.0650	0.0757	116.5	Pass
5	0.0673	0.0805	119.7	Pass
6	0.0674	0.0825	122.4	Fail
7	0.0737	0.1005	136.4	Fail
8	0.1126	0.1637	145.4	Fail
9	0.1410	0.1727	122.5	Fail
10	0.1627	0.2076	127.6	Fail
11	0.1735	0.2026	116.7	Pass
12	0.1642	0.1756	106.9	Pass
13	0.1416	0.1523	107.5	Pass
14	0.1240	0.1313	105.9	Pass
15	0.1059	0.1114	105.2	Pass
16	0.0933	0.1025	109.9	Pass
17	0.0946	0.1132	119.6	Pass
18	0.0943	0.1139	120.9	Fail
19	0.1037	0.1253	120.8	Fail
20	0.1366	0.1845	135.1	Fail
21	0.2699	0.3074	113.9	Pass
22	0.2505	0.2835	113.2	Pass
23	0.2185	0.2299	105.2	Pass
24	0.2090	0.2432	116.3	Pass
25	0.1982	0.2255	113.8	Pass
26	0.2197	0.2904	132.2	Fail
27	0.2870	0.3603	125.5	Fail
28	0.4046	0.4774	118.0	Pass
29	0.4373	0.4975	113.8	Pass
30	0.5266	0.5953	113.0	Pass

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31	0.4557	0.5117	112.3	Pass
Nov1	0.5267	0.5770	109.5	Pass
2	0.4773	0.5256	110.1	Pass
3	0.5804	0.6489	111.8	Pass
4	0.4724	0.5083	107.6	Pass
5	0.5269	0.6073	115.3	Pass
6	0.5210	0.6146	118.0	Pass
7	0.7138	0.8174	114.5	Pass
8	0.7354	0.8158	110.9	Pass
9	0.7085	0.7901	111.5	Pass
10	1.1620	1.2811	110.2	Pass
11	0.8673	0.9475	109.2	Pass
12	0.9077	0.9964	109.8	Pass
13	0.9169	1.0048	109.6	Pass
14	1.5256	1.6119	105.7	Pass
15	1.0386	1.1174	107.6	Pass
16	1.0216	1.1135	109.0	Pass
17	1.2870	1.3964	108.5	Pass
18	1.7479	1.8738	107.2	Pass
19	1.4619	1.5738	107.7	Pass
20	1.4603	1.5754	107.9	Pass
21	1.5120	1.6004	105.8	Pass
22	1.7410	1.8860	108.3	Pass
23	2.2277	2.3555	105.7	Pass
24	2.2993	2.3997	104.4	Pass
25	2.1463	2.1817	101.6	Pass
26	2.0705	2.1089	101.9	Pass
27	1.8711	1.8677	99.8	Pass
28	1.6149	1.6169	100.1	Pass
29	1.9486	2.0245	103.9	Pass
30	1.6322	1.6736	102.5	Pass
Dec1	2.3584	2.4697	104.7	Pass
2	2.3748	2.4699	104.0	Pass
3	2.6041	2.6533	101.9	Pass
4	2.2293	2.2548	101.1	Pass
5	2.3714	2.4001	101.2	Pass
6	2.2114	2.2300	100.8	Pass
7	2.0092	2.0026	99.7	Pass
8	1.9650	1.9862	101.1	Pass
9	2.2867	2.3551	103.0	Pass
10	2.2043	2.2712	103.0	Pass
11	2.2988	2.3082	100.4	Pass
12	2.7380	2.7560	100.7	Pass
13	2.3935	2.3748	99.2	Pass
14	2.4854	2.4618	99.1	Pass
15	2.3287	2.3528	101.0	Pass
16	2.0340	2.0029	98.5	Pass
17	1.8811	1.8494	98.3	Pass
18	2.1098	2.1309	101.0	Pass
19	2.3928	2.4095	100.7	Pass
20	3.1792	3.2038	100.8	Pass
21	2.7407	2.7331	99.7	Pass
22	2.6073	2.6039	99.9	Pass
23	2.6705	2.6377	98.8	Pass
24	2.7806	2.7077	97.4	Pass
25	2.7595	2.7446	99.5	Pass
26	2.9001	2.8695	98.9	Pass
27	2.5971	2.5490	98.1	Pass

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28	2.7915	2.7619	98.9	Pass
29	2.7185	2.6756	98.4	Pass
30	2.7286	2.6564	97.4	Pass
31	2.3015	2.2600	98.2	Pass

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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.

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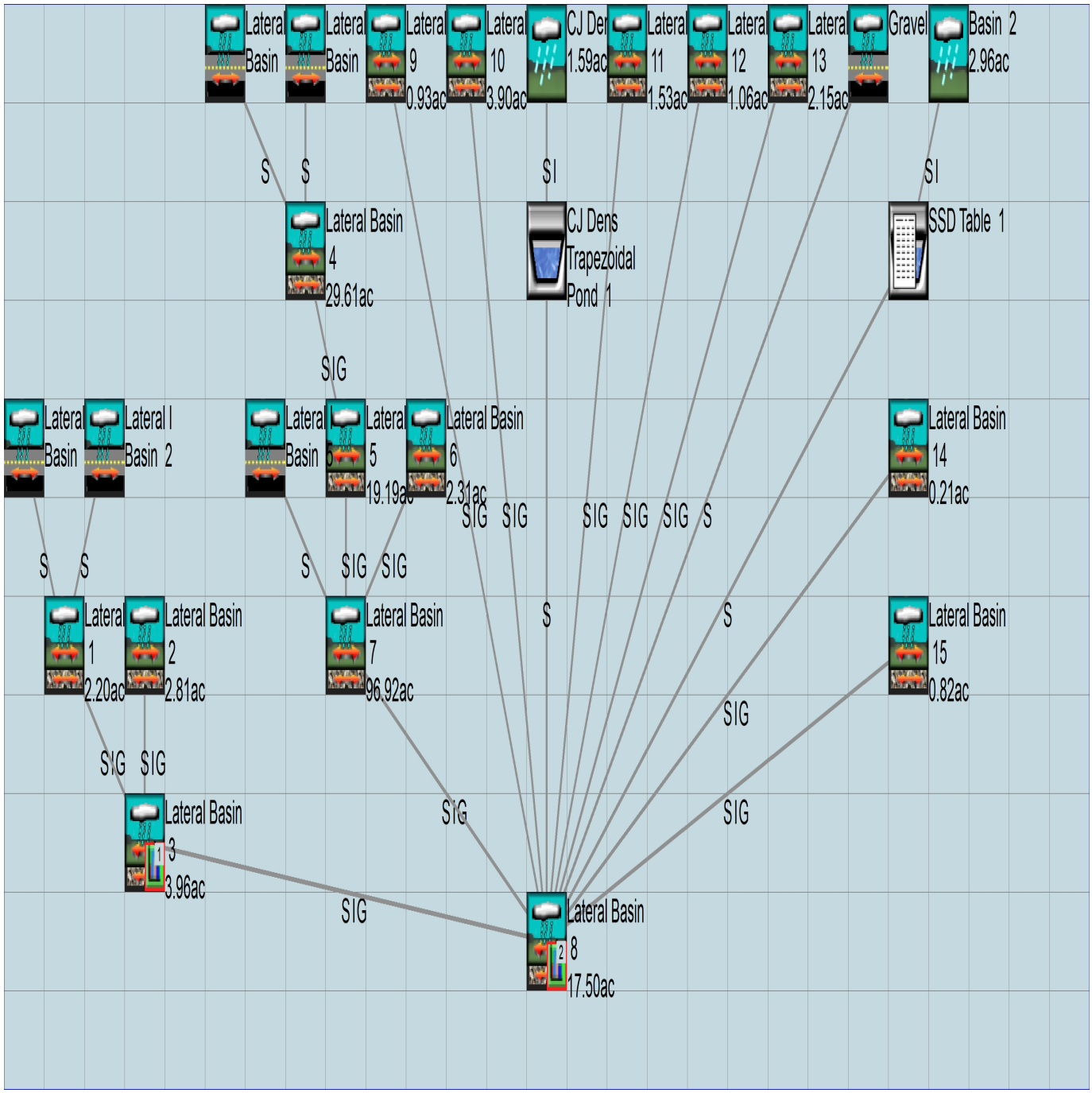
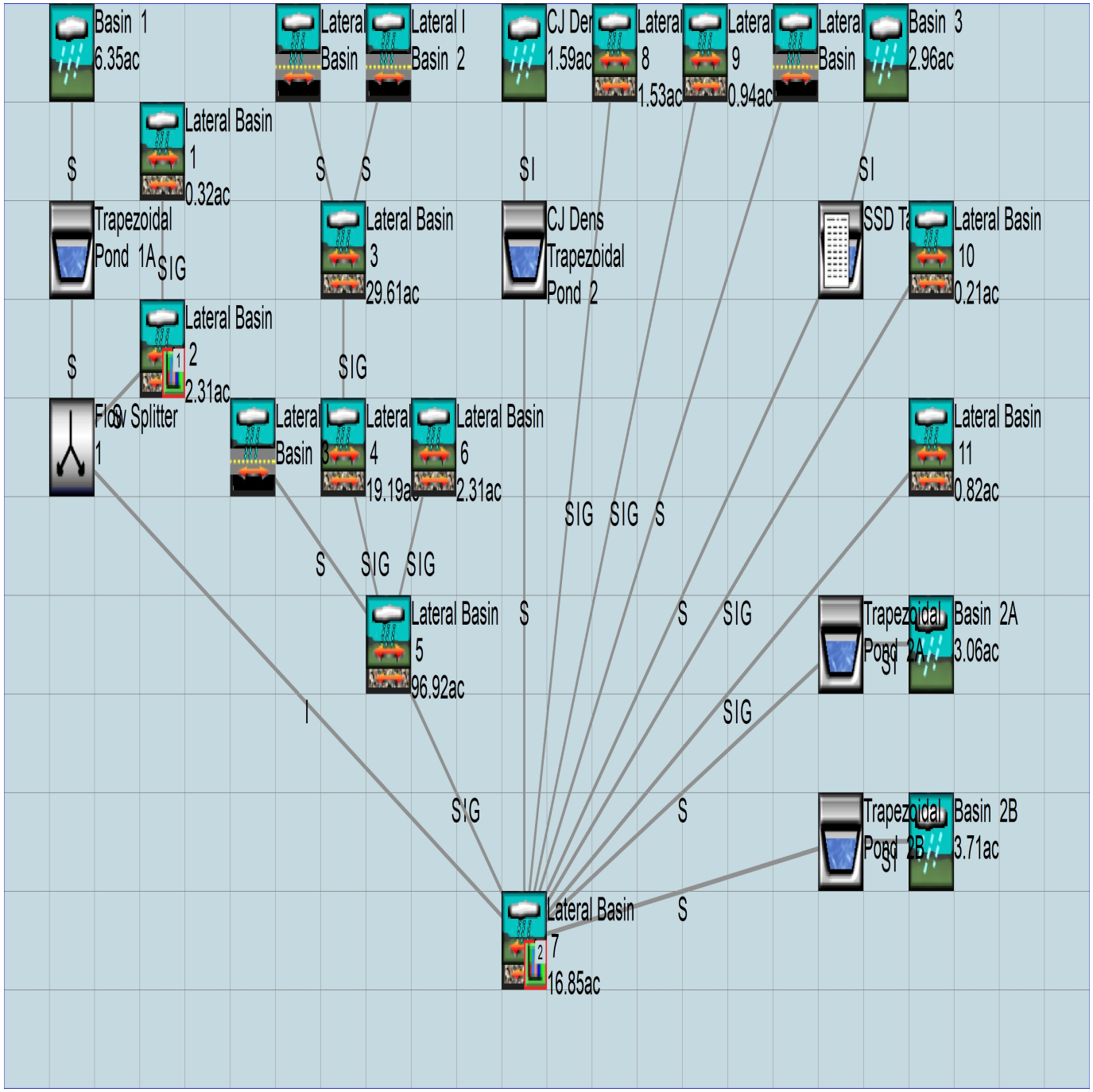
Appendix

Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   9095 Wetland A.wdm
MESSU       25   Pre9095 Wetland A.MES
            27   Pre9095 Wetland A.L61
            28   Pre9095 Wetland A.L62
            30   POC9095 Wetland A1.dat
            31   POC9095 Wetland A2.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      IMPLND      16
      IMPLND      17
      PERLND      48
      IMPLND      21
      IMPLND      22
      IMPLND      23
      PERLND      55
      PERLND      58
      PERLND      59
      PERLND      31
      IMPLND       1
      IMPLND       4
      IMPLND       5
      IMPLND       8
      IMPLND      11
      IMPLND      14
      PERLND      60
      PERLND      61
      PERLND      62
      IMPLND      24
      PERLND      63
      PERLND      64
      RCHRES       1
      RCHRES       2
      PERLND      47
      PERLND      53
      PERLND      54
      PERLND      49
      PERLND      56
      PERLND      57
      COPY       501
      COPY         1
      COPY       502
      COPY         2
      DISPLY       1
      DISPLY       2
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title---------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Lateral Basin  3           MAX                   1    2   30    9
    2        Lateral Basin  8           MAX                   1    2   31    9
  END DISPLY-INFO1
END DISPLY
COPY
```

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```
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  502         1    1
    2         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                        in  out             ***
   48     SG4, Forest, Steep      1    1    1    1   27    0
   55     SG4, Forest, Steep      1    1    1    1   27    0
   58     SG4, Forest, Steep      1    1    1    1   27    0
   59     SG4, Forest, Mod        1    1    1    1   27    0
   31     SG4, Field, Flat        1    1    1    1   27    0
   60     SG4, Lawn, Flat         1    1    1    1   27    0
   61     SG4, Forest, Steep      1    1    1    1   27    0
   62     SG4, Field, Flat        1    1    1    1   27    0
   63     SG4, Lawn, Steep        1    1    1    1   27    0
   64     SG4, Field, Flat        1    1    1    1   27    0
   47     SG4, Field, Flat        1    1    1    1   27    0
   53     SG4, Field, Flat        1    1    1    1   27    0
   54     SG4, Forest, Steep      1    1    1    1   27    0
   49     SG4, Forest, Mod        1    1    1    1   27    0
   56     SG4, Field, Flat        1    1    1    1   27    0
   57     SG4, Forest, Mod        1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   48         0    0    1    0    0    0    0    0    0    0    0    0
   55         0    0    1    0    0    0    0    0    0    0    0    0
   58         0    0    1    0    0    0    0    0    0    0    0    0
   59         0    0    1    0    0    0    0    0    0    0    0    0
   31         0    0    1    0    0    0    0    0    0    0    0    0
   60         0    0    1    0    0    0    0    0    0    0    0    0
   61         0    0    1    0    0    0    0    0    0    0    0    0
   62         0    0    1    0    0    0    0    0    0    0    0    0
   63         0    0    1    0    0    0    0    0    0    0    0    0
   64         0    0    1    0    0    0    0    0    0    0    0    0
   47         0    0    1    0    0    0    0    0    0    0    0    0
   53         0    0    1    0    0    0    0    0    0    0    0    0
   54         0    0    1    0    0    0    0    0    0    0    0    0
   49         0    0    1    0    0    0    0    0    0    0    0    0
   56         0    0    1    0    0    0    0    0    0    0    0    0
   57         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   48         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   55         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   58         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   59         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   31         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   60         0    0    4    0    0    0    0    0    0    0    0    0    1    9
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```
 61          0    0    4    0    0    0    0    0    0    0    0    0    1    9
 62          0    0    4    0    0    0    0    0    0    0    0    0    1    9
 63          0    0    4    0    0    0    0    0    0    0    0    0    1    9
 64          0    0    4    0    0    0    0    0    0    0    0    0    1    9
 47          0    0    4    0    0    0    0    0    0    0    0    0    1    9
 53          0    0    4    0    0    0    0    0    0    0    0    0    1    9
 54          0    0    4    0    0    0    0    0    0    0    0    0    1    9
 49          0    0    4    0    0    0    0    0    0    0    0    0    1    9
 56          0    0    4    0    0    0    0    0    0    0    0    0    1    9
 57          0    0    4    0    0    0    0    0    0    0    0    0    1    9
END PRINT-INFO

PWAT-PARM1
  <PLS >  PWATER variable monthly parameter value flags  ***
  # -   # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
 48          0    0    0    0    0    0    0    0    0    0    0
 55          0    0    0    0    0    0    0    0    0    0    0
 58          0    0    0    0    0    0    0    0    0    0    0
 59          0    0    0    0    0    0    0    0    0    0    0
 31          0    0    0    0    0    0    0    0    0    0    0
 60          0    0    0    0    0    0    0    0    0    0    0
 61          0    0    0    0    0    0    0    0    0    0    0
 62          0    0    0    0    0    0    0    0    0    0    0
 63          0    0    0    0    0    0    0    0    0    0    0
 64          0    0    0    0    0    0    0    0    0    0    0
 47          0    0    0    0    0    0    0    0    0    0    0
 53          0    0    0    0    0    0    0    0    0    0    0
 54          0    0    0    0    0    0    0    0    0    0    0
 49          0    0    0    0    0    0    0    0    0    0    0
 56          0    0    0    0    0    0    0    0    0    0    0
 57          0    0    0    0    0    0    0    0    0    0    0
END PWAT-PARM1

PWAT-PARM2
  <PLS >      PWATER input info: Part 2          ***
  # -   # ***FOREST       LZSN     INFILT      LSUR     SLSUR      KVARY      AGWRC
 48             0          6       0.04       400      0.15          0       0.96
 55             0          6       0.04       400      0.15          0       0.96
 58             0          6       0.04       400      0.15          0       0.96
 59             0          6       0.04       400       0.1          0       0.96
 31             0          6       0.03       400      0.05          0       0.96
 60             0          6       0.02       400      0.05          0       0.96
 61             0          6       0.04       400      0.15          0       0.96
 62             0          6       0.03       400      0.05          0       0.96
 63             0          6       0.02       400      0.15          0       0.96
 64             0          6       0.03       400      0.05          0       0.96
 47             0          6       0.03       400      0.05          0       0.96
 53             0          6       0.03       400      0.05          0       0.96
 54             0          6       0.04       400      0.15          0       0.96
 49             0          6       0.04       400       0.1          0       0.96
 56             0          6       0.03       400      0.05          0       0.96
 57             0          6       0.04       400       0.1          0       0.96
END PWAT-PARM2

PWAT-PARM3
  <PLS >      PWATER input info: Part 3          ***
  # -   # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
 48             0         0         3         2         0         0         0
 55             0         0         3         2         0         0         0
 58             0         0         3         2         0         0         0
 59             0         0         3         2         0         0         0
 31             0         0         3         2         0         0         0
 60             0         0         3         2         0         0         0
 61             0         0         3         2         0         0         0
 62             0         0         3         2         0         0         0
 63             0         0         3         2         0         0         0
 64             0         0         3         2         0         0         0
 47             0         0         3         2         0         0         0
 53             0         0         3         2         0         0         0
 54             0         0         3         2         0         0         0
```

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```
   49              0         0         3         2         0         0         0
   56              0         0         3         2         0         0         0
   57              0         0         3         2         0         0         0
  END PWAT-PARM3
  PWAT-PARM4
    <PLS >     PWATER input info: Part 4                                    ***
    # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
   48            0.2       0.4      0.35         2       0.4       0.7
   55            0.2       0.4      0.35         2       0.4       0.7
   58            0.2       0.4      0.35         2       0.4       0.7
   59            0.2       0.4      0.35         2       0.4       0.7
   31           0.15       0.4       0.3         2       0.4       0.4
   60            0.1       0.2      0.25         2       0.4      0.25
   61            0.2       0.4      0.35         2       0.4       0.7
   62           0.15       0.4       0.3         2       0.4       0.4
   63            0.1       0.2      0.25         2       0.4      0.25
   64           0.15       0.4       0.3         2       0.4       0.4
   47           0.15       0.4       0.3         2       0.4       0.4
   53           0.15       0.4       0.3         2       0.4       0.4
   54            0.2       0.4      0.35         2       0.4       0.7
   49            0.2       0.4      0.35         2       0.4       0.7
   56           0.15       0.4       0.3         2       0.4       0.4
   57            0.2       0.4      0.35         2       0.4       0.7
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS       IFWS       LZS       AGWS       GWVS
   48              0         0         0          0       2.5          1          0
   55              0         0         0          0       2.5          1          0
   58              0         0         0          0       2.5          1          0
   59              0         0         0          0       2.5          1          0
   31              0         0         0          0       2.5          1          0
   60              0         0         0          0       2.5          1          0
   61              0         0         0          0       2.5          1          0
   62              0         0         0          0       2.5          1          0
   63              0         0         0          0       2.5          1          0
   64              0         0         0          0       2.5          1          0
   47              0         0         0          0       2.5          1          0
   53              0         0         0          0       2.5          1          0
   54              0         0         0          0       2.5          1          0
   49              0         0         0          0       2.5          1          0
   56              0         0         0          0       2.5          1          0
   57              0         0         0          0       2.5          1          0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name------->   Unit-systems   Printer ***
    # -  #                     User  t-series Engl Metr ***
                                      in  out             ***
   16      ROOF TOPS/FLAT         1    1    1   27    0
   17      ROADS/FLAT             1    1    1   27    0
   21      ROADS/FLAT             1    1    1   27    0
   22      ROOF TOPS/FLAT         1    1    1   27    0
   23      ROADS/STEEP            1    1    1   27    0
    1      ROADS/FLAT             1    1    1   27    0
    4      ROOF TOPS/FLAT         1    1    1   27    0
    5      DRIVEWAYS/FLAT         1    1    1   27    0
    8      SIDEWALKS/FLAT         1    1    1   27    0
   11      PARKING/FLAT           1    1    1   27    0
   14      POND                   1    1    1   27    0
   24      ROADS/FLAT             1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
```

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```
  <PLS > ************ Active Sections ******************************
  # -   # ATMP SNOW IWAT  SLD  IWG IQAL    ***
 16          0    0    1    0    0    0
 17          0    0    1    0    0    0
 21          0    0    1    0    0    0
 22          0    0    1    0    0    0
 23          0    0    1    0    0    0
  1          0    0    1    0    0    0
  4          0    0    1    0    0    0
  5          0    0    1    0    0    0
  8          0    0    1    0    0    0
 11          0    0    1    0    0    0
 14          0    0    1    0    0    0
 24          0    0    1    0    0    0
END ACTIVITY

PRINT-INFO
  <ILS > ******** Print-flags ******** PIVL  PYR
  # -   # ATMP SNOW IWAT  SLD  IWG IQAL     *********
 16          0    0    4    0    0    0    1    9
 17          0    0    4    0    0    0    1    9
 21          0    0    4    0    0    0    1    9
 22          0    0    4    0    0    0    1    9
 23          0    0    4    0    0    0    1    9
  1          0    0    4    0    0    0    1    9
  4          0    0    4    0    0    0    1    9
  5          0    0    4    0    0    0    1    9
  8          0    0    4    0    0    0    1    9
 11          0    0    4    0    0    0    1    9
 14          0    0    4    0    0    0    1    9
 24          0    0    4    0    0    0    1    9
END PRINT-INFO

IWAT-PARM1
  <PLS >  IWATER variable monthly parameter value flags  ***
  # -   # CSNO RTOP  VRS  VNN RTLI     ***
 16          0    0    0    0    0
 17          0    0    0    0    0
 21          0    0    0    0    0
 22          0    0    0    0    0
 23          0    0    0    0    0
  1          0    0    0    0    0
  4          0    0    0    0    0
  5          0    0    0    0    0
  8          0    0    0    0    0
 11          0    0    0    0    0
 14          0    0    0    0    0
 24          0    0    0    0    0
END IWAT-PARM1

IWAT-PARM2
  <PLS >       IWATER input info: Part 2         ***
  # -   # ***  LSUR     SLSUR      NSUR     RETSC
 16            400      0.01       0.1       0.1
 17            400      0.01       0.1       0.1
 21            400      0.01       0.1       0.1
 22            400      0.01       0.1       0.1
 23            400       0.1       0.1      0.05
  1            400      0.01       0.1       0.1
  4            400      0.01       0.1       0.1
  5            400      0.01       0.1       0.1
  8            400      0.01       0.1       0.1
 11            400      0.01       0.1       0.1
 14            400      0.01       0.1       0.1
 24            400      0.01       0.1       0.1
END IWAT-PARM2

IWAT-PARM3
  <PLS >       IWATER input info: Part 3         ***
  # -   # ***PETMAX    PETMIN
```

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```
   16              0         0
   17              0         0
   21              0         0
   22              0         0
   23              0         0
    1              0         0
    4              0         0
    5              0         0
    8              0         0
   11              0         0
   14              0         0
   24              0         0
  END IWAT-PARM3

  IWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
    # -  # ***  RETS      SURS
   16              0         0
   17              0         0
   21              0         0
   22              0         0
   23              0         0
    1              0         0
    4              0         0
    5              0         0
    8              0         0
   11              0         0
   14              0         0
   24              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                <--Area-->     <-Target->   MBLK    ***
<Name>   #                <-factor->     <Name>   #   Tbl#    ***
Lateral I Basin  1***
IMPLND  16                    0.3831     PERLND  47     50
Lateral Basin  1***
PERLND  47                    0.5559     PERLND  49     30
PERLND  47                    0.5559     PERLND  49     34
PERLND  47                    0.5559     PERLND  49     38
Lateral Basin  10***
PERLND  59                    0.2228     PERLND  57     30
PERLND  59                    0.2228     PERLND  57     34
PERLND  59                    0.2228     PERLND  57     38
CJ Dens***
PERLND  31                     0.522     RCHRES   1      2
PERLND  31                     0.522     RCHRES   1      3
IMPLND   1                     0.38     RCHRES   1      5
IMPLND   4                    0.413     RCHRES   1      5
IMPLND   5                    0.096     RCHRES   1      5
IMPLND   8                    0.083     RCHRES   1      5
IMPLND  11                    0.034     RCHRES   1      5
IMPLND  14                    0.057     RCHRES   1      5
Lateral I Basin  2***
IMPLND  17                    0.0454     PERLND  47     50
Lateral Basin  2***
PERLND  48                    0.7098     PERLND  49     30
PERLND  48                    0.7098     PERLND  49     34
PERLND  48                    0.7098     PERLND  49     38
Basin  2***
PERLND  31                     1.119     RCHRES   2      2
PERLND  31                     1.119     RCHRES   2      3
IMPLND   1                     0.992     RCHRES   2      5
IMPLND   4                     0.372     RCHRES   2      5
IMPLND   5                     0.197     RCHRES   2      5
IMPLND   8                     0.283     RCHRES   2      5
Lateral I Basin  3***
IMPLND  21                    0.0459     PERLND  53     50
```

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```
Lateral I Basin  4***
IMPLND  22                    0.0165     PERLND  53     50
Lateral Basin  4***
PERLND  53                     1.543     PERLND  54     30
PERLND  53                     1.543     PERLND  54     34
PERLND  53                     1.543     PERLND  54     38
Lateral Basin  5***
PERLND  54                     0.198     PERLND  56     30
PERLND  54                     0.198     PERLND  56     34
PERLND  54                     0.198     PERLND  56     38
Lateral I Basin  5***
IMPLND  23                    0.0025     PERLND  56     50
Lateral Basin  6***
PERLND  55                    0.0238     PERLND  56     30
PERLND  55                    0.0238     PERLND  56     34
PERLND  55                    0.0238     PERLND  56     38
Gravel***
IMPLND  24                    0.0051     PERLND  57     50
Lateral Basin  7***
PERLND  56                    5.5373     PERLND  57     30
PERLND  56                    5.5373     PERLND  57     34
PERLND  56                    5.5373     PERLND  57     38
Lateral Basin  9***
PERLND  58                    0.0531     PERLND  57     30
PERLND  58                    0.0531     PERLND  57     34
PERLND  58                    0.0531     PERLND  57     38
Lateral Basin  11***
PERLND  60                    0.0874     PERLND  57     30
PERLND  60                    0.0874     PERLND  57     34
PERLND  60                    0.0874     PERLND  57     38
Lateral Basin  12***
PERLND  61                    0.0606     PERLND  57     30
PERLND  61                    0.0606     PERLND  57     34
PERLND  61                    0.0606     PERLND  57     38
Lateral Basin  13***
PERLND  62                    0.1228     PERLND  57     30
PERLND  62                    0.1228     PERLND  57     34
PERLND  62                    0.1228     PERLND  57     38
Lateral Basin  14***
PERLND  63                     0.012     PERLND  57     30
PERLND  63                     0.012     PERLND  57     34
PERLND  63                     0.012     PERLND  57     38
Lateral Basin  15***
PERLND  64                    0.0468     PERLND  57     30
PERLND  64                    0.0468     PERLND  57     34
PERLND  64                    0.0468     PERLND  57     38
Lateral Basin  3***
PERLND  49                    0.2264     PERLND  57     30
PERLND  49                    0.2264     PERLND  57     34
PERLND  49                    0.2264     PERLND  57     38
Lateral Basin  3***
PERLND  49                     3.963     COPY   501     12
Lateral Basin  8***
PERLND  57                    17.503     COPY   502     12
PERLND  57                    17.503     COPY   502     13
PERLND  57                    17.503     COPY   502     14

******Routing******
RCHRES   1                     .0571     PERLND  57     60
RCHRES   2                     .0571     PERLND  57     60
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1
COPY   502 OUTPUT MEAN   1 1   48.4        DISPLY   2     INPUT  TIMSER 1
```

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```
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<-----------------><---> User T-series  Engl Metr LKFG            ***
                                        in  out                             ***
    1     CJ Dens Trapezoi-030    1    1    1    1   28    0    1
    2     SSD Table  1            1    1    1    1   28    0    1
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************ Active Sections ****************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
    1         1    0    0    0    0    0    0    0    0    0
    2         1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************* PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
    1         4    0    0    0    0    0    0    0    0    0    1    9
    2         4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                    ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
          FG FG FG FG  possible  exit  *** possible  exit      possible  exit
           *  *  *  *     *  *  *  *  *       *  *  *  *  *       ***
    1        0  1  0  0     4  0  0  0  0       0  0  0  0  0       2  2  2  2  2
    2        0  1  0  0     4  0  0  0  0       0  0  0  0  0       2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN      DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
    1             1      0.01       0.0       0.0       0.5       0.0
    2             2      0.01       0.0       0.0       0.5       0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                       ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
         *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
    1            0         4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
    2            0         4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE      1
   91    4
     Depth      Area    Volume  Outflow1 Velocity  Travel Time***
      (ft)   (acres) (acre-ft)   (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.022779  0.000000  0.000000
  0.055556  0.023264  0.001279  0.028883
  0.111111  0.023753  0.002585  0.040847
  0.166667  0.024248  0.003918  0.050027
  0.222222  0.024748  0.005279  0.057766
  0.277778  0.025253  0.006668  0.064584
  0.333333  0.025763  0.008085  0.070748
  0.388889  0.026279  0.009531  0.076417
  0.444444  0.026799  0.011005  0.081693
  0.500000  0.027324  0.012509  0.086649
```

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0.555556	0.027855	0.014042	0.091336
0.611111	0.028391	0.015604	0.095794
0.666667	0.028931	0.017196	0.100053
0.722222	0.029477	0.018819	0.104139
0.777778	0.030028	0.020472	0.108070
0.833333	0.030584	0.022155	0.111863
0.888889	0.031145	0.023870	0.115531
0.944444	0.031712	0.025616	0.119087
1.000000	0.032283	0.027394	0.122540
1.055556	0.032860	0.029203	0.125898
1.111111	0.033441	0.031045	0.129168
1.166667	0.034028	0.032919	0.132358
1.222222	0.034620	0.034826	0.135473
1.277778	0.035216	0.036766	0.138517
1.333333	0.035818	0.038739	0.141497
1.388889	0.036425	0.040746	0.144414
1.444444	0.037038	0.042786	0.147274
1.500000	0.037655	0.044861	0.150080
1.555556	0.038277	0.046970	0.152834
1.611111	0.038905	0.049114	0.155539
1.666667	0.039537	0.051293	0.158198
1.722222	0.040175	0.053508	0.160813
1.777778	0.040818	0.055757	0.163386
1.833333	0.041466	0.058043	0.165919
1.888889	0.042119	0.060365	0.168415
1.944444	0.042777	0.062723	0.170873
2.000000	0.043440	0.065118	0.173297
2.055556	0.044108	0.067550	0.186468
2.111111	0.044782	0.070019	0.208194
2.166667	0.045460	0.072526	0.235130
2.222222	0.046144	0.075070	0.266005
2.277778	0.046833	0.077653	0.300049
2.333333	0.047526	0.080274	0.336716
2.388889	0.048225	0.082934	0.375588
2.444444	0.048929	0.085633	0.416328
2.500000	0.049638	0.088371	0.458652
2.555556	0.050353	0.091148	0.502317
2.611111	0.051072	0.093965	0.547110
2.666667	0.051796	0.096823	0.592841
2.722222	0.052526	0.099721	0.639338
2.777778	0.053261	0.102659	0.686445
2.833333	0.054000	0.105639	0.734018
2.888889	0.054745	0.108659	0.781924
2.944444	0.055495	0.111722	0.830039
3.000000	0.056250	0.114826	0.878245
3.055556	0.057010	0.117972	0.936465
3.111111	0.057775	0.121160	0.996168
3.166667	0.058546	0.124391	1.057317
3.222222	0.059321	0.127665	1.119876
3.277778	0.060102	0.130983	1.183814
3.333333	0.060887	0.134344	1.249100
3.388889	0.061678	0.137748	1.315705
3.444444	0.062474	0.141197	1.753851
3.500000	0.063275	0.144690	1.844582
3.555556	0.064081	0.148228	1.936961
3.611111	0.064892	0.151810	2.030957
3.666667	0.065708	0.155438	2.126544
3.722222	0.066530	0.159111	2.223694
3.777778	0.067356	0.162830	2.322382
3.833333	0.068188	0.166595	2.422583
3.888889	0.069024	0.170407	2.524275
3.944444	0.069866	0.174265	2.627436
4.000000	0.070713	0.178170	2.732044
4.055556	0.071565	0.182122	2.872469
4.111111	0.072422	0.186122	3.125264
4.166667	0.073284	0.190169	3.440530
4.222222	0.074151	0.194264	3.784790
4.277778	0.075024	0.198408	4.123963
4.333333	0.075901	0.202600	4.425520
4.388889	0.076784	0.206842	4.664787

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```
  4.444444  0.077671  0.211132  4.833535
  4.500000  0.078564  0.215472  4.950246
  4.555556  0.079462  0.219862  5.096106
  4.611111  0.080365  0.224301  5.212280
  4.666667  0.081273  0.228791  5.323343
  4.722222  0.082186  0.233332  5.429923
  4.777778  0.083104  0.237923  5.532527
  4.833333  0.084028  0.242566  5.631572
  4.888889  0.084956  0.247260  5.727410
  4.944444  0.085890  0.252005  5.820336
  5.000000  0.086829  0.256803  5.910602
  END FTABLE  1
  FTABLE      2
   37    4
     Depth      Area    Volume  Outflow1 Velocity  Travel Time***
      (ft)   (acres) (acre-ft)   (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.058000  0.000000  0.000000
  0.170000  0.058000  0.005193  0.044755
  0.330000  0.058000  0.011161  0.062356
  0.500000  0.058000  0.017609  0.076754
  0.670000  0.058000  0.024425  0.088850
  0.830000  0.058000  0.031543  0.098891
  1.000000  0.058000  0.038915  0.108547
  1.170000  0.058000  0.046504  0.117412
  1.330000  0.058000  0.054281  0.125183
  1.500000  0.058000  0.062221  0.132943
  1.670000  0.058000  0.070301  0.140274
  1.830000  0.058000  0.078501  0.146840
  2.000000  0.058000  0.086804  0.153509
  2.170000  0.058000  0.095192  0.159900
  2.330000  0.058000  0.103651  0.165690
  2.500000  0.058000  0.112165  0.171628
  2.670000  0.058000  0.120721  0.177368
  2.830000  0.058000  0.129303  0.182605
  3.000000  0.058000  0.137899  0.188009
  3.170000  0.058000  0.146495  0.193263
  3.330000  0.058000  0.155077  0.198080
  3.500000  0.058000  0.163632  0.203073
  3.670000  0.058000  0.172146  0.207947
  3.830000  0.058000  0.180605  0.236899
  4.000000  0.058000  0.188994  0.347589
  4.170000  0.058000  0.197297  0.495645
  4.330000  0.058000  0.205497  0.654966
  4.500000  0.058000  0.213577  0.836956
  4.670000  0.058000  0.221516  1.025852
  4.830000  0.058000  0.229293  1.225254
  5.000000  0.058000  0.236883  1.471327
  5.170000  0.058000  0.244255  2.581571
  5.330000  0.058000  0.251373  4.323604
  5.500000  0.058000  0.258189  6.122265
  5.670000  0.058000  0.264636  7.256359
  5.830000  0.058000  0.270604  7.946961
  6.000000  0.058000  0.275798  8.581160
  END FTABLE  2
END FTABLES

EXT SOURCES
<-Volume-> <Member> SsysSgap<--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   # <Name> # tem strg<-factor->strg <Name>   #   #        <Name> # #  ***
WDM      2 PREC     ENGL    1.3            PERLND   1 999 EXTNL  PREC
WDM      2 PREC     ENGL    1.3            IMPLND   1 999 EXTNL  PREC
WDM      1 EVAP     ENGL    0.8            PERLND   1 999 EXTNL  PETINP
WDM      1 EVAP     ENGL    0.8            IMPLND   1 999 EXTNL  PETINP

END EXT SOURCES

EXT TARGETS
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Volume-> <Member> Tsys Tgap Amd ***
<Name>   #        <Name> # #<-factor->strg <Name>   # <Name>    tem strg strg***
COPY   501 OUTPUT MEAN   1 1     48.4      WDM    501 FLOW     ENGL      REPL
```

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```
COPY    502 OUTPUT MEAN    1 1     48.4       WDM     502 FLOW      ENGL      REPL
END EXT TARGETS

MASS-LINK
<Volume>    <-Grp> <-Member-><--Mult-->     <Target>       <-Grp> <-Member->***
<Name>             <Name> # #<-factor->     <Name>                <Name> # #***
  MASS-LINK         2
PERLND      PWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK     2

  MASS-LINK         3
PERLND      PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK     3

  MASS-LINK         5
IMPLND      IWATER SURO       0.083333      RCHRES         INFLOW IVOL
  END MASS-LINK     5

  MASS-LINK        12
PERLND      PWATER SURO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK    12

  MASS-LINK        13
PERLND      PWATER IFWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK    13

  MASS-LINK        14
PERLND      PWATER AGWO       0.083333      COPY           INPUT  MEAN
  END MASS-LINK    14

  MASS-LINK        30
PERLND      PWATER SURO                     PERLND         EXTNL  SURLI
  END MASS-LINK    30

  MASS-LINK        34
PERLND      PWATER IFWO                     PERLND         EXTNL  IFWLI
  END MASS-LINK    34

  MASS-LINK        38
PERLND      PWATER AGWO                     PERLND         EXTNL  AGWLI
  END MASS-LINK    38

  MASS-LINK        50
IMPLND      IWATER SURO                     PERLND         EXTNL  SURLI
  END MASS-LINK    50

  MASS-LINK        60
RCHRES      ROFLOW            12.00000      PERLND         EXTNL  SURLI
  END MASS-LINK    60


END MASS-LINK

END RUN
```

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Mitigated UCI File

```
RUN

GLOBAL
  WWHM4 model simulation
  START       1948 10 01        END    2008 09 30
  RUN INTERP OUTPUT LEVEL    3    0
  RESUME     0 RUN     1                    UNIT SYSTEM     1
END GLOBAL

FILES
<File>  <Un#>   <-----------File Name------------------------------>***
<-ID->                                                              ***
WDM         26   9095 Wetland A.wdm
MESSU       25   Mit9095 Wetland A.MES
            27   Mit9095 Wetland A.L61
            28   Mit9095 Wetland A.L62
            30   POC9095 Wetland A1.dat
            31   POC9095 Wetland A2.dat
END FILES

OPN SEQUENCE
    INGRP               INDELT 00:15
      PERLND      50
      PERLND      34
      PERLND      31
      IMPLND       1
      IMPLND       2
      IMPLND       4
      IMPLND      14
      IMPLND      25
      IMPLND      26
      IMPLND      27
      PERLND      68
      IMPLND       5
      IMPLND       8
      IMPLND      11
      PERLND      70
      PERLND      71
      IMPLND      28
      PERLND      72
      PERLND      73
      PERLND      32
      RCHRES       1
      RCHRES       2
      RCHRES       3
      RCHRES       4
      RCHRES       5
      RCHRES       6
      PERLND      65
      PERLND      66
      PERLND      51
      PERLND      67
      PERLND      69
      COPY       501
      COPY         1
      COPY       502
      COPY         2
      DISPLY       1
      DISPLY       2
    END INGRP
END OPN SEQUENCE
DISPLY
  DISPLY-INFO1
    # -  #<----------Title---------->***TRAN PIVL DIG1 FIL1  PYR DIG2 FIL2 YRND
    1        Lateral Basin  2           MAX                   1    2   30    9
    2        Lateral Basin  7           MAX                   1    2   31    9
  END DISPLY-INFO1
END DISPLY
```

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```
COPY
  TIMESERIES
    # -  #  NPT  NMN ***
    1         1    1
  501         1    1
  502         1    1
    2         1    1
  END TIMESERIES
END COPY
GENER
  OPCODE
    #    # OPCD ***
  END OPCODE
  PARM
    #    #         K ***
  END PARM
END GENER
PERLND
  GEN-INFO
    <PLS ><-------Name------->NBLKS   Unit-systems   Printer ***
    # -  #                          User  t-series Engl Metr ***
                                       in  out             ***
   50     SG4, Forest, Steep      1    1    1    1   27    0
   34     SG4, Lawn, Flat         1    1    1    1   27    0
   31     SG4, Field, Flat        1    1    1    1   27    0
   68     SG4, Forest, Steep      1    1    1    1   27    0
   70     SG4, Lawn, Flat         1    1    1    1   27    0
   71     SG4, Field, Flat        1    1    1    1   27    0
   72     SG4, Lawn, Steep        1    1    1    1   27    0
   73     SG4, Field, Flat        1    1    1    1   27    0
   32     SG4, Field, Mod         1    1    1    1   27    0
   65     SG4, Field, Flat        1    1    1    1   27    0
   66     SG4, Forest, Steep      1    1    1    1   27    0
   51     SG4, Forest, Mod        1    1    1    1   27    0
   67     SG4, Field, Flat        1    1    1    1   27    0
   69     SG4, Forest, Mod        1    1    1    1   27    0
  END GEN-INFO
  *** Section PWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC ***
   50         0    0    1    0    0    0    0    0    0    0    0    0
   34         0    0    1    0    0    0    0    0    0    0    0    0
   31         0    0    1    0    0    0    0    0    0    0    0    0
   68         0    0    1    0    0    0    0    0    0    0    0    0
   70         0    0    1    0    0    0    0    0    0    0    0    0
   71         0    0    1    0    0    0    0    0    0    0    0    0
   72         0    0    1    0    0    0    0    0    0    0    0    0
   73         0    0    1    0    0    0    0    0    0    0    0    0
   32         0    0    1    0    0    0    0    0    0    0    0    0
   65         0    0    1    0    0    0    0    0    0    0    0    0
   66         0    0    1    0    0    0    0    0    0    0    0    0
   51         0    0    1    0    0    0    0    0    0    0    0    0
   67         0    0    1    0    0    0    0    0    0    0    0    0
   69         0    0    1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ***************************** PIVL  PYR
    # -  # ATMP SNOW PWAT  SED  PST  PWG PQAL MSTL PEST NITR PHOS TRAC  *********
   50         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   34         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   31         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   68         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   70         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   71         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   72         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   73         0    0    4    0    0    0    0    0    0    0    0    0    1    9
   32         0    0    4    0    0    0    0    0    0    0    0    0    1    9
```

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```
 65          0    0    4    0    0    0    0    0    0    0    0    0    1    9
 66          0    0    4    0    0    0    0    0    0    0    0    0    1    9
 51          0    0    4    0    0    0    0    0    0    0    0    0    1    9
 67          0    0    4    0    0    0    0    0    0    0    0    0    1    9
 69          0    0    4    0    0    0    0    0    0    0    0    0    1    9
END PRINT-INFO

PWAT-PARM1
  <PLS >  PWATER variable monthly parameter value flags  ***
  # -  # CSNO RTOP UZFG  VCS  VUZ  VNN VIFW VIRC  VLE INFC  HWT ***
 50          0    0    0    0    0    0    0    0    0    0    0
 34          0    0    0    0    0    0    0    0    0    0    0
 31          0    0    0    0    0    0    0    0    0    0    0
 68          0    0    0    0    0    0    0    0    0    0    0
 70          0    0    0    0    0    0    0    0    0    0    0
 71          0    0    0    0    0    0    0    0    0    0    0
 72          0    0    0    0    0    0    0    0    0    0    0
 73          0    0    0    0    0    0    0    0    0    0    0
 32          0    0    0    0    0    0    0    0    0    0    0
 65          0    0    0    0    0    0    0    0    0    0    0
 66          0    0    0    0    0    0    0    0    0    0    0
 51          0    0    0    0    0    0    0    0    0    0    0
 67          0    0    0    0    0    0    0    0    0    0    0
 69          0    0    0    0    0    0    0    0    0    0    0
END PWAT-PARM1

PWAT-PARM2
  <PLS >      PWATER input info: Part 2          ***
  # -  # ***FOREST      LZSN     INFILT      LSUR      SLSUR      KVARY      AGWRC
 50               0         6       0.04       400       0.15          0       0.96
 34               0         6       0.02       400       0.05          0       0.96
 31               0         6       0.03       400       0.05          0       0.96
 68               0         6       0.04       400       0.15          0       0.96
 70               0         6       0.02       400       0.05          0       0.96
 71               0         6       0.03       400       0.05          0       0.96
 72               0         6       0.02       400       0.15          0       0.96
 73               0         6       0.03       400       0.05          0       0.96
 32               0         6       0.03       400        0.1          0       0.96
 65               0         6       0.03       400       0.05          0       0.96
 66               0         6       0.04       400       0.15          0       0.96
 51               0         6       0.04       400        0.1          0       0.96
 67               0         6       0.03       400       0.05          0       0.96
 69               0         6       0.04       400        0.1          0       0.96
END PWAT-PARM2

PWAT-PARM3
  <PLS >      PWATER input info: Part 3          ***
  # -  # ***PETMAX    PETMIN    INFEXP    INFILD    DEEPFR    BASETP    AGWETP
 50               0         0         3         2         0         0         0
 34               0         0         3         2         0         0         0
 31               0         0         3         2         0         0         0
 68               0         0         3         2         0         0         0
 70               0         0         3         2         0         0         0
 71               0         0         3         2         0         0         0
 72               0         0         3         2         0         0         0
 73               0         0         3         2         0         0         0
 32               0         0         3         2         0         0         0
 65               0         0         3         2         0         0         0
 66               0         0         3         2         0         0         0
 51               0         0         3         2         0         0         0
 67               0         0         3         2         0         0         0
 69               0         0         3         2         0         0         0
END PWAT-PARM3
PWAT-PARM4
  <PLS >     PWATER input info: Part 4                              ***
  # -  #     CEPSC      UZSN      NSUR     INTFW       IRC     LZETP ***
 50            0.2       0.4      0.35         2       0.4       0.7
 34            0.1       0.2      0.25         2       0.4      0.25
 31           0.15       0.4       0.3         2       0.4       0.4
 68            0.2       0.4      0.35         2       0.4       0.7
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   70            0.1       0.2      0.25         2       0.4      0.25
   71           0.15       0.4       0.3         2       0.4       0.4
   72            0.1       0.2      0.25         2       0.4      0.25
   73           0.15       0.4       0.3         2       0.4       0.4
   32           0.15       0.4       0.3         2       0.4       0.4
   65           0.15       0.4       0.3         2       0.4       0.4
   66            0.2       0.4      0.35         2       0.4       0.7
   51            0.2       0.4      0.35         2       0.4       0.7
   67           0.15       0.4       0.3         2       0.4       0.4
   69            0.2       0.4      0.35         2       0.4       0.7
  END PWAT-PARM4

  PWAT-STATE1
    <PLS > *** Initial conditions at start of simulation
               ran from 1990 to end of 1992 (pat 1-11-95) RUN 21 ***
    # -  # ***  CEPS      SURS       UZS       IFWS       LZS       AGWS      GWVS
   50              0         0         0          0       2.5          1         0
   34              0         0         0          0       2.5          1         0
   31              0         0         0          0       2.5          1         0
   68              0         0         0          0       2.5          1         0
   70              0         0         0          0       2.5          1         0
   71              0         0         0          0       2.5          1         0
   72              0         0         0          0       2.5          1         0
   73              0         0         0          0       2.5          1         0
   32              0         0         0          0       2.5          1         0
   65              0         0         0          0       2.5          1         0
   66              0         0         0          0       2.5          1         0
   51              0         0         0          0       2.5          1         0
   67              0         0         0          0       2.5          1         0
   69              0         0         0          0       2.5          1         0
  END PWAT-STATE1

END PERLND

IMPLND
  GEN-INFO
    <PLS ><-------Name-------->   Unit-systems   Printer ***
    # -  #                      User  t-series Engl Metr ***
                                      in  out            ***
    1      ROADS/FLAT              1    1    1   27    0
    2      ROADS/MOD               1    1    1   27    0
    4      ROOF TOPS/FLAT          1    1    1   27    0
   14      POND                    1    1    1   27    0
   25      ROADS/FLAT              1    1    1   27    0
   26      ROOF TOPS/FLAT          1    1    1   27    0
   27      ROADS/STEEP             1    1    1   27    0
    5      DRIVEWAYS/FLAT          1    1    1   27    0
    8      SIDEWALKS/FLAT          1    1    1   27    0
   11      PARKING/FLAT            1    1    1   27    0
   28      ROADS/FLAT              1    1    1   27    0
  END GEN-INFO
  *** Section IWATER***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # ATMP SNOW IWAT  SLD  IWG IQAL   ***
    1         0    0    1    0    0    0
    2         0    0    1    0    0    0
    4         0    0    1    0    0    0
   14         0    0    1    0    0    0
   25         0    0    1    0    0    0
   26         0    0    1    0    0    0
   27         0    0    1    0    0    0
    5         0    0    1    0    0    0
    8         0    0    1    0    0    0
   11         0    0    1    0    0    0
   28         0    0    1    0    0    0
  END ACTIVITY

  PRINT-INFO
```

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  <ILS > ******** Print-flags ******** PIVL  PYR
  # -  # ATMP SNOW IWAT  SLD  IWG IQAL    *********
  1         0    0    4    0    0    4    1    9
  2         0    0    4    0    0    0    1    9
  4         0    0    4    0    0    0    1    9
 14         0    0    4    0    0    0    1    9
 25         0    0    4    0    0    0    1    9
 26         0    0    4    0    0    0    1    9
 27         0    0    4    0    0    0    1    9
  5         0    0    4    0    0    0    1    9
  8         0    0    4    0    0    0    1    9
 11         0    0    4    0    0    0    1    9
 28         0    0    4    0    0    0    1    9
END PRINT-INFO

IWAT-PARM1
  <PLS >  IWATER variable monthly parameter value flags  ***
  # -  # CSNO RTOP  VRS  VNN RTLI     ***
  1         0    0    0    0    0
  2         0    0    0    0    0
  4         0    0    0    0    0
 14         0    0    0    0    0
 25         0    0    0    0    0
 26         0    0    0    0    0
 27         0    0    0    0    0
  5         0    0    0    0    0
  8         0    0    0    0    0
 11         0    0    0    0    0
 28         0    0    0    0    0
END IWAT-PARM1

IWAT-PARM2
  <PLS >      IWATER input info: Part 2         ***
  # -  # ***  LSUR      SLSUR      NSUR     RETSC
  1           400       0.01       0.1       0.1
  2           400       0.05       0.1      0.08
  4           400       0.01       0.1       0.1
 14           400       0.01       0.1       0.1
 25           400       0.01       0.1       0.1
 26           400       0.01       0.1       0.1
 27           400        0.1       0.1      0.05
  5           400       0.01       0.1       0.1
  8           400       0.01       0.1       0.1
 11           400       0.01       0.1       0.1
 28           400       0.01       0.1       0.1
END IWAT-PARM2

IWAT-PARM3
  <PLS >      IWATER input info: Part 3         ***
  # -  # ***PETMAX    PETMIN
  1              0         0
  2              0         0
  4              0         0
 14              0         0
 25              0         0
 26              0         0
 27              0         0
  5              0         0
  8              0         0
 11              0         0
 28              0         0
END IWAT-PARM3

IWAT-STATE1
  <PLS > *** Initial conditions at start of simulation
  # -  # ***  RETS      SURS
  1              0         0
  2              0         0
  4              0         0
 14              0         0
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   25              0         0
   26              0         0
   27              0         0
    5              0         0
    8              0         0
   11              0         0
   28              0         0
  END IWAT-STATE1

END IMPLND

SCHEMATIC
<-Source->                  <--Area-->     <-Target->   MBLK    ***
<Name>   #                  <-factor->     <Name>   #   Tbl#    ***
Basin  1***
PERLND  34                       1.327     RCHRES   1      2
PERLND  31                       1.203     RCHRES   1      2
IMPLND   1                       0.178     RCHRES   1      5
IMPLND   2                       2.616     RCHRES   1      5
IMPLND   4                       0.844     RCHRES   1      5
IMPLND  14                       0.182     RCHRES   1      5
Lateral Basin  1***
PERLND  50                      0.1394     PERLND  51     30
PERLND  50                      0.1394     PERLND  51     34
PERLND  50                      0.1394     PERLND  51     38
Lateral I Basin  1***
IMPLND  25                      0.0459     PERLND  65     50
Lateral Basin  10***
PERLND  72                      0.0125     PERLND  69     30
PERLND  72                      0.0125     PERLND  69     34
PERLND  72                      0.0125     PERLND  69     38
Lateral I Basin  2***
IMPLND  26                      0.0165     PERLND  65     50
CJ Dens***
PERLND  31                       0.522     RCHRES   2      2
PERLND  31                       0.522     RCHRES   2      3
IMPLND   1                        0.38     RCHRES   2      5
IMPLND   4                       0.413     RCHRES   2      5
IMPLND   5                       0.096     RCHRES   2      5
IMPLND   8                       0.083     RCHRES   2      5
IMPLND  11                       0.034     RCHRES   2      5
IMPLND  14                       0.057     RCHRES   2      5
Basin  3***
PERLND  31                       1.119     RCHRES   3      2
PERLND  31                       1.119     RCHRES   3      3
IMPLND   1                       0.992     RCHRES   3      5
IMPLND   4                       0.372     RCHRES   3      5
IMPLND   5                       0.197     RCHRES   3      5
IMPLND   8                       0.283     RCHRES   3      5
Basin  2A***
PERLND  32                       0.728     RCHRES   4      2
PERLND  32                       0.728     RCHRES   4      3
IMPLND   2                       2.336     RCHRES   4      5
Basin  2B***
PERLND  32                       0.776     RCHRES   5      2
PERLND  32                       0.776     RCHRES   5      3
IMPLND   2                       2.932     RCHRES   5      5
Lateral Basin  3***
PERLND  65                       1.543     PERLND  66     30
PERLND  65                       1.543     PERLND  66     34
PERLND  65                       1.543     PERLND  66     38
Lateral I Basin  3***
IMPLND  27                      0.0025     PERLND  67     50
Lateral Basin  4***
PERLND  66                       0.198     PERLND  67     30
PERLND  66                       0.198     PERLND  67     34
PERLND  66                       0.198     PERLND  67     38
Lateral I Basin  4***
IMPLND  28                      0.0053     PERLND  69     50
Lateral Basin  5***
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PERLND  67                      5.7512     PERLND  69     30
PERLND  67                      5.7512     PERLND  69     34
PERLND  67                      5.7512     PERLND  69     38
Lateral Basin  6***
PERLND  68                      0.0238     PERLND  67     30
PERLND  68                      0.0238     PERLND  67     34
PERLND  68                      0.0238     PERLND  67     38
Lateral Basin  8***
PERLND  70                      0.0908     PERLND  69     30
PERLND  70                      0.0908     PERLND  69     34
PERLND  70                      0.0908     PERLND  69     38
Lateral Basin  9***
PERLND  71                      0.0558     PERLND  69     30
PERLND  71                      0.0558     PERLND  69     34
PERLND  71                      0.0558     PERLND  69     38
Lateral Basin  11***
PERLND  73                      0.0487     PERLND  69     30
PERLND  73                      0.0487     PERLND  69     34
PERLND  73                      0.0487     PERLND  69     38
Lateral Basin  2***
PERLND  51                        2.31     COPY   501     12
PERLND  51                        2.31     COPY   501     13
PERLND  51                        2.31     COPY   501     14
Lateral Basin  7***
PERLND  69                      16.852     COPY   502     12
PERLND  69                      16.852     COPY   502     13
PERLND  69                      16.852     COPY   502     14

******Routing******
PERLND  50                       0.322     COPY     1     12
PERLND  50                       0.322     COPY     1     13
PERLND  50                       0.322     COPY     1     14
RCHRES   1                           1     RCHRES   6      6
RCHRES   6                       .4329     PERLND  51     63
RCHRES   6                                 COPY     1     17
RCHRES   6                       .0593     PERLND  69     66
RCHRES   6                                 COPY     2     18
PERLND  67                       96.92     COPY     2     12
PERLND  67                       96.92     COPY     2     13
PERLND  67                       96.92     COPY     2     14
RCHRES   2                       .0593     PERLND  69     60
RCHRES   2                                 COPY     2     16
PERLND  70                        1.53     COPY     2     12
PERLND  70                        1.53     COPY     2     13
PERLND  70                        1.53     COPY     2     14
PERLND  71                        0.94     COPY     2     12
PERLND  71                        0.94     COPY     2     13
PERLND  71                        0.94     COPY     2     14
IMPLND  28                        0.09     COPY     2     15
RCHRES   3                       .0593     PERLND  69     60
RCHRES   3                                 COPY     2     16
PERLND  72                        0.21     COPY     2     12
PERLND  72                        0.21     COPY     2     13
PERLND  72                        0.21     COPY     2     14
PERLND  73                        0.82     COPY     2     12
PERLND  73                        0.82     COPY     2     13
PERLND  73                        0.82     COPY     2     14
RCHRES   4                       .0593     PERLND  69     60
RCHRES   4                                 COPY     2     16
RCHRES   5                       .0593     PERLND  69     60
RCHRES   5                                 COPY     2     16
END SCHEMATIC

NETWORK
<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
COPY   501 OUTPUT MEAN   1 1   48.4        DISPLY   1     INPUT  TIMSER 1
COPY   502 OUTPUT MEAN   1 1   48.4        DISPLY   2     INPUT  TIMSER 1
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<-Volume-> <-Grp> <-Member-><--Mult-->Tran <-Target vols> <-Grp> <-Member->  ***
<Name>   #        <Name> # #<-factor->strg <Name>   #   #        <Name> # #  ***
END NETWORK

RCHRES
  GEN-INFO
    RCHRES       Name        Nexits   Unit Systems   Printer                ***
    # -  #<-----------------><---> User T-series  Engl Metr LKFG            ***
                                        in  out                             ***
    1     Trapezoidal Pond-014    1    1    1    1   28    0    1
    2     CJ Dens Trapezoi-050    1    1    1    1   28    0    1
    3     SSD Table  1            1    1    1    1   28    0    1
    4     Trapezoidal Pond-059    1    1    1    1   28    0    1
    5     Trapezoidal Pond-061    1    1    1    1   28    0    1
    6     Flow Splitter  1-017    2    1    1    1   28    0    1
  END GEN-INFO
  *** Section RCHRES***

  ACTIVITY
    <PLS > ************ Active Sections ******************************
    # -  # HYFG ADFG CNFG HTFG SDFG GQFG OXFG NUFG PKFG PHFG ***
    1         1    0    0    0    0    0    0    0    0    0
    2         1    0    0    0    0    0    0    0    0    0
    3         1    0    0    0    0    0    0    0    0    0
    4         1    0    0    0    0    0    0    0    0    0
    5         1    0    0    0    0    0    0    0    0    0
    6         1    0    0    0    0    0    0    0    0    0
  END ACTIVITY

  PRINT-INFO
    <PLS > ***************** Print-flags ******************** PIVL  PYR
    # -  # HYDR ADCA CONS HEAT  SED  GQL OXRX NUTR PLNK PHCB PIVL  PYR  *********
    1         4    0    0    0    0    0    0    0    0    0    1    9
    2         4    0    0    0    0    0    0    0    0    0    1    9
    3         4    0    0    0    0    0    0    0    0    0    1    9
    4         4    0    0    0    0    0    0    0    0    0    1    9
    5         4    0    0    0    0    0    0    0    0    0    1    9
    6         4    0    0    0    0    0    0    0    0    0    1    9
  END PRINT-INFO

  HYDR-PARM1
    RCHRES  Flags for each HYDR Section                                    ***
    # -  #  VC A1 A2 A3  ODFVFG for each *** ODGTFG for each     FUNCT  for each
           FG FG FG FG  possible  exit  *** possible  exit      possible  exit
            *  *  *  *    *  *  *  *  *      *  *  *  *  *        ***
    1       0  1  0  0    4  0  0  0  0       0  0  0  0  0        2  2  2  2  2
    2       0  1  0  0    4  0  0  0  0       0  0  0  0  0        2  2  2  2  2
    3       0  1  0  0    4  0  0  0  0       0  0  0  0  0        2  2  2  2  2
    4       0  1  0  0    4  0  0  0  0       0  0  0  0  0        2  2  2  2  2
    5       0  1  0  0    4  0  0  0  0       0  0  0  0  0        2  2  2  2  2
    6       0  1  0  0    4  5  0  0  0       0  0  0  0  0        2  2  2  2  2
  END HYDR-PARM1

  HYDR-PARM2
    # -  #    FTABNO       LEN      DELTH     STCOR        KS      DB50       ***
  <------><--------><--------><--------><--------><--------><-------->       ***
    1             1      0.01       0.0       0.0       0.5       0.0
    2             2      0.01       0.0       0.0       0.5       0.0
    3             3      0.01       0.0       0.0       0.5       0.0
    4             4      0.01       0.0       0.0       0.5       0.0
    5             5      0.11       0.0       0.0       0.5       0.0
    6             6      0.01       0.0       0.0       0.0       0.0
  END HYDR-PARM2
  HYDR-INIT
    RCHRES  Initial conditions for each HYDR section                       ***
    # -  # ***   VOL     Initial  value  of COLIND     Initial  value  of OUTDGT
          *** ac-ft     for each possible exit        for each possible exit
  <------><-------->     <---><---><---><---><---> *** <---><---><---><---><--->
    1           0         4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
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    2           0         4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
    3           0         4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
    4           0         4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
    5           0         4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
    6           0         4.0  0.0  0.0  0.0  0.0       0.0  0.0  0.0  0.0  0.0
  END HYDR-INIT
END RCHRES

SPEC-ACTIONS
END SPEC-ACTIONS
FTABLES
  FTABLE      1
   91    4
     Depth      Area    Volume  Outflow1 Velocity  Travel Time***
      (ft)   (acres) (acre-ft)   (cfs)   (ft/sec)    (Minutes)***
  0.000000  0.036731  0.000000  0.000000
  0.044444  0.037222  0.001643  0.091535
  0.088889  0.037717  0.003309  0.129450
  0.133333  0.038215  0.004996  0.158543
  0.177778  0.038716  0.006706  0.183070
  0.222222  0.039220  0.008438  0.204679
  0.266667  0.039728  0.010192  0.224214
  0.311111  0.040239  0.011969  0.242179
  0.355556  0.040753  0.013769  0.258900
  0.400000  0.041271  0.015592  0.274605
  0.444444  0.041792  0.017437  0.289459
  0.488889  0.042316  0.019307  0.303587
  0.533333  0.042843  0.021199  0.317087
  0.577778  0.043374  0.023115  0.330034
  0.622222  0.043907  0.025054  0.342493
  0.666667  0.044444  0.027018  0.354514
  0.711111  0.044985  0.029005  0.366140
  0.755556  0.045528  0.031017  0.377409
  0.800000  0.046075  0.033052  0.388350
  0.844444  0.046625  0.035112  0.398992
  0.888889  0.047179  0.037197  0.409357
  0.933333  0.047736  0.039306  0.419466
  0.977778  0.048295  0.041440  0.429337
  1.022222  0.048859  0.043599  0.438987
  1.066667  0.049425  0.045783  0.448428
  1.111111  0.049995  0.047992  0.457675
  1.155556  0.050568  0.050227  0.466739
  1.200000  0.051144  0.052487  0.475630
  1.244444  0.051724  0.054773  0.484358
  1.288889  0.052306  0.057085  0.492931
  1.333333  0.052893  0.059423  0.501358
  1.377778  0.053482  0.061787  0.509646
  1.422222  0.054074  0.064177  0.517800
  1.466667  0.054670  0.066593  0.525829
  1.511111  0.055269  0.069037  0.533737
  1.555556  0.055872  0.071506  0.541529
  1.600000  0.056478  0.074003  0.549210
  1.644444  0.057086  0.076527  0.556786
  1.688889  0.057699  0.079077  0.564260
  1.733333  0.058314  0.081655  0.571636
  1.777778  0.058933  0.084261  0.578919
  1.822222  0.059555  0.086894  0.591601
  1.866667  0.060180  0.089555  0.621493
  1.911111  0.060808  0.092243  0.660532
  1.955556  0.061440  0.094960  0.706148
  2.000000  0.062075  0.097705  0.757001
  2.044444  0.062714  0.100478  0.812209
  2.088889  0.063355  0.103279  0.871125
  2.133333  0.064000  0.106110  0.933241
  2.177778  0.064648  0.108968  0.998141
  2.222222  0.065299  0.111856  1.065476
  2.266667  0.065954  0.114773  1.134943
  2.311111  0.066612  0.117719  1.206274
  2.355556  0.067273  0.120694  1.279234
  2.400000  0.067938  0.123699  1.353606
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2.444444  0.068605  0.126733  1.429196
2.488889  0.069276  0.129797  1.505823
2.533333  0.069950  0.132891  1.583321
2.577778  0.070628  0.136015  1.661536
2.622222  0.071309  0.139169  1.740320
2.666667  0.071993  0.142354  1.819538
2.711111  0.072680  0.145568  1.899061
2.755556  0.073370  0.148814  1.978766
2.800000  0.074064  0.152090  2.058537
2.844444  0.074761  0.155398  2.154060
2.888889  0.075462  0.158736  2.251469
2.933333  0.076165  0.162105  2.350726
2.977778  0.076872  0.165506  2.451794
3.022222  0.077582  0.168939  2.558514
3.066667  0.078296  0.172403  2.785002
3.111111  0.079012  0.175898  3.104602
3.155556  0.079732  0.179426  3.492248
3.200000  0.080455  0.182986  3.932124
3.244444  0.081182  0.186578  4.410345
3.288889  0.081912  0.190202  4.913098
3.333333  0.082645  0.193859  5.426196
3.377778  0.083381  0.197548  5.935227
3.422222  0.084120  0.201270  6.426033
3.466667  0.084863  0.205026  6.885402
3.511111  0.085609  0.208814  7.301933
3.555556  0.086359  0.212635  7.667028
3.600000  0.087111  0.216490  7.975995
3.644444  0.087867  0.220379  8.229264
3.688889  0.088626  0.224301  8.433678
3.733333  0.089388  0.228257  8.603882
3.777778  0.090154  0.232246  8.844724
3.822222  0.090923  0.236270  9.025761
3.866667  0.091695  0.240329  9.202070
3.911111  0.092471  0.244421  9.374010
3.955556  0.093249  0.248548  9.541896
4.000000  0.094031  0.252710  9.706005
END FTABLE  1
FTABLE      6
 90    5
   Depth      Area    Volume  Outflow1  Outflow2  Velocity  Travel Time***
    (ft)   (acres) (acre-ft)   (cfs)      (cfs)   (ft/sec)    (Minutes)***
0.000000  0.002296  0.000000  0.000000  0.000000
0.111111  0.002296  0.000255  0.002261  0.144730
0.222222  0.002296  0.000510  0.003198  0.204679
0.333333  0.002296  0.000765  0.003917  0.250679
0.444444  0.002296  0.001020  0.004523  0.289459
0.555556  0.002296  0.001275  0.005057  0.323625
0.666667  0.002296  0.001530  0.005539  0.354514
0.777778  0.002296  0.001786  0.005983  0.382919
0.888889  0.002296  0.002041  0.006396  0.409357
1.000000  0.002296  0.002296  0.006784  0.434189
1.111111  0.002296  0.002551  0.007151  0.457675
1.222222  0.002296  0.002806  0.007500  0.480014
1.333333  0.002296  0.003061  0.007834  0.501358
1.444444  0.002296  0.003316  0.008154  0.521830
1.555556  0.002296  0.003571  0.008461  0.541529
1.666667  0.002296  0.003826  0.008758  0.560535
1.777778  0.002296  0.004081  0.009046  0.578919
1.888889  0.002296  0.004336  0.009324  0.640076
2.000000  0.002296  0.004591  0.009594  0.757001
2.111111  0.002296  0.004846  0.009857  0.901811
2.222222  0.002296  0.005102  0.010113  1.065476
2.333333  0.002296  0.005357  0.010363  1.242564
2.444444  0.002296  0.005612  0.010607  1.429196
2.555556  0.002296  0.005867  0.010845  1.622348
2.666667  0.002296  0.006122  0.011079  1.819538
2.777778  0.002296  0.006377  0.011307  2.018650
2.888889  0.002296  0.006632  0.011531  2.251469
3.000000  0.002296  0.006887  0.011751  2.502997
3.111111  0.002296  0.007142  0.011966  3.104602
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3.222222  0.002296  0.007397  0.012178  4.167297
3.333333  0.002296  0.007652  0.012386  5.426196
3.444444  0.002296  0.007907  0.012591  6.660413
3.555556  0.002296  0.008162  0.012792  7.667028
3.666667  0.002296  0.008418  0.012991  8.336862
3.777778  0.002296  0.008673  0.013186  8.844724
3.888889  0.002296  0.008928  0.013379  9.288566
4.000000  0.002296  0.009183  0.013568  9.706005
4.111111  0.002296  0.009438  0.013756  10.10132
4.222222  0.002296  0.009693  0.013940  10.47774
4.333333  0.002296  0.009948  0.014122  10.83777
4.444444  0.002296  0.010203  0.014302  11.18342
4.555556  0.002296  0.010458  0.014480  11.51631
4.666667  0.002296  0.010713  0.014656  11.83776
4.777778  0.002296  0.010968  0.014829  12.14891
4.888889  0.002296  0.011223  0.015000  12.45068
5.000000  0.002296  0.011478  0.015170  12.74390
5.111111  0.002296  0.011733  0.015338  13.02925
5.222222  0.002296  0.011989  0.015503  13.30736
5.333333  0.002296  0.012244  0.015667  13.57874
5.444444  0.002296  0.012499  0.015830  13.84387
5.555556  0.002296  0.012754  0.015991  14.10317
5.666667  0.002296  0.013009  0.016150  14.35702
5.777778  0.002296  0.013264  0.016307  14.60573
5.888889  0.002296  0.013519  0.016463  14.84963
6.000000  0.002296  0.013774  0.016618  15.08897
6.111111  0.002296  0.014029  0.016771  15.32401
6.222222  0.002296  0.014284  0.016923  15.55497
6.333333  0.002296  0.014539  0.017073  15.78207
6.444444  0.002296  0.014794  0.017222  16.00549
6.555556  0.002296  0.015049  0.017370  16.22540
6.666667  0.002296  0.015305  0.017517  16.44197
6.777778  0.002296  0.015560  0.017662  16.65534
6.888889  0.002296  0.015815  0.017806  16.86566
7.000000  0.002296  0.016070  0.017949  17.07305
7.111111  0.002296  0.016325  0.018091  17.27764
7.222222  0.002296  0.016580  0.018232  17.47952
7.333333  0.002296  0.016835  0.018372  17.67882
7.444444  0.002296  0.017090  0.018510  17.87563
7.555556  0.002296  0.017345  0.018648  18.07003
7.666667  0.002296  0.017600  0.018785  18.26213
7.777778  0.002296  0.017855  0.018920  18.45198
7.888889  0.002296  0.018110  0.019055  18.63968
8.000000  0.002296  0.018365  0.019189  18.82530
8.111111  0.002296  0.018621  0.019321  19.00890
8.222222  0.002296  0.018876  0.019453  19.19055
8.333333  0.002296  0.019131  0.019584  19.37031
8.444444  0.002296  0.019386  0.019714  19.54824
8.555556  0.002296  0.019641  0.019844  19.72439
8.666667  0.002296  0.019896  0.019972  19.89882
8.777778  0.002296  0.020151  0.020100  20.07157
8.888889  0.002296  0.020406  0.020227  20.24270
9.000000  0.002296  0.020661  0.020353  20.41225
9.111111  0.002296  0.020916  0.205392  20.58025
9.222222  0.002296  0.021171  0.389753  20.74676
9.333333  0.002296  0.021426  0.475336  20.91182
9.444444  0.002296  0.021681  0.545787  21.07545
9.555556  0.002296  0.021937  0.607870  21.23770
9.666667  0.002296  0.022192  0.664008  21.39860
9.777778  0.002296  0.022447  0.715642  21.55819
9.888889  0.002296  0.022702  0.763709  21.71649
END FTABLE  6
FTABLE      2
 91    4
   Depth      Area    Volume  Outflow1 Velocity  Travel Time***
    (ft)   (acres) (acre-ft)   (cfs)   (ft/sec)    (Minutes)***
0.000000  0.022779  0.000000  0.000000
0.055556  0.023264  0.001279  0.028883
0.111111  0.023753  0.002585  0.040847
0.166667  0.024248  0.003918  0.050027
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0.222222	0.024748	0.005279	0.057766
0.277778	0.025253	0.006668	0.064584
0.333333	0.025763	0.008085	0.070748
0.388889	0.026279	0.009531	0.076417
0.444444	0.026799	0.011005	0.081693
0.500000	0.027324	0.012509	0.086649
0.555556	0.027855	0.014042	0.091336
0.611111	0.028391	0.015604	0.095794
0.666667	0.028931	0.017196	0.100053
0.722222	0.029477	0.018819	0.104139
0.777778	0.030028	0.020472	0.108070
0.833333	0.030584	0.022155	0.111863
0.888889	0.031145	0.023870	0.115531
0.944444	0.031712	0.025616	0.119087
1.000000	0.032283	0.027394	0.122540
1.055556	0.032860	0.029203	0.125898
1.111111	0.033441	0.031045	0.129168
1.166667	0.034028	0.032919	0.132358
1.222222	0.034620	0.034826	0.135473
1.277778	0.035216	0.036766	0.138517
1.333333	0.035818	0.038739	0.141497
1.388889	0.036425	0.040746	0.144414
1.444444	0.037038	0.042786	0.147274
1.500000	0.037655	0.044861	0.150080
1.555556	0.038277	0.046970	0.152834
1.611111	0.038905	0.049114	0.155539
1.666667	0.039537	0.051293	0.158198
1.722222	0.040175	0.053508	0.160813
1.777778	0.040818	0.055757	0.163386
1.833333	0.041466	0.058043	0.165919
1.888889	0.042119	0.060365	0.168415
1.944444	0.042777	0.062723	0.170873
2.000000	0.043440	0.065118	0.173297
2.055556	0.044108	0.067550	0.186468
2.111111	0.044782	0.070019	0.208194
2.166667	0.045460	0.072526	0.235130
2.222222	0.046144	0.075070	0.266005
2.277778	0.046833	0.077653	0.300049
2.333333	0.047526	0.080274	0.336716
2.388889	0.048225	0.082934	0.375588
2.444444	0.048929	0.085633	0.416328
2.500000	0.049638	0.088371	0.458652
2.555556	0.050353	0.091148	0.502317
2.611111	0.051072	0.093965	0.547110
2.666667	0.051796	0.096823	0.592841
2.722222	0.052526	0.099721	0.639338
2.777778	0.053261	0.102659	0.686445
2.833333	0.054000	0.105639	0.734018
2.888889	0.054745	0.108659	0.781924
2.944444	0.055495	0.111722	0.830039
3.000000	0.056250	0.114826	0.878245
3.055556	0.057010	0.117972	0.936465
3.111111	0.057775	0.121160	0.996168
3.166667	0.058546	0.124391	1.057317
3.222222	0.059321	0.127665	1.119876
3.277778	0.060102	0.130983	1.183814
3.333333	0.060887	0.134344	1.249100
3.388889	0.061678	0.137748	1.315705
3.444444	0.062474	0.141197	1.753851
3.500000	0.063275	0.144690	1.844582
3.555556	0.064081	0.148228	1.936961
3.611111	0.064892	0.151810	2.030957
3.666667	0.065708	0.155438	2.126544
3.722222	0.066530	0.159111	2.223694
3.777778	0.067356	0.162830	2.322382
3.833333	0.068188	0.166595	2.422583
3.888889	0.069024	0.170407	2.524275
3.944444	0.069866	0.174265	2.627436
4.000000	0.070713	0.178170	2.732044
4.055556	0.071565	0.182122	2.872469

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4.111111  0.072422  0.186122  3.125264
4.166667  0.073284  0.190169  3.440530
4.222222  0.074151  0.194264  3.784790
4.277778  0.075024  0.198408  4.123963
4.333333  0.075901  0.202600  4.425520
4.388889  0.076784  0.206842  4.664787
4.444444  0.077671  0.211132  4.833535
4.500000  0.078564  0.215472  4.950246
4.555556  0.079462  0.219862  5.096106
4.611111  0.080365  0.224301  5.212280
4.666667  0.081273  0.228791  5.323343
4.722222  0.082186  0.233332  5.429923
4.777778  0.083104  0.237923  5.532527
4.833333  0.084028  0.242566  5.631572
4.888889  0.084956  0.247260  5.727410
4.944444  0.085890  0.252005  5.820336
5.000000  0.086829  0.256803  5.910602
END FTABLE  2
FTABLE      3
 37    4
   Depth      Area    Volume  Outflow1 Velocity  Travel Time***
    (ft)   (acres) (acre-ft)   (cfs)   (ft/sec)    (Minutes)***
0.000000  0.058000  0.000000  0.000000
0.170000  0.058000  0.005193  0.044755
0.330000  0.058000  0.011161  0.062356
0.500000  0.058000  0.017609  0.076754
0.670000  0.058000  0.024425  0.088850
0.830000  0.058000  0.031543  0.098891
1.000000  0.058000  0.038915  0.108547
1.170000  0.058000  0.046504  0.117412
1.330000  0.058000  0.054281  0.125183
1.500000  0.058000  0.062221  0.132943
1.670000  0.058000  0.070301  0.140274
1.830000  0.058000  0.078501  0.146840
2.000000  0.058000  0.086804  0.153509
2.170000  0.058000  0.095192  0.159900
2.330000  0.058000  0.103651  0.165690
2.500000  0.058000  0.112165  0.171628
2.670000  0.058000  0.120721  0.177368
2.830000  0.058000  0.129303  0.182605
3.000000  0.058000  0.137899  0.188009
3.170000  0.058000  0.146495  0.193263
3.330000  0.058000  0.155077  0.198080
3.500000  0.058000  0.163632  0.203073
3.670000  0.058000  0.172146  0.207947
3.830000  0.058000  0.180605  0.236899
4.000000  0.058000  0.188994  0.347589
4.170000  0.058000  0.197297  0.495645
4.330000  0.058000  0.205497  0.654966
4.500000  0.058000  0.213577  0.836956
4.670000  0.058000  0.221516  1.025852
4.830000  0.058000  0.229293  1.225254
5.000000  0.058000  0.236883  1.471327
5.170000  0.058000  0.244255  2.581571
5.330000  0.058000  0.251373  4.323604
5.500000  0.058000  0.258189  6.122265
5.670000  0.058000  0.264636  7.256359
5.830000  0.058000  0.270604  7.946961
6.000000  0.058000  0.275798  8.581160
END FTABLE  3
FTABLE      4
 91    4
   Depth      Area    Volume  Outflow1 Velocity  Travel Time***
    (ft)   (acres) (acre-ft)   (cfs)   (ft/sec)    (Minutes)***
0.000000  0.036731  0.000000  0.249423
0.044444  0.037222  0.001643  0.265688
0.088889  0.037717  0.003309  0.281014
0.133333  0.038215  0.004996  0.295546
0.177778  0.038716  0.006706  0.309397
0.222222  0.039220  0.008438  0.322653
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0.266667	0.039728	0.010192	0.335386
0.311111	0.040239	0.011969	0.347653
0.355556	0.040753	0.013769	0.359501
0.400000	0.041271	0.015592	0.370971
0.444444	0.041792	0.017437	0.382097
0.488889	0.042316	0.019307	0.392908
0.533333	0.042843	0.021199	0.403430
0.577778	0.043374	0.023115	0.413684
0.622222	0.043907	0.025054	0.423690
0.666667	0.044444	0.027018	0.433465
0.711111	0.044985	0.029005	0.443024
0.755556	0.045528	0.031017	0.452381
0.800000	0.046075	0.033052	0.461549
0.844444	0.046625	0.035112	0.470538
0.888889	0.047179	0.037197	0.479359
0.933333	0.047736	0.039306	0.488020
0.977778	0.048295	0.041440	0.496530
1.022222	0.048859	0.043599	0.504897
1.066667	0.049425	0.045783	0.513127
1.111111	0.049995	0.047992	0.521228
1.155556	0.050568	0.050227	0.529204
1.200000	0.051144	0.052487	0.537062
1.244444	0.051724	0.054773	0.544807
1.288889	0.052306	0.057085	0.552443
1.333333	0.052893	0.059423	0.559975
1.377778	0.053482	0.061787	0.567407
1.422222	0.054074	0.064177	0.574742
1.466667	0.054670	0.066593	0.581986
1.511111	0.055269	0.069037	0.589140
1.555556	0.055872	0.071506	0.596209
1.600000	0.056478	0.074003	0.603194
1.644444	0.057086	0.076527	0.610100
1.688889	0.057699	0.079077	0.620375
1.733333	0.058314	0.081655	0.642041
1.777778	0.058933	0.084261	0.669772
1.822222	0.059555	0.086894	0.701845
1.866667	0.060180	0.089555	0.737371
1.911111	0.060808	0.092243	0.775763
1.955556	0.061440	0.094960	0.816593
2.000000	0.062075	0.097705	0.859525
2.044444	0.062714	0.100478	0.904284
2.088889	0.063355	0.103279	0.950638
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WDM      1 EVAP     ENGL    0.8             IMPLND   1 999 EXTNL  PETINP
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COPY   501 OUTPUT MEAN   1 1     48.4      WDM    801 FLOW     ENGL      REPL
COPY     2 OUTPUT MEAN   1 1     48.4      WDM    702 FLOW     ENGL      REPL
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PERLND     PWATER IFWO       0.083333      RCHRES         INFLOW IVOL
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  END MASS-LINK   30

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  MASS-LINK       38
PERLND     PWATER AGWO                     PERLND         EXTNL  AGWLI
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END MASS-LINK

END RUN
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Predeveloped HSPF Message File

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Mitigated HSPF Message File

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WETLAND BUFFER MODIFICATION & MITIGATION PLAN

July 8, 2025



Village at North Shore

Camas, Washington

Prepared for

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Prepared by

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SIGNATURE PAGE

The information and data in this report was compiled and prepared under the supervision and direction of the undersigned.



Julianne Blake
Biologist IV

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APPENDIX

Appendix A – WDFW Functional Assessments for Individual Oaks and Mitigation Calculations
Appendix B – Offsite Protected Wetland Area

INTRODUCTION

Ecological Land Services, Inc. (ELS) was contracted by the applicant, HSR Capital, LLC, to address impacts to the buffers of two Category III wetlands and impacts to Oregon white oak (*Quercus garryana*; oak) and herbaceous bald habitat associated with the proposed Village at North Shore (VANS) subdivision. The project will include 102 single-family lots, 4 multi-family buildings with 96 apartment units, and 3 mixed-use building(s) with 30,250 square feet of commercial use and 44 apartment units, within Clark County parcel numbers 177885000 and 178175000. The approximately 36-acre site is located just south of the terminus of NE 252nd Avenue in Camas, Washington within a portion of Section 34, Township 2 North, Range 3 East of the Willamette Meridian (Figure 1). This wetland buffer modification and mitigation plan has been prepared in accordance with *City of Camas Municipal Code (CMC) Title 16 – Environment* (June 2025) and *Management recommendations for Washington's priority habitats: Best management practices for mitigating impacts to Oregon white oak priority habitat* (Guidance; Nolan and Azerrad 2024).

RESPONSIBLE PARTIES

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PROJECT DESCRIPTION

PROPOSED DEVELOPMENT

The project will include 102 single-family lots, 4 multi-family buildings with 96 apartment units, and 3 mixed-use building(s) with 30,250 square feet of commercial use and 44 apartment units, over the approximately 36.03-acre site. Residential lot sizes range from approximately 2,280 to 6,500 square feet. Construction of the subdivision will include clearing, grading, lot preparation, and construction of supporting infrastructure including parking areas, stormwater facilities, interior circulation roads, sidewalks, utilities, streetlights, and open space areas (Figure 4). All interior roads will be designed to meet minimum emergency vehicle circulation requirements and City of Camas North Shore Subarea design standards. Access to the subdivision will be provided by extending NE 252nd Avenue southerly at the northern site boundary. Construction of a new arterial road (North Shore Blvd.) extending northwest from the eastern boundary of the site is required to comply with the mandated public road alignment. This roadway supports broader City transportation goals established in the municipal code and has been closely coordinated with City staff. Several alignment alternatives were evaluated, including the City's initial proposal to route the boulevard through Wetland B. The final proposed alignment was selected by the City to avoid critical areas, meet long-term transportation objectives, and comply with roadway design standards for this higher classification roadway to ensure the safe and efficient movement of traffic. While the City may complete construction of the roadway as part of a larger transportation improvement project, the development will, at a minimum, dedicate the necessary right-of-way to accommodate future construction. If the City does not proceed with its transportation project, the applicant will construct the roadway as shown in the proposed plans.

Stormwater generated from new impervious surfaces will be managed according to the *2019 Stormwater Management Manual for Western Washington* and City of Camas stormwater design requirements. Stormwater runoff from the western and southwestern portions of the site will be collected and directed to an onsite mechanical water quality treatment facility, where it will receive basic treatment for pollutants and phosphorous treatment prior to being discharged to Lacamas Lake, which has a large water body direct discharge exemption. Runoff from the eastern portion of the site will be collected and conveyed to water quality treatment facilities prior to entering detention facilities for flow control management. Three stormwater detention facilities will be located in low-lying areas in the eastern and north-central portions of the site for detaining stormwater prior to discharge to Wetland A and Stream A and eventually Lacamas Lake.

The proposed project will remove eleven Oregon white oak trees in Oak Cluster 1, each with a diameter at breast height (DBH) of 10 inches or less for a combined dripline impact of 0.048 acres (2,077 sq. ft.). Approximately 0.088 acres (3,852 sq. ft.) of herbaceous bald habitat and 0.184 acres (8,001 sq. ft.) of Wetland B's buffer will also be impacted (Figure 5). All direct wetland impacts will be avoided and impacts to wetland buffers will be minimized through the use of low impact strategies, combined with buffer averaging. Wetland buffer impacts will be mitigated by enhancing approximately 0.184 acres (8,001 sq. ft.) of wetland buffer onsite. Herbaceous bald impacts and a portion of temporal oak impacts will be mitigated by preserving and enhancing

approximately 0.15 acres (6,522 sq. ft.) of existing oak and herbaceous bald habitat onsite. The remaining oak impacts will be mitigated by purchasing 1.063 credits from Terrace Oak Mitigation Bank (Terrace). Additionally, two vegetated corridors will be established and protected in perpetuity to offset wetland impacts, achieve an overall net gain in ecological functions onsite, and further protect critical areas from the surrounding developments.

EXISTING CONDITIONS

EXISTING AND SURROUNDING LAND USES

The approximately 36-acre site consists of Clark County Tax Parcel Numbers 177885000 and 178175000 and is accessed by a gravel road off SE 252nd Avenue from the north. The site is zoned as North Shore Lower Density Residential (LD-NS), North Shore Higher Density Residential (HD-NS), Mixed Use (MX-NS), and North Shore Commercial (C-NS). The properties surrounding the site consist of single-family homes, farmland, undeveloped forested land, and two subdivisions with construction in progress. The northwest portion of the site has a single-family residence and fenced area for livestock. Topography on parcel 178175000 is generally level in the north and northeast, with a depressional area in the northwest corner of the parcel that corresponds to the location of Wetland B. Topography in the remainder of the parcel consists of moderate to steep slopes that descend towards the onsite portions of Wetland A and Stream A. Topography on parcel 177885000 consists of moderate slopes downward to the south, undulating hills throughout the parcel, and several low-lying areas to the north and northeast. Shallow bedrock and rock outcroppings are also present in some locations. General vegetation consists of grasses, weedy herbs, and forbs in the northern portions of each parcel, and the remainder of the site consists of a forested canopy containing a mix of coniferous and deciduous trees with a multi-layered subcanopy. Two wetlands (Wetlands A and B), one stream (Stream A), two oak clusters consisting of a total of 20 oak trees, and two herbaceous balds (Herbaceous Bald 1 and Herbaceous Bald 2; HB-1 and HB-2) are located onsite. An agricultural ditch (Ditch A) was also mapped onsite (Figure 2).

EXISTING CRITICAL AREAS

The site was assessed for critical areas by ELS in 2022, 2023, and 2024. The *Critical Areas Report for ICG 252nd Property* was completed by ELS on May 19, 2025, and addresses critical areas on parcel 178175000 (ELS 2025a). The *Critical Areas Report for Mills Property* was also completed by ELS on May 19, 2025, and addresses critical areas on parcel 17885000 (ELS 2025b).

WETLAND A

Wetland A is Category III, depressional, emergent (EM), forested (FO), seasonally flooded (SF) and saturated only (SO) wetland with a seasonally flowing stream (SFS) within the wetland, with approximately 2.26 acres onsite and a total area of approximately 10.06 acres (Figure 2). Portions of Wetland A's offsite boundary were approximated using lidar and topographic maps along with visual observations of noticeable changes in elevation and vegetation. Wetland A's onsite vegetation is dominated by Oregon ash (*Fraxinus latifolia*), common rush (*Juncus effusus*), and reed canarygrass (*Phalaris arundinacea*). Hydrology is supported by seasonal overbank flooding from Stream A, which serves as Wetland A's outlet, a shallow groundwater table, precipitation,

and surface runoff. According to the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Rating System), Wetland A is a Category III wetland, scoring 7 points for water quality functions, 4 points for hydrologic functions, and 7 points for habitat functions, for a total score of 18 points.

Wetland B

Wetland B is a Category III, depressional, EM, FO, SF wetland, with approximately 0.81 acres onsite and a total area of approximately 0.84 acres. Wetland B's vegetation is dominated by Oregon ash, black cottonwood (*Populus trichocarpa*), Scouler's willow (*Salix scouleriana*), Nootka rose (*Rosa nutkana*), reed canarygrass, and water smartweed (*Persicaria amphibia*). Hydrology is supported by a shallow groundwater table, precipitation, and runoff from adjacent uplands. Wetland B does not have an outlet. According to the Rating System, Wetland B is a Category III wetland, scoring 6 points for water quality functions, 5 points for hydrologic functions, and 7 points for habitat functions, for a total score of 18 points.

Wetland Buffers

Standard wetland buffers are based on wetland category and habitat score from the Rating System, in conjunction with the proposed land use intensity (*CMC 16.53.040(B)(2)*). Wetland A and Wetland B are both Category III wetlands, each with a habitat score of 7 points. According to *CMC Table 16.53.040-3*, the standard buffer widths for both wetlands adjacent to proposed high land use intensity is 150 feet. According to *CMC 16.53.040(B)(4)(b)(i)*, functionally isolated buffer areas are areas that do not protect the wetland from adverse impacts, such as preexisting roads and structures, and shall be excluded from buffer requirements. Portions of the wetland buffers are functionally isolated due to existing impervious surfaces (Figure 2). Wetlands and buffers are summarized in Table 1.

Stream A

Stream A is mapped as Type-U by Washington Department of Natural Resources (WDNR 2025). According to WAC 222-16-031, Stream A meets the definition of a Type 3 water based on a defined channel of 2 feet or greater within the bankfull width, a gradient of 16 percent or less, and the absence of any fish passage barriers (WDFW 2025a). As such, Stream A is considered a Type-F (fish-bearing) stream. Onsite hydrology is supported by a shallow groundwater table, precipitation, and runoff from upslope areas.

Stream Buffers

According to Washington State Fish Passage online mapping, Stream A may have the potential presence of resident fish (WDFW 2025a). According to *CMC 16.61.040(D),* non-anadromous Type-F streams require a 75-foot stream buffer. The buffer of Stream A is primarily vegetated with reed canarygrass, slough sedge, and a mixture of mature coniferous and deciduous trees with a multi-layered subcanopy. Stream A is summarized in Table 1.

Table 1. Wetland and Stream Summary

Identifier	Classification	Cowardin, Hydroperiod[4]	Habitat Score/ Category[5]	Proposed Land Use Intensity	Buffer Width[6,7]
Wetland A (2.26 acres onsite)	Depressional[1]	EM/FO, SF/SO/SFS	III/7	High	150 feet
Wetland B (0.81 acres onsite)		EM/FO, SF			
Stream A	Type F, non-anadromous[2]	--			75 feet

[1]NRCS 2008; [2]WAC 222-16-031; [3]WDNR 2025b; [4]FGDC 2013; [5]Hruby and Yahnke 2023; [6]CMC Table 16.53.040-3; [7]CMC 16.61.040(D).

Ditch A

Ditch A is an agricultural ditch that appears to have been created within uplands for the purpose of diverting upslope runoff into Stream A (Figure 2). According to *CMC 16.53.010(C)(2)(b),* Ditch A is exempt from buffers as detailed below:

> *Artificial. Wetlands created from non-wetland sites including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, stormwater facilities, farm ponds, and landscape amenities; provided, that wetlands created as mitigation shall not be exempted.*

Ditch A is not classified as a fish and wildlife habitat conservation area per *CMC 16.61.010(A)(5)* which defines "Water of the State" as omitting, "man-made ditches or bio-swales that have been created from areas not meeting the definition of waters of the state."

Landscape Position

According to the Washington State Department of Ecology's Water Quality Atlas, the site is in the Lacamas Creek 12-digit hydrologic unit code (HUC) 170800050305 and Watershed Resource Inventory Area (WRIA) 28 Salmon – Washougal. Onsite hydrology generally flows downslope to the east into the wetlands and stream.

Oregon White Oak

The Washington Department of Fish and Wildlife (WDFW) identifies which oak communities are considered priority habitats through its Priority Habitats and Species (PHS) program. The Washington Natural Heritage Program (WNHP) defines a North Pacific Oak Woodland as a community dominated or co-dominated by oak and associated with dry, low-elevation sites or those with frequent fires pre-settlement. Oregon white oak woodlands are associated with eight different plant communities, including a wide variety of native herbaceous and shrub species. Oak woodlands provide a mix of feeding, nesting, and breeding habitat for many wildlife species (Nolan and Azerrad 2024). In addition to oak woodlands, individual oak trees can be considered a priority habitat if they provide considerable value to wildlife. In addition to woodland communities, oaks are also associated with prairies and savannas in Washington. These

communities are considered wooded grasslands and are an association of upland grassland and meadows (Rocchio and Crawford 2015).

Two oak clusters were identified onsite, with sixteen oaks in Cluster 1 and four oaks in Cluster 2. The total dripline of Cluster 1 is approximately 0.10 acres and the total dripline of Cluster 2 is approximately 0.05 acres. Although PHS mapping identifies each cluster as an oak woodland, these areas do not meet woodland size requirements, and each oak shall be considered an individual (Figure 3). Details for Oaks 2-12 will be discussed in this report, as these oaks will be impacted by the proposed project. For more details on other oaks onsite, see the *Critical Areas Report for Mills Property (*ELS 2025b).

Herbaceous Bald Habitat

According to *CMC 16.61.010(A)(2)*, priority habitats and species are identified by WDFW; however, *CMC 16.61.010(A)(1)* states that lists, categories, and definitions of species promulgated by WDFW are provided to the City to be used for guidance only. According to the WDFW Priority Habitat and Species Program (WDFW 2025b) herbaceous balds are defined as:

"*…variable-sized patches of grass and forb vegetation located on shallow soils over bedrock that commonly is fringed by forest or woodland. Typically consists of low-growing vegetation adapted for survival on shallow soils amid seasonally dry conditions, and is often on steep slopes. Dominant flora includes herbaceous vegetation, dwarf shrubs, mosses, and lichens. Rock outcrops, boulders, and scattered trees are often present, especially Douglas-fir, Pacific madrone, and Oregon white oak. Balds occur within mid-montane to lowland forest zones. On slopes near saltwater shorelines in the northern Puget Trough, herbaceous balds and herbaceous bluffs can sometimes be difficult to differentiate. Balds typically are smaller than 5 ha (12 ac), although some can be up to about 100 ha (≅ 250 ac)*" (WDFW 2008).

ELS biologists identified two areas onsite that meet herbaceous bald criteria (HB-1 and HB-2). These areas are defined by shallow soils with vegetation dominated by grasses and forbs. Dominant vegetation found on herbaceous bald locations included Camas lily (*Camassia quamash*), licorice fern (*Polypodium glycyrrhiza*), various grasses, moss, and blackberry species. Although Camas lily was observed on the entirety of both herbaceous balds, it comprises less than 0.25 acres and is not considered a priority habitat itself. Douglas fir (*Pseudotsuga menziesii*) trees were rooted near herbaceous bald locations but not directly on the balds. All observed oaks were rooted within herbaceous bald boundaries and many displayed stunted crowns and curled leaves, likely from stress related to shallow soils and shading by Douglas fir trees. Herbaceous bald boundaries were delineated based on vegetation and the presence of bedrock under shallow soils.

Standard Wetland Buffer Modifications

According to *CMC 16.53.050.C(1)*, standard wetland buffer widths may be reduced under certain conditions, provided the project results in no net loss or a net gain in ecological functions and values provided by the wetland. The section also specifies that buffer width reductions allowed

under subsections (C)(1)(a) and (C)(1)(b) may be combined, provided that minimum buffer widths shall never be less than fifty feet for Category III wetlands. In *italic* font are excerpts from *CMC* detailing the criteria required to utilize the buffer reductions, with a description of how this project will meet the criteria in regular font.

WETLAND BUFFER REDUCTION

LOWER IMPACT LAND USES

According to *CMC 16.53.050.C(1)(a)*, buffer widths recommended for proposed land uses with high-intensity impacts to wetlands can be reduced to those recommended for moderate-intensity impacts if both the following criteria are met:

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

Wetland A: Wetland A extends onto the adjacent parcel to the east (parcel 178171000), which was permitted for the Enclave development in June 2025 (NWS-2025-263). A vegetated corridor, ranging in width between approximately 141 feet to 491 feet from Wetland A's eastern boundary to the eastern parcel boundary, will be established and protected in perpetuity through a conservation covenant or similar (Figure 6). Protection and enhancement of Wetland A and its buffer on the Enclave parcel are mandated by the permit (NWS-2025-263), providing an additional corridor width of approximately 300 feet to the adjacent development (Appendix B). This additional corridor width will increase the ecological functions of critical areas on- and offsite and further minimize impacts caused by the proposed project. The *Buffer Modification and Onsite Mitigation Plan for Enclave Property* (ELS 2025) details the offsite mitigation and protection measures.

Wetland B: A corridor ranging between approximately 66 feet and 260 feet will be established between Wetland B and the location of HB-1 and Oak Cluster 1. Wetland B's buffer will be increased and enhanced in this area to provide more protection for nearby habitats and to create continuity between the wetland and other priority habitat areas in the vicinity.

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

Wetland A and B: Infiltration is not feasible due to the shallow soils present over solid bedrock; however, runoff impacts to wetlands and buffers from the development will be minimized by collecting stormwater for detention and treatment prior to regulated discharge toward the wetlands, to maintain hydrologic input to the wetlands. Where possible, disturbed vegetated areas will be restored by placing topsoil that meets Ecology standards on top of the grading slopes to allow for reestablishment of native vegetation. Many areas onsite are composed of shallow soils over solid bedrock. If solid bedrock is present as anticipated, cut slopes will be minimized to

the greatest extent practicable by control blasting near vertical slopes to limit disturbance from the development toward the wetland. These near vertical slopes will not be suitable for revegetation; however, disturbance beyond the top of the cuts will be minimized.

Stormwater facilities proposed within the buffers are designed to meet city and state standards for managing stormwater runoff prior to discharge towards the critical areas. The discharge locations will be placed as far from the critical areas as feasible to allow for the greatest flow path through the wetland buffers. No untreated stormwater will be discharged from the project. Streetlights will be directed down and away from the wetland to the greatest extent practicable to reduce light pollution. Increases to ambient noise after construction is complete are expected, as the proposed subdivision is in a growing mixed-use residential area with commercial uses required by City zoning standards. However, noise generated by the completed project will be comparable to surrounding land uses and is not anticipated to exceed standard acceptable levels. The project will retain a significant amount of heavily vegetated areas which will reduce noise disturbances to the wetlands and stream. Additionally, the buffers for both wetlands will be enhanced by controlling invasive species to provide an overall higher ecological function than currently exists onsite (Figure 6). A full description of buffer enhancement activities can be found in the *Onsite Mitigation Plan* section of this report.

The above design measures will be implemented to reduce the land use intensity of the project and reduce adverse impacts. Therefore, the project meets the required criteria, and this buffer reduction should be allowed. As such, the buffers for Wetland A and Wetland B are reduced from 150 feet to 110 feet per *CMC Table 16.53.040-3* (Figure 4).

Restoration

The following is an excerpt from *CMC 16.53.050.C(1)(b)*: *Buffer widths may be reduced up to twenty-five percent if the buffer is restored or enhanced from a pre-project condition that is disturbed (e.g., dominated by invasive species), so that functions of the post-project wetland and buffer are equal or greater. To the extent possible, restoration should provide a vegetated corridor of a minimum one hundred feet wide between the wetland and any other priority habitat areas as defined by the Washington State Department of Fish and Wildlife. The habitat corridor must be protected for the entire distance between the wetland and the priority habitat area by some type of permanent legal protection such as a covenant or easement. The restoration plan must meet requirements in subsection D of this section for a mitigation plan, and this section for a critical area report.*

Wetland A and B: Invasive species such as reed canarygrass and Himalayan blackberry are present in the wetland and buffer areas of both wetlands and are prolific in some areas. The buffers of both Wetland A and Wetland B will be enhanced by removing invasive vegetation, which will allow native species to reestablish and provide an overall net gain in ecological functions. Two vegetated corridors, one for each wetland, will be established and protected as described in the *Lower Impact Land Uses* section of this report. The vegetated corridors will be protected in perpetuity through a conservation covenant or similar legal mechanism and the restoration plan will follow all applicable guidelines outlined in the *CMC*. As such, the buffers for

Wetland A and Wetland B are reduced further from 110 feet to 82.5 feet per *CMC 16.53.050.C(1)(b)* (Figure 4).

WETLAND BUFFER AVERAGING

According to *CMC 16.53.050(C)(2)*, averaging buffers is allowed in conjunction with any of the other provisions for reductions in buffer width listed in subsection (C)(1), provided that minimum buffer widths listed in subsection (C)(1)(c) are adhered to. This project proposes buffer averaging to further avoid and minimize wetland buffer impacts caused by construction of the subdivision, and will adhere to the following criteria:

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

Wetland A: A total of 0.015 acres (661 sq. ft.) of the buffer will be decreased in the southwestern portion of the wetland and correspondingly increased in the northwest portion of the wetland. **Wetland B:** A total of 0.216 acres (9,388 sq. ft.) of the buffer will be decreased along the northeast and western portions of the wetland and correspondingly increased in the southeast portion of the wetland (Figure 4).

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

Wetland A and Wetland B: The buffer areas proposed for decrease generally provide equal or less ecological function than the areas proposed for increase, resulting in no net loss of function. Native vegetation is less dense, and invasive species are present in higher quantities in decreased areas than increased areas. Thus, no net loss is achieved, and this criterion is met.

c. The averaged buffer width at its narrowest point shall not result in a width less than seventy-five percent of the required width, provided that minimum buffer widths shall never be less than fifty feet for all Category 1, 2, and 3 wetlands and twenty-five feet for all Category IV wetlands.

Wetland A and Wetland B: The standard wetland buffer width, after applying the allowed reduction, is 82.5 feet. The averaged buffer width at its narrowest point is approximately 62 feet, which meets the requirement of being no less than 75 percent of the standard width. Buffer averaging is shown on Figure 4.

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

Wetland A and Wetland B: It is not anticipated that onsite mitigation will result in a change to the wetland ratings, as mitigation will take place in the wetland buffers. Functions of the wetland buffers will increase, but the ratings are expected to remain the same.

AVOIDANCE AND MINIMIZATION

The preferred mitigation sequencing of first avoidance, then minimization, and finally compensation for unavoidable impacts was taken into consideration during the project design process. The proposed subdivision has been designed to completely avoid direct impacts to Wetland A, Wetland B, Oak Cluster 2, and Herbaceous Bald 2, by utilizing lower impact development strategies in conjunction with buffer enhancement and averaging as described in the *Standard Wetland Buffer Modifications* section of this report. Several layouts were tested during the project design process to locate the majority of development outside of critical areas boundaries. Grading impacts to Oak Cluster 2 and HB-2 have been completely avoided by incorporating a 2:1 slope up to the proposed open space in which they are located. This area also appears to be solid rock based on site observations and the project geotechnical findings; therefore, the 2:1 slopes may be steeper and thus minimize the grading impact around the oak cluster and herbaceous bald even further.

Impacts to the buffer for Wetland A, Wetland B, Oak Cluster 1, and HB-1 could not be entirely avoided due to the City mandated location of North Shore Blvd., topographical and environmental constraints onsite, as well as required roadway circulation, density requirements, stormwater paths, and parking lots to support the residential and commercial uses as required by *CMC*. However, impacts will be minimized to the greatest extent practicable by applying the buffer reductions described above, retaining and protecting oaks and herbaceous balds to the maximum extent possible, and establishing and protecting two vegetated corridors onsite. Impacts will be further minimized by utilizing best management practices (BMPs) as described in the *Best Management Practices* subsection of this report.

BEST MANAGEMENT PRACTICES

Before work begins, a construction entrance will be established and clearing and grading will occur within the project area. All construction and tree removal will strictly adhere to the designated construction area. BMPs utilized prior to, during, and after construction to further minimize impacts to critical areas are as follows:

- Install silt fencing or similar measures to control sedimentation and general ground disturbance.
- Locate construction access and staging and stockpile areas within uplands.
- Limit ground disturbance to only those areas necessary to construct project elements.
- Grading will occur during the dry season to minimize surface runoff.
- Maintain stable construction access per the 2019 *Stormwater Management Manual for Western Washington*.
- Use a water truck as needed during construction to control fugitive dust.
- Maintain, repair, and service vehicles and equipment outside of any critical area onsite.
- Maintenance, service, and repair operations include, but are not limited to:
    - Prohibiting discharge of wastewaters into stormwater drains or hose down work areas.
    - Removing the buildup of oils and grease on equipment.

- Removing construction maintenance waste materials from work site and dispose and/or recycle.
- Having a spill kit onsite.

- Stabilize exposed soil with straw mulch or other suitable BMP if left exposed and unworked according to the *2019 Stormwater Management Manual for Western Washington*.

UNAVOIDABLE IMPACTS

The project will result in approximately 0.184 acres (8,001 sq. ft.) of wetland buffer impact and approximately 0.088 acres (3,852 sq. ft.) of herbaceous bald impact. The project will also remove Oaks 2-12, resulting in approximately 0.048 acres (2,077 sq. ft.) of oak canopy dripline impact from clearing and grading for construction of North Shore Blvd. (Figures 4 and 5, Table 2).

Table 2. Impact Summary

Oregon White Oak Trees			
Name	**Size**	**Impact Type**	**Impact Area**
Oak 2	8-inch DBH	Individual Oak Removal	0.048 acres (2,077 sq. ft.) Combined Dripline Impact[1]
Oak 3	8-inch DBH		
Oak 4	6-inch DBH		
Oak 5	6-inch DBH		
Oak 6	5-inch DBH		
Oak 7	9-inch DBH		
Oak 8	10-inch DBH		
Oak 9	8-inch DBH		
Oak 10	10-inch DBH		
Oak 11	5-inch DBH		
Oak 12	10-inch DBH		
		Total Oak Impact	0.048 acres (2,077 sq. ft.)

Herbaceous Balds			
Name	**Size**	**Impact Type**	**Impact Area**
HB-1	0.15 acres (6,628 sq. ft.)	Permanent	0.088 acres (3,852 sq. ft.)

Wetlands				
Critical Area	**Impact Type**	**HGM[2]**	**Ecology Rating[3]**	**Impact Area**
Wetland B	Buffer	Depressional	Category III	0.184 acres (8,001 sq. ft.)

[1]The driplines for Oaks 2-12 are contiguous and shall be combined for the purpose of mitigation calculations. [2]NRCS 2008. [3]Hruby & Yahnke 2023.

Oak Mitigation Discussion

Oak Mitigation Requirements

According to the Guidance, compensatory mitigation should ideally take place onsite or as close to the site as possible when options for onsite mitigation are limited, and any plan for compensatory mitigation must address both the physical loss of oak habitat and the temporal loss in ecological function (Nolan and Azerrad 2024). This mitigation plan accounts for both the physical and temporal losses from the project, as described later in this section. Because North Shore Blvd. construction is still under discussion between the applicant and the City, oak habitat will be retained as long as possible and will not be impacted until road construction begins. Suitable area for oak mitigation is limited onsite due to the densely forested canopy and sub-canopy, which interfere with the potential for oak establishment as they require ample sunlight and open area. Use of open spaces that may be suitable for oak mitigation is undetermined, and these areas may not be available in the future due to *CMC* requirements and potential changes to North Shore Blvd. design and construction. Because of this, a portion of temporal impacts will be offset by enhancing retained oak habitat onsite and the remainder will be offset by purchasing 1.063 credits from Terrace.

Oak Woodland Determination

Mitigation for impacts to oak woodlands differs from mitigation for impacts to individual oaks. As such, an assessment must be completed to determine whether the project impacts an oak woodland or individual oaks. Each oak on- and offsite is assigned a habitat area with a 118-foot radius, which produces an area of approximately one acre per oak. If two or more of these habitat areas overlap, further investigation is required to determine if they meet the definition of an oak woodland. To be considered an oak woodland, there must be a minimum density of five large oaks per acre and the oak component must be no less than 25 percent of the total canopy cover. The habitat areas for all oaks in Cluster 1 overlap; however, the oak component of the canopy comprises approximately 7.46 percent of the total canopy. The habitat areas for all oaks in Cluster 2 also overlap; however, the oak component of the canopy comprises approximately 4.16 percent of the total canopy. The habitat areas for Cluster 1 and Cluster 2 do not overlap and the oak component of each cluster comprises less than 25 percent of the total canopy. As such, all oaks onsite are considered individuals, and project impacts will be calculated according to the WDFW process for individual oak trees (Nolan and Azerrad 2024). Table 3 summarizes the completed oak woodland assessment, which is also depicted on Figure 3.

Table 3. Oak Woodland Determination

Identifier	Habitat Area Total	Oak Dripline Total	Oak Canopy Coverage
Oak Cluster 1	1.34 acres	0.10 acres	7.46 percent
Oak Cluster 2	1.20 acres	0.05 acres	4.16 percent

Physical Impacts

After it has been determined whether the project will impact oak woodland or individual oaks, mitigation to offset project impacts must be calculated. Physical mitigation is designed to offset

the physical losses of an impacted oak and is determined by the DBH of the impacted oak. Table 4 summarizes the mitigation needed to offset physical impacts of the proposed project. No mitigation is required for removal of Oak 6 or Oak 11, as both oaks have a DBH of approximately 5 inches; therefore, these oaks are excluded from mitigation calculations.

Table 4. Oak Mitigation to Offset Physical Impacts

Name	Mitigation Ratio[1]	Oak Quantity
Oak 2	50:1	50
Oak 3		50
Oak 4		50
Oak 5		50
Oak 7		50
Oak 8		50
Oak 9		50
Oak 10		50
Oak 12		50
	Total Oak Quantity	**450**
	Total Area for Physical Loss (Oak Quantity x Spacing[2] = Total Area)	**0.90 acres (39,150 sq. ft.)**

[1]Nolan and Azerrad 2024. [2]Spacing = 87 square feet (Nolan and Azerrad 2024).

Temporal Impacts

Because oaks are slow-growing trees, temporal mitigation is designed to offset the temporal functional losses of an impacted oak by enhancing and/or preserving existing oak habitat. An assessment must be completed for the functions of each impacted oak prior to and after development and will determine the mitigation ratios to be used. Because the oaks will be removed entirely, a post-development assessment will not completed and post-development functions shall be considered minimal. After mitigation ratios have been established, the dripline of each oak is used to determine how much area is needed to offset temporal impacts. This information is summarized in Table 5. Functional assessments and mitigation calculations are in Appendix A.

Table 5. Mitigation for Temporal Impacts

Name	Baseline Functions	Functions After Development	Mitigation Ratio[1]	Combined Dripline[2]
Oak 2	High	Minimal	10:1	0.048 acres (2,077 sq. ft.)
Oak 3				
Oak 4				
Oak 5				
Oak 7				
Oak 8				
Oak 9				
Oak 10				
Oak 12				
Total Area Required for Temporal Mitigation[3]				**0.477 acres (20,770 sq. ft.)**
Temporal Mitigation to be Mitigated Onsite				**0.150 acres (6,522 sq. ft.)**
Temporal Mitigation Remaining after Onsite Enhancement				**0.327 acres (14,248 sq. ft.)**

[1]Nolan and Azerrad 2024. [2]The driplines for Oaks 2-12 are contiguous and the assigned mitigation ratio is consistent for each oak; therefore, the combined dripline shall be used for mitigation calculations. [3]Dripline x Ratio = Area Required.

OREGON WHITE OAK MITIGATION BANK SELECTION RATIONALE

The Oregon white oaks proposed for removal are located in the service area for the Terrace Oak Bank (Bank). The oak trees are approximately 5 miles southeast of the Bank which is in the southeastern portion of the service area (Figure 7). The proposed oak removal will be mitigated by purchasing credits from the Bank at ratios specified in the Terrace Oak Bank's Mitigation Banking Instrument (MBI).

Rationale for selecting this mitigation bank is as follows:

- There is not adequate space available onsite to fully compensate for oak habitat losses utilizing onsite mitigation. The use of the Bank will ensure that habitat functions common to urban areas can be fully replaced.
- The habitat functions lost from the proposed oak removal correspond directly with the habitat creation purpose, goals, and objectives at the Bank which identifies 13.93 acres of existing Oregon white oak woodland WDFW Priority Habitat that will be restored to pre-agricultural conditions through creation, enhancement, and preservation. Creation and enhancement will be accomplished through planting oak saplings and/or native understory plantings, removing of Douglas-fir, and establishing a conservation easement over the entire 13.93 acres.
- The use of Terrace Oak Bank credits will provide immediate compensation for the accrued oak impacts.

The 2008 *Compensatory Mitigation for Losses of Aquatic Resources, Final Rule* (Corps) recommends purchasing mitigation bank credits for ecological considerations (lower risk of failure and lower temporal loss of resources and services) and to avoid the maintenance and

contingency issues and outright failures that often accompany permittee-responsible mitigation sites. As such, use of the Terrace Oak Bank substantially lowers the risk of failure and temporal loss of resource functions and services over newly established, permittee-responsible mitigation sites and offsite mitigation is anticipated to be more meaningful and beneficial to the watershed's habitat functions.

Functions Provided at Oak Bank

The general goal of the Bank is to restore the approximately 13.93 acres to a state similar to its pre-agricultural condition through creation, enhancement, and preservation of an existing Oregon white oak woodland. All functions related to oak habitat are expected to increase as a result of design implementation. The primary ecological goals of the Bank are as follows:

- Removal of all existing impervious surfaces, including buildings, large equipment, gravel and paved areas, and debris, followed by replanting oak saplings and native understory species.
- Removal of invasive species in creation, enhancement, and preservation areas, primarily English ivy (*Hedera helix*) and Himalayan blackberry (*Rubus armeniacus*).
- Removal of Douglas-fir (*Pseudotsuga menziesii*) overstory as recommended by WDFW to reduce competition and further degradation of the Oregon white oak woodland from shading.
- Replanting of both creation and enhancement areas with oak saplings and native understory species to augment and expand existing Oregon white oak habitat.
- Preserve the Bank through a conservation easement.

Wildlife Habitat

The proposed development site plan will provide diverse habitat for a variety of large and small mammals, songbirds, waterfowl, amphibians, and insects by improving the condition of the existing Oregon White Oak habitat through creation and enhancement that includes replanting of oaks and native understory, removing invasive species, non-native debris, and impervious surfaces, and eliminating Douglas-fir encroachment.

Anticipated Functional Lift

The creation, enhancement, and Douglas-fir stand release activities proposed in the Bank will provide a variety of benefits lifting overall habitat functions. Invasive species eradication and installing oak trees and native understory in open areas will increase the site's potential to provide habitat by providing improved and increased diversity of plant species, structure, and interspersion of habitat. Removing Douglas-fir competition will allow the existing oaks to increase branching and smaller oak trees to become better established. The changes will increase acorn production, provide additional food for wildlife, and support a greater diversity of wildlife species as will removing impervious surfaces and debris. All functions impacted by removing an oak tree at the project site will be fully mitigated at the Bank.

Proposed Mitigation Credits

The mitigation credits required for oak impacts will be determined using calculations described in the Guidance (Nolan and Azerrad 2024). Because the Guidance recommends physical impacts be mitigated by planting new oaks, and temporal impacts be mitigated by enhancing or preserving existing oak habitat, physical impacts shall be treated as creation and temporal impacts shall be treated as enhancement and preservation. As such, physical impacts shall be assigned a 2:1 creation ratio and temporal impacts shall be assigned a 1:1 enhancement and preservation ratio. Because mitigating at the bank increases the likelihood of mitigation success and impacts can be mitigated immediately, the total credit amount shall be multiplied by a "risk reduction factor" of 50 percent (0.5). Table 9 summarizes the impact type, mitigation ratio, and total credits proposed for compensation.

Table 6. Proposed Credit Purchase Summary

Impact Type[1]	Impact Area	Credit Type	Ratio	Multiplier	Credits
Physical	0.899 acres (39,150 sq. ft.)	Creation	2:1	0.5	0.899
Temporal	0.327 acres[2] (14,248 sq. ft.)	Enhancement/ Preservation	1:1		0.164
				Total	**1.063**

[1]Nolan and Azerrad 2024. [2]Remaining mitigation required after onsite enhancement.

Credit Purchase or Transfer Timing

Following permit issuance, HSR Capital, LLC, as the applicant, will enter into a Buy/Sell Agreement with Terrace Oak Bank, for purchase of mitigation credits (in the quantity specified in Table 9) that would appropriately mitigate for the proposed project impacts. The actual purchase of credits will occur upon permit issuance. Prior to impacting the project oak, the applicant will submit proof of transfer of mitigation credits to project managers for the City of Camas. Proof of the mitigation transfer will be provided in the form of a notification letter to the approving agencies. Upon service of this notification, the mitigation requirement to purchase 1.063 mitigation credits will be fully satisfied.

Confirmation of Mitigation Credit Availability

Proof of the current number of available mitigation credits at the Terrace Oak Bank site will be confirmed by the approving agency, City of Camas and through the advising members of the Oak Bank Review Team.

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Onsite Enhancement Plan

Mitigation Goals and Discussion

The goal of this onsite mitigation plan is to fully compensate for wetland buffer and herbaceous bald impacts, partially compensate for oak temporal impacts associated with the proposed development, and to satisfy the aforementioned buffer reduction requirements.

Wetland Buffers

To compensate for wetland buffer impacts, approximately 0.184 acres (8,001 sq. ft.) of the buffer for Wetland A will be enhanced by removing invasive species and installing native species, for an overall buffer enhancement ratio of 1:1. Although the majority of buffer impacts are associated with Wetland B, the buffer planting area will be located entirely within the buffer for Wetland A. The majority of Wetland B's buffer is densely forested with a diverse sub-canopy, providing ample protection for the wetland from the surrounding development, while the portions of Wetland A's buffer proposed for planting consist of regularly mowed grasses and provide very little protection for the wetland. As such, mitigating impacts within Wetland A's buffer will provide a higher ecological lift than mitigating within Wetland B's buffer.

Additionally, a vegetated corridor will be established within each wetland buffer, and the entirety of both buffers will be enhanced through invasive species removal to satisfy buffer reduction criteria, further contributing to the functional gain onsite. Enhancing the buffers will improve wetland protection from surrounding human activity, helping to preserve important habitat and

water quality functions. This enhancement will offset for any loss to functions or values and ensure no net loss of ecological function. Furthermore, the enhancement areas will be protected in perpetuity by installing protective fencing and signage, and by establishing a conservation covenant or similar legal mechanism. The legal mechanism shall protect the Existing Oak Habitat and Herbaceous Bald Enhancement Areas and the entirety of the vegetated corridors, which include all other critical areas required for protection. Temporary impacts to Wetland A's buffer will be restored to pre-project conditions by applying a native seed mix to disturbed areas and will not require further mitigation or monitoring.

Oak and Herbaceous Bald Habitat

Approximately 0.15 acres (6,522 sq. ft.) of retained oak and HB habitat areas will be utilized to compensate for HB impacts and a portion of oak temporal impacts. This approach is ecologically appropriate due to the correlation between oak habitat and HB habitat, and because all oaks present onsite were near or within HB boundaries. According to WDFW's HB priority area description, dominant flora found on HBs includes herbaceous vegetation, dwarf shrubs, mosses, and lichens. Rock outcrops, boulders, and scattered trees are often present, especially Douglas fir, Pacific madrone (*Arbutus menziesii*), and Oregon white oak (WDFW 2025b). These conditions were present within the oak and HB areas, which further supports utilizing retained habitat as mitigation for oak temporal impacts and HB impacts. Oak physical impacts and the remaining temporal impacts will be offset by purchasing 1.063 credits from Terrace, as described in the *Proposed Mitigation Credits* section of this report.

There is currently no guidance that details management recommendations for herbaceous bald habitat. To ensure no net loss is achieved and impacts are adequately compensated for, ELS recommends HB impacts be mitigated at a 1:1 ratio. Enhancement will consist of removing invasive species and seeding native herbaceous species commonly associated with oak and HB habitat (Table 7).

Objectives and Performance Standards

Monitoring and maintenance of the enhancement areas will occur for a 5-year period with annual monitoring and reporting occurring in Years 1, 2, 3, and 5. Monitoring and maintenance will ensure the mitigation area is meeting the mitigation plan's goals, objectives, and performance standards. To meet this goal, the following objectives and performance standards are proposed:

Objective 1: Control invasive plant species including, but not limited to, English ivy (Hedera helix), Himalayan blackberry (Rubus armeniacus), reed canarygrass, and Canada thistle (Cirsium arvense) throughout the Wetland Buffer Enhancement Area, Existing Oak Habitat and Herbaceous Bald Enhancement Areas, and Wetland Buffer Planting Area.

Performance Standard 1a: Remove existing invasive species in the enhancement areas. Document the removal in the as-built report.

Performance Standard 1b: In all years, invasive plant species (not including reed canarygrass) will not exceed 20 percent aerial cover within the enhancement areas.

Objective 2: Enhance the buffers for Wetland A and Wetland B by installing native vegetation within the Wetland Buffer Planting Area.

Performance Standard 2a: Install native species according to the specifications in Table 7. Document installation in the as-built report.

Performance Standard 2b: In Year 1, planted species will achieve 90 percent survival. If dead plants are replaced, this performance standard will be met. Volunteers will be included in species counts. Document in annual monitoring report.

Performance Standard 2c: In Year 2, planted species will achieve 85 percent survival. If dead plants are replaced, this performance standard will be met. Volunteers will be included in species counts. Document in annual monitoring report.

Performance Standard 2d: In Year 3, planted species will achieve a minimum of 25 percent aerial cover OR 75 percent survival. If dead plants are replaced, this performance standard will be met. Volunteers will be included in species counts. Document in annual monitoring report.

Performance Standard 2e: In Year 5, planted species will achieve 35 percent aerial cover. If dead plants are replaced, this performance standard will be met. Volunteers will be included in cover estimates. Document in annual monitoring report.

Objective 3: Enhance the retained oak and herbaceous bald habitat by seeding native herbaceous species in the Existing Oak Habitat Enhancement and Herbaceous Bald Enhancement Areas.

Performance Standard 3a: Spread native seed according to specifications in Table 8. Document in the as-built report.

Performance Standard 3b: In Year 1, native herbaceous species will achieve 15 percent aerial cover. If the areas are reseeded to meet cover requirements, this performance standard will be met. Document in annual monitoring report.

Performance Standard 3c: In Year 2, native herbaceous species will achieve 20 percent aerial cover. If the areas are reseeded to meet cover requirements, this performance standard will be met. Document in annual monitoring report.

Performance Standard 3d: In Year 3, native herbaceous species will achieve 25 percent aerial cover. If the areas are reseeded to meet cover requirements, this performance standard will be met. Document in annual monitoring report.

Performance Standard 3e: In Year 5, native herbaceous species will achieve 35 percent aerial cover. If the areas are reseeded to meet cover requirements, this performance standard will be met. Document in annual monitoring report.

Objective 4: Provide long-term protection for the enhancement areas.

Performance Standard 4a: Record a conservation covenant or similar legal mechanism protecting the Vegetated Corridors in perpetuity. This performance standard will be met when the protection mechanism is recorded by the City, and a copy will be provided in the as-built report.

Performance Standard 4b: Permanent fencing and logs salvaged from trees removed onsite will be installed along the boundary of the enhancement area. This performance standard will be met when the logs and fencing are reported to be in place in the final monitoring report.

Performance Standard 4c: Restrictive signage meeting *CMC* requirements will be posted every 100 feet along the fencing and will remain in legible condition. Signs will be replaced if they become missing or illegible. This performance standard will be met when signs are reported to be in place in the final monitoring report.

PLANTING SPECIFICATIONS

The enhancement areas will be cleared of invasive species, planted with native trees and shrubs, and seeded with herbaceous species, providing greater habitat diversity, refuge, and forage opportunities than currently exist onsite. Planting native trees and shrubs in the wetland buffers will improve their ability to trap sediments and pollutants, reduce stormwater surface flows, and protect the wetlands from the surrounding development. The proposed species were selected due to their hardy and fast-growing nature, ensuring quick establishment and a timely net gain in functions (Table 7). Actual planting locations will be determined in the field, with consideration to the listed spacing and density to produce the most natural appearance possible. The enhancement will also create more habitat interspersion adjacent to Wetland A, increase its value to a greater variety of animal species, and increase screening from the proposed development, resulting in an overall net gain in ecological functions. Impacts and proposed mitigation measures are summarized in Table 6.

Table 7. Proposed Impacts and Onsite Mitigation

Critical Area	Impact Type	Mitigation Ratio	Impact Area	Mitigation Total	Mitigation Activities
Wetland B	Buffer	1:1	0.184 acres (8,001 sq. ft.)	0.184 acres (8,001 sq. ft.)	• Remove invasive species • Install native species • Protect with fencing, signage, and a conservation covenant • Maintain and monitor for 5 years
Herbaceous Bald 1	Removal	1:1	0.088 acres (3,852 sq. ft.)	0.150 acres (6,522 sq. ft.)[2,3]	
Oak Cluster 1		--[1]	0.048 acres (2,077 sq. ft.)		

[1]See the Oak Mitigation Requirements *section of this report for required oak mitigation discussion. [2]Remaining oak impacts will be mitigated at Terrace Oak Bank. [3]Oak and HB impacts will be mitigated together due to their similar habitat conditions.*

Table 8. Wetland Buffer Planting Specifications

Species Name and Facultative Status[1]	Spacing[2]	Stock[3]	Quantity
Trees			
Red alder (*Alnus rubra,* FAC)	10 feet on-center	One-gallon Container	10
Black cottonwood (*Populus trichocarpa,* FAC)			10
Total Trees			**20**
Shrubs			
Red flowering currant (*Ribes sanguineum,* FACU)	6 feet on-center	One-gallon Container	45
Nootka rose (*Rosa nutkana,* FAC)			45
Common snowberry (*Symphoricarpos albus,* FACU)			45
Scouler's willow (*Salix scouleriana,* FAC)			45
Total Shrubs			**180**
Total Woody Species			**200**

[1]Corps 2012. [2]Actual planting locations will be determined in the field. [3]Actual plant stock will be determined based on nursery availability.

Table 9. Seed Mix Specifications

Sunmark Seeds International, Inc – Native Pollinator Mix			
Species	**Composition**	**Rate**	**Quantity**
Baby Blue Eyes (*Nemophila menziesii*)	20.00%	1 pound per 1,000 sq. ft.	7 pounds (6,522 sq. ft.)
Meadow Barley (*Hordeum brachyantherum*)	18.50%		
Blanketflower (*Gaillardia aristata*)	18.00%		
Coastal Tidytips (*Layia platyglossa*)	13.00%		
Riverbank Lupine (*Lupinus rivularis*)	10.0%		
Small Camas (*Camassia quamash*)	7.00%		
Tufted Hairgrass (*Deschampsia cespitosa*)	4.50%		
Black-Eyed Susan (*Rudbeckia hirta*)	3.50%		
Sweet Alyssum (*Lobularia maritima*)	2.00%		
Common Yarrow (*Achillea millifolium*)	1.75%		
Aspen Fleabane (*Erigeron speciosus*)	1.25%		
Oceanspray (*Holodiscus discolor*)	0.50%		
Total	**100%**		

**An alternate seed mix may be used in the Existing Oak and Herbaceous Bald Enhancement Areas, provided it is appropriate for the local habitat type and comprised entirely of native species.*

PLANTING PLAN

Site Specifications

- Stake or flag the enhancement area.
- Investigate for and remove invasive and competing species from the mitigation area.
- Install mitigation plantings according to plant specifications.

Planting Implementation

- Install plants and spread seed in late fall (October-November) or early spring (February-March) at the intervals listed in Table 7 and Table 8.
- Space plants somewhat irregularly to encourage heterogeneity in the density and appearance of the mitigation area.
- Place plants so that their roots can extend down entirely and do not bend upward or circle inside the hole (no “J” or “U” roots).
- Position the root crowns so that they are at or slightly below the level of surrounding soil.
- Compact the soil around the planted species to eliminate air spaces.
- Irrigate all installed plants as site and weather conditions warrant.

Potted Stock

- Potted species will be purchased from a native plant nursery.
- Potted plants will be a minimum size of one-gallon.
- Potted stock will be kept cool and moist prior to being planted.
- Potted stock will have well-developed roots and sturdy stems, with an appropriate root-to-shoot ratio.
- Unplanted potted stock will be properly stored at the end of each day.

- The planting technician will be responsible for inspecting potted plant stock prior to and during planting, culling unacceptable plant materials.

Monitoring, Maintenance, and Contingency Measures

Monitoring and maintenance of the enhancement areas will occur for a 5-year period and annual monitoring and reporting will be conducted in Years 1, 2, 3, and 5. Plant counts will be conducted in Years 1, 2, and 3, to determine percent survival of installed species. Native volunteers may be included. Percent of aerial cover will be assessed in Year 5 using visual estimation. At least six monitoring plots will be established in the Wetland Buffer Enhancement Areas, one plot in the Wetland Buffer Planting Area, and one plot in each Existing Oak Habitat and Herbaceous Bald Enhancement Area during as-built activities to assess performance standards. Additionally, a photostation will be established at each monitoring plot to photo-document vegetation establishment. Photostation locations and the direction in which the picture is taken will also be recorded in the as-built report.

The goal of monitoring will be to determine if the previously stated performance standards are being met. Monitoring reports will be submitted no later than December 31st of each monitoring year to the City of Camas. Year 1 monitoring will begin a minimum of one year after plant installation.

At minimum, the following items will be included in the annual report:

- Location map and as-built drawing, including any changes.
- Historic description of the project, including dates of plant installation, current year of monitoring, and remedial actions taken (if any).
- Description of monitoring methods.
- Documentation of vegetative performance standards and overall development of plant communities.
- Assessment of invasive plant species and recommendations for management.
- Photographs from established photo stations.
- Observations of wildlife, including amphibians, invertebrates, reptiles, birds, and mammals. If photographs are taken, they will be included.
- Summary of the maintenance and contingency measures completed for the past year and proposed for the next year.

Monitoring

Monitoring will occur annually during the growing season, preferably during the same two-week period to better compare data. The following information will be gathered in the mitigation area:

- Percent survival of native species in Years 1, 2, and 3.
- Percent cover of native species in Year 5.
- Percent cover of non-native, invasive species in all monitoring years.

- General health of plants in the mitigation area, noting specific problems and potential causes.
- Photo documentation of vegetative changes over time from photo station established after plant installation.

Maintenance

Maintenance will include the following:

- Irrigating planting areas every other week or as needed in the dry season for the first three years. Taper watering in Years 2 and 3, watering approximately every 3 to 4 weeks in the dry season, or as needed.
- Remove competing herbaceous species at least three times yearly within a 3-foot radius of planted species and re-apply mulch, as needed.
- Weed-eat, spray, or mow invasive species as needed during the growing season.
- Replace dead or failed plants as described for the original installation to meet the minimum performance standards.

Contingency Measures

If the performance criteria are not met, steps will be taken to correct the situation in a timely manner. The following steps will be implemented when an area is identified as failing or potentially failing:

- Identify the cause(s) of the failure or potential failure.
- Identify the extent of the failure or potential failure.
- Implement corrective actions such as irrigating, fertilizing, and replanting.
- Document the activities and include this data in the monitoring reports.
- If a routine corrective action will not correct the problem, immediately consult with the appropriate agencies.
- Evaluate recommendations from resource agency staff and implement recommendations in a timely manner.

Funding for corrective actions will be the responsibility of the applicant.

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.

REFERENCES

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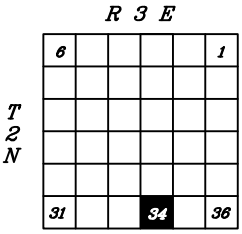
FIGURES

WASHINGTON



Latitude: 45.6193°
Longitude: -122.4156°

LOCATION MAP



PROJECT VICINITY MAP

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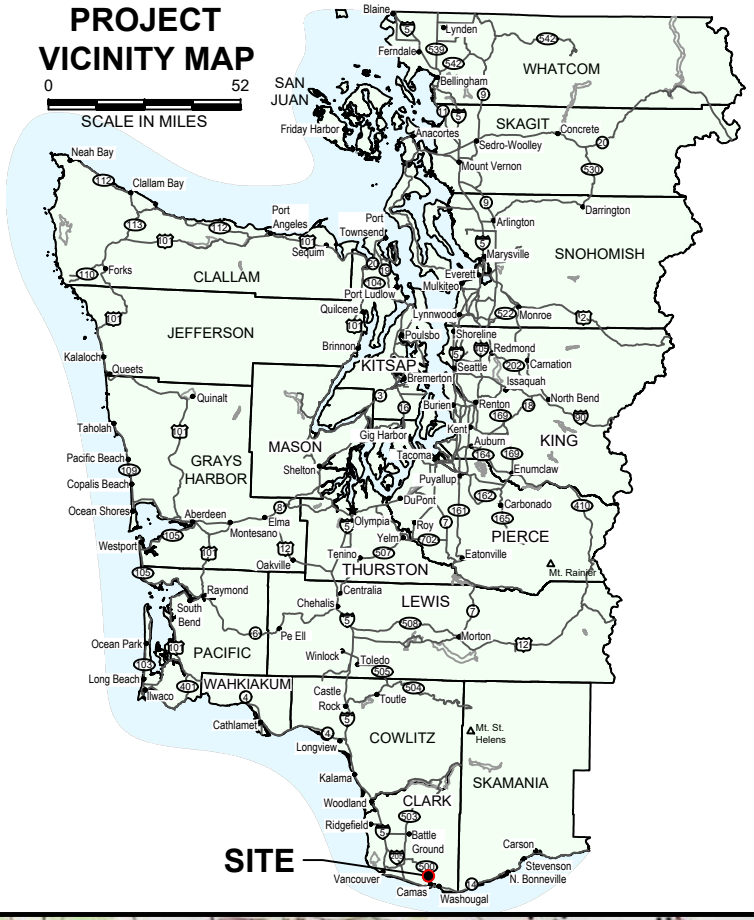

NOTE:
Quadrangle topographic map from USGS.

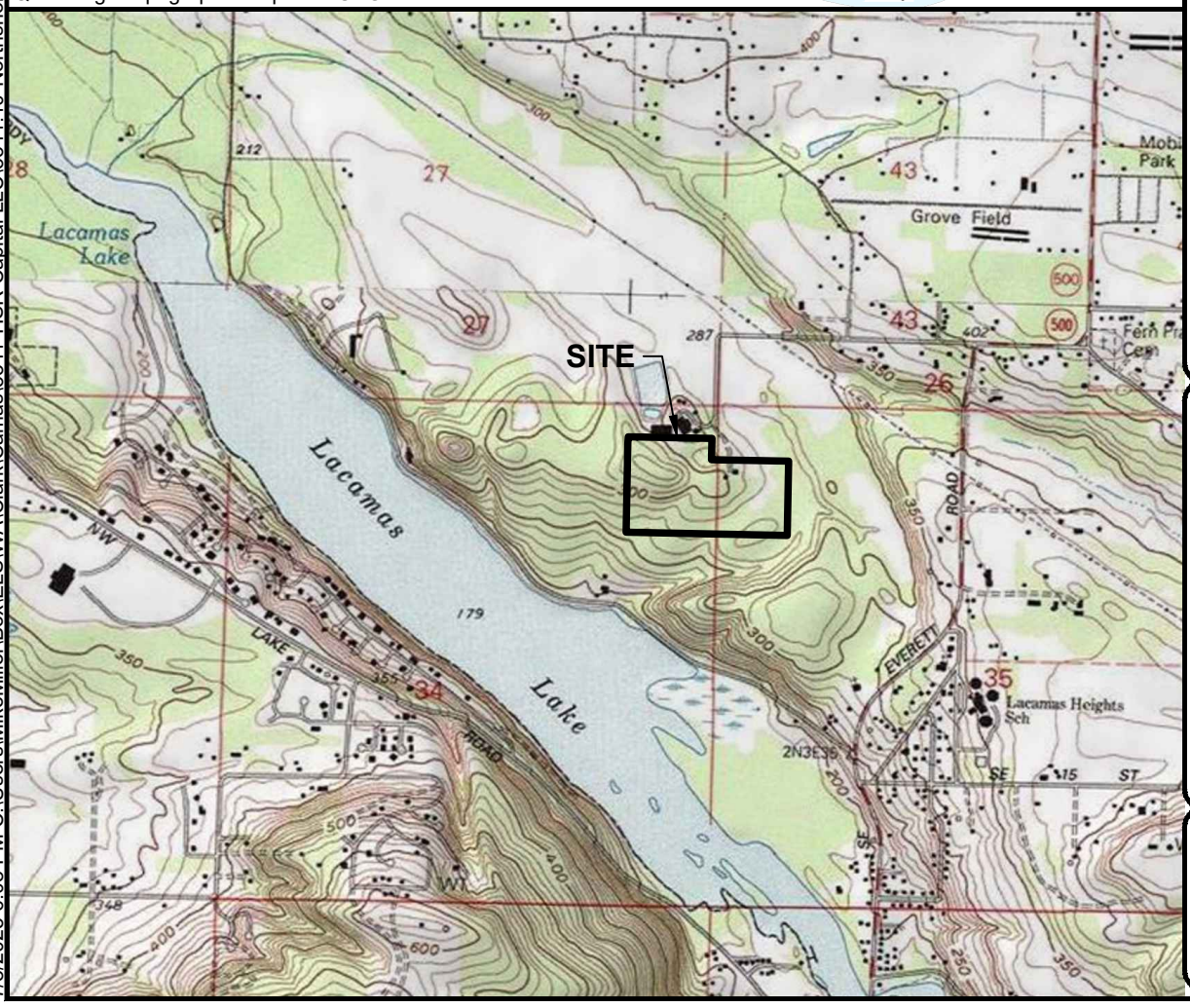

Figure 1
VICINITY MAP
Village at North Shore Mitigation
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 7/8/25
DWN: MPM
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3341.26

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

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LEGEND:
- Site Boundary
- Parcel Boundary
- Wetland Boundary
- Approximate Wetland Boundary
- Wetland Buffer - High Intensity (150')
- Functionally Isolated Wetland Buffer
- Stream with Flow Direction
- Stream Buffer
- 1'-5' Contours
- Contiguous Oak Dripline
- Herbaceous Bald Boundary

Offsite Wetland
Functionally isolated from site by road. Clark County MapsOnline identifies that this wetland unit was rated as a Category IV depressional wetland on 9/27/2016.

Parcel #:177891000

Existing Gravel Road

NE 252nd Avenue

Wetland B
Category III
Depressional
Emergent
Forested
Seasonally Flooded
(0.81 ac. onsite)

Existing Gravel Road

Wetland A
Category III
Depressional
Emergent
Forested
Seasonally Flooded
Saturated Only
Seasonally Flowing Stream
(2.26 ac. onsite)

Ditch A

Parcel #: 177885000

150'

Oak Cluster 2

Herbaceous Bald 2

Existing Parking Pad

Parcel #: 178175000

Herbaceous Bald 1

Oak Cluster 1

150'

Stream A
Type F

Parcel #: 178171000

NOTE(S):
1. Aerial (June 3, 2024) from Google Earth™.
2. Contours obtained from drawing provided by AKS Engineering & Forestry.
3. Wetland, herbaceous bald boundaries and oak driplines located using handheld GPS capable of submeter accuracy.
4. The offsite portion of Wetland A's boundaries on parcel 178171000 were delineated by ELS biologists in November 2023 and are described in the Critical Areas Report for Enclave Property (ELS 2025c).

Figure 2
EXISTING CONDITIONS
Village at North Shore Mitigation
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 7/8/25
DWN: MPM
REQ. BY: JB
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CHK:
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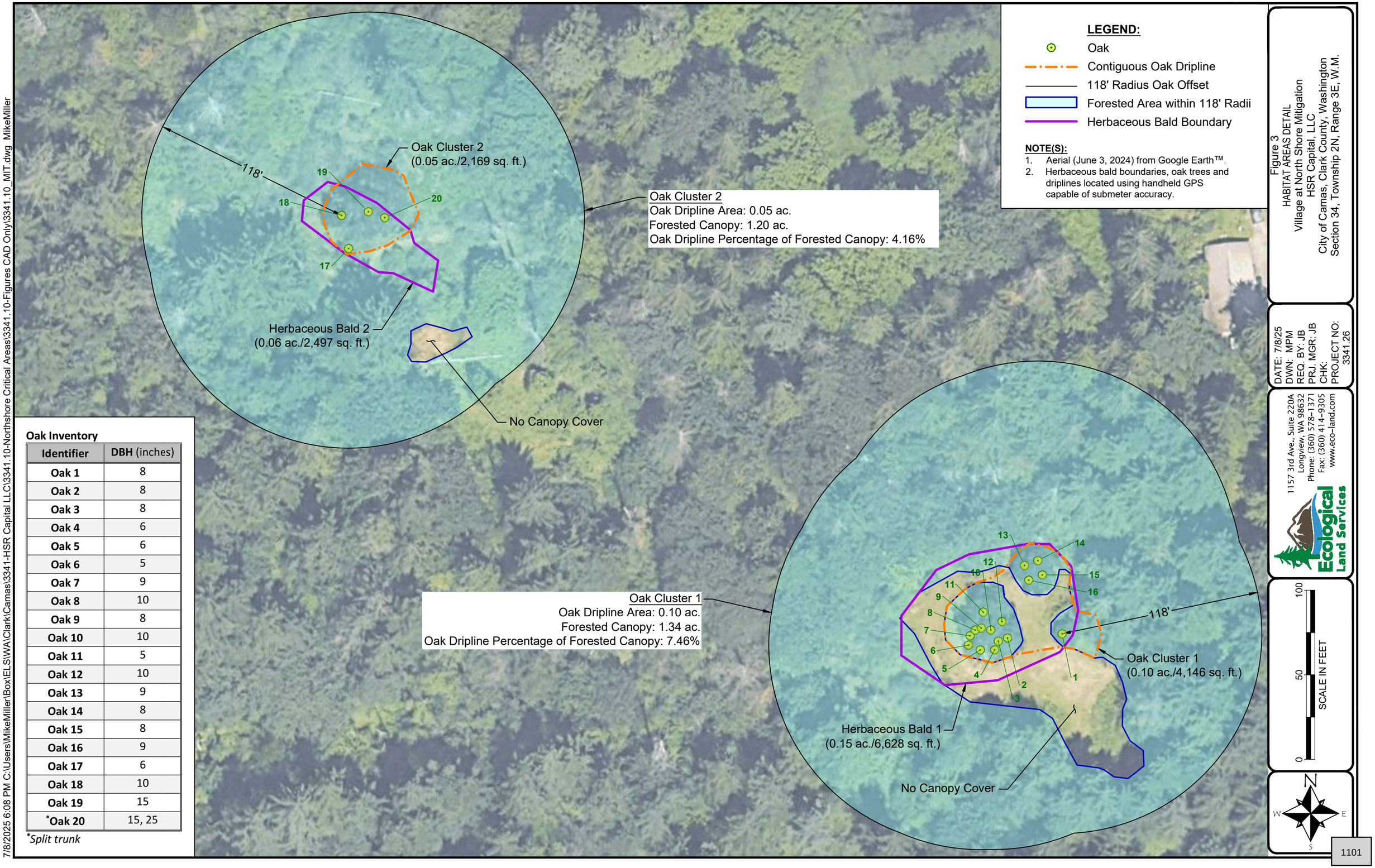
LEGEND:
Oak
Contiguous Oak Dripline
118' Radius Oak Offset
Forested Area within 118' Radii
Herbaceous Bald Boundary
NOTE(S):
1. Aerial (June 3, 2024) from Google Earth™.
2. Herbaceous bald boundaries, oak trees and driplines located using handheld GPS capable of submeter accuracy.
Oak Cluster 2
(0.05 ac./2,169 sq. ft.)
118'
19
18
20
17
Oak Cluster 2
Oak Dripline Area: 0.05 ac.
Forested Canopy: 1.20 ac.
Oak Dripline Percentage of Forested Canopy: 4.16%
Herbaceous Bald 2
(0.06 ac./2,497 sq. ft.)
No Canopy Cover
Oak Cluster 1
Oak Dripline Area: 0.10 ac.
Forested Canopy: 1.34 ac.
Oak Dripline Percentage of Forested Canopy: 7.46%
13
14
12
15
10
16
11
9
8
7
6
5
4
2
3
1
118'
Oak Cluster 1
(0.10 ac./4,146 sq. ft.)
Herbaceous Bald 1
(0.15 ac./6,628 sq. ft.)
No Canopy Cover
Oak Inventory
Identifier | DBH (inches)
Oak 1 | 8
Oak 2 | 8
Oak 3 | 8
Oak 4 | 6
Oak 5 | 6
Oak 6 | 5
Oak 7 | 9
Oak 8 | 10
Oak 9 | 8
Oak 10 | 10
Oak 11 | 5
Oak 12 | 10
Oak 13 | 9
Oak 14 | 8
Oak 15 | 8
Oak 16 | 9
Oak 17 | 6
Oak 18 | 10
Oak 19 | 15
*Oak 20 | 15, 25
*Split trunk
Figure 3
HABITAT AREAS DETAIL
Village at North Shore Mitigation
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.
DATE: 7/8/25
DWN: MPM
REQ. BY: JB
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Ecological Land Services
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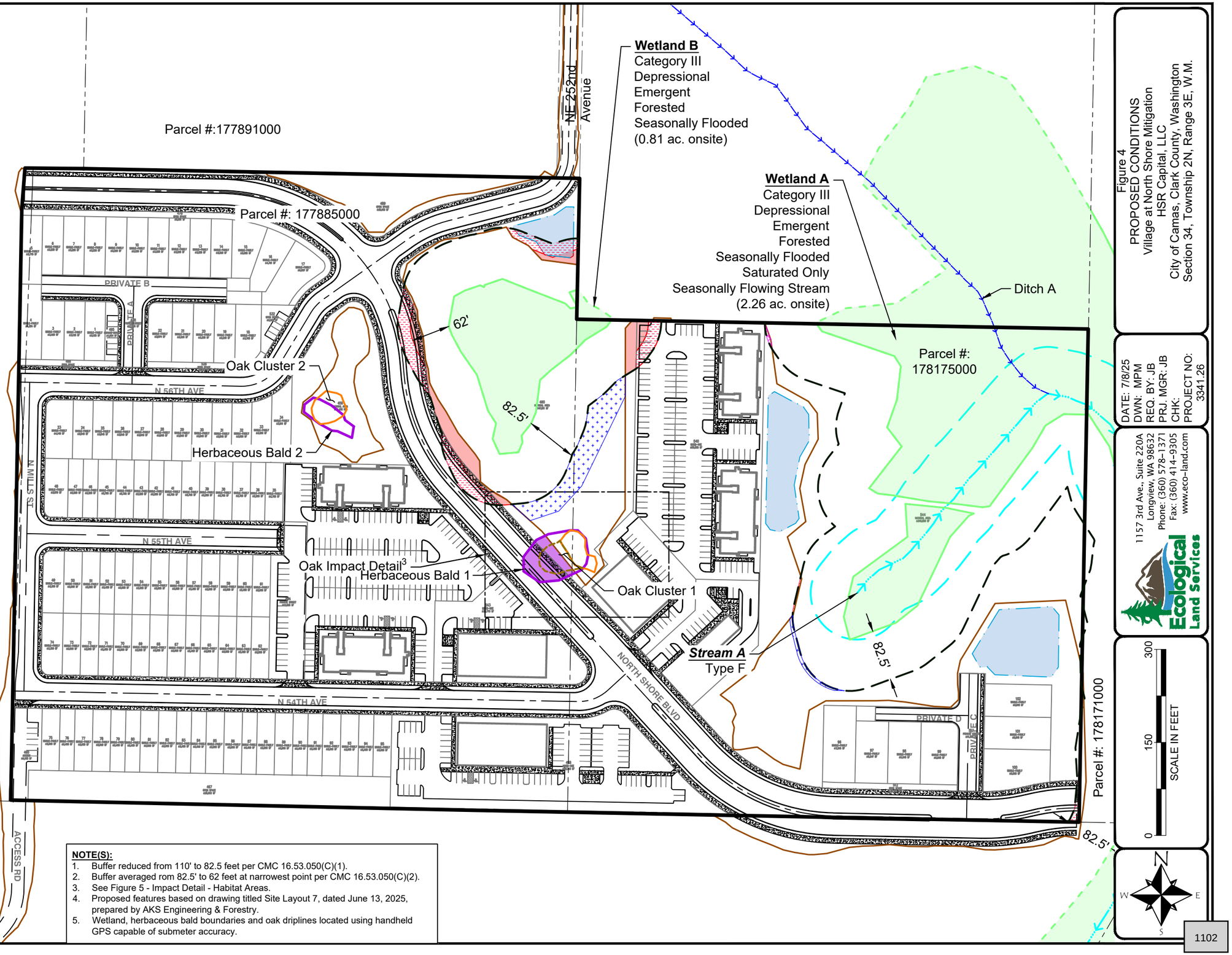
LEGEND:

- Site Boundary
- Parcel Boundary
- Wetland Boundary
- Approximate Wetland Boundary
- Reduced Buffer (82.5')[1]
- Stream with Flow Direction
- Stream Buffer
- Herbaceous Bald Boundary
- Proposed Road Centerline
- Proposed Curbing
- Proposed Sidewalk
- Proposed Stormwater Pond
- Proposed Limits of Grading
- Wetland Buffer Averaging Reductions:[2]
  A - (0.015 ac./661 sq. ft.)
  B - (0.216 ac./9,388 sq. ft.)
- Wetland Buffer Averaging Increases:
  A - (0.015 ac./661 sq. ft.)
  B- (0.216 ac./9,388 sq. ft.)
- Temporary Wetland Buffer Impact Areas
  A - (0.003 ac./132 sq. ft.)
- Wetland Buffer Impact Areas
  B - (0.184 ac./8,001 sq. ft.)
- Herbaceous Bald Impact (0.088 ac./3,852 sq. ft.)
- Oak Dripline to Remain (0.048 ac./4,238 sq. ft.)[3]
- Oak Dripline to be Removed (0.048 ac./2,077 sq. ft.)[3]



NOTE(S):

1. Buffer reduced from 110' to 82.5 feet per CMC 16.53.050(C)(1).
2. Buffer averaged rom 82.5' to 62 feet at narrowest point per CMC 16.53.050(C)(2).
3. See Figure 5 - Impact Detail - Habitat Areas.
4. Proposed features based on drawing titled Site Layout 7, dated June 13, 2025, prepared by AKS Engineering & Forestry.
5. Wetland, herbaceous bald boundaries and oak driplines located using handheld GPS capable of submeter accuracy.

Figure 4
PROPOSED CONDITIONS
Village at North Shore Mitigation
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 7/8/25
DWN: MPM
REQ. BY: JB
PRJ. MGR: JB
CHK:
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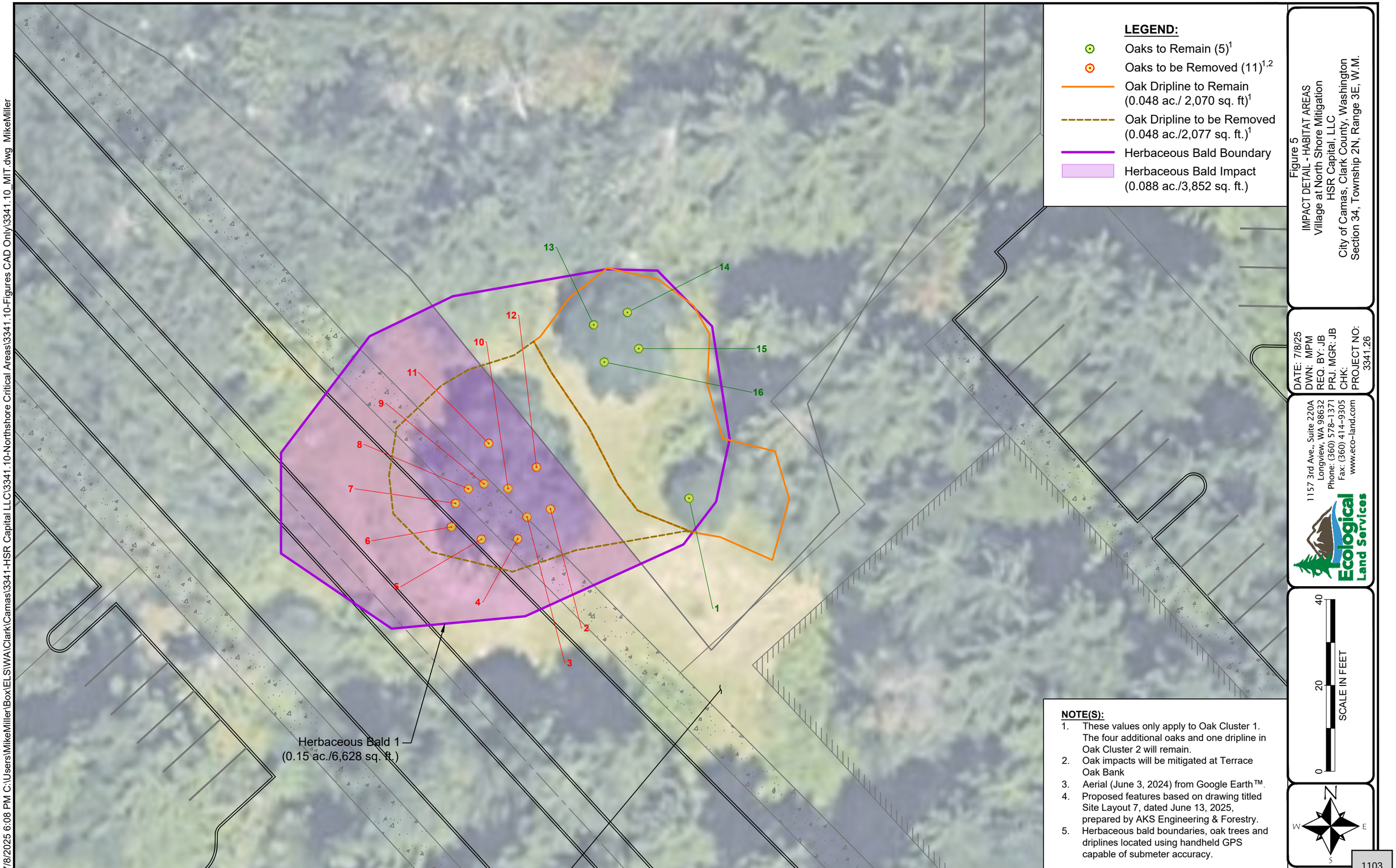
LEGEND:
Oaks to Remain (5)[1]
Oaks to be Removed (11)[1,2]
Oak Dripline to Remain (0.048 ac./ 2,070 sq. ft)[1]
Oak Dripline to be Removed (0.048 ac./2,077 sq. ft.)[1]
Herbaceous Bald Boundary
Herbaceous Bald Impact (0.088 ac./3,852 sq. ft.)
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
Herbaceous Bald 1
(0.15 ac./6,628 sq. ft.)
NOTE(S):
1. These values only apply to Oak Cluster 1. The four additional oaks and one dripline in Oak Cluster 2 will remain.
2. Oak impacts will be mitigated at Terrace Oak Bank
3. Aerial (June 3, 2024) from Google Earth™.
4. Proposed features based on drawing titled Site Layout 7, dated June 13, 2025, prepared by AKS Engineering & Forestry.
5. Herbaceous bald boundaries, oak trees and driplines located using handheld GPS capable of submeter accuracy.
Figure 5
IMPACT DETAIL - HABITAT AREAS
Village at North Shore Mitigation
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.
DATE: 7/8/25
DWN: MPM
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3341.26
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services
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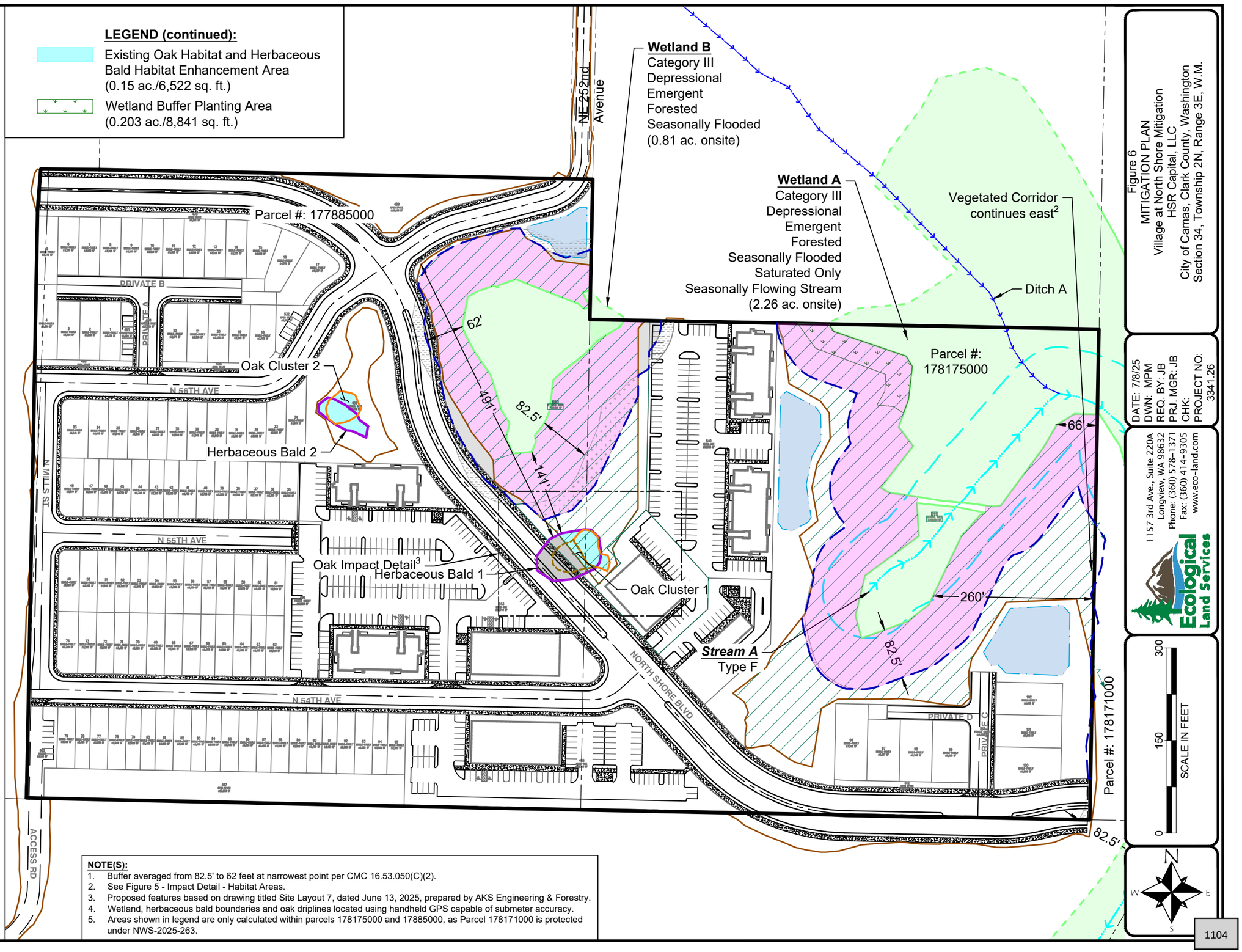
LEGEND:

- Site Boundary
- Parcel Boundary
- Wetland Boundary
- Approximate Wetland Boundary
- Final Wetland Buffer
- Stream with Flow Direction
- Stream Buffer
- Herbaceous Bald Boundary
- Proposed Road Centerline
- Proposed Curbing
- Proposed Sidewalk
- Proposed Stormwater Pond
- Proposed Limits of Grading
- Wetland Buffer Averaging Reductions:[1]
  A - (0.015 ac./9,388 sq. ft.)
  B - (0.216 ac./661 sq. ft.)
- Wetland Buffer Averaging Increases:
  A - (0.015 ac./637 sq. ft.)
  B - (0.216 ac./9,388 sq. ft.)
- Temporary Wetland Buffer Impact Areas:
  A - (0.003 ac./132 sq. ft.)
- Wetland Buffer Impact Areas
  B - (0.184 ac./8,001 sq. ft.)
- Herbaceous Bald Impact (0.088 ac./3,852 sq. ft.)
- Oak Dripline to Remain (0.048 ac./4,238 sq. ft.)[2]
- Oak Dripline to be Removed (0.048 ac./2,077 sq. ft.)[2]
- Vegetated Corridors:[3]
  Wetland A -
  (3.98 ac./173,575 sq. ft.)
  Wetland B -
  (2.11 ac./92,126 sq. ft.)
- Wetland Buffer Enhancement Areas:
  A - (2.52 ac./109,580 sq. ft.)
  B - (1.69 ac./73,597 sq. ft.)

LEGEND (continued):

- Existing Oak Habitat and Herbaceous Bald Habitat Enhancement Area (0.15 ac./6,522 sq. ft.)
- Wetland Buffer Planting Area (0.203 ac./8,841 sq. ft.)



NOTE(S):

1. Buffer averaged from 82.5' to 62 feet at narrowest point per CMC 16.53.050(C)(2).
2. See Figure 5 - Impact Detail - Habitat Areas.
3. Proposed features based on drawing titled Site Layout 7, dated June 13, 2025, prepared by AKS Engineering & Forestry.
4. Wetland, herbaceous bald boundaries and oak driplines located using handheld GPS capable of submeter accuracy.
5. Areas shown in legend are only calculated within parcels 178175000 and 17885000, as Parcel 178171000 is protected under NWS-2025-263.

Figure 6
MITIGATION PLAN
Village at North Shore Mitigation
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 7/8/25
DWN: MPM
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3341.26

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
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LEGEND:

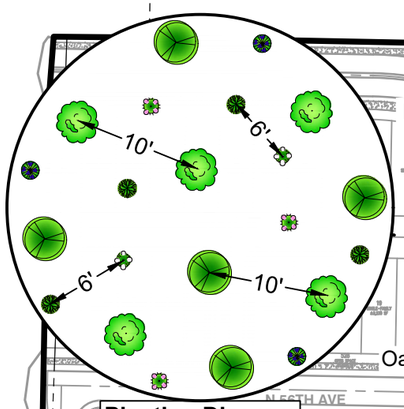
- Site Boundary
- Parcel Boundary
- Wetland Boundary
- Approximate Wetland Boundary
- Final Buffer
- Stream with Flow Direction
- Stream Buffer
- Herbaceous Bald Boundary
- Proposed Road Centerline
- Proposed Curbing
- Proposed Sidewalk
- Proposed Stormwater Pond
- Proposed Limits of Grading
- Wetland Buffer Averaging Reductions:[2]
  A - (0.015 ac./9,388 sq. ft.)
  B - (0.216 ac./661 sq. ft.)
- Wetland Buffer Averaging Increases:
  A - (0.015 ac./637 sq. ft.)
  B - (0.216 ac./9,388 sq. ft.)
- Temporary Wetland Buffer Impact Areas:
  A - (0.003 ac./132 sq. ft.)
- Wetland Buffer Impact Areas
  B - (0.184 ac./8,001 sq. ft.)
- Herbaceous Bald Impact (0.088 ac./3,852 sq. ft.)
- Oak Dripline to Remain (0.048 ac./4,238 sq. ft.)[3]
- Oak Dripline to be Removed (0.048 ac./2,077 sq. ft.)[3]
- Vegetated Corridors:[4]
  Wetland A - (3.98 ac./173,575 sq. ft.)
  Wetland B - (2.11 ac./92,126 sq. ft.)
- Wetland Buffer Enhancement Areas:
  A - (2.52 ac./109,580 sq. ft.)
  B - (1.69 ac./73,597 sq. ft.)

LEGEND (continued):

- Existing Oak Habitat and Herbaceous Bald Habitat Enhancement Area (0.15 ac./6,522 sq. ft.)
- Wetland Buffer Planting Area (0.203 ac./8,841 sq. ft.)

NOTE(S):

1. Buffer reduced from 110' to 82.5 feet per CMC 16.53.050(C)(1).
2. Buffer averaged rom 82.5' to 62 feet at narrowest point per CMC 16.53.050(C)(2).
3. See Figure 5 - Impact Detail - Habitat Areas.
4. Proposed features based on drawing titled Site Layout 7, dated June 13, 2025, prepared by AKS Engineering & Forestry.
5. Wetland, herbaceous bald boundaries and oak driplines located using handheld GPS capable of submeter accuracy.
6. Areas shown in legend are only calculated within parcels 178175000 and 17885000, as Parcel 178171000 is protected under NWS-2025-263.



Planting Diagram
(Not to Scale)

Wetland Buffer Planting Specifications

Species Name and Facultative Status[1]	Spacing[2]	Stock[3]	Quantity
Trees			
Red alder (*Alnus rubra,* FAC)	10 feet on-center	One-gallon Container	10
Black cottonwood (*Populus trichocarpa,* FAC)			10
		Total Trees	**20**
Shrubs			
Red flowering currant (*Ribes sanguineum,* FACU)	6 feet on-center	One-gallon Container	45
Nootka rose (*Rosa nutkana,* FAC)			40
Common snowberry (*Symphoricarpos albus,* FACU)			40
Scouler's willow (*Salix scouleriana,* FAC)			40
		Total Shrubs	**165**
		Total Woody Species	**185**

[1]Corps 2012. [2]Actual planting locations will be determined in the field. [3]Actual plant stock will be determined based on nursery availability.

Seed Mix Specifications (Existing Oak and Herbaceous Bald Habitat Enhancement Areas)

Sunmark Seeds International, Inc – Native Pollinator Mix			
Species	Composition	Rate	Quantity
Baby Blue Eyes (*Nemophila menziesii*)	20.00%	1 pound per 1,000 sq. ft.	7 pounds (6,522 sq. ft.)
Meadow Barley (*Hordeum brachyantherum*)	18.50%		
Blanketflower (*Gaillardia aristata*)	18.00%		
Coastal Tidytips (*Layia platyglossa*)	13.00%		
Riverbank Lupine (*Lupinus rivularis*)	10.0%		
Small Camas (*Camassia quamash*)	7.00%		
Tufted Hairgrass (*Deschampsia cespitosa*)	4.50%		
Black-Eyed Susan (*Rudbeckia hirta*)	3.50%		
Sweet Alyssum (*Lobularia maritima*)	2.00%		
Common Yarrow (*Achillea millifolium*)	1.75%		
Aspen Fleabane (*Erigeron speciosus*)	1.25%		
Oceanspray (*Holodiscus discolor*)	0.50%		
Total	100%		

**An alternate seed mix may be used, provided it is appropriate for the local habitat type and comprised entirely of native species.*

Figure 7
PLANTING PLAN
Village at North Shore Mitigation
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 7/8/25
DWN: MPM
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3341.26

1157 3rd Ave., Suite 220A
Longview, WA 98632
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Fax: (360) 414-9305
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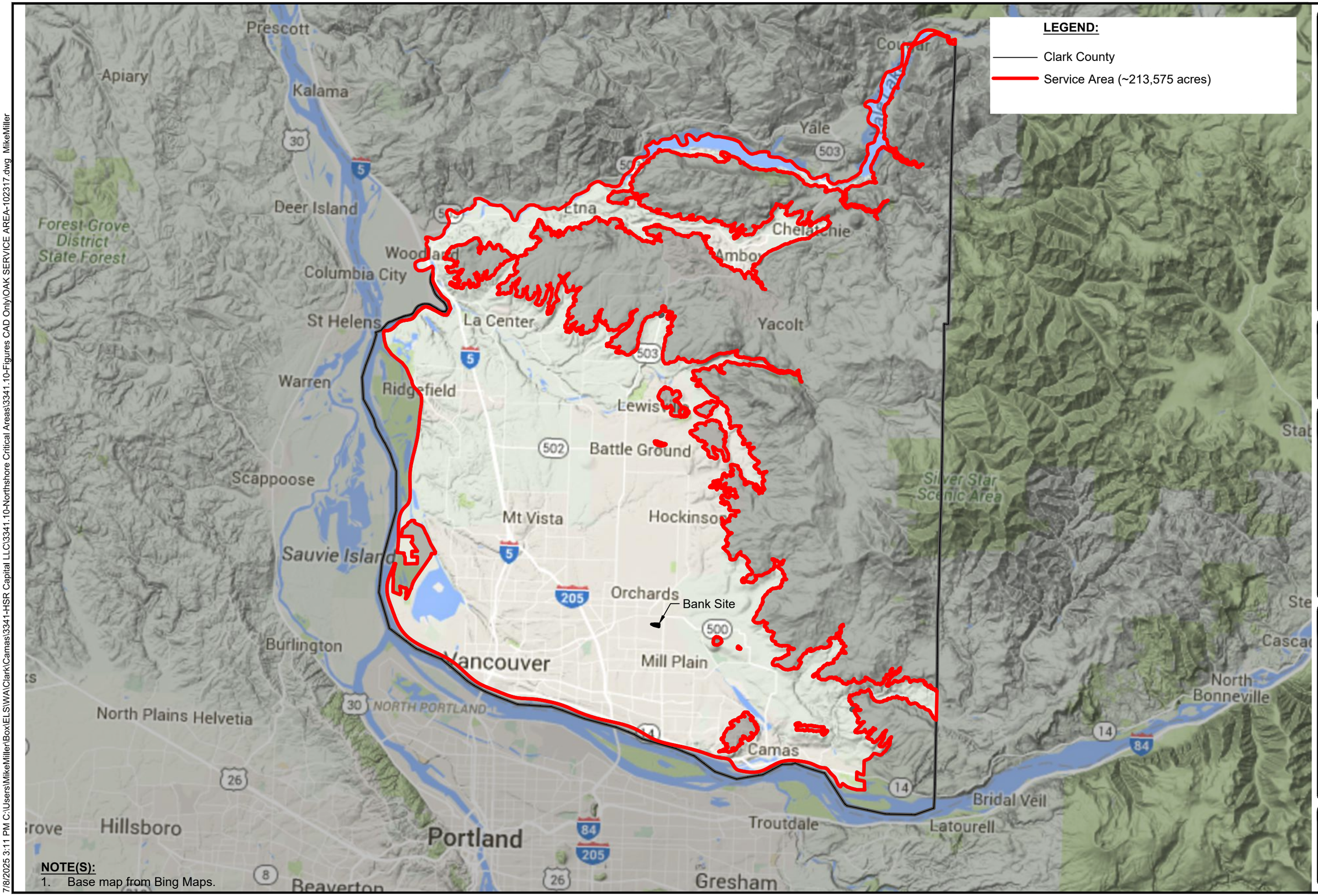

Figure 8
TERRACE MIITGATION BANK SERVICE AREA
Village at North Shore
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 7/8/25
DWN: MPM
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3341.26

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NOTE(S):
1. Base map from Bing Maps.

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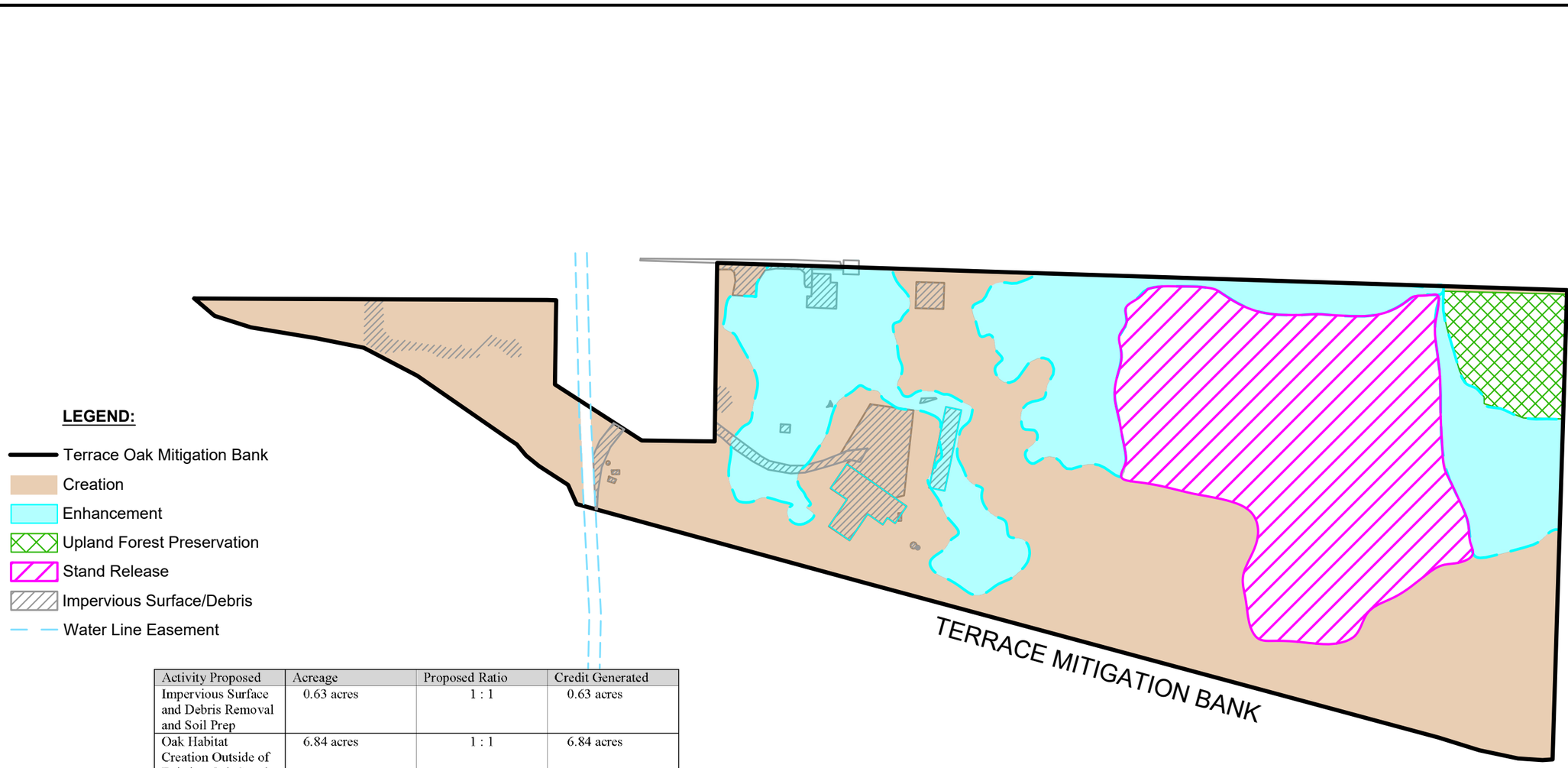

Activity Proposed	Acreage	Proposed Ratio	Credit Generated
Impervious Surface and Debris Removal and Soil Prep	0.63 acres	1 : 1	0.63 acres
Oak Habitat Creation Outside of Existing Oak Stand	6.84 acres	1 : 1	6.84 acres
Douglas Fir Stand Release	3.34 acres	0.4 : 1	8.35 acres
Enhancement of Existing Oak Stand	3.20 acres	0.4 : 1	8.00 acres
Upland Forest Preservation	0.50 acres	0.5 : 1	1.00 acres
Totals	14.51 acres[1]		24.82 acres

[1] Total acreage includes areas of activity overlap and does not include 0.05 acres of water line easement, so is not reflective of the 13.93 acres represented in the legal survey of Oak Bank area.

Table 2. Oak Mitigation Bank Activity Descriptions.

Activity Proposed	Type of Activity/Area
Impervious Surface and Debris Removal and Soil Prep	• Includes: • Buildings, driveways, gravel pads or any other impervious area to be removed (regardless of whether oak tree canopy already covers the area) • Removal of debris piles throughout the site • Loosening of soils following impervious/debris removal
Oak Habitat Creation Outside of Existing Oak Stand	• Includes open areas of all types not currently covered by oak canopy • Areas to be replanted with oak saplings and native understory
Douglas Fir Stand Release	• Includes area of dense fir canopy within existing oak stand • Douglas fir over-story to be removed through harvest or tree girdling/snag creation
Enhancement of Existing Oak Stand	• Includes areas of existing oak canopy • Enhancement areas will have non-natives removed and understory planted with native shrubs typically associated with oak woodlands
Upland Forest Preservation	• Includes areas of deciduous forest adjacent to oak canopy, providing upland forest habitat • Area will be preserved through administration of a conservation easement

Figure 9
TERRACE MIITGATION BANK SITE DESIGN
Village at North Shore
HSR Capital, LLC
City of Camas, Clark County, Washington
Section 34, Township 2N, Range 3E, W.M.

DATE: 7/8/25
DWN: MPM
REQ. BY: JB
PRJ. MGR: JB
CHK:
PROJECT NO: 3341.26

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
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APPENDIX A

WDFW FUNCTIONAL ASSESSMENTS FOR INDIVIDUAL OAKS AND MITIGATION CALCULATIONS

WDFW Functional Assessments for Individual Oaks to be Impacted

Oregon White Oak Functional Assessments - HSR Capital, Village at North Shore - April 29, 2025										
Metric	**Multiplier**	**Oak 2**	**Oak 3**	**Oak 4**	**Oak 5**	**Oak 7**	**Oak 8**	**Oak 9**	**Oak 10**	**Oak 12**
Size of Oak Trees (*Choose one*)										
>76 cm (30 in) DBH	6	☐	☐	☐	☐	☐	☐	☐	☐	☐
50-76 cm (20-30 in) DBH	5	☐	☐	☐	☐	☐	☐	☐	☐	☐
30-50 cm (12-20 in) DBH	3	☐	☐	☐	☐	☐	☐	☐	☐	☐
<30 cm (12 in) DBH	1	☑	☑	☑	☑	☑	☑	☑	☑	☑
Condition of Crown (*Choose one*)										
Well-formed/dominant	3	☐	☐	☐	☐	☐	☐	☐	☐	☐
Suppressed/stunted	2	☑	☑	☑	☑	☑	☑	☑	☑	☑
Seedling/Sapling	1	☐	☐	☐	☐	☐	☐	☐	☐	☐
Wildlife Value (*Choose all that apply*)										
Acorn production	2	☑	☑	☑	☑	☑	☑	☑	☑	☑
Leaves available for wildlife browsing	1	☑	☑	☑	☑	☑	☑	☑	☑	☑
Presence of cavities	2	☐	☐	☐	☐	☐	☐	☐	☐	☐
Presence of dead branches	1	☑	☑	☑	☑	☑	☑	☑	☑	☑
Presence of galls or fungi	1	☐	☐	☐	☐	☐	☐	☐	☐	☐
Presence of heart rot or carpenter ants	1	☐	☐	☐	☐	☐	☐	☐	☐	☐
Located near other OWO trees (<118 ft)	3	☑	☑	☑	☑	☑	☑	☑	☑	☑
Total		**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**
Function Score		**High**	**High**	**High**	**High**	**High**	**High**	**High**	**High**	**High**

*Oak 6 and Oak 11 were not assessed due to DBH < 6 inches.

Score	Function
0	Minimal
1	Minimal
2	Minimal
3	Minimal
4	Low
5	Low
6	Low
7	Medium
8	Medium
9	Medium
10	High
11	High
12	High
13	High
14	High
15	High
16	High
17	High
18	High
19	High
20	High
21	High
22	High
23	High

APPENDIX B

OFFSITE PROTECTED WETLAND AREA

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Planting Specifications

Common Name	Scientific Name	Stock	Spacing	Quantity
Wetland Buffer Enhancement Area				
Douglas fir	*Pseudotsuga menziesii*	One-gallon Container	15 feet on-center	**10**
Bigleaf maple	*Acer macrophyllum*			**10**
Red alder	*Alnus rubra*			**12**
Common snowberry	*Symphoricarpos albus*	Bare-root	6 feet on-center	**150**
Nootka rose	*Rosa nutkana*			**150**
Salmonberry	*Rubus spectabilis*			**150**
Vine maple	*Acer circinatum*			**150**
			Total	**632**
Riparian Buffer Enhancement Area				
Douglas fir	*Pseudotsuga menziesii*	One-gallon Container	15 feet on-center	**10**
Bigleaf maple	*Acer macrophyllum*			**8**
Red alder	*Alnus rubra*			**8**
Cascara	*Frangula purshiana*	Bare-root	4 feet on-center	**120**
Osoberry	*Oemleria cerasiformis*			**120**
Common snowberry	*Symphoricarpos albus*			**120**
Black hawthorn	*Crataegus douglasii*			**120**
			Total	**506**

NOTE(S):
1. Wetland and test plots located using handheld GPS capable of submeter accuracy.
2. Parcel data from Clark County GIS.
3. Proposed Conditions Map based on drawing dated January 10, 2025, provided by AKS Engineering.

Wetland A
Category III
Depressional
Emergent
Forested 3/5
Seasonally Flooded
Saturated Only
Seasonally Flowing Stream
2.59 ac. Onsite
~10.09 ac. Total

Wetland B
Category III
Depressional
Emergent
Scrub-Shrub
Forested
Seasonally Flooded
Saturated Only
Seasonally Flowing Stream
0.13 ac. Onsite
~11.01 ac. Total

Spyglass Hill
Oak Mitigation

Limits of Grading

Stream A
Type F

Stream B
Type F

Wildlife Habitat Corridor

75'
110'
95'
328'
67.5'
62.5'

LEGEND:
- Site Boundary
- Parcel Boundary
- Wetland Boundary
- Approx. Wetland Boundary
- 110' Wetland Buffer (Reduced)
- Functionally Isolated Buffer
- Stream with Flow Direction
- 75' Stream Buffer
- Ditch with Flow Direction
- OHWM
- Existing Fence
- Culvert
- Habitat Log
- Temporary Wetland Buffer Impact (Wetland A=0.07 ac. / 3,237 sq.ft.)
- Indirect Wetland Impact (Wetland B=0.11 ac. / 4,590 sq.ft.)
- Proposed Wetland Buffer Impact (Wetland A=0.005 ac. / 220 sq.ft.)
- Wetland Buffer Average-Decrease (Wetland A=0.13 ac. / 5,646 sq.ft.) (Wetland B=0.02 ac. / 703 sq.ft.)
- Wetland Buffer Average-Increase (Wetland A=0.13 ac. / 5,646 sq.ft.) (Wetland B=0.02 ac. / 703 sq.ft.)
- Temporary Stream Buffer Impacts (0.08 ac. / 3,677 sq.ft.)
- Proposed Stream Buffer Impacts (0.50 ac. / 21,673 sq.ft.)
- Proposed Instream Impacts (0.03 ac. / 1,410 sq.ft.)
- Wetland Buffer Enhancement Area (0.66 ac. / 28,860 sq.ft.)
- Stream Buffer Enhancement Area (0.53 ac. / 23,083 sq.ft.)

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Ecological Land Services
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371

PURPOSE: Mitigation for Indirect Wetland Impacts and Instream Impacts

DATUM: NAD83
ADJACENT PROPERTY OWNERS:

Mitigation Plan
APPLICANT: HSR Capital, LLC
PROJECT NAME: Enclave Property
REFERENCE #: NWS-2025-263
SITE LOCATION ADDRESS: No Situs Address

PROPOSED: Indirect and Instream Impacts
IN Streams
NEAR: Camas
COUNTY: Clark **STATE:** WA
SHEET 6 **OF** 7
DATE: 3/4/25

12. Mailing Labels

Owner Name	Mailing Address
CITY OF CAMAS	616 NE 4TH AVE, CAMAS, WA, 98607
HSR DEV - MILLS LLC	500 E BROADWAY ST #120, VANCOUVER, WA, 98660
ICG CAMAS 252ND LLC	500 E BROADWAY, STE 120, VANCOUVER, WA, 98660
LACAMAS HERITAGE PROPERTIES LLC	320 NE 257TH AVE, CAMAS, WA, 98607
LACAMAS HILLS OWNERS ASSOCIATION	8815 122ND AVE NE STE 200, KIRKLAND, WA, 98033
LOPEZ EDUARDO & VILLARREAL ELISAMA	211 SE 252ND AVE, CAMAS, WA, 98607
MILLS FAMILY LLC	PO BOX 100, MT HOOD, OR, 97041

This document was created by the Clark County, Washington Geographic Information System

Number of Records 7
Number of Pages 1
Date Created 7/9/2025
Employee
Employee Name Jesse Manley

LACAMAS HERITAGE PROPERTIES LLC
320 NE 257TH AVE
CAMAS, WA 98607

LACAMAS HERITAGE PROPERTIES LLC
320 NE 257TH AVE
CAMAS, WA 98607

MILLS FAMILY LLC
PO BOX 100
MT HOOD, OR 97041

HSR DEV - MILLS LLC
500 E BROADWAY ST #120
VANCOUVER, WA 98660

LACAMAS HERITAGE PROPERTIES LLC
320 NE 257TH AVE
CAMAS, WA 98607

CITY OF CAMAS
616 NE 4TH AVE
CAMAS, WA 98607

ICG CAMAS 252ND LLC
500 E BROADWAY, STE 120
VANCOUVER, WA 98660

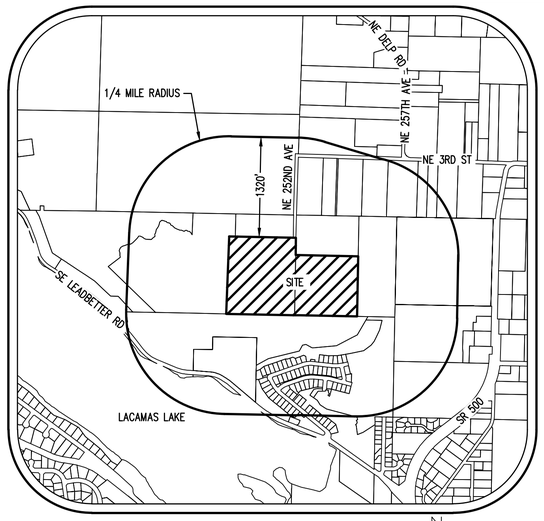
ICG CAMAS 252ND LLC
500 E BROADWAY, STE 120
VANCOUVER, WA 98660

LOPEZ EDUARDO & VILLARREAL ELISAMA
211 SE 252ND AVE
CAMAS, WA 98607

LACAMAS HILLS OWNERS ASSOCIATION
8815 122ND AVE NE STE 200
KIRKLAND, WA 98033

VILLAGE AT NORTH SHORE

PRELIMINARY ENGINEERING/SITE/SUBDIVISION PLANS



VICINITY MAP
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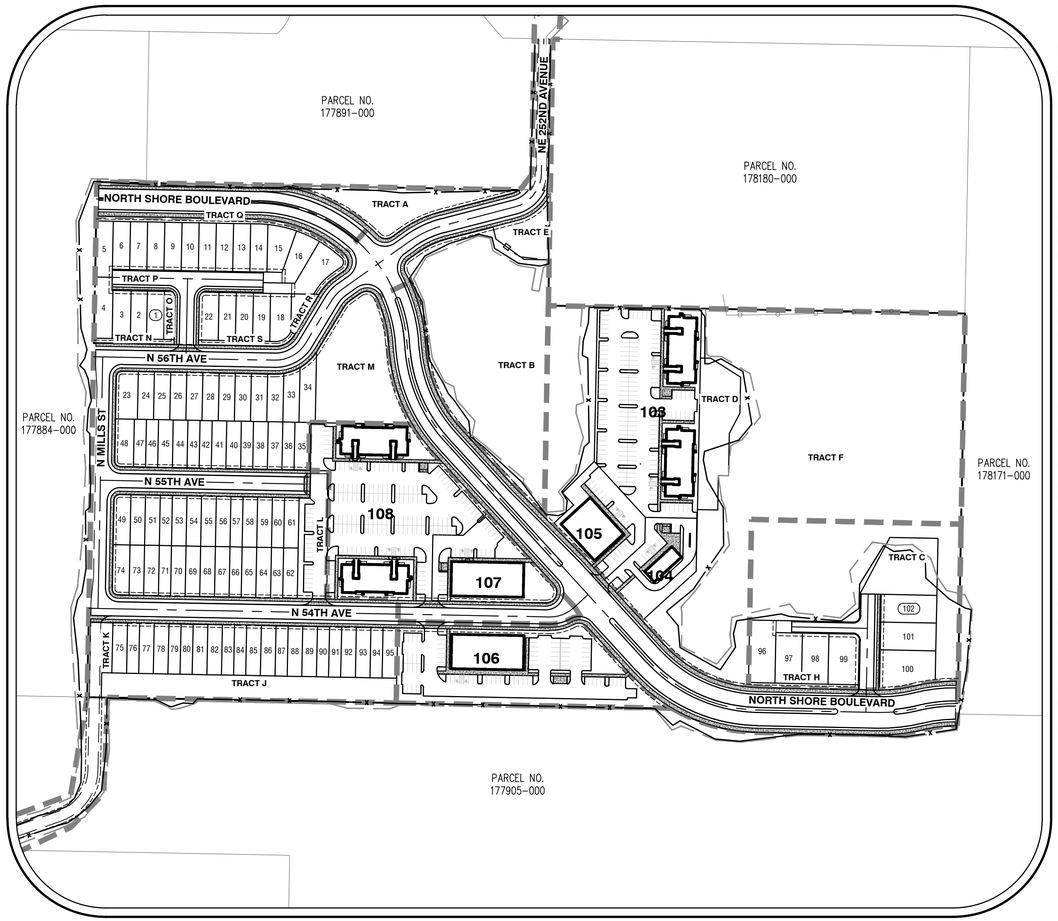

SITE MAP
N.T.S.

LEGEND

	EXISTING	PROPOSED		EXISTING	PROPOSED
DECIDUOUS TREE			STORM DRAIN CLEAN OUT		
CONIFEROUS TREE			STORM DRAIN CATCH BASIN		
FIRE HYDRANT			STORM DRAIN AREA DRAIN		
WATER BLOWOFF			STORM DRAIN MANHOLE		
WATER METER			GAS METER		
WATER VALVE			GAS VALVE		
DOUBLE CHECK VALVE			GUY WIRE ANCHOR		
AIR RELEASE VALVE			UTILITY POLE		
SANITARY SEWER CLEAN OUT			POWER VAULT	P	P
SANITARY SEWER MANHOLE			POWER JUNCTION BOX		
SIGN			POWER PEDESTAL		
STREET LIGHT			COMMUNICATIONS VAULT	C	C
MAILBOX	MB	MB	COMMUNICATIONS JUNCTION BOX		
			COMMUNICATIONS RISER		

	EXISTING	PROPOSED
RIGHT-OF-WAY LINE		
BOUNDARY LINE		
PROPERTY LINE		
CENTERLINE		
DITCH		
CURB		
EDGE OF PAVEMENT		
GUTTER		
EASEMENT		
FENCE LINE		
GRAVEL EDGE		
POWER LINE	PWR	PWR
OVERHEAD WIRE	OHW	OHW
COMMUNICATIONS LINE	COM	COM
FIBER OPTIC LINE	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 List Table

P1.0	COVER SHEET
P2.0	PRELIMINARY EXISTING CONDITIONS OVERVIEW
P2.1	PRELIMINARY EXISTING CONDITIONS
P2.2	PRELIMINARY EXISTING CONDITIONS
P2.3	PRELIMINARY EXISTING CONDITIONS
P3.0	PRELIMINARY PLAT OVERVIEW
P3.1	PRELIMINARY SUBDIVISION PLAT
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P11.3	PRELIMINARY LANDSCAPE PLAN
P12.0	PRELIMINARY LIGHTING PLAN OVERVIEW
P12.1	PRELIMINARY LIGHTING PLAN
P12.2	PRELIMINARY LIGHTING PLAN

OWNERS

HSR DEV – MILLS, LLC
PARCEL NO. 177885-000
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19120 SE 34TH STREET, #103
VANCOUVER, WA 98683
PH: (503) 936-8514
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ICG CAMAS 252ND, LLC
PARCEL NO. 178175-000
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PROPERTY DESCRIPTION

LOCATED IN THE NORTHEAST AND NORTHWEST 1/4 OF SECTION 34 AND 35, TOWNSHIP 2 NORTH, RANGE 3 EAST, WILLAMETTE MERIDIAN, CLARK COUNTY, WASHINGTON. PROPERTY SERIAL NO.'S 177885-000 AND 178175-000.

EXISTING LAND USE

VACANT, UNDEVELOPED LAND, ZONED HD-NS, LD-NS, C-NS, AND MX-NS.

PROJECT PURPOSE

PHASED, MIXED USE SUBDIVISION INCLUDING 102 SINGLE-FAMILY RESIDENTIAL LOTS, MIXED USE, MULTI-FAMILY (140 APARTMENTS), COMMERCIAL, AND ASSOCIATED ROAD AND OTHER SITE IMPROVEMENTS.

SITE AREA

SITE AREA: ±36.04 AC
(1,569,902 SF)

VERTICAL DATUM

VERTICAL DATUM:
ELEVATIONS ARE BASED ON CLARK COUNTY BENCHMARK NO. 240, LOCATED AT THE NW CORNER OF HWY STATE ROUTE 500 AND 23RD AVENUE. ELEVATION = 213.07 FEET (NGVD (29)47)).

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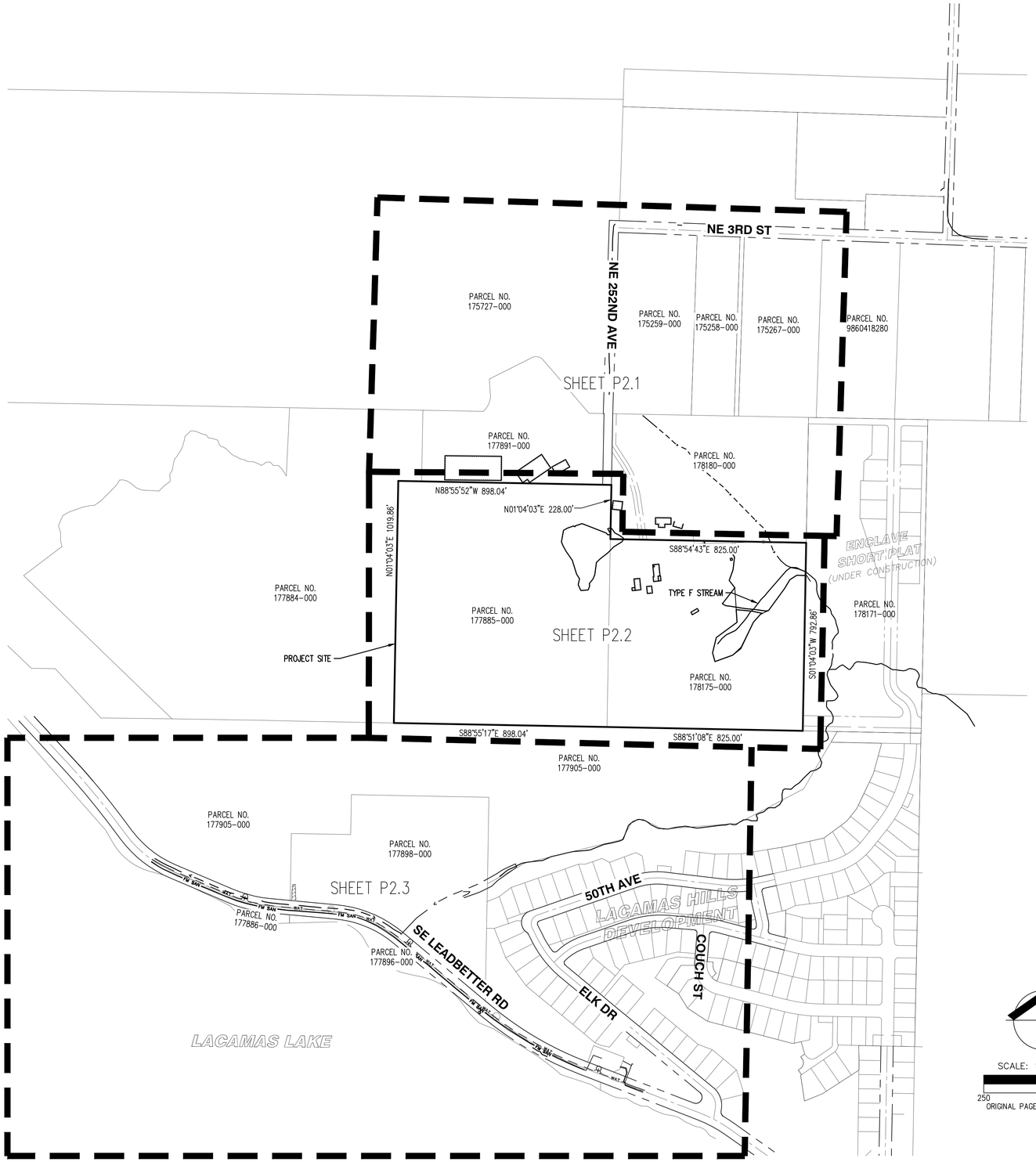
COVER SHEET
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

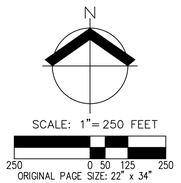
STATE OF WASHINGTON · BRIAN D. HARDY · 19079 · REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	9095
DATE:	7/22/2025
DESIGNED BY:	BDH
DRAWN BY:	LPM
CHECKED BY:	BDH

P1.0

AKS DRAWING FILE: 9095 P1.0 COVER.DWG | LAYOUT: P1.0





NOTES:

1. UTILITIES SHOWN ARE BASED ON UNDERGROUND UTILITY LOCATE MARKINGS AS PROVIDED BY OTHERS, PROVIDED PER UTILITY LOCATE TICKET NUMBER 20253525, 20253535, 20253544, 25053270, 25053281, AND 25053357. 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 JUNE 2019–AUGUST 2020, AND JANUARY 2025–MARCH 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.
4. VERTICAL DATUM: ELEVATIONS ARE BASED ON CLARK COUNTY BENCHMARK NO. 240, LOCATED AT THE NW CORNER OF HWY STATE ROUTE 500 AND 23RD AVENUE. ELEVATION = 213.07 FEET (NGVD (29)47)).
5. CONTOUR INTERVAL IS 1.00 FOOT.
6. THIS IS NOT A PROPERTY BOUNDARY SURVEY TO BE RECORDED WITH THE COUNTY SURVEYOR. BOUNDARIES MAY BE PRELIMINARY AND SHOULD BE CONFIRMED WITH THE STAMPING SURVEYOR PRIOR TO RELYING ON FOR DETAILED DESIGN OR CONSTRUCTION.
7. BUILDING FOOTPRINTS ARE MEASURED TO SIDING UNLESS NOTED OTHERWISE. CONTACT SURVEYOR WITH QUESTIONS REGARDING BUILDING TIES.
8. TREES WITH DIAMETER OF 6" AND GREATER ARE SHOWN. TREE DIAMETERS WERE DETERMINED BY VISUAL INSPECTION. TREE INFORMATION IS SUBJECT TO ARBORIST INSPECTION.
9. WETLAND BOUNDARIES SHOWN WERE DELINEATED BY A ECOLOGICAL LAND SURVICES BETWEEN SEPTEMBER 2022 AND AUGUST 2024. AND WERE PROFESSIONALLY SURVEYED BY AKS IN FEBRUARY 2025.

EXISTING LAND NOTES

1. THE SITE IS COMPRISED OF PARCELS NO. 177885-000 AND 178175-000. THE GROSS SITE AREA IS ±36.04 AC (1,569,902 SF).
2. A SINGLE FAMILY RESIDENCE EXISTS ON PARCEL 178175-000.
3. ACCORDING TO CLARK COUNTY GIS, A SEPTIC SYSTEM EXISTS ON SITE ON PARCEL NO. 178175-000.
4. ACCORDING TO CLARK COUNTY GIS, AN UNCLASSIFIED WATER SYSTEM EXISTS ON PARCEL 177885-000 AN A GROUP B WATER SYSTEM EXISTS ON PARCEL 178175-000.
5. THE WETLAND AND ASSOCIATED BUFFERS ON SITE WERE PROVIDED BY ELS IN THREE REPORTS INCLUDING A CRITICAL AREA REPORT DATED MAY 19, 2025 AS WELL AS A DELEGATION REPORT OF THE SAME DATE, AND A MITIGATION REPORT DATED JULY 8, 2025.
6. THE EXISTING SURFACE MATERIAL OF SE LEADBETTER RD AND NE 252ND AVE ARE ASPHALT.
7. THERE ARE NO BIKE FACILITIES ON SITE OR WITHIN 100' OF THE SITE.
8. NO SIDEWALKS EXIST ALONG THE SITE.
9. ACCORDING TO C-TRAN THERE ARE NO TRANSIT STOPS WITHIN A 1/4 MILE RADIUS OF THE SITE.
10. ACCORDING TO CLARK COUNTY GIS, THERE ARE SLOPES GREATER AND 15% ON SITE.
11. ACCORDING TO CLARK COUNTY GIS, THE ARCHAEOLOGICAL PROBABILITY RANGES FROM MODERATE-HIGH.
12. ACCORDING TO CLARK COUNTY GIS, THE SITE IS INSIDE A CRITICAL AQUIFER RECHARGE AREA-CATEGORY 2 (CARA 2).

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PRELIMINARY EXISTING CONDITIONS OVERVIEW
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

PRELIMINARY
NOT FOR CONSTRUCTION

JOB NUMBER:	9095
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DRAWN BY:	LPM
CHECKED BY:	BDH

P2.0

AKS DRAWING FILE: 9095 P2.0 EXCOND.DWG | LAYOUT: P2.0



LEGEND

EXISTING GROUND CONTOUR (2 FT)

EXISTING GROUND CONTOUR (10 FT) -320-

N

SCALE: 1"= 80 FEET

80 0 16 40 80

ORIGINAL PAGE SIZE: 22" x 34"

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PRELIMINARY EXISTING CONDITIONS
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HSR DEV - MILLS, LLC
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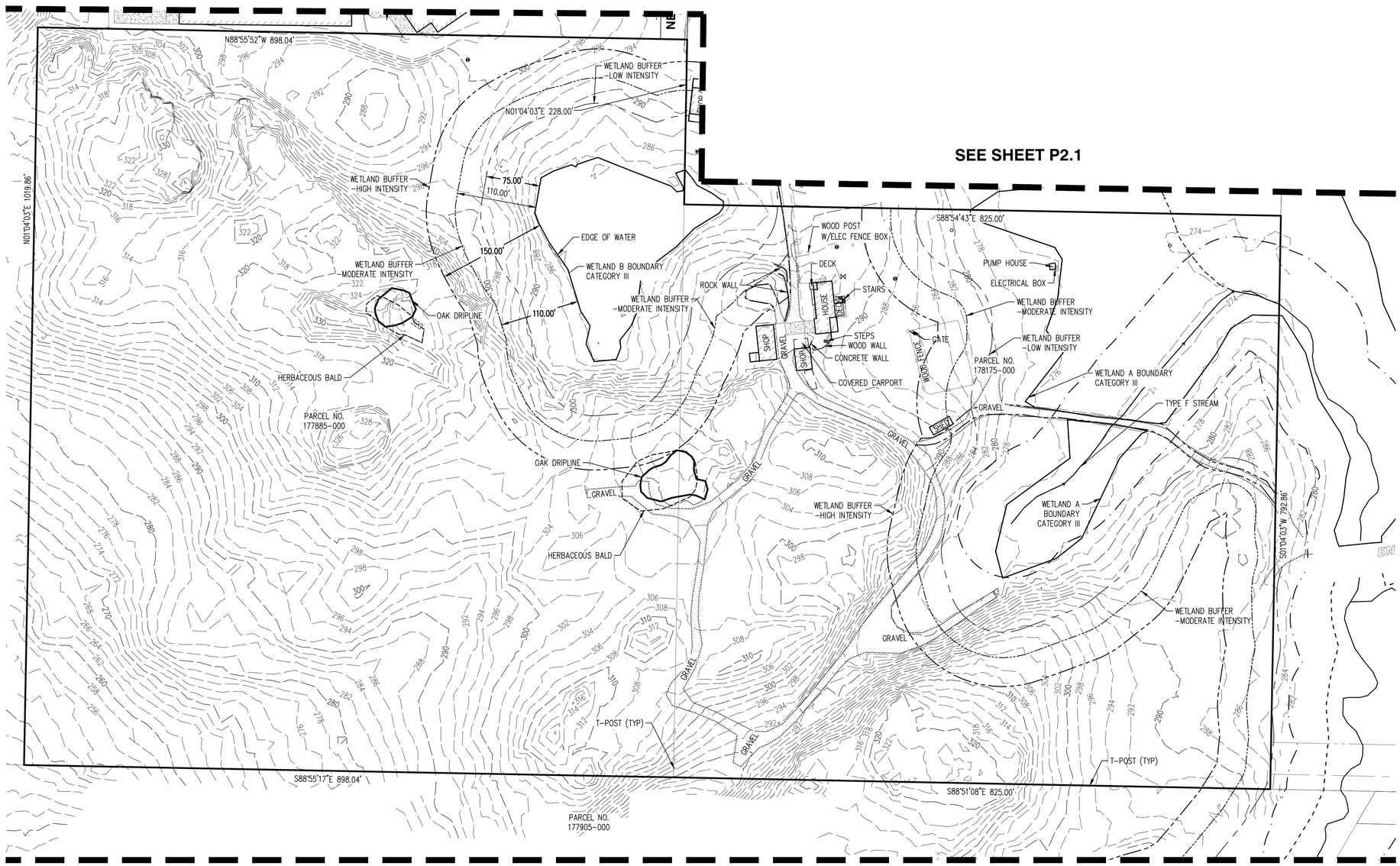
P2.1

AKS DRAWING FILE: 9095 P2.0 EXCOND.DWG | LAYOUT: P2.1

SEE SHEET P2.1



SEE SHEET P2.3

LEGEND

EXISTING GROUND CONTOUR (2 FT) ———

EXISTING GROUND CONTOUR (10 FT) ——320——

N

SCALE: 1"= 80 FEET

80 0 16 40 80

ORIGINAL PAGE SIZE: 22" x 34"

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CHECKED BY:	BDH

P2.2

1118

AKS DRAWING FILE: 9095 P2.0 EXCOND.DWG | LAYOUT: P2.2

SEE SHEET P2.2

PARCEL NO. 177905-000

PARCEL NO. 177905-000

PARCEL NO. 177898-000

EX 18" CONC CULVERT IE: 182.98

EX 18" CONC CULVERT IE: 181.44

BARBED WIRE FENCE

EX FM SAN LOCATE STATION

PARCEL NO. 177886-000

EX 12" CONC CULVERT IE: 185.32

LACAMAS LAKE

FIRE HYDRANT

BOULDERS

GRAVEL PARKING

GRAVEL

GRAVEL

GATE

BARBED WIRE/ WOVEN WIRE FENCE

UTILIZE EXISTING ACCESS LOCATION THROUGH PARCEL 177898-000

EX 12" CONC CULVERT IE: 185.29

COMMUNICATION MANHOLE

EXISITNG ±23' PAVED

EXISTING 60' ROW

FIRE HYDRANT

EX 34" CONC CULVERT IE: 180.82

EX FM SAN LOCATE STATION

SE LEADBETTER RD

EX 34" CONC CULVERT IE: 180.21

PARCEL NO. 177896-000

EX FM SAN LOCATE STATION

SEWER COMBO AIR RELEASE VAULT

SEWER ARV

COMMUNICATION MANHOLE

EX FM SAN LOCATE STATION

EX 12" CONC CULVERT IE: 178.69

EX 12" CONC CULVERT IE: 179.68

EX LEADBETTER PS

HYDRANT

CHAINLINK FENCE

EX FM SAN LOCATE STATION

EX 10" DI CULVERT IE: 178.69

50TH AVE

LACAMAS HILLS DEVELOPMENT

49TH AVE

ELK DR

LACAMAS LAKE

LEGEND

EXISTING GROUND CONTOUR (2 FT)

EXISTING GROUND CONTOUR (10 FT) 320

N

SCALE: 1"=80 FEET

80 0 16 40 80

ORIGINAL PAGE SIZE: 22" x 34"

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PRELIMINARY EXISTING CONDITIONS
VILLAGE AT NORTH SHORE
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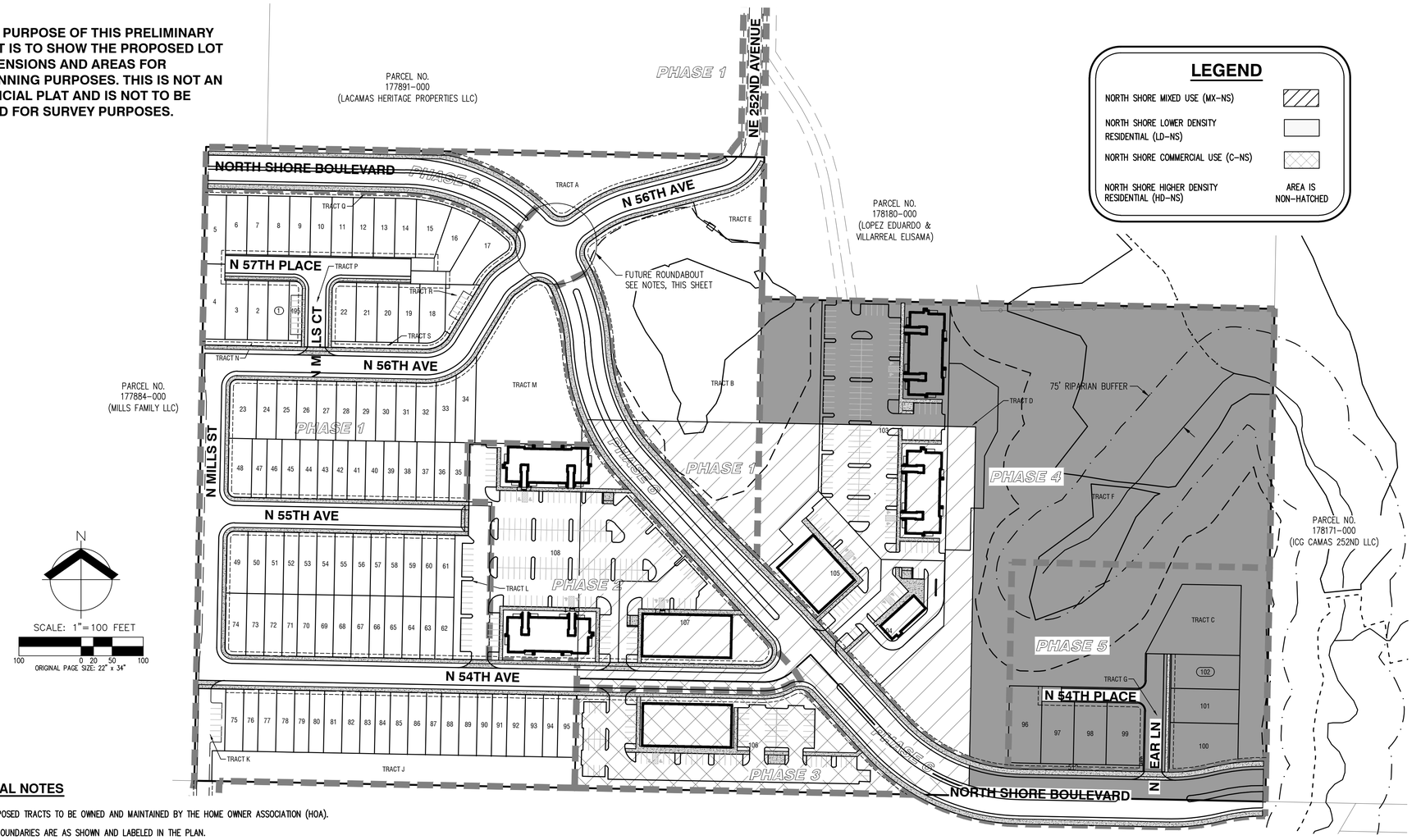
P2.3

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.



LEGEND

- NORTH SHORE MIXED USE (MX-NS)
- NORTH SHORE LOWER DENSITY RESIDENTIAL (LD-NS)
- NORTH SHORE COMMERCIAL USE (C-NS)
- NORTH SHORE HIGHER DENSITY RESIDENTIAL (HD-NS) — AREA IS NON-HATCHED

GENERAL NOTES

1. ALL PROPOSED TRACTS TO BE OWNED AND MAINTAINED BY THE HOME OWNER ASSOCIATION (HOA).
2. ZONING BOUNDARIES ARE AS SHOWN AND LABELED IN THE PLAN.
3. BUILDING ENVELOPES SHALL BE PER THE PROPOSED DEVELOPMENT STANDARDS TABLE SHOWN ON THIS SHEET, OR AS SHOWN ON THESE PLANS.
4. WATER – ALL LOTS WILL BE SERVED WITH PUBLIC WATER (CITY OF CAMAS).
5. THERE ARE FIVE PROPOSED INTERNAL PUBLIC ROADS AND FOUR PRIVATE ROADS TO SERVE THE DEVELOPMENT. THE ROADS ARE PROPOSED TO BE CONSTRUCTED TO THE LOCAL STREET RIGHT-OF-WAY SECTION. ALL ROADS TO BE PER THE NORTH SHORE SUB-AREA DESIGN MANUAL. NORTH SHORE BOULEVARD (ARTERIAL ROADWAY) MAY BE CONSTRUCTED BY THE CITY OF CAMAS, EXTENDING OFFSITE.
6. SURFACE MATERIAL FOR ALL PROPOSED ROADWAYS IS ASPHALT.
7. THERE ARE NO BICYCLE IMPROVEMENTS PROPOSED ON SITE.
8. THE SITE IS WITHIN NEHRP SITE CLASS B, C.
9. 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 OFF- SITE TOWARD LACAMAS LAKE OR TOWARDS THE WETLAND AND STREAM ON THE EAST SIDE OF THE PROPERTY. EACH FACILITY WILL HAVE AN EMERGENCY OVERFLOW THAT WILL DISCHARGE IN ITS NATURAL FLOW PATH BASIN/DIRECTION.
10. FINAL ADDRESS MONUMENT LOCATION TO BE DETERMINED DURING FINAL ENGINEERING.
11. SEE LIGHTING PLAN, P12.0, FOR SITE LIGHTING.
12. A FUTURE ROUNDABOUT IS SHOWN AT THE INTERSECTION OF NORTH SHORE BOULEVARD AND N 56TH STREET TO SHOW FEASIBILITY ONLY. THE PROJECT DOES NOT TRIGGER REQUIREMENTS FOR CONSTRUCTING THIS IMPROVEMENT. SEE TRAFFIC REPORT PREPARED BY KITTELSON & ASSOCIATES DATED JUNE 2025.
13. CURB RAMPS TO BE DESIGNED WITH FINAL ENGINEERING.

PROPOSED PHASING PLAN

PHASE 1: 34 DETACHED SFR, 61 TOWNHOMES, COUNTY ROAD IMPROVEMENTS, OFF-SITE UTILITIES, STORMWATER FACILITIES, SITE GRADING

PHASE 2: 64 APARTMENTS, ±10,000 SF COMMERCIAL

PHASE 3: 16 APARTMENTS, ±10,000 SF COMMERCIAL

PHASE 4: 60 APARTMENTS, ±10,250 SF COMMERCIAL, STORMWATER FACILITY

PHASE 5: 7 DETACHED SFR, STORMWATER FACILITY

PHASE 6: NORTH SHORE BOULEVARD (TO BE COMPLETED BY THE CITY OF CAMAS OR BY APPLICANT PRIOR TO ANY COMMERCIAL OCCUPANCY)

OWNERS

HSR DEV – MILLS, LLC
PARCEL NO. 177885-000
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PROPERTY DESCRIPTION

LOCATED IN THE NORTHEAST AND NORTHWEST 1/4 OF SECTION 34 AND 35, TOWNSHIP 2 NORTH, RANGE 3 EAST, WILLAMETTE MERIDIAN, CLARK COUNTY, WASHINGTON. PROPERTY SERIAL NO.'S 177885-000 AND 178175-000.

EXISTING LAND USE

VACANT, UNDEVELOPED LAND, ZONED HD-NS, LD-NS, C-NS, AND MX-NS.

PROJECT PURPOSE

SUBDIVISION INCLUDING 102, 6 MIXED USE AND COMMERCIAL LOTS, AND ASSOCIATED ROAD AND OTHER SITE IMPROVEMENTS.

SITE AREA

SITE AREA: ±1,569,697 SF (±36.04 AC)

VERTICAL DATUM

VERTICAL DATUM: ELEVATIONS ARE BASED ON CLARK COUNTY BENCHMARK NO. 240, LOCATED AT THE NW CORNER OF HWY STATE ROUTE 500 AND 23RD AVENUE. ELEVATION = 213.07 FEET (NGVD (29)47))

TRACT	PURPOSE	AREA
TRACT A	OPEN SPACE	20,163 SF
TRACT B	OPEN SPACE	39,712 SF
TRACT C	STORMWATER FACILITY	13,908 SF
TRACT D	STORMWATER FACILITY	18,103 SF
TRACT E	STORMWATER FACILITY	8,099 SF
TRACT F	OPEN SPACE	309,329 SF
TRACT G	PRIVATE STREET	11,260 SF
TRACT H	OPEN SPACE	2,175 SF
TRACT J	OPEN SPACE	28,563 SF
TRACT K	ACCESS/PARKING	6,153 SF
TRACT L	PRIVATE STREET	13,598 SF
TRACT M	OPEN SPACE	34,432 SF
TRACT N	OPEN SPACE	1,590 SF
TRACT O	PARKING	1,964 SF
TRACT P	PRIVATE STREET	17,660 SF
TRACT Q	OPEN SPACE	6,081 SF
TRACT R	PARKING	2,529 SF
TRACT S	OPEN SPACE	1,957 SF
TOTAL		637,275 SF

DEVELOPMENT STANDARDS (HD-NS)

MINIMUM LOT AREA:	1,800 SF
MINIMUM LOT WIDTH:	20 FEET
MINIMUM LOT DEPTH:	60 FEET
MINIMUM FRONT YARD / GARAGE SETBACK:	10 / 20 FEET
MINIMUM SIDE YARD SETBACK:	3 FEET
MINIMUM STREET SIDE YARD SETBACK:	15 FEET
MINIMUM REAR YARD SETBACK:	10 FEET
MAXIMUM BUILDING LOT COVERAGE:	65%
MAXIMUM BUILDING HEIGHT:	50 FEET

HD-NS DENSITY

GROSS SITE AREA:	746,680 SF (17.14 AC)
OPEN SPACE AREA:	172,053 SF (3.95 AC)
NET AREA:	574,627 SF (13.19 AC)
DENSITY PER NORTH SHORE ZONING:	
MAXIMUM DENSITY (18 DU/AC X 13.19 AC):	237 UNITS
MINIMUM DENSITY (10 DU/AC X 13.19 AC):	132 UNITS
PROPOSED TOWN HOMES:	61 UNITS
PROPOSED DETACHED SINGLE FAMILY RESIDENCE:	34 UNITS
PROPOSED APARTMENTS:	48 UNITS
TOTAL PROPOSED:	143 UNITS

DEVELOPMENT STANDARDS (LD-NS) (DENSITY TRANSFER)

MINIMUM LOT AREA:	5,250 SF
MAXIMUM LOT AREA:	9,000 SF
MINIMUM LOT WIDTH:	40 FEET
MINIMUM LOT DEPTH:	80 FEET
MINIMUM FRONT YARD SETBACK:	10-25 FEET
MINIMUM GARAGE FRONT SETBACK:	5 FEET
MINIMUM ALLEY GARAGE:	10 FEET
MINIMUM SIDE YARD SETBACK:	5 FEET
MINIMUM STREET SIDE / CORNER YARD SETBACK:	10 FEET
MINIMUM REAR YARD SETBACK:	10-20 FEET
MAXIMUM BUILDING LOT COVERAGE:	60%
MAXIMUM BUILDING HEIGHT:	35 FEET

LD-NS DENSITY

GROSS SITE AREA:	447,395 SF (10.27 AC)
OPEN SPACE AREA:	302,621 SF (6.95 AC)
NET AREA:	144,774 SF (3.32 AC)
DENSITY PER NORTH SHORE ZONING:	
MAXIMUM DENSITY (5.8 DU/AC X 3.32 AC):	19 UNITS
MINIMUM DENSITY (4 DU/AC X 3.32 AC):	13 UNITS
PROPOSED UNITS:	31 UNITS

DEVELOPMENT STANDARDS (MX-NS)

MINIMUM LOT AREA:	1,800 SF
MINIMUM LOT WIDTH:	20 FEET
MINIMUM LOT DEPTH:	60 FEET
MAXIMUM FRONT YARD SETBACK:	10 FEET
MINIMUM SIDE YARD SETBACK:	10 FEET
MINIMUM REAR YARD SETBACK:	10 FEET
MAXIMUM BUILDING LOT COVERAGE:	65%
MAXIMUM BUILDING HEIGHT:	100 FEET

MX-NS DENSITY

GROSS SITE AREA:	283,240 SF (6.50 AC)
OPEN SPACE AREA:	67,153 SF (1.54 AC)
NET AREA:	216,087 SF (4.96 AC)
DENSITY PER NORTH SHORE ZONING:	
MAXIMUM DENSITY (24 DU/AC X 4.96 AC):	119 UNITS
MINIMUM DENSITY (10 DU/AC X 4.96 AC):	50 UNITS
PROPOSED UNITS:	52 UNITS
COMMERCIAL USE:	±20,250 SF

DEVELOPMENT STANDARDS (C-NS)

MINIMUM FRONT YARD SETBACK:	15 FEET
MINIMUM USABLE OPEN SPACE:	5% (NET ACREAGE)
MAXIMUM BUILDING HEIGHT:	100 FEET

C-NS DENSITY

LOTS:	1 LOT
SQUARE FOOTAGE:	68,743 SF (1.58 AC)
REQUIRED USABLE OPEN SPACE:	3,437 SF
PROPOSED USABLE OPEN SPACE:	±4,300 SF
PROPOSED RESIDENTIAL UNITS:	16 UNITS
COMMERCIAL USE:	±10,000 SF

TOTAL SITE DENSITY

MINIMUM DENSITY:	132 DU + 13 DU + 50 DU = 195 UNITS
MAXIMUM DENSITY:	237 DU + 19 DU + 119 DU = 375 UNITS
PROPOSED DENSITY:	143 DU + 31 DU + 52 DU + 16 DU= 242 UNITS

PARKING STATISTICS

PARKING STALL TYPE	REQUIRED	PROPOSE
SITE PLAN PARKING STALLS	396	442
RESIDENTIAL OFF-STREET PARKING	19	19

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PRELIMINARY PLAT OVERVIEW
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HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

BRUCE D. HAMMOND — STATE OF WASHINGTON — 21078 — REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	9095
DATE:	7/22/2025
DESIGNED BY:	BDH
DRAWN BY:	LPM
CHECKED BY:	BDH

P3.0

1120

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.

CENTERLINE CURVE TABLE			
CURVE #	LENGTH	DELTA	RADIUS
C2	73.09'	59°49'36"	70.00'
C3	28.57'	23°22'54"	70.00'
C6	439.31'	83°54'10"	300.00'

CENTERLINE TANGENT TABLE		
LINE #	LENGTH	DIRECTION
T1	911.28	N88° 55' 52"W
T3	498.00	N01° 04' 03"E
T4	414.99	S88° 55' 52"E
T5	358.86	S88° 55' 49"E
T6	99.84	N31° 14' 35"E
T7	166.05	N54° 37' 29"E
T10	158.00	S01° 04' 11"W
T11	299.00	N88° 55' 48"W
T12	320.82	S88° 55' 52"E

SCALE: 1"=40 FEET

40 0 8 20 40

ORIGINAL PAGE SIZE: 22" x 34"

SEE SHEET P3.2

SEE SHEET P3.2

SEE SHEET P3.2

PHASE 6

PHASE 1

N 56TH AVE

N 55TH AVE

N 54TH AVE

N 57TH PLACE

N MILLS CT

N MILLS ST

NORTH SHORE BOULEVARD

N88°55'52"W 898.04'

N01°04'03"E 1019.86'

TRACT M
OPEN SPACE
±34,432 SF

HERBACEOUS BALD AND OREGON WHITE OAK AREA

FUTURE ROUNDABOUT SEE NOTES, SHEET P3.0

TRACT R
PARKING
±2,529 SF

TRACT S
OPEN SPACE
±1,957 SF

TRACT N
OPEN SPACE
±1,580 SF

TRACT O
PARKING
±1,964 SF

TRACT P
PRIVATE STREET
±17,660 SF

TRACT Q
OPEN SPACE
±6,081 SF

TRACT J
OPEN SPACE
±28,563 SF

TRACT K
ACCESS
±6,153 SF

489 ±20,163 SF

1 ±3,230 SF
2 ±3,040 SF
3 ±3,420 SF
4 ±4,304 SF
5 ±3,775 SF
6 ±3,230 SF
7 ±3,230 SF
8 ±3,230 SF
9 ±3,230 SF
10 ±3,230 SF
11 ±3,230 SF
12 ±3,230 SF
13 ±3,230 SF
14 ±3,223 SF
15 ±3,985 SF
16 ±4,791 SF
17 ±6,537 SF
18 ±3,768 SF
19 ±3,230 SF
20 ±3,230 SF
21 ±3,230 SF
22 ±3,674 SF
23 ±4,149 SF
24 ±3,040 SF
25 ±3,040 SF
26 ±3,040 SF
27 ±3,040 SF
28 ±3,040 SF
29 ±3,040 SF
30 ±3,040 SF
31 ±3,040 SF
32 ±3,050 SF
33 ±3,256 SF
34 ±3,911 SF
35 ±2,755 SF
36 ±2,280 SF
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38 ±2,755 SF
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83 ±2,400 SF
84 ±2,400 SF
85 ±2,900 SF
86 ±2,900 SF
87 ±2,400 SF
88 ±2,900 SF
89 ±2,900 SF
90 ±2,400 SF
91 ±2,400 SF
92 ±2,900 SF
93 ±2,900 SF
94 ±2,400 SF
95 ±2,900 SF

PARKING STATISTICS

PARKING STALL TYPE	REQUIRED	PROPOSED
RESIDENTIAL OFF-STREET PARKING	19	19

NOTE: LOTS 1 – 34 PROPOSED AS SINGLE FAMILY DETACHED. LOTS 35 – 95 PROPOSED AS TOWNHOMES.

5.00' MEDIAN PLANTER STRIP
7' PLANTER STRIP
8' SIDEWALK
18.00' PAVED LANE WIDTH
68'–75' ROW (WIDTH VARIES)
54.00' ROW
28.00' PAVED WIDTH
27.00' HALF OF ROW
7.00' PLANTER STRIP
6.00' SIDEWALK
28' PAVED WIDTH
6.00' PUE
7.00' PLANTER
5.00' SIDEWALK
6.00' SIDEWALK
33.50' HALF ROW
67.00' ROW
18.00' HALF PAVED WIDTH
10.00' PUE
5.00' PLANTER STRIP
20.00' MIN. PAVED WIDTH
30.00' MIN. UTILITY AND PUBLIC ACCESS EASEMENT
6.00' SIDEWALK
7.00' PLANTER
14.00' HALF PAVED WIDTH
24.00' PAVED WIDTH
27.00' HALF ROW WIDTH
45.00' ROW

PARCEL NO. 177891–000 (LACAMAS HERITAGE PROPERTIES LLC)

PARCEL NO. 177905–000 (CITY OF CAMAS)

PARCEL NO. 177884–000 (MILLS FAMILY LLC)

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
360.882.0419
WWW.AKS-ENG.COM

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PRELIMINARY SUBDIVISION PLAT
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P3.1

1121

AKS DRAWING FILE: 9095 P3.0 PLAT2.DWG | LAYOUT: P3.1

PARKING STATISTICS

PARKING SUMMARY FOR MX LOTS 107, 108 & TRACT N

32-1 BEDROOM UNITS, 32-2 BEDROOM UNITS REQUIRED PARKING APARTMENT UNITS (1.5/PER 1 BEDROOM UNIT & 2/PER 2 BEDROOM UNIT):	112 SPACES
10,000 SF COMMERCIAL (1/200 SF):	50 SPACES
REQUIRED PARKING:	162 SPACES
PROPOSED PARKING:	189 SPACES

PARKING SUMMARY FOR MX LOTS 103, 104 & 105

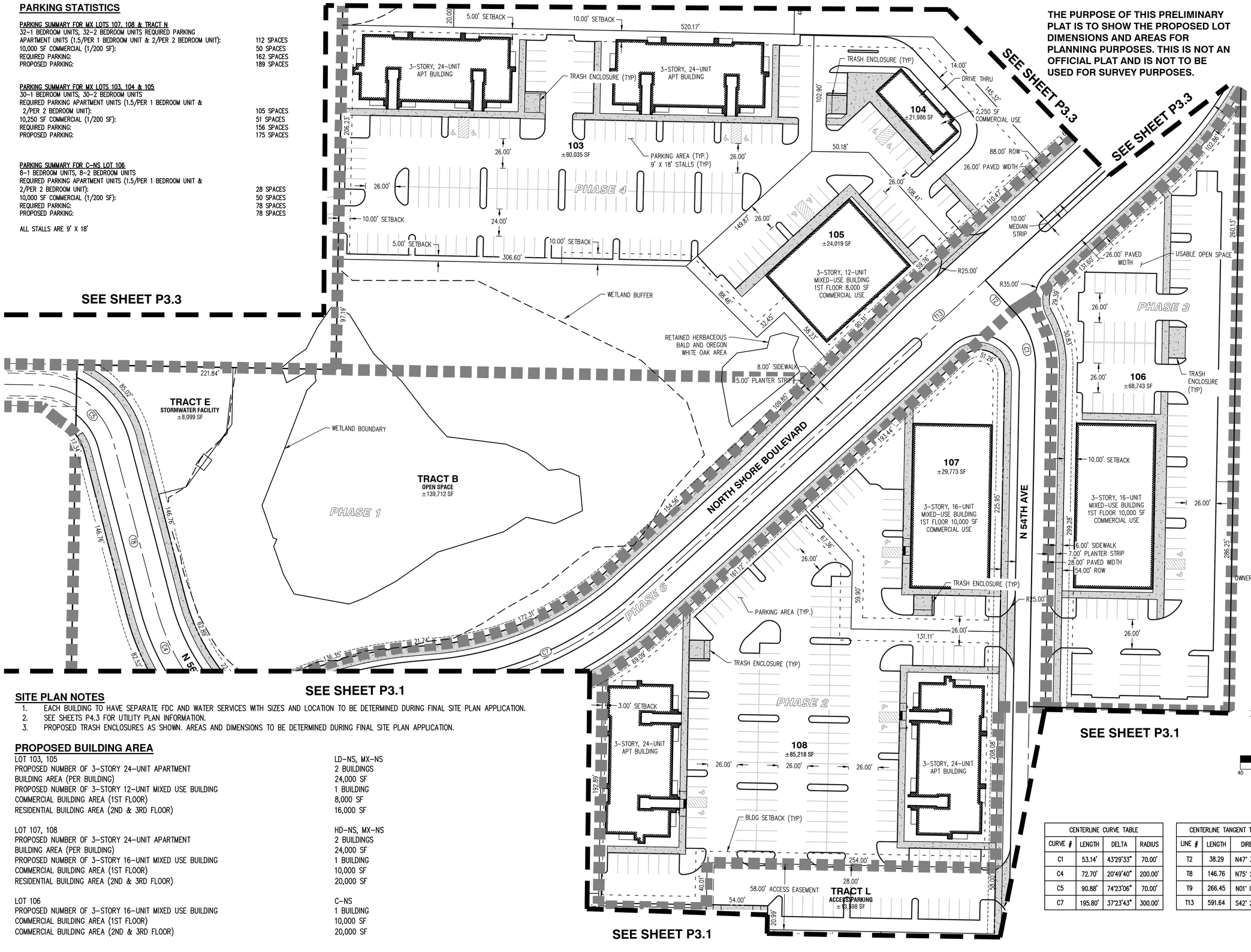
30-1 BEDROOM UNITS, 30-2 BEDROOM UNITS REQUIRED PARKING APARTMENT UNITS (1.5/PER 1 BEDROOM UNIT & 2/PER 2 BEDROOM UNIT):	105 SPACES
10,250 SF COMMERCIAL (1/200 SF):	51 SPACES
REQUIRED PARKING:	156 SPACES
PROPOSED PARKING:	175 SPACES

PARKING SUMMARY FOR C-NS LOT 106

8-1 BEDROOM UNITS, 8-2 BEDROOM UNITS REQUIRED PARKING APARTMENT UNITS (1.5/PER 1 BEDROOM UNIT & 2/PER 2 BEDROOM UNIT):	28 SPACES
10,000 SF COMMERCIAL (1/200 SF):	50 SPACES
REQUIRED PARKING:	78 SPACES
PROPOSED PARKING:	78 SPACES

ALL STALLS ARE 9' X 18'

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.



SITE PLAN NOTES

1. EACH BUILDING TO HAVE SEPARATE FDC AND WATER SERVICES WITH SIZES AND LOCATION TO BE DETERMINED DURING FINAL SITE PLAN APPLICATION.
2. SEE SHEETS P4.3 FOR UTILITY PLAN INFORMATION.
3. PROPOSED TRASH ENCLOSURES AS SHOWN. AREAS AND DIMENSIONS TO BE DETERMINED DURING FINAL SITE PLAN APPLICATION.

PROPOSED BUILDING AREA

LOT 103, 105	LD-NS, MX-NS
PROPOSED NUMBER OF 3-STORY 24-UNIT APARTMENT BUILDING AREA (PER BUILDING)	2 BUILDINGS 24,000 SF
PROPOSED NUMBER OF 3-STORY 12-UNIT MIXED USE BUILDING	1 BUILDING
COMMERCIAL BUILDING AREA (1ST FLOOR)	8,000 SF
RESIDENTIAL BUILDING AREA (2ND & 3RD FLOOR)	16,000 SF
LOT 107, 108	HD-NS, MX-NS
PROPOSED NUMBER OF 3-STORY 24-UNIT APARTMENT BUILDING AREA (PER BUILDING)	2 BUILDINGS 24,000 SF
PROPOSED NUMBER OF 3-STORY 16-UNIT MIXED USE BUILDING	1 BUILDING
COMMERCIAL BUILDING AREA (1ST FLOOR)	10,000 SF
RESIDENTIAL BUILDING AREA (2ND & 3RD FLOOR)	20,000 SF
LOT 106	C-NS
PROPOSED NUMBER OF 3-STORY 16-UNIT MIXED USE BUILDING	1 BUILDING
COMMERCIAL BUILDING AREA (1ST FLOOR)	10,000 SF
COMMERCIAL BUILDING AREA (2ND & 3RD FLOOR)	20,000 SF

CENTERLINE CURVE TABLE			
CURVE #	LENGTH	DELTA	RADIUS
C1	53.14'	43°29'33"	70.00'
C4	72.70'	20°49'40"	200.00'
C5	90.88'	74°23'06"	70.00'
C7	195.80'	37°23'43"	300.00'

CENTERLINE TANGENT TABLE		
LINE #	LENGTH	DIRECTION
T2	38.29	N47° 34' 35"E
T8	146.76	N75° 27' 09"E
T9	266.45	N01° 04' 03"E
T13	591.64	S42° 25' 25"E

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AKS ENGINEERING - SURVEYING - NATURAL RESOURCES
FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE

PRELIMINARY SUBDIVISION PLAT
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

BRUCE D. HANNA — STATE OF WASHINGTON — 19079 — REGISTERED PROFESSIONAL ENGINEER — PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	9095
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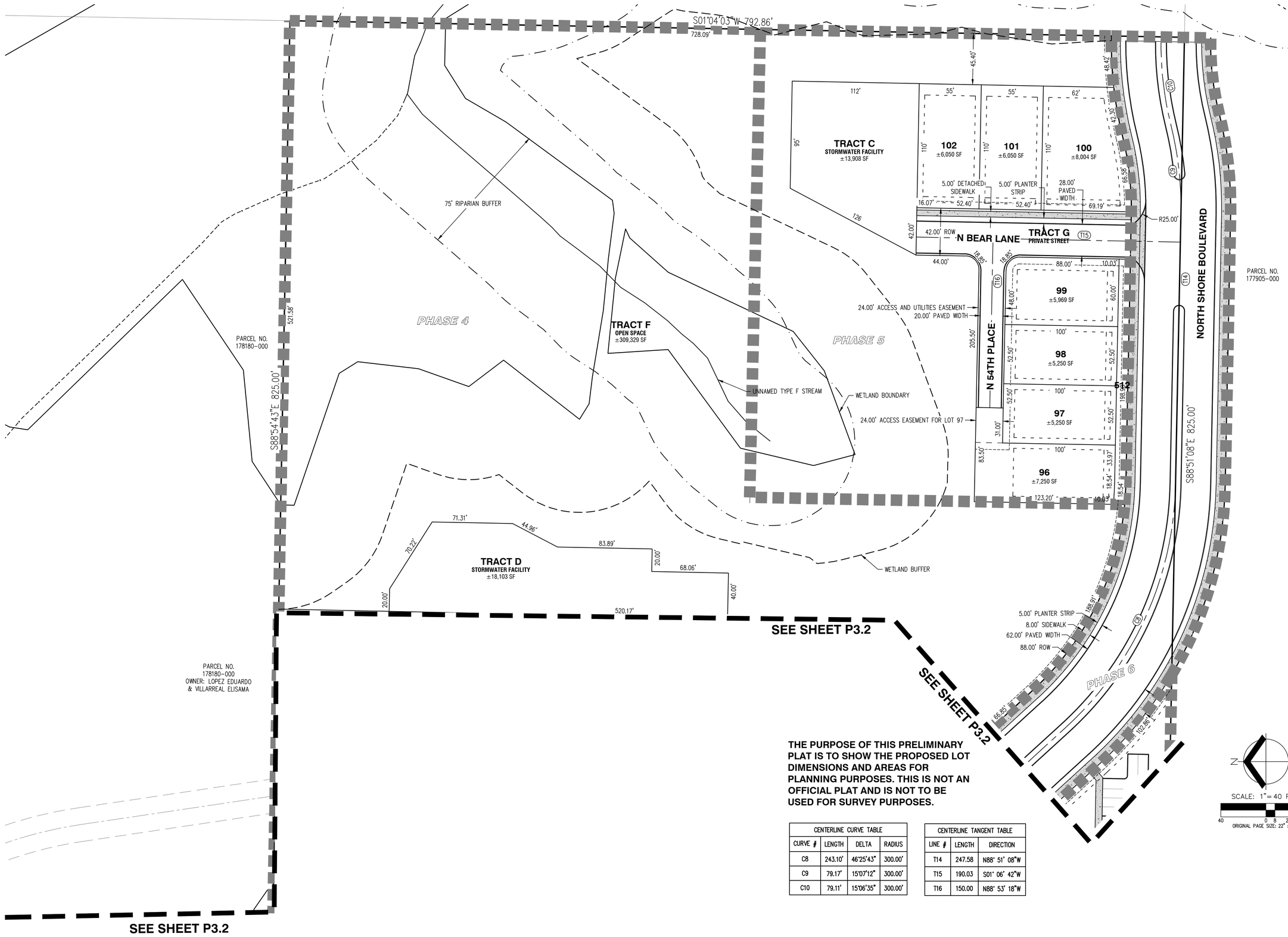
CHECKED BY:	BDH

P3.2

AKS DRAWING FILE: 9095 P3.0 PLAT2.DWG | LAYOUT: P3.2



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CENTERLINE CURVE TABLE			
CURVE #	LENGTH	DELTA	RADIUS
C8	243.10'	46°25'43"	300.00'
C9	79.17'	15°07'12"	300.00'
C10	79.11'	15°06'35"	300.00'

CENTERLINE TANGENT TABLE		
LINE #	LENGTH	DIRECTION
T14	247.58	N88° 51' 08"W
T15	190.03	S01° 06' 42"W
T16	150.00	N88° 53' 18"W

N

SCALE: 1"= 40 FEET

40 0 8 20 40

ORIGINAL PAGE SIZE: 22" x 34"

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JOB NUMBER:	9095
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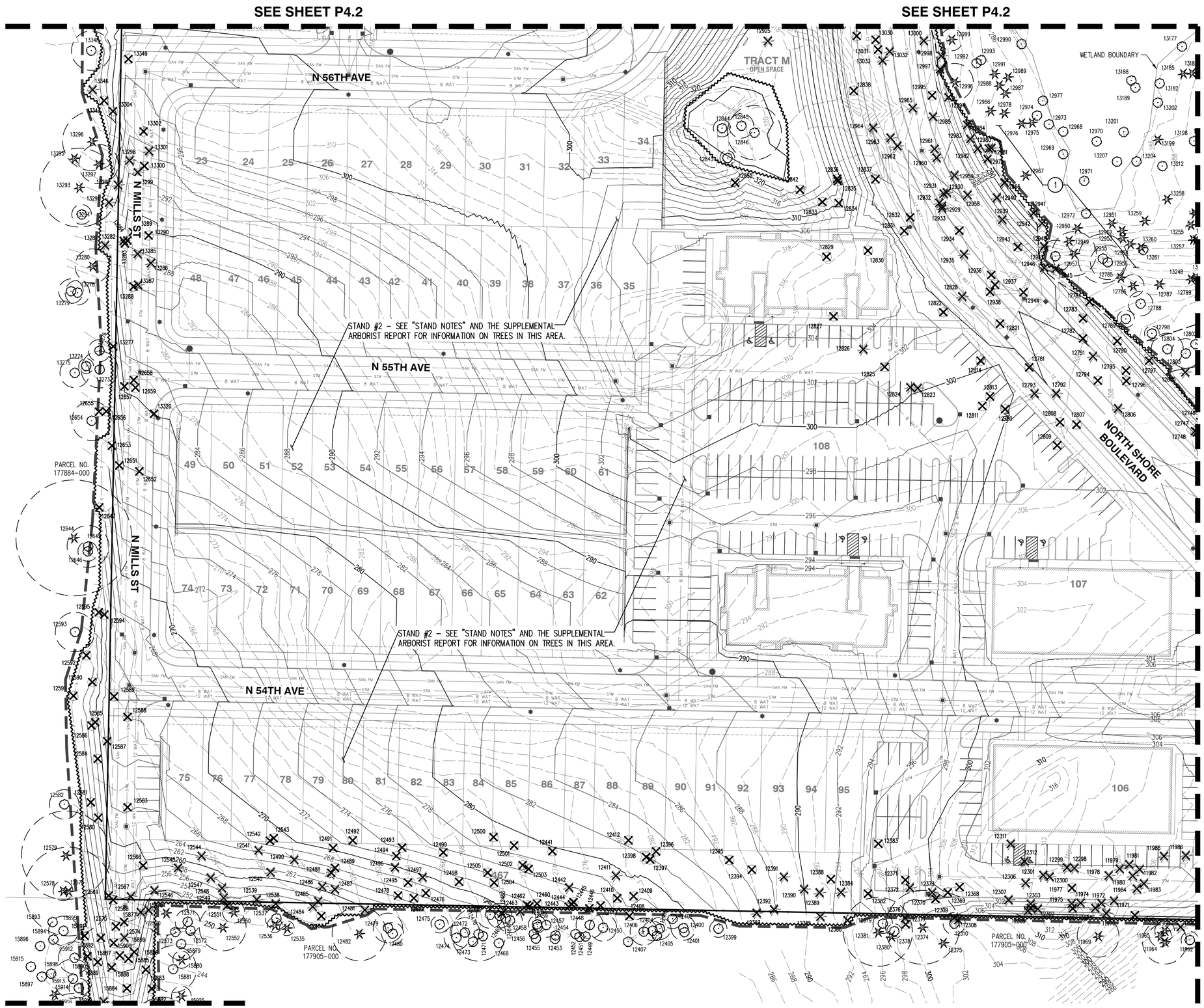
P3.3

1123

AKS DRAWING FILE: 9095 P3.0 PLAT2.DWG | LAYOUT: P3.3



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)
- ORANGE SEDIMENT FENCE (STRAW WATTLE TO BE USED WITHIN ROOT ZONES OF TREES TO BE PRESERVED) — x — x —
- ASSUMED TREE ROOT ZONE (1-FT RADIUS PER 1-IN OF DBH)

NOTE: OFF-SITE TREES PROPOSED FOR REMOVAL ON PARCEL 177884-00 TO BE REMOVED UNDER THE CONSTRUCTION EASEMENT TO BE RECORDED.

TREE PROTECTION KEYED NOTES:

(1) TREES TO BE REEVLUATED DURING FINAL ENGINEERING. TREES REMOVED FOR HAZARD ABATEMENT SHALL BE FELLED AND RETAINED WITHIN THE CRITICAL AREA BUFFER.

TREE PLAN

SITE AREA:	±36.04 AC
SITE AREA EXCLUDING OPEN SPACE:	23.60 AC
TOTAL TREE UNITS REQUIRED (23.60 AC X 30):	708
EXISTING TREES RETAINED/(TREE UNITS):	558/(2236)
PROPOSED SITE TREES/(TREE UNITS):	322/(322)
TOTAL TREE UNITS: (RETAINED AND PROPOSED)	2,558

NOTE: SEE LANDSCAPE PLAN (P11.0–P11.3) 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 P4.12.
2. SEE PROJECT SUPPLEMENTAL ARBORIST REPORT FOR THE DETAILED TREE INVENTORY (DATED JULY 2025).
3. SEE SHEET P4.12 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 IN THE SUPPLEMENTAL REPORT, 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.
7. TREES CUT WITHIN EXISTING CRITICAL AREA BUFFERS TO BE RETAINED ON-SITE FOR MITIGATION USE. SEE PROJECT CAR AND PRELIMINARY MITIGATION PLAN PREPARED BY ELS INC.

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.

STAND #1
THE STAND IS DOMINATED BY DOUGLAS-FIR PLANTED IN ROWS. THE TREES ARE GENERALLY IN GOOD CONDITION WITH A DENSITY OF ±125 TREES PER ACRE.

STAND #2
THE DOMINANT SPECIES IN THE STAND ARE DOUGLAS-FIR AND BIGLEAF MAPLE WITH SOME WESTERN REDCEDAR AND RED ALDER. THE TREES ARE GENERALLY IN GOOD CONDITION WITH A DENSITY OF ±100 TREES PER ACRE. SOME PATCHES OF LARGE SNAGS ARE SCATTERED THROUGHOUT THE STAND.

N

SCALE: 1"=40 FEET

40 0 8 20 40

ORIGINAL PAGE SIZE: 22" x 34"

PRELIMINARY NOT FOR CONSTRUCTION

CERTIFIED ARBORIST ISA

BENNETT R. KOCSIS
CERTIFICATE NUMBER: PN 8877A
EXPIRATION DATE: 12/31/2025

AKS ENGINEERING & FORESTRY, LLC
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PRELIMINARY TREE PRESERVATION & REMOVAL PLAN OVERVIEW
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

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CHECKED BY:	BDH

P4.0

1124

AKS DRAWING FILE: 9095 PLO TREEDWG | LAYOUT: P4.0

SEE SHEET P4.3

SEE SHEET P4.3

SEE SHEET P4.0

SEE SHEET P4.0

STAND #2 – SEE "STAND NOTES" AND THE SUPPLEMENTAL ARBORIST REPORT FOR INFORMATION ON TREES IN THIS AREA.

STAND #1 – SEE "STAND NOTES" AND THE SUPPLEMENTAL ARBORIST REPORT FOR INFORMATION ON TREES IN THIS AREA.

TRACT F
OPEN SPACE

TRACT H
OPEN SPACE

PARCEL NO. 178171-000

PARCEL NO. 177905-000

N 54TH AVE

N 54TH PL

N BEAR LN

NORTH SHORE BOULEVARD

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)	
ORANGE SEDIMENT FENCE (STRAW WATTLE TO BE USED WITHIN ROOT ZONES OF TREES TO BE PRESERVED)	
ASSUMED TREE ROOT ZONE (1-FT RADIUS PER 1-IN OF DBH)	

TREE PLAN

SITE AREA:	±36.04 AC
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TOTAL TREE UNITS REQUIRED (23.60 AC X 30):	708
EXISTING TREES RETAINED/(TREE UNITS):	558/(2236)
PROPOSED SITE TREES/(TREE UNITS):	322/(322)
TOTAL TREE UNITS: (RETAINED AND PROPOSED)	2,558

NOTE: SEE LANDSCAPE PLAN (P11.0–P11.3) FOR PROPOSED TREE PLANTING PLAN

GENERAL NOTES

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N

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PRELIMINARY TREE PRESERVATION & REMOVAL PLAN

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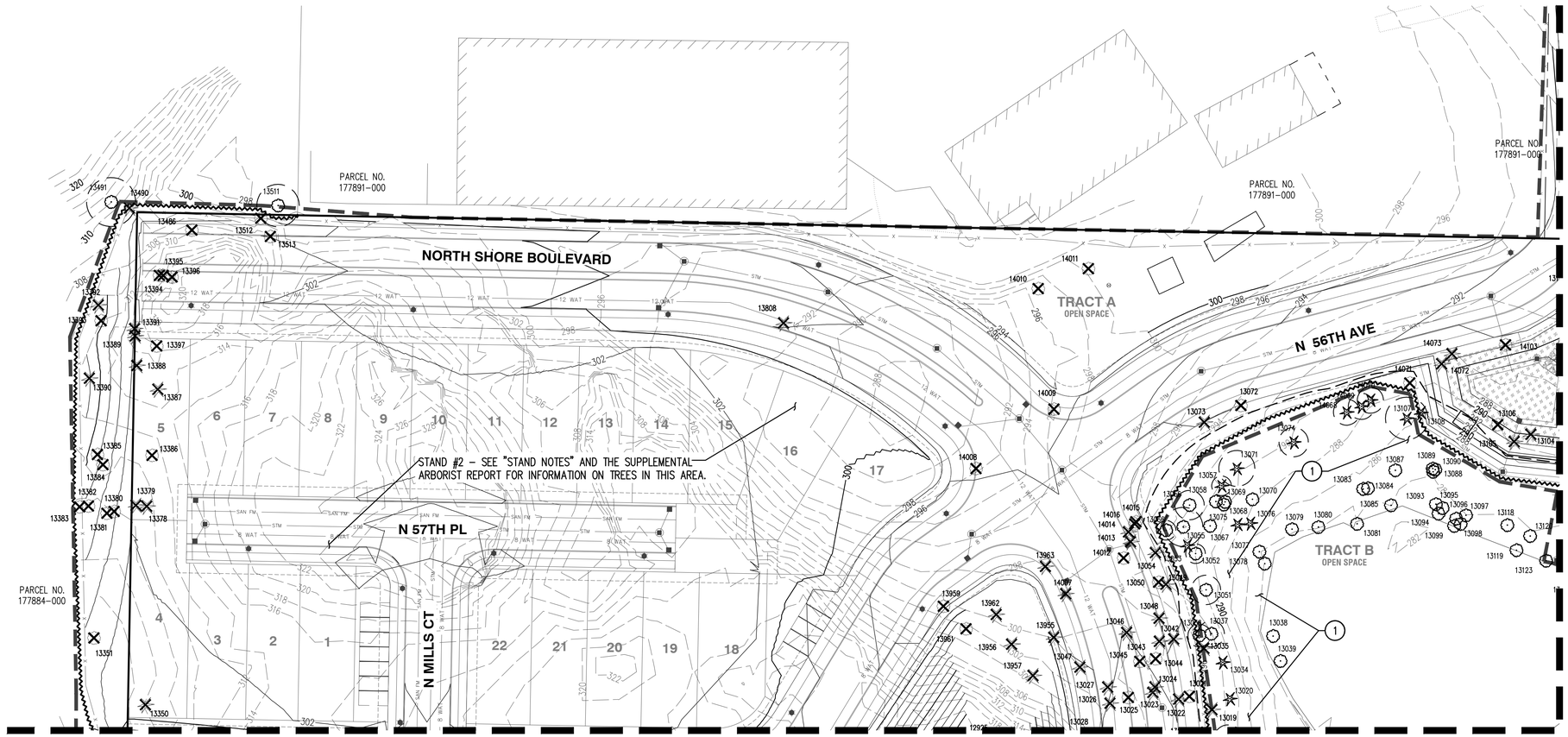
P4.1

1125

AKS DRAWING FILE: 9095 PKO TREE.DWG | LAYOUT: P4.1



N

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LEGEND

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- EXISTING GROUND CONTOUR (5 FT) — 150
- FINISHED GRADE CONTOUR (1 FT) — 149
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- EXISTING CONIFEROUS TREE
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- TREE REMOVAL
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NOTE: SEE LANDSCAPE PLAN (P11.0-P11.3) 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 P4.12.
2. SEE PROJECT SUPPLEMENTAL ARBORIST REPORT FOR THE DETAILED TREE INVENTORY (DATED JULY 2025).
3. SEE SHEET P4.12 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 IN THE SUPPLEMENTAL REPORT, 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.
7. TREES CUT WITHIN EXISTING CRITICAL AREA BUFFERS TO BE RETAINED ON-SITE FOR MITIGATION USE. SEE PROJECT CAR AND PRELIMINARY MITIGATION PLAN PREPARED BY ELS INC.

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.

STAND #1
THE STAND IS DOMINATED BY DOUGLAS-FIR PLANTED IN ROWS. THE TREES ARE GENERALLY IN GOOD CONDITION WITH A DENSITY OF ±125 TREES PER ACRE.

STAND #2
THE DOMINANT SPECIES IN THE STAND ARE DOUGLAS-FIR AND BIGLEAF MAPLE WITH SOME WESTERN REDCEDAR AND RED ALDER. THE TREES ARE GENERALLY IN GOOD CONDITION WITH A DENSITY OF ±100 TREES PER ACRE. SOME PATCHES OF LARGE SNAGS ARE SCATTERED THROUGHOUT THE STAND.

CERTIFIED ARBORIST ISA

PRELIMINARY NOT FOR CONSTRUCTION

BENNETT R. KOCSIS
CERTIFICATE NUMBER: PN 8877A
EXPIRATION DATE: 12/31/2025

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PRELIMINARY TREE PRESERVATION & REMOVAL PLAN
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

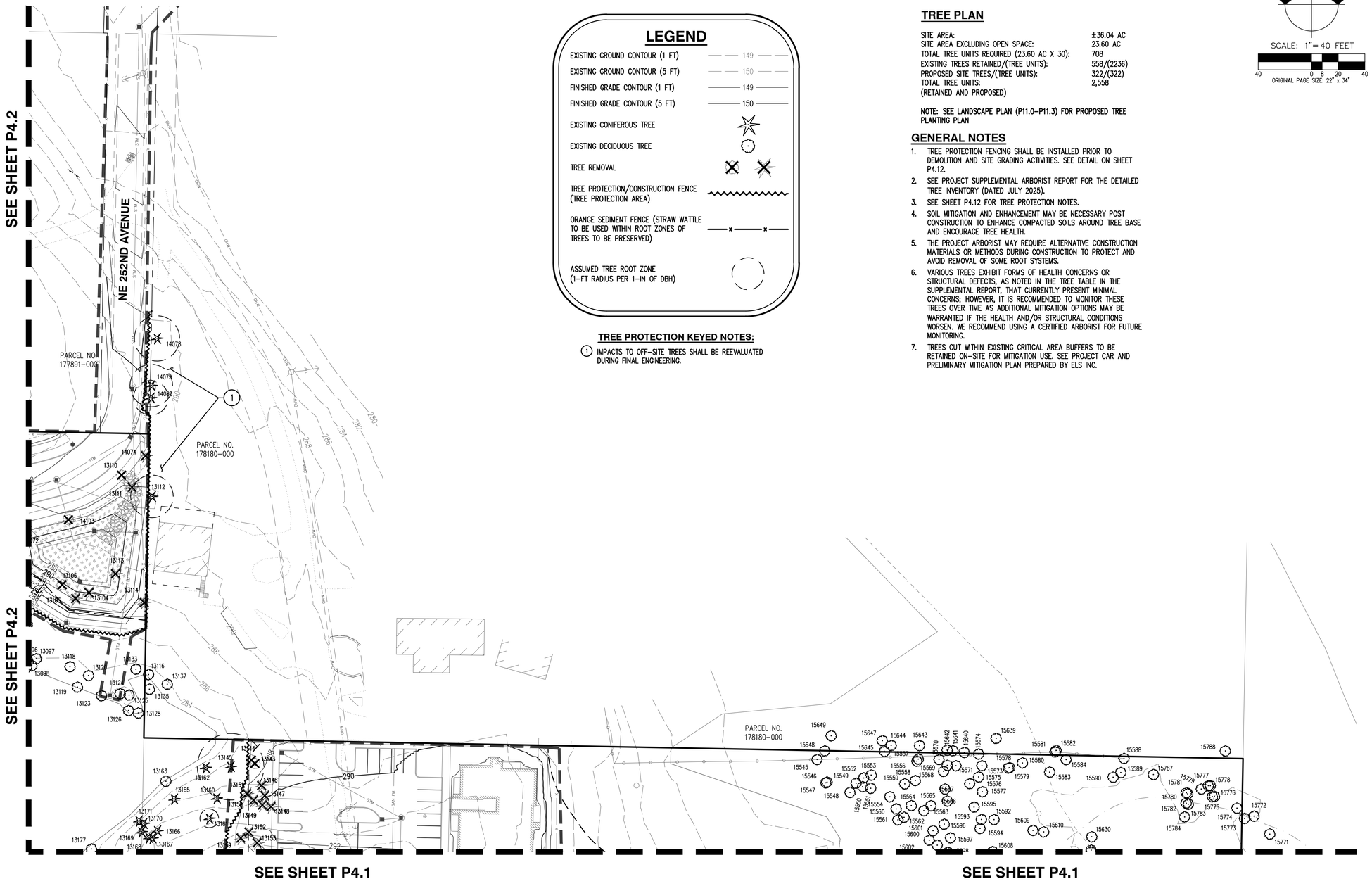
PRELIMINARY NOT FOR CONSTRUCTION
BRUCE D. HANNA
STATE OF WASHINGTON
10179
REGISTERED
PROFESSIONAL ENGINEER

JOB NUMBER:	9095
DATE:	7/22/2025
DESIGNED BY:	BRK
DRAWN BY:	BRK
CHECKED BY:	BDH

P4.2

1126

AKS DRAWING FILE: 9095 PX.0 TREE.DWG | LAYOUT: P4.2



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)
- ORANGE SEDIMENT FENCE (STRAW WATTLE TO BE USED WITHIN ROOT ZONES OF TREES TO BE PRESERVED)
- ASSUMED TREE ROOT ZONE (1-FT RADIUS PER 1-IN OF DBH)

TREE PROTECTION KEYED NOTES:

1. IMPACTS TO OFF-SITE TREES SHALL BE REEVALUATED DURING FINAL ENGINEERING.

TREE PLAN

SITE AREA:	±36.04 AC
SITE AREA EXCLUDING OPEN SPACE:	23.60 AC
TOTAL TREE UNITS REQUIRED (23.60 AC X 30):	708
EXISTING TREES RETAINED/(TREE UNITS):	558/(2236)
PROPOSED SITE TREES/(TREE UNITS):	322/(322)
TOTAL TREE UNITS: (RETAINED AND PROPOSED)	2,558

NOTE: SEE LANDSCAPE PLAN (P11.0–P11.3) 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 P4.12.
2. SEE PROJECT SUPPLEMENTAL ARBORIST REPORT FOR THE DETAILED TREE INVENTORY (DATED JULY 2025).
3. SEE SHEET P4.12 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 IN THE SUPPLEMENTAL REPORT, 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.
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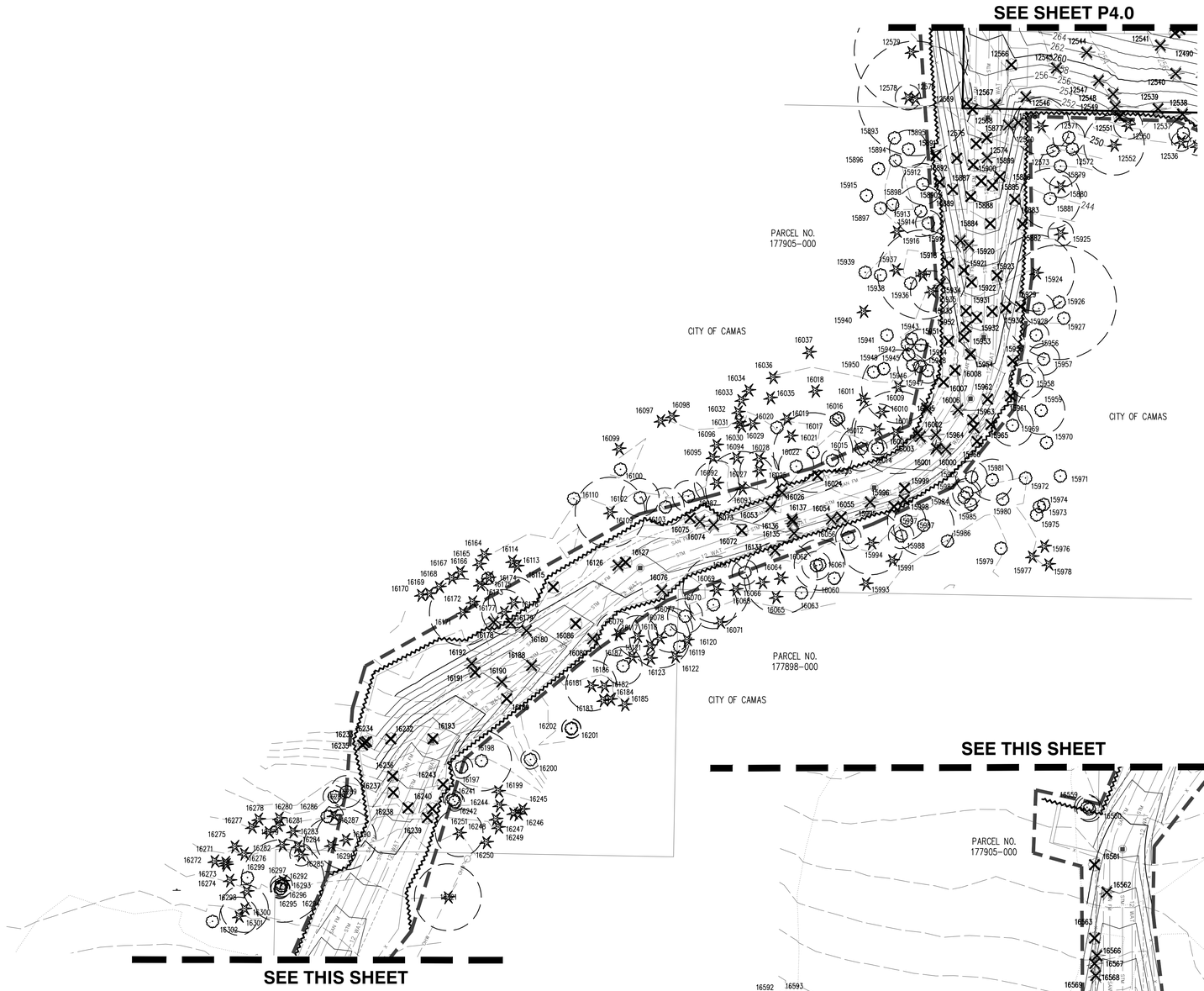
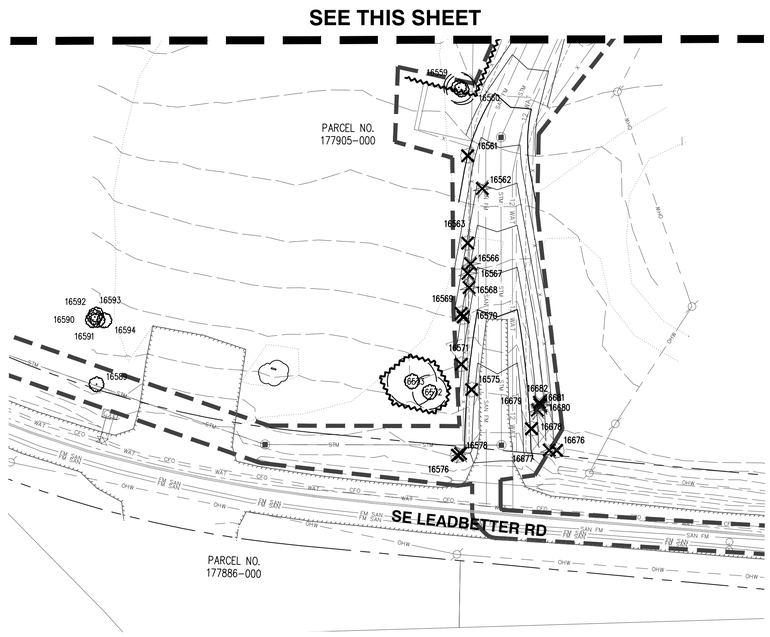
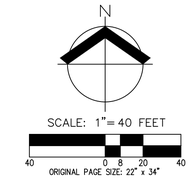
SCALE: 1"= 40 FEET

40 0 8 20 40

ORIGINAL PA







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DRAWN BY:	BRK
CHECKED BY:	BDH

P4.4

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AKS DRAWING FILE: 9095 PX.0 TREE.DWG | LAYOUT: P4.4

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 CITY OF CAMAS CODE OF ORDINANCES CHAPTERS 14.02 AND 14.06.

E. DIRECTIONAL FELLING OF TREES SHALL BE USED TO AVOID DAMAGE TO TREES DESIGNATED FOR RETENTION.

F. ADDITIONAL REQUIREMENTS – THE PROJECT ARBORIST MAY REQUIRE ADDITIONAL TREE PROTECTION MEASURES WHICH ARE CONSISTENT WITH ACCEPTED URBAN FORESTRY PRACTICES.

G. ENCROACHMENT INTO THE ROOT PROTECTION ZONE IS ALLOWED WITH PROJECT ARBORIST APPROVAL AS DESCRIBED IN THE FOLLOWING NOTES:

G.A. EXCAVATION IN THE TOP 24 INCHES OF THE SOIL IN THE CRITICAL ROOT ZONE AREA SHOULD BEGIN AT THE EXCAVATION LINE THAT IS CLOSEST TO THE TREE.

G.B. THE EXCAVATION SHOULD BE DONE BY HAND/SHOVEL OR WITH A BACKHOE AND A MAN WITH A SHOVEL, PRUNING SHEARS, AND A PRUNING SAW.

G.C. IF DONE BY HAND, ALL ROOTS 1 INCH OR LARGER SHOULD BE PRUNED AT THE EXCAVATION LINE.

G.D. IF DONE WITH BACKHOE (MOST LIKELY SCENARIO), THEN THE OPERATOR SHALL START THE CUT AT THE EXCAVATION LINE AND CAREFULLY "FEEL" FOR ROOT/RESISTANCE. WHEN THERE IS RESISTANCE, THE MAN WITH THE SHOVEL HAND DIGS AROUND THE ROOTS AND PRUNES THE ROOTS LARGER THAN 1 INCH DIAMETER.

G.E. THE BACKHOE IS TO REMAIN OFF OF THE TREE ROOTS TO BE PRESERVED AT ALL TIMES.

G.F. ALL ROOTS SHALL BE CUT CLEANLY WITH PRUNING SHEARS OR A PRUNING SAW.

G.G. PROJECT ARBORIST MUST BE ONSITE DURING ANY WORK WITHIN THE TREE ROOT PROTECTION ZONE.

G.H. THE CITY OFFICIAL 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.

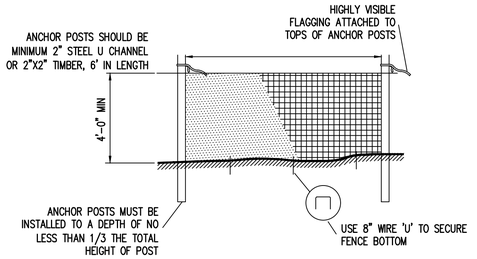
J.I. ANY BRUSH CLEARING REQUIRED WITHIN THE TREE PROTECTION ZONE SHALL BE ACCOMPLISHED WITH HAND OPERATED EQUIPMENT.

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.

CERTIFIED ARBORIST ISA

PRELIMINARY NOT FOR CONSTRUCTION

BENNETT R. KOCSIS
CERTIFICATE NUMBER: PN 8877A
EXPIRATION DATE: 12/31/2025

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REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

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DESIGNED BY:	BRK
DRAWN BY:	BRK
CHECKED BY:	BDH

P4.12

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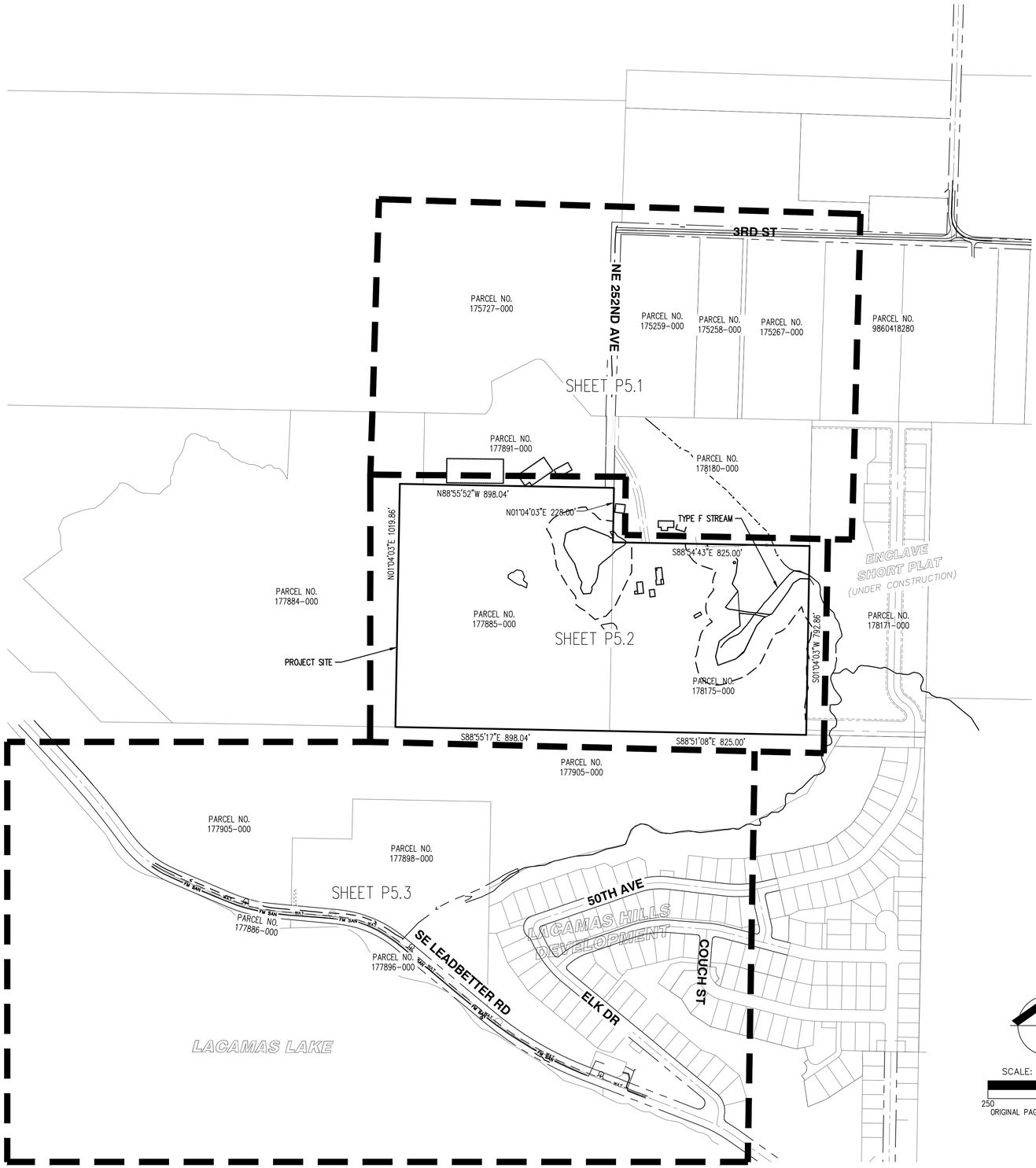
AKS DRAWING FILE: 9095 PLO TREE.DWG | LAYOUT: P4.12



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PRELIMINARY DEMOLITION PLAN OVERVIEW
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CHECKED BY:	BDH

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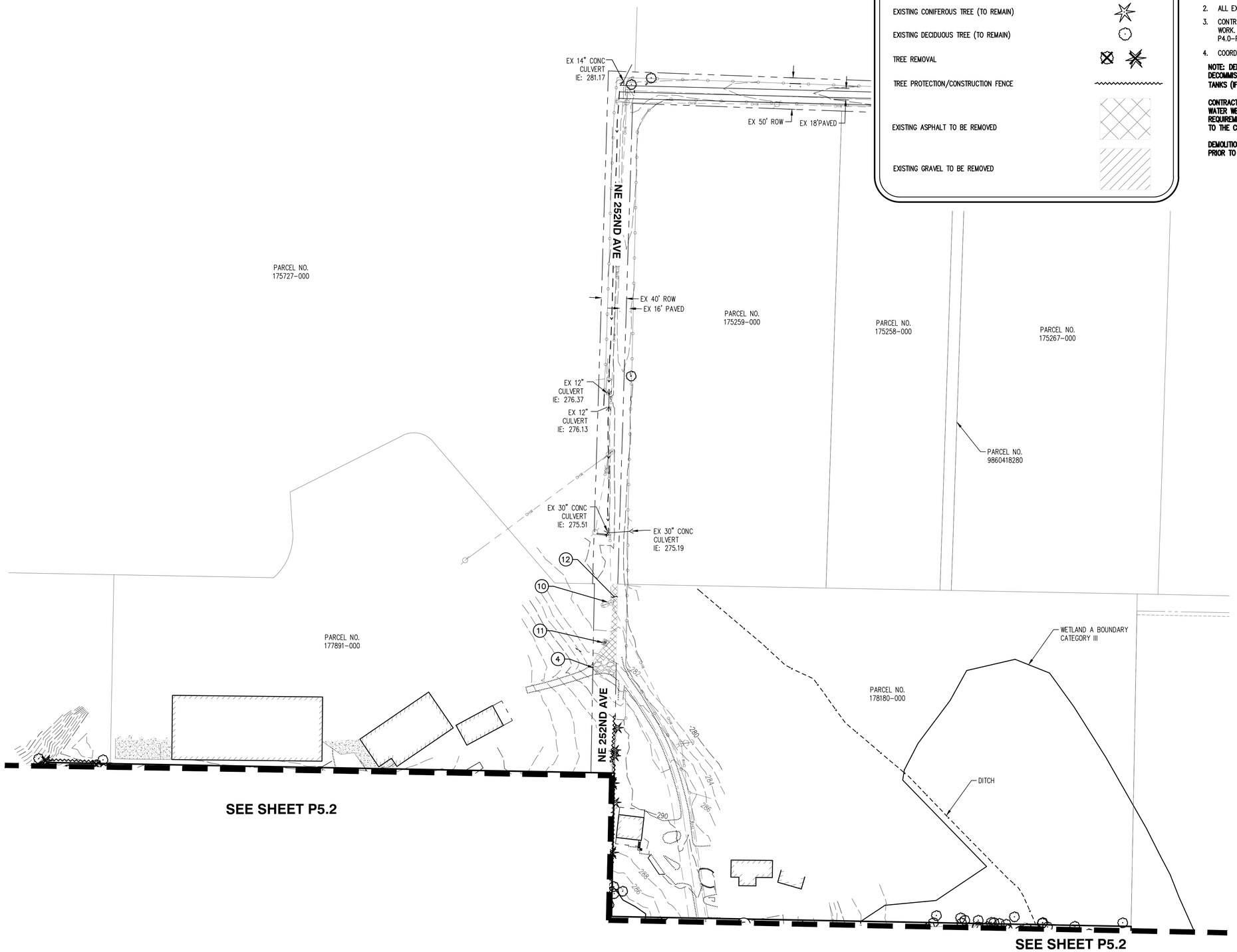

LEGEND

- EXISTING GROUND CONTOUR (2 FT)
- EXISTING GROUND CONTOUR (10 FT) — 350
- EXISTING CONIFEROUS TREE (TO REMAIN)
- EXISTING DECIDUOUS TREE (TO REMAIN)
- TREE REMOVAL
- TREE PROTECTION/CONSTRUCTION FENCE
- EXISTING ASPHALT TO BE REMOVED
- EXISTING GRAVEL TO BE REMOVED

GENERAL NOTES

1. SEE THE PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN P4.0–P4.4 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.
3. CONTRACTOR TO PROTECT AND PRESERVE EXISTING TREES DURING DEMOLITION WORK. SEE TREE PRESERVATION AND REMOVAL PLANS AND DETAILS, SHEETS P4.0–P4.1 FOR ADDITIONAL NOTES AND DETAILS.
4. COORDINATE WITH UTILITY PURVEYORS TO REMOVE / RELOCATE AS NEEDED.

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.

DEMOLITION KEYED NOTES (#)

1. REMOVE EXISTING HOUSE, ACCESSORY BUILDINGS, AND ASSOCIATED APPENDITURES.
2. REMOVE EXISTING FENCE
3. REMOVE EXISTING ROCK WALL
4. REMOVE EXISTING GRAVEL DRIVEWAY WITHIN EXISTING RIGHT OF WAY
5. DISCONNECT AND REMOVE EXISTING POWER SERVICE
6. REMOVE EXISTING SHED
7. REMOVE EXISTING PUMP HOUSE, WELL, AND WELL HEAD
8. REMOVE EXISTING WATER LINE & FITTINGS
9. REMOVE EXISTING SEPTIC TANKS AND DRAINFIELD
10. RELOCATE EXISTING CPU POWER POLE
11. RELOCATED EXISTING MAILBOXES
12. SAWCUT/REMOVE EXISTING ASPHALT
13. REMOVE 6.5" VERTICAL METAL PILLAR

N

SCALE: 1"= 80 FEET

80 0 16 40 80

ORIGINAL PAGE SIZE: 22" x 34"

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PRELIMINARY DEMOLITION PLAN
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

BRYCE D. HANSEN
STATE OF WASHINGTON
PRELIMINARY NOT FOR CONSTRUCTION
51079
REGISTERED PROFESSIONAL ENGINEER

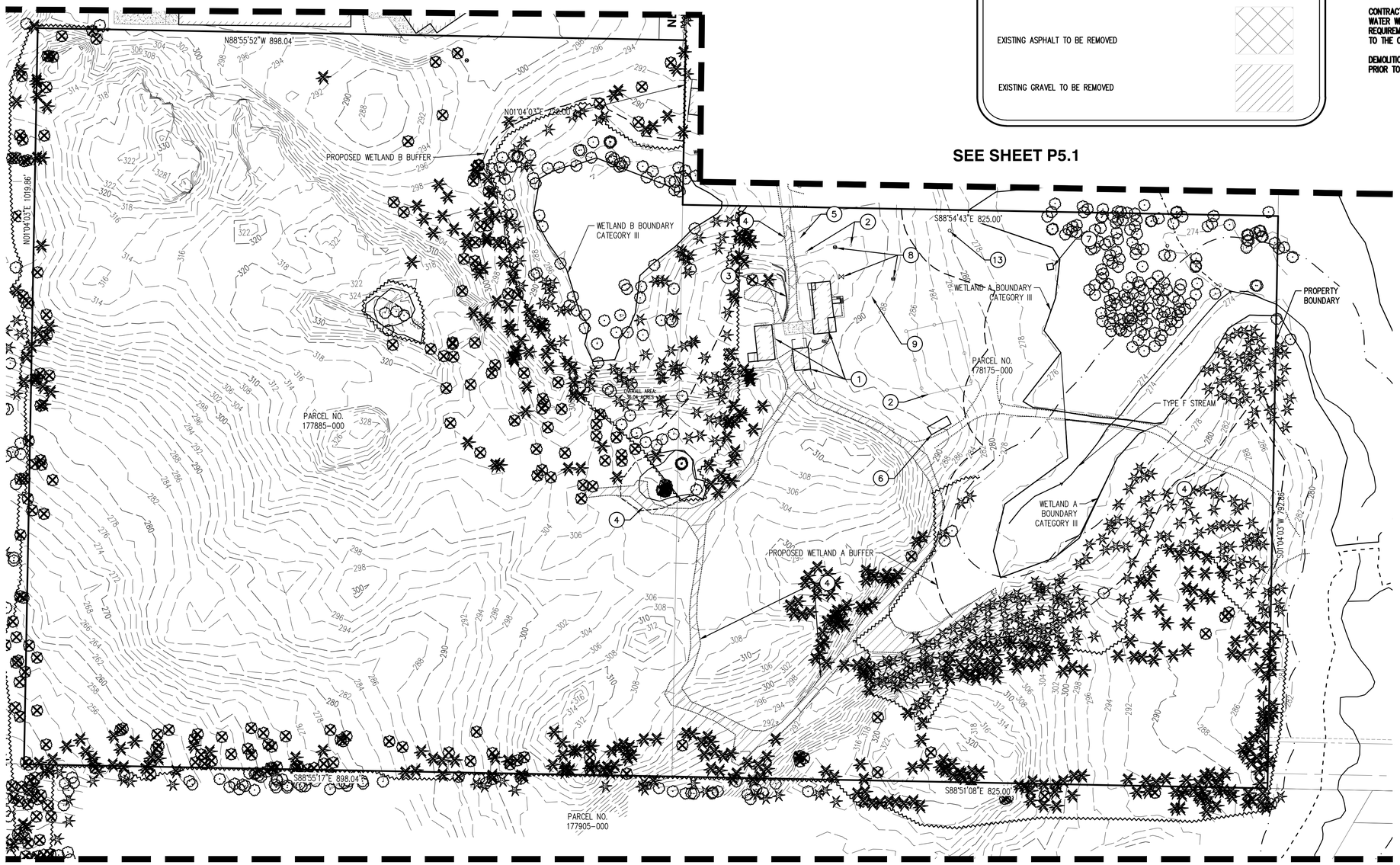
JOB NUMBER:	9095
DATE:	7/22/2025
DESIGNED BY:	BDH
DRAWN BY:	LPM
CHECKED BY:	BDH

P5.1

1131

AKS DRAWING FILE: 9095 P6.0 DEMO.DWG | LAYOUT: P5.1

SEE SHEET P5.1



SEE SHEET P5.1

SEE SHEET P5.3

LEGEND

- EXISTING GROUND CONTOUR (2 FT)
- EXISTING GROUND CONTOUR (10 FT) — 350
- EXISTING CONIFEROUS TREE (TO REMAIN)
- EXISTING DECIDUOUS TREE (TO REMAIN)
- TREE REMOVAL
- TREE PROTECTION/CONSTRUCTION FENCE
- EXISTING ASPHALT TO BE REMOVED
- EXISTING GRAVEL TO BE REMOVED

GENERAL NOTES

1. SEE THE PRELIMINARY TREE PRESERVATION AND REMOVAL PLAN P4.0–P4.4 FOR TREE PROTECTION AND CONSTRUCTION FENCE LOCATIONS AND TREE ROOT PROTECTION ZONE RADIUS ZONES.
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5. DISCONNECT AND REMOVE EXISTING POWER SERVICE
6. REMOVE EXISTING SHED
7. PROTECT EXISTING PUMP HOUSE, WELL, AND WELL HEAD
8. REMOVE EXISTING WATER LINE & FITTINGS
9. REMOVE EXISTING SEPTIC TANKS AND DRAINFIELD
10. RELOCATE EXISTING CPU POWER POLE
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P5.2

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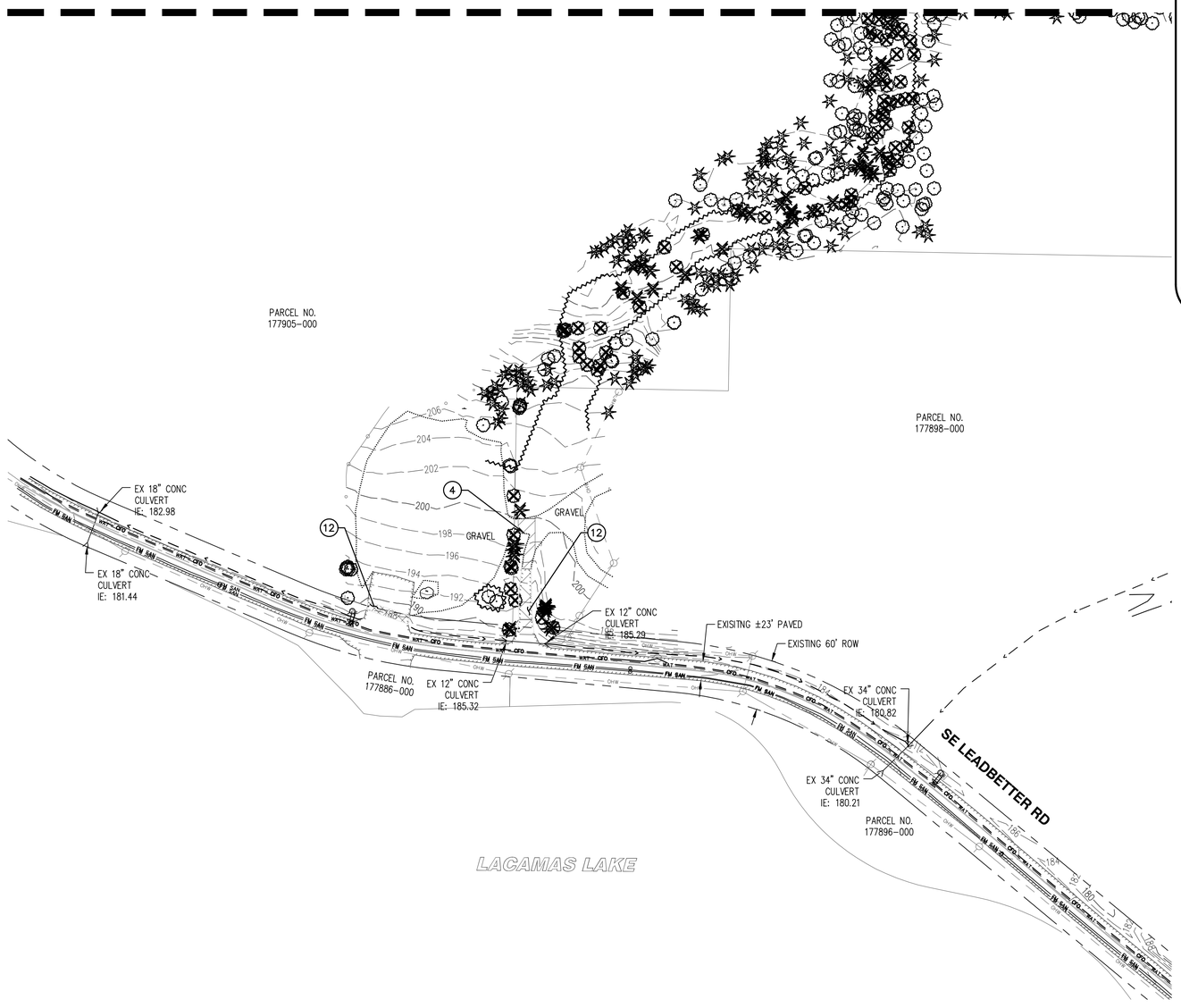

LEGEND

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- EXISTING GROUND CONTOUR (10 FT) — 350
- EXISTING CONIFEROUS TREE (TO REMAIN)
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- TREE REMOVAL
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GENERAL NOTES

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DEMOLITION PERMITS FROM THE CITY OF CAMAS BUILDING DEPARTMENT REQUIRED PRIOR TO REMOVING EXISTING STRUCTURES.

DEMOLITION KEYED NOTES

1. REMOVE EXISTING HOUSE, ACCESSORY BUILDINGS, AND ASSOCIATED APPENDITURES.
2. REMOVE EXISTING FENCE
3. REMOVE EXISTING ROCK WALL
4. REMOVE EXISTING GRAVEL DRIVEWAY ONLY WITHIN PLANNED IMPROVEMENTS AREA
5. DISCONNECT AND REMOVE EXISTING POWER SERVICE
6. REMOVE EXISTING SHED
7. REMOVE EXISTING PUMP HOUSE, WELL, AND WELL HEAD
8. REMOVE EXISTING WATER LINE & FITTINGS
9. REMOVE EXISTING SEPTIC TANKS AND DRAINFIELD
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P5.3

1133

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GENERAL NOTES

1. ADDITIONAL EROSION CONTROL MEASURES WILL BE INCLUDED DURING FINAL ENGINEERING TO ACCOUNT FOR GRADING ON STEEP SLOPES AND CONSTRUCTION PHASING.
2. RETAINING WALLS MAY BE NECESSARY TO COMPLETE THIS PROJECT. WALL LOCATIONS WILL BE DETERMINED WITH FINAL ENGINEERING IF NECESSARY.
3. STRAW WATTLES MAY BE USED IN LIEU OF SEDIMENT FENCE ALONG CRITICAL AREAS & OFF-SITE TREED AREAS.
4. DRILLING, BLASTING AND ROCK CRUSHING ARE EXPECTED TO OCCUR ONSITE WITH GRADING OPERATIONS.

EROSION CONTROL KEYED NOTES

1. INSTALL INLET PROTECTION (TYP).
2. POTENTIAL STOCKPILE AREA.
3. INSTALL SEDIMENT FENCE (TYP).
4. DISTURBED LIMITS (TYP).
5. CONSTRUCTION ENTRANCE.
6. CONCRETE TRUCK WASHOUT (TYP).
7. INSTALL TEMPORARY SEDIMENT TRAP (TYP).

PRELIMINARY GRADING QUANTITIES

DISTURBED AREA:	1,209,383 SF
CUT:	199,000 C.Y.
FILL:	68,000 C.Y.
NET:	131,000 C.Y. (CUT)

NOTE: CUT AND FILL QUANTITIES SHOWN ARE BASED OFF OF GENERAL SITE GRADING ESTABLISHED FROM UNSTRIPPED EXISTING GRADE TO THE PROPOSED FINISHED GRADE. THESE VOLUMES DO NOT TAKE INTO ACCOUNT ANY UNKNOWN UNSUITABLE SOIL DEPOSITS, EXCAVATION OF NON-ORGANIC MATERIALS FOUND ONSITE, WET WEATHER CONDITIONS, OR ANY TRENCHING REQUIRED FOR THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS AS SHOWN.

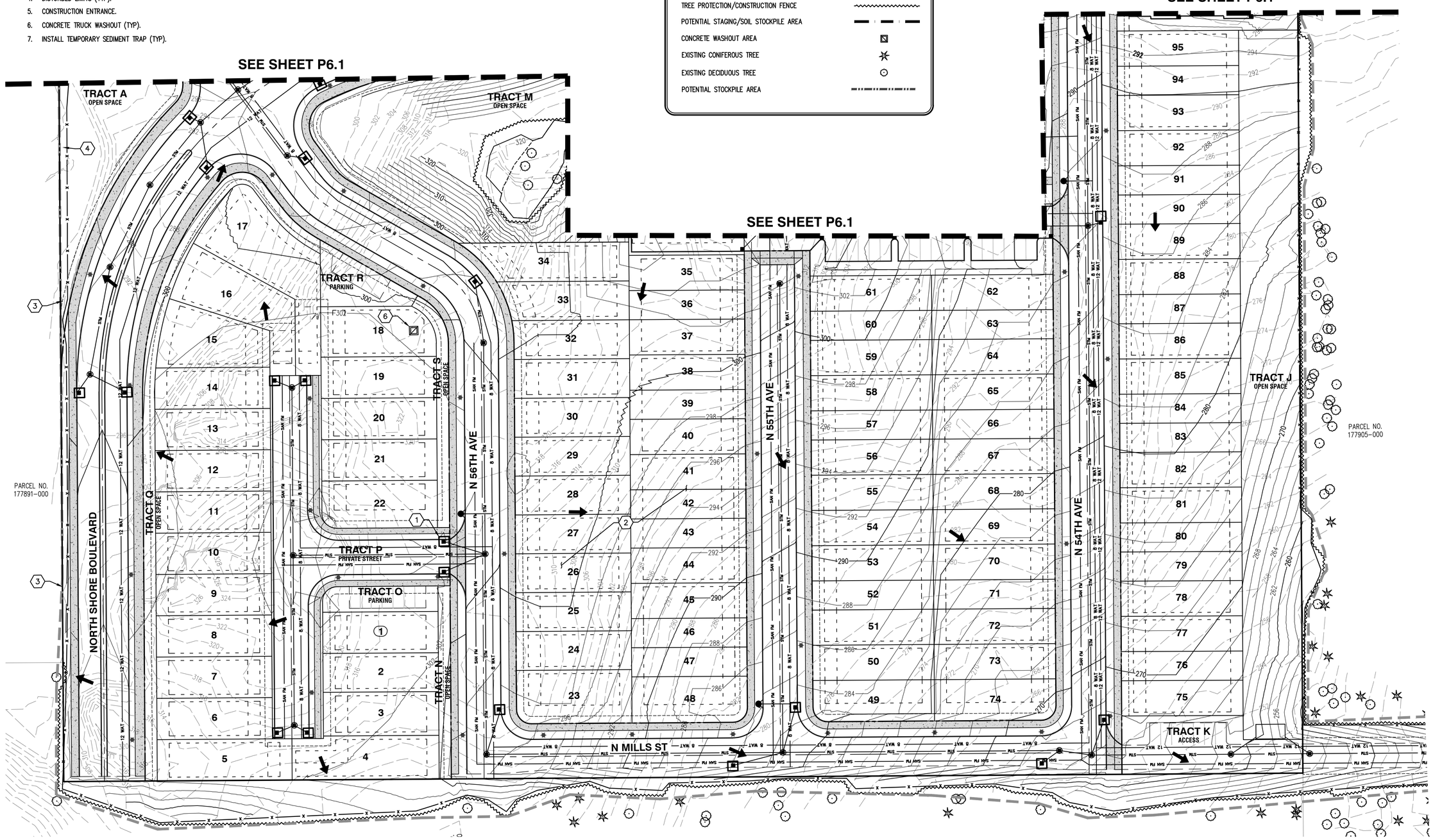
LEGEND

- EXISTING GROUND CONTOUR (2 FT) — 342
- EXISTING GROUND CONTOUR (10 FT) — 350
- FINISHED GRADE CONTOUR (2 FT) — 342
- FINISHED GRADE CONTOUR (10 FT) — 350
- SEDIMENT FENCE (TO BE INSTALLED PRIOR TO GRADING)
- INLET PROTECTION (TYP) PER COMBINATION DETAIL
- PROPOSED DRAINAGE FLOW DIRECTION
- GRAVEL CONSTRUCTION ENTRANCE
- DISTURBED LIMITS
- TREE PROTECTION/CONSTRUCTION FENCE
- POTENTIAL STAGING/SOIL STOCKPILE AREA
- CONCRETE WASHOUT AREA
- EXISTING CONIFEROUS TREE
- EXISTING DECIDUOUS TREE
- POTENTIAL STOCKPILE AREA

SCALE: 1"= 40 FEET

40 0 8 20 40

ORIGINAL PAGE SIZE: 22" x 34"



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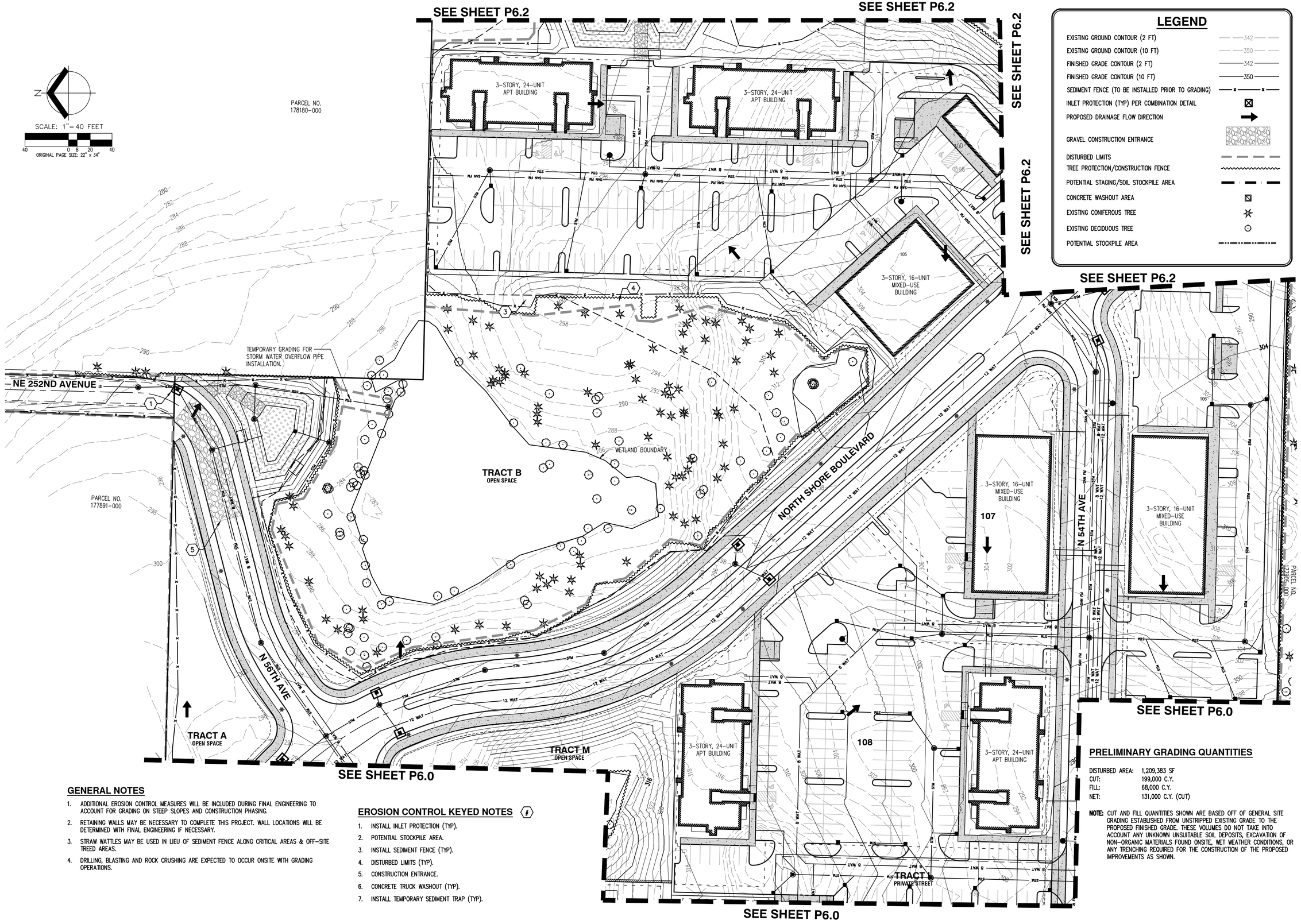

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POTENTIAL STOCKPILE AREA	

GENERAL NOTES

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EROSION CONTROL KEYED NOTES

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NOTE: CUT AND FILL QUANTITIES SHOWN ARE BASED OFF OF GENERAL SITE GRADING ESTABLISHED FROM UNSTRIPPED EXISTING GRADE TO THE PROPOSED FINISHED GRADE. THESE VOLUMES DO NOT TAKE INTO ACCOUNT ANY UNKNOWN UNSUITABLE SOIL DEPOSITS, EXCAVATION OF NON-ORGANIC MATERIALS FOUND ONSITE, WET WEATHER CONDITIONS, OR ANY TRENCHING REQUIRED FOR THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS AS SHOWN.

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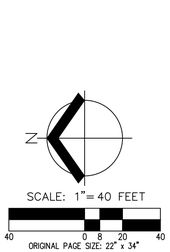

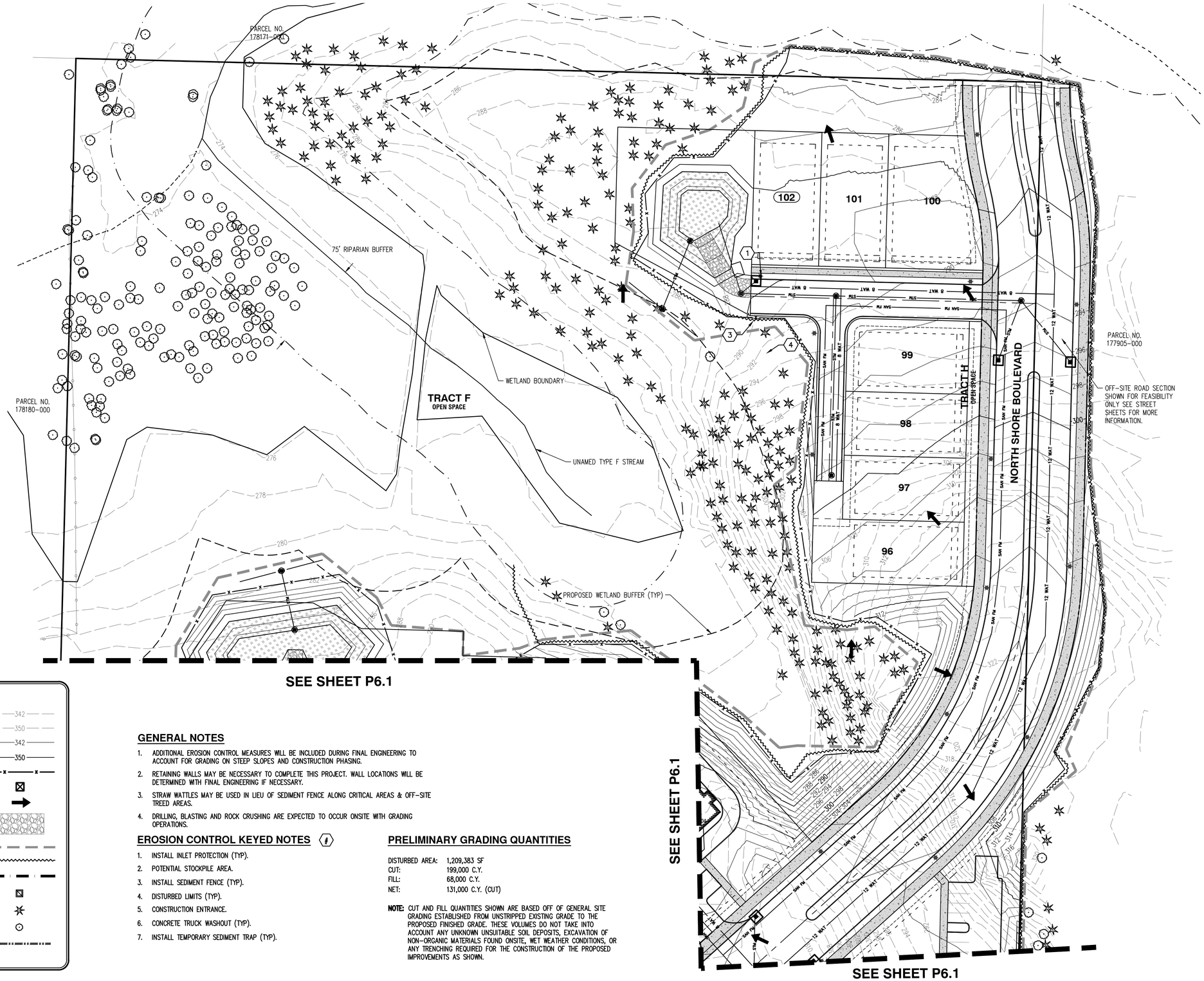

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CAMAS, WASHINGTON

BRUCE D. HANNA — STATE OF WASHINGTON — 21079 — REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

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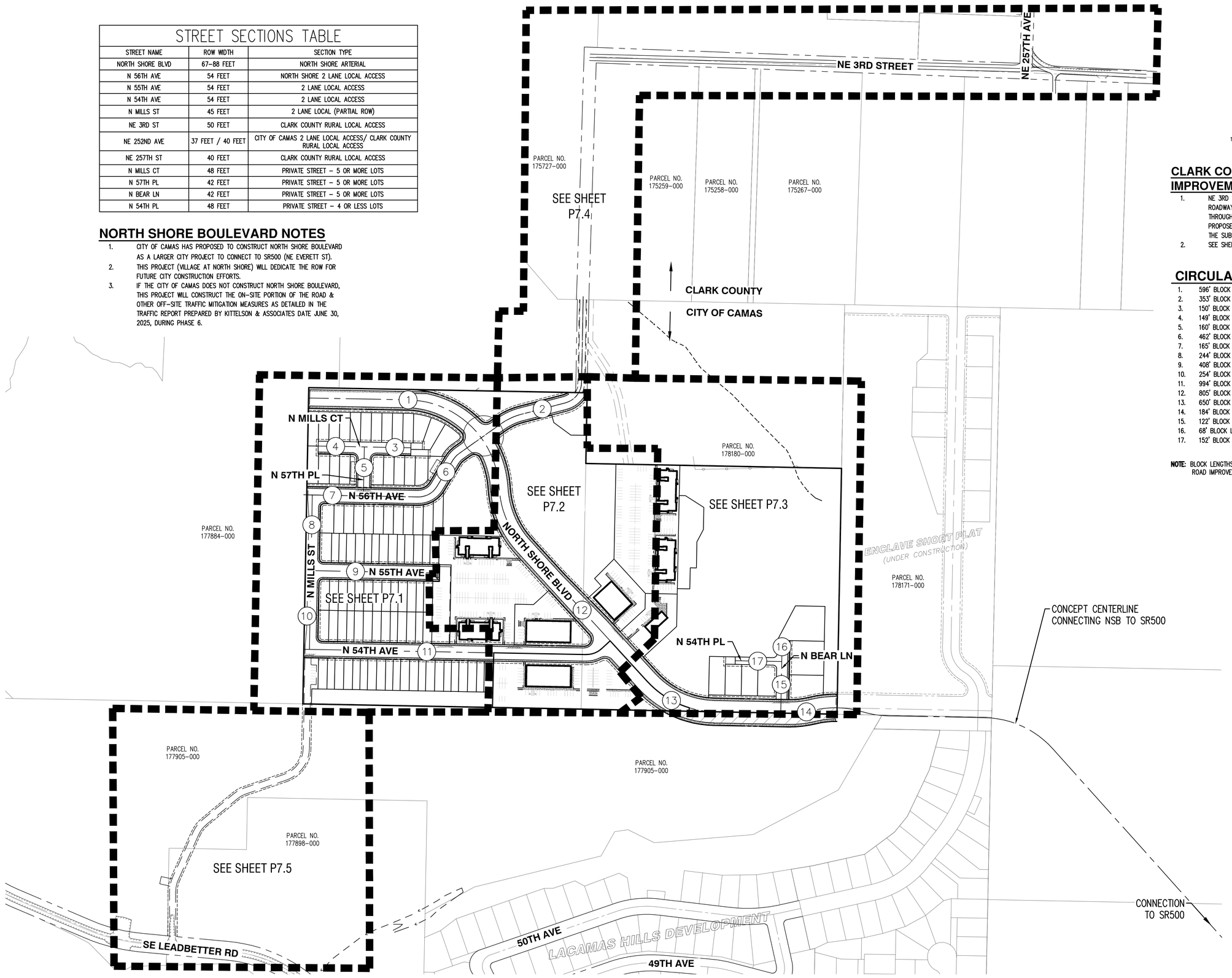
P6.2

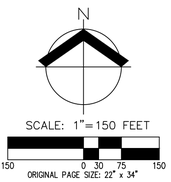
AKS DRAWING FILE: 9095 P5.0 ESC2.DWG | LAYOUT: P6.2

STREET SECTIONS TABLE		
STREET NAME	ROW WIDTH	SECTION TYPE
NORTH SHORE BLVD	67–88 FEET	NORTH SHORE ARTERIAL
N 56TH AVE	54 FEET	NORTH SHORE 2 LANE LOCAL ACCESS
N 55TH AVE	54 FEET	2 LANE LOCAL ACCESS
N 54TH AVE	54 FEET	2 LANE LOCAL ACCESS
N MILLS ST	45 FEET	2 LANE LOCAL (PARTIAL ROW)
NE 3RD ST	50 FEET	CLARK COUNTY RURAL LOCAL ACCESS
NE 252ND AVE	37 FEET / 40 FEET	CITY OF CAMAS 2 LANE LOCAL ACCESS/ CLARK COUNTY RURAL LOCAL ACCESS
NE 257TH ST	40 FEET	CLARK COUNTY RURAL LOCAL ACCESS
N MILLS CT	48 FEET	PRIVATE STREET – 5 OR MORE LOTS
N 57TH PL	42 FEET	PRIVATE STREET – 5 OR MORE LOTS
N BEAR LN	42 FEET	PRIVATE STREET – 5 OR MORE LOTS
N 54TH PL	48 FEET	PRIVATE STREET – 4 OR LESS LOTS

NORTH SHORE BOULEVARD NOTES

1. CITY OF CAMAS HAS PROPOSED TO CONSTRUCT NORTH SHORE BOULEVARD AS A LARGER CITY PROJECT TO CONNECT TO SR500 (NE EVERETT ST).
2. THIS PROJECT (VILLAGE AT NORTH SHORE) WILL DEDICATE THE ROW FOR FUTURE CITY CONSTRUCTION EFFORTS.
3. IF THE CITY OF CAMAS DOES NOT CONSTRUCT NORTH SHORE BOULEVARD, THIS PROJECT WILL CONSTRUCT THE ON-SITE PORTION OF THE ROAD & OTHER OFF-SITE TRAFFIC MITIGATION MEASURES AS DETAILED IN THE TRAFFIC REPORT PREPARED BY KITTELSON & ASSOCIATES DATE JUNE 30, 2025, DURING PHASE 6.





CLARK COUNTY OFF-SITE ROAD IMPROVEMENTS

1. NE 3RD STREET & NE 252ND AVENUE ARE RURAL LOCAL ACCESS ROADWAYS TO BE PERMITTED SEPARATELY WITH CLARK COUNTY THROUGH A FINAL ENGINEERING AND DRAINAGE APPLICATION PROPOSED TO BE PROCESSED CONCURRENTLY WITH PHASE I OF THE SUBDIVISION.
2. SEE SHEET P7.4 FOR PROPOSED IMPROVEMENTS.

CIRCULATION KEYED NOTES

1. 596' BLOCK LENGTH
2. 353' BLOCK LENGTH
3. 150' BLOCK LENGTH
4. 149' BLOCK LENGTH
5. 160' BLOCK LENGTH
6. 462' BLOCK LENGTH
7. 165' BLOCK LENGTH
8. 244' BLOCK LENGTH
9. 408' BLOCK LENGTH
10. 254' BLOCK LENGTH
11. 994' BLOCK LENGTH
12. 805' BLOCK LENGTH
13. 650' BLOCK LENGTH
14. 184' BLOCK LENGTH
15. 122' BLOCK LENGTH
16. 68' BLOCK LENGTH
17. 152' BLOCK LENGTH

NOTE: BLOCK LENGTHS MEASURED FROM ℄ TO ℄, OR ℄ TO END OF ROAD IMPROVEMENTS AS SHOWN.

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PRELIMINARY STREET, SITE & CIRCULATION PLAN OVERVIEW

VILLAGE AT NORTH SHORE

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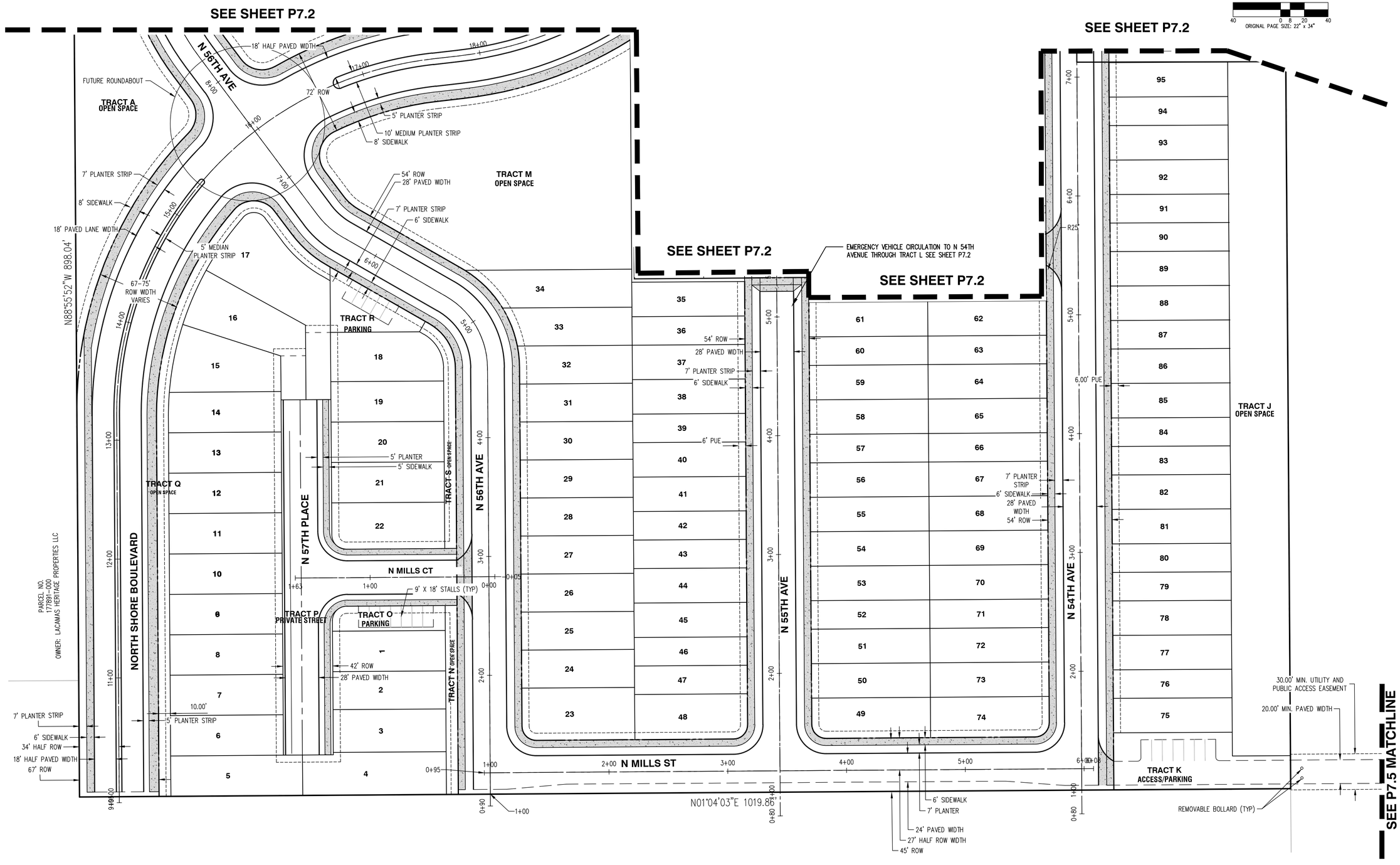
1137

GENERAL NOTES:
A FUTURE ROUNDABOUT IS SHOWN AT THE INTERSECTION OF NORTH SHORE BOULEVARD AND N 56TH STREET TO SHOW FEASIBILITY ONLY. THE PROJECT DOES NOT TRIGGER REQUIREMENTS FOR CONSTRUCTION THIS IMPROVEMENT. SEE TRAFFIC REPORT PREPARED BY KITTELSON & ASSOCIATES DATED JUNE 2025.



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CAMAS, WASHINGTON

BRYCE D. HANEY
STATE OF WASHINGTON
PRELIMINARY NOT FOR CONSTRUCTION
REGISTERED PROFESSIONAL ENGINEER

JOB NUMBER:	9095
DATE:	7/22/2025
DESIGNED BY:	BDH
DRAWN BY:	LPM
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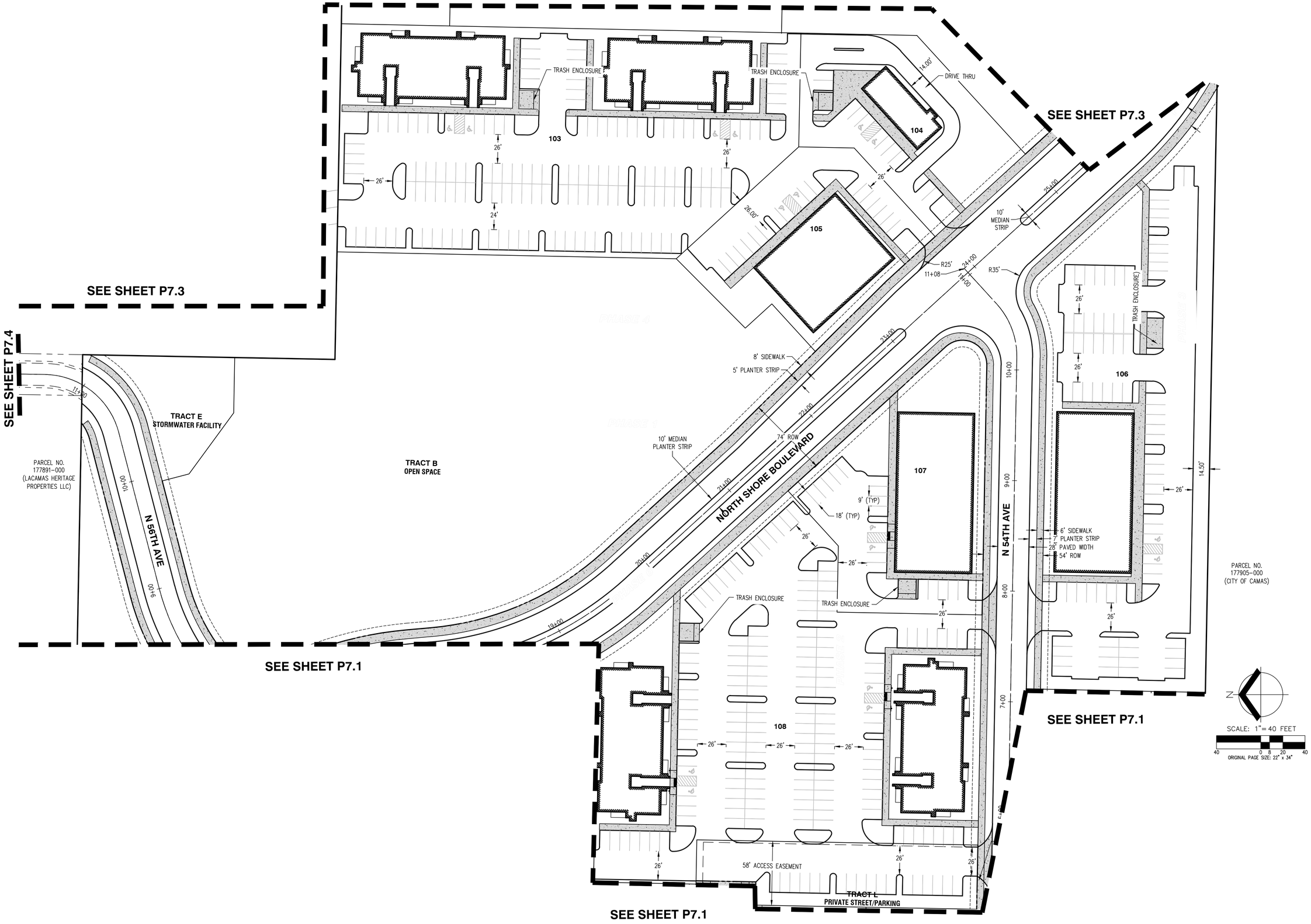
P7.1

1138

AKS DRAWING FILE: 9095 P4.0 CIRC-STREET.DWG | LAYOUT: P7.1



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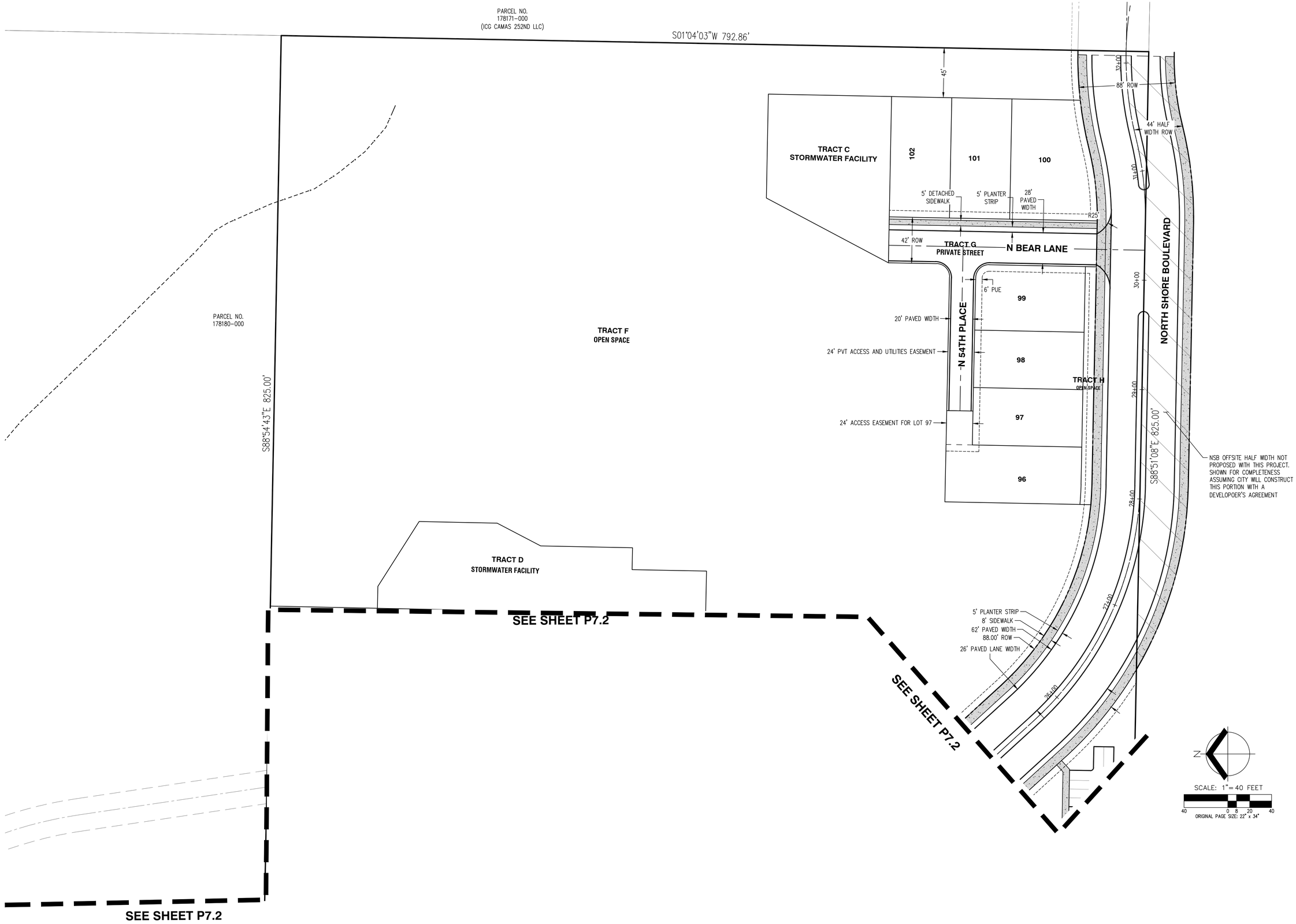
P7.2

1139

AKS DRAWING FILE: 9095 P4.0 CIRC-STREET.DWG | LAYOUT: P7.2



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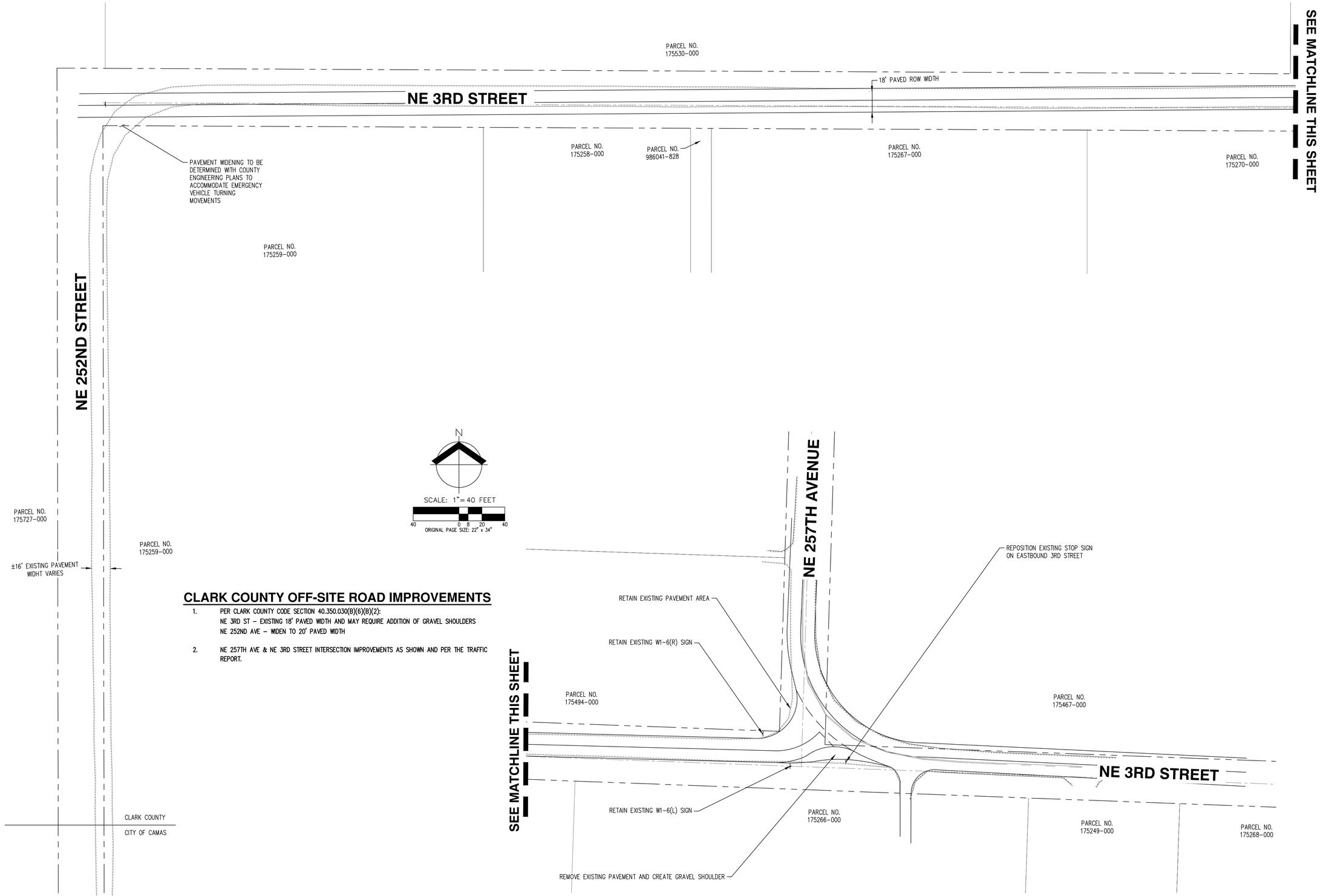
P7.3

1140

AKS DRAWING FILE: 9095 P4.0 CIRC-STREET.DWG | LAYOUT: P7.3



CLARK COUNTY OFF-SITE ROAD IMPROVEMENTS

1. PER CLARK COUNTY CODE SECTION 40.350.030(B)(6)(B)(2):
   NE 3RD ST – EXISTING 18' PAVED WIDTH AND MAY REQUIRE ADDITION OF GRAVEL SHOULDERS
   NE 252ND AVE – WIDEN TO 20' PAVED WIDTH
2. NE 257TH AVE & NE 3RD STREET INTERSECTION IMPROVEMENTS AS SHOWN AND PER THE TRAFFIC REPORT.

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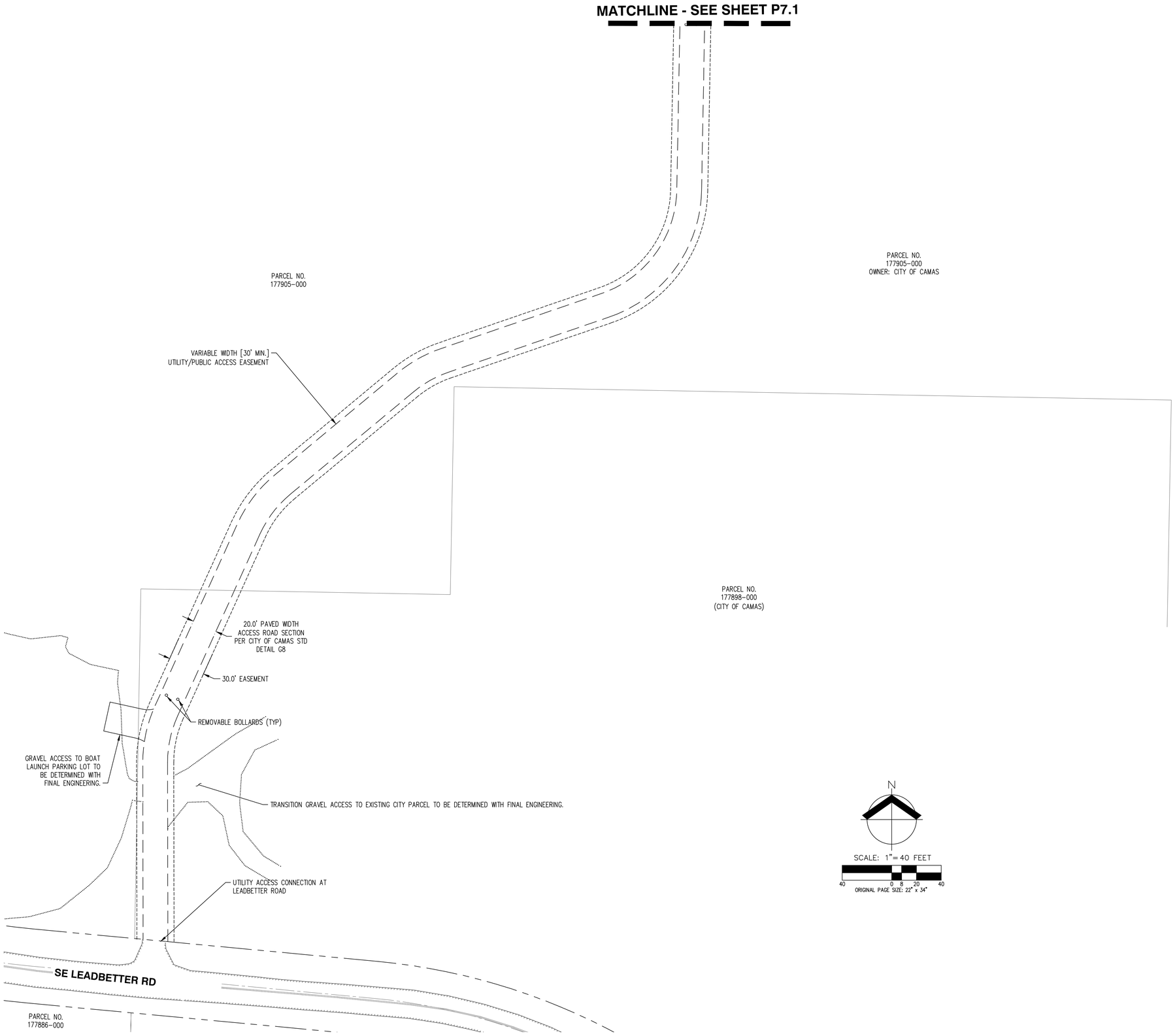
P7.4

AKS DRAWING FILE: 9095 P4.0 CIRC-STREETDWG | LAYOUT: P7.4



AKS DRAWING FILE: 9095 P4.0 CIRC-STREET.DWG | LAYOUT: P7.5

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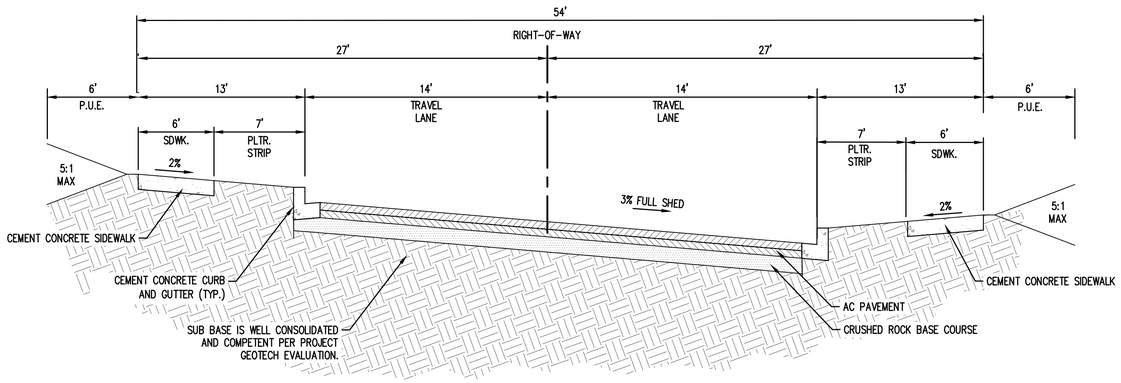
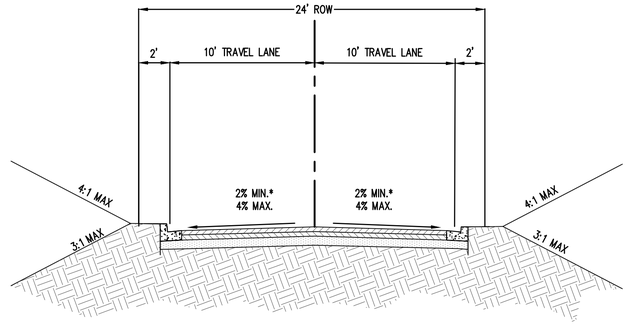
P7.5

1142



1 **2 LANE LOCAL (54' R.O.W.)**
Scale: N.T.S.

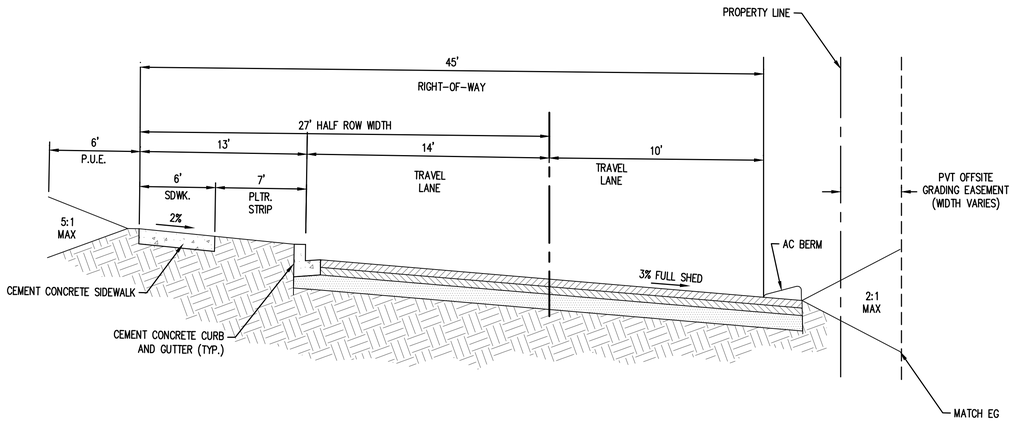
N 54TH AVENUE
N 55TH AVENUE
N 56TH AVENUE



2 **PRIVATE STREET - (24' TRACT WIDTH)**
Scale: N.T.S.

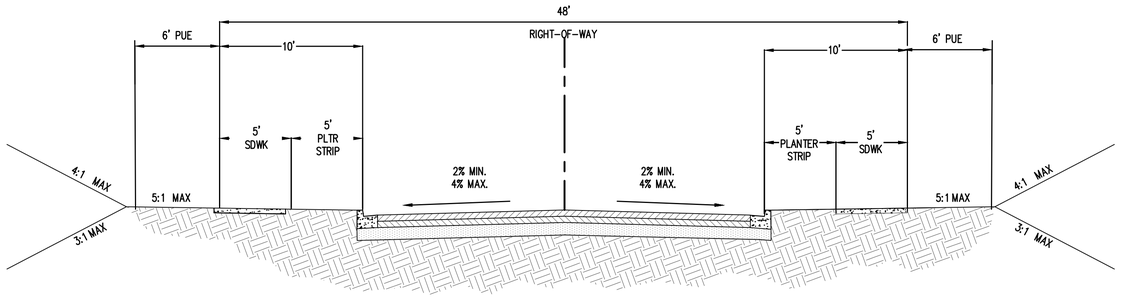
*CROWN SECTION UNLESS SHOWN ON PLANS AS SHED SECTION

N 54TH PLACE



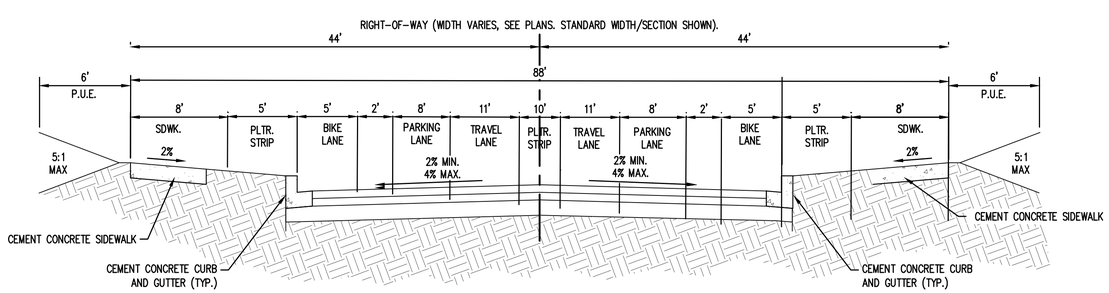
3 **2 LANE LOCAL (45' ROW)**
Scale: N.T.S.

N MILLS STREET

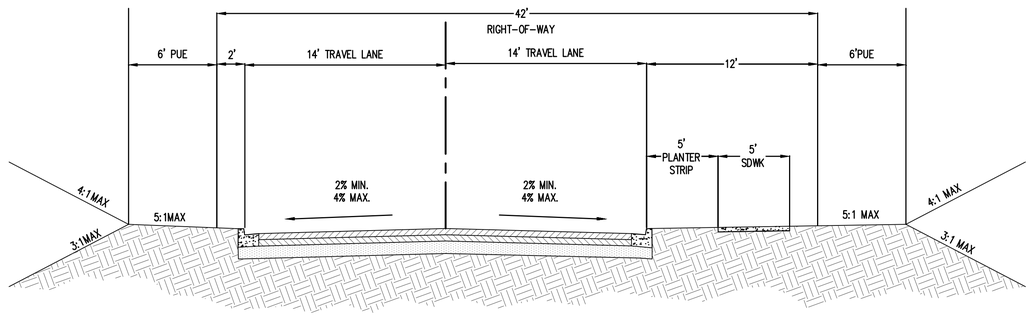


4 **PRIVATE STREET - (48' TRACT WIDTH)**
Scale: N.T.S.

N MILLS COURT



5 **NORTH SHORE BOULEVARD (88' R.O.W.)**
Scale: N.T.S.



6 **PRIVATE STREET - (42' TRACT WIDTH)**
Scale: N.T.S.

N 57TH PLACE
N BEAR LANE

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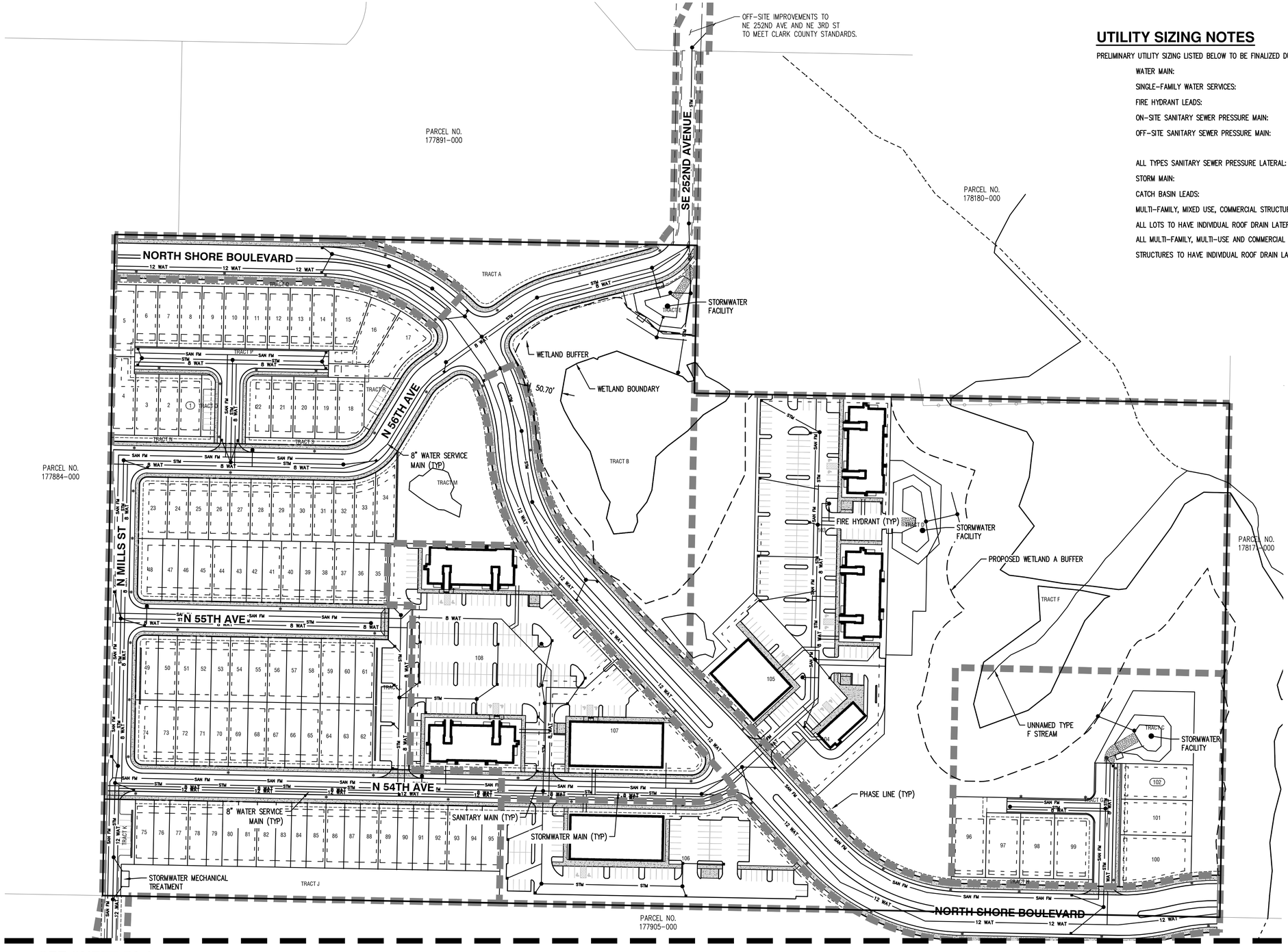
P7.6

1143

AKS DRAWING FILE: 9095 P4.0 CIRC-STREET.DWG | LAYOUT: P7.6



SEE SHEET P9.1

SEE SHEET P9.1

N

SCALE: 1"=80 FEET

80 0 16 40 80

ORIGINAL PAGE SIZE: 22" x 34"

UTILITY SIZING NOTES

PRELIMINARY UTILITY SIZING LISTED BELOW TO BE FINALIZED DURING FINAL ENGINEERING:

WATER MAIN:	8" MIN. DIAMETER (FOR SERVICE CONNECTIONS)
SINGLE-FAMILY WATER SERVICES:	1" DIAMETER
FIRE HYDRANT LEADS:	6" MIN. DIAMETER
ON-SITE SANITARY SEWER PRESSURE MAIN:	2" MIN. DIAMETER
OFF-SITE SANITARY SEWER PRESSURE MAIN:	6" MIN. DIAMETER
ALL TYPES SANITARY SEWER PRESSURE LATERAL:	1-1/4" DIAMETER
STORM MAIN:	12" MIN. DIAMETER
CATCH BASIN LEADS:	10" MIN. DIAMETER
MULTI-FAMILY, MIXED USE, COMMERCIAL STRUCTURES:	1" MIN. WATER SERVICE
ALL LOTS TO HAVE INDIVIDUAL ROOF DRAIN LATERALS:	6" MIN. DIAMETER
ALL MULTI-FAMILY, MULTI-USE AND COMMERCIAL STRUCTURES TO HAVE INDIVIDUAL ROOF DRAIN LATERALS:	6" MIN. DIAMETER

GENERAL NOTES

1. LAYOUT ASSUMES STORMWATER WILL BE DISCHARGED TO LACAMAS LAKE OR TOWARDS THE WETLANDS AND STREAM ON THE EAST SIDE OF THE PROPERTY.
2. WATER TO CONNECT TO EXISTING 12" MAIN IN LEADBETTER ROAD. A PRV STATION MAY BE REQUIRED ON-SITE TO REDUCE PRESSURE FOR 8" SERVICE MAIN.
3. RESIDENTIAL FIRE SPRINKLERS ARE REQUIRED IN ALL UNITS.
4. VERIFICATION OF WATER PRESSURE AND AVAILABILITY TO BE COORDINATED WITH CITY STAFF.
5. 12" WATER MAIN TO BE USED FOR WATER DISTRIBUTION.
6. IRRIGATION METERS WILL BE OWNED BY HOA.
7. 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, ULTIMATELY DISCHARGING AT THE LEADBETTER PUMP STATION.

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PRELIMINARY COMPOSITE UTILITY PLAN OVERVIEW

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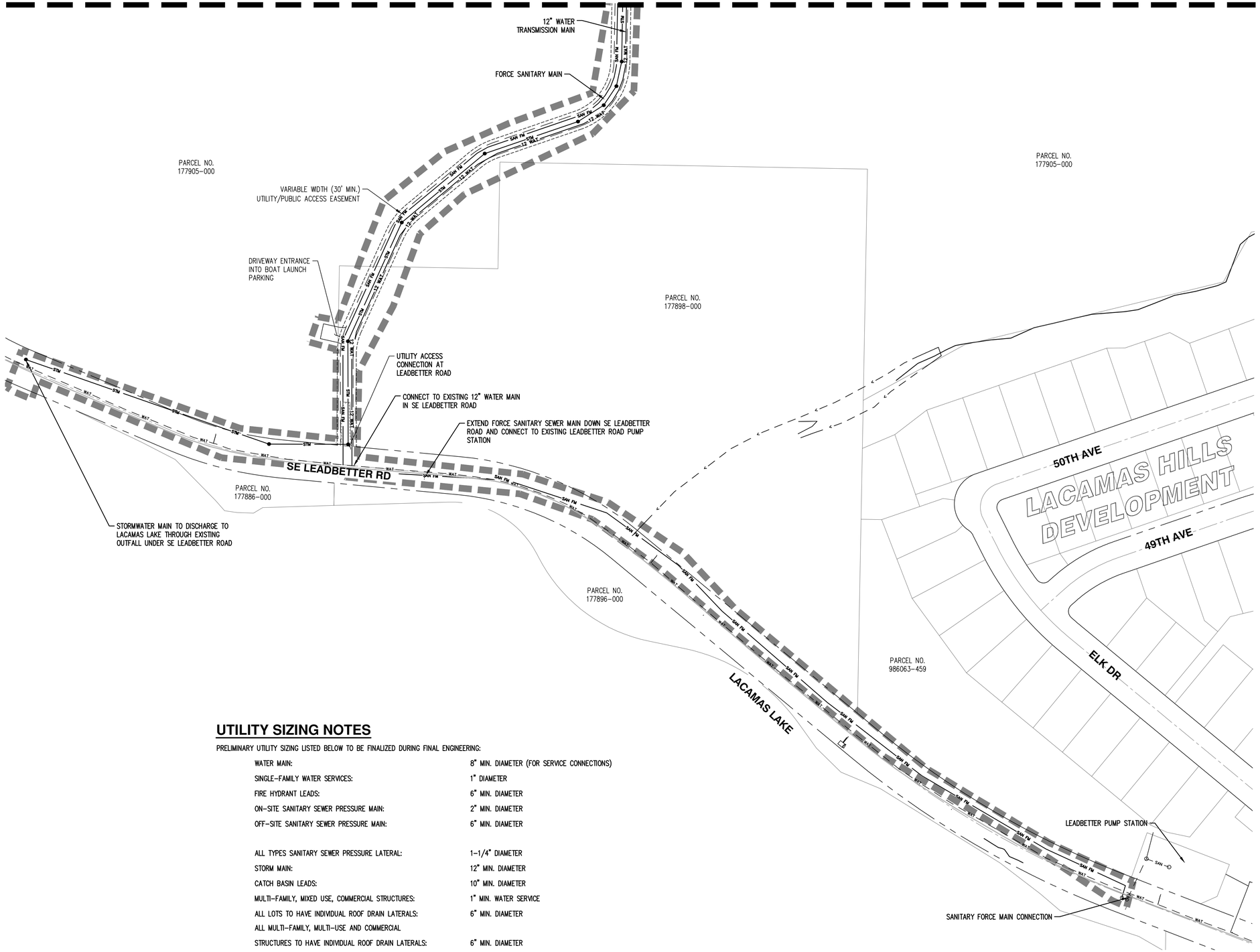
P9.0

AKS DRAWING FILE: 9095 P4.0 UTILDWG | LAYOUT: P9.0

SEE SHEET P9.0

SEE SHEET P9.0

SEE SHEET P9.0



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WATER MAIN:	8" MIN. DIAMETER (FOR SERVICE CONNECTIONS)
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N

SCALE: 1"= 80 FEET

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P9.1

1145

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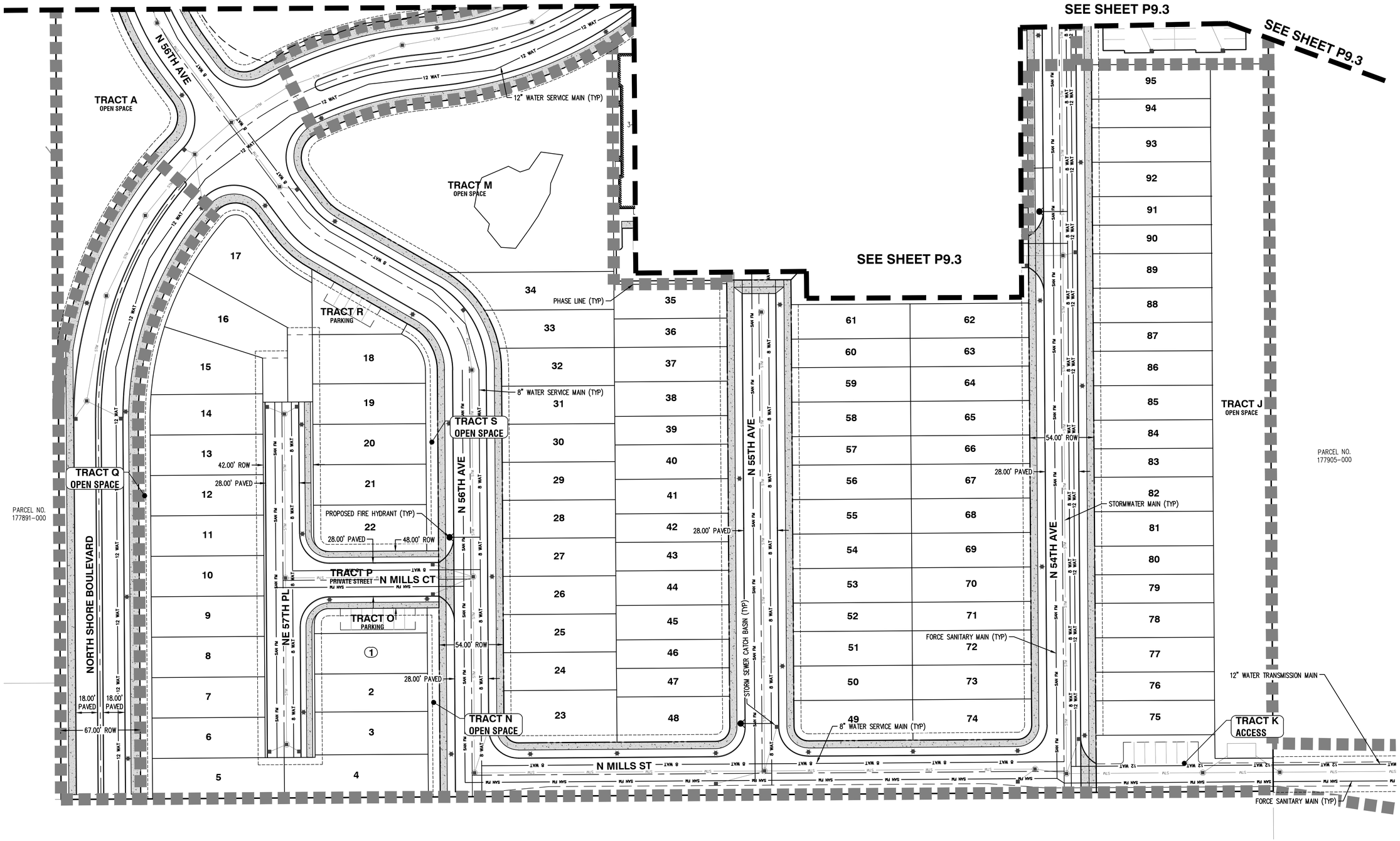
UTILITY SIZING NOTES

1. SEE SHEETS P9.0 – P9.1 FOR PROPOSED UTILITY SIZES.
2. SEE SHEETS P10.0 – P10.4 FOR STORMWATER DESIGN INFORMATION.



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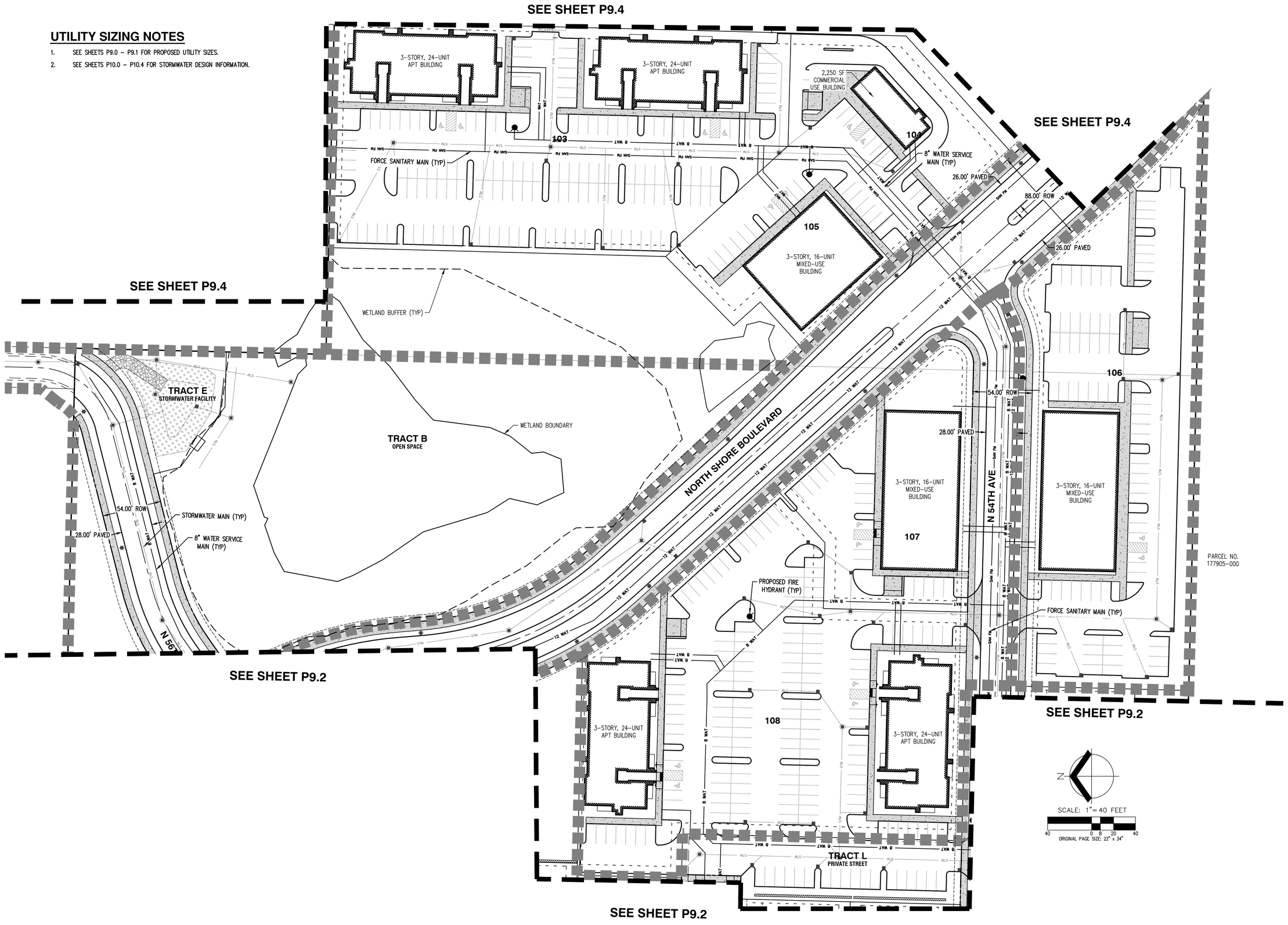
P9.2

AKS DRAWING FILE: 9095 P4.0 UTL2.DWG | LAYOUT: P9.2

UTILITY SIZING NOTES

1. SEE SHEETS P9.0 – P9.1 FOR PROPOSED UTILITY SIZES.
2. SEE SHEETS P10.0 – P10.4 FOR STORMWATER DESIGN INFORMATION.



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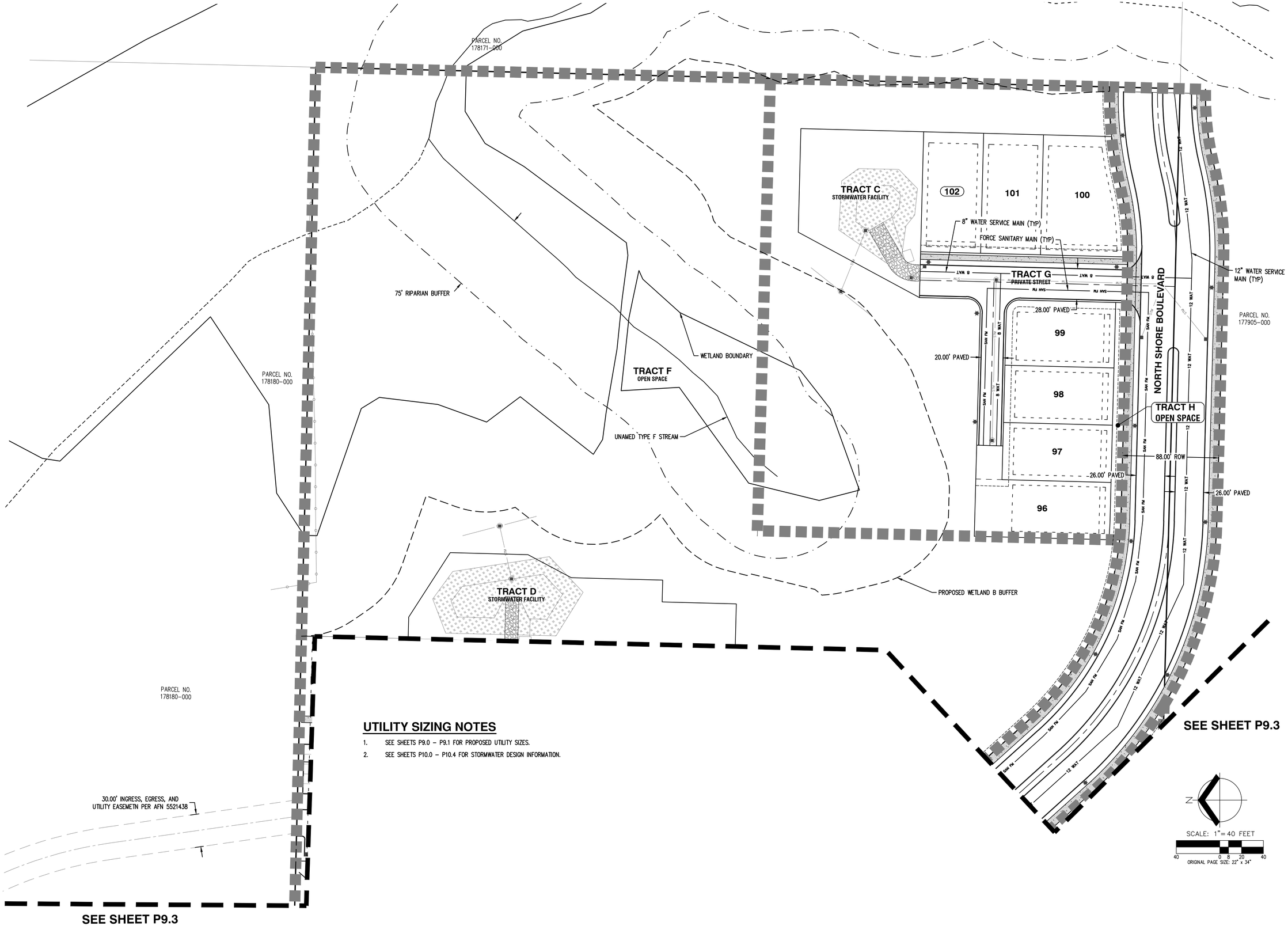
P9.3

1147

AKS DRAWING FILE: 9095 P4.0 UTIL2.DWG | LAYOUT: P9.3



UTILITY SIZING NOTES

1. SEE SHEETS P9.0 – P9.1 FOR PROPOSED UTILITY SIZES.
2. SEE SHEETS P10.0 – P10.4 FOR STORMWATER DESIGN INFORMATION.

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P9.4

1148

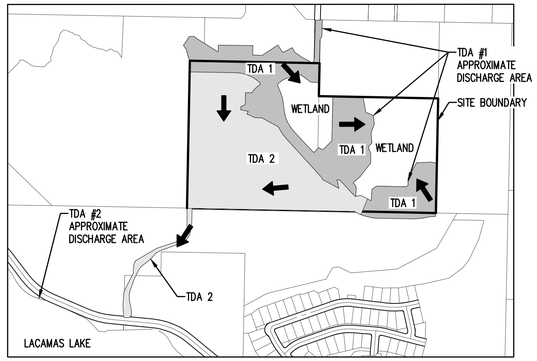
AKS DRAWING FILE: 9095 P4.0 UTIL2.DWG | LAYOUT: P9.4

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	

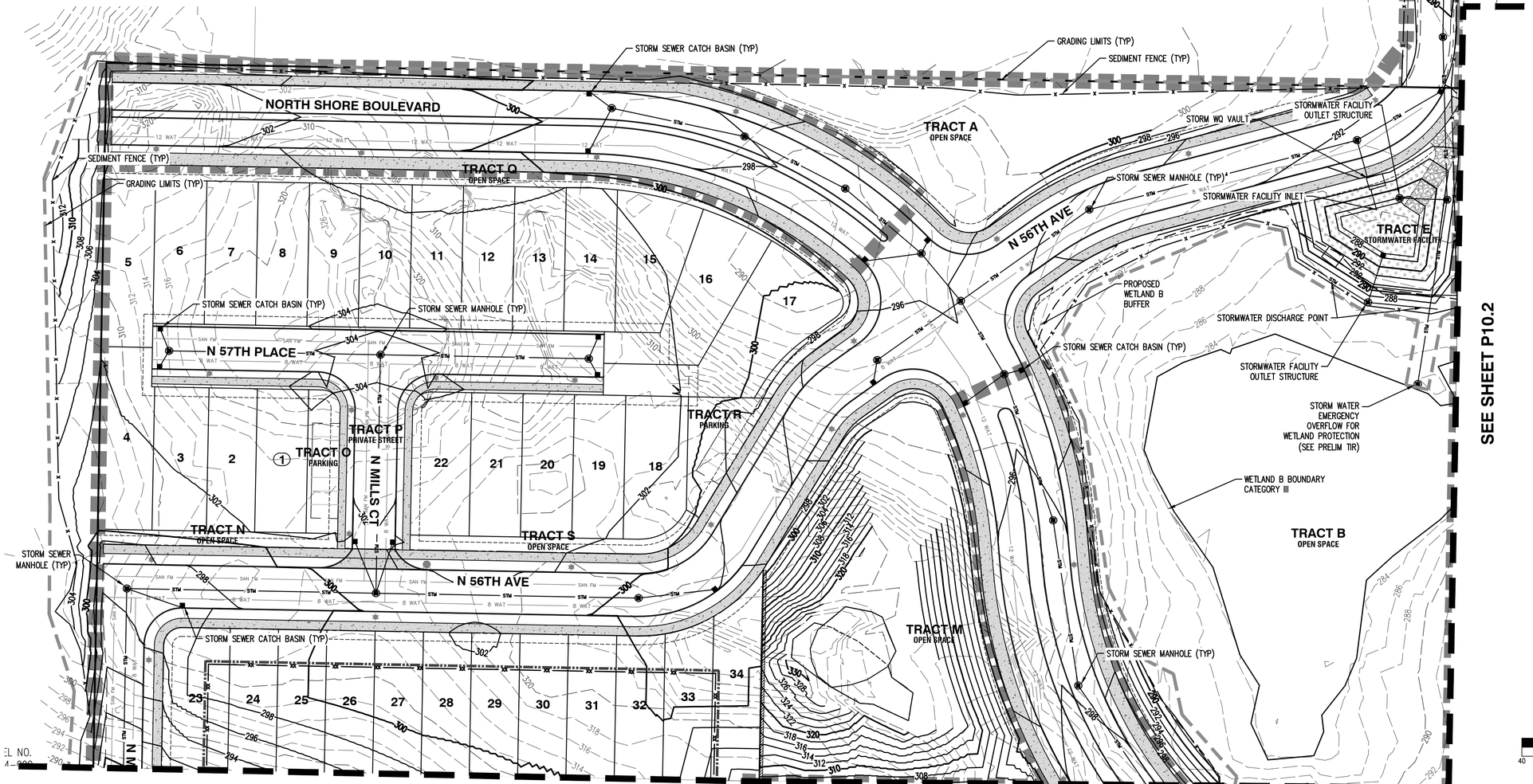
GENERAL NOTES

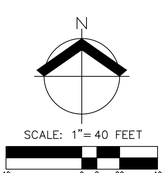
1. CONTOUR INTERVAL IS 2 FEET.
2. TREES ARE NOT SHOWN.
3. STORMWATER TREATMENT AND DETENTION FACILITIES FOR THIS DEVELOPMENT ARE TO BE PRIVATELY OWNED AND MAINTAINED.
4. ACCORDING TO CLARK COUNTY GIS, THE SITE IS NOT WITHIN OR ADJACENT TO A 100-YEAR FLOODPLAIN. THE SITE IS ADJACENT TO A SHORELINE MANAGEMENT AREA TO THE SOUTH.
5. THERE ARE NO KNOWN EXISTING ON-SITE STORMWATER FACILITIES.
6. ACCORDING TO CLARK GIS, NO FLOODPLAIN, FLOODWAYS, OR SHORELINE EXIST ON-SITE.
7. THE EXISTING SITE CONTAINS TWO THRESHOLD DISCHARGE AREAS (TDAs). THE DRAINAGE IS SPLIT INTO THESE TWO TDAs DIAGONALLY AT APPROXIMATELY THE CENTER OF THE SITE BY A RIDGE. THE NORTHERN TDA (#1) SURFACE FLOWS NORTHEAST INTO EXISTING WETLANDS, AND THE SOUTH TDA (#2) SURFACE FLOWS SOUTHWEST INTO SHALLOW CONCENTRATED FLOWS, ULTIMATELY INTO LACAMAS LAKE.
8. PROPOSED DRAINAGE FLOW ROUTES TO FOLLOW EXISTING FLOW ROUTES TO EXTENT POSSIBLE, MAINTAINING THE ULTIMATE DISCHARGE POINTS FOR BOTH ON SITE TDAs IN THE POST DEVELOPED CONDITION..
9. ROOF AREAS FOR ALL LOTS DRAIN TO STORM SEWER MAIN AND SUBSEQUNETLY TO PRIVATE STORMWATER FACILITIES.
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



TDA VICINITY MAP

N.T.S.





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PRELIMINARY STORMWATER PLAN OVERVIEW
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P10.0

1149

LEGEND

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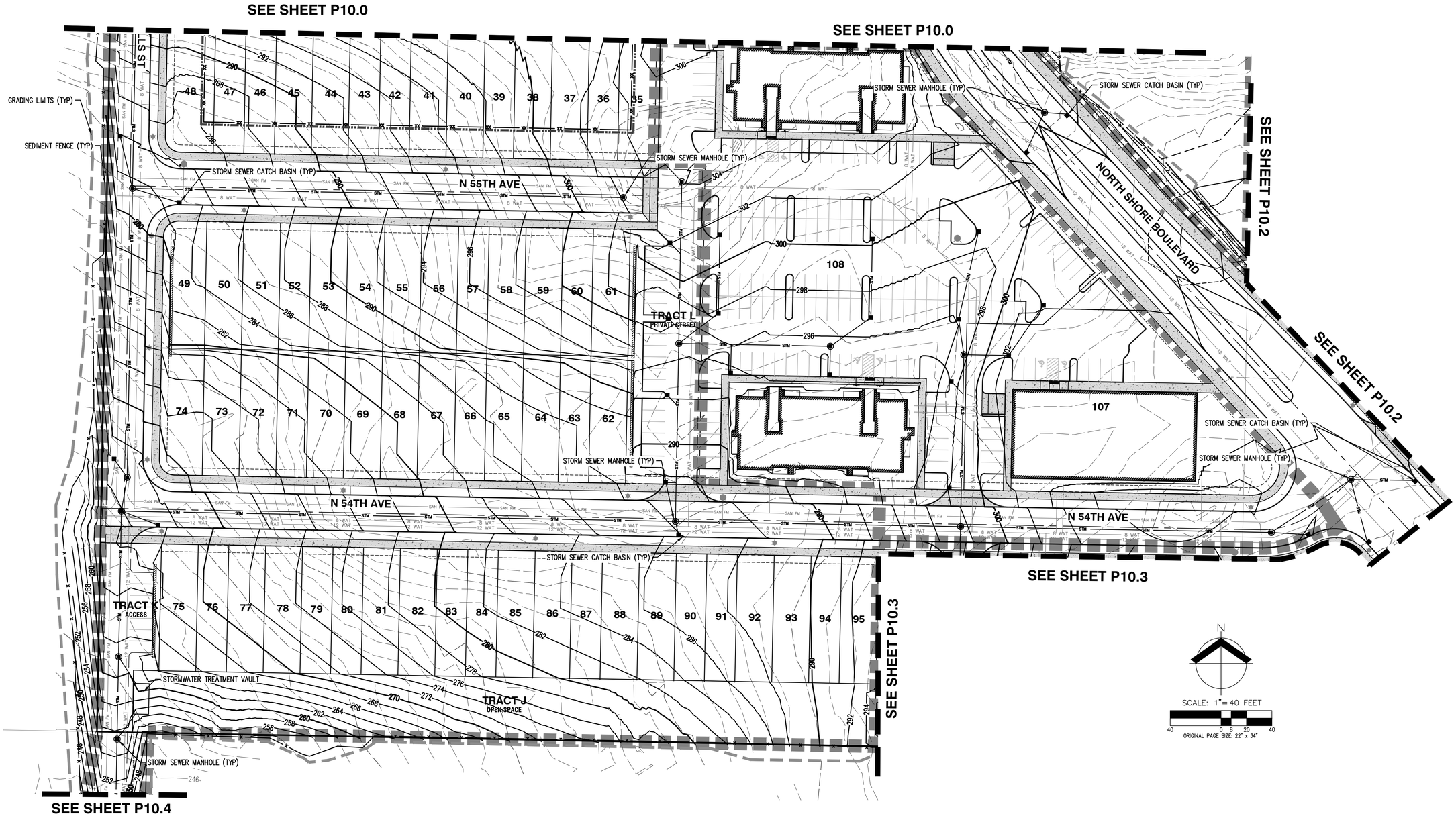
EXISTING GROUND CONTOUR (10 FT)	350
FINISHED GRADE CONTOUR (2 FT)	352
FINISHED GRADE CONTOUR (10 FT)	350
DRAINAGE FLOW DIRECTION	
GRADING LIMITS	

GENERAL NOTES

1. SEE SHEET P10.0 FOR STORMWATER NOTES.



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PRELIMINARY STORMWATER PLAN
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

BRYCE D HANEY
STATE OF WASHINGTON
PRELIMINARY NOT FOR CONSTRUCTION
REGISTERED PROFESSIONAL ENGINEER

JOB NUMBER:	9095
DATE:	7/22/2025
DESIGNED BY:	BDH
DRAWN BY:	LPM
CHECKED BY:	BDH

P10.1

1150

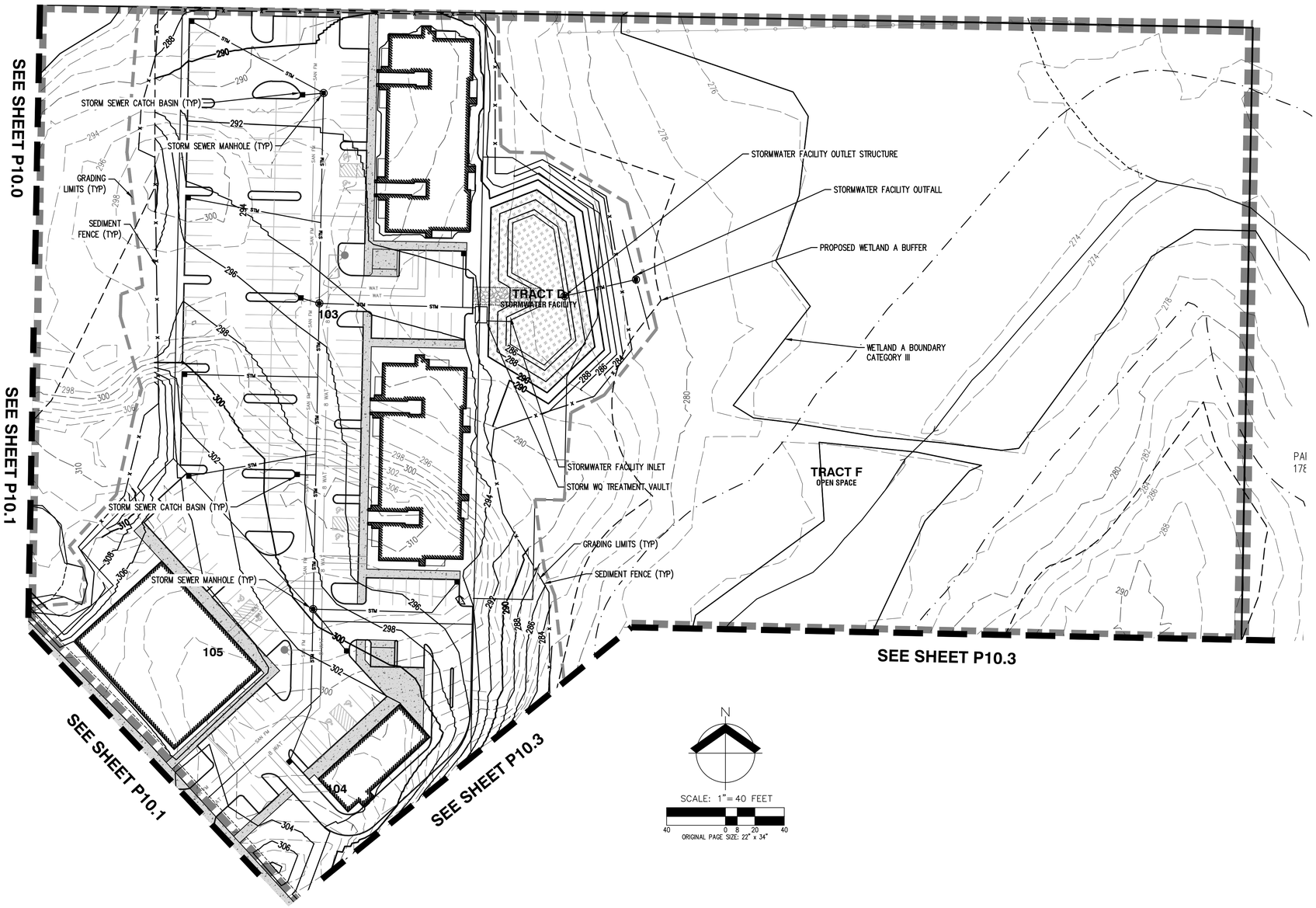
AKS DRAWING FILE: 9095 P10.0 STM.DWG | LAYOUT: P10.1

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

GENERAL NOTES

1. SEE SHEET P10.0 FOR STORMWATER NOTES.



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SCALE: 1"=40 FEET

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ORIGINAL PAGE SIZE: 22" x 34"

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PRELIMINARY STORMWATER PLAN
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

BRUCE D. HANEY — STATE OF WASHINGTON — 21079 — REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	9095
DATE:	7/22/2025
DESIGNED BY:	BDH
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P10.2

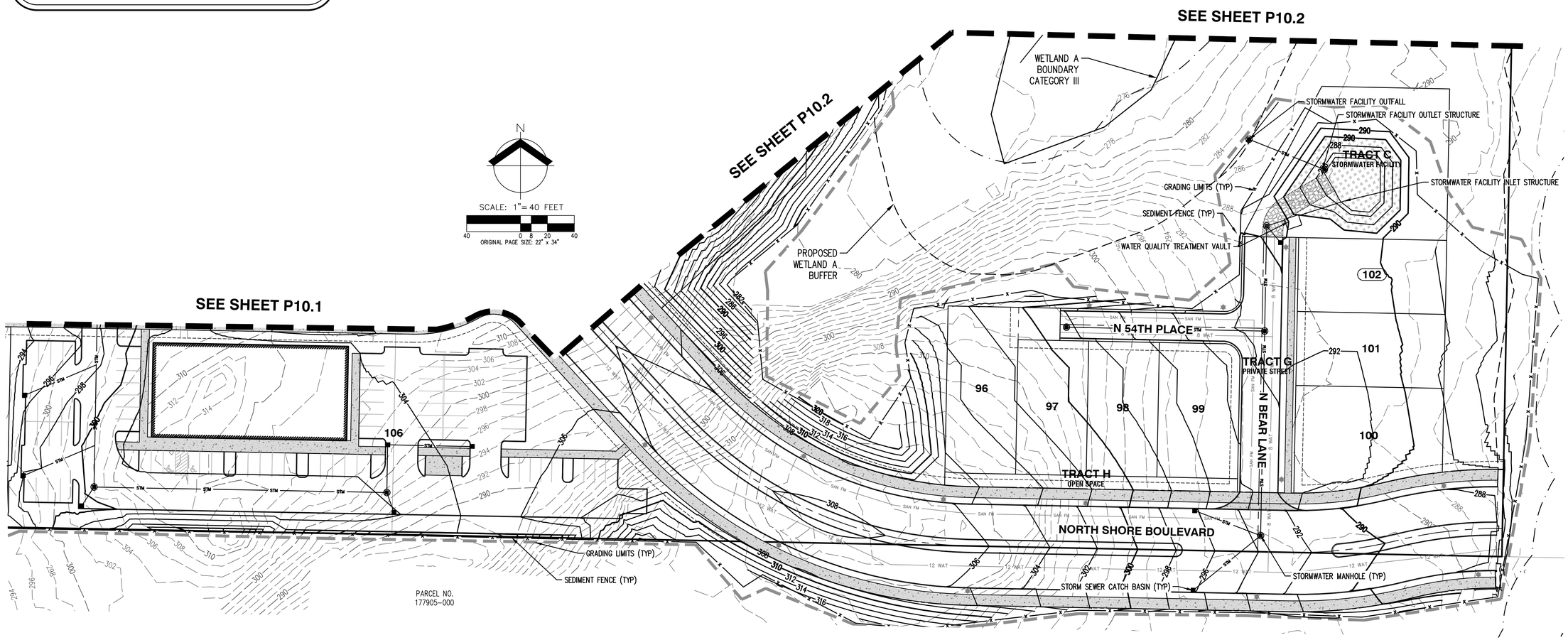
AKS DRAWING FILE: 9095 P10.0 STM.DWG | LAYOUT: P10.2

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	

GENERAL NOTES

1. SEE SHEET P10.0 FOR STORMWATER NOTES.



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PRELIMINARY STORMWATER PLAN
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

BRYCE D. HANSEN
STATE OF WASHINGTON
PRELIMINARY NOT FOR CONSTRUCTION
51079
REGISTERED PROFESSIONAL ENGINEER

JOB NUMBER:	9095
DATE:	7/22/2025
DESIGNED BY:	BDH
DRAWN BY:	LPM
CHECKED BY:	BDH

P10.3

1152

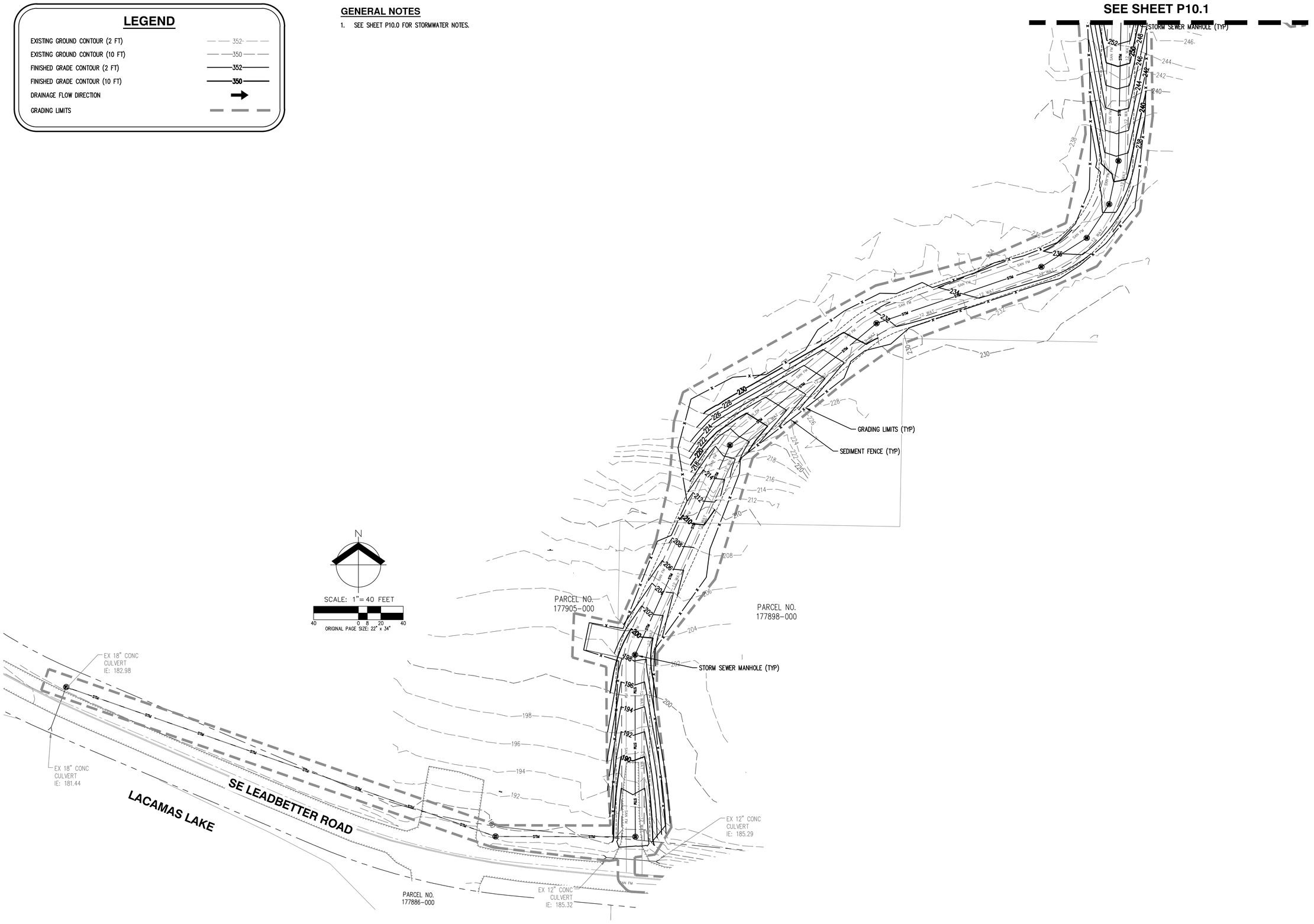
AKS DRAWING FILE: 9095 P10.0 STM.DWG | LAYOUT: P10.3

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

GENERAL NOTES

1. SEE SHEET P10.0 FOR STORMWATER NOTES.



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PRELIMINARY STORMWATER PLAN
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

BRICE D. HANAN — STATE OF WASHINGTON — 21079 — REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

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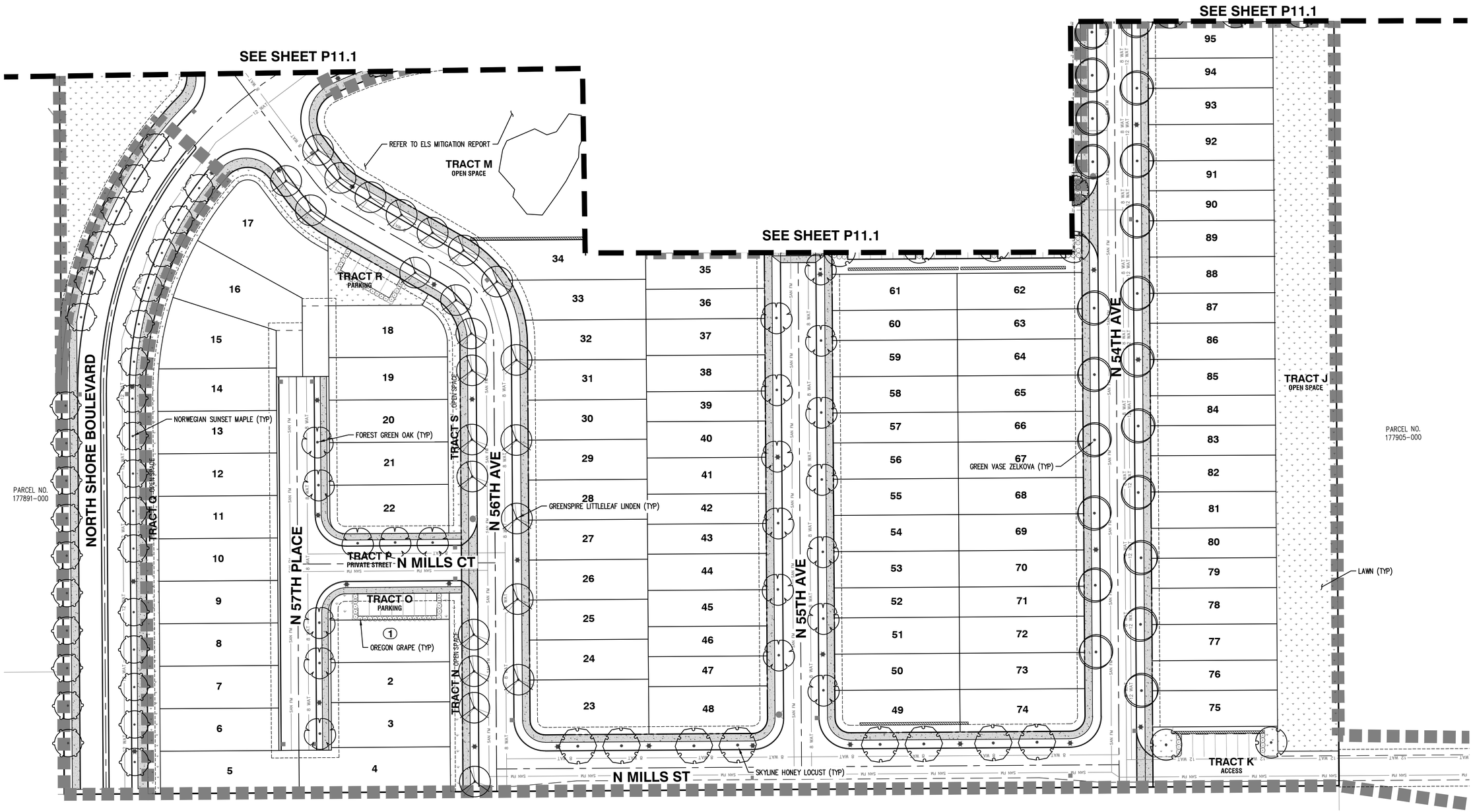
P10.4

AKS DRAWING FILE: 9095 P10.0 STM.DWG | LAYOUT: P10.4



GENERAL NOTE

REFER TO SHEET P11.3 FOR PRELIMINARY PLANT SCHEDULE AND LANDSCAPE NOTES.

TREE PLAN

TOTAL SITE AREA:	36.04 AC
SITE AREA EXCLUDING OPEN SPACE:	23.60 AC
TOTAL TREE UNITS REQUIRED (36.04 AC X 30):	708
EXISTING TREES RETAINED/(TREE UNITS):	558/(2,236)
PROPOSED SITE TREES/(TREE UNITS):	322/(322)
TOTAL TREE UNITS (RETAINED AND PROPOSED):	2,558

SCALE: 1"= 40 FEET

40 0 8 20 40

ORIGINAL PAGE SIZE: 22" x 34"

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PRELIMINARY LANDSCAPE PLAN OVERVIEW
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

STATE OF WASHINGTON
TIMOTHY E. BAIRD
LICENSED LANDSCAPE ARCHITECT
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	9095
DATE:	7/22/2025
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P11.0

1154

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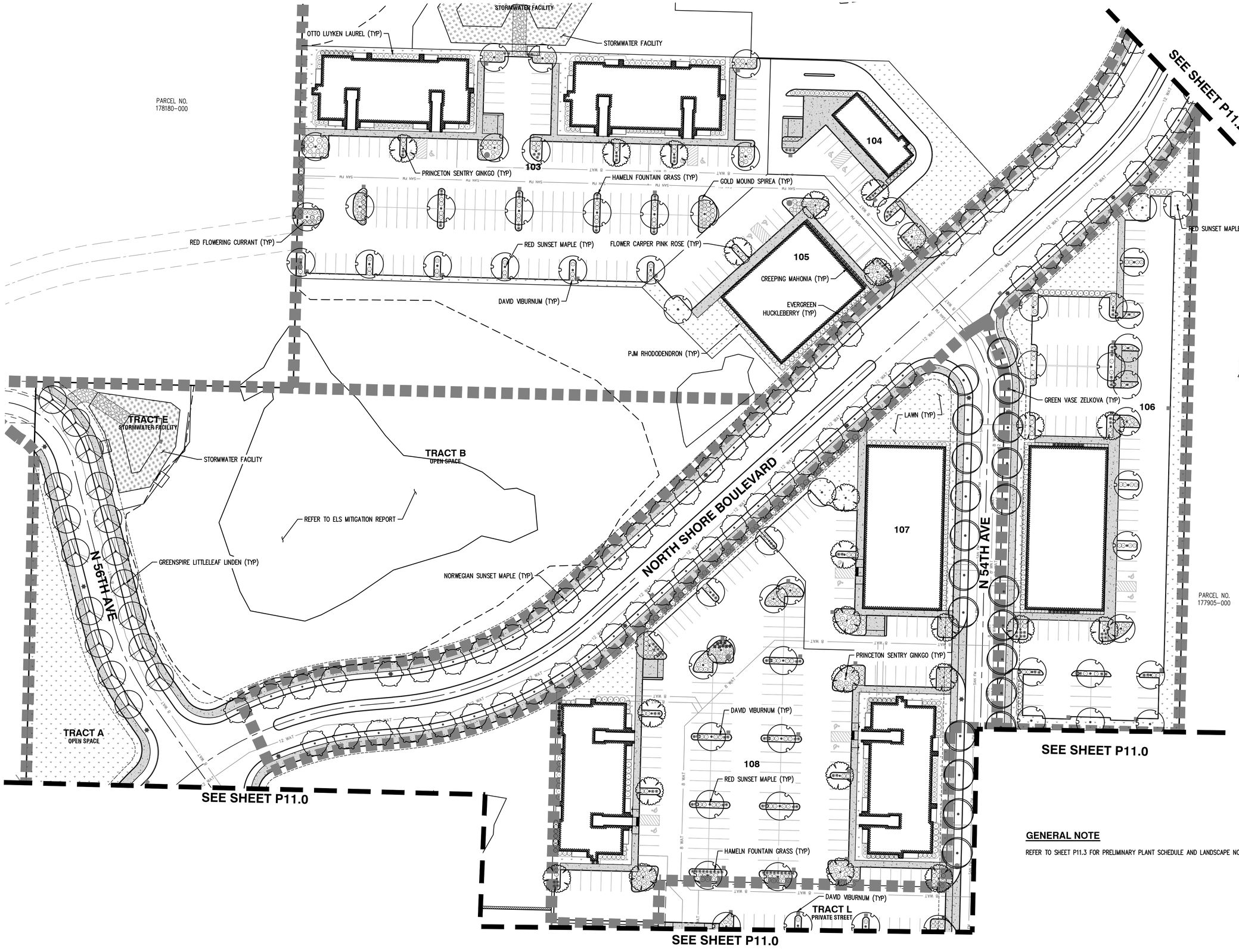

GENERAL NOTE

REFER TO SHEET P11.3 FOR PRELIMINARY PLANT SCHEDULE AND LANDSCAPE NOTES.

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PRELIMINARY LANDSCAPE PLAN
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

STATE OF WASHINGTON
TIMOTHY E. BAIRD
LICENSED LANDSCAPE ARCHITECT
NO. 1814 EXP. 12/21/2026
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	9095
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P11.1

1155

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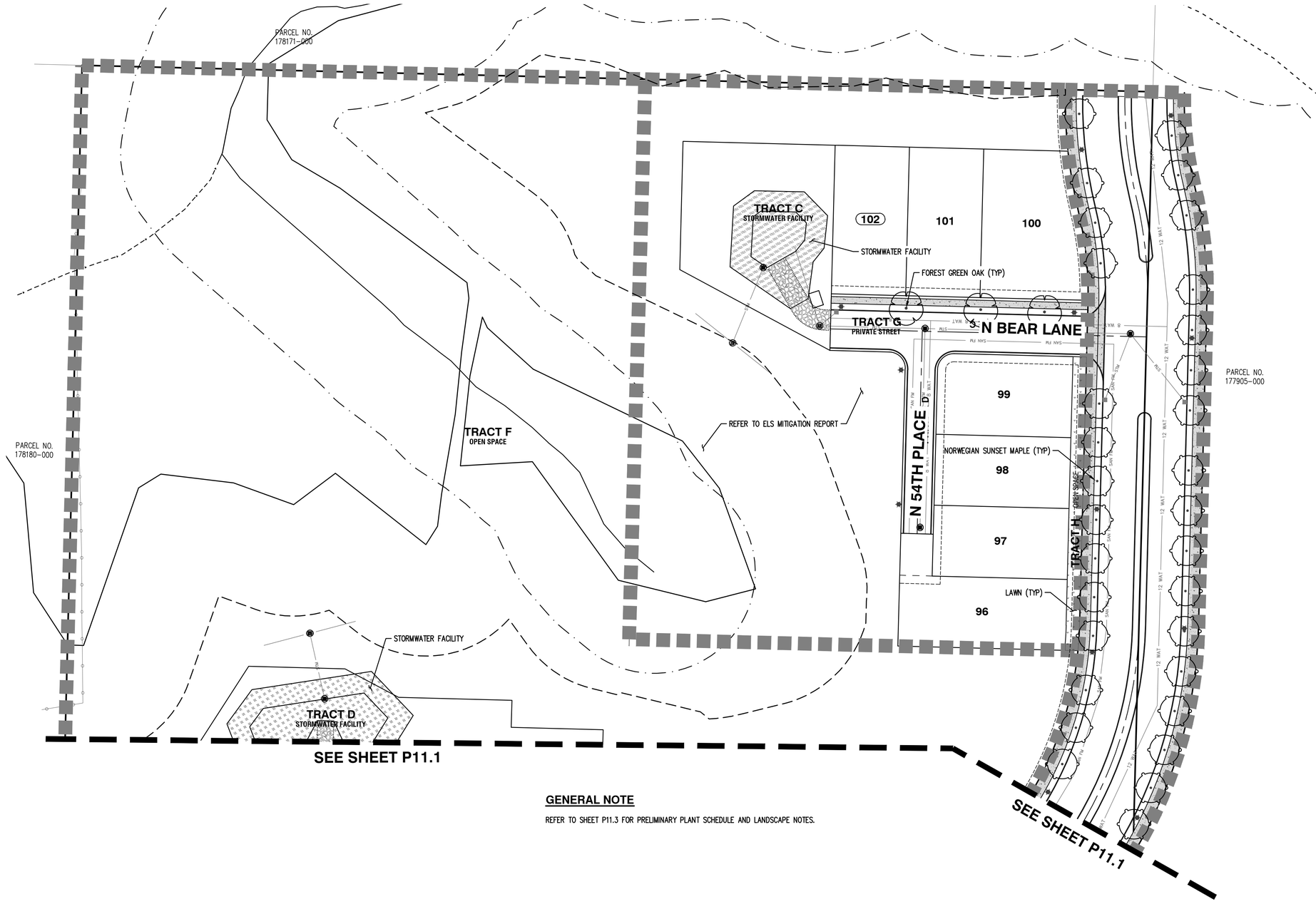
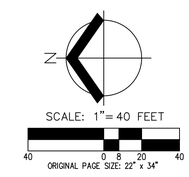


GENERAL NOTE

REFER TO SHEET P11.3 FOR PRELIMINARY PLANT SCHEDULE AND LANDSCAPE NOTES.



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PRELIMINARY LANDSCAPE PLAN
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

STATE OF WASHINGTON
TIMOTHY E. BAUER
LICENSED LANDSCAPE ARCHITECT
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	9095
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P11.2

1156

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PRELIMINARY PLANT SCHEDULE

SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
TREES					
	64	ACER RUBRUM 'FRANKSRED'	RED SUNSET MAPLE	2" CAL. B&B	AS SHOWN
	24	GINKGO BILOBA 'PRINCETON SENTRY'	PRINCETON SENTRY GINKGO	2" CAL. B&B	AS SHOWN
STREET TREES					
	124	ACER TRUNCATUM X PLATANOIDES 'NORWEGIAN SUNSET'	NORWEGIAN SUNSET MAPLE	2" CAL. B&B	AS SHOWN
	8	GLEDITSIA TRIACANTHOS INERMIS 'SKYLINE'	SKYLINE HONEY LOCUST	2" CAL. B&B	AS SHOWN
	24	QUERCUS FRAINETTO 'FOREST GREEN'	FOREST GREEN OAK	2" CAL. B&B	AS SHOWN
	41	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LITTLELEAF LINDEN	2" CAL. B&B	AS SHOWN
	37	ZELKOVA SERRATA 'GREEN VASE'	GREEN VASE ZELKOVA	2" CAL. B&B	AS SHOWN
SYMBOL	QTY	BOTANICAL NAME	COMMON NAME	SIZE/CONTAINER	SPACING
SHRUBS					
	174	MAHONIA AQUIFOLIUM	OREGON GRAPE	3 GAL. CONT.	48" o.c.
	62	MAHONIA REPENS	CREEPING MAHONIA	1 GAL. CONT.	36" o.c.
	140	PENNISETUM ALOPECUROIDES 'HAMELN'	HAMELN FOUNTAIN GRASS	1 GAL. CONT.	36" o.c.
	98	PRUNUS LAUROCERASUS 'OTTO LUYKEN'	OTTO LUYKEN ENGLISH LAUREL	2 GAL. CONT.	60" o.c.
	97	RHODODENDRON X 'P.J.M.'	PJM RHODODENDRON	3 GAL CONT.	48" o.c.
	49	RIBES SANGUINEUM	RED FLOWERING CURRANT	1 GAL. CONT.	48" o.c.
	94	ROSA X 'NOATRAUM'	FLOWER CARPET PINK ROSE	2 GAL. CONT.	42" o.c.
	143	SPIRAEA X BUMALDA 'GOLDMOUND'	GOLD MOUND SPIREA	2 GAL CONT.	36" o.c.
	10	THUJA OCCIDENTALIS 'SMARAGD'	EMERALD GREEN ARBORVITAE	4'-5' HT. CONT.	36" o.c.
	118	VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	3 GAL. CONT.	60" o.c.
	310	VIBURNUM DAVIDII	DAVID VIBURNUM	2 GAL. CONT.	48" o.c.

GROUND COVERS

106,232 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.

STORMWATER FACILITY TO BE DESIGNED PER CITY OF CAMAS STANDARDS

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 (EXCLUDING STORMWATER FACILITIES). 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.

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PRELIMINARY LANDSCAPE PLAN
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

STATE OF WASHINGTON · TIMOTHY E. BA... · 21884 · REGISTERED LANDSCAPE ARCHITECT · EXP. 10/21/2026
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	9095
DATE:	7/22/2025
DESIGNED BY:	BDH
DRAWN BY:	LPM
CHECKED BY:	BDH

P11.3

AKS DRAWING FILE: 9095 P7.0 LANDSCAPE.DWG | LAYOUT: P11.3

GENERAL NOTE:

1. LIGHTING ANALYSIS PERFORMED WITH AGI SOFTWARE.
2. SITE PLAN LIGHTING TO BE DESIGNED DURING THE FINAL SITE PLAN APPLICATION

ROADWAY LIGHT LEVEL SUMMARY – CITY OF CAMAS

ROADWAY	UNITS	AVERAGE	MAX	MIN
NORTH SHORE BOULEVARD	Fc	0.76	2.0	0.1
N 56TH AVENUE	Fc	0.57	1.3	0.2
N 55TH AVENUE	Fc	0.47	0.9	0.2
N 54TH AVENUE	Fc	0.53	1.3	0.1
N MILLS STREET	Fc	0.81	1.3	0.4
TRACT P	Fc	0.73	1.5	0.2

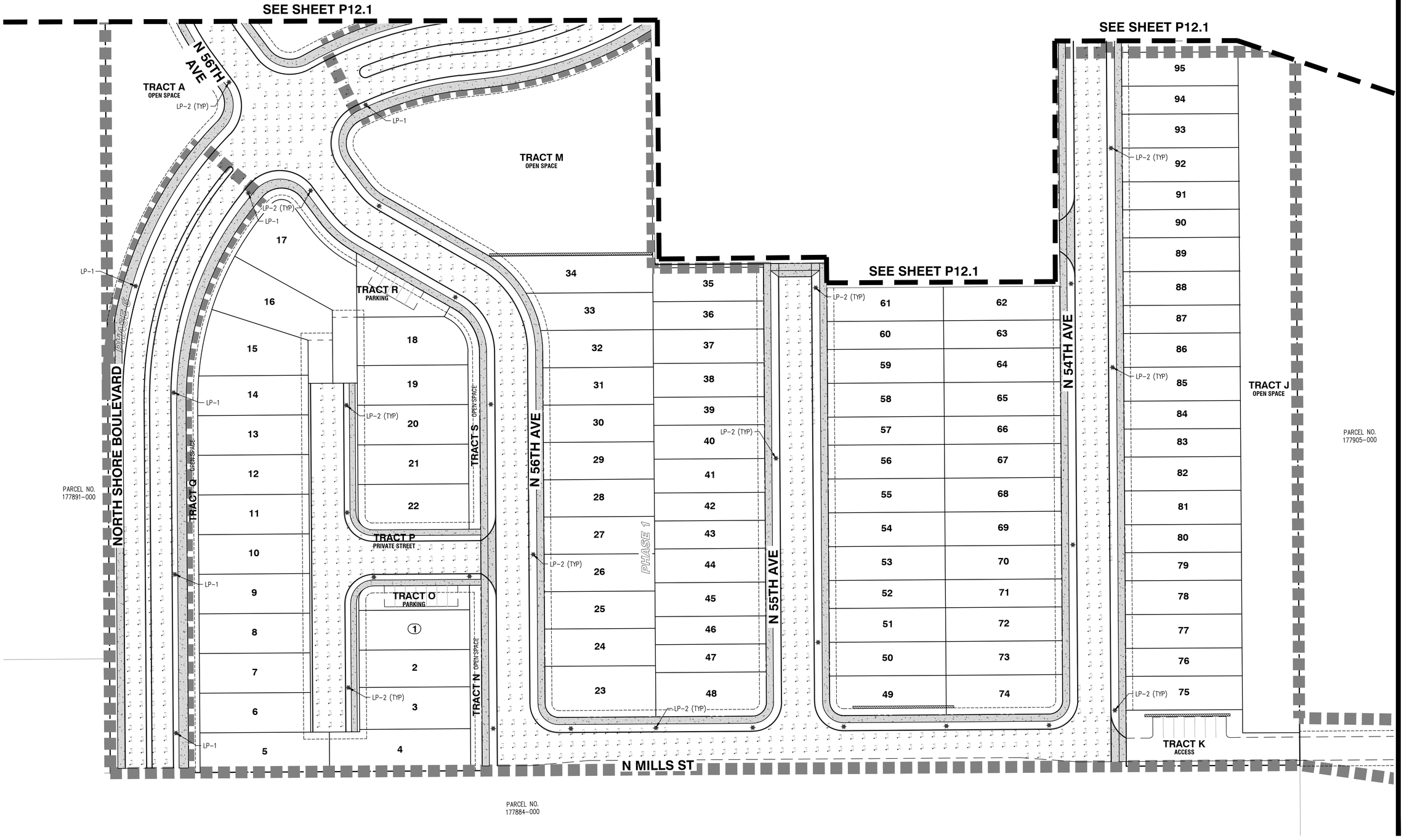
LUMINAIRE SCHEDULE

SYMBOL	QUANTITY	STYLE	LUMINAIRE TYPE	POLE TYPE	POLE HEIGHT
* (LP-1)	23	PROPOSED	LEOTEK – LED COBRA HEAD – GCJ1-20H-MV-WW-2R-GY-700-BBL-PCR7-WL	VALMONT STRUCTURES 1MA0832S-320845906T4-SBF	25.0' HT
* (LP-2)	35	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.

SCALE: 1"= 40 FEET

40 0 8 20 40

ORIGINAL PAGE SIZE: 22" x 34"



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PRELIMINARY LIGHTING PLAN OVERVIEW
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

BRYCE D. HANSEN
STATE OF WASHINGTON
PRELIMINARY NOT FOR CONSTRUCTION
REGISTERED PROFESSIONAL ENGINEER

JOB NUMBER:	9095
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DRAWN BY:	ALL
CHECKED BY:	BDH

P12.0

1158

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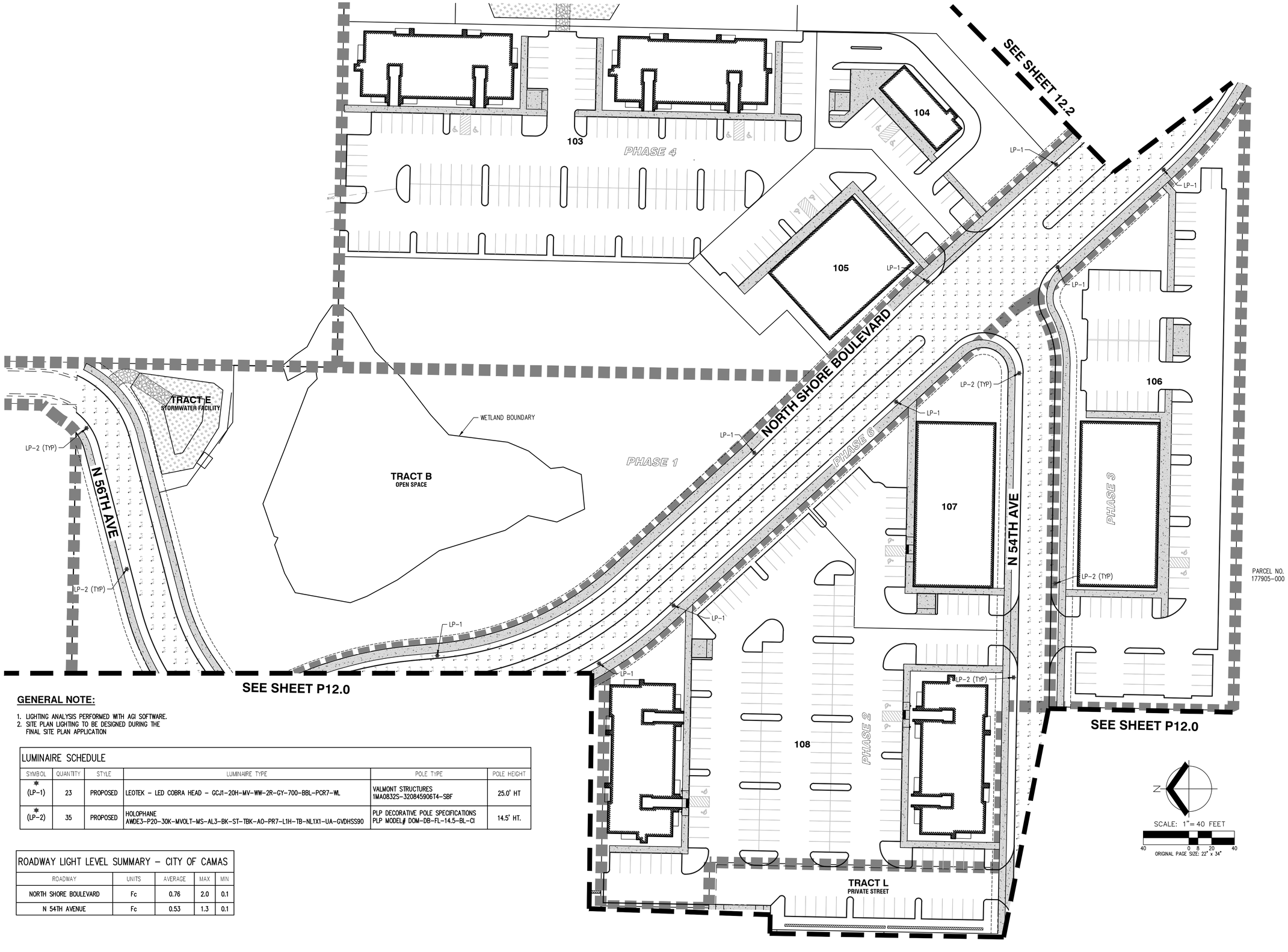

GENERAL NOTE:

1. LIGHTING ANALYSIS PERFORMED WITH AGI SOFTWARE.
2. SITE PLAN LIGHTING TO BE DESIGNED DURING THE FINAL SITE PLAN APPLICATION

LUMINAIRE SCHEDULE					
SYMBOL	QUANTITY	STYLE	LUMINAIRE TYPE	POLE TYPE	POLE HEIGHT
(LP-1)	23	PROPOSED	LEOTEK – LED COBRA HEAD – GCJ1-20H-MV-WW-2R-GY-700-BBL-PCR7-WL	VALMONT STRUCTURES 1MA0832S-320845906T4-SBF	25.0' HT
(LP-2)	35	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.

ROADWAY LIGHT LEVEL SUMMARY – CITY OF CAMAS				
ROADWAY	UNITS	AVERAGE	MAX	MIN
NORTH SHORE BOULEVARD	Fc	0.76	2.0	0.1
N 54TH AVENUE	Fc	0.53	1.3	0.1

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PRELIMINARY LIGHTING PLAN
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

BRYCE D. HANEY
STATE OF WASHINGTON
21079
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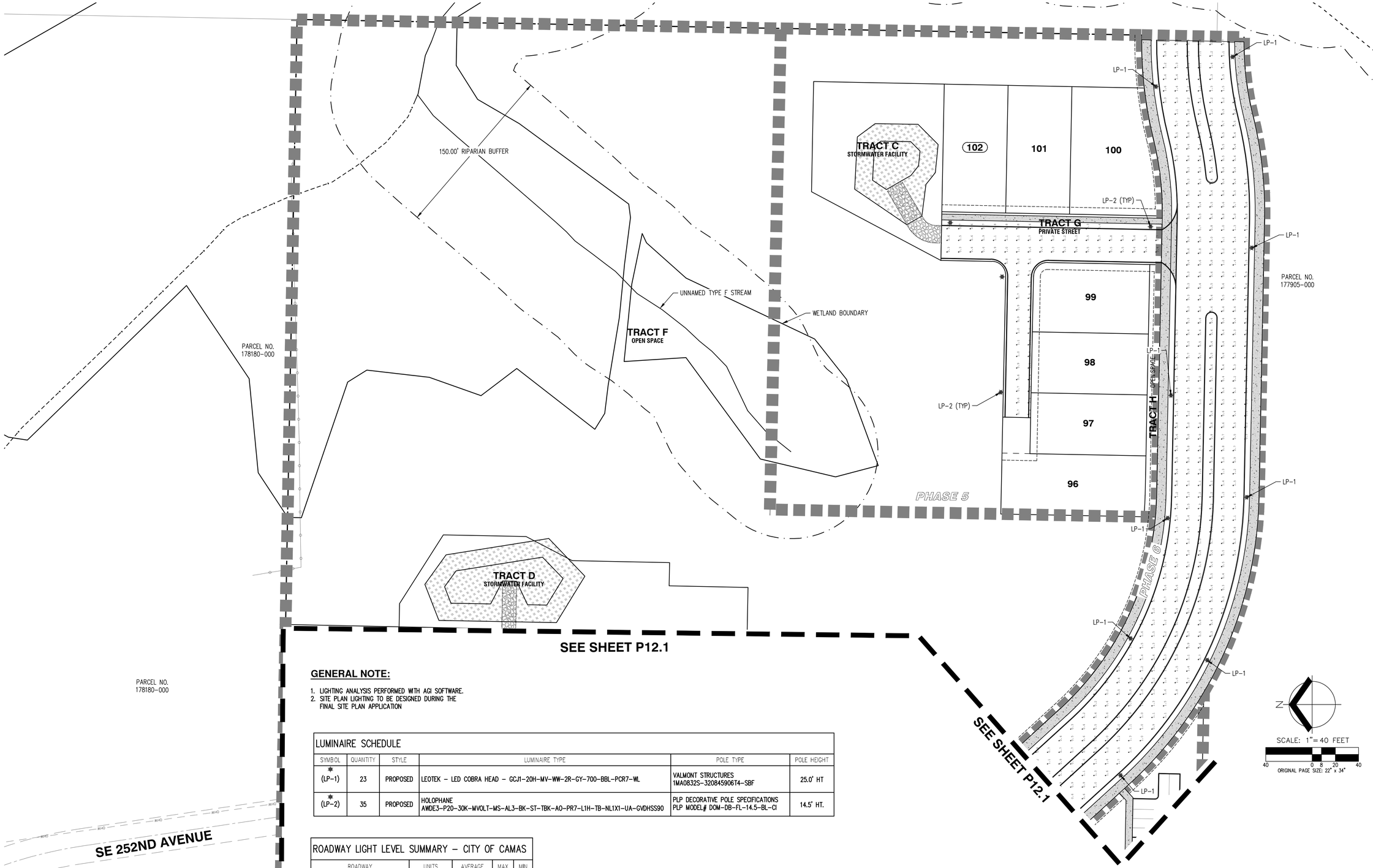
DRAWN BY:	ALL
CHECKED BY:	BDH

P12.1

AKS DRAWING FILE: 9095 P&D LIGHT.DWG | LAYOUT: P12.1



GENERAL NOTE:

1. LIGHTING ANALYSIS PERFORMED WITH AGI SOFTWARE.
2. SITE PLAN LIGHTING TO BE DESIGNED DURING THE FINAL SITE PLAN APPLICATION

LUMINAIRE SCHEDULE

SYMBOL	QUANTITY	STYLE	LUMINAIRE TYPE	POLE TYPE	POLE HEIGHT
(LP-1)	23	PROPOSED	LEOTEK - LED COBRA HEAD - GCJ1-20H-MV-WW-2R-GY-700-BBL-PCR7-WL	VALMONT STRUCTURES 1MA0832S-320845906T4-SBF	25.0' HT
(LP-2)	35	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.

ROADWAY LIGHT LEVEL SUMMARY - CITY OF CAMAS

ROADWAY	UNITS	AVERAGE	MAX	MIN
NORTH SHORE BOULEVARD	Fc	0.76	2.0	0.1
TRACT G	Fc	0.62	1.1	0.2

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FORESTRY - PLANNING - LANDSCAPE ARCHITECTURE

PRELIMINARY LIGHTING PLAN
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

BRYCE D. HINKLE
STATE OF WASHINGTON
21079
REGISTERED PROFESSIONAL ENGINEER
PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	9095
DATE:	7/22/2025
DESIGNED BY:	ALL
DRAWN BY:	ALL
CHECKED BY:	BDH

P12.2

1160

AKS DRAWING FILE: 9095 P8.0 LIGHT.DWG | LAYOUT: P12.2

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:
Village at North Shore

2. Name of applicant:
HSR DEV-MILLS, LLC

3. Address and phone number of applicant and contact person:

Applicant:	Contact:
HSR DEV-MILLS, 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
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(503) 936-8514	(360) 882-0419

4. Date checklist prepared:
July 2025

5. Agency requesting checklist:
City of Camas

6. Proposed timing or schedule (including phasing, if applicable):
The project is anticipated to begin construction as soon as all permits are obtained. This project is proposed to be constructed in up to six phases, with full site grading to occur with the first phase. The phases have been numbered in the Proposed Development Plans for reference and not for intended construction sequencing. Depending on market conditions and potential timing of required off-site improvements, it may be necessary for the Applicant to combine phases, or construct phases out of the sequence shown on the plans.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.
Off-site roadway improvements will occur with this project. The improvements include paving and widening where necessary NE 252nd Avenue and NE 3rd Street, both of which are existing county roads providing access to the subject site. There will also be offsite utility construction for water and sanitary sewer, including work in Leadbetter Road.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.
- Geotechnical Report (Columbia West)
- Preliminary Stormwater Technical Information Report (AKS Engineering & Forestry (AKS))
- Transportation Impact Study (Kittleson & Associates)
- This SEPA Checklist (AKS Engineering & Forestry (AKS))
- Archaeological Pre-Determination (Applied Archaeological Research, Inc. (AAR))
- Critical Areas Reports and Wetland Buffer and Oak Mitigation Plan (Ecological Land Services (ELS))

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.
None known.

10. List any government approvals or permits that will be needed for your proposal, if known.

- Type III Preliminary Subdivision Approval
- Final Engineering Approval
- Preliminary Site Plan Approval
- Grading Permit
- Erosion Control Plan Approval
- Final Plat Approval
- SEPA Determination
- Critical Area Permit Approval
- Major Design Review Approval
- Fire Department Blasting 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 61 single-family attached lots, 41 single-family detached lots, six mixed-use lots containing 140 multifamily apartment units and ±30,250 square feet of commercial lots. Tracts for stormwater, open space, and critical area protection will be created with this project.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The site is addressed as 303 SE Leadbetter Road and 305 SE 252nd Avenue, Camas, WA 98607

Tax Lots: 177885-000 and 178175-000 in the NE and NW ¼, S35 and S34, 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)?

According to Clark County Geographic Information Systems (GIS), there are slopes between 15 and 25 percent on parcel 177885-000 and slopes between 25 and 40 percent on parcel 178175-000.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

According to the Geotechnical Engineering Study, the subject site contains mostly Lauren very gravelly loam, Olympic Stoney Clay Loam, Vader Silt Loam, and a small pocket of Lauren loam along the north property boundary. These are generally soils that are not suitable for agriculture and the site is not being used for agricultural purposes.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

According to Clark County Geographic Information Systems (GIS), there are slopes between 15 and 25 percent on parcel 177885-000 and slopes between 25 and 40 percent on parcel 178175-000. The average slope across the site is less than 15 percent. A Geotechnical Engineering Study, prepared by Columbia West, dated October 17, 2023, notes that while there is a presence of steep slopes on site, the slopes do not meet the definition of a landslide hazard according to Camas Municipal Code, Section 16.59.

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. Due to the presence of shallow bedrock, blasting will also occur with the grading. 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 ±27.76 acres with estimated grading quantities of ±199,000 cubic yards of cut and ±68,000 cubic yards of fill. Fill material will come from on-site sources or approved off-site sources if necessary. Excess material needing to be hauled off-site will be taken to an approved location.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Yes, erosion is possible during construction in the form of silt transfer and dust blowoff. Stormwater and Erosion Control Plans will be prepared and implemented by the Applicant for the site improvement, which will meet or exceed the requirements imposed by the City of Camas Municipal Code (CMC) and the Washington State Department of Ecology (ECY).

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Approximately 21.03 acres of the site, ±58.3 percent, of the gross site area may be covered with impervious surfaces. This includes homes, multi-family buildings, a mixed-use buildings, driveways, streets and sidewalks, and parking areas.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Stormwater and Erosion Control Plans will be prepared and implemented in accordance with CMC and ECY standards.

2. Air

i. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Construction equipment and vehicles and blasting 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.

a. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

Off-site sources of emissions or odor near the project site are exhaust emissions from vehicles traveling along the adjacent streets, and the surrounding farm properties. These sources are not anticipated to impact this project. There are no other known sources or emissions or odors that will impact the site.

b. Proposed measures to reduce or control emissions or other impacts to air, if any:

If necessary, water will be utilized for dust control as needed during the construction of the proposed site improvements. Emissions control measures for vehicles and equipment are regulated under CMC, ECY, and U.S. Environmental Protection Agency (EPA) standards. It is anticipated that all vehicles and equipment will comply with these regulations.

3. Water

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Ecological Land Services, Inc. (ELS), has prepared two Critical Areas Reports and a Wetland Buffer Modification & Mitigation for the site. Both reports were completed in May 2025, and collectively, the reports cover the entirety of the site. The reports identified multiple wetlands, Oregon white oaks, a stream, and two herbaceous balds within the project area. Those Critical Areas Reports are included in this application package. Wetland buffer modifications and critical area mitigation plans are identified in the Wetland Buffer Modification & Mitigation Plan. Refer to the Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan for additional information.

Lacamas Lake and the associate shoreline exist south of the site. Utilities and a pedestrian pathway will extend from the site to SE Leadbetter road just north of the lake and with the Medium Intensity shoreline designation.

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 occur within 200 feet of the described water. Work will include site grading and construction for lots, roads, and stormwater facilities, construction of homes, construction of a pedestrian path, and construction of utilities. No work will occur over or in the 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 the 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.

There is an existing well on-site that provides water service to parcel 178180-000. That water well will be retained with this project. The quantity of water withdrawn is unknown at this time. The planned project will not withdraw water from this well and will be connect to the City public water system.

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 any existing on-site septic systems. 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.

The subject site has two drainage basins for stormwater. Stormwater runoff generated in the southwest portion of the site will be collected and conveyed to stormwater vaults for mechanical treatment. Treated stormwater will be transported to a planned stormwater main, that will be located in the off-site utility access easement tract. Treated stormwater will be discharged directly into Lacamas Lake at existing discharge points using the large water body exemption for stormwater discharge. Stormwater runoff generated by the northeast portion of the site will be collected on-site and conveyed to stormwater vaults for mechanical treatment. Treated stormwater will be transferred to detention ponds for flow control, prior to being discharged to an existing stream and natural area in the northeast corner of the site and wetland in the center of the site. All stormwaters will be discharged at rates allowed by City of Camas. The stormwater system is designed per the Washington State Department of Ecology (ECY) 2024 *Stormwater Management Manual for Western Washington* (SWMMWW). Refer to the Preliminary Stormwater Technical Information Report (TIR) and Preliminary 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.

d. Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

The proposed project will not alter or affect the drainage patterns in the vicinity of the site.

e. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

The project will meet or exceed the CMC and ECY erosion control and stormwater standards. The stormwater generated by the proposed impervious surfaces will be collected, treated, and discharged at rates allowed per the City. Any spills will be immediately responded to, and appropriate remediation measures will be taken.

4. Plants

a. Check the types of vegetation found on the site:

X deciduous tree: alder, maple, aspen, other
X evergreen tree: fir, cedar, pine, other
X shrubs
X grass
____ pasture
____ crop or grain
____ Orchards, vineyards or other permanent crops.
X 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 critical areas and 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.

5. Himalayan Blackberry is found on and near the site. **Animals**

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Animals that are known to be on or near the site are rabbits, squirrels, rodents, snakes, hawks, songbirds, crows, bass, and trout.

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

b. List any threatened and endangered species known to be on or near the site.

According to the Washington State Department of Fish and Wildlife PHS, there are no mapped threatened or endangered species known to be on or near the site.

c. Is the site part of a migration route? If so, explain.

The site is located within what is commonly referred to as the Pacific Flyway. This Flyway is the general migratory route for various species of ducks, geese, and other migratory waterfowl. Neotropical birds, such as Robins, may seasonally utilize or be near the site.

d. Proposed measures to preserve or enhance wildlife, if any:

There are on-site critical areas that will be protected to the greatest extent practicable to provide habitat for wildlife. Mitigation for wetland and wetland buffer impacts are included in the Critical Areas Report and Mitigation Report. Signage and demarcation will be installed and maintained along the outer perimeter of the priority buffer to denote retaining the critical area and buffer in a natural state. Landscaping will be installed in the development's developed area and will provide potential for additional habitat.

e. List any invasive animal species known to be on or near the site.

No invasive animal species are known to be on or near the site.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Electricity and potentially natural gas will be used for the completed project, which will include standard residential uses such as heating or cooling, lighting, and other appliances.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No, it is not anticipated that the project will affect adjacent properties potential use of solar energy.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

All construction on-site will be designed to comply with the Washington State Energy Code and the adopted version of the International Building Code and City of Camas Municipal Code as applicable to this project.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

Heavy equipment and a variety of materials will be used to construct the project. Blasting of bedrock will also take place during site grading. The blasting will follow all local, state, and federal regulations. Other environmental hazards are limited to standard risks associated with construction and occupancy of the development.

1) Describe any known or possible contamination at the site from present or past uses.

There is no known contamination on the site from present or past uses. There are existing septic systems 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. Blasting materials will be temporarily stored on-site for bedrock blasting during site grading.

4) Describe special emergency services that might be required.

Special emergency services could be required if an accident related to the proposed blasting occurs. 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. 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, including blasting, 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, employees, 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, commercial, and multi-family, 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 and contractors will follow all required mitigation practices during blasting of bedrock. Restrict construction to hours allowed by the City of Camas (CMC 9.32.050(A)),

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The current use of the site is single family residential. Properties to the north are used as farms and single-family residential. South, east, and west, of the site are parcels used as park land and single family residential. 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 a house, two shops, and one shed.

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 Lower Density (LD-NS), North Shore Higher Density (HD-NS), North Shore Mixed Used (MX-NS), and North Shore Commercial (C-NS).

f. What is the current comprehensive plan designation of the site?

The current comprehensive plan designation is HD-NS, C-NS, MX-NS, and LD-NS.

g. If applicable, what is the current shoreline master program designation of the site?

The site will be served with utilities from SE Leadbetter Road, an off-site road to the south that is located in the Medium Intensity shoreline designation. A pedestrian path and existing utilities in SE Leadbetter Road will be extended north into the subject site through a utility and public access easement. The subject site location is outside any shoreline 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, Inc. (ELS), has prepared two Critical Areas Reports and a Wetland Buffer Modification & Mitigation for the site. Both reports were completed in May 2025, and collectively, the reports cover the entirety of the site. The reports identified multiple wetlands, Oregon white oaks, a stream, and two herbaceous balds within the project area. Those Critical Areas Reports are included in this application package. Wetland buffer modifications and critical area mitigation plans are identified in the Wetland Buffer Modification & Mitigation Plan. Refer to the Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan for additional information.

i. Approximately how many people would reside or work in the completed project?

The Applicant proposes to subdivide two parcels into 61 single-family attached lots attached townhomes lots, 41 detached single-family detached lots, six mixed-use lots containing 140 multifamily apartment units and ±30,250 square feet of commercial lots. Tracts for stormwater, open space, and critical area protection will be created with this project. Assuming ±2.7 people per residence, ±653 people will reside in this project once the project is completed. The final users for the commercial use is on unknown at this time, so the number of people working in the completed project is unknown.

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, ±3 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, Preliminary Site Plan Review, and Preliminary and Final Engineering review processes.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

The proposed development includes 102 single family units and 140 multi-family units, for a total of 242 units. The proposed units will be middle-income units.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

The project will remove one middle-income dwelling unit.

c. Proposed measures to reduce or control housing impacts, if any:

The proposed project will provide a net increase of 241 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 35-foot maximum height allowed in the LD-NS zoning district, the 50-foot maximum height allowed in the HD-NS zoning district, or the 100-foot maximum height in the MX-NS zoning district and the C-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, mixed-use buildings, and multi-family buildings 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); commercial and multi-family lighting (building and parking lot 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 ±0.75 miles to the southeast
- Lacamas Park is located ±1.2 miles to the south.
- Fallen Leaf Park is located ±1.1 miles to the south.
- Lacamas Lake is located ±0.3 miles southwest.
- A trail network around Lacamas Lake is located directly south of the site.

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 completed by AAR, dated July 1, 2022, and November 15, 2024, there are structures on-site that are over 45 years old; however, these structures do 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.

Archaeological Predeterminations completed by AAR, dated July 1, 2022, and November 15, 2024 and according to AAR, no artifacts or evidence for archaeological resources were found on-site. AAR recommends that no further archaeological work is needed.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Per the Archaeological predeterminations, 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 10 meters apart and 37 test pits were dug on-site.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

The proposed development will comply with DAHP requirements and obtain all necessary permits from DAHP. In the event that archaeological materials, Indian cairns, or human remains are encountered during the development of the properties, all construction activities will stop in the vicinity of the finds. The Applicant will then immediately notify the planning official and the Washington State DAHP. Procedures outlined under Washington Administrative Code (WAC) 24-28-020 will be followed and work will not resume until mitigation measures have been agreed upon.

14. Transportation

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

The subject site is served by NE 3rd Street and NE 252nd Avenue. Four public roads and three private road tracts will be constructed with this project. North Shore Boulevard will not be constructed with this project, but the right-of-way for North Shore Boulevard will be dedicated with this project. North Shore Boulevard will run across the site, from the northwest corner of the site to the southeast corner of the site. The development will also provide local streets throughout the site. Local streets that are planned with the project include N 56th Avenue, N 55th Avenue, and N 54th Avenue. Half-width improvements to N Mills Street will also be constructed with this project. Three private street tracts are also planned to be constructed with this project.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

The nearest transit stop is about ±2.25 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 planned project includes single-family and multi-family units. Each single-family lot will be provided with a minimum of two parking spaces (1 driveway space and 1 garage space) along with 19 additional stalls located in tracts throughout the development. The multi-family and mixed-use lots will provide 442 parking stalls for residents and visitors.

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 four new roadways to provide access to the lots within the development. The right-of-way dedication for North Shore Boulevard will also occur with this project, but North Shore Boulevard will be constructed at a later date by the City of Camas. The dedicated right-of-way for North Shore Boulevard will vary between 67 feet and 88 feet. The planned right-of-way varies in width throughout the site because critical areas, and an off-site barn impacts the ability for North Shore Boulevard to be dedicated at 88-feet-wide throughout the entirety of the site. In the southeast of the site, closer to the mixed use buildings, the right-of-way for North Shore Boulevard will be dedicated to 88-feet-wide. As North Shore Boulevard travels northwestwardly, its right-of-way shrinks down to 67 feet. This reduction in size is needed to avoid wetland and Oregon white oak impacts, and to avoid an off-site barn that is approximately eight feet north of the northern property line. N 57th Avenue, N 56th Avenue, N 55th Avenue, and N 54th Avenue will be constructed with a 54-foot-wide right-of-way, a 28-foot-wide paved surface, and a 6-foot-wide planter strip and 6-foot-wide sidewalk on both sides of the road.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

The proposed project will not use and does not occur in the immediate vicinity of water, rail, or air transportation.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

The Applicant's Transportation Engineering Consultant, Kittelson & Associates, prepared a Transportation Impact Study (TIS). The TIS used an assumed subdivision with up to 41 detached single-family lots, 61 townhome lots and apartment units. Trip generation was calculated using the *ITE Trip Generation Manual 11th Edition*. The TIS states the proposed development will generate 1,831 average daily trips (ADT) with 125 a.m. peak hour trips and 157 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 proportionate share fees and transportation impact fees to be paid to mitigate the impacts of 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 242 residential units and commercial space 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 wells 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 water into the site from SE Leadbetter Road and loop the water through the development to provide service to the lots. A force sewer main is planned throughout the site. Each lot will have its own service lateral and grinder pump. The planned force main will connect to the existing force main in SE Leadbetter Road through the planned utility/public access easement tract, before being conveyed to the Leadbetter Pump Station to the east. The development will also have to extend three-phase power lines into the development to provided electrical service to each lot.

Signature

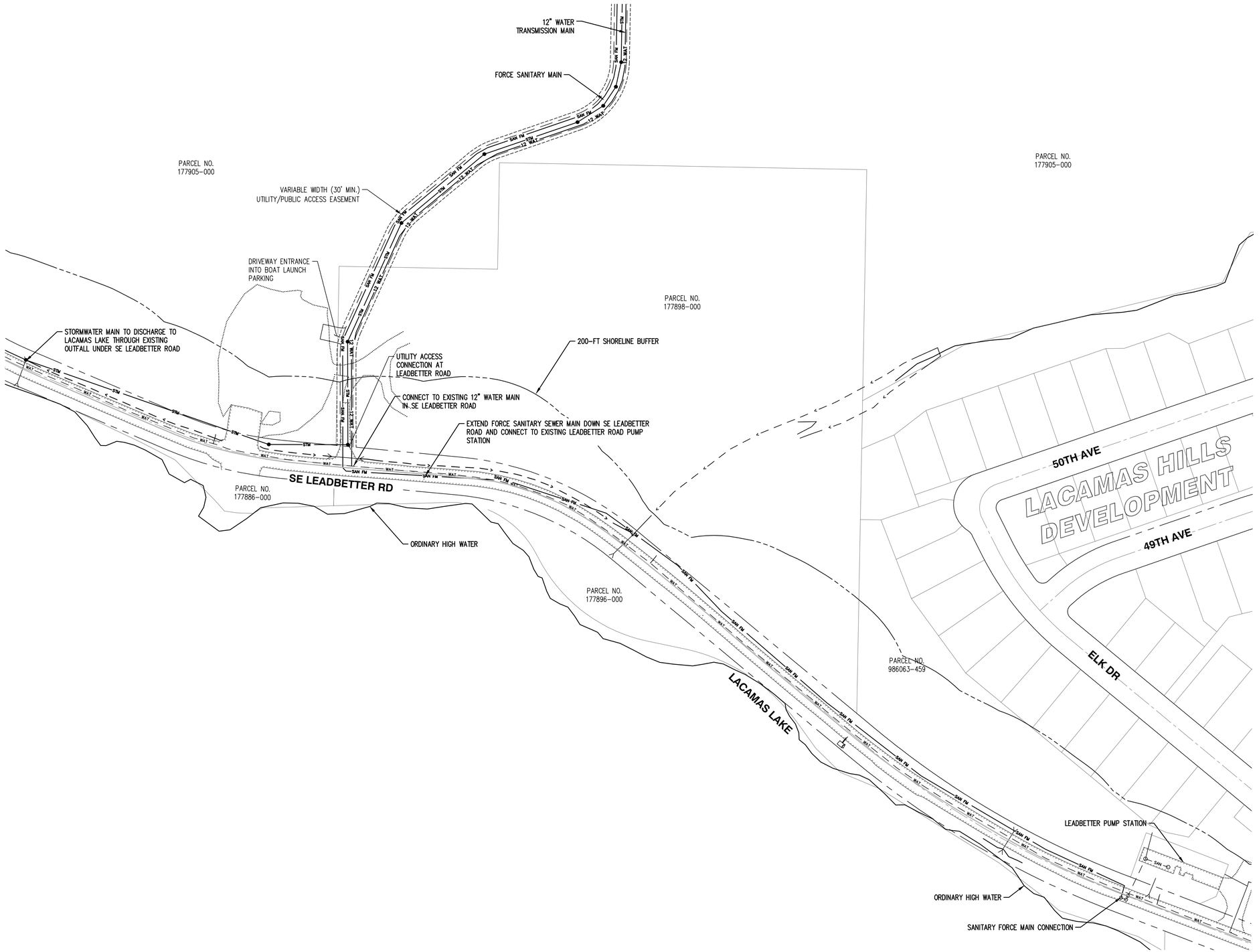
Under the penalty of perjury, the above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee: Michael Andreotti

Position and Agency/Organization: Land Use Planner / AKS Engineering & Forestry

Date Submitted: 07/22/2025



AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
360.882.0419
WWW.AKS-ENG.COM

ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

LACAMAS LAKE SHORELINE EXHIBIT
VILLAGE AT NORTH SHORE
HSR DEV - MILLS, LLC
CAMAS, WASHINGTON

PRELIMINARY NOT FOR CONSTRUCTION

JOB NUMBER:	9095
DATE:	8/20/2025
DESIGNED BY:	BDH
DRAWN BY:	LPM
CHECKED BY:	BDH

EX A

1178

AKS DRAWING FILE: 9095 20250820 SHORELINE EXHIBIT.DWG | LAYOUT: PS1

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

August 20, 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: Village at North Shore (SUB25-1008) Application Completeness Review

Dear Michael Andreotti,

Thank you for your application submittal for the Village at North Shore Subdivision. There are items that need to be addressed with your application. The purpose of this letter is to inform you that the above application submitted on 7/23/2025, 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:

- The southern portion of the development that extends to Leadbetter Road is within shoreline jurisdiction. Therefore, the narrative and critical area report must be updated to address the Shoreline Master Program regulations. Please refer to the pre-application meeting notes for additional information.

Items not necessary for completeness, however, still need to be addressed:

- A preliminary mitigation plan is required due to the proposed critical area impacts.

If you have any questions, please contact me at mcoulter@cityofcamas.us
Respectfully,

Madeline Coulter

Madeline Coulter, AICP
Planner

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

August 26, 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: Village at North Shore (SUB25-1008) Application Completeness Review

Dear Michael Andreotti,

The purpose of this letter is to inform you that the above application submitted on 7/23/2025, and resubmitted on 8/21/2025, 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.

Items to be addressed but not required for a complete application:

CMC 17.11.030.14: An engineering estimate of costs for site improvements, both public and private.

- An engineer's estimate was not submitted with application.
- Not considering a TC item but is required with the Civil Construction Application.

If you have any questions, please email me: mcoulter@cityofcamas.us

Respectfully,

Madeline Coulter

Madeline Coulter, AICP
Planner

In re: Village at North Shore

) NO. SUB25-1008
)
) AFFIDAVIT OF MAILING
)
)
)
)
)
Respondent.)

STATE OF WASHINGTON)
) ss.
CLARK COUNTY)

I, Carey Certo, on oath says:

I, Carey Certo, on October 1, 2025, I directed a true and correct copy of the Notice of Application & Public Hearing be served upon the parties herein, in the above-entitled action, by depositing with the U.S. Post Office, Camas, Washington, a postage-prepaid envelope containing same addressed as follows: See attached list.

Carey Certo
SIGNATURE

SUBSCRIBED and SWORN to before me this 7th day of October, 2025.

Aireanna Baldwin
Notary Public
State of Washington
My Appointment Expires 10/1/2028
Commission Number 183848

Aireanna Baldwin
Notary Public in and for the State of Washington, residing at Clark County
My appointment expires: 10/1/2028

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CAMAS, WA 98607

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LACAMAS HILLS OWNERS ASSOCIATION
8815 122ND AVE NE STE 200
KIRKLAND, WA 98033

Notice of Application and Public Hearing

Village at North Shore (SHOR25-1008)

NOTICE IS HEREBY GIVEN that an application for the "Village at North Shore" including a proposal to develop a subdivision with 102 single-family residential lots, mixed-use buildings and apartments in the North Shore Mixed Use (MX-NS), North Shore Higher Density Residential (HD-NS), North Shore Lower Density Residential (LD-NS), and North Shore Commercial (C-NS)., was received on July 23, 2025, resubmitted on August 21, 2025 and deemed technically complete on August 26, 2025.

LOCATION: The subject site is located at 313 SE Leadbetter Road and 305 SE 252nd Avenue, Camas, WA and is in the North Shore Mixed Use (MX-NS), North Shore Higher Density Residential (HD-NS), NorthShore Lower Density Residential (LD-NS), and North Shore Commercial (C-NS). The parcels are identified as 177885000 of the NE ¼, Section 34, Township 2 North, Range 3 East, of the Willamette Meridian and 178175000 of NW 1/4 of Section 35, Township 2 North, Range 3 East, of the Willamette Meridian.

SCHEDULED PUBLIC HEARING: A virtual and in-person public hearing will be held before the city's hearings examiner on **December 2, 2025 at 5:00pm**. Instructions and a link to participate will be available on the agenda page of the city's website at least seven days prior to the meeting. The agenda is located at the following link: www.cityofcamas.us/yourgovernment/minuteagendavideo

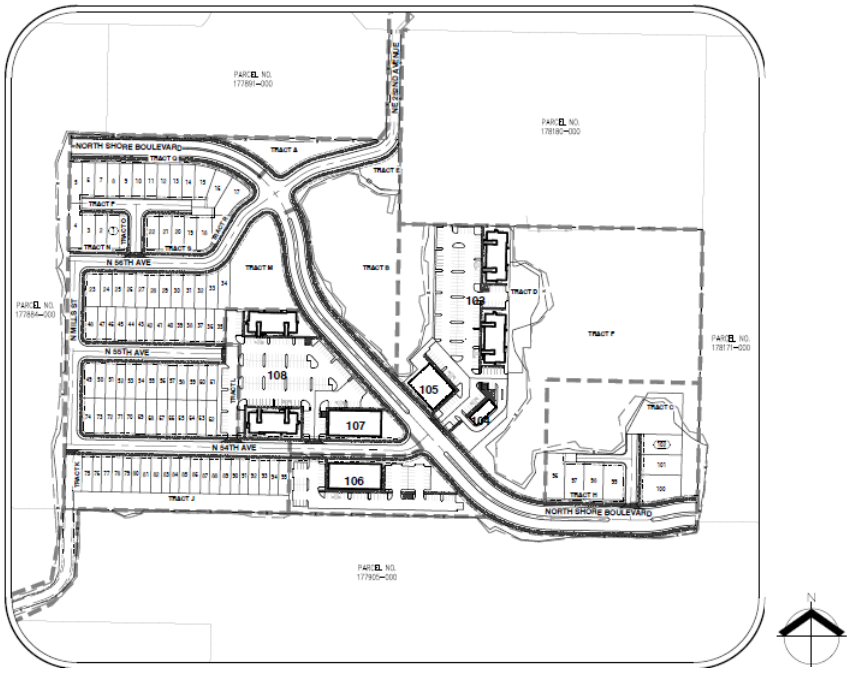
APPLICATION MATERIALS: The Village at North Shore application included the following: narrative, preliminary site plan, pre-application meeting notes, preliminary geotechnical report, preliminary stormwater plan, SEPA checklist, critical areas report, mitigation plan, transportation impact study, tree survey, and other required documents. The documents are available for review at the Community Development Department located at 616 NE 4th Avenue, Camas, WA during regular business hours Monday through Friday 8:00am-5:00pm.

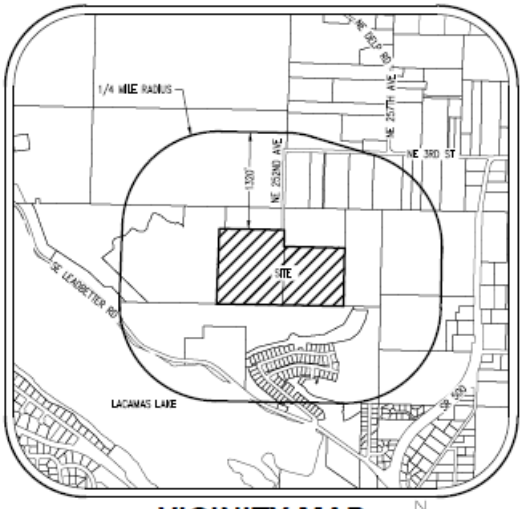
PARTICIPATE: All citizens are entitled to have equal access to the services, benefits, and programs of the City of Camas. Please contact the City Clerk at (360) 834-6864 for special accommodation if needed. The city will provide translators for non-English speaking persons who request assistance at least three working days prior to a public meeting.

Public comments and questions are encouraged, and there are several opportunities available to interested citizens. *It is preferable that written comments be received five days prior to the public hearing, in order to be available with the online agenda and materials.* Comments can also be accepted during the public hearing. The public hearing will follow the quasi-judicial process described within Camas Municipal Code §18.55.180. Comments related to this development may be submitted as follows: (1) In person by testifying at the public hearing; (2) by regular mail to Planning Division staff, Yvette Sennewald, Senior Planner, at the Camas City Hall, 616 NE 4th Avenue, Camas, WA 98607; (3) by email to: communitydevelopment@cityofcamas.us; or (4) by phone (360) 817-7237. **For questions related to this application, please contact Madeline Coulter Planner, at (360) 817-1568 or communitydevelopment@cityofcamas.us.**

Published in the Post Record on October 2, 2025 Legal Publication #1037190
Posted at Camas City Hall, Camas Library, City of Camas website at: http://www.cityofcamas.us
Mailed to property owners within 300-feet on October 1, 2025

Village at North Shore
Preliminary Site Plan





VICINITY MAP
N.T.S.

Notice of Application and Public Hearing

Village at North Shore (SHOR25-1008)

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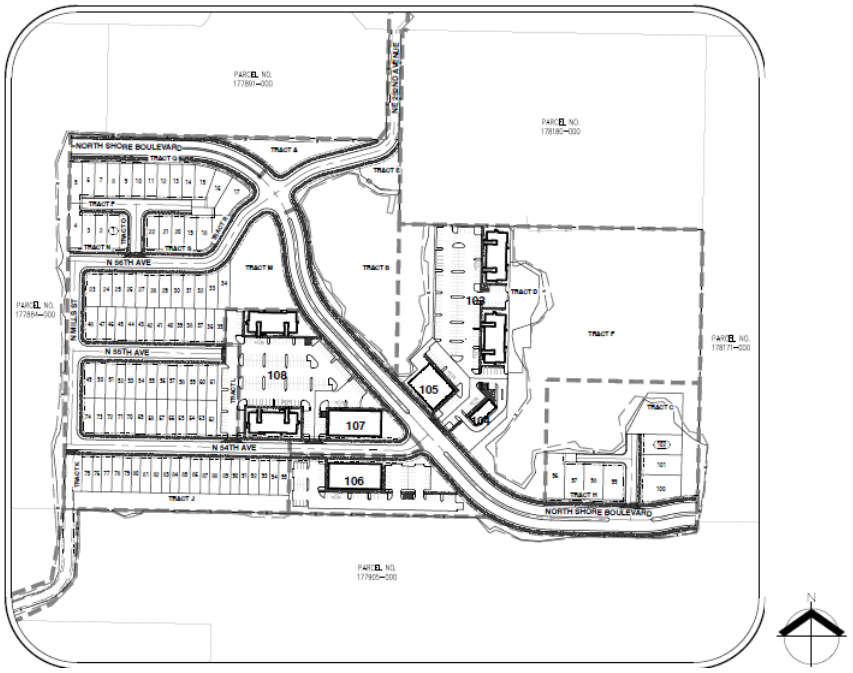
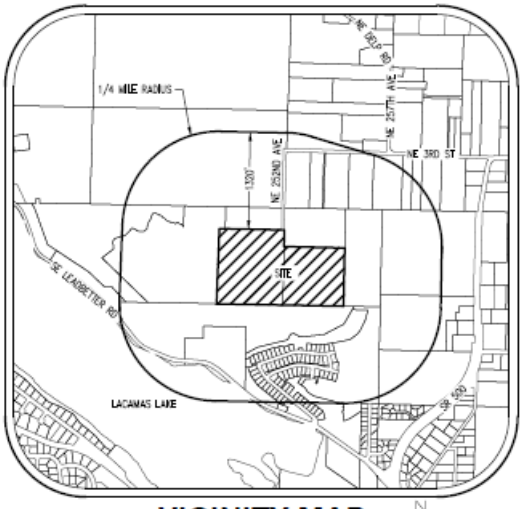




VICINITY MAP
N.T.S.

PROPOSED DEVELOPMENT

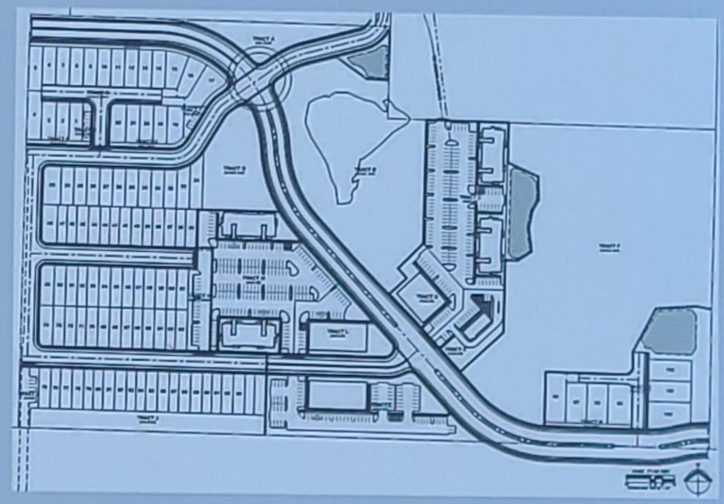
Exhibit 19 SUB25-1008

Village at North Shore

36.04 Acres

108 Lot Subdivision & Site Plan

Madeline Coulter, City of Camas
(360) 817-1568



PUBLIC HEARING REQUIRED:

December 2, 2025 at 5:00p.m.

PERMITS: Type III Subdivision and Preliminary Site Plan

APPLICANT: HSR Dev – Mills, LLC
CONTACT NO: (503) 936-8514

In re: Village at North Shore

) NO. SUB25-1008
)
) AFFIDAVIT OF MAILING
)
)
)
)
)
Respondent.)

STATE OF WASHINGTON)
) ss.
CLARK COUNTY)

I, Carey Certo, on oath says:

I, Carey Certo, on November 5, 2025, I directed a true and correct copy of the SEPA DNS 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 6th day of November, 2025.

Aireanna Baldwin
Notary Public
State of Washington
My Appointment Expires 10/1/2028
Commission Number 183848

Aireanna Baldwin
Notary Public in and for the State of Washington, residing at Clark County
My appointment expires: 10/1/2028

State Environmental Policy Act
Determination of Non-Significance

CASE NO: SUB25-1008 Village at North Shore

APPLICANT: AKS Engineering & Forestry
Michael Andreotti
9600 NE 126th Ave Suite 2520
Vancouver, WA 98682

REQUEST: Develop a subdivision with 102 single-family residential lots, mixed-use buildings and apartments.

LOCATION: 313 SE Leadbetter Road and 305 SE 252nd Avenue
Camas, WA 98607

LEGAL DESCRIPTION: The project is located in the City of Camas in the NE ¼ of Section 34 Township 2 North, Range 3 East, of the Willamette Meridian; and described as parcels 177885000 and 17817500

SEPA DETERMINATION: DETERMINATION OF NON-SIGNIFICANCE (DNS)

COMMENT DEADLINE: NOVEMBER 20, 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 November 6, 2025 Legal Publication #1046870
Posted at Camas City Hall, Camas Library, City of Camas website at: http://www.cityofcamas.us
Mailed to property owners within 300-feet on November 5, 2025

Determination:

Determination of Non-Significance (DNS). 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.

Date of Publication & Comment Period:

Publication date of this DNS is **November 6, 2025**, and is issued under WAC 197-11-340. The lead agency will not act on this proposal until the close of the 14-day comment period which ends on **November 20, 2025**. Comments may be sent by email to communitydevelopment@cityofcamas.us or regular mail to:

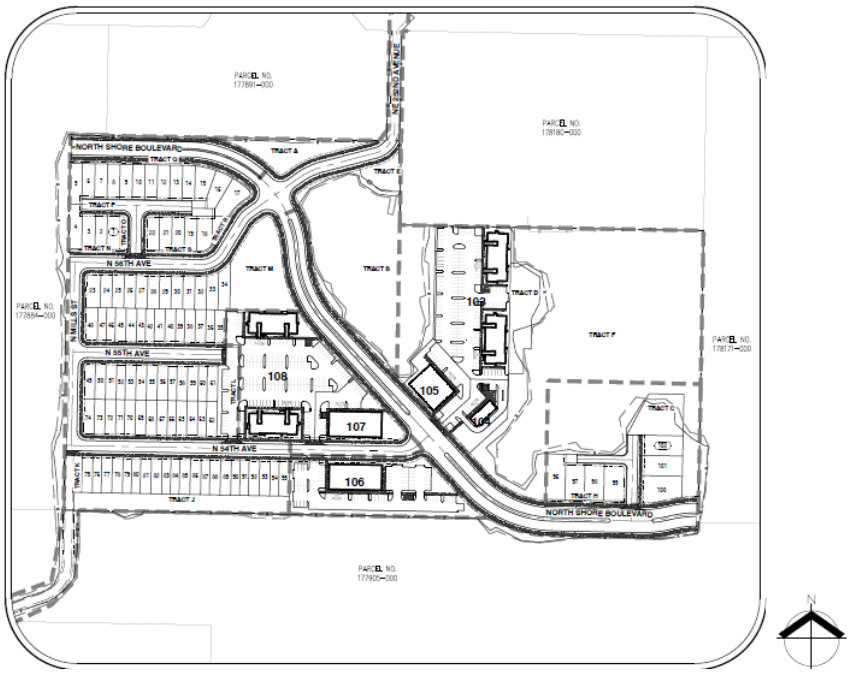
City of Camas SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607

Responsible Official: Robert Maul (360) 817-1568

Robert Maul, Planning Manager and Responsible Official

November 6, 2025
Date of publication

Preliminary Site Plan





VICINITY MAP
N.T.S.

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CAMAS, WA 98607

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HSR DEV - MILLS LLC
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CITY OF CAMAS
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CAMAS, WA 98607

LACAMAS HILLS OWNERS ASSOCIATION
8815 122ND AVE NE STE 200
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State Environmental Policy Act
Determination of Non-Significance

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Michael Andreotti
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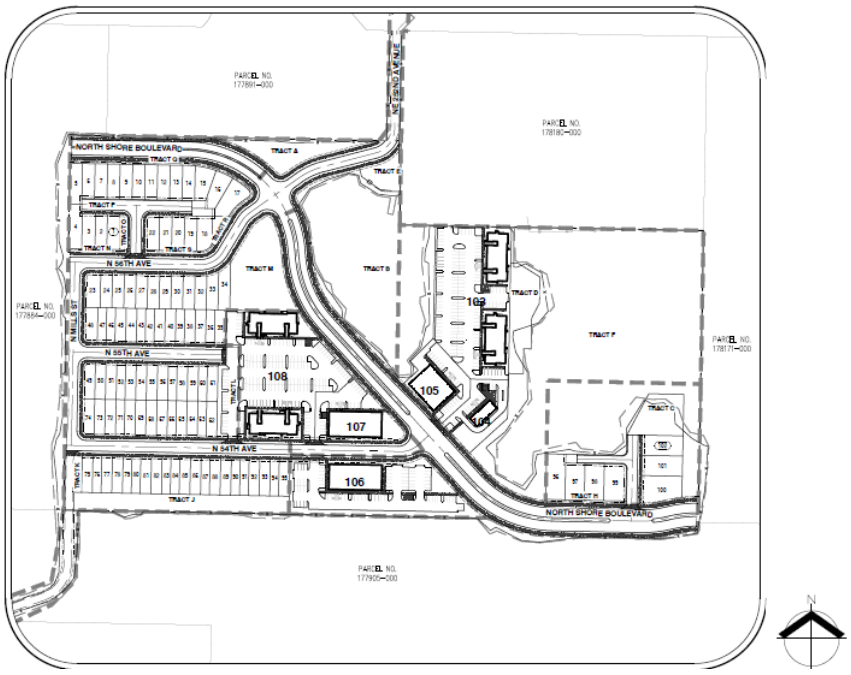
Responsible Official: Robert Maul (360) 817-1568

Robert Maul, Planning Manager and Responsible Official

November 6, 2025
Date of publication

Preliminary Site Plan





COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

Date Published: November 6, 2025

To Whom It May Concern:

Please find enclosed a Determination of Non-Significance (DNS) for **Village at North Shore (SUB25-1008)** 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:

- Narrative
- Site Plan
- Traffic Report
- Tree Survey
- SEPA Checklist
- Critical Areas Report
- Preliminary Stormwater Report
- Geotechnical Report
- Mitigation Plan
- Mailing Labels
- Title Report
- Archaeological Predetermination*

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 Engineering Department Managers and Staff
Camas Fire Department, Randy Miller
Camas Finance Director, Cathy Huber Nickerson
Camas Community Development Director, Alan Peters
Camas Mayor and City Council Members
Camas Parks and Recreation Director, Chris Witkowski
Camas Planning Manager and Staff
Camas Police Chief, Tina Jones
Camas Public Works Director, Scott Collins
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
Determination of Non-Significance

CASE NO: SUB25-1008 Village at North Shore

APPLICANT: AKS Engineering & Forestry
Michael Andreotti
9600 NE 126th Ave Suite 2520
Vancouver, WA 98682

REQUEST: Develop a subdivision with 102 single-family residential lots, mixed-use buildings and apartments.

LOCATION: 313 SE Leadbetter Road and 305 SE 252nd Avenue
Camas, WA 98607

LEGAL DESCRIPTION: The project is located in the City of Camas in the NE ¼ of Section 34 Township 2 North, Range 3 East, of the Willamette Meridian; and described as parcels 177885000 and 17817500

SEPA DETERMINATION: DETERMINATION OF NON-SIGNIFICANCE (DNS)

COMMENT DEADLINE: NOVEMBER 20, 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 November 6, 2025 Legal Publication #1046870
Posted at Camas City Hall, Camas Library, City of Camas website at: http://www.cityofcamas.us
Mailed to property owners within 300-feet on November 5, 2025

Determination:

Determination of Non-Significance (DNS). 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.

Date of Publication & Comment Period:

Publication date of this DNS is **November 6, 2025**, and is issued under WAC 197-11-340. The lead agency will not act on this proposal until the close of the 14-day comment period which ends on **November 20, 2025**. Comments may be sent by email to communitydevelopment@cityofcamas.us or regular mail to:

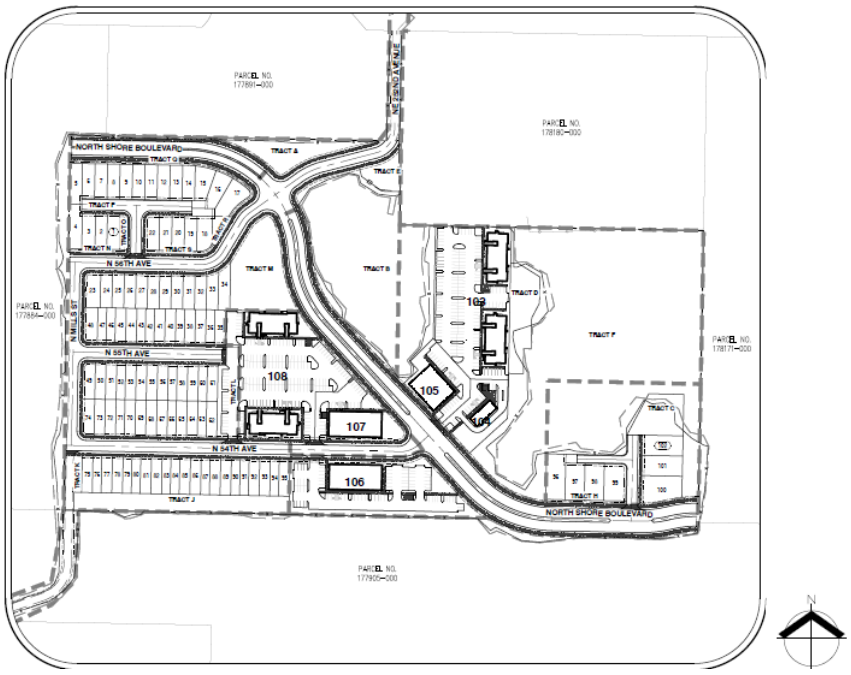
City of Camas SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607

Responsible Official: Robert Maul (360) 817-1568

Robert Maul, Planning Manager and Responsible Official

November 6, 2025
Date of publication

Preliminary Site Plan





VICINITY MAP
N.T.S.

Community Development
616 NE Fourth Avenue • Camas, WA 98607
(360) 817-1568
http://www.cityofcamas.us

SEPA ENVIRONMENTAL CHECKLIST

UPDATED 2016

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

***Instructions for applicants*:**

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background

1. Name of proposed project, if applicable:
Village at North Shore

2. Name of applicant:
HSR DEV-MILLS, LLC

3. Address and phone number of applicant and contact person:

Applicant:	Contact:
HSR DEV-MILLS, 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:
July 2025

5. Agency requesting checklist:
City of Camas

6. Proposed timing or schedule (including phasing, if applicable):
The project is anticipated to begin construction as soon as all permits are obtained. This project is proposed to be constructed in up to six phases, with full site grading to occur with the first phase. The phases have been numbered in the Proposed Development Plans for reference and not for intended construction sequencing. Depending on market conditions and potential timing of required off-site improvements, it may be necessary for the Applicant to combine phases, or construct phases out of the sequence shown on the plans.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.
Off-site roadway improvements will occur with this project. The improvements include paving and widening where necessary NE 252nd Avenue and NE 3rd Street, both of which are existing county roads providing access to the subject site. There will also be offsite utility construction for water and sanitary sewer, including work in Leadbetter Road.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.
- Geotechnical Report (Columbia West)
- Preliminary Stormwater Technical Information Report (AKS Engineering & Forestry (AKS))
- Transportation Impact Study (Kittleson & Associates)
- This SEPA Checklist (AKS Engineering & Forestry (AKS))
- Archaeological Pre-Determination (Applied Archaeological Research, Inc. (AAR))
- Critical Areas Reports and Wetland Buffer and Oak Mitigation Plan (Ecological Land Services (ELS))

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.
None known.

10. List any government approvals or permits that will be needed for your proposal, if known.

- Type III Preliminary Subdivision Approval
- Final Engineering Approval
- Preliminary Site Plan Approval
- Grading Permit
- Erosion Control Plan Approval
- Final Plat Approval
- SEPA Determination
- Critical Area Permit Approval
- Major Design Review Approval
- Fire Department Blasting 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 61 single-family attached lots, 41 single-family detached lots, six mixed-use lots containing 140 multifamily apartment units and ±30,250 square feet of commercial lots. Tracts for stormwater, open space, and critical area protection will be created with this project.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The site is addressed as 303 SE Leadbetter Road and 305 SE 252nd Avenue, Camas, WA 98607

Tax Lots: 177885-000 and 178175-000 in the NE and NW ¼, S35 and S34, 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)?

According to Clark County Geographic Information Systems (GIS), there are slopes between 15 and 25 percent on parcel 177885-000 and slopes between 25 and 40 percent on parcel 178175-000.

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

According to the Geotechnical Engineering Study, the subject site contains mostly Lauren very gravelly loam, Olympic Stoney Clay Loam, Vader Silt Loam, and a small pocket of Lauren loam along the north property boundary. These are generally soils that are not suitable for agriculture and the site is not being used for agricultural purposes.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

According to Clark County Geographic Information Systems (GIS), there are slopes between 15 and 25 percent on parcel 177885-000 and slopes between 25 and 40 percent on parcel 178175-000. The average slope across the site is less than 15 percent. A Geotechnical Engineering Study, prepared by Columbia West, dated October 17, 2023, notes that while there is a presence of steep slopes on site, the slopes do not meet the definition of a landslide hazard according to Camas Municipal Code, Section 16.59.

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. Due to the presence of shallow bedrock, blasting will also occur with the grading. 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 ±27.76 acres with estimated grading quantities of ±199,000 cubic yards of cut and ±68,000 cubic yards of fill. Fill material will come from on-site sources or approved off-site sources if necessary. Excess material needing to be hauled off-site will be taken to an approved location.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Yes, erosion is possible during construction in the form of silt transfer and dust blowoff. Stormwater and Erosion Control Plans will be prepared and implemented by the Applicant for the site improvement, which will meet or exceed the requirements imposed by the City of Camas Municipal Code (CMC) and the Washington State Department of Ecology (ECY).

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Approximately 21.03 acres of the site, ±58.3 percent, of the gross site area may be covered with impervious surfaces. This includes homes, multi-family buildings, a mixed-use buildings, driveways, streets and sidewalks, and parking areas.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

Stormwater and Erosion Control Plans will be prepared and implemented in accordance with CMC and ECY standards.

2. Air

i. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Construction equipment and vehicles and blasting 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.

a. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

Off-site sources of emissions or odor near the project site are exhaust emissions from vehicles traveling along the adjacent streets, and the surrounding farm properties. These sources are not anticipated to impact this project. There are no other known sources or emissions or odors that will impact the site.

b. Proposed measures to reduce or control emissions or other impacts to air, if any:

If necessary, water will be utilized for dust control as needed during the construction of the proposed site improvements. Emissions control measures for vehicles and equipment are regulated under CMC, ECY, and U.S. Environmental Protection Agency (EPA) standards. It is anticipated that all vehicles and equipment will comply with these regulations.

3. Water

a. Surface Water:

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

Ecological Land Services, Inc. (ELS), has prepared two Critical Areas Reports and a Wetland Buffer Modification & Mitigation for the site. Both reports were completed in May 2025, and collectively, the reports cover the entirety of the site. The reports identified multiple wetlands, Oregon white oaks, a stream, and two herbaceous balds within the project area. Those Critical Areas Reports are included in this application package. Wetland buffer modifications and critical area mitigation plans are identified in the Wetland Buffer Modification & Mitigation Plan. Refer to the Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan for additional information.

Lacamas Lake and the associate shoreline exist south of the site. Utilities and a pedestrian pathway will extend from the site to SE Leadbetter road just north of the lake and with the Medium Intensity shoreline designation.

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 occur within 200 feet of the described water. Work will include site grading and construction for lots, roads, and stormwater facilities, construction of homes, construction of a pedestrian path, and construction of utilities. No work will occur over or in the 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 the 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.

There is an existing well on-site that provides water service to parcel 178180-000. That water well will be retained with this project. The quantity of water withdrawn is unknown at this time. The planned project will not withdraw water from this well and will be connect to the City public water system.

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 any existing on-site septic systems. 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.

The subject site has two drainage basins for stormwater. Stormwater runoff generated in the southwest portion of the site will be collected and conveyed to stormwater vaults for mechanical treatment. Treated stormwater will be transported to a planned stormwater main, that will be located in the off-site utility access easement tract. Treated stormwater will be discharged directly into Lacamas Lake at existing discharge points using the large water body exemption for stormwater discharge. Stormwater runoff generated by the northeast portion of the site will be collected on-site and conveyed to stormwater vaults for mechanical treatment. Treated stormwater will be transferred to detention ponds for flow control, prior to being discharged to an existing stream and natural area in the northeast corner of the site and wetland in the center of the site. All stormwaters will be discharged at rates allowed by City of Camas. The stormwater system is designed per the Washington State Department of Ecology (ECY) 2024 *Stormwater Management Manual for Western Washington* (SWMMWW). Refer to the Preliminary Stormwater Technical Information Report (TIR) and Preliminary 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.

d. Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

The proposed project will not alter or affect the drainage patterns in the vicinity of the site.

e. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

The project will meet or exceed the CMC and ECY erosion control and stormwater standards. The stormwater generated by the proposed impervious surfaces will be collected, treated, and discharged at rates allowed per the City. Any spills will be immediately responded to, and appropriate remediation measures will be taken.

4. Plants

a. Check the types of vegetation found on the site:

X deciduous tree: alder, maple, aspen, other
X evergreen tree: fir, cedar, pine, other
X shrubs
X grass
____ pasture
____ crop or grain
____ Orchards, vineyards or other permanent crops.
X 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 critical areas and 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.

5. Himalayan Blackberry is found on and near the site. **Animals**

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Animals that are known to be on or near the site are rabbits, squirrels, rodents, snakes, hawks, songbirds, crows, bass, and trout.

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

b. List any threatened and endangered species known to be on or near the site.

According to the Washington State Department of Fish and Wildlife PHS, there are no mapped threatened or endangered species known to be on or near the site.

c. Is the site part of a migration route? If so, explain.

The site is located within what is commonly referred to as the Pacific Flyway. This Flyway is the general migratory route for various species of ducks, geese, and other migratory waterfowl. Neotropical birds, such as Robins, may seasonally utilize or be near the site.

d. Proposed measures to preserve or enhance wildlife, if any:

There are on-site critical areas that will be protected to the greatest extent practicable to provide habitat for wildlife. Mitigation for wetland and wetland buffer impacts are included in the Critical Areas Report and Mitigation Report. Signage and demarcation will be installed and maintained along the outer perimeter of the priority buffer to denote retaining the critical area and buffer in a natural state. Landscaping will be installed in the development's developed area and will provide potential for additional habitat.

e. List any invasive animal species known to be on or near the site.

No invasive animal species are known to be on or near the site.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Electricity and potentially natural gas will be used for the completed project, which will include standard residential uses such as heating or cooling, lighting, and other appliances.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No, it is not anticipated that the project will affect adjacent properties potential use of solar energy.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

All construction on-site will be designed to comply with the Washington State Energy Code and the adopted version of the International Building Code and City of Camas Municipal Code as applicable to this project.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

Heavy equipment and a variety of materials will be used to construct the project. Blasting of bedrock will also take place during site grading. The blasting will follow all local, state, and federal regulations. Other environmental hazards are limited to standard risks associated with construction and occupancy of the development.

1) Describe any known or possible contamination at the site from present or past uses.

There is no known contamination on the site from present or past uses. There are existing septic systems 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. Blasting materials will be temporarily stored on-site for bedrock blasting during site grading.

4) Describe special emergency services that might be required.

Special emergency services could be required if an accident related to the proposed blasting occurs. 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. 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, including blasting, 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, employees, 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, commercial, and multi-family, 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 and contractors will follow all required mitigation practices during blasting of bedrock. Restrict construction to hours allowed by the City of Camas (CMC 9.32.050(A)),

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The current use of the site is single family residential. Properties to the north are used as farms and single-family residential. South, east, and west, of the site are parcels used as park land and single family residential. 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 a house, two shops, and one shed.

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 Lower Density (LD-NS), North Shore Higher Density (HD-NS), North Shore Mixed Used (MX-NS), and North Shore Commercial (C-NS).

f. What is the current comprehensive plan designation of the site?

The current comprehensive plan designation is HD-NS, C-NS, MX-NS, and LD-NS.

g. If applicable, what is the current shoreline master program designation of the site?

The site will be served with utilities from SE Leadbetter Road, an off-site road to the south that is located in the Medium Intensity shoreline designation. A pedestrian path and existing utilities in SE Leadbetter Road will be extended north into the subject site through a utility and public access easement. The subject site location is outside any shoreline 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, Inc. (ELS), has prepared two Critical Areas Reports and a Wetland Buffer Modification & Mitigation for the site. Both reports were completed in May 2025, and collectively, the reports cover the entirety of the site. The reports identified multiple wetlands, Oregon white oaks, a stream, and two herbaceous balds within the project area. Those Critical Areas Reports are included in this application package. Wetland buffer modifications and critical area mitigation plans are identified in the Wetland Buffer Modification & Mitigation Plan. Refer to the Critical Areas Reports and Wetland Buffer Modification & Mitigation Plan for additional information.

i. Approximately how many people would reside or work in the completed project?

The Applicant proposes to subdivide two parcels into 61 single-family attached lots attached townhomes lots, 41 detached single-family detached lots, six mixed-use lots containing 140 multifamily apartment units and ±30,250 square feet of commercial lots. Tracts for stormwater, open space, and critical area protection will be created with this project. Assuming ±2.7 people per residence, ±653 people will reside in this project once the project is completed. The final users for the commercial use is on unknown at this time, so the number of people working in the completed project is unknown.

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, ±3 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, Preliminary Site Plan Review, and Preliminary and Final Engineering review processes.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

The proposed development includes 102 single family units and 140 multi-family units, for a total of 242 units. The proposed units will be middle-income units.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

The project will remove one middle-income dwelling unit.

c. Proposed measures to reduce or control housing impacts, if any:

The proposed project will provide a net increase of 241 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 35-foot maximum height allowed in the LD-NS zoning district, the 50-foot maximum height allowed in the HD-NS zoning district, or the 100-foot maximum height in the MX-NS zoning district and the C-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, mixed-use buildings, and multi-family buildings 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); commercial and multi-family lighting (building and parking lot 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 ±0.75 miles to the southeast
- Lacamas Park is located ±1.2 miles to the south.
- Fallen Leaf Park is located ±1.1 miles to the south.
- Lacamas Lake is located ±0.3 miles southwest.
- A trail network around Lacamas Lake is located directly south of the site.

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 completed by AAR, dated July 1, 2022, and November 15, 2024, there are structures on-site that are over 45 years old; however, these structures do 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.

Archaeological Predeterminations completed by AAR, dated July 1, 2022, and November 15, 2024 and according to AAR, no artifacts or evidence for archaeological resources were found on-site. AAR recommends that no further archaeological work is needed.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Per the Archaeological predeterminations, 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 10 meters apart and 37 test pits were dug on-site.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

The proposed development will comply with DAHP requirements and obtain all necessary permits from DAHP. In the event that archaeological materials, Indian cairns, or human remains are encountered during the development of the properties, all construction activities will stop in the vicinity of the finds. The Applicant will then immediately notify the planning official and the Washington State DAHP. Procedures outlined under Washington Administrative Code (WAC) 24-28-020 will be followed and work will not resume until mitigation measures have been agreed upon.

14. Transportation

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

The subject site is served by NE 3rd Street and NE 252nd Avenue. Four public roads and three private road tracts will be constructed with this project. North Shore Boulevard will not be constructed with this project, but the right-of-way for North Shore Boulevard will be dedicated with this project. North Shore Boulevard will run across the site, from the northwest corner of the site to the southeast corner of the site. The development will also provide local streets throughout the site. Local streets that are planned with the project include N 56th Avenue, N 55th Avenue, and N 54th Avenue. Half-width improvements to N Mills Street will also be constructed with this project. Three private street tracts are also planned to be constructed with this project.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

The nearest transit stop is about ±2.25 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 planned project includes single-family and multi-family units. Each single-family lot will be provided with a minimum of two parking spaces (1 driveway space and 1 garage space) along with 19 additional stalls located in tracts throughout the development. The multi-family and mixed-use lots will provide 442 parking stalls for residents and visitors.

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 four new roadways to provide access to the lots within the development. The right-of-way dedication for North Shore Boulevard will also occur with this project, but North Shore Boulevard will be constructed at a later date by the City of Camas. The dedicated right-of-way for North Shore Boulevard will vary between 67 feet and 88 feet. The planned right-of-way varies in width throughout the site because critical areas, and an off-site barn impacts the ability for North Shore Boulevard to be dedicated at 88-feet-wide throughout the entirety of the site. In the southeast of the site, closer to the mixed use buildings, the right-of-way for North Shore Boulevard will be dedicated to 88-feet-wide. As North Shore Boulevard travels northwestwardly, its right-of-way shrinks down to 67 feet. This reduction in size is needed to avoid wetland and Oregon white oak impacts, and to avoid an off-site barn that is approximately eight feet north of the northern property line. N 57th Avenue, N 56th Avenue, N 55th Avenue, and N 54th Avenue will be constructed with a 54-foot-wide right-of-way, a 28-foot-wide paved surface, and a 6-foot-wide planter strip and 6-foot-wide sidewalk on both sides of the road.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

The proposed project will not use and does not occur in the immediate vicinity of water, rail, or air transportation.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

The Applicant's Transportation Engineering Consultant, Kittelson & Associates, prepared a Transportation Impact Study (TIS). The TIS used an assumed subdivision with up to 41 detached single-family lots, 61 townhome lots and apartment units. Trip generation was calculated using the *ITE Trip Generation Manual 11th Edition*. The TIS states the proposed development will generate 1,831 average daily trips (ADT) with 125 a.m. peak hour trips and 157 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 proportionate share fees and transportation impact fees to be paid to mitigate the impacts of 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 242 residential units and commercial space 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 wells 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 water into the site from SE Leadbetter Road and loop the water through the development to provide service to the lots. A force sewer main is planned throughout the site. Each lot will have its own service lateral and grinder pump. The planned force main will connect to the existing force main in SE Leadbetter Road through the planned utility/public access easement tract, before being conveyed to the Leadbetter Pump Station to the east. The development will also have to extend three-phase power lines into the development to provided 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: 07/22/2025

DEPARTMENT OF NATURAL RESOURCES

PACIFIC CASCADE REGION
601 BOND ROAD
PO BOX 280
CASTLE ROCK, WA 98611

360-577-2025
TRS 711
PACIFIC-CASCADE.REGION@DNR.WA.GOV
WWW.DNR.WA.GOV

November 7th, 2025

City of Camas
Attn: Robert Maul – Planning Manager and Responsible Official
616 NE Fourth Avenue
Camas, WA 98607

Re: SUB25-1008 Village at North Shore

Dear Mr. Maul,

Thank you for the opportunity to comment on the Determination of Non-Significance (DNS) for SUB25-1008 Village at North Shore within the city of Camas, section 34 of township 02 north, Range 03 West. We have reviewed the DNS and Environmental Checklist and have the following initial comment.

As indicated in the Environmental Checklist trees exist on site and will be removed from the site. If merchantable timber is removed/harvested as part of the proposal or future development, a Forest Practices Application will be required (RCW 76.09 and WAC 222). The FPA will need to meet the requirements of the Forest Practices Act and its rules. If the applicant would like to meet on-site with our local Forest Practices Forester, call our Pacific Cascade Region office at (360) 577-2025.

Sincerely,

Alex Lilla

Alex Lilla

DNR Forest Practices Coordinator
Pacific Cascade Region
602 Bond Road
Castle Rock, WA 98611

c: Marc Ratcliff, Forest Practices District Manager
Michael Rutledge
John Tapley, Forest Practices Office Forester
SEPA Center

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Southwest Region Office
PO Box 47775, Olympia, WA 98504-7775 • 360-407-6300

November 19, 2025

Robert Maul, Planning Manager
City of Camas
Community Development Department
616 Northeast Fourth Avenue
Camas, WA 98607

Dear Robert Maul:

Thank you for the opportunity to comment on the determination of non-significance for the Village at North Shore Project (SUB25-1008) located at 313 Southeast Leadbetter Road as proposed by Michael Andreotti. The Department of Ecology (Ecology) reviewed the environmental checklist and has the following comment(s):

HAZARDOUS WASTE & TOXICS REDUCTION: Garret Peck (564) 669-0836

The applicant proposes to demolish an existing structure(s). In addition to any required asbestos abatement procedures, the applicant should ensure that any other potentially dangerous or hazardous materials present, such as PCB-containing lamp ballasts, fluorescent lamps, and wall thermostats containing mercury, are removed prior to demolition. It is important that these materials and wastes are removed and appropriately managed prior to demolition. It is equally important that demolition debris is also safely managed, especially if it contains painted wood or concrete, treated wood, or other possibly dangerous materials.

Please review the "Dangerous Waste Rules for Demolition, Construction, and Renovation Wastes," posted at Ecology's website, https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Dangerous-waste-guidance/Common-dangerous-waste/Construction-and-demolition. The applicant may also contact Katy Harvey of Ecology's Hazardous Waste and Toxics Reduction Program at katy.harvey@ecy.wa.gov for more information about safely handling dangerous wastes and demolition debris.

SOLID WASTE MANAGEMENT: Derek Rockett (360) 995-3176

All grading and filling of land must utilize only clean fill. All other materials may be considered solid waste and permit approval may be required from your local jurisdictional health department prior to filling. All removed debris resulting from this project must be disposed of at an approved site. Contact the local jurisdictional health department or Department of Ecology for proper management of these materials.

Ecology's comments are based upon information provided by the lead agency. As such, they may not constitute an exhaustive list of the various authorizations that must be obtained or legal requirements that must be fulfilled in order to carry out the proposed action.

If you have any questions or would like to respond to these comments, please contact the appropriate reviewing staff listed above.

Department of Ecology
Southwest Regional Office

(JKT:202504668)

cc: Garret Peck, HWTR
Derek Rockett, SWM

Allyson Brooks Ph.D., Director
State Historic Preservation Officer

November 20, 2025

Robert Maul
City of Camas

In future correspondence please refer to:
Project Tracking Code: 2024-09-06888
Property: Village at North Shore (SUB25-1008)
Re: SEPA – Survey Recommended

Dear Robert Maul:

Thank you for contacting the Washington State Historic Preservation Officer and Department of Archaeology and Historic Preservation (DAHP), and for providing documentation regarding the above-referenced project. As a result of our review, our professional opinion is that the project area has the potential to contain archaeological resources. The project is in an area determined to be at “Very High” risk for containing archaeology according to the DAHP Archaeological Risk Assessment Model and is in proximity to fresh water sources, an environmental factor that can increase the risk of an inadvertent discovery. Given the scale of proposed ground disturbance, we recommend a professional archaeological survey to assess the additional tax parcel within the project area that has not yet been tested as part of previous predetermination survey efforts. We also recommend continued consultation with the concerned Tribes' cultural committees and staff regarding cultural resource issues.

These comments are based on the information available at the time of this review and on behalf of the State Historic Preservation Officer in conformance with Washington State law. Should additional information become available, our assessment may be revised.

Thank you for the opportunity to comment on this project and we look forward to receiving the survey report. The survey report should be uploaded directly into the DAHP Online WISAARD system by the cultural resource consultant to expedite DAHP review. Please ensure that the DAHP Project Number (a.k.a. Project Tracking Code) is shared with any hired cultural resource consultants and is attached to any communications or submitted reports. Should you have any questions, please feel free to contact me.

Sincerely,

Jessica Stone, Ph.D.
Assistant State Archaeologist
(360) 890-2633
jessica.stone@dahp.wa.gov

State of Washington
DEPARTMENT OF FISH AND WILDLIFE
Southwest Region 5 • 5525 South 11th Street, Ridgefield, WA 98642
Telephone: (360) 696-6211

November 20, 2025

City of Camas, SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, WA 98607

Dear SEPA Official:

Thank you for the opportunity to comment on the **SUB25-1008: Village at North Shore** project. The Washington Department of Fish and Wildlife (WDFW) has reviewed this proposal and offers the following comments for your consideration.

Our primary concerns for this project are the impacts to the critical areas on site, including the riparian area, herbaceous bald habitat, and the Oregon white oak (OWO) trees proposed for removal. We offer our most up to date recommendations for determining riparian management zones for streams and guidance for Oregon white oak mitigation.

Riparian Habitat

In 2020, WDFW published updated riparian ecosystem management recommendations, *Riparian Ecosystems, Volume 1: Science Synthesis and Management Implications* (Quinn et al. 2020) and *Riparian Ecosystems, Volume 2: Management Recommendations* (Rentz et al. 2020). WDFW recommends that riparian buffers be sized based on Site Potential Tree Height at 200 years (SPTH200) to ensure the ecosystem maintains the greatest functionality. Riparian ecological functions include, but are not limited to: stream morphology evolution, erosion and sedimentation processes, fish and wildlife habitat availability, wood recruitment, stream temperature stabilization, shading, pollutant removal, and nutrient cycling (Quinn et al. 2020). These new recommendations do not differentiate between buffer sizing for non-fish and fish-bearing streams because they all connect to and impact one another. This is particularly true for the transport of nutrients and pollutants, which are easily moved by water.

The site plan for this project notes that the riparian buffer for "Stream A" was reduced from 110 ft to 82.5 ft per CMC 16.53.050(C)(1). The SPTH200 where Stream A is located is 225 ft, corresponding to the height of mature Douglas-fir. Accordingly, **we recommend that a 225-ft riparian buffer, and at minimum, a 100-ft buffer** should be implemented**.** A buffer width of 100 feet or more could be expected to achieve the target of 95% pollution removal for most pollutants. The 225-ft buffer corresponding to SPTH200 could be expected to preserve all ecological functions and thereby meet the goal of ensuring no net loss of ecological function.

Herbaceous Balds

The project proponent has identified two herbaceous balds on site, as documented in the Critical Areas Report ("CAR") prepared by Ecological Land Services (ELS) in May 2025, as well as their Wetland Buffer Modification & Mitigation Plan ("Mitigation Plan") prepared by ELS in July 2025. As referenced in these reports, WDFW considers herbaceous balds to be a type of priority habitat per our agency's Priority Habitats and Species (PHS) List. Additionally, the Washington Department of Natural Resources Natural Heritage Program classifies the conservation status of North Pacific Herbaceous Bald & Bluffs as "vulnerable" (Rocchio & Crawford 2015). The unique morphology of herbaceous balds, which is based on a shallow soil layer, results in these habitats supporting a high diversity of plant species that are often distinct from the surrounding woodland landscape. This habitat and vegetation heterogeneity is critical for supporting a diversity of animal life, including invertebrate pollinators, which have evolved to specialize in this habitat niche. We commend the consultant for identifying this lesser-known but critical habitat.

The unique geological and biological features of herbaceous balds make these habitat conditions exceedingly difficult, or arguably impossible, to replicate. For this reason, avoidance of impacts to these habitats is likely the only way to ensure no net loss of ecological function. We support the applicant's proposal to avoid impacts to the herbaceous bald near "Oak Cluster 1" and part of the bald near "Oak Cluster 2", and to install fencing, educational signage, and establish a conservation covenant or similar protective mechanism around these areas. Additionally, **we strongly advise that all alternatives be considered that could route construction away from the entirety of the herbaceous bald near "Oak Cluster 2"**.

If impacts to all herbaceous bald areas cannot be entirely avoided, as we advise, further discussion will be necessary to determine how such impacts could be adequately addressed through compensatory mitigation. Enhancement of the remaining herbaceous bald habitats, including the removal of invasive species, would be beneficial to these habitats, but such enhancement at a ratio of 1:1 for lost habitat would not be sufficient to prevent loss of ecological function. Furthermore, area enhanced as a means of mitigating for the loss of herbaceous bald habitat should not also be counted as a means of mitigating for loss of oak habitat. WDFW is available for further consultation regarding both avoidance and mitigation.

Oregon White Oak Woodlands

The project proponent has identified two clusters of Oregon white oaks (OWO), consisting of 20 trees, within the project site. As referenced in the CAR and Mitigation Plan, WDFW considers Oregon white oak (OWO) woodlands to be a type of priority habitat even a single OWO tree can qualify as OWO woodland habitat if located in an urban or urbanizing area. We support the decision to retain five of these trees but advise that the project proponent consider alternatives to avoid impacts to all OWOs on site, especially since they coincide with herbaceous bald habitat.

WDFW's *Best management practices for mitigating impacts to Oregon white oak habitat* ("WDFW Oak Guidance") (Nolan & Azerrad 2024) provides guidance for avoiding, minimizing, and mitigating for impacts to OWO. We commend the project proponent for following the mitigation sequence outlined in the WDFW Oak Guidance by proposing a nuanced plan for both physical and temporal mitigation, with a focus on conducting habitat enhancement (temporal mitigation) on site.

The Mitigation Plan describes a strategy to enhance the remaining habitat via the removal of invasive species and installation of native species appropriate to both OWO and herbaceous bald vegetation communities. WDFW supports this approach to tailor the planting plan to this unique habitat, which is distinct from other OWO woodlands.

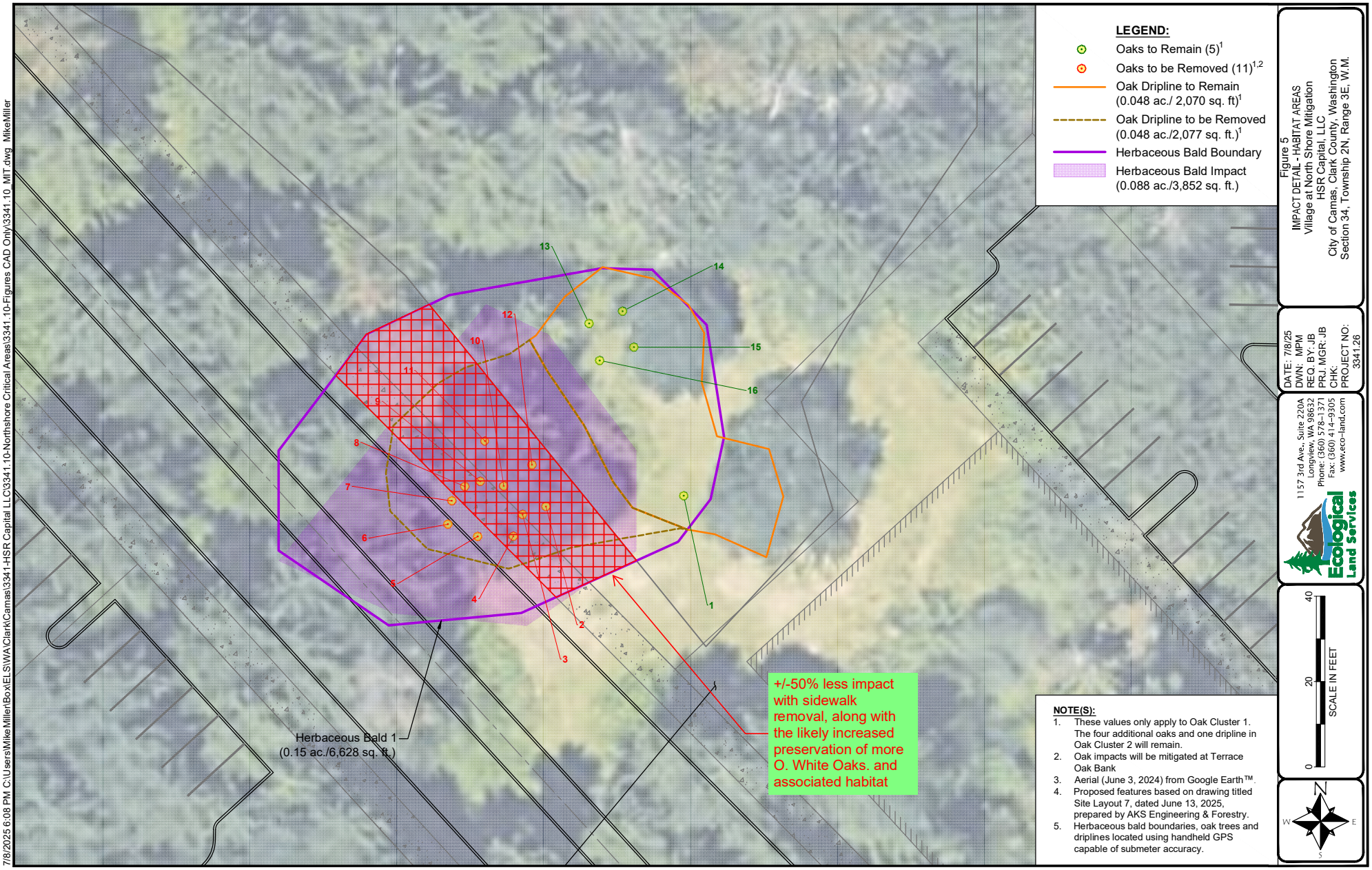
We advise that precautions be taken to avoid and minimize impacts to the oak trees' root systems during construction, especially the construction of North Shore Blvd. The Oregon State University Extension Service offers a useful resource on this topic: *Tree Protection Construction and Development Sites: A Best Management Practices Guidebook for the Pacific Northwest* (OSU 2009). We also recommend consultation with an ISA-certified arborist if any of the trees show declining health post-construction.

WDFW assistance is available upon request for guidance on avoiding and minimizing impacts to priority habitats and species, including herbaceous balds and OWO habitat.

Sincerely,

Joy Peplinski

Joy Peplinski, Habitat Biologist
Washington Department of Fish & Wildlife



7/8/2025 6:08 PM C:\Users\MikeMiller\Box\ELS\WA\Clark\Camas\3341-HSR Capital LLC\3341.10-Northshore Critical Areas\3341.10-Figures CAD Only\3341.10_MIT.dwg MikeMiller

TABLE 6: 2045 VOLUME FORECASTS

PEAK HOUR	TURN MOVEMENT VOLUMES					
	NBL	NBR	EBT	EBR	WBL	WBT
A.M. PEAK HOUR	170	540	685	175	190	455
P.M. PEAK HOUR	150	270	930	290	185	405

FUTURE SCENARIO OPERATIONS ANALYSIS

The following section details the operational results and geometric needs for each future scenario.

SCENARIO 1: NO BUILD

This scenario shows the operational results of the intersection if no mitigations were made at the intersection in the design year.

No Build traffic operations at the study intersection was determined for the a.m. and p.m. peak hours based on the Highway Capacity Manual (HCM) 6th Edition methodology.[4] The results were then compared with the City of Camas' minimum acceptable operating standards. Table 7 lists the estimated v/c ratio, delay, and LOS of the study intersection. HCM 6 worksheets are included in the appendix. Table 8 shows the 95th percentile queuing that would be present under these conditions. Queuing information is obtained by averaging queues for 10 runs of SimTraffic (11th edition).

TABLE 7: SCENARIO 1 (NO BUILD) INTERSECTION OPERATIONS

INTERSECTION	OPERATING STANDARD	AM PEAK HOUR[A]			PM PEAK HOUR[A]		
		V/C RATIO	DELAY (SECS)	LOS	V/C RATIO	DELAY (SECS)	LOS
LAKE ROAD/SIERRA STREET	LOS D	0.29/2.83	11.8/>100	B/F	0.36/3.63	15.4/>100	C/F

[A] Results shown for two way stop controlled intersection are shown as major approach results/minor approach results.

[4] Highway Capacity Manual, 6th Edition, Transportation Research Board, 2016.

Carey Certo

From: Rick Marshall <camasrick@gmail.com>
Sent: Wednesday, November 26, 2025 1:07 PM
To: Community Development Email
Cc: andreottim@aks-eng.com
Subject: North Shore Village

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Hi Madeline,

I just wanted to follow up on our conversation from Monday. I had a chance to look more at the development materials for this subdivision and it looks pretty solid. I'm excited about the combined public access and emergency vehicle access down to the boat launch area. We'll want to make sure this access road is well graded but this should be a really valuable amenity for the residents. Also, based on the lot sizes, it's likely that this will be one of our more affordable developments and possibly offer up some housing sizes that are not provided in other developments.

One possible concern is the lack of protected bike lanes along North Shore Blvd. I spoke with Michael Andreotti and he indicated that this development was not asking for on-street parking along North Shore Blvd. This makes sense as access is limited in order to improve traffic flow and off street parking is planned for commercial areas. The problem is that the publicly vetted and approved North Shore Blvd plan, detailed in the City's North Shore Design Manual, uses parked cars both to create protected bike lanes and to calm traffic in order to reduce speeds and keep motorists safer. My understanding is that painted bike lanes cause 2 problems: 1) They increase lane width and the perceived clear zone which encourages speeding and adds danger to motorists and to other users at intersections. 2) And likely the more fatal flaw, they do not provide adequate protection for bicyclists. This results in low usage and encourages bicyclists to use sidewalks instead, which can create conflicts between pedestrians and bicyclists.

A possible solution is to move the bike lane adjacent to the sidewalk and protected from traffic by the planting strip and street trees. Well grown street trees make excellent and attractive bollards, providing both perceived and actual protection from vehicles. This would require neither expanding the ROW width nor additional paving. 10' of sidewalk and bike lane is wide enough for maintenance vehicles or in extreme instances, emergency vehicles. Bicyclists and pedestrians are much easier to reroute than traffic when needed. Reducing the curb to curb lane width would also have the benefit of calming traffic.

Obviously, it would be nice to see consistent bike and pedestrian facilities along the entirety of North Shore Blvd. This will be the main biking route to access future businesses and parks in the adjacent development as well as schools, Lacamas Lake, and connections to Downtown and East Vancouver. Biking and pedestrian facilities will only be used up to their least safe stretch so it's important to provide adequate safety along an entire route.

Thanks for giving the public an opportunity to comment. I look forward to learning more about this development. Thanks!

Rick Marshall
Camas, WA

Carey Certo

From: gwendolyntdavis <gwendolyntdavis@proton.me>
Sent: Monday, December 1, 2025 12:45 PM
To: Community Development Email
Subject: Protect the bike lands and follow the bicycle/pedestrian transportation plan for the North Shore.

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Hello,

I'm concerned that the Developer and the City are not following the North Shore Design Manual when designing the Village at North Shore Transportation Plan. The public worked hard on that plan. Don't ignore our wishes! While this looks like a cool development. Please make sure to keep bicyclists and pedestrians safe! Also, make sure North Shore Blvd doesn't turn into a high speed hwy. Do everything you can to keep speeds down! Speeds on city streets in Camas are outrageous as it is! It is quite concerning from a neighborhood standpoint. I enjoy riding bikes and walking along throughout Camas/Washougal, including along North Shore Blvd.

Thank you!

Gwen Davis
509-460-1735
1205 NW 8th Ave.

Sent with Proton Mail secure email.

Carey Certo

From: Kim Sogge <kimsogge@gmail.com>
Sent: Monday, December 1, 2025 2:20 PM
To: Community Development Email
Subject: Village at North Shore Public Comment

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

I'm genuinely excited to see the North Shore take shape. The growth and opportunity in this area were part of what drew me to Camas, and I look forward to being able to walk or bike up there as it develops. However, I'm concerned that the current proposal for the Village at North Shore Transportation Plan does not fully reflect the transportation and safety requirements outlined in the North Shore Design Standards.

Those standards were created with significant community input and clearly call for protected bike facilities, safe pedestrian crossings, and roadway designs that keep vehicle speeds appropriate. These elements are critical for residents moving between homes, schools, parks, and future commercial areas. Without them, everyday travel becomes more stressful and less safe. Given the City's commitment to resident safety and well-being, ensuring that new infrastructure supports all users should be a priority.

Because this project sets the foundation for the entire North Shore area, it is essential that the adopted standards guide decisions now. Painted bike lanes and narrow sidewalks along major corridors do not align with what the community supported and miss a rare chance to build safe streets from the start, rather than retrofitting later.

I respectfully ask that the City ensure the approved design standards are fully applied to this project, especially the protected bike and pedestrian elements that make the area safe, functional, and welcoming for everyone.

Thank you,

Kim Sogge

Camas Resident

Carey Certo

From: Cassi Marshall <cassi.r.marshall@gmail.com>
Sent: Monday, December 1, 2025 9:01 PM
To: Community Development Email
Subject: Village at North Shore Hearing Public Comment

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Dear Hearings Examiner and Community Development Team --

I'm excited for the North Shore to come to life with housing, commercial amenities, and safe transit routes and trails. It's going to be phenomenal! I do, however, have concerns that the North Shore Design Standards that were established after an extensive public process have not been fully considered and implemented in the design currently up for approval at this hearing.

The approved NS Design Standards show protected bike and pedestrian infrastructure as well as enhanced crosswalks for the convenience and safety of all users -- walkers, rollers and automobile drivers included. It also calls for fairly specific Site Development Guidelines for each land use type, which do not seem to be consistently applied in this application (parking lots, green space focus, etc.)

It is my understanding that the NS Design Standards were developed because the community realized that the North Shore is a unique place. Often, public input sessions for this type of planning are not well attended -- but large crowds came to give input on the North Shore planning. Different standards were set for this area because of its setting, adjacency to Legacy Lands and Lacamas Lake, and the fact that it is largely undeveloped -- so a chance to create planned, cohesive development and infrastructure on a mostly blank slate. The standards are great! Nice work, Camas.

I also thought the design standards were supposed to make developers' work easier and approvals quicker by providing clear and consistent standards throughout the area -- eliminating the need to 'match up' standards at property boundaries, because that was already set. For that to work, the standards need to be followed very closely.

We have this one chance to get the infrastructure and design right. If any portion of the main roads isn't safe for all users, then the functionality of the entire project is weakened. The approved plan did not allow for curb-tight sidewalks on major roads, nor painted-only bike lanes -- neither is fun to use, and more importantly, not safe. Neither discourages too-fast car speeds, which protect drivers and all users. And since retrofitting streets is always difficult and expensive, this is an incredible opportunity to create functional, safe, and desirable routes at the time of new construction.

As one resident who has participated in many hours of Legacy Lands Committee, Open House, and Parks Commission meetings, I can say for certain that the public will care about proposed projects aligning with the approved design standards. I think that care is extremely positive. There are many of us who are truly excited for these types of projects that will allow a whole new crop of residents access to

incredible trails and natural spaces, and connect them to their schools, new and existing Camas businesses and amenities, and their neighbors. We just want that access to be safe and desirable -- the same connectivity and thoughtful design that we want for all of our neighborhoods. But this particular area actually does have the design standards to back those wishes.

Thank you for your consideration.
Cassi Marshall
Camas resident

Carey Certo

From: Robert Maul
Sent: Friday, February 6, 2026 10:15 AM
To: Madeline Coulter; Anita Ashton; Carey Certo; Curleigh (Jim) Carothers
Subject: FW: North Shore Bike & Pedestrian
Attachments: Village at North Shore Hearing 12.1.25 - Google Docs.pdf

From: Cassi Marshall <cassi.r.marshall@gmail.com>
Sent: Friday, February 6, 2026 8:01 AM
To: City Clerk <cityclerk@cityofcamas.us>; City Council Members (GRP) <CityCouncilGRP@cityofcamas.us>; Administration Email <administration@cityofcamas.us>
Cc: Doug Quinn <DQuinn@cityofcamas.us>; Alan Peters <APeters@cityofcamas.us>; Robert Maul <RMaul@cityofcamas.us>; Madeline Coulter <mcoulter@cityofcamas.us>; Chris Witkowski <CWitkowski@cityofcamas.us>; Curleigh (Jim) Carothers <jcarothers@cityofcamas.us>; Scott Collins <SCollins@cityofcamas.us>; Bryan Rachal <BRachal@cityofcamas.us>
Subject: North Shore Bike & Pedestrian

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Pedestrian & Bike Infrastructure in North Shore development proposals

Good Morning, Council & Mayor –

I know that at least two proposals for development on North Shore properties are currently working their way through the City processes. It is my understanding that the HSR project (Village at North Shore) will go through a hearings examiner, but you as Council will vote on the approval of a development agreement with SunCal. I'm contacting you now to ask that you give serious consideration to the bike and pedestrian infrastructure proposed for any North Shore projects that come before you.

The public process undertaken by the City to gather input for this subarea plan was impressive, and the North Shore Subarea Design Manual is phenomenal – so first, kudos to staff, council, volunteer committee members, consultants, and the public for the tremendous work done from 2019-2023. I especially appreciate that the manual is designed for public consumption, with informative drawings, descriptions and photos. Thank you.

There was significant input prioritizing a variety of infrastructure to support walking and biking options. The plan's Vision Statement includes, "Cluster uses for a walkable community… so residents can meet daily needs without driving. Use sidewalks, pedestrian trails and bike paths to connect residents to neighborhood destinations." The North Shore Subarea Plan states, "Provide a multimodal trail network along public rights-of-way to provide daily commute and recreation options and connect to the larger regional trail system," and "Balance the rural character of roadways with the addition of traffic calming features and upgraded pedestrian and bicycle facilities to support multimodal travel," and "Incorporate secure bicycle parking and storage to promote non-motorized travel and encourage modeshift." (p. 23) Not to be overly formal in referencing the documents, but the input and resulting planning guidelines show *really* strong support for safe, convenient, usable infrastructure to support walking and biking as viable transit options.

Camas has a chance with these developments to create state-of-the-art infrastructure. It's a blank slate, which is an exciting opportunity – and since infrastructure retrofits are expensive and incredibly disruptive, a decision for design that will meet residents' needs for a very long time is financially prudent as well. If we actually prioritize options for pedestrians and bikes (and wheelchairs, strollers, scooters – all the wheels), we can make a significant dent in other costs as well, like parking, congestion, pollution etc. When kids can safely walk and bike to school, and community members and visitors can pedal to recreation sites and commercial establishments, it's a win for the walkers, the bikers and the drivers. We can also make meaningful strides toward our emissions reduction goals, have cleaner air, and promote improved health for all our residents. So many wins.

- Please make sure that current, best-practice safety design standards are used throughout the North Shore street network. There are numerous resources – like this 2025 guide published by the National Association of City Transportation Officials (NACTO).
- Please require plans to include buffers between the fast-moving cars and the bikers and pedestrians.
- Please ensure that traffic calming, enhanced pedestrian crossings, and protected bike infrastructure intersections are included consistently.
- Please consider how transit fits into these plans, since the recent C-Tran presentation at C-W Chamber noted future possible lines within North Shore.
- And please make sure that these qualities are consistent throughout the new development – that they flow smoothly between the properties and developments.

This planning does not have to cost more, nor take up more right-of-way space. It just needs to be done thoughtfully, and in alignment with data-backed best practices. And if done right, the entire development will be more desirable and successful.

It has been some time since the original plans were shared with the public, so I'll be optimistic that these changes may already be in the works. But my concern is that if they have not, the community will not have sufficient notice to review and understand the changes nor prepare to comment, and that a weakening of the public-supported, council-approved subarea plan could be made in one quick vote. I'm pretty sure the community would favor taking a little bit of extra time to get the right outcome on such huge investments.

I know this is already a very long communication in your very full inboxes (sorry), but I'll also attach the comment I prepared for the scheduled-then-cancelled Hearings Examiner meeting in early December for the HSR proposal, since the concerns are similar.

If you've read this far, thank you for your time and consideration. You deserve a cute dog biking pic.



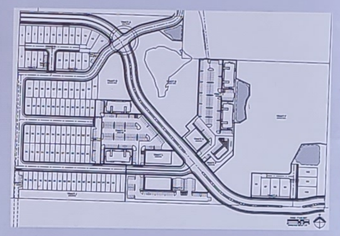
– Cassi

Cassi Marshall
Camas, WA

PROPOSED DEVELOPMENT

Village at North Shore

36.04 Acres
108 Lot Subdivision & Site Plan



Madeline Coulter, City of Camas
(360) 817-1568

PUBLIC HEARING REQUIRED:
October 13, 2026 at 4:00 p.m.

PERMITS: Type III Subdivision and Preliminary Site Plan

APPLICANT: HSR Dev – Mills, LLC
CONTACT NO: (503) 936-8514


PROPOSED DEVELOPMENT
Village at North Shore
36.04 Acres
108 Lot Subdivision & Site Plan
Madeline Coulter, City of Camas
(360) 817-1568
PUBLIC HEARING REQUIRED:
October 13, 2026 at 4:00 p.m.
PERMITS: Type III Subdivision and Preliminary Site Plan
APPLICANT: HSR Dev - Mills, LLC
CONTACT NO.(503) 934-8114

In re: Village at North Shore

) NO. SUB25-1008
)
) AFFIDAVIT OF MAILING
)
)
)
)
)
Respondent.)

STATE OF WASHINGTON)
) ss.
CLARK COUNTY)

I, Carey Certo, on oath says:

I, Carey Certo, on September 23, 2026, 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 24th day of September, 2026.

Aireanna Baldwin
Notary Public
State of Washington
My Appointment Expires 10/1/2028
Commission Number 183848

Aireanna Baldwin
Notary Public in and for the State of Washington, residing at Clark County
My appointment expires: 10/1/2028

LACAMAS HERITAGE PROPERTIES LLC
320 NE 257TH AVE
CAMAS, WA 98607

LACAMAS HERITAGE PROPERTIES LLC
320 NE 257TH AVE
CAMAS, WA 98607

MILLS FAMILY LLC
PO BOX 100
MT HOOD, OR 97041

HSR DEV - MILLS LLC
500 E BROADWAY ST #120
VANCOUVER, WA 98660

LACAMAS HERITAGE PROPERTIES LLC
320 NE 257TH AVE
CAMAS, WA 98607

CITY OF CAMAS
616 NE 4TH AVE
CAMAS, WA 98607

ICG CAMAS 252ND LLC
500 E BROADWAY, STE 120
VANCOUVER, WA 98660

ICG CAMAS 252ND LLC
500 E BROADWAY, STE 120
VANCOUVER, WA 98660

LOPEZ EDUARDO & VILLARREAL ELISAMA
211 SE 252ND AVE
CAMAS, WA 98607

LACAMAS HILLS OWNERS ASSOCIATION
8815 122ND AVE NE STE 200
KIRKLAND, WA 98033

NOTICE OF PUBLIC HEARING
Village at North Shore
(File no. SUB25-1008)

A public hearing will be held on **October 13, 2026, at 4 p.m.** or soon thereafter, before the City's Hearings Examiner to consider the Preliminary Plat application for the Village at North Shore. The public hearing will be held remotely and in person at city hall. The applicant proposes to construct 102 attached and detached single-family residential lots and six mixed-use lots containing buildings with apartment units and commercial space. The +/-36.04-acre site is zoned North Shore Mixed Use (MX-NS), North Shore Higher Density Residential (HD-NS), NorthShore Lower Density Residential (LD-NS), and North Shore Commercial (C-NS) in the City of Camas. The site is located at 313 SE Leadbetter Road and 305 SE 252nd Avenue. The parcels are identified as 177885000 of the NE ¼, Section 34, Township 2 North, Range 3 East, of the Willamette Meridian and 178175000 of NW 1/4 of Section 35, Township 2 North, Range 3 East, of the Willamette Meridian. The application was determined technically complete on August 26, 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 Coulter, 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.

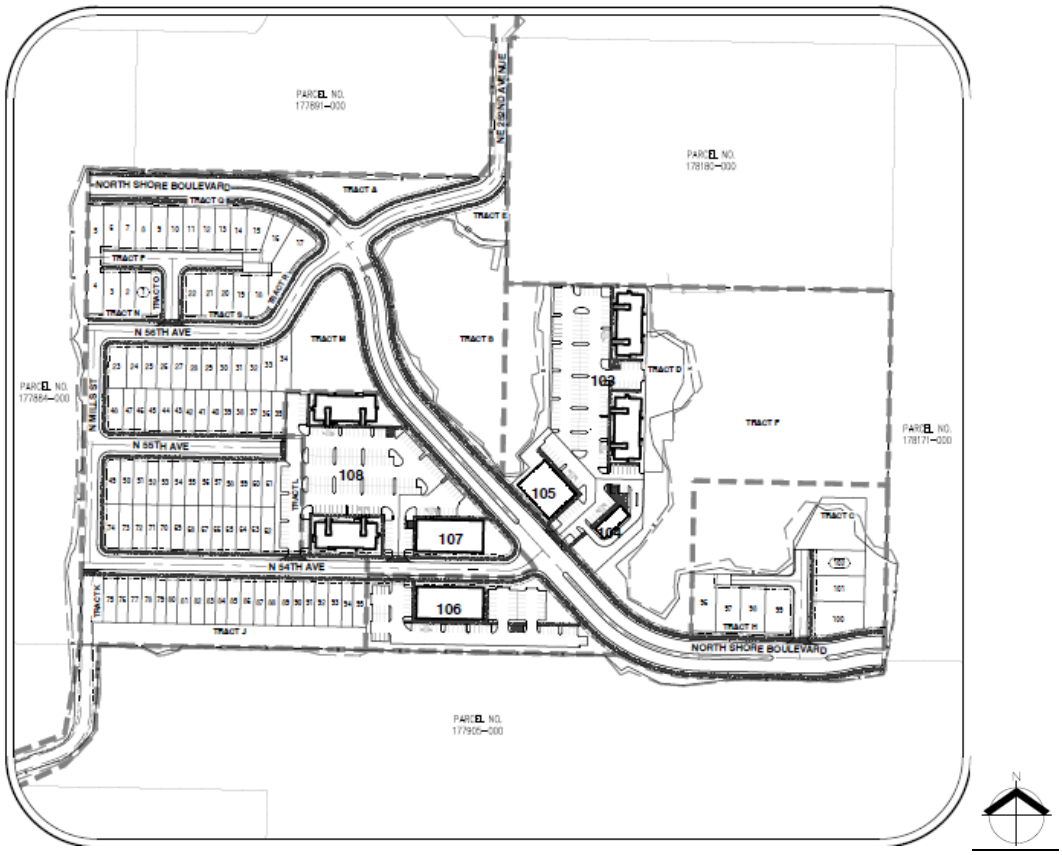
Application Materials: The application included the following: narrative, preliminary site plan, pre-application meeting notes, preliminary geotechnical report, preliminary stormwater plan, SEPA checklist, critical areas report, mitigation plan, transportation impact study, tree survey, as required for 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 September 24, 2026 Legal Publication #1128130
Posted at Camas City Hall, Camas Library, City of Camas website at: http://www.cityofcamas.us
Mailed to property owners within 300-feet on September 23, 2026

Village at North Shore
Preliminary Site Plan





VICINITY MAP
N.T.S.

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Village at North Shore
(File no. SUB25-1008)

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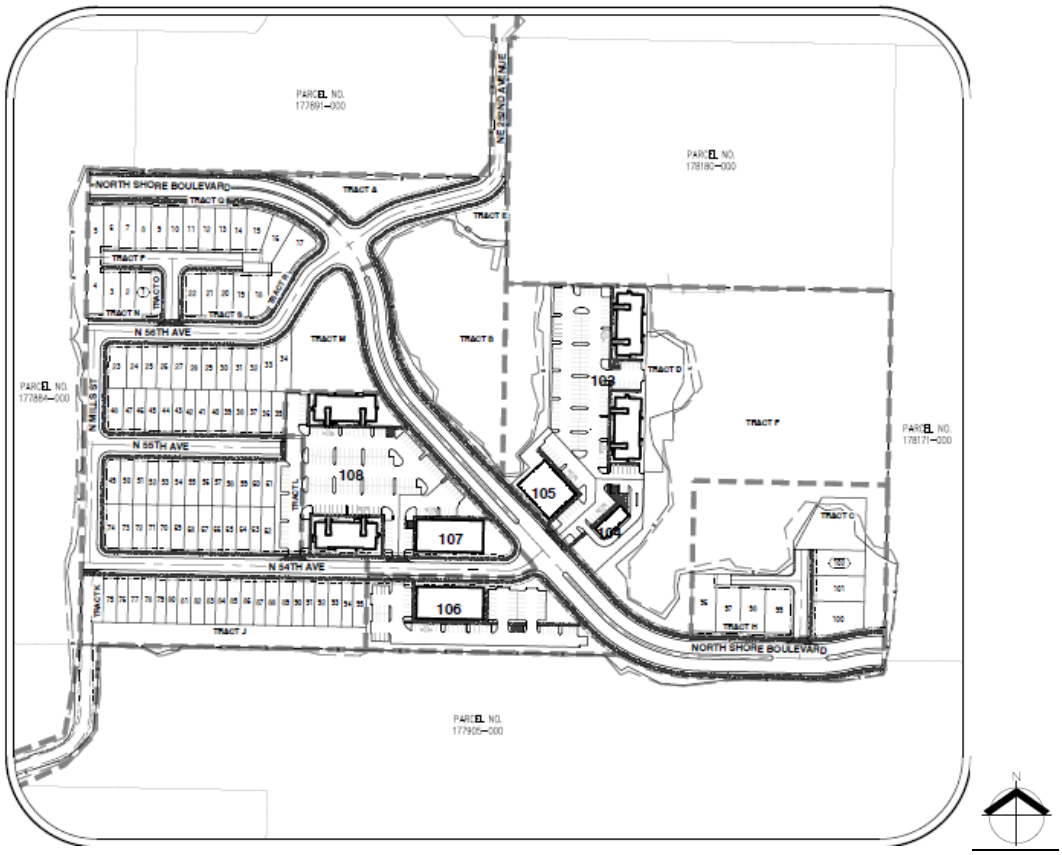
Village at North Shore
Preliminary Site Plan





VICINITY MAP
N.T.S.



MASTER PLAN - OVERALL RENDERING

VILLAGE AT NORTH SHORE
CAMAS, WASHINGTON

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
VANCOUVER, WA 98682
360.882.0419
WWW.AKS-ENG.COM

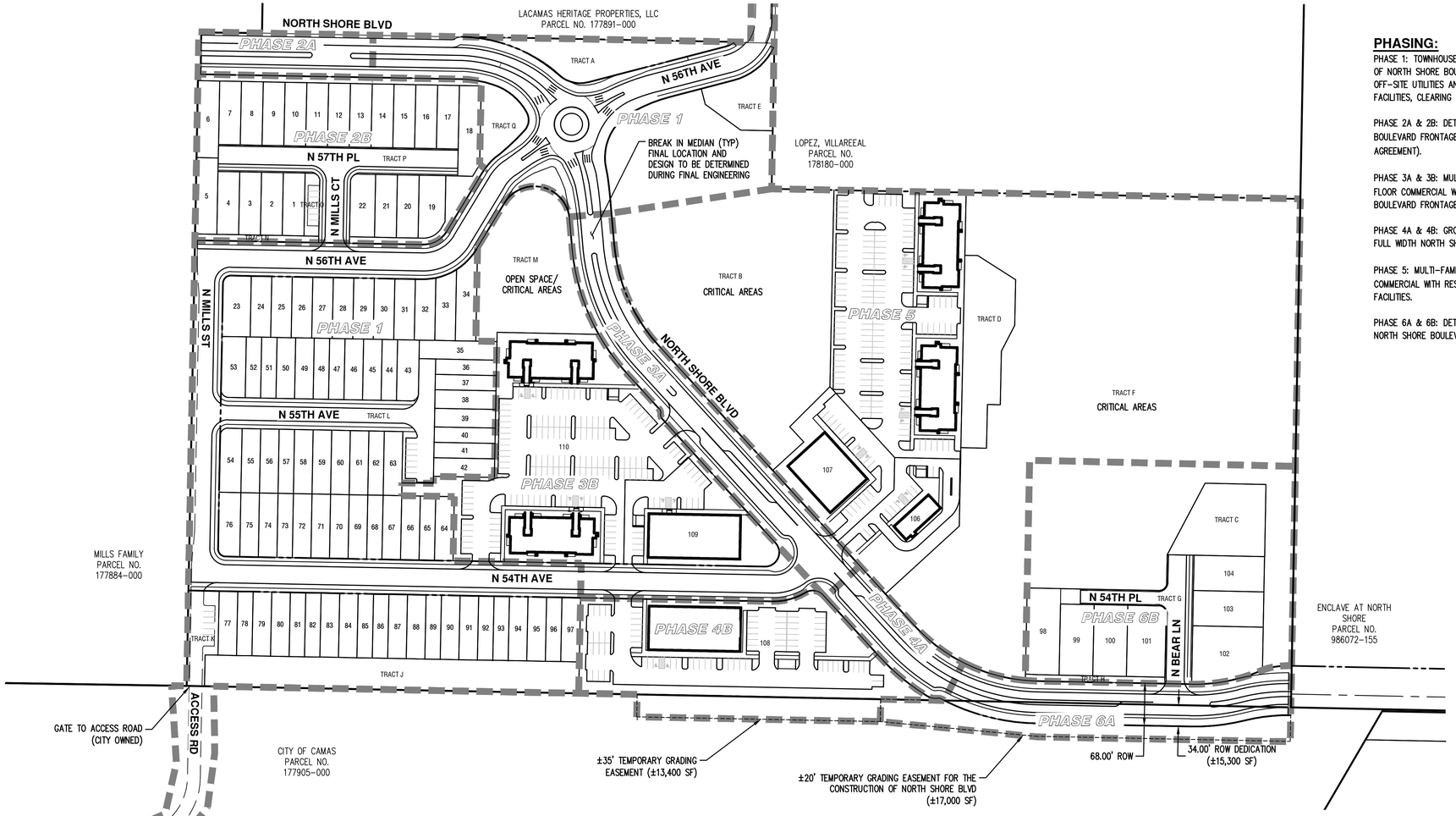
ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING · LANDSCAPE ARCHITECTURE

JOB NUMBER:	9095
DATE:	5/11/2026
DESIGNED BY:	AKS
DRAWN BY:	JTG
CHECKED BY:	BSH

MP-01

1243

Exhibit 37 SUB25-1008



PHASING:

PHASE 1: TOWNHOUSES, DETACHED SINGLE-FAMILY RESIDENCES, PORTION OF NORTH SHORE BOULEVARD, OFF-SITE COUNTY ROADWAY IMPROVEMENTS, OFF-SITE UTILITIES AND PATH TO LEADBETTER ROAD, STORMWATER FACILITIES, CLEARING AND MASS GRADING OF FULL SUBDIVISION.

PHASE 2A & 2B: DETACHED SINGLE-FAMILY RESIDENCES. NORTH SHORE BOULEVARD FRONTAGE (IF NECESSARY – SEE SECTION 4.2 OF DEVELOPER'S AGREEMENT).

PHASE 3A & 3B: MULTI-FAMILY RESIDENTIAL AND MIXED-USE (GROUND FLOOR COMMERCIAL WITH RESIDENTIAL ABOVE), FULL WIDTH NORTH SHORE BOULEVARD FRONTAGE.

PHASE 4A & 4B: GROUND FLOOR COMMERCIAL WITH RESIDENTIAL ABOVE, FULL WIDTH NORTH SHORE BOULEVARD FRONTAGE.

PHASE 5: MULTI-FAMILY RESIDENTIAL, MIXED-USE (GROUND FLOOR COMMERCIAL WITH RESIDENTIAL ABOVE), COMMERCIAL, STORMWATER FACILITIES.

PHASE 6A & 6B: DETACHED SINGLE-FAMILY RESIDENCES. FULL WIDTH NORTH SHORE BOULEVARD FRONTAGE.

DENSITY NOTES:

1. PROJECT DENSITY SHALL BE CALCULATED ON A OVERALL PROJECT BASIS.
2. RESIDENTIAL DENSITY WILL BE ALLOWED IN THE C-NS ZONE ABOVE COMMERCIAL USES.
3. FOR CALCULATING TOTAL PROJECT DENSITY, THE DENSITY WITHIN EACH ZONE SHALL BE CALCULATED BASED ON THE FOLLOWING UNITS PER ACRE:
   - 3.1. LD-NS MINIMUM DENSITY IS 4 UNITS PER ACRE AND MAXIMUM DENSITY IS 5.8 UNITS PER ACRE
   - 3.2. HD-NS MINIMUM DENSITY IS 10 UNITS PER ACRE AND MAXIMUM DENSITY IS 18 UNITS PER ACRE
   - 3.3. MX-NS MINIMUM DENSITY IS 10 UNITS PER ACRE AND MAXIMUM DENSITY IS 24 UNITS PER ACRE
   - 3.4. C-NS MINIMUM DENSITY IS 10 UNITS PER ACRE AND MAXIMUM DENSITY IS 24 UNITS PER ACRE
4. PROJECT DENSITY WILL BE DETERMINED BY ADDING THE DENSITY FOR ALL ZONES TOGETHER.

TRACT	OWNER	PURPOSE	AREA
TRACT A	CITY OF CAMAS	OPEN SPACE (PUBLIC ART)	13,787 SF
TRACT B	HOA	OPEN SPACE (W/ CRITICAL AREAS)	138,990 SF
TRACT C	HOA	STORMWATER FACILITY	13,908 SF
TRACT D	HOA	STORMWATER FACILITY	18,103 SF
TRACT E	HOA	STORMWATER FACILITY	8,099 SF
TRACT F	HOA	OPEN SPACE (W/ CRITICAL AREAS)	312,242 SF
TRACT G	HOA	PRIVATE STREET	11,722 SF
TRACT H	HOA	OPEN SPACE	2,175 SF
TRACT J	HOA	OPEN SPACE	28,563 SF
TRACT K	HOA	ACCESS/PARKING	6,153 SF
TRACT L	HOA	PRIVATE STREET	21,761 SF
TRACT M	HOA	OPEN SPACE (W/ CRITICAL AREAS)	32,582 SF
TRACT N	HOA	OPEN SPACE	1,930 SF
TRACT O	HOA	PARKING	2,223 SF
TRACT P	HOA	PRIVATE STREET	20,954 SF
TRACT Q	HOA	OPEN SPACE	15,224 SF
		TOTAL	648,416 SF

DEVELOPMENT STANDARDS (HD-NS)

MINIMUM LOT AREA:	1,800 SF
MINIMUM LOT WIDTH:	20 FEET
MINIMUM LOT DEPTH:	60 FEET
MINIMUM FRONT YARD/GARAGE SETBACK:	10/20 FEET
MINIMUM SIDE YARD SETBACK:	0/3 FEET
MINIMUM STREET SIDE YARD SETBACK:	15 FEET
MINIMUM STREET SIDE YARD SETBACK (ROWHOUSE):	10 FEET
MINIMUM REAR YARD SETBACK:	10 FEET
MAXIMUM BUILDING LOT COVERAGE:	65%
MAXIMUM BUILDING HEIGHT:	50 FEET

DEVELOPMENT STANDARDS (LD-NS) (DENSITY TRANSFER)

MINIMUM LOT AREA:	5,250 SF
MAXIMUM LOT AREA:	9,000 SF
MINIMUM LOT WIDTH:	40 FEET
MINIMUM LOT DEPTH:	80 FEET
MINIMUM FRONT YARD SETBACK:	10-25 FEET
MINIMUM GARAGE FRONT SETBACK:	20 FEET
MINIMUM SIDE YARD SETBACK:	5 FEET
MINIMUM STREET SIDE:	10 FEET
MINIMUM REAR YARD SETBACK:	10-20 FEET
MAXIMUM BUILDING LOT COVERAGE:	60%
MAXIMUM BUILDING HEIGHT:	35 FEET

DEVELOPMENT STANDARDS (MX-NS)

MINIMUM LOT AREA:	1,800 SF
MINIMUM LOT WIDTH:	20 FEET
MINIMUM LOT DEPTH:	60 FEET
MAXIMUM FRONT YARD SETBACK:	10 FEET
MINIMUM SIDE YARD SETBACK:	10 FEET
MINIMUM REAR YARD SETBACK:	10 FEET
MAXIMUM BUILDING LOT COVERAGE:	65%
MAXIMUM BUILDING HEIGHT:	100 FEET

DEVELOPMENT STANDARDS (C-NS)

MINIMUM LOT AREA:	NONE
MINIMUM LOT WIDTH:	NONE
MINIMUM LOT DEPTH:	NONE
MINIMUM FRONT YARD SETBACK:	10 FEET
MINIMUM SIDE YARD SETBACK:	NONE
MINIMUM REAR YARD SETBACK:	NONE
MAXIMUM BUILDING LOT COVERAGE:	NONE
MINIMUM USABLE OPEN SPACE:	5% (NET ACREAGE)
MAXIMUM BUILDING HEIGHT:	100 FEET

N

SCALE: 1"=100 FEET

100 0 20 50 100

ORIGINAL PAGE SIZE: 11" x 17"

AKS ENGINEERING & FORESTRY, LLC
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VANCOUVER, WA 98682
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ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING LANDSCAPE ARCHITECTURE

MASTER PLAN - DEVELOPMENT PLAN

VILLAGE AT NORTH SHORE

CAMAS, WASHINGTON

JOB NUMBER:	9095
DATE:	6/22/2026
DESIGNED BY:	AKS
DRAWN BY:	JTG
CHECKED BY:	BDH

MP-02

AKS DRAWING FILE: 9095 20260622 DA LAYOUT AND EASEMENT EXHIBIT.DWG | LAYOUT: C

NORTH SHORE BLVD ARTERIAL SECTIONS (SEE EXHIBIT B)

- SECTION 1 – (80' ROW, BY OTHERS)
- SECTION 2 – PARKING ONE SIDE (75' ROW)
- SECTION 3 – NO PARKING (68' ROW)
- SECTION 4 – STREAM CROSSING (110' ROW, BY OTHERS)

NORTH SHORE BLVD

LACAMAS LAKE ELEMENTARY SCHOOL PARCEL NO. 175724-000

LACAMAS HERITAGE PROPERTIES, LLC PARCEL NO. 175747-000

LACAMAS HERITAGE PROPERTIES, LLC PARCEL NO. 175733-000

LACAMAS HERITAGE PROPERTIES, LLC PARCEL NO. 175726-000

FUTURE ROUNDABOUT LOCATION (PER OTHERS)

NORTH SHORE BLVD ARTERIAL ALIGNMENT

LACAMAS HERITAGE PROPERTIES, LLC PARCEL NO. 175727-000

LACAMAS HERITAGE PROPERTIES, LLC PARCEL NO. 175551-000

MANDEL, SPAETH PARCEL NO. 175531-000

LACAMAS HERITAGE PROPERTIES, LLC PARCEL NO. 175530-000

NE 257TH AVENUE

NE 3RD STREET

CITY JURISDICTION

COUNTY JURISDICTION

NE 252ND AVENUE

LACAMAS HERITAGE PROPERTIES, LLC PARCEL NO. 175259-000

NSB ROAD SECTION 3 MODIFIED TO ATTACHED SIDEWALK ADJACENT TO PARCEL 177891-000

LACAMAS HERITAGE PROPERTIES, LLC PARCEL NO. 177891-000

CITY OF CAMAS PARCEL NO. 177904-000

LOPEZ, VILLAREEAL PARCEL NO. 178180-000

NE 56TH AVE

FUTURE ROUNDABOUT LOCATION

MILLS FAMILY PARCEL NO. 177884-000

ENCLAVE AT NORTH SHORE PARCEL NO. 986072-155

N BENTON DRIVE

NORTHLAKE CHURCH PARCEL NO. 178222-000

SE EVERETT STREET (SR 500)

INTERSECTION CONSTRUCTED WITH ENCLAVE AT NORTH SHORE SHORT PLAT

PROPOSED GATE LOCATION (CITY OWNED)

CITY OF CAMAS PARCEL NO. 177905-000

FUTURE STREAM/WETLAND CROSSING

ANDERSON PARCEL NO. 178115-005

PROPOSED GATE LOCATION (CITY OWNED)

BOAT LAUNCH PARKING AREA

CITY OF CAMAS PARCEL NO. 177898-000

N BENTON DRIVE

SE LEADBETTER ROAD

SE 8TH STREET

FUTURE ROUNDABOUT LOCATION

OLIVER PARCEL NO. 178221-000

HSR CAMAS WOODS, PARCEL NO. 178159-000

N

SCALE: 1"= 250 FEET

250 0 50 125 250

ORIGINAL PAGE SIZE: 11" x 17"

AKS ENGINEERING & FORESTRY, LLC
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VANCOUVER, WA 98682
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ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING/LANDSCAPE ARCHITECTURE

MASTER PLAN - ARTERIAL ROADWAY

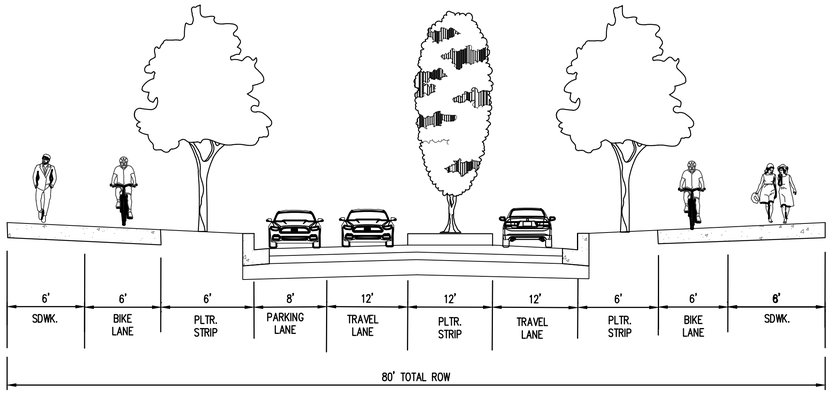
VILLAGE AT NORTH SHORE
CAMAS, WASHINGTON

JOB NUMBER:	9095
DATE:	4/23/2026
DESIGNED BY:	AKS
DRAWN BY:	JTG
CHECKED BY:	BDH

MP-03

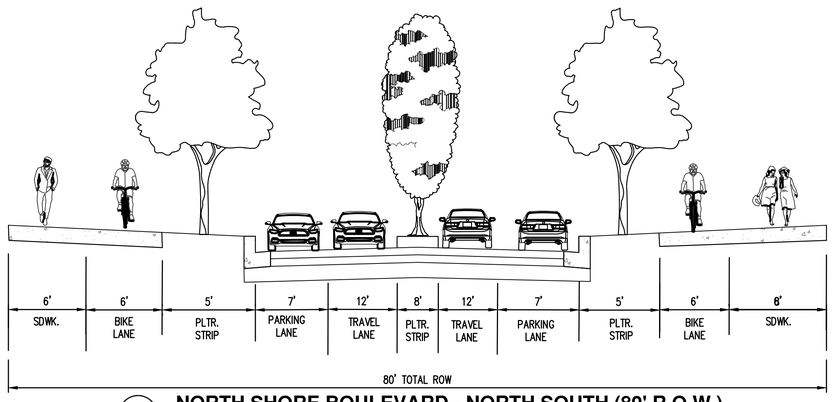
1245

AKS DRAWING FILE: 9095 20260224 NSB EXHIBITDWG | LAYOUT: A



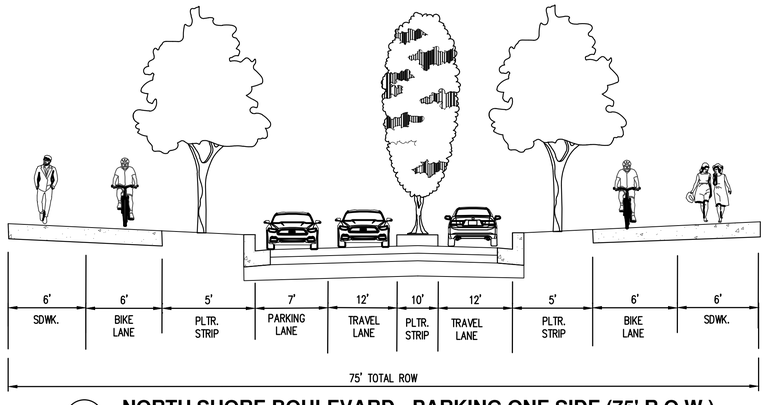
1A NORTH SHORE BOULEVARD - EAST WEST (80' R.O.W.)

ROAD SECTION BY OTHERS (SUNCAL D.A. AND/OR CITY OF CAMAS) Scale: N.T.S.



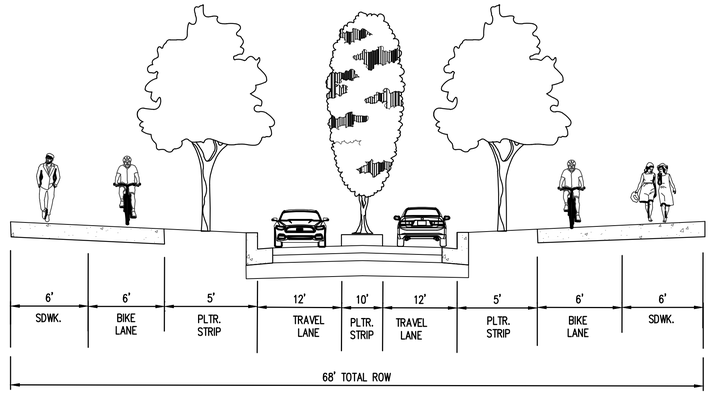
1B NORTH SHORE BOULEVARD - NORTH SOUTH (80' R.O.W.)

ROAD SECTION BY OTHERS (SUNCAL D.A. AND/OR CITY OF CAMAS) Scale: N.T.S.



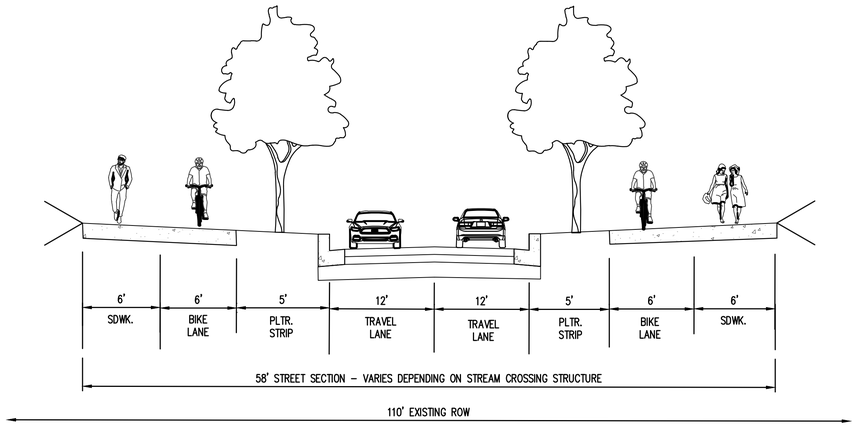
2 NORTH SHORE BOULEVARD - PARKING ONE SIDE (75' R.O.W.)

Scale: N.T.S.



3 NORTH SHORE BOULEVARD - NO PARKING (68' R.O.W.)

Scale: N.T.S.



4 NORTH SHORE BOULEVARD - STREAM CROSSING (110' R.O.W.)

ASSUMED ROAD SECTION FOR PLANNING PURPOSES ONLY. DESIGNED BY OTHERS (CITY OF CAMAS). Scale: N.T.S.

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVE, STE 2520
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ENGINEERING · SURVEYING · NATURAL RESOURCES
FORESTRY · PLANNING/LANDSCAPE ARCHITECTURE

MASTER PLAN - STREET SECTIONS

VILLAGE AT NORTH SHORE
CAMAS, WASHINGTON

JOB NUMBER:	9095
DATE:	4/23/2026
DESIGNED BY:	AKS
DRAWN BY:	JTG
CHECKED BY:	BDH

MP-04

AKS DRAWING FILE: 9095 20260224 NSB EXHIBIT.DWG | LAYOUT: B

After recording, return to:

Steve Morasch
Landerholm P.S.
P.O. Box 1086
Vancouver, WA 98666

Space Above for Recording Information Only

DEVELOPMENT AGREEMENT

This Development Agreement (the "Agreement) is made and entered into by and between the CITY OF CAMAS, a Washington Municipal Corporation (hereinafter referred to as the "City") and ICG CAMAS 252ND LLC (owns APN 178175000) and HSR DEV - MILLS LLC (owns APN 177885000) (hereinafter referred to collectively as the "North Shore Developer"); and CAMAS WOODS LLC (owns APN 178140000) and HSR Camas Woods P2 LLC (owns APN 178159000, APN 178169000, and APN 178108000) (hereinafter referred to collectively as the "Camas Woods Developer"). The North Shore Developer and the Camas Woods Developer are referred to individually as a Developer and collectively as the "Developers". The City, North Shore Developer and Camas Woods Developer are collectively referred to as "Parties".

RECITALS

WHEREAS, North Shore Developer owns or controls certain real property that is located within the City's municipal boundary with the following tax identification numbers: 178175000 and 177885000 and that is more particularly described in **Exhibit A-1** and incorporated by reference herein (together, the "North Shore Property");

WHEREAS, Camas Woods Developer owns or controls certain real property that is located within the City's municipal boundary with the following tax identification numbers: APN 178140000, APN 178159000, APN 178169000, and APN 178108000 and that is more particularly described in **Exhibit A-2** and incorporated by reference herein (together, the "Camas Woods Property");

WHEREAS, the North Shore Property and the Camas Woods Property are referred to individually as a "Property" and collectively as the "Properties;"

WHEREAS, the City and the Developers recognize this area will develop with multiple uses and wish to provide predictability about the development standards that will apply to the Properties over the course of its full development in order to increase efficient use of urban

services and land, and provide compatibility amongst the various phases of the Properties as they develop, including planning for advance funding for transportation improvements, predictable infrastructure and regulations, parks, trails and open spaces; and,

WHEREAS, the City is a Washington municipality with land use planning and permitting authority over all land within its limits; and,

WHEREAS, pursuant to RCW 36.70B.170, a Development Agreement may set forth the development standards and other provisions that shall apply to, govern and vest the development, use and mitigation of the development of real property for the duration specified in the agreement; which statute provides:

> (1) A local government may enter into a Development Agreement with a person having ownership or control of real property within its jurisdiction. A city may enter into a development agreement for real property outside its boundaries as part of a proposed annexation or a service agreement. A development agreement must set forth the development standards and other provisions that shall apply to and govern and vest the development, use, and mitigation of the development of the real property for the duration specified in the agreement. A development agreement shall be consistent with applicable development regulations adopted by a local government planning under chapter 36.70A RCW; and

WHEREAS, the legislative findings supporting the enactment of this section provide: The legislature finds that the lack of certainty of the approval of development projects can result in a waste of public and private resources, escalate housing costs for consumers and discourage the commitment to comprehensive planning that would make maximum efficient use of resources at the least economic cost to the public. Assurance to a development project applicant that upon government approval the project may proceed in accordance with existing policies and regulations, and subject to conditions of approval, all as set forth in a development agreement, will strengthen the public planning process, encourage private participation and comprehensive planning, and reduce the economic cost of development. Further, the lack of public facilities and services is a serious impediment to development of new housing and commercial uses. Project applicants and local governments may include provisions and agreements whereby applicants are reimbursed over time for financing public facilities. It is the intent of the legislature by RCW 36.70B.170 through 36.70B.210 to allow local governments and developers of real property to enter into development agreements; and,

WHEREAS, for the purposes of this Agreement, "Development Standards" includes, but is not limited to, all of the standards listed in the Master Plan attached hereto as **Exhibit B**, as applicable to the North Shore Property and RCW 36.70B.170(3); and CMC 18.55.340 as applicable to the Properties; and,

WHEREAS, the City will be making necessary updates to its Capital Facilities Plan (CFP) and Transportation Improvement Project (TIP) list, of which North Shore Boulevard and SR 500 are transportation corridors of regional importance; and,

WHEREAS, Developer has agreed to place the road alignment for the North Shore Developer's responsible portion of Northshore Boulevard at the City's preferred location and the SR 500 and Everett Drive roundabout as will be set forth in the CFP, City's circulation plan documents, and TIP list; and,

WHEREAS, certain offsite transportation improvements are located in unincorporated Clark County and will require cooperation and agreement with that jurisdiction.

NOW, THEREFORE, THE PARTIES HERETO AGREE AS FOLLOWS:

Section 1. Development Agreement. This Agreement is a Development Agreement to be implemented under the authority of and in accordance with RCW 36.70B.170 through RCW 36.70B.210. It shall become a contract between the Developer and the City upon its approval by ordinance or resolution following a public hearing as provided for in RCW 36.70B.170; and upon execution by all parties. The City is authorized to enter into this Agreement pursuant to CMC 18.55.340.

Section 2. Term of Agreement. This Agreement shall commence upon the Effective Date, and shall be valid for a period of Fifteen (15) years; unless extended or terminated by mutual consent of the Parties; provided however, if this Agreement or any initial land use applications related to the Property and filed within one year of the effective date of this Agreement, are appealed, the term of this Agreement shall be tolled for the time during which the appeal is pending or 18 months, whichever is less. The "Effective Date" shall be the date of recording, which shall occur within thirty (30) days of the date of the adopting Resolution.

Section 3. Vesting. Any land use applications submitted with respect to the Properties during the term of this Agreement, shall be vested to the following land use regulations and Development Standards in effect on the Effective Date of this Agreement CMC Title 16.01-16.19; CMC 16.31; CMC Title 17 and CMC Title 18 (through Ordinance 24-007), unless otherwise provided for within the Master Plan. Any land use approvals currently in effect and land use approvals affecting the Properties issued after the Effective Date of this Agreement shall remain in effect during the term of this Agreement; provided however, that preliminary plat approvals shall be valid for a period of ten (10) years from the date of the approval, regardless of whether the end of such ten years occurs during or after the term of this Agreement and Developers shall have the right to seek extensions to such preliminary plat approvals pursuant to the relevant provisions of the CMC. The vesting provided for under this Agreement shall not apply to System Development Charges, Impact Fees or application or review fees, which shall be assessed at the then-current rates.

The City shall have no liability for any damages or losses suffered by a Developer or the Developer's successors if a federal or state agency takes action that voids, nullifies or preempts the City's agreement to permit vesting under this Agreement. Each of the Developers and Developers' successors shall further indemnify and hold harmless the City from any and all liability stemming from their development, including third party liability, under any applicable state or federal regulations including, but not limited to, the Clean Water Act, for any actual or alleged violation of

said regulations arising from the City's agreement to allow the vesting described in this section, or in the event said third party or agency challenges the adoption of this Agreement within the applicable timeframes. In such event, the City, in its sole discretion, may require a Developers or the Developer's successors to post a bond in an amount deemed reasonably sufficient to cover all costs and expenses associated with any claim or action for liability stemming from their development as described herein, including reasonable attorney's fees to be incurred by the City in defending any third party claim.

Upon notice of any claim or action for liability against City relating to this Section, the City shall timely notify the Developer or Developer's successors of their duties for indemnification of the City. Within ten (10) days of such notice, the Developer may, at Developer's sole discretion, revoke its vested rights to the City's current standards arising under this section by giving written notice of such revocation to the City. Upon such revocation, the Developers shall have no further liability to the City or obligation to indemnify the City, including any obligation to post the bond described in this Section. The Developer may choose to waive the vesting provided for in this Section, if it notifies the City in writing. In that event, any fully complete development application submitted to the City and relating to the property, shall vest to the rules and regulations in effect at the time such application is submitted to the City. If the Developer chooses to waive the vesting provided for in this Section, then all vested rights created in this Section shall become null and void.

Section 4. Master Plan. Attached as **Exhibit B** and incorporated by reference herein is the Master Plan for the development of the North Shore Property. The Master Plan provides for a variety of housing types and lot sizes, as well as commercial development in a mixed use environment. The Master Plan provides the Parties with predictability regarding certain aspects of the future development of the Property, including access locations on to public streets and any associated offsite improvements related to transportation. The standards within the Master Plan, or those substantially similar to the standards in the Master Plan, shall be controlling on the future development of the North Shore Property.

Section 4.1 Environmental Review. Pursuant to the State Environmental Policy Act (SEPA), piecemeal environmental review is to be discouraged. As such, the Parties wish for SEPA review for the North Shore Property to be accomplished as part of the Agreement for as many of the North Shore Property's potential adverse environmental impacts as can be reasonably analyzed, based upon current information contained within the SEPA checklist submitted with this Agreement, including, but not limited to, a Traffic Impact Analysis, Critical Areas Report, and GIS data as to off-site storm water impacts. This review is done under the Consolidated Review provisions of SEPA. The SEPA Checklist attendant with this Agreement identifies various potential adverse impacts including transportation, wetlands, sewer, water, and storm water. The Checklist also identifies a variety of technical reports or information that provides a basis for the proposed mitigation or partial mitigation of these impacts. It is the intent of this Agreement and its attendant SEPA process, to have the City issue a Threshold Determination (as that term is utilized in RCW 43.21C) on the identified conceptually proposed impacts of the development of the North Shore Property. Uses and impacts that are identified at future stages of the development, including but not limited to,

Site Plan approval, Preliminary Plat approval, Short Plat approval or building permit approvals that have been previously analyzed through this or other SEPA processes, shall not be re-analyzed on the condition that the future identified adverse impacts, in the sole discretion of the City, are substantially similar to and of the same or less intensity as those previously analyzed under this or other SEPA processes. Nothing in this Section shall preclude the City from requesting information, at the cost of the Developer, on the potential adverse environmental impacts associated with a specific land use application that has not been previously identified or analyzed as required under the State Environmental Policy Act.

Section 4.2 Phasing.

4.2.1 Description of Phasing. The Parties agree that site development of the North Shore Property at buildout will occur consistent with the phasing depicted in the Master Plan and the City's preliminary plat procedures set forth in CMC 17.11.030. Site development at buildout is expected to include a mix of single-family residential, multi-family residential, commercial retail and mixed-use lands. The Parties agree to the following phasing structure of the Subdivision:

Phase 1 will include townhouses and single-family detached residences, a portion of North Shore Boulevard (NSB) that includes the intersection with N 56th Ave extending to the northwestern point at which the road is expected to begin to curve to the north and be constructed by an adjacent developer. Phase 1 also includes improvements to the county roads (NE 252nd Ave and NE 3rd St), construction of the off-site utilities and path down to Leadbetter Road, clearing and mass grading of the full site outside of the critical areas and defined tree preservation areas, and necessary stormwater facilities for the phase.

Each subsequent phase will construct the respective frontage of NSB as depicted in the attached exhibit and labeled as Phases 2A, 3A, 4A and 6A. In the event that an adjacent development needs NSB constructed in a more expedited timeline than the North Shore Developer, the North Shore Developer will work with the adjacent developer to grant a construction easement or dedicate right-of-way over phases 2A, 3A, 4A, & 6A.

Phase 2B will include detached single-family residences. The portion of NSB displayed within Phase 2A is reserved to allow for greater roadway alignment flexibility for eventual continuation of North Shore Boulevard to the north allowing for the city to determine the best location of intersection alignment. If deemed not necessary for the construction of NSB, this area will be adjusted into the lots or retained as a tract.

Phase 3B will include multi-family residential and mixed-use (ground floor commercial with residential above).

Phase 4B will include the commercial zone, with the allowed residential units

above the ground floor commercial.

Phase 5 will include a combination of multi-family residential, mixed use (ground floor commercial with residential above), commercial, and permanent stormwater facilities.

Phase 6B will include single-family detached residences, and permanent stormwater facilities.

After Phase 1 is complete, the order in which the subsequent phases are constructed could be adjusted provided that access and utilities are included to serve the respective phase. Phasing for the Camas Woods Property is also described in the preliminary plat for the Camas Woods Subdivision (SUB24-1002).

4.2.2 Boundaries of the phases may be adjusted with approval. The City also agrees to allow the boundaries of individual phases to be adjusted through final engineering review upon approval of the City Engineer.

4.2.3 Timing for Final Plats. Developers shall have until the expiration of the Agreement to record any Final Plat for their respective Properties, subject to the City's preliminary plat procedures. The Developers may also record final plats for the individual phases without the completion of all required infrastructure improvements, provided that the Developer submits a subdivision improvement bond or other financial security and all relevant improvements are engineered, pursuant to CMC 17.21.

Section 4.3 Transportation. Kittelson and Associates, Inc. (North Shore Developer's transportation engineers, "Kittelson") and the City have analyzed the transportation impacts of the full development (based upon the Master Plan in Exhibit B) of the North Shore Property as identified in the transportation impact analysis attached hereto as **Exhibit C** and incorporated by reference. Based upon the Kittelson transportation impact analysis, the North Shore Property at full development will increase the existing number of vehicle trips on the transportation system by 125 net new weekday AM peak hour, 157 net new weekday PM peak hour and 1,831 net new average daily trips. Based upon Kittelson's and the City's analysis as well as Clark County and WSDOT feedback, the future development of the Property will be conditioned upon the reasonable funding within six (6) years of, the critical links and intersections provided for in the Comprehensive Plan and the other mitigation measures provided for in Exhibit C. The City agrees to consider and use best efforts, as a part of the 2025 annual review process, to include the North Shore Boulevard onto the City of Camas six (6) year transportation improvement project list within the CFP as a reasonably funded project. The Parties agree that North Shore Developer's obligation to construct critical links and intersections depicted in Exhibit B shall be limited to North Shore Developer's construction of North Shore Developer's proportional share of extending Northshore

Boulevard and providing right of way dedication to 3rd Street and 252nd Avenue.

The North Shore Property shall be vested during the term of this Agreement with 157 net new weekday PM peak hour, 125 net new weekday AM peak hour and 1,831 net new average daily trips and no additional off site transportation mitigation or analysis will be required during the term of this Agreement; provided, however, that in the event North Shore Developer proposes uses or intensities of uses that would cause the total number of weekday AM, PM Peak, or Average Daily trips to exceed the number of trips analyzed as part of this Agreement, then the City may require, and North Shore Developer shall provide, additional transportation analysis and lawful mitigation for those increased trips. The transportation vesting provided for in this Section shall be subject to the mitigation measures and the timing provided for in the Master Plan and Exhibit C. Some of the transportation improvements may be on the City's Transportation Capital Facility Plan. North Shore Developer or its successor in interest to the Property, upon construction of such qualifying transportation improvement, shall be eligible to apply for Transportation Impact Fee Credits pursuant to CMC Chapter 3.88, but only if such improvements are eligible for Credits under the City's applicable Capital Facilities Plan and Transportation Impact Fee programs.

The City and North Shore Developer also acknowledge that there will be no offsite intersection improvements needed at NE 28th Street and NW 232nd Avenue in accordance with the Kittelson transportation impact analysis because this development sends less than 5 trips to that intersection. No mitigation shall be required for the SR 500 (NE Everett Street) and NE 14th Avenue because this development does not send any trips to the eastbound approach during the evening peak hour.

The Camas Woods Property shall be vested for the number of trips described in the approved preliminary plat for the Camas Woods Subdivision (SUB24-1002).

Section 4.4 Specific Design Standards.

4.4.1 Streetscape. North Shore Developer has incorporated into its Master Plan streetscape standards for primary streets within the North Shore Property addressing street specifications, tree spacing and species, sidewalk separation, trash receptacles, benches and other street amenities that will create an inviting, safe passage for not only vehicular but pedestrian and bicycle traffic. Streetscape standards will be consistent with the streetscape standards identified in the Master Plan, including the following:

1) There shall be no parking lane on either side of North Shore Boulevard abutting residential uses. The right-of-way for North Shore Boulevard shall be reduced from 80 feet to 68 feet abutting residential uses where parking lanes are not provided.

2) North of the intersection with N 56th Ave, the multi-use sidewalk along North Shore Boulevard (NSB) shall be attached to the curb/street and the 5-foot

planter strip shall be located between the back of the sidewalk and property line. However, if the adjacent north development gains approval to construct a portion of NSB on parcel #177891-000, then the sidewalk north of N 56th Ave will be detached with the planter strip separating the roadway from the sidewalk.

3) The minimum centerline radius of North Shore Boulevard shall be reduced to 200' or less near the intersection with N 56th Ave to accommodate the roundabout.

4) There shall be no public utility easement along the east side of North Shore Boulevard adjacent to Tract B.

5) Any parking lanes provided along North Shore Boulevard adjacent to the commercial or mixed-use zones shall count towards meeting the commercial parking requirements, at the rate of one parking space per 20 lineal feet of parking lane. Parking space striping to be included with final engineering design.

6) A reduction in the 660' minimum access spacing per the Camas engineering design standard shall be allowed to accommodate a driveway onto North Shore Boulevard for the multi-family and mixed-use site plan in Phase 3 (proposed lots 109 and 110).

7) The design speed for North Shore Boulevard shall be 25 MPH for the entire road section within the Property.

8) The 300-foot minimum driveway setback from arterial roadways set forth in Table 3 of the Camas design shall be reduced to 200 feet from the North Shore Boulevard intersection with N 56th Ave.

During the land use application phase subsequent to the adoption of this Agreement, proposed streetscape standards that are not substantially similar to those standards within the Master Plan may be adopted upon mutual agreement of the City and the North Shore Developer.

4.4.2 Lighting. This Project uses dark sky compatible street lights and LED lamps.

4.4.3 Development of Commercial Lands. The development of the commercial lands within the North Shore Property shall be consistent with the standards and provisions identified in the Master Plan. During the land use application phase subsequent to the adoption of this Agreement, proposed development standards that are not substantially similar to those standards within the Master Plan may be adopted upon mutual agreement of the City and North Shore Developer.

4.4.4 Public Art. North Shore Developer agrees to dedicate land for a permanent public art installation in the general location depicted in the Master Plan, which shall be publicly visible and accessible and shall be generally as described in the Master Plan.

4.4.5 Early Grading. The North Shore Developer shall be allowed to submit an application for an early clearing and grading permit for review and approval prior to the submittal of the first phase of final engineering to allow early tree and vegetation removal, grading and rock blasting. Erosion control BMP's will be included in and maintained throughout the early clearing and grading permit activities.

Section 4.5 Stormwater. The North Shore Property will send most of its stormwater runoff via controlled, piped conveyance following water quality treatment through the easement described in Section 4.6.2 for direct discharge into Lacamas Lake. The remainder of the stormwater runoff will be managed on-site meeting City of Camas and WA Department of Ecology standards for discharge towards wetlands that ultimately drain towards Lacamas Lake.

Section 4.6 City Easements.

4.6.1 Temporary Grading Easement on City Parcel. The City Parcel south of the North Shore Property has a rolling and hummocky topography. Several of the hummocks are located on the property line between the City Parcel and North Shore Property. The varied topography along the property lines will result in cut and fill slopes to enable flatter areas to be graded onsite. Therefore, the Parties agree that it is mutually beneficial for the City to grant North Shore Developer temporary grading easements ("TGE") to resolve the aforementioned topographical challenges that are present on the common property line between the City Parcel and the North Shore Property. The TGEs will allow beneficial grading to occur on both parcels to the mutual benefit of the Parties, as well as allow North Shore Boulevard to be developed adjacent to the City Parcel. The TGEs will include appropriate erosion control methods to be implemented in conjunction with grading. Permanent reforestation plantings consistent with forestry industry standards of +/-250 seedlings per acre of Douglas-fir or approved alternative evergreen conifers will be established concurrent with erosion control establishment. Standard maintenance and warranty bond for plant establishment and survival will be documented and approved by the City prior to grading acceptance. The legal description for the TGEs are attached as **Exhibit D & E**.

4.6.2 Permanent Easement. The City shall grant a perpetual non-exclusive easement over the property described in **Exhibit F** to provide access to Leadbetter Road for emergency services, utilities, stormwater and pedestrian access benefitting the North Shore Property.

4.6.3 North Shore Boulevard Easement. The City shall provide an appropriate easement over the property described in **Exhibit G** to allow the construction of North Shore Boulevard as shown in the Master Plan.

Section 4.7 City to Reimburse Developer for Upsizing Onsite Water Trunk Lines.

4.7.1 ***Temporary Water Service from Leadbetter Road***

A temporary water main connection from Leadbetter Road to the North Shore Property may be required to provide interim water service to the Property prior to construction of the permanent water transmission main within North Shore Boulevard identified in the City's Water System Plan ("WSP"), incorporated herein by reference.

Any temporary water main installed to serve the Property shall be sized and constructed by the North Shore Developer at its sole cost and expense and shall not be eligible for reimbursement or System Development Charge ("SDC") credits from the City. The Developer acknowledges that this temporary line is intended only to provide interim service until the permanent water transmission main within North Shore Boulevard is constructed and connected.

4.7.2 ***Permanent North Shore Boulevard Water Transmission Main***

The City's WSP identifies a future water transmission main along the North Shore Boulevard corridor. The City requires construction of a 24-inch water transmission main along the full stretch of North Shore Boulevard as part of the ultimate water system improvements.

To the extent the City requires installation of a larger diameter main than would otherwise be necessary to serve the development, the City agrees that the Developer shall be eligible for SDC credits for the verified incremental cost associated with upsizing the permanent water main to the 24-inch diameter required by the City.

SDC credits shall be calculated based on the documented difference between the cost of the water main required to serve the development and the cost of the upsized 24-inch transmission main, and shall be issued upon completion and acceptance of the improvements by the City.

4.7.3 ***Everett Street Water Transmission Main***

Two sections of water main line are identified within the City's WSP as being located on the Camas Woods Property: (1) the portion of 24" water main "PS-02" that fronts Camas Woods and goes through the roundabout and (2) the portion of 12" water main "D-08" that extends from the 24" in the roundabout, north to 8th Street (future N 50th Avenue). The City agrees that Camas Woods Developer shall be reimbursed the full and verified cost of these improvements through SDC credits issued by the City, at the time improvements are accepted by City inspector.

Section 4.8 Impact Fee Credits and Reimbursement; Latecomers Agreements. Developers or successor in interest to either of the Properties, upon construction of such qualifying improvements, shall be eligible to apply for impact fee credits, including for schools, traffic, fire, parks, stormwater, sanitary and water for such Property. The Parties agree that the City shall include updated cost estimates for the roundabout at SR 500 and Everett Drive, the roundabout at North Shore Boulevard and N 56th Ave, and North Shore Developer's design of its proportional share of North Shore Boulevard (as depicted in the Master Plan) within the City's Transportation System Plan ("TSP") and that Camas Woods Developer shall be eligible for all available impact fee credits upon completion of the SR 500 and Everett Drive roundabout and North Shore Developer will be eligible for all available impact fee credits upon completion of the roundabout at North Shore Boulevard and N 56th Ave, and Developer's proportional share of North Shore Boulevard.

4.8.1 The City shall defer payment of all traffic impact fees on each of the Properties until the City has issued all eligible traffic impact fee credits to which such Developer is entitled pursuant to this Agreement.

4.8.2 If the City does not incorporate the roundabout at North Shore Boulevard and N 56th Ave into the TSP updates, then the roundabout would not be required to be constructed. An alternative intersection control type could be constructed at this intersection, adhering to appropriate engineering standards. North Shore Developer would be eligible for all available impact fee credits upon completion of this intersection commensurate with the Developer's proportional share of North Shore Boulevard.

4.8.3 In addition to SDC credits or reimbursement for the water mains described in Section 4.7, Developers shall be entitled to any impact fee or SDC credits allowable under City code for any upsizing of water, sewer or stormwater facilities of their Property.

4.8.4 In addition to impact fee or SDC credits described in Section 4.8.3, above, Developers shall be entitled to apply to the City for a latecomer's agreement for any oversizing of sewer, water or stormwater facilities constructed for their Property that benefits other properties.

Section 4.9 Dedication and Management of Public Amenities. Developer will dedicate and convey ownership to the City of Tract A located north of the North Shore Boulevard and 56th Avenue roundabout as shown on the Master Plan's open space sheet and consistent with the phasing depicted in the Master Plan. All other tracts within the Master Plan to be owned and maintained by the Home Owners Association (HOA).

Section 4.10 Land Use Designations. The City and North Shore Developer agree that the North Shore Property shall develop consistent with the land use designations and density set forth in the Master Plan depicted in Exhibit B. The allowed uses for the Property shall be those uses listed in the Master Plan's Design Guidelines and those uses permitted (outright, conditionally, or otherwise)

within the base zone of any relevant portion of the North Shore Property. To the extent the allowed uses set forth in the Master Plan's Design Guidelines and the uses allowed under the base zoning for any relevant portion of the North Shore Property conflict, the uses set forth in the Master Plan's Design Guidelines shall control. The Camas Woods Property shall be developed per the approved preliminary plat for the Camas Woods Subdivision (SUB24-1002) unless the Camas Woods Developer applies for and obtains approval from the City for any modifications or revisions to the approved preliminary plat.

4.10.1 Since the North Shore Property is split zoned and the North Shore Subarea Plan allows flexibility, the density shall be calculated for the North Shore Property as a whole based on the area of each individual zone but the density may be allocated to any portion of the Property. For avoidance of doubt, higher density may be allowed in the North Shore Lower Density Residential (LD-NS) zone, as long as the overall density for the North Shore Property as a whole is within allowable limits.

4.10.2 Residential dwelling units shall be allowed over the ground floor commercial use in the North Shore Commercial (C-NS) zone of the North Shore Property. Ground floor residential uses shall be limited to an entry lobby.

Section 5. Process. The preliminary plat for Camas Woods Property has been approved in the Camas Woods Subdivision (SUB24-1002). Subsequent to the approval of this Agreement, the City and North Shore Developer agree that subdivision and future development of the North Shore Property will be achieved through a subdivision application subject to the provisions in CMC Chapter 17.11. The subdivision application will be processed as a Type III decision subject to a hearing and city final decision by the hearings examiner pursuant to the provisions in CMC Chapter 18.55.030(C). The approval of any multi-family development will proceed forward through a Type II site plan review process under CMC Chapter 18.18 and Chapter 18.55. The entitlement of industrial and commercially zoned lands within the Property will be concurrently processed under the City's site plan review standards within CMC Chapter 18.18 and under Chapter 18.55. Design review for North Shore residential shall be processed as a Type I decision to be rendered by the City's Community Development Director or designee and be approved consistent with the design standards set forth in the Master Plan. The application shall be substantially similar to the Master Plan. Any aspects of a land use application relating to the North Shore Property that are not substantially similar to the Master Plan shall be reviewed under the applicable regulations as if no Master Plan had been approved.

Section 6. Remedies. Should a disagreement arise between the City and a Developer regarding the interpretation and application of this Agreement, the Parties agree to attempt to resolve the disagreement by first meeting and conferring. If such meeting proves unsuccessful to resolve the dispute, the disagreement may be resolved by judicial action filed in the Clark County Superior Court in the State of Washington consistent with the terms in Section 8, below. However, no party may initiate litigation without first providing the other party notice of the matter in dispute and a reasonable opportunity to cure the matter. It is understood that the North Shore Developer is

responsible only for matters pertaining to the North Shore Property and the Camas Woods Developer is responsible only for matters pertaining to the Camas Woods Property.

Section 7. Performance. Failure by either party at any time to require performance by the other party of any of the provisions hereof shall in no way affect the parties' rights hereunder to enforce the same, nor shall any waiver by a party of the breach hereof be held to be a waiver of any succeeding breach or a waiver of this non-waiver clause.

Section 8. Governing Law and Venue. This Agreement shall be construed in accordance with, and governed by the laws of the State of Washington. The parties agree to venue in the Superior Court for Clark County, State of Washington, to resolve any disputes that may arise under this Agreement.

Section 9. Severability. This Agreement does not violate any federal or state statute, rule, regulation or common law known; but if any provision is found to be invalid or in violation of any statute, rule, regulation or common law, it shall be considered null and void, with the remaining provisions remaining viable and in effect.

Section 10. Inconsistencies. If any provisions of the Camas Municipal Code or Master Plan are deemed inconsistent with the provisions of this Agreement, the provisions of this Agreement shall prevail.

Section 11. Binding on Successors and Recording. The rights and obligations created by this Agreement are assignable and shall be binding upon and inure to the benefit of Developers, the City, and their respective heirs, successors and assigns. Only Developers and the City or their successors and assigns shall have the right to enforce the terms of this Agreement. This Agreement shall be recorded against the real property described in Exhibit A-1 and A-2 with the Clark County Auditor.

Section 12. Recitals. Each of the recitals contained herein are intended to be, and are incorporated as, covenants between the parties and shall be so construed.

Section 13. Amendments. This Agreement may only be amended by mutual, written agreement of the Parties affected by the amendment that is approved by the City pursuant to a Type IV legislative process as set forth in the CMC. While nothing contained herein shall be construed to obligate either party to amend the Master Plan, it is recognized that future evolution of the Project and the City may warrant consideration of such issues. The City reserves the authority to impose new or different regulations to the extent required by a serious threat to public health and safety pursuant to RCW 36.70B.

Section 14. Agreement to Run with the Land. For the term of this Agreement, the benefits and obligations of this Agreement shall run with the land and continue following the completion of the Project or transfer of ownership to either of the Developer’s successors and assigns.

Section 15. Recording. This Agreement shall be recorded with the Clark County Auditor's Office.

Section 16. Notices. All notices, requests, demands, and other communications called for or contemplated by this Agreement shall be in writing, and shall be duly given by mailing the same by certified mail, return receipt requested; or by delivering the same by hand, to the following addresses, or to such other addresses as the Parties may designate by written notice in the manner aforesaid:

HSR DEV - MILLS LLC
ICG CAMAS 252ND LLC
CAMAS WOODS LLC
HSR CAMAS WOODS P2 LLC

_____
_____
_____

And to its Attorney:
Steve C. Morasch
Landerholm P.S.
stevem@landerholm.com
P.O. Box 1086
Vancouver, WA 98666

City of Camas
Community Development Department
Communitydevelopment@cityofcamas.us
616 NE 4th Avenue,
Camas, WA 98607

Section 17. Interpretation. This Agreement has been reviewed and revised by legal counsel for both Parties, and no presumption or rule construing ambiguity against the drafter of the document shall apply to the interpretation or enforcement of this Agreement. Nothing herein shall be construed as a waiver of the City's constitutional and statutory powers. Nothing herein shall be construed or implied that the City is contracting away its constitutional and statutory powers, except as otherwise authorized by law.

Section 18. Authority. Each signatory to this Agreement represents and warrants that he or she has full power and authority to execute and deliver this Agreement on behalf of the Party for which he or she is signing, and that he or she will defend and hold harmless the other Parties and signatories from any claim that he or she was not fully authorized to execute this Agreement on behalf of the person or entity for whom he or she signed. Upon proper execution and delivery, this Agreement will have been duly entered into by the Parties, will constitute as against each Party a valid, legal and binding obligation that shall run with the land, and will be enforceable against each Party in accordance with the terms herein.

Section 19. Delays. If either Party is delayed in the performance of its obligations in this Agreement due to Force Majeure, then performance of such obligation shall be excused for the period of delay. Force Majeure means extraordinary natural events or conditions such as war, riot, labor disputes, or other causes beyond the reasonable control of the obligated party. The City's or Developer's inability to fund, or decision not to fund, any of its obligations shall not be an acceptable reason for delay.

Section 20. No Third Party Beneficiary. This Agreement is made and entered into for the sole protection and benefit of the parties hereto and their successors and assigns. No other person shall have any right of action based upon any provision of this Agreement.

Section 21. Attorneys' Fees. In any judicial action to enforce or determine a party's rights under this Agreement, the prevailing party (or the substantially prevailing party, if no one party prevails entirely) shall be entitled to reasonable attorneys' fees, expert witness fees, and costs, including fees and costs incurred in the appeal of any ruling of a lower court.

Section 22. Cooperation in Execution of Documents. The Parties agree to properly and promptly execute and deliver any and all additional documents that may be necessary to render this Agreement practically effective. This Paragraph shall not require the execution of any document that expands, alters or in any way changes the terms of this Agreement.

Section 23. Full Understanding. The Parties each acknowledge, represent and agree that they have read this Agreement; that they fully understand the terms thereof; that they have had the opportunity to be fully advised by their legal counsel and any other advisors with respect thereto; and that they are executing this Agreement after sufficient review and understanding of its contents.

Section 24. Final and Complete Agreement. This Agreement is integrated and constitutes the final and complete expression of the Parties on all subjects relating to the development of the Property. This Agreement may not be modified, interpreted, amended, waived or revoked orally, but only by a writing signed by all Parties. This Agreement supersedes and replaces all prior agreements, discussions and representations on all subjects discussed herein, without limitation. No Party is entering into this Agreement in reliance on any oral or written promises, inducements, representations, understandings, interpretations or agreements other than those contained in this Agreement and the exhibits hereto.

IN WITNESS WHEREOF, the parties hereto have caused this to be executed as of the dates set forth below:

CITY OF CAMAS

_____

By _____

Its _____

ICG CAMAS 252ND LLC,
a Washington Limited Liability Company

_____

By _____

Its _____

HSR DEV - MILLS LLC,
a Washington Limited Liability Company

_____

By _____

Its _____

CAMAS WOODS LLC,
a Washington Limited Liability Company

_____

By _____

Its _____

HSR CAMAS WOODS P2 LLC,
a Washington Limited Liability Company

_____

By _____

Its _____

STATE OF WASHINGTON)
) ss.
County of _____)

This record was acknowledged before me on _____, 2026 by _____ as _____ of the City of Camas.

_____
NOTARY PUBLIC FOR WASHINGTON
My Commission Expires: _____

STATE OF WASHINGTON)
) ss.
County of _____)

This record was acknowledged before me on _____, 2026 by _____ as _____ of the ICG CAMAS 252ND LLC, a Washington limited liability company.

_____
NOTARY PUBLIC FOR WASHINGTON
My Commission Expires: _____

STATE OF WASHINGTON)
) ss.
County of _____)

This record was acknowledged before me on _____, 2026 by _____ as _____ of the HSR DEV - MILLS LLC LLC, a Washington limited liability company.

_____
NOTARY PUBLIC FOR WASHINGTON
My Commission Expires: _____

STATE OF WASHINGTON)
) ss.
County of _____)

This record was acknowledged before me on _____, 2026 by _____ as _____ of the CAMAS WOODS LLC, a Washington limited liability company.

_____
NOTARY PUBLIC FOR WASHINGTON
My Commission Expires: _____

STATE OF WASHINGTON)
) ss.
County of _____)

This record was acknowledged before me on _____, 2026 by _____ as _____ of the HSR CAMAS WOODS P2 LLC, a Washington limited liability company.

_____
NOTARY PUBLIC FOR WASHINGTON
My Commission Expires: _____

WWW.AKS-ENG.COM

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVENUE, SUITE 2520
VANCOUVER, WA 98682
(360) 882-0419

October 11, 2026

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

RE: Village at North Shore Staff Report Response

Dear Madeline:

Below is a list of clarifications with the findings and requested revisions to the conditions for the Saff Report for Village at North Shore (SUB25-1008) (Staff Report), dated October 8, 2026. The clarifications or modifications to the findings and conditions are identified followed by reasoning for the request. All requested condition modifications also apply to the associated findings in the staff report.

PROJECT INFORMATION AND SUMMARY

Page 1 – PROPOSAL
To construct ~~102~~ 104 attached and detached single-family residential lots and six mixed-use lots containing buildings with apartment units and commercial space.

Request: Revise the project proposal as edited above. One hundred four (104) attached and detached single-family residential lots are planned with this project following changes made for the Development Agreement (DA).

Page 2 – SUMMARY (First Paragraph)
An application has been made to the City of Camas for Preliminary Plat approval to construct ~~102~~ 104 attached and detached single-family residential lots and six mixed-use lots containing buildings with apartment units and commercial spaces.

Request: Revise the project summary as edited above. One hundred four (104) attached and detached single-family residential lots are planned with this project following changes made for the DA).

CONDITIONS

Condition 10 – Page 54
If any item of archaeological interest is uncovered during a permitted land-disturbing action or activity, all ground disturbing activities in the immediate vicinity shall immediately cease, and the applicant shall notify the City and the Department of Archaeology and Historic Preservation (DAHP).

Request: The Applicant requests the condition be revised as noted above. The modification will allow site improvements to continue elsewhere on-site while any discovered items are investigated.

Condition 12 – Page 54

At the time of building permit approval, the applicant shall pay the appropriate impact fees in accordance with the provisions of CMC 3.88. Traffic impact fees (TIF) are to be paid as described in the Development Agreement Section 4.8.1.

Request: The Applicant requests the condition be revised as noted above. The modification will align the condition with the approved DA.

Condition 20 – Page 54

Unless construction of this site commences within ~~five (5)~~ ten (10) *years of issuance of this decision,* as described in Section 3 of the Development Agreement, *this permit will expire.*

Request: The Applicant requests the condition be revised as noted above. The modification will align the condition with the approved DA.

Condition 21 – Page 54

If potential artifacts are discovered during construction, work must immediately cease in the immediate vicinity*, and both the State Department of Archaeological and Historic Preservation and the City shall be notified.*

Request: The Applicant requests the condition be revised as noted above. The modification will allow site improvements to continue elsewhere on-site while any discovered items are investigated.

Condition 37 – Page 55

Lots ~~97-99~~ 98-101 *are considered double frontage lots and require a landscape tract.*

Request: The Applicant requests the condition be revised as noted above. The modification request is to match the lot numbering in the Developers Agreement Master Plan.

Condition 38 – Page 55

The applicant shall dedicate Tract A, with the final plat, to the City for the future installation of public are as identified in Section 4.4.4 of the Development Agreement. ~~*submit drawings or renderings of the proposed public art prior to engineering plan approval for the phase in which the art will be located*~~.

Request: The Applicant requests the condition be revised as noted above. The modification will align the condition with the approved DA.

Condition 41 – Page 56

The applicant shall submit revised water utility plans that include the locations of all water services and water meter boxes on both the public streets and the private streets located in Tracts P and G. Additionally, the revised utility plans are to show the water utility easement over and under the 8-inch water main, the water meters, and meter boxes located in Tract P for Lots 1 through 22; and Tract G for Lots ~~96 through 102~~ 98 through 104.

Request: The Applicant requests the condition be revised as noted above. The modification request is to match the lot numbering in the Developers Agreement Master Plan.

Condition 63 – Page 58 and 59

Prior to engineering plan approval, the applicant should submit revised street plans showing construction of the full width of the approved Section 3 of the North Shore Development Agreement Master Plan for North Shore Blvd. from Sta 10+04 to approximate Sta 20+51.24 that is referenced as Phase 2A, Phase 1, which includes the future roundabout, and Phase 3A (Exhibit 37, Sheet MP-02 and MP-04). ~~*that abuts the Enclave at North Shore subdivision (Parcel No. 178171000), to approximate Sta 20+51.24.*~~

Request: The Applicant requests the condition be revised as noted above. This is to match stationing that starts at NW corner of site and ends at the Enclave in the southeast corner of the site.

Condition 65 – Page 59

Prior to engineering plan approval, the applicant should submit revised street plans showing construction of the full width of the approved Section 3 of the North Shore Development Agreement Master Plan for North Shore Blvd. from approximate Sta 26+77.72 to Sta 32+06.30 that is referenced as Phase 6A ~~*Phase 3A, Phase 1, which includes the future roundabout, and Phase 2A.*~~ *(Exhibit 37, Sheet MP-02 and MP-04).*

Request: The Applicant requests the condition be revised as noted above. This is to match stationing that starts at NW corner of site and ends at the Enclave in the southeast corner of the site.

Condition 66 – Page 59

Prior to engineering plan approval for the Phase 1 improvements that the plans should be revised to include a dead-end turnaround at the eastern end of N 54th Avenue at future Lots 96 and 97 ~~*94 and 95*~~ *until such time as Phase 2 is constructed.*

Request: The Applicant requests the condition be revised as noted above. The modification request is to match the lot numbering in the Developers Agreement Master Plan.

Condition 68 – Page 59

Prior to engineering plan approval for the Phase 1 improvements, which includes N 55th Avenue, that the plans shall ~~*be revised to*~~ *include a dead-end turnaround in the form of either a hammerhead or a cul-de-sac at future Lots* 43 and 63 ~~*35 and 36 and Lots 60 and 61 and the pass-through access easement to Tract L is to be as an access between N 55th Avenue and N 54th Avenue removed*~~*.*

Request: The Applicant requests the condition be revised as noted above. The modification is to match the Developers Agreement Master Plan, that now shows a turnaround and no access easement between N 55th Avenue and N 54th Avenue.

Condition 71 – Page 59

~~*The preliminary plat and the street plans should be revised to eliminate Tract R off-street parking spaces.*~~

Request: The Applicant requests the condition be removed as Tract R does not exist on the Developers Agreement Master Plan. Tract R was removed as part of the site adjustments for the DA.

Condition 74 – Page 60

~~*The preliminary plat and the street plans shall be revised with private road N 57th Place extended to the east property line of Lot 15 and the east property line of Lot 18, which will eliminate the need for an access and utility easement across Lots 16 and 17 respectively.*~~

Request: The Applicant requests the condition be removed as this situation no longer exists in the Developers Agreement Master Plan. The layout was modified to remove this as part of the site adjustments for the DA.

Condition 75 – Page 60

The applicant shall obtain approval of a road deviation to allow N 54th Place to be construction of Private Street Section A and N Bear Lane to be constructed to Private Street Section C; or the *preliminary plat and the street plans are to be revised providing the required tract width and paved surface in accordance with Private Street Section D. The city engineer would be in support of a deviation from the standard requiring a sidewalk on both sides of the streets* if Private Street Section D is used*.*

Request: The Applicant requests the condition be revised as noted above. The Applicant understands that the total length of both N Bear Lane and N 54th Place is greater than 300 feet and together both private streets serve seven lots. However, N 54th Place only serves four lots and N Bear Lane only has three lots fronting the street. N Bear Land and N 54th Place are also each less than 300 feet individually. The Applicant believes this meets the intent of Private Street Sections A and C and would like the opportunity to submit a road deviation request for approval during final engineering review.

Condition Heading above Condition 79 – Page 60

Lots ~~103, 104,~~ 105, 106, 107, ~~and~~ 108, 109, and 110

Request: The Applicant requests the condition be revised as noted above. The modification request is to match the lot numbering in the Developers Agreement Master Plan.

Condition 79 – Page 60

The preliminary plat and street plans are to be revised with the curb return radius on both sides of the drive access to Lots 106 and 107 ~~*104 and 105*~~ *to be a minimum 35-feet.*

Request: The Applicant requests the condition be revised as noted above. The modification request is to match the lot numbering in the Developers Agreement Master Plan.

Condition 81 – Page 61

The street plans are to be submitted with the following revisions:

a. *A sign is to be installed on both the gates stating, Emergency Vehicle Access Only'.*
b. *A note is to be added to the final plat and street plans stating that 'All vehicular access is prohibit except for emergency* and maintenance *vehicles.'*
c. *An Opticom activated gate is to be installed at the north end of the emergency access road to Tract K south of the parking stalls, and on the south end of the emergency access road north of the existing boat launch parking lot. The applicant is to work with staff to determine the best location for the south gate.*
d. *The applicant is responsible for providing and installing the gates at both locations and for obtaining the gate permits in accordance with CMC 12.36.*

e. *The* HOA and/or homeowners are ~~*applicant is*~~ *responsible for ownership and maintenance of the gate located on Tract K.*~~*, for parking and access to N 54th Avenue of the proposed development.*~~

f. *The city will be responsible for ownership and maintenance of the gate located adjacent to the boat launch parking lot on the city's park open space.*

Request: The Applicant requests the condition be revised as noted above. For condition 81.b, the modification will allow for utility maintenance vehicle access. For condition 81.e, the HOA or future homeowners will own and maintain the gate on Tract K following platting.

Condition 83 – Page 61

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.*

Request: The Applicant requests the condition be revised as noted above. As the final construction type and material for the retaining wall could change during final engineering design, the modification requires any retaining wall to be reviewed.

Condition 89 – Page 62

Proof of the purchased mitigation credits ~~*of 1.063*~~ *shall be submitted to the city.*

Request: The Applicant requests the condition be revised as noted above. The amount of mitigation credits may change with the final mitigation plan; therefore, stating a specific amount of credits may result in too many or too few credits being required for final plat.

Condition 90 – Page 62

The applicant shall include the following notes on the final plat:

a. *The grinder pumps for the single-family residences are owned and maintained by the individual homeowners.*
b. *The grinder pumps for the multi-family residential units are owned and maintained by the property owners of the multi-family residential units on Lots* 105 and 110 ~~*103 and 108*~~*.*
c. *The grinder pumps for the mixed-use commercial development are to be owned and maintained by the property owners of the mixed-use commercial developments on Lots* 106 and 109 ~~*104-107*~~*.*

Request: The Applicant requests the condition be revised as noted above. The modification request is to match the lot numbering in the Developers Agreement Master Plan.

Condition 91 – Page 62

An access and utility easement is to be recorded of the private streets located in Tract P, Tract L, and Tract G, stating that the HOA/Homeowners taking access off the private streets will be responsible for ownership and maintenance of said private streets. The following plat notes to this effect is warranted:

a. *Tract P, a private street, shall be owned and maintained by the Homeowners Association (HOA) and/or individual homeowners.*
b. *Tract G, a private street, shall be owned and maintained by the Homeowners Association (HOA) and/or individual homeowners.*

c. Tract L, a private street, shall be owned and maintained by the Homeowners Association (HOA) and/or individual homeowners.

Request: The Applicant requests the condition be revised as noted above. This is to include Tract L, which is a planned private street within the project area.

Condition 92 – Page 62 and 63

Prior to final plat approval, the following easements are to be shown 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,* except along Tract B, as identified in Section 4.4.1.(4) of the Development Agreement.
b. *A utility access and maintenance easement to the city, for the water mains and sanitary sewer system in private street* Tract L, *Tract P, and Tract G.*
c. *A utility access and maintenance easement to the city for the water transmission main, the sanitary sewer main, and the stormwater main located within the emergency access road from SE Leadbetter Road to N 54th Avenue.*
d. *A right-of-entry is to be granted to the city for stormwater inspection purposes of the stormwater facilities located in Tracts C, D, and E.*
e. *A public pedestrian access easement over the emergency access road from SE Leadbetter Road to N 56th Avenue.*
f. *The storm facilities located in Tracts C, D, and E, 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.*

Request: The Applicant requests the condition be revised as noted above. The modification to 92.a is to align the condition with the approved DA. The modification to Condition 92.b is to address Tract L, which is a planned private street within the project area that was added as part of the site updates for the DA.

Condition 101 – Page 64

~~*The applicant shall collaborate with WSDOT to identify and implement (if construction is required) capacity mitigation at the SR 500 (NE 242nd Avenue)/NE 28th Street intersection in conjunction with site development.*~~

~~*a. Potential options identified to explore with WSDOT include but are not limited to payment of a proportional share financial contribution to a future intersection capacity improvement.*~~

Request: The Applicant requests the condition be removed as it is a repeat of condition 100.

Condition 108 – Page 64

~~*Apartment units are not permitted in the Commercial - North Shore zone and the application shall be updated to reflect this.*~~

Request: The Applicant requests the condition be removed. As noted in the finding, the Developers Agreement allows apartments over commercial in the commercial zoning district.

Proposed Plat Notes

Plat Note 2 – Page 64

The grinder pumps for the multi-family residential units are owned and maintained by the property owners of the multi-family residential units on Lots 105 and 110 ~~103 and 108~~.

Request: The Applicant requests the condition be revised as noted above. The modification request is to match the lot numbering in the Developers Agreement Master Plan.

Plat Note 3 – Page 64

The grinder pumps for the multi-family residential units are owned and maintained by the property owners of the multi-family residential units on Lots 106-109 ~~104-107~~.

Request: The Applicant requests the condition be revised as noted above. The modification request is to match the lot numbering in the Developers Agreement Master Plan.

Plat Note 6

Tract L, a private street, shall be owned and maintained by the Homeowners Association (HOA) and/or individual homeowners.

Request: The Applicant requests a plat note be added. This is to address Tract L, which is a planned private street within the project area that was added as part of the site updates for the DA.

Sincerely,

AKS ENGINEERING & FORESTRY, LLC



Michael Andreotti, RLA, Land Use Planner

WWW.AKS-ENG.COM

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVENUE, SUITE 2520
VANCOUVER, WA 98682
(360) 882-0419

October 11, 2026

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

RE: Village at North Shore Staff Report Response

10/12/26: Staff responses in 'Blue' text below.

Dear Madeline:

Below is a list of clarifications with the findings and requested revisions to the conditions for the Saff Report for Village at North Shore (SUB25-1008) (Staff Report), dated October 8, 2026. The clarifications or modifications to the findings and conditions are identified followed by reasoning for the request. All requested condition modifications also apply to the associated findings in the staff report.

PROJECT INFORMATION AND SUMMARY

Page 1 – PROPOSAL

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CONDITIONS

Condition 10 – Page 54

If any item of archaeological interest is uncovered during a permitted land-disturbing action or activity, all ground disturbing activities in the immediate vicinity shall immediately cease, and the applicant shall notify the City and the Department of Archaeology and Historic Preservation (DAHP). OK

Request: The Applicant requests the condition be revised as noted above. The modification will allow site improvements to continue elsewhere on-site while any discovered items are investigated.

Revise COA 12 to read:
At the time of building permit approval, the traffic impact fees will be deferred until the City has issued all eligible Traffic Impact Fee Credits, per DA Section 4.8.1.

Condition 12 – Page 54

~~*At the time of building permit approval, the applicant shall pay the appropriate impact fees in accordance with the provisions of CMC 3.88.* Traffic impact fees (TIF) are to be paid as described in the Development Agreement~~ Section 4.8.1.

Request: The Applicant requests the condition be revised as noted above. The modification will align the condition with the approved DA.

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Unless construction of this site commences within ~~five (5)~~ ten (10) *years of issuance of this decision,* as described in Section 3 of the Development Agreement, *this permit will expire.* OK

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If potential artifacts are discovered during construction, work must immediately cease in the immediate vicinity, *and both the State Department of Archaeological and Historic Preservation and the City shall be notified.* OK

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Request: The Applicant requests the condition be revised as noted above. The modification will align the condition with the approved DA.

Staff does not support. COA 38 should remain as written

Condition 41 – Page 56

The applicant shall submit revised water utility plans that include the locations of all water services and water meter boxes on both the public streets and the private streets located in Tracts P and G. Additionally, the revised utility plans are to show the water utility easement over and under the 8-inch water main, the water meters, and meter boxes located in Tract P for Lots 1 through 22; and Tract G for Lots ~~96 through 102~~ 98 through 104. OK

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Condition 68 – Page 59

Prior to engineering plan approval for the Phase 1 improvements, which includes N 55th Avenue, that the plans shall ~~*be revised to*~~ *include a dead-end turnaround in the form of either a hammerhead or a cul-de-sac at future Lots* 43 and 63 ~~*35 and 36 and Lots 60 and 61 and the pass-through access easement to Tract L is to be as an access between N 55th Avenue and N 54th Avenue removed*~~*.* OK

Request: The Applicant requests the condition be revised as noted above. The modification is to match the Developers Agreement Master Plan, that now shows a turnaround and no access easement between N 55th Avenue and N 54th Avenue.

Condition 71 – Page 59

~~*The preliminary plat and the street plans should be revised to eliminate Tract R off-street parking spaces.*~~

Request: The Applicant requests the condition be removed as Tract R does not exist on the Developers Agreement Master Plan. Tract R was removed as part of the site adjustments for the DA. OK

COA 75 to be revised to read:
The City Engineer would support a deviation request for N Bear Lane and N 54th Place to meet the requirements of Private Street Section C. Staff is not in support of the deviation request for N 54th Place to meet the requirements of Private Street Section A. The applicant will need to address adequate access and turnaround for garbage, recycling, and emergency services prior to support from the city engineer for Private Street Section A for N 54th Place.

Condition 74 – Page 60

~~*The preliminary plat and the street plans shall be revised with private road N 57th Place extended to the east property line of Lot 15 and the east property line of Lot 18, which will eliminate the need for an access and utility easement across Lots 16 and 17 respectively.*~~ OK

Request: The Applicant requests the condition be removed as this situation no longer exists in the Developers Agreement Master Plan. The layout was modified to remove this as part of the site adjustments for the DA.

Condition 75 – Page 60

The applicant shall obtain approval of a road deviation to allow N 54th Place to be construction of Private Street Section A and N Bear Lane to be constructed to Private Street Section C; or the *preliminary plat and the street plans are to be revised providing the required tract width and paved surface in accordance with Private Street Section D. The city engineer would be in support of a deviation from the standard requiring a sidewalk on both sides of the streets* if Private Street Section D is used*.*

Request: The Applicant requests the condition be revised as noted above. The Applicant understands that the total length of both N Bear Lane and N 54th Place is greater than 300 feet and together both private streets serve seven lots. However, N 54th Place only serves four lots and N Bear Lane only has three lots fronting the street. N Bear Land and N 54th Place are also each less than 300 feet individually. The Applicant believes this meets the intent of Private Street Sections A and C and would like the opportunity to submit a road deviation request for approval during final engineering review.

Condition Heading above Condition 79 – Page 60

Lots ~~103, 104,~~ 105, 106, 107, ~~and~~ 108, 109, and 110 OK

Request: The Applicant requests the condition be revised as noted above. The modification request is to match the lot numbering in the Developers Agreement Master Plan.

Condition 79 – Page 60

The preliminary plat and street plans are to be revised with the curb return radius on both sides of the drive access to Lots 106 and 107 ~~*104 and 105*~~ *to be a minimum 35-feet.* OK

Request: The Applicant requests the condition be revised as noted above. The modification request is to match the lot numbering in the Developers Agreement Master Plan.

Condition 81 – Page 61

The street plans are to be submitted with the following revisions:

a. *A sign is to be installed on both the gates stating, Emergency Vehicle Access Only'.*
b. *A note is to be added to the final plat and street plans stating that 'All vehicular access is prohibit except for emergency* and maintenance *vehicles.'* OK
c. *An Opticom activated gate is to be installed at the north end of the emergency access road to Tract K south of the parking stalls, and on the south end of the emergency access road north of the existing boat launch parking lot. The applicant is to work with staff to determine the best location for the south gate.*
d. *The applicant is responsible for providing and installing the gates at both locations and for obtaining the gate permits in accordance with CMC 12.36.*

e. *The* HOA and/or homeowners are ~~*applicant is*~~ *responsible for ownership and maintenance of the gate located on Tract K.*~~*, for parking and access to N 54th Avenue of the proposed development.*~~ OK

f. *The city will be responsible for ownership and maintenance of the gate located adjacent to the boat launch parking lot on the city's park open space.*

Request: The Applicant requests the condition be revised as noted above. For condition 81.b, the modification will allow for utility maintenance vehicle access. For condition 81.e, the HOA or future homeowners will own and maintain the gate on Tract K following platting.

Condition 83 – Page 61

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.*

Request: The Applicant requests the condition be revised as noted above. As the final construction type and material for the retaining wall could change during final engineering design, the modification requires any retaining wall to be reviewed. Clarification: Block/modular walls are submitted to Engineering. Poured in-place concrete walls require a building permit application to Bldg. Dept. for review, approval, and inspection. See Page 42 Retaining Walls discuss.

Condition 89 – Page 62

Proof of the purchased mitigation credits ~~*of 1.063*~~ *shall be submitted to the city.* OK

Request: The Applicant requests the condition be revised as noted above. The amount of mitigation credits may change with the final mitigation plan; therefore, stating a specific amount of credits may result in too many or too few credits being required for final plat.

Condition 90 – Page 62

The applicant shall include the following notes on the final plat:

a. *The grinder pumps for the single-family residences are owned and maintained by the individual homeowners.*
b. *The grinder pumps for the multi-family residential units are owned and maintained by the property owners of the multi-family residential units on Lots* 105 and 110 ~~*103 and 108*~~*.* OK
c. *The grinder pumps for the mixed-use commercial development are to be owned and maintained by the property owners of the mixed-use commercial developments on Lots* 106 and 109 ~~*104-107*~~*.* OK

Request: The Applicant requests the condition be revised as noted above. The modification request is to match the lot numbering in the Developers Agreement Master Plan.

Condition 91 – Page 62

OK

An access and utility easement is to be recorded of the private streets located in Tract P, Tract L, and Tract G, stating that the HOA/Homeowners taking access off the private streets will be responsible for ownership and maintenance of said private streets. The following plat notes to this effect is warranted:

a. *Tract P, a private street, shall be owned and maintained by the Homeowners Association (HOA) and/or individual homeowners.*
b. *Tract G, a private street, shall be owned and maintained by the Homeowners Association (HOA) and/or individual homeowners.*

c. Tract L, a private street, shall be owned and maintained by the Homeowners Association (HOA) and/or individual homeowners. OK

Request: The Applicant requests the condition be revised as noted above. This is to include Tract L, which is a planned private street within the project area.

Condition 92 – Page 62 and 63

Prior to final plat approval, the following easements are to be shown 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,* except along Tract B, as identified in Section 4.4.1.(4) of the Development Agreement. OK
b. *A utility access and maintenance easement to the city, for the water mains and sanitary sewer system in private street* Tract L, *Tract P, and Tract G.* OK
c. *A utility access and maintenance easement to the city for the water transmission main, the sanitary sewer main, and the stormwater main located within the emergency access road from SE Leadbetter Road to N 54th Avenue.*
d. *A right-of-entry is to be granted to the city for stormwater inspection purposes of the stormwater facilities located in Tracts C, D, and E.*
e. *A public pedestrian access easement over the emergency access road from SE Leadbetter Road to N 56th Avenue.*
f. *The storm facilities located in Tracts C, D, and E, 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.*

Request: The Applicant requests the condition be revised as noted above. The modification to 92.a is to align the condition with the approved DA. The modification to Condition 92.b is to address Tract L, which is a planned private street within the project area that was added as part of the site updates for the DA.

Condition 101 – Page 64

~~*The applicant shall collaborate with WSDOT to identify and implement (if construction is required) capacity mitigation at the SR 500 (NE 242nd Avenue)/NE 28th Street intersection in conjunction with site development.*~~

~~*a. Potential options identified to explore with WSDOT include but are not limited to payment of a proportional share financial contribution to a future intersection capacity improvement.*~~ OK

Request: The Applicant requests the condition be removed as it is a repeat of condition 100.

Condition 108 – Page 64

~~*Apartment units are not permitted in the Commercial - North Shore zone and the application shall be updated to reflect this.*~~ OK

Request: The Applicant requests the condition be removed. As noted in the finding, the Developers Agreement allows apartments over commercial in the commercial zoning district.

Proposed Plat Notes

Plat Note 2 – Page 64

The grinder pumps for the multi-family residential units are owned and maintained by the property owners of the multi-family residential units on Lots 105 and 110 ~~103 and 108~~. OK

Request: The Applicant requests the condition be revised as noted above. The modification request is to match the lot numbering in the Developers Agreement Master Plan.

Plat Note 3 – Page 64

The grinder pumps for the multi-family residential units are owned and maintained by the property owners of the multi-family residential units on Lots 106-109 ~~104-107~~. OK

Request: The Applicant requests the condition be revised as noted above. The modification request is to match the lot numbering in the Developers Agreement Master Plan.

Plat Note 6

Tract L, a private street, shall be owned and maintained by the Homeowners Association (HOA) and/or individual homeowners. OK

Request: The Applicant requests a plat note be added. This is to address Tract L, which is a planned private street within the project area that was added as part of the site updates for the DA.

Sincerely,

AKS ENGINEERING & FORESTRY, LLC



Michael Andreotti, RLA, Land Use Planner

WWW.AKS-ENG.COM

AKS ENGINEERING & FORESTRY, LLC
9600 NE 126TH AVENUE, SUITE 2520
VANCOUVER, WA 98682
(360) 882-0419

October 13, 2026

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

RE: Village at North Shore (SUB25-1008) Public Comment Response

Dear Madeline:

This letter is in response to the public comment letters received to this point, including Exhibits 29 to 33. This response is written as a single response given the main concern of all comments was generally centered around pedestrian and bicycle safety, specifically along North Shore Boulevard.

As shown in Exhibits 37 and 38, the project is now subject to an approved Development Agreement (Resolution 26-015). As part of this agreement, the road section for North Shore Boulevard was modified. As part of this modification, bicycle facilities for North Shore Boulevard were removed from the core road section and placed in a 12-foot-wide multi-use path that is separated from the roadway by a planter strip for a majority of the project. In one location, in order to provide greater critical area protection, a short segment of the multi-use path is attached to the curb. In addition to the planter strips, there is also on-street parking planned along portions of the road that will provide additional separation from vehicle traffic.

The planned North Shore Boulevard section also includes a planter center median for a majority of the project. This median, along with the on-street parking, will provide a visual narrowing of vehicle travel way, which can create a traffic calming effect and help to keep traffic speeds lower.

The remaining streets within the development will be local access streets that will have lower speeds and traffic volumes. In these locations, bicyclists will be able to share the roadway with vehicles, while pedestrians will continue to use a detached sidewalk.

Sincerely,
AKS ENGINEERING & FORESTRY, LLC

Michael Andreotti, RLA, Land Use Planner
andreottim@aks-eng.com

Carey Certo

From: Scott York <scotty@bild-inc.com>
Sent: Tuesday, October 13, 2026 12:45 PM
To: Community Development Email; scott.gwgs@gmail.com
Subject: File Number SUB25-1008

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Attached are a library of photographs taken March 2025-May 2025

The videos and photos are of particular interest to this case as it is documenting abuse of the easment, construction entrance being constructed for The Enclave on the adjoining property, and these pre date the issuance of the WAR permit for The Enclave

The WAR permit specifically listed Benton Drive as the only legal entrance.

This is a full display of earth moving and road building without any permit coverage.

There is no record of any permits for any work at 305 SE 252nd Ave Camas WA 98607 during my tenacy from Sept 2018 thru Sept 2025.

I am attaching a link to the photos and videos as the files are too numerous and too large to compress

Please acknowledge receipt for the comment period for this application

Thank you
https://photos.app.goo.gl/wFd6C5RSH3dNtx8d7

Sent from my Galaxy

Carey Certo

From: Scott York <scotty@bild-inc.com>
Sent: Tuesday, October 13, 2026 1:47 PM
To: Community Development Email
Cc: scott.gwgs@gmail.com
Subject: File SUB25-1008

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I will attach a link to photos that document the destruction of portions of Wetland A and portions of Stream A for the purposes of this application some of the Stream A photos will be located in the tract adjacent to The Enclave to the east and some will be from the vantage point of Wetland A and Stream A perspectives looking from all directions.

The photos and my subsequent comments and testimony will show the applicants vendors filling in a significant portion of the beginning of Stream A
as well as raising the grade from the farm road that bisects the Wetland A and Stream A from east to west.

Once these photos are looked at Google Earth can verify with time and date stamps on my original unedited raw photos. The text was added to clarify exact locations as they relate to the design plans and their nomenclature.

The first link provided shows the overall condition of the stream, wetland areas, and roads paying attention to the topography and elevations that can be inferred from the photos and videos from prior to SEP 2022 and will be comparable to the SEPT 2022-MAR 2025 photos as most were taken from the same location
I can clarify the locations and compare side by side but these are self explanatory.

The applicant has shown no regard for DOE policy, state law, city municipal code, or even federal law.

Willful destruction of a sensitive watershed area, especially the Lacamas Lake Watershed goes against the values of the community and is a crime according to RCW 90.48.080 as the discharge is directly put into Lacamas Lake.

RCW 9A.76.175 is at play here as well. The applicants are required to certify their applications to be true under penalty of law and this unpermitted work constitutes mis-representation of material facts.

The second link and arguably the most damaging set of photos and videos shows the area marked Stream A and Wetland A on AKS paperwork or WETLAND B amd Stream B on ELS paperwork. Ultimately its the only Stream in the plan set that is adjacent to and impacted upon Tracts C,D,E,F,H,I.

The location of the streams beginning on AKS and ELS plans are shown as they existed AFTER the stream and Wetland was disrupted, filled in, and flattened out with the work that was done onsite from Sept 2022 onward but prior to site visits by AKS, ELS, DOE, or any other entities that were tied to the creation of this application.The actual functional beginning of the stream is listed on Clark County GIS portal and is significantly further south than is listed.

That Stream delineation is important to the entire layout of the subdivision including the layout of the proposed North Shore Alignment.It is known as Watershed 10

The North Shore alignment submitted BY AKS Engineering 16.51 Critical Areas lists a 260 foot High Intensity Land Use Buffer and that is not listed anywhere on this application and will have a material impact on the functional layout of all Tracts listed in the plan set.

Staff Notes Page 2 summary noted a "Development Agreement entered into with the applicant and the City of Camas.
Why is this not part of the application for the public to review? What is contained in this agreement? Who signed off on this agreement and what does it entails?
This is entirely outside of protocols especially when the agreement dated 9/21/2026 was only days before notice of public hearing was sent out (9/25/1026) therefore documents should be made available for public review if it pertains directly to this application. What are we not being told?

The entire application must be rejected immediately and the process of restoring the Stream and Wetland be undertaken immediately. Time is of the essence as extensive damage to the entire ecosystem of Lacamas Lake and its last remaining undistrubed Watershed has now been disturbed.

https://photos.app.goo.gl/KAY43orSQyBPDnA36

https://photos.app.goo.gl/PUuUszcfyBY3Zy4P8

Sent from my Galaxy

Carey Certo

From: Scott York <scotty@bild-inc.com>
Sent: Tuesday, October 13, 2026 1:53 PM
To: Community Development Email
Subject: RE: File Number SUB25-1008

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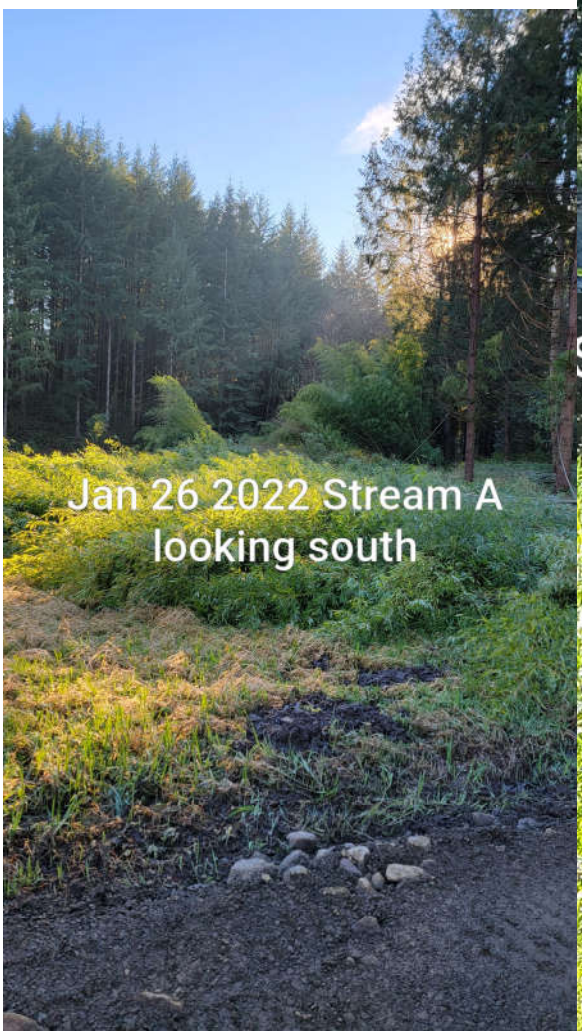
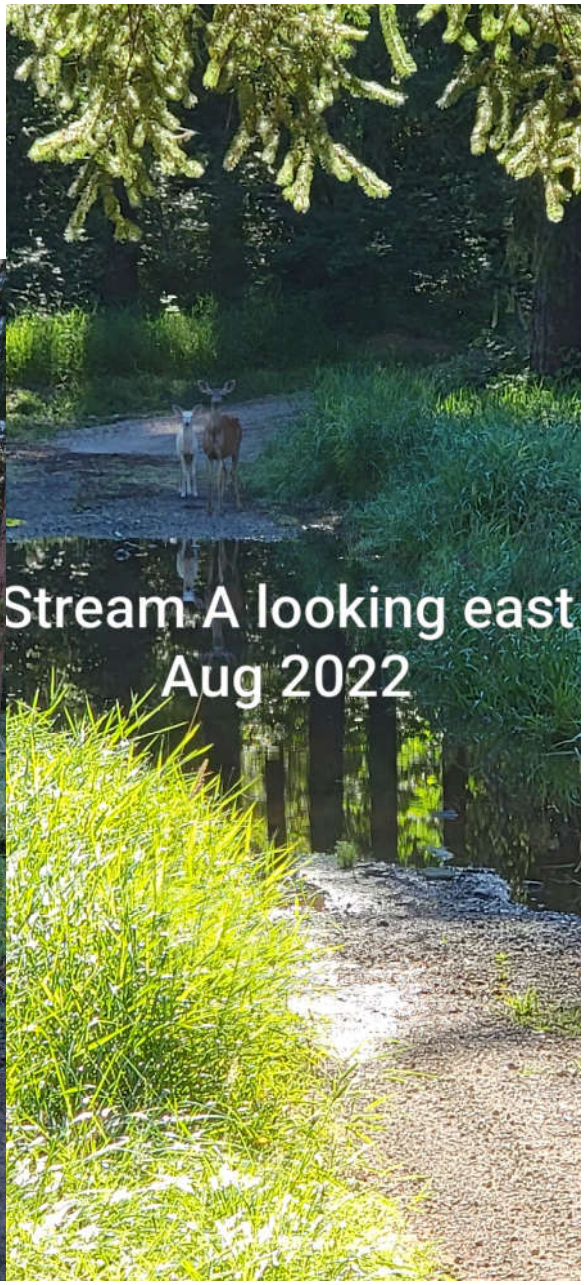
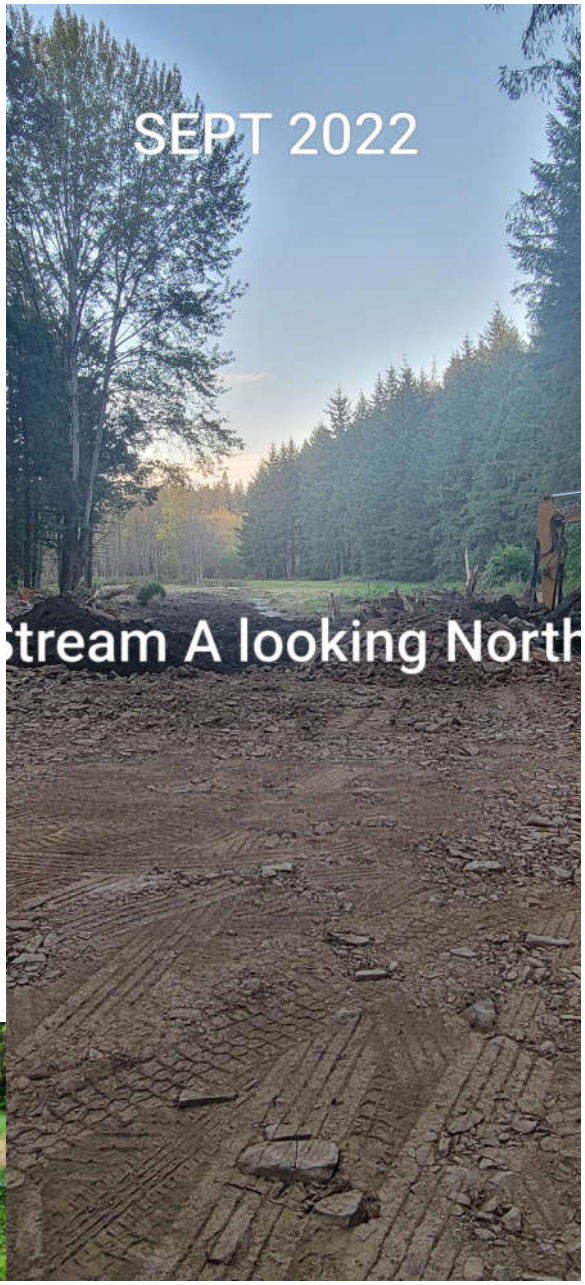
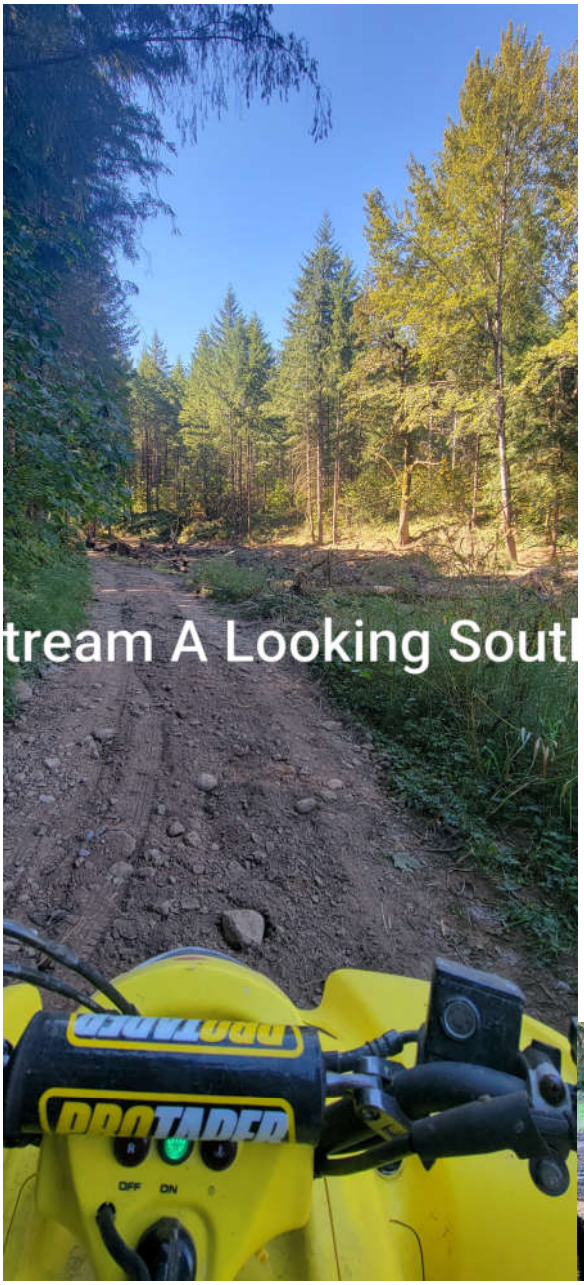

Jan 26 2022 Stream A
looking south


Stream A looking east
Aug 2022


SEPT 2022
tream A looking North


Stream A bisecting road
looking East Jun 2022





Is this the proper way to attach photos. I am condensing the quantity and sending multiple emails please advise

Sent from my Galaxy

Carey Certo

From: Scott York <scotty@bild-inc.com>
Sent: Tuesday, October 13, 2026 4:14 PM
To: Community Development Email
Subject: RE: File Number SUB25-1008

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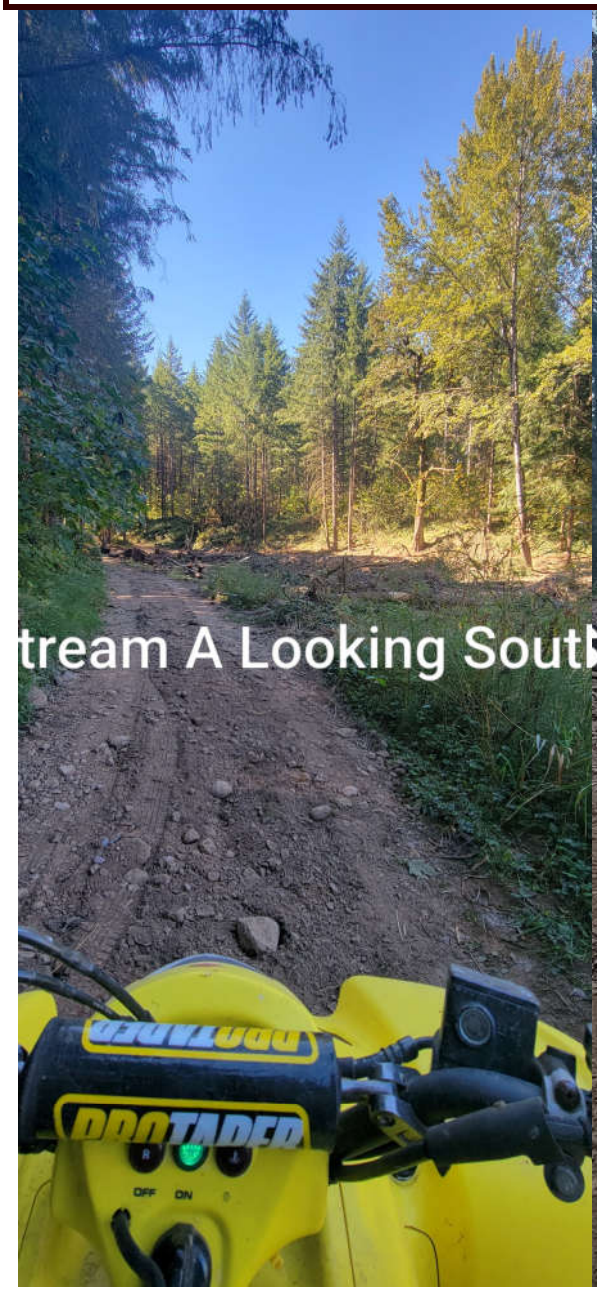

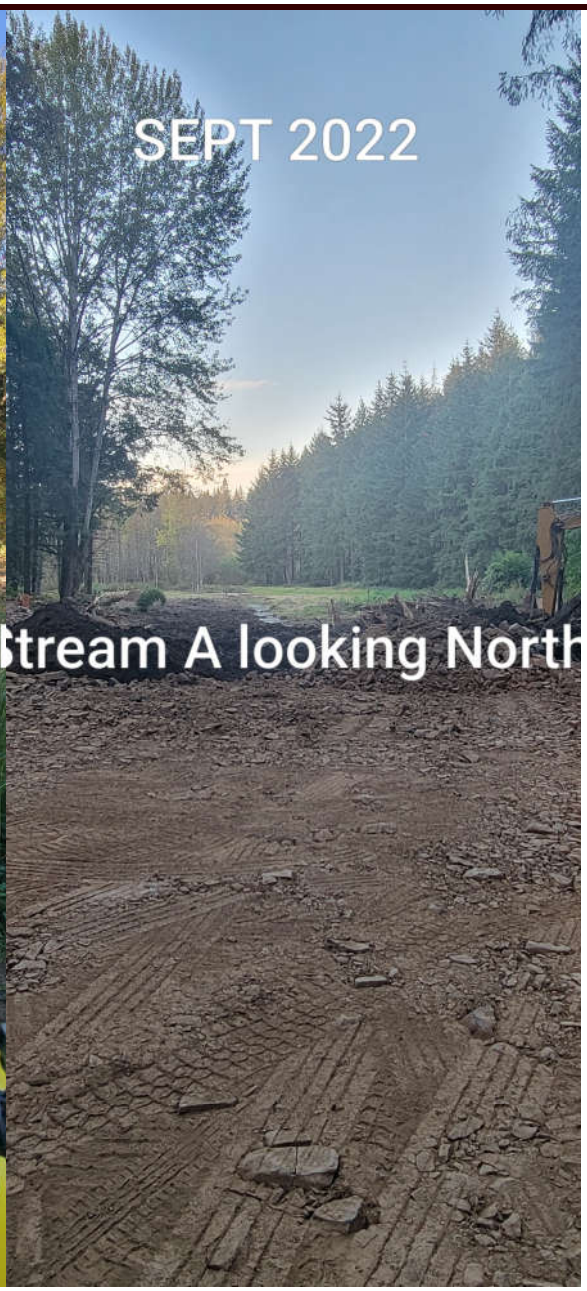

Carey Certo

From: Robert Maul
Sent: Tuesday, October 13, 2026 3:59 PM
To: Joe Turner; Carey Certo
Subject: Fwd: SUB25-1008 Village at North Shore Public Comment Response

Begin forwarded message:

From: Michael Andreotti <andreottim@aks-eng.com>
Date: October 13, 2026 at 3:47:33 PM PDT
To: Robert Maul <RMaul@cityofcamas.us>, Madeline Coulter <mcoulter@cityofcamas.us>
Cc: Carey Certo <CCerto@cityofcamas.us>, Theresa McGuire-Cook <theresa.mcguire-cook@aks-eng.com>, Bryce Hanson <BryceH@aks-eng.com>, Anita Ashton <AAshton@cityofcamas.us>, Alan Peters <APeters@cityofcamas.us>, stevem <stevem@landerholm.com>, Andy Swanson <andy@hsr-capital.com>
Subject: RE: SUB25-1008 Village at North Shore Public Comment Response

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Robert –

Thank you for the response and clarification.

Based on that, we would request that Condition 38 be changed prior to final plat to give a little more time to work out the details on the public art.

If this is acceptable, please include this email in the record for the examiner.

Thanks,

Michael Andreotti, RLA
Land Use Planner
AKS ENGINEERING & FORESTRY, LLC
P: 360.882.0419 | www.aks-eng.com | andreottim@aks-eng.com

From: Robert Maul <RMaul@cityofcamas.us>
Sent: Tuesday, October 13, 2026 2:48 PM
To: Michael Andreotti <andreottim@aks-eng.com>; Madeline Coulter <mcoulter@cityofcamas.us>

Cc: Carey Certo <CCerto@cityofcamas.us>; Theresa McGuire-Cook <theresa.mcguire-cook@aks-eng.com>; Bryce Hanson <BryceH@aks-eng.com>; Anita Ashton <AAshton@cityofcamas.us>; Alan Peters <APeters@cityofcamas.us>; stevem <stevem@landerholm.com>; Andy Swanson <andy@hsr-capital.com>
Subject: RE: SUB25-1008 Village at North Shore Public Comment Response

Hi Michael.

Alan and I have discussed further today. The intent with the DA was clearly to get some public art space out there, which I believe you heard council support. And yes, the language does specify the dedication for the space to do so, but I do also believe there is some expectation from council that something would happen with the development.

That said we have not specified anything specific about possible art, nor have we conditioned that you build it. We would like to have the discussion about what could go out there and if there is an opportunity to have some sort of entrance to the development at that location, which is why the condition focuses on design opportunities. Just about every subdivision installs some sort of monument signage and/or entrance feature with landscaping, etc., which can be considered artful if done right. We are not looking for bronze statues or expensive water features. I think this is being made out to be a bigger deal that it really is.

Best,

Robert

From: Michael Andreotti <andreottim@aks-eng.com>
Sent: Tuesday, October 13, 2026 12:38 PM
To: Madeline Coulter <mcoulter@cityofcamas.us>
Cc: Carey Certo <CCerto@cityofcamas.us>; Theresa McGuire-Cook <theresa.mcguire-cook@aks-eng.com>; Bryce Hanson <BryceH@aks-eng.com>; Anita Ashton <AAshton@cityofcamas.us>; Robert Maul <RMaul@cityofcamas.us>; Alan Peters <APeters@cityofcamas.us>; stevem <stevem@landerholm.com>; Andy Swanson <andy@hsr-capital.com>
Subject: RE: SUB25-1008 Village at North Shore Public Comment Response

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Madeline –

Thanks for sending this over.

The only issue we still have is with Condition 38. Given that this is related to the DA, I have added Alan and Robert as well as Andy and Steve Morasch. I have also included a snip of the section of the DA in question for reference.

The DA only identifies the dedication of land and that the tract to be dedicated for public art, be visible and accessible to the public, and be as generally depicted and described in the Master Plan. The Master plan only identifies the tract that is to be dedicated for public art. The DA does not require the Applicant to provide the public art. Also, I don't believe

code requires public art for the development, but if I am incorrect, please direct me to the code requirement.

Please confirm that Condition 38 can be modified as requested based on the language in the DA.

HSR-NORTH SHORE DEVELOPMENT AGREEMENT - 8
HSRD01-000001 – 7499080.1

Page 11

4.4.4 Public Art. North Shore Developer agrees to dedicate lan
installation in the general location depicted in the Master P
visible and accessible and shall be generally as described i

Thanks,

Michael Andreotti, RLA
Land Use Planner
AKS ENGINEERING & FORESTRY, LLC
P: 360.882.0419 | www.aks-eng.com | andreottim@aks-eng.com

From: Madeline Coulter <mcoulter@cityofcamas.us>
Sent: Tuesday, October 13, 2026 8:53 AM
To: Michael Andreotti <andreottim@aks-eng.com>
Cc: Carey Certo <CCerto@cityofcamas.us>; Theresa McGuire-Cook <theresa.mcguire-cook@aks-eng.com>; Bryce Hanson <BryceH@aks-eng.com>
Subject: RE: SUB25-1008 Village at North Shore Public Comment Response

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Thanks, Michael. Attached are the responses from staff to your staff report response letter.

There are a few conditions staff had edits to that we can discuss further at the hearing if there are concerns.

Thanks,

Madeline Coulter, AICP
Planner
360-817-7237
www.cityofcamas.us | mcoulter@cityofcamas.us

The City of Camas has gone digital! Apply for permits online through our new Civic Access Portal at www.cityofcamas.us/permits.

From: Michael Andreotti <andreottim@aks-eng.com>
Sent: Tuesday, October 13, 2026 8:41 AM
To: Madeline Coulter <mcoulter@cityofcamas.us>
Cc: Carey Certo <CCerto@cityofcamas.us>; Theresa McGuire-Cook <theresa.mcguire-cook@aks-eng.com>; Bryce Hanson <BryceH@aks-eng.com>
Subject: SUB25-1008 Village at North Shore Public Comment Response

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Madeline –

Our response to the public comments is attached for the record.

Thanks,

Michael Andreotti, RLA
Land Use Planner



AKS ENGINEERING & FORESTRY, LLC
Physical: 9600 NE 126th Avenue, Suite 2520 | Vancouver, WA 98682
Mailing: 13504 NE 84th Street, Suite 103-295 | Vancouver, WA 98682
P: 360-882-0419 Ext. 316 | www.aks-eng.com | andreottim@aks-eng.com
Arizona | Nevada | Oregon | Washington

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Village at North Shore (SUB25-1008)
Index of Exhibits

Exhibit No.	Title/Description	Document Date
1	Applicants Narrative	7/2025
2	Shoreline Narrative	7/2025
3	Title Report	4/25/22
4	Geotechnical Report	11/17/23
5	Critical Areas Report	5/19/25
6	Pre-Application Conference Notes	6/6/24
7	Transportation Impact Study	6/30/25
8	Tree Survey	7/2025
9	Preliminary Stormwater Technical Information Report	7/2025
10	Mitigation Plan	7/8/25
11	Mailing Labels	7/9/25
12	Site Plans	7/22/25
13	SEPA Checklist	7/22/25
14	Shoreline Exhibit	8/20/25
15	Completeness Review Letter	8/20/25
16	Technically Complete Letter	8/26/25
17	Affidavit of Mailing Notice of Application & Public Hearing	10/1/25
18	Notice of Application & Public Hearing	10/2/25
19	Sign Posting Confirmation	
20	Affidavit of Mailing SEPA Determination of Non-Significance	11/5/25
21	SEPA Determination of Non-Significance	11/6/25
22	SEPA Distribution Packet	11/6/25
23	Department of Natural Resources Public Comment	11/7/25
24	Department of Ecology Public Comment	11/19/25
25	Department of Archaeology & Historic Preservation Comment	11/20/25
26	Department of Fish & Wildlife Comment	11/20/25
27	Applicant's Response to WDFW Comment	11/24/25
28	DKS Tech Memo	11/25/25
29	Marshall Public Comment	11/26/25
30	Davis Public Comment	12/1/25
31	Sogge Public Comment	12/1/25
32	Marshall Public Comment	12/1/25
33	Marshall Public Comment	2/6/26
34	Development Sign Posting	9/3/26
35	Affidavit of Mailing Notice of Public Hearing	9/23/26
36	Notice of Public Hearing	9/24/26
37	Northshore DA Master Plan	6/22/26
38	Northshore Development Agreement	
39	Applicant's Response to Staff Report	10/11/26

40	Camas Staff Response to Applicant's Response	10/11/26
41	Applicant's Public Comments Response Letter	10/13/26
42	York Public Comment	10/13/26
43	Applicant's Response 10.13.26	10/13/26