



**White Salmon Planning Commission Meeting  
A G E N D A  
October 09, 2024 – 5:30 PM  
119 NE Church Ave and Zoom Teleconference**

**[Meeting ID: 810 1876 2335](#)**

**Call in Number: 1 (253) 215-8782 US (Tacoma)**

**Call to Order/Roll Call**

**Public Hearing**

A public hearing, with a virtual/telephonic attendance option, will be held during this Planning Commission meeting or as soon thereafter as possible. Any individual who wishes to testify in person or via teleconference will be allowed to do so.

- 1.** Cherry Hill Estates Subdivision
  - a. Presentation
  - b. Public Testimony
  - c. Discussion
  - d. Action

**Discussion Items**

- 2.** DRAFT Parking Ordinance

**Adjournment**

**[Planning Commission Workshop \(Will begin after Planning Commission Meeting\)](#)**

- 1.** Zoning Update

The Planning Commission will engage in a discussion of the ongoing Zoning Code updates with a focus on the proposed Commercial Code Update ("Form-Based Code"), the Unit Lot Subdivision process as required by the State, and the other entitlement streamlining and barrier removal work, as part of implementation of the Comprehensive Plan, Housing Action Plan, and other adopted City policies.

Prior outreach includes:

- Let's Talk: Zoning Updates, September 24, 2024
- Planning Commission Workshop, August 14, 2024
- "Office Hours" and individual stakeholder meetings, March through October 2024
- Visual Preference Survey, November 2023 – February 2024 and Open House, Nov 28, 2023 (69 respondents)



**File Attachments for Item:**

1. Cherry Hills Estates Subdivision



City of White Salmon  
Recommendation to Planning  
Commission

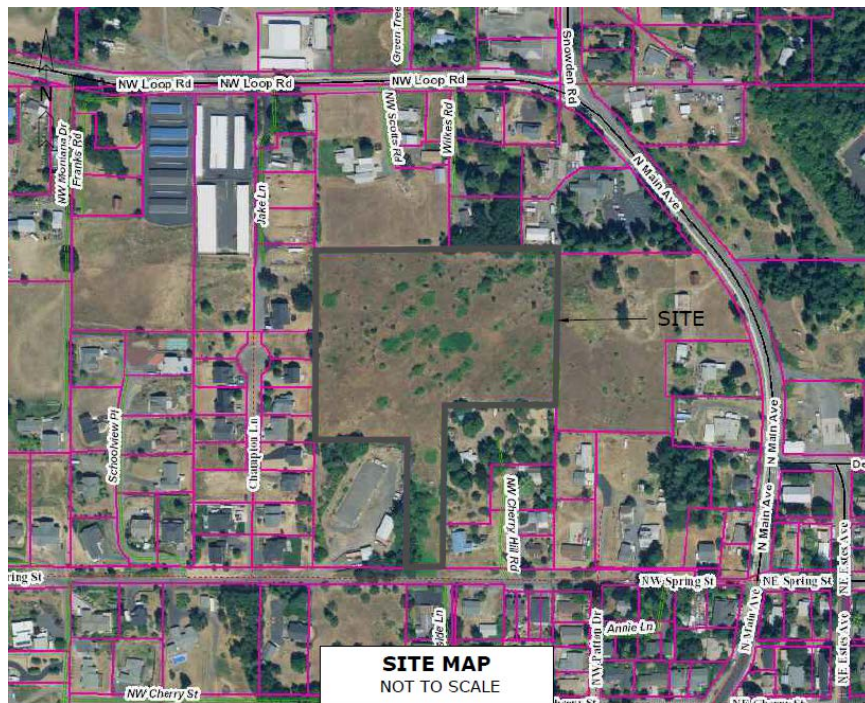
Cherry Hill Estates Preliminary  
Plat

WS-SUB-2024.001 and WS-SEPA-2024.001  
Applicants: Alex Pedroza of HRK Engineering &  
Field Services, representing Cherry Hill NW, LLC  
and Cameron Curtis of Legacy Development  
Group

**STAFF RECOMMENDATION**  
September 25, 2024

**PROPOSAL**

Alex Pedroza of HRK Engineering & Field Services, representing Cherry Hill NW, LLC and Cameron Curtis of Legacy Development Group filed a preliminary plat for purposes of subdividing 35-single family residential lots (Exhibit A). Preliminary plat applications are processed as a Type III applications with recommendations to Planning Commission and final approval towards City Council.



**LEGAL DESCRIPTION**

Parcel Number 03102475000400  
LOT 4 SP 91-17 IN NENE 24-3-10, in the County of Klickitat and the State of Washington.

**ADDRESS**

Not assigned, located off of NW Spring St, between NW Cherry Hill Rd and Champion Ln in WHITE SALMON, WASHINGTON 98672

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**ACREAGE OF LOT**

7.93 acres

**SURROUNDING USES AND ZONING**

The subject property is zoned Single-Family Residential (R-1).

- North* – Three parcels, a single family residence (03102411001200), City of White Salmon zoned R-1, a single family residence (03102417000400), Klickitat County zoned suburban residential, a funeral home/professional service (03111922000200), Klickitat County zoned General Commercial.
- South* – One parcel, a single-family residence (03102474000100), City of White Salmon zoned R-2.
- East* – Three parcels, one vacant (03102475000400), and two single family residences, City of White Salmon zoned R-1.
- West* – Six parcels, containing five single family residences and the public works operations facility (03102411000900), City of White Salmon zoned R-1 and PU Public, respectively.

**PROJECT TIMELINE**

- September 12, 2023 – Application Received
- October 9, 2023 – Request for additional information
- November 8, 2023 – Response received
- November 21, 2023 - Request for additional information
- December 4, 2023 – Response received
- January 25, 2024 – Notice of Application
- March 4, 2024 – 1<sup>st</sup> Consistency Review
- May 13, 2024 – Response provided
- June 14, 2024 - 2<sup>nd</sup> Consistency Review
- July 26, 2024 – Response provided
- September 25, 2024 – Recommendation to Planning Commission

**APPLICABLE STATUS OF BEARING**

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**EXHIBITS**

1. Preliminary Subdivision Application & Ownership Consent Affidavits
2. Preliminary Plat
3. Site and Civil Plans
4. Title Report
5. Easement Contact Information
6. SEPA Review and Determination
  - a. SEPA Checklist (11/28/2023)
  - b. SEPA Determination (9/6/2024)
7. Arborist Report (Braun Arboriculture 11/23/23)
8. Traffic Study
  - a. Traffic Impact Analysis (DKS, 7/22/24)
  - b. Traffic Impact Analysis Review (Gray & Osborne, Inc. 8/16/24)
9. Geotechnical Report (Earth Engineers Inc, 11/15/2021)
10. Notices
  - a. Notice of Application & SEPA Public Comment Period – 1/25/24
  - b. Public Comments, including Ecology SEPA Comment, Klickitat County SEPA Comment and General comments
  - c. Notice of Public Hearing (9/9/24)
11. Soil Sampling Results (March 25, 2024)
12. Example CC&Rs
13. City Comments
  - a. Notice of Incomplete Application - 10/8/2023
  - b. Notice of Incomplete Application #2 – 11/21/2023
  - c. 1<sup>st</sup> Consistency Review – 3/4/24
  - d. 2<sup>nd</sup> Consistency Review – 6/14/24

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## PRELIMINARY REVIEW FACTS AND FINDINGS

### SITE DESCRIPTION

The project site is approximately 7.93 acres on parcel 03102475000400 (unaddressed), a vacant piece of property mostly consisting of grassed areas with trees along the perimeter. Steep slope critical areas exist along the southwest boundary of the site.

### WHITE SALMON MUNICIPAL CODE (WSMC)

## TITLE 17 - ZONING

### Chapter 17.24 R-1 Single-Family Residential District

#### **WSMC 17.24.040 – Density provisions.**

- C. *Minimum area of lot: three thousand square feet for each single-family structure.*

**FINDING** – The proposed lots meet the minimum density requirements of three thousand square feet for each single-family structure. Development standards are subject to permit review procedures provided in WSMC Chapter 17.24.035 – Property development standards and 17.24.010 – Principal uses permitted outright.

## TITLE 16 - LAND DIVISIONS

### WSMC Chapter 16.15 Preliminary Procedures

#### **WSMC 16.15.030 – Site Evaluation for Critical Areas**

- A. *Prior to preparation of preliminary plans for a proposed subdivision and prior to site disturbing activities, the applicant shall meet with the administrator to assess whether the proposed development site includes one or more critical areas such as a wetland, waterbody, sensitive habitat area or geological hazard area as identified, classified and protected by city ordinance. The Washington Department of Fish and Wildlife (WDFW) shall be notified of all applications to divide land within the city limits prior to determination of completeness. A joint visit to the site may be necessary. If the administrator determines that a critical area is present or likely to be impacted by a proposed development, the applicant shall first complete a critical areas application, review and report, with appropriate protective measures identified, prior to preparation of preliminary development plans. The intent of this section is to minimize design conflicts, unnecessary costs and misunderstandings that could arise later, so that the applicant will be able to proceed with greater certainty about the physical limitations of a particular site.*

**FINDING** – City staff reviewed WDFW’s Priority Habitat Species (PHS) map to determine whether species mapped on site have a primary association with the site and result in management recommendations via a Habitat Management Plan (WSMC 18.10.300). Post-review, no mapped priority habitats with a primary association to the site were observed. As a result, this parcel does not require a Habitat Management Plan for mapped PHS.

**FINDING** – Upon further review of site critical area constraints, a regulated steep slope exists along the southwestern boundary of the site, as mapped on sheet 2 of Exhibit 3. Per review of the project

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geotechnical report (Exhibit 9), the access easement does not impact this critical area or its proposed buffer.

**WSMC 16.15.050 – Expiration of approval – Forfeiture of fees.**

*B. Preliminary plat approval shall be effective for five years from date of approval by the city, or such longer period as required by state law. If, during this period, a final plat is not filed with the administrator, the preliminary plat shall be null and void. Fees paid to the city clerk shall be forfeited.*

**FINDING** – Staff finds that the Applicant shall file the final plat within five years of preliminary plat approval or the plat shall be null and void.

**CONDITION OF APPROVAL:** This preliminary short plat approval, should it be recommended by Planning Commission, will be valid five years from the date of City Council approval. All associated conditions of approval must be met prior to submittal of the final plat.

**WSMC 16.45 Design Standards**

**WSMC 16.45.010 - General standards.**

*All roads, bridges, drains, culverts, sidewalks, curbs, storm sewers, fire protection systems, and related structures or devices shall be constructed in accordance with standards currently in effect at the time of construction. These standards shall be those contained in this article or those promulgated by the council or may be other than a city standard if accepted by the city engineer.*

**FINDING:** Applicant shall follow standards as specified by the 2022 Construction Standard Specifications and Standard Plans for roads, drains, sidewalks, curbs, storm sewers.

**CONDITION OF APPROVAL:** Prior to final plat, Applicant shall demonstrate proposed streets meet the 2022 Construction Standard Specifications and Standard Plans.

**FINDING:** Applicant shall follow standards and fire protection systems as prescribed under WSMC 15.04.010 referencing WAC 51-54 International Fire Code (2021 edition) for hydrant placement.

**CONDITION OF APPROVAL:** Prior to final plat and as part of general public improvements, Applicant shall install fire hydrant(s) per WSMC 15.04.010 within the City. Hydrant(s) shall meet City standards and Applicant to verify sufficient water flow is available.

**FINDING:** Development plans under construction permitting will be reviewed for consistency with grading (WSMC 13.01.050) and temporary erosion control standards (WSMC 13.01.060).

**CONDITION OF APPROVAL:** Prior to commencing construction or grading, the Applicant shall provide the City with plans for grading, recontouring, and temporary erosion control that meet City standards and receive approval for such plans prior to grading or recontouring work.

**WSMC 16.45.030 – Access**

*A. All subdivisions shall be served by one or more public roads providing ingress and egress to and from the subdivision at not less than two points, unless approved otherwise by the planning commission.*

**FINDING** – Staff finds subject parcel has one formal access along NW Spring Street. Per the 3<sup>rd</sup> Party Traffic Review letter provided by Gray and Osborne (Exhibit 8b), no more than 30 residential structures can have one access per the International Fire Code.

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**CONDITION OF APPROVAL** - Prior to building permit issuance for greater than 30 lots, improved right-of-way access via the Four Oaks Planned Unit Development (PUD) to the east must be approved by Public Works.

- B. *Road networks shall provide ready access for fire and other emergency vehicles and equipment, and routes of escape for inhabitants.*

**FINDING** – Emergency vehicle turnarounds may be necessary, should the Four Oaks PUD access roads not be fully constructed.

**CONDITION OF APPROVAL** – Prior to final plat, provide proof that ingress-egress access via the Four Oaks Planned Unit Development (PUD) to the east is approved by Public Works. If not, construct a temporary hammerhead turnaround on-site or show evidence of agreement from neighboring property owner allowing temporary access on an improved surface for emergency vehicle turnaround or egress. Any interim agreements for access shall be indicated on the final plat map and recorded with Klickitat County.

**WSMC 16.45.100 – Water, Sewer, utilities and drainage**

- A. *Water and Sanitary Sewer Systems. Where a public water supply is the source of water, a potable water connection shall be provided for each lot within a subdivision by the subdivider. Where a public sanitary sewer is installed, a connection shall be provided for each lot within a subdivision by the subdivider. All facilities and devices of water supply and sanitary sewer systems shall meet the standards of the Southwest Washington Health District and any local or state regulations.*

**FINDING** –The City Public Works Director, Andrew Dirks reviewed the application and found that public facilities serving the subject parcel appear adequate to serve the proposed lots. Public sewer and water are available to the proposed lots on the plat once the Four Oaks PUD is constructed. Water will be provided through the neighboring Four Oaks PUD via the City’s North Main Booster Pump Station. Sewer will connect via the neighboring Four Oaks PUD via their connection to North Main Ave.

**FINDING** – Local standards for water and sanitary sewer include 2022 Public Works Standards and 2023 Construction Standard Specifications and Standard Plans.

**CONDITION OF APPROVAL** – Prior to final plat water and sewer lines must either be constructed or bonded for and must connect to constructed lines provided via the Four Oaks PUD. Utility lines, along with proposed hook-ups, shall be indicated on the stamped civil site plan meeting 2022 Public Works Standards and 2023 Construction Standard Specifications and Standard Plans.

**CONDITION OF APPROVAL** – All public utility mains serving residences shall be located in existing or proposed right of way to be dedicated to the City upon final plat.

**CONDITION OF APPROVAL** - Prior to issuance of future building permits, all residences shall be connected to public water and sewer utilities. Sewer and water connections and associated requirements shall be reviewed at the time of development or when building permits applications are received.



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*B. Utility Easement. Easement for electric, telephone, water, gas and similar utilities shall be of sufficient width to assure maintenance and to permit future utility installations.*

**FINDING** - Staff finds that per the submitted preliminary plat, storm, water and sewer utilities proposed will be located in the right of way to be dedicated to the City. Underground power is also proposed. A five foot front yard easement exists within each of the residential lots. A 5-foot utility easement also exists on the east side of the access road running from Spring Street the project.

**CONDITION OF APPROVAL** – Prior to final plat the applicant must name which utilities will be utilizing the 5-foot utility easements and written confirmation from the appropriate utility district that this easement is sufficient width for maintenance purposes.

**FINDING** - The existing 30-foot City of White Salmon Waterline easement containing the existing 14” steel transmission main waterline must be relocated to accommodate the lot configuration proposed.

**FINDING** - The proposed 30-foot City of White Salmon Waterline easement containing a re-routed 14” steel transmission main waterline encumbers lots 1, 2, 10, and 11 of the proposed plat.

**CONDITION OF APPROVAL** – Prior to final plat the applicant must provide a new waterline utility easement agreement listing lots 1, 2, 10 11 to the City and request to vacate the existing water line easement for the transmission main.

**CONDITION OF APPROVAL** - No structures may be built on any existing or future easements.

*C. Underground Utility Installations. In areas designated by the public utility district, underground utility installation is required.*

**FINDING** - Staff finds the Applicants are subject to the above stated standards regarding underground utilities for future development. All new proposed utilities shall be underground.

**CONDITION OF APPROVAL** – Prior to final plat, the applicant shall provide written direction from Klickitat PUD whether existing power poles located on-site must be underground.

**CONDITION OF APPROVAL** – All new utilities must be underground.

*D. Drainage and Storm Sewer Easements. Easements for drainage channels and ways shall be of sufficient width to assure that the same may be maintained and improved. Easements for storm sewers shall be provided and shall be of sufficient width and proper location to permit future installation.*

**FINDING** - Applicants have not provided drainage and storm sewer plans or information about related easements. Consistency with WSMC 13.01.050 will be needed.

**CONDITION OF APPROVAL** – Prior to final plat, the applicant shall provide stormwater runoff calculations, including a demonstration that Low Impact Development is infeasible per WSMC 13.01.050. Infiltration testing will be required with adequate equipment.

## **WSMC Chapter 16.60 Plat Standards and Specifications**

### **WSMC 16.60.010 – Preliminary Plat**

**FINDING** – The applicant has provided boundaries of the proposed subdivision, contour lines, layout of proposed streets, utility easements and example restrictive covenants/CC&Rs (Exhibit 11) to be utilized.

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**CONDITION OF APPROVAL** – Prior to final plat, provide the finalized CC&Rs to the City for review prior to recording.

**WSMC 16.60.020 – Final Plat**

**FINDING** - The applicant's preliminary plans do still need to meet WSMC Chapter 16.60.020 regarding standards, subdivision map, section reference map, and survey seal.

**CONDITION OF APPROVAL** – The final plat must meet the standards of WSMC 16.60.020.

## **TITLE 12 – STREETS, SIDEWALKS, AND PUBLIC PLACES**

### **TRANSPORTATION SYSTEMS PLAN – APPLICABILITY**

**FINDING:** Consistent with the City’s efforts to construct complete streets (WSMC 12.26.030) and with the adopted Transportation Systems Plan “Lite” (TSP, Ordinance 2023-08-1148, 8/30/23), WSMC 12.02.003 outlines powers of the director to further the public health, safety and welfare within public right-of way. WSMC 12.02.009 – Specifications provides for all other standards, including the application of this TSP for purposes of improved access within the NW Spring St right-of-way to mitigate against traffic impacts from new single-family development.

**FINDING:** Figure 20 – High Priority Near-Term Projects and Appendix C of the TSP: Project List and Maps, of the Transportation System Plan “Lite”, designates Spring St. to be a high priority project for bicycle and pedestrian pathways and a critical east-west corridor that provides connectivity between the two major collectors – Main St. and Estes Avenue - for residents living in the lower density neighborhoods. As such, NW Spring St. is a key nexus of transportation activity.

**FINDING:** A Connector Street on the Bicycle Network includes a 11’ travel lane, 6’ bike lane, and 5’ sidewalk, per Figure 26 of the TSP (as referenced as Figure 3 in the Street Design Guidelines within Exhibit 12b).

**FINDING:** Per RCW 47.04.30 and the adopted Safe Routes to School network shown on Figure 7 of the TSP and described on page 3-10 of the TSP, staff finds frontage improvements along NW Spring St per the adopted Safe Routes to School network shown on Figure 7 of the TSP and described on page 3-10 of the plan (Exhibit 12b) are needed. If the City receives funding and constructs these improvements on the north side of NW Spring Street prior to final plat, the City may elect to waive this requirement.

**CONDITION OF APPROVAL:** Prior to issuance of a future building permit certificate of occupancy, frontage improvements meeting Public Works standards must be installed or bonded for at the intersection of the access road and NW Spring St and running east roughly 125 linear feet. These improvements will be required for half of NW Spring St including a 11’ travel lane, 6’ bike lane, and 5’ sidewalk. The improvements shall join and provide a transition with the existing NW Spring St to provide safe access.

## **Title 18 - ENVIRONMENT**

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## **WSMC 18.10 Critical Areas Ordinance**

### **WSMC 18.10.415 Design standards-erosion and landslide hazard areas.**

*Development within an erosion or landslide hazard area and/or buffer shall be designed to meet the following basic requirements, unless it can be demonstrated that an alternative design that deviates from one or more of these standards provides greater long-term slope stability while meeting all other provisions of this chapter. The requirements for long-term slope stability shall exclude designs that require regular and periodic maintenance to maintain their level of function. The basic development design standards are:*

- A. Structures and improvements shall be clustered to avoid landslide and erosion hazard areas.*
- B. Structures and improvements shall minimize alterations to the natural contours of the slope, and foundations shall be tiered where possible to conform to existing topography.*
- C. Structures and improvements shall be located to preserve the most critical portion of the site and its natural landforms and vegetation.*
- D. The proposed development shall not result in greater risk or need for increased buffers on neighboring properties.*
- E. The use of a retaining wall that allows the maintenance of existing natural slopes is preferred over graded artificial slopes*
- F. Development shall be designed to minimize impervious lot coverage.*

**FINDING:** A regulated steep slope exists along the southwest property boundary abutting the adjacent City Public Works Maintenance Facility. Per the Geotechnical Report (Exhibit 9), site observations indicate the site is stable. Further, the access road has been shifted to avoid cuts or retaining wall into this steep slope or proposed buffer. Further, no cuts are proposed in the steep slope itself that would undermine this critical area. Finally, heritage trees are targeted for retention in this immediate area, thereby acting as a way to retain soils in vicinity.

**FINDING:** A critical areas tract (Notice on Title) is required per WSMC 18.10.215 to establish future protections of this steep slope critical area from development. A template notice of tract form is available by request.

**CONDITION OF APPROVAL:** Prior to building permit issuance, please record a Critical Area Notice on Title. City will review prior to recording.

### **WSMC 18.40 Special Provisions – Heritage trees**

The City aims to enforce tree protection regulations for trees that meet the size threshold criteria for a Heritage tree, as follows:

- A. All heritage trees qualifying for protection provide valuable local habitat and shall be protected as critical areas. The tree protection area shall be equal to ten times the trunk diameter of the tree or the average diameter of the area enclosed within the outer edge of the drip line of the canopy, whichever is greater.*
- B. Heritage trees include:*
  - 1. Oregon White Oaks with a trunk diameter larger than fourteen inches,*

- 
2. *All other tree species with a trunk diameter greater than eighteen inches, and*
  3. *Any tree designated as a heritage tree by the city council in accordance with the nomination process detailed below.*

...

F. *Maintenance and preservation of heritage trees is required.*

1. *Any owner or applicant shall use reasonable efforts to maintain and preserve all heritage trees located thereon in a state of good health pursuant to the provisions of this chapter. Failure to do so shall constitute a violation of this chapter. Reasonable efforts to protect heritage trees include:*
  - a. *Avoidance of grading, excavation, demolition or construction activity within the heritage tree protection area where possible. The city shall consider special variances to allow location of structures outside the building setback line of a heritage tree whenever it is reasonable to approve such variance to yard requirements or other set back requirements.*

...

4. *A heritage tree protection easement (HTPE) shall be required. A HTPE is an easement granted to the city for the protection of a heritage tree protection area. HTPEs shall be required as specified in these rules and shall be recorded on final development permits and all documents of title and with the county recorder at the applicant's expense. The required language is as follows:*

*"Dedication of a Heritage Tree Protection Easement (HTPE) conveys to the public a beneficial interest in the land within the easement. This interest includes the preservation of existing heritage tree for all purposes that benefit the public health, safety and welfare, including control of surface water and erosion, maintenance of slope stability, visual and aural buffering, and protection of plant and animal habitat. The HTPE imposes upon all present and future owners and occupiers of land subject to the easement the obligation, enforceable on behalf of the public of the city of White Salmon, to leave undisturbed all heritage trees within the easement. The heritage tree protection area may not be impacted by grading, excavation, demolition or construction without express permission from the city of White Salmon, which permission must be obtained in writing."*

**FINDING** – Staff acknowledges the arborist report, dated November 7th 2023 (Exhibit 7) including an assessment of trees on site.

**FINDING** - Due to the existing force main gas line along the west property line of the subject site, HTPE's are not required for the trees within this easement named to the El Paso Natural Gas Company (Exhibits 2 and 4).

**CONDITION OF APPROVAL:** Prior to final plat, Applicant shall retain heritage trees on the final plat map for and show their protective easements (HTPEs) on the face of plat for those encumbering the access road area as it approaches NW Spring St.

## **TITLE 19 – ADMINISTRATION OF LAND DEVELOPMENT REGULATIONS**

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## **WSMC 19.10 Land Development Administration Procedures**

### **19.10.150 Notice of Application**

- A. *All public comments on the notice of application must be received in City Hall by five o'clock p.m. on the last day of the comment period. Comments may be mailed, personally delivered or sent by facsimile. Comments should be as specific as possible. Public comments may be provided at any time up to and during the public hearing. However, the city cannot ensure that comments provided after the comment period on the notice of application will be considered and addressed in staff reports on Type III projects. The SEPA threshold determination shall not be issued until after the expiration of the comment period following the notice of application. Regardless of the expiration of the notice of application comment period, any interested party may comment upon the SEPA threshold determination pursuant to applicable SEPA regulations.*

**FINDING:** In the interest of notifying neighbors of land use actions, Staff mailed notifications to nearby property owners within 300-feet of the subject site. Seven (7) comments were provided, raising concerns regarding traffic impacts (Klickitat County and five residents), NW Spring St road and pedestrian quality, as well as soil contaminants (Department of Ecology).

Regarding traffic concerns a Traffic Impact Analysis Report was provided and updated (Exhibit 8a) and reviewed by the City's 3<sup>rd</sup> Party Traffic Consultant (Exhibit 8b). Recommendations were provided by the City's 3<sup>rd</sup> Party Traffic Consultant regarding street improvements beyond the amount requested. While NW Spring St improvements are being requested by the applicant beyond the access road to further support Safe Routes to Schools under RCW 47.04.30 and the adopted TSP, a standard or prescriptive requirement supporting additional frontage improvements beyond the request is not found within the TSP or municipal code. Further, impact fees cannot be assessed for traffic impacts, as the City is located within a partially planning county under the Growth Management Act (RCW 82.02.050).

### **19.10.235 Planning commission review and recommendation (Type III).**

- A. *The planning commission shall review and make findings, conclusions and issue recommendations on all Type III permit applications.*
- B. *Staff Report. The administrator shall prepare a staff report on the proposed development or action summarizing the comments and recommendations of city departments, affected agencies and special districts, and evaluating the development's consistency with the city's development code, adopted plans and regulations. If requested by the planning commission, the staff report shall include proposed findings, conclusions and recommendations for disposition of the development application. The staff report shall include and consider all written public comments on the application.*
- C. *Planning Commission Hearing. The planning commission shall conduct a public hearing on Type III development proposals for the purpose of taking testimony, hearing evidence, considering the facts germane to the proposal, and evaluating the proposal for consistency with the city's development code, adopted plans and regulations. Notice of the planning commission hearing shall be in accordance with Section 19.10.190 of this code.*
- D. *Required Findings. In addition to the approval criteria listed in this code, the planning commission shall not recommend approval of a proposed development unless it first makes the following findings and conclusions:*
- 1. The development is consistent with the White Salmon comprehensive plan and meets the requirements and intent of the White Salmon Municipal Code;*
  - 2. The development is not detrimental to the public health, safety and welfare;*

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3. *The development adequately mitigates impacts identified under Chapters 18.10 (Critical Areas Ordinance) and 18.20 (Environmental Protection/SEPA Review) of this code; and*
  4. *For land division applications, findings and conclusions shall be issued in conformance with Sections 19.10.230 review and decision by the designated decision-making body (Type II) and 19.10.235 Planning commission review and recommendation (Type III) of this title, and RCW 58.17.110.*
- E. *Recommendation. In the planning commission's recommendation decision regarding Type III actions, it shall adopt written findings and conclusions. The planning commission's recommendation following closure of an open record public hearing shall include one of the following actions:*
1. *Recommend approval;*
  2. *Recommend approval with conditions; or*
  3. *Recommend denial.*

**FINDING:** The Planning Commission shall review and make recommendations based on the above criteria.

### **19.10.240 Procedures for public hearings.**

*Public hearings shall be conducted in accordance with the hearing body's rules of procedure and shall serve to create or supplement an evidentiary record upon which the body will base its decision. Questions directed to the staff or the applicant shall be posed by the chair at its discretion. In cases where scientific standards and criteria affecting project approval are at issue, the chair shall allow orderly cross-examination of expert witnesses presenting reports and/or scientific data and opinions. The hearing body may address questions to any party who testifies at a public hearing. The chair shall open the public hearing and, in general, observe the following sequence of events:*

- A. *Staff presentation, including submittal of any administrative reports. Members of the hearing body may ask questions of the staff.*
- B. *Applicant presentation, including submittal of any materials. Members of the hearing body may ask questions of the applicant.*
- C. *Testimony or comments by the public germane to the matter.*
- D. *Rebuttal, response or clarifying statements by the staff and the applicant.*
- E. *The evidentiary portion of the public hearing shall be closed and the hearing body shall deliberate on the matter before it.*

**FINDING:** The Planning Commission shall conduct the meeting in accordance with the following procedures.

### **Comprehensive Plan Alignment**

*Neighborhoods Policy H-2.1: Establish standards to help protect White Salmon's small-town feel and other aspects of community character.*

**Finding** – The purpose of a preliminary plat is to provide additional housing that will accommodate the growth in housing for the City of White Salmon. Providing housing is critical to the long-term success of the community. Single-family homes are a preferred housing choice as incomes rise and renters start families, making this housing type ideal for the community. This also increases housing stock for the City, potentially allowing additional units to become available at lower price ranges. The R1 zoning

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allows and encourages the development of single-family housing, as long as development can meet standards set forth in the White Salmon Municipal Code and Comprehensive Plan.

**RCW 35A.63.080 Comprehensive Plan —Effect**

*From the date of approval by the legislative body the comprehensive plan, its parts and modifications thereof, shall serve as a basic source of reference for future legislative and administrative action: PROVIDED, That the comprehensive plan shall not be construed as a regulation of property rights or land uses: PROVIDED, FURTHER, That no procedural irregularity or informality in the consideration, hearing, and development of the comprehensive plan or a part thereof, or any of its elements, shall affect the validity of any zoning ordinance or amendment thereto enacted by the code city after the approval of the comprehensive plan.*

**Finding** – The City Council further endorsed the current R1 zoning classification after the approval of the 2021 Comprehensive Plan. For clarification, White Salmon is a code City. RCW 35A.63.080 is clear in its intent that the Comprehensive Plan or a part thereof, or any of its elements, shall affect the validity of any zoning ordinance or amendment thereto enacted by the City code after the approval of the Comprehensive Plan. Therefore, Staff must base their decision on the applicable City of White Salmon Municipal Codes. However, it is essential to note that the elements of the Comprehensive Plan and their intent are represented clearly in the appropriate zoning and land division ordinance. Both present a clear need for housing opportunities within the residential zoning.

**ADMINISTRATIVE RECOMMENDATION**

Considering the proposed project, the above findings support the Land Use Planner or its designee's preliminary recommendations including recommended conditions of approval, as follows:

**Conditions of Approval to be Met Prior to Final Plat**

1. Prior to commencing construction or grading, the Applicant shall provide the City with plans for grading, recontouring, and temporary erosion control that meet City standards and receive approval for such plans prior to grading or recontouring work.
2. Prior to final plat, Applicant shall demonstrate proposed streets meet the 2022 Construction Standard Specifications and Standard Plans.
3. Prior to final plat and as part of general public improvements, Applicant shall install fire hydrant(s) per WSMC 15.04.010 within the City. Hydrant(s) shall meet City standards and Applicant to verify sufficient water flow is available.
4. Prior to final plat the applicant must provide a new waterline utility easement agreement listing lots 1, 2, 10 11 to the City and request to vacate the existing water line easement for the transmission main.
5. Prior to final plat, provide proof that ingress-egress access via the Four Oaks Planned Unit Development (PUD) to the east is approved by Public Works. If not, construct a temporary hammerhead turnaround on-site or show evidence of agreement from neighboring property owner allowing temporary access on an improved surface for emergency vehicle turnaround or egress. Any interim agreements for access shall be indicated on the final plat map and recorded with Klickitat County.
6. Prior to final plat water and sewer lines must either be constructed or bonded for and must connect to constructed lines provided via the Four Oaks PUD. Utility lines, along with proposed

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hook-ups, shall be indicated on the stamped civil site plan meeting 2022 Public Works Standards and 2023 Construction Standard Specifications and Standard Plans.

7. All public utility mains serving residences shall be located in existing or proposed right of way to be dedicated to the City upon final plat.
8. Prior to final plat, the applicant shall provide stormwater runoff calculations, including a demonstration that Low Impact Development is infeasible per WSMC 13.01.050. Infiltration testing will be required with adequate equipment.
9. Prior to final plat, the applicant shall provide written direction from Klickitat PUD whether existing power poles located on-site must be underground.
10. Prior to final plat, provide the finalized CC&Rs to the City for review prior to recording.
11. The final plat must meet the standards of WSMC 16.60.020.
12. Prior to final plat, Applicant shall retain heritage trees on the final plat map for and show their protective easements (HTPEs) on the face of plat for those encumbering the access road area as it approaches NW Spring St.

**Conditions of Approval to be Met Prior to Building Permit**

13. Prior to building permit issuance for greater than 30 lots, improved right-of-way access via the Four Oaks Planned Unit Development (PUD) to the east must be approved by Public Works.
14. Prior to issuance of future building permits, all residences shall be connected to public water and sewer utilities. Sewer and water connections and associated requirements shall be reviewed at the time of development or when building permits applications are received.
15. Prior to building permit issuance, please record a Critical Area Notice on Title. City will review prior to recording.
16. Prior to issuance of a future building permit certificate of occupancy, frontage improvements meeting Public Works standards must be installed or bonded for at the intersection of the access road and NW Spring St and running east roughly 125 linear feet. These improvements will be required for half of NW Spring St including a 11' travel lane, 6' bike lane, and 5' sidewalk. The improvements shall join and provide a transition with the existing NW Spring St to provide safe access.

**General Conditions of Approval**

17. This preliminary short plat approval, should it be recommended by Planning Commission, will be valid five years from the date of City Council approval. All associated conditions of approval must be met prior to submittal of the final plat.
18. No structures may be built on any existing or future easements.
19. All public utility mains serving residences shall be located in existing public right of way or proposed right of way to be dedicated to the City upon final plat.
20. All new utilities must be underground.

**Recommended By:**



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Alex Capron, AICP - Planning Consultant

## **APPEALS PROCEDURE**

### **19.10.320 Judicial appeal.**

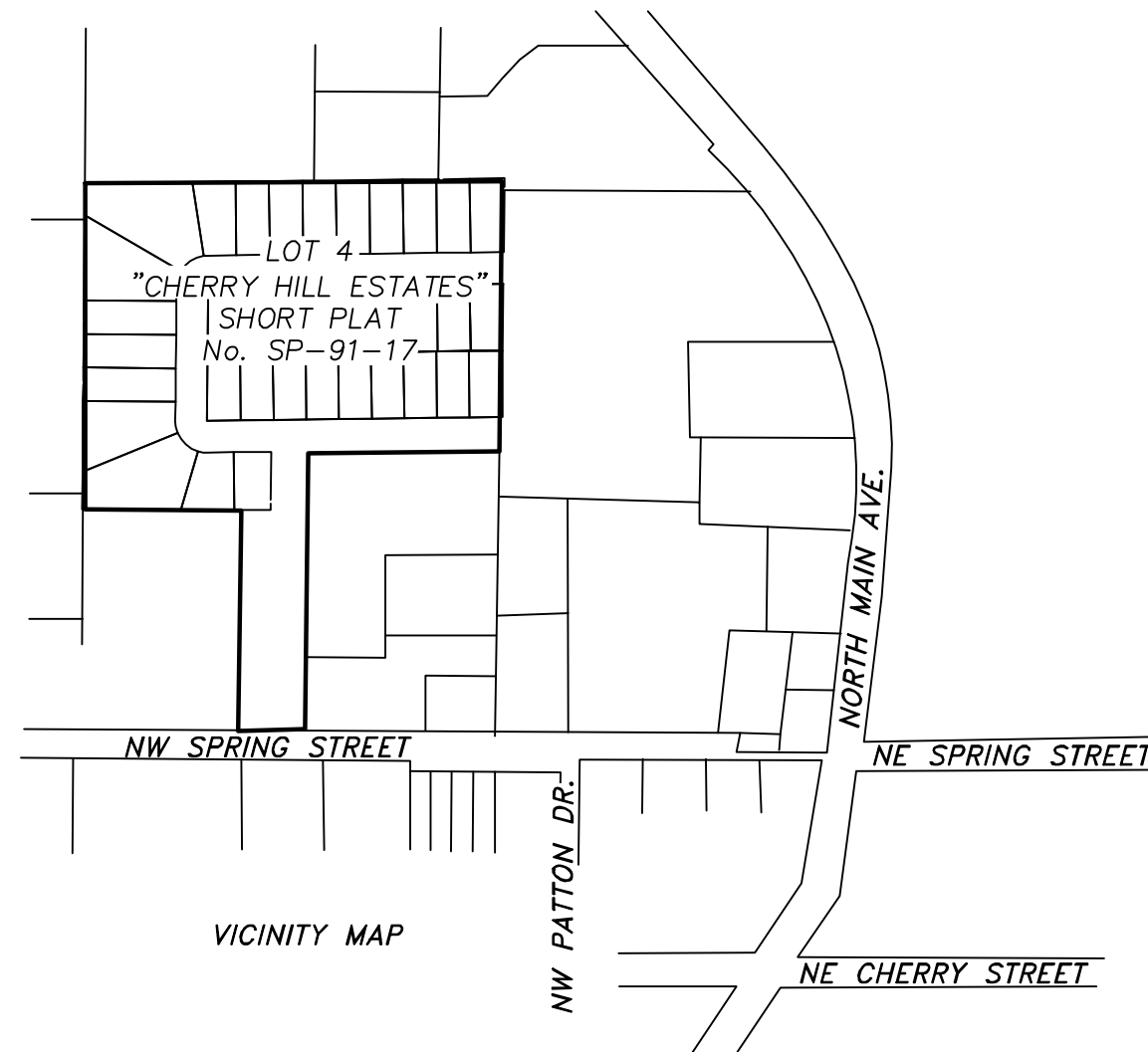
- A. Appeals from the final decision of the city council and appeals from any other final decisions specifically authorized (subject to timely exhaustion of all administrative remedies) shall be made to Superior Court within twenty-one calendar days of the date the decision or action became final, as defined in Section 19.10.280(B) of this code, unless another time period is established by state law or local ordinance. All appeals must conform with procedures set forth in Chapter 36.70C RCW.
- B. Notice of the appeal and any other pleadings required to be filed with the court shall be served on the city clerk, and all persons identified in RCW 36.70C.040, within the applicable time period. This requirement is jurisdictional.
- C. The cost of transcribing and preparing all records ordered certified by the court or desired by the appellant for such appeal shall be borne by the appellant. Prior to the preparation of any records, the appellant shall post with the city clerk an advance fee deposit in the amount specified by the city clerk. Any overage will be promptly returned to the appellant.

OWNER:  
LEGACY DEVELOPMENT GROUP  
403 HIGHWAY 35  
HOOD RIVER, OR 97031

**PLAT OF CHERRY HILL ESTATES SUBDIVISION SUB-2024-###**  
**PLATTING LOT 4 CHERRY HILL ESTATES, SHORT PLAT NO. SP-91-17**  
**SECTION 24, TOWNSHIP 3 NORTH, RANGE 10 EAST, WILLAMETTE MERIDIAN, KLICKITAT COUNTY, WASHINGTON.**  
PAGE 1 OF 2

AREA TABLE

LOT 1	5,249 SQ.FT.
LOT 2	6,328 SQ.FT.
LOT 3	15,447 SQ.FT.
LOT 4	11,792 SQ.FT.
LOT 5	7,617 SQ.FT.
LOT 6	7,610 SQ.FT.
LOT 7	7,665 SQ.FT.
LOT 8	13,520 SQ.FT.
LOT 9	17,733 SQ.FT.
LOT 10	6,895 SQ.FT.
LOT 11	6,088 SQ.FT.
LOT 12	6,086 SQ.FT.
LOT 13	6,084 SQ.FT.
LOT 14	6,082 SQ.FT.
LOT 15	6,080 SQ.FT.
LOT 16	6,078 SQ.FT.
LOT 17	6,076 SQ.FT.
LOT 18	6,189 SQ.FT.
LOT 19	5,631 SQ.FT.
LOT 20	5,323 SQ.FT.
LOT 21	5,323 SQ.FT.
LOT 22	5,323 SQ.FT.
LOT 23	5,323 SQ.FT.
LOT 24	5,323 SQ.FT.
LOT 25	5,323 SQ.FT.
LOT 26	5,323 SQ.FT.
LOT 27	5,387 SQ.FT.
LOT 28	5,322 SQ.FT.
LOT 29	5,322 SQ.FT.
LOT 30	5,322 SQ.FT.
LOT 31	5,322 SQ.FT.
LOT 32	5,322 SQ.FT.
LOT 33	5,322 SQ.FT.
LOT 34	5,322 SQ.FT.
LOT 35	5,322 SQ.FT.
LOT 36	5,399 SQ.FT.



NARRATIVE:

THE PURPOSE OF THIS SURVEY IS TO CREATE A 36 LOT SUBDIVISION PLAT, NAMED CHERRY HILL ESTATES. THE PROPERTY WAS CREATED ON SHORT PLAT NO. SP-91-17. IN THE FIELD, WE RECOVERED AND HELD ORIGINAL MONUMENTS SET ON ORIGINAL PLAT, BEING THE SOUTH SOUTHEAST CORNER, NORTH SOUTHEAST AND SOUTHEAST CORNER. THE NORTHWEST CORNER OF LOT 4 WAS RECOVERED AS A 1-1/2" ALUMINUM CAP, L.S.15673. IT IS UNCLEAR WHEN THIS WAS SET, BUT ASSUME IT IS THE ORIGINAL MONUMENT. THE NORTHEAST CORNER OF LOT 4 WAS REPLACED BY HOLDING THE ORIGINAL PLAT DISTANCES FROM THE NORTHWEST AND SOUTHEAST CORNER MONUMENTS. THIS POSITION WAS VALIDATED BY RECOVERING A 5/8" IRON ROD WITH UNREADABLE CAP FOUND ALONG EAST LINE. WE ALSO RECOVERED MONUMENT FITTING THE BOUNDARY RESOLUTION ON THE WEST LINE THAT WERE SET ON THE WHITSON-HURN SUBDIVISION.

BASIS OF BEARING IS THE EASTERN SOUTH LINE OF LOT 4 OF CHERRY HILL ESTATE SHORT PLAT NO. 91-17, SHOWN WITH WASHINGTON STATE PLANE GRID BEARINGS.

REFERENCES:

ON FILE AT KLICKITAT COUNTY SURVEY RECORDS:  
AFN. 207520, SHORT PLAT NO. 87-07: DATED NOVEMBER 17, 1987.  
AFN. 229623, SHORT PLAT NO. 91-17: DATED JULY 24, 1992.  
AFN. 245222, SURVEY FOR THE CITY OF WHITE SALMON: DATED JANUARY 18, 1995.  
AFN. 252221, SHORT PLAT NO. 95-16: DATED MARCH 21, 1996.  
AFN. 1026503, SHORT PLAT NO. 2000-00003: DATED OCTOBER 26, 2001.  
AFN. 1093016, SHORT PLAT NO. 2009-10: DATED APRIL 29, 2011.  
AFN. 1099990, SHORT PLAT NO. 2010-010: DATED OCTOBER 2012.  
AFN. 1129497, PLAT OF WHITSON-HURN SUBDIVISION SUB-2017-002: DATED JUNE 25, 2018.

LEGAL DESCRIPTION OF TOTAL PARCEL:

LOT 4, CHERRY HILL ESTATES, SHORT PLAT NO. SP-91-17, ACCORDING TO THE PLAT THEREOF, RECORDED JULY 24, 1992, IN BOOK 2, PAGE 112, AUDITOR'S FILE NO.229623, KLICKITAT COUNTY SHORT PLAT RECORDS, IN THE COUNTY OF KLICKITAT AND STATE OF WASHINGTON.

ACCESS EASEMENT THE RIGHT TO USE SPRING LANE PRIVATE DRIVE OVER LOTS 1, 2 AND 3 OF CHERRY HILL ESTATES, SHORT PLAT NO. SP-91-17, RECORDED JULY 24, 1992, IN BOOK 2, PAGE 112, AUDITOR'S FILE NO. 229623, KLICKITAT COUNTY SHORT PLAT RECORD. (SEE TITLE EXCEPTION INST#1133874)

TITLE EXCEPTIONS:

BOOK 46, PAGE 277, PRIVATE POWER DISTRIBUTION EASEMENT GRANTED TO PACIFIC POWER AND LIGHTS, DATED NOVEMBER 12, 1917. THIS EASEMENT GIVES A GENERAL LOCATION.

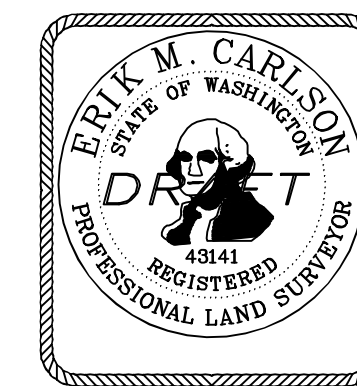
BOOK 135, PAGE 310, PRIVATE 60 FOOT GAS LINE EASEMENT GRANTED TO EL PASO NATURAL GAS COMPANY, DATED JANUARY 21, 1963. AS SHOWN.

BOOK 143, PAGE 1, PRIVATE EASEMENT FOR WATER LINE GRANTED TO THE CITY OF WHITE SALMON. DATED AUGUST 4, 1966. THIS WATERLINE IS BEING REDESIGNED, THE EASEMENT WILL NEED TO BE EXTINGUISHED.

BOOK 149, PAGE 478, PUBLIC UTILITY DISTRICT EASEMENT GRANTED TO KLICKITAT COUNTY, DATED SEPTEMBER 10, 1969. LOCATION UNCLER.

BOOK 285, PAGE 861, COVENANTS, CONDITIONS AND RESTRICTIONS. DATED JULY 24, 1992.

INST#1133874 MODIFICATION OF CCRS, DATED APRIL 29, 2019.



TERRA SURVEYING

P.O. BOX 617  
HOOD RIVER, OREGON 97031  
PHONE: (541) 386-4531  
E-Mail: terra@gorge.net

DATE: AUGUST 1, 2024

PROJECT: 20186

SCALE: 1" = 60'

PARCEL No: 03-10-24-75000400

I, CAMERON CURTIS, HEREBY DECLARE THAT THE DIVISION OF LAND HAS BEEN MADE WITH MY FREE CONSENT AND IN ACCORDANCE WITH MY DESIRES CONSENT TO THE SUBDIVISION OF SUCH LAND AND RECITING A DEDICATION BY THEM OF ALL LAND SHOWN ON THE PLAT TO BE DEDICATED FOR PUBLIC USES AND A WAIVER BY THEM AND THEIR SUCCESSORS OF ALL CLAIMS FOR DAMAGES AGAINST ANY GOVERNMENTAL AUTHORITY ARISING FROM THE CONSTRUCTION AND MAINTENANCE OF PUBLIC FACILITIES AND PUBLIC PROPERTY WITHIN THE SUBDIVISION (WSMC 16.60.020.D(7));

CAMERON CURTIS, MANAGING MEMBER.

NOTARY:  
WITNESS MY HAND AND OFFICIAL SEAL  
DATED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2024.

NOTARY PUBLIC IN AND FOR THE STATE OF OREGON, RESIDING IN HOOD RIVER COUNTY.

COMMISSION NUMBER: \_\_\_\_\_

MY COMMISSION EXPIRES: \_\_\_\_\_

SURVEYORS CERTIFICATE:  
I, ERIK M. CARLSON, REGISTERED AS A LAND SURVEYOR BY THE STATE OF WASHINGTON, CERTIFY THAT THIS PLAT IS BASED ON AN ACTUAL SURVEY OF THE LAND DESCRIBED HEREIN, CONDUCTED BY ME OR UNDER MY SUPERVISION, DURING THE MONTH OF JUNE 2024; THAT THE DISTANCES AND BEARINGS ARE SHOWN THEREON CORRECTLY AND THAT MONUMENTS, OTHER THAN THOSE APPROVED FOR SETTING AT A LATER DATE, HAVE BEEN SET AND LOT CORNERS STAKED ON THE GROUND AS DEPICTED ON THE PLAT.

ERIK M. CARLSON L.S. 43141 WA DATE \_\_\_\_\_

I HEREBY CERTIFY THAT THIS SUBDIVISION HAS BEEN EXAMINED BY ME AND THAT IT CONTAINS ADEQUATE SAFE PROVISIONS FOR WATER SUPPLY AND ACCESS FOR PURPOSES OF FIRE PROTECTION.

WHITE SALMON FIRE CHIEF DATE \_\_\_\_\_

I HEREBY CERTIFY THAT THIS SUBDIVISION HAS BEEN REVIEWED AND EXAMINED BY ME AND THAT IT CONFORMS TO THE CITY OF WHITE SALMON STANDARDS FOR SURVEY DATA, LAYOUT FOR ROADS, ALLEY AND EASEMENTS, ROAD NAMES, AND NUMBERS, AND OTHER IMPROVEMENTS AS REQUIRED OR AS APPLICABLE.

WHITE SALMON CITY ENGINEER/CITY ADMINISTRATOR DATE \_\_\_\_\_

I HEREBY CERTIFY THAT THIS SUBDIVISION HAS BEEN EXAMINED BY ME AND THAT IT CONFORMS WITH THE CITY OF WHITE SALMON ZONING ORDINANCE, COMPREHENSIVE PLAN AND ANY OTHER APPLICABLE LAWS AND/OR POLICIES.

WHITE SALMON CITY PLANNER DATE \_\_\_\_\_

I HEREBY CERTIFY THAT THIS SUBDIVISION HAS BEEN EXAMINED BY ME AND THAT IT CONTAINS ADEQUATE PROVISIONS FOR WATER SUPPLY AND SEWAGE DISPOSAL FOR DOMESTIC AND/OR COMMERCIAL USE.

WHITE SALMON PUBLIC WORKS

I HEREBY CERTIFY THAT ALL TAXES, AND COMPENSATING TAXES AND/OR PENALTIES AND PROPERTY CONTAINED WITHIN THE PLAT SHOWN HEREIN HAVE BEEN PAID, DISCHARGED, OR SATISFIED PER WSMC 16.60.020.D(8).

KLICKITAT COUNTY TREASURER DATE \_\_\_\_\_

EXAMINED AND APPROVED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2024  
WHITE SALMON CITY COUNCIL

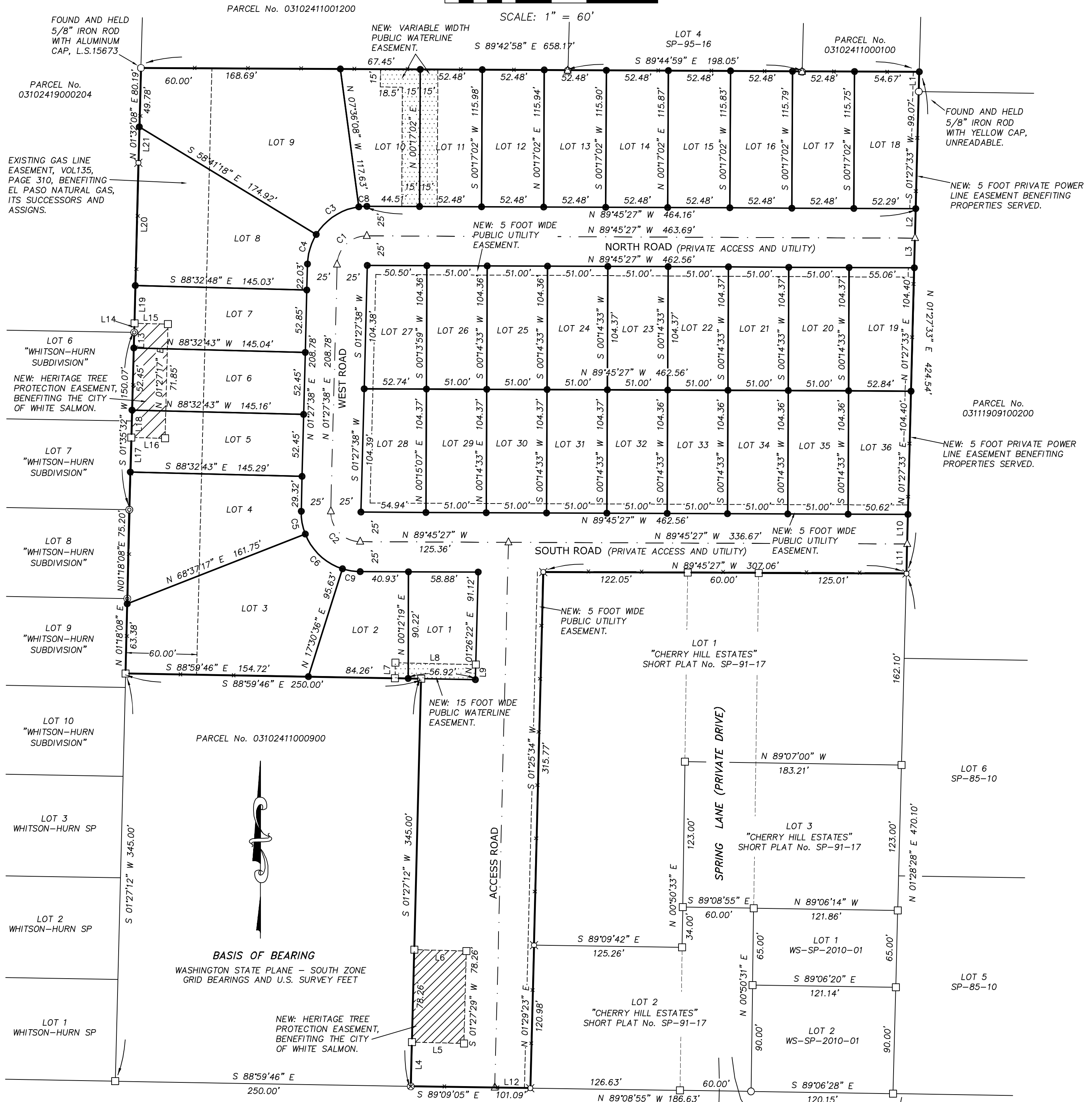
MAYOR \_\_\_\_\_ ATTEST: \_\_\_\_\_  
CITY CLERK

AUDITORS CERTIFICATE:  
SUBDIVISION FILED FOR RECORD AT THE REQUEST OF TERRA SURVEYING THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_, AT \_\_\_\_\_ M AND RECORDED IN VOLUME \_\_\_\_\_ OF PLATS, PAGE \_\_\_\_\_, RECORDS OF KLICKITAT COUNTY, WASHINGTON.

AUDITOR'S FILE NO. \_\_\_\_\_

KLICKITAT COUNTY AUDITOR DEPUTY \_\_\_\_\_

PLAT OF CHERRY HILL ESTATES SUBDIVISION SUB-2024-###  
 PLATTING LOT 4 CHERRY HILL ESTATES, SHORT PLAT NO. SP-91-17  
 SECTION 24, TOWNSHIP 3 NORTH, RANGE 10 EAST, WILLAMETTE MERIDIAN, KLICKITAT COUNTY, WASHINGTON.  
 PAGE 2 OF 2

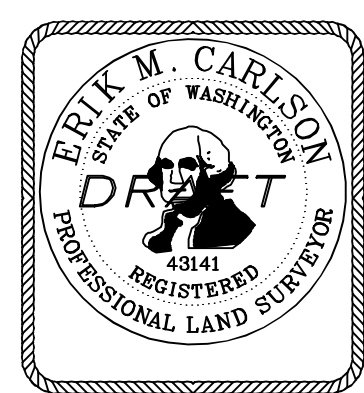


**BASIS OF BEARING**  
 WASHINGTON STATE PLANE - SOUTH ZONE  
 GRID BEARINGS AND U.S. SURVEY FEET

- LEGEND:**
- SET 5/8" X 30" IRON ROD, L.S. 43141
  - △ SET 1 1/2" WASHER WITH NAIL, L.S. 43141
  - ⊕ FOUND MONUMENT OF RECORD AS NOTED
  - FOUND 5/8" IRON ROD, L.S. 15673 (AFN252221)
  - ⊗ FOUND 5/8" IRON ROD, L.S. 15673 (AFN229623)
  - ⊙ FOUND 5/8" IRON ROD, L.S. 42587 (AFN129497)
  - ⊗ FOUND 2 1/2" BRASS CAP, L.S. 15673 (AFN245222)
  - ⊗ FOUND 1 1/2" ALUM CAP, L.S. 25552 (AFN229526)
  - CALCULATED, NOT FOUND OR SET
  - x- EXISTING FENCE

LINE	BEARING	DISTANCE
L1	S 01°11'33" W	16.67'
L2	S 01°27'33" W	25.00'
L3	S 01°27'33" W	25.00'
L4	N 01°26'16" E	37.41'
L5	S 88°32'35" E	43.99'
L6	N 88°32'36" W	43.99'
L7	N 01°00'14" E	13.09'
L8	N 88°39'19" W	68.07'
L9	S 01°26'22" W	12.78'
L10	S 01°27'33" W	25.00'
L11	S 01°27'33" W	25.00'
L12	N 89°09'05" W	30.09'
L13	N 01°35'32" E	13.26'
L14	N 01°24'48" E	7.71'
L15	N 88°32'54" W	28.36'
L16	S 88°31'40" E	28.57'
L17	S 01°34'51" W	29.19'
L18	N 01°36'23" E	23.26'
L19	N 01°24'48" E	31.88'
L20	N 01°24'48" E	103.94'
L21	N 01°32'08" E	30.41'

CURVE	ARC LENGTH	RADIUS	DELTA ANGLE	CHORD BEARING	CHORD LENGTH
C1	38.74'	25.00'	88°46'55"	N 45°51'06" E	34.98'
C2	39.80'	25.00'	91°13'05"	N 44°08'54" W	35.73'
C3	44.32'	50.00'	50°46'38"	N 57°02'18" E	42.88'
C4	26.34'	50.00'	30°11'07"	N 16°33'12" E	26.04'
C5	19.95'	50.00'	22°51'23"	S 09°58'24" E	19.81'
C6	44.58'	50.00'	51°05'08"	N 46°56'40" W	43.12'
C7	0.79'	0.25'	180°00'00"	N 90°00'00" E	0.50'
C8	6.82'	50.00'	7°48'45"	S 86°20'11" W	6.81'
C9	15.10'	50.00'	17°18'28"	N 81°08'28" W	15.05'



**TERRA SURVEYING**  
 P.O. BOX 617  
 HOOD RIVER, OREGON 97031  
 PHONE: (541) 386-4531  
 E-Mail: terra@gorge.net  
 DATE: AUGUST 1, 2024  
 PROJECT: 20186  
 SCALE: 1" = 60'  
 PARCEL No: 03-10-24-75000400

# CHICAGO TITLE INSURANCE COMPANY

**Policy No. 72156-48322157**

## GUARANTEE

CHICAGO TITLE INSURANCE COMPANY, a Florida corporation, herein called the Company, guarantees the Assured against actual loss not exceeding the liability amount stated in Schedule A which the Assured shall sustain by reason of any incorrectness in the assurances set forth in Schedule A.

1. No guarantee is given nor liability assumed with respect to the identity of any party named or referred to in Schedule A or with respect to the validity, legal effect or priority of any matter shown therein.
2. The Company's liability hereunder shall be limited to the amount of actual loss sustained by the Assured because of reliance upon the assurance herein set forth, but in no event shall the Company's liability exceed the liability amount set forth in Schedule A.

PLEASE NOTE CAREFULLY THE LIABILITY EXCLUSIONS AND LIMITATIONS AND THE SPECIFIC ASSURANCES AFFORDED BY THIS GUARANTEE. IF YOU WISH ADDITIONAL LIABILITY, OR ASSURANCES OTHER THAN AS CONTAINED HEREIN, PLEASE CONTACT THE COMPANY FOR FURTHER INFORMATION AS TO THE AVAILABILITY AND COST.

Dated: September 18, 2023

Issued by:

AmeriTitle, LLC

165 NE Estes Ave. - PO Box 735

White Salmon, WA 98672

(509)493-1965

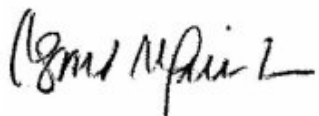
*Arika Klawitter*


Authorized Signer

*Note: This endorsement shall not be valid or binding until countersigned by an authorized signatory.*

CHICAGO TITLE INSURANCE COMPANY



By:   
President

ATTEST  
  
Secretary

Subdivision Guarantee Policy Number: 72156-48322157

# SUBDIVISION GUARANTEE

Order No.: 608926AM  
Guarantee No.: 72156-48322157  
Dated: September 18, 2023

Liability: \$1,000.00  
Fee: \$350.00  
Tax: \$24.50

Your Reference:

Assured: Curtis Homes, LLC

The assurances referred to on the face page are:

That, according to those public records with, under the recording laws, impart constructive notice of matters relative to the following described real property:

See attached Exhibit 'A'

Title to said real property is vested in:

Cherry Hill NW, LLC, an Oregon limited liability company

**END OF SCHEDULE A**

**(SCHEDULE B)**

Order No: 608926AM  
Policy No: 72156-48322157

Subject to the matters shown below under Exceptions, which Exceptions are not necessarily shown in the order of their priority.

**EXCEPTIONS:**

1. Taxes or assessments which are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the public records.
2. Unpatented mining claims; reservations or exceptions in the United States Patents or in Acts authorizing the issuance thereof; water rights, claims or title to water.
3. Title to any property beyond the lines of the real property expressly described herein, or title to streets, roads, avenues, lanes, ways or waterways on which such real property abuts, or the right to maintain therein vaults, tunnels, ramps, or any other structure or improvement; or any rights or easements therein unless such property, rights or easements are expressly and specifically set forth in said description.
4. The rights of the public in and to that portion of the herein described property lying within the limits of public roads, streets or highways.
5. An easement including the terms and provisions thereof, affecting the portion of said premises and for the purposes stated therein as set forth in instrument:  
Granted To: Pacific Power & Light Company  
Book: 46, Page: 277  
[View Document](#)
6. An easement including the terms and provisions thereof, affecting the portion of said premises and for the purposes stated therein as set forth in instrument:  
Granted To: El Paso Natural Gas Company, a corporation  
Recorded: January 21, 1963  
Book: 135, Page: 310  
[View Document](#)
7. An easement for Water Line including the terms and provisions thereof, affecting the portion of said premises and for the purposes stated therein as set forth in instrument:  
Granted To: Town of White Salmon, a municipal corporation  
Recorded: August 4, 1966  
Instrument No.: 123626  
Book: 143, Page: 1  
[View Document](#)
8. An easement including the terms and provisions thereof, affecting the portion of said premises and for the purposes stated therein as set forth in instrument:  
Granted To: Public Utility District No. 1 for Klickitat County  
Recorded: September 10, 1969  
Instrument No.: 134029  
Book: 149, Page: 478  
[View Document](#)
9. Covenants, conditions and restrictions, but omitting any covenant or restriction based on race, color, religion, sex, sexual orientation, disability, handicap, familial status, marital status, ancestry,

Subdivision Guarantee Policy Number: 72156-48322157

national origin or source of income, as set forth in applicable state or federal laws, except to the extent that said covenant or restriction is permitted by applicable law.

Recorded: July 24, 1992

Instrument No.: 229622

Book: 285, Page: 861

Including, but not limited to, the following:

A. Easement

B. Road Maintenance Provisions

[View Document](#)

Modification(s) of said covenants, conditions and restrictions:

Recorded: April 29, 2019

Instrument No: 1133874

[View Documents](#)

10. Matters as shown on Short Plat No. SP-91-17, including but not limited to:

Recorded: July 24, 1992

Instrument No.: 229623

Book: 2, Page: 112

A. Open Space Provision/Restriction

B. Easements

C. Break Line

D. Fence Line Locations

E. County Road Right-of-Way

[View Document](#)

11. Agreement and the terms and conditions contained therein

Between: City of White Salmon

And: The Public

Purpose: Annexation Ordinance

Recorded: June 7, 2019

Instrument No.: 1134475

[View Document](#)

Amendment to Annexation Ordinance, including the terms and provisions thereof;

Recorded: July 16, 2019

Instrument No.: 1135037

[View Document](#)

12. A Deed of Trust, including the terms and provisions thereof, to secure the amount noted below and other amounts secured thereunder, if any:

Amount: \$1,900,000.00

Trustor/Grantor: Cherry Hill NW, LLC, an Oregon Limited Liability Company

Trustee: AmeriTitle, LLC

Beneficiary: Deltalon JV Limited Partnership, an Oregon Limited Partnership

Dated: February 10, 2021

Recorded: February 23, 2021

Instrument No.: 1145755

**END OF EXCEPTIONS**

**Notes:**

Note No. 1: Any map or sketch enclosed as an attachment herewith is furnished for information purposes only to assist in property location with reference to streets and other parcels. No representation is made as to accuracy and the company assumes no liability for any loss occurring by reason of reliance thereon.

Note No. 2: All documents recorded in Washington State must include an abbreviated legal description and tax parcel number on the first page of the document. The abbreviated description for this property is: Lot 4, SP-91-17, Bk. 2, Pg. 112, KCSPR.

Note No. 3: Taxes, including any assessments collected therewith, for the year shown below are paid:

Amount: \$6,633.15

Year: 2023

Parcel No.: 03-10-2475-0004/00

Taxes as paid include the following exemptions: None

NOTE: In the event any contracts, liens, mortgages, judgments, etc. which may be set forth herein are not paid off and released in full, prior to or immediately following the recording of the forthcoming plat (short plat), this Company will require any parties holding the beneficial interest in any such matters to join in on the platting and dedication provisions of the said plat (short plat) to guarantee the insurability of any lots or parcels created thereon. We are unwilling to assume the risk involved created by the possibility that any matters dedicated to the public, or the plat (short plat) in its entirety, could be rendered void by a foreclosure action of any such underlying matter if said beneficial party has not joined in on the plat (short plat).

**END OF GUARANTEE**



## **EXHIBIT 'A'**

File No. 608926AM

### PARCEL 1:

Lot 4, CHERRY HILL ESTATES, SHORT PLAT NO. SP-91-17, according to the Plat thereof, recorded July 24, 1992, in Book 2, Page 112, Auditor's File No. 229623, Klickitat County Short Plat Records, in the County of Klickitat and State of Washington.

### PARCEL 2:

Access Easement

The right to use Spring Lane Private Drive over Lots 1, 2 and 3 of CHERRY HILL ESTATES, SHORT PLAT NO. SP-91-17, recorded July 24, 1992, in Book 2, Page 112, Auditor's File No. 229623, Klickitat County Short Plat Records.



# CITY OF WHITE SALMON

## CITY HALL OFFICE

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Date: September 6, 2024

To: Klickitat County: Assessor, Treasurer, Engineer, Environmental Health.  
Washington State Department of Transportation  
Washington State Department of Ecology  
Washington State Department of Fish and Wildlife  
Washington State Department of Natural Resources  
Washington State Department of Archaeological & Historic Preservation  
The Confederated Tribes and Bands of the Yakima Nation  
The Confederated Tribes of Warm Springs  
Nez Perce Tribe  
Confederated Tribes of the Umatilla Indian Reservation  
Columbia Gorge News  
Hospital Dist. #2  
PUD #1 of Klickitat County  
Yakima Nation  
NW Natural  
City of Bingen  
City of White Salmon Property Owners within 300-ft Radius of the Project

From: City of White Salmon Planning Department

Subject: SEPA Determination of Non-significance (DNS)  
Cherry Hills Estates Preliminary Plat, File #WS-SEPA-2024-001  
Notice of SEPA Determination of Non-Significance

Enclosed is a Determination of Non-significance (DNS) for the proposed Cherry Hills Estates Preliminary Plat to subdivide a parcel for future residential development. Please see the attached subdivision and SEPA Checklist.



## CITY OF WHITE SALMON CITY HALL OFFICE

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Per the White Salmon Municipal Code 18.20.170 - environmental protection (SEPA review) Appeal, any agency or person may appeal this DNS to the city council. The proponent or any aggrieved party may perfect such appeal by giving notice to the responsible official within fourteen days of the decision being appealed. Appeals shall not be deemed complete without payment of the appeal fees applicable, payable to the City of White Salmon. Appeals must be filed by no later than 5:00pm on Monday, September 23<sup>rd</sup>.

Thank you for your attention to this matter. The City contact person and e-mail for any questions on this review is Erika Castro Guzman, Community Development/Special Project Coordinator [erikac@ci.white-salmon.wa.us](mailto:erikac@ci.white-salmon.wa.us).



# CITY OF WHITE SALMON

## CITY HALL OFFICE

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### SEPA DETERMINATION OF NONSIGNIFICANCE (DNS)

**Environmental Checklist No:** WS-SEPA-2024-001

**Description of Proposal:** Alex Pedroza of HRK Engineering & Field Services, representing Cherry Hill NW, LLC and Cameron Curtis of Legacy Development Group filed a State Environmental Policy Act (SEPA) checklist (File WS-SEPA-2024.001) as part of a preliminary plat for purposes of subdividing 35-single family residential lots.

**Proponent:** Cherry Hill NW, LLC

**Lead agency:** City of White Salmon Planning Department  
PO Box 2139  
White Salmon, WA 98672

The City of White Salmon has determined that this proposal will not have a probable significant adverse impact on the environment. An environmental impact statement (EIS) is not required under RCW 43.21C.030. After reviewing a completed environmental checklist and other information on file with the lead agency, this decision was made. This information is available to the public upon request.

This determination is based on the following findings and conclusions: This project is a 35-lot preliminary plat application on a vacant 7.93 Acres with connection to NW Spring Street and secondary access to Main Street through the Four Oaks Planned Unit Development. The subject site is zoned R1. Street improvements to a portion of NW Spring Street will occur. Steep slope critical areas exist, though will not be impacted by this project. Otherwise, there are no planned disturbances to sensitive areas such as wetlands, waterbodies, sensitive ecological areas, or areas with known historical/archaeological features.

**Appeal Period Ends:** September 23, 2024, at 5:00 PM



# CITY OF WHITE SALMON

## CITY HALL OFFICE

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**Responsible Official:** Troy Rayburn  
City Administrator  
PO Box 2139  
White Salmon, WA 98672  
Ph. 509-493-1133  
[administrator@whitesalmonwa.gov](mailto:administrator@whitesalmonwa.gov)

**DATED** this 6<sup>th</sup> day of September 2024

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Troy Rayburn  
SEPA Responsible Official

**Preliminary Report:  
Identification of Candidate Heritage Trees,  
Assessment of Condition, and  
Estimation of Heritage Tree Protection Areas**

*for*

**Cameron Curtis  
Curtis Homes LLC**

*by*

**David M. Braun  
Braun Arboricultural Consulting LLC  
Hood River OR  
November 7<sup>th</sup>, 2023**

## **Background**

I was contacted by Cameron Curtis in early November 2023 regarding the need for an arborist’s assessment of candidate heritage trees potentially present on a lot and covered by the White Salmon Heritage Tree Ordinance. The lot is on the north side of Spring St. in White Salmon (Lot 4, Klickitat County Tax Lot #0310247500400, 7.93 ac.; Klickitat County, 2023).

Mr. Curtis requires an arborist’s assessment of Candidate Heritage Trees to facilitate final development plans and obtain permit approvals. The focus of this Report is to provide location and condition information on trees likely qualifying as Heritage Trees based on the Heritage Tree portion (18.10.317- Special Provisions-Heritage Trees) of the White Salmon Critical Areas Ordinance (Chapter 18.10) of Title 18 – Environment, White Salmon Code of Ordinances.

The following is my interpretation of the meaning and application of Section 18.10.317:

**HTPAs:** designation of Heritage Tree Protection Areas (HTPAs) is required for qualifying trees; dimensions are 10 times tree diameter at breast height (diameter at 4.5 ft.) plus a 15 ft. wide Building Set Back Line (BSBL), e.g., a 20 in. diameter oak would require a circle 200 in. (16.7 ft.) wide plus 15 ft. on all sides, adding up to a 46.7 ft. (47 ft.) wide protection zone (alternative is average crown width plus BSBL). Trees over 14 in. dbh (Oregon White Oak) or 18 in. dbh (other species) may be designated Heritage Trees. I refer to such trees as “Candidate Heritage Trees” before a final determination is made by the City as to what trees will be retained (see Tree removal, below). Significant incursions that are likely to significantly decrease tree health or stability are not allowed, such as cuts, fills, buried utilities, or building footprints over a significant portion of a HTPA; mitigation including fencing, mulching, temporary irrigation, are recommended to reduce impacts by minor incursions inside or work outside the HTPA.

**Tree removal:** If a property can’t be reasonably developed based on zoning due to extensive coverage of the parcel area by HTPAs, some Candidate Heritage Trees may be removed; dead, high risk, “weed” tree species such as *Ailanthus altissima* (Tree of Heaven), non-maintained fruit trees, or trees in very poor condition may also be removed even if they meet diameter requirements. Key sections of the Heritage Tree Ordinance are included at the end of this report.

## Scope

Two objectives are the subject of this report:

Describe the large trees on the property: their species, location, size (diameter, height, and spread), and overall condition. Trees over 14 in. dbh (Oregon White Oak) or 18 in. dbh (other species) may be designated Heritage Trees and protected during and after construction activities under the White Salmon Critical Areas Ordinance.

Identify Candidate Heritage Trees and estimate Heritage Tree Protection Areas (HTPAs) in relation to development plans. A Heritage Tree Protection Plan (HTPP) for mitigation of impacts to specific HTPAs will be prepared as a supplement to this Preliminary Report upon request that describes likely construction impacts and proposes mitigation. The HTPP will be based on this preliminary report, updated with revised recommendations for mitigation of likely construction impacts to Heritage Trees, and include a revised schematic showing the HTPAs, BSBLs, and building and other construction footprints; this schematic would ideally be prepared by the surveyor producing plans for the site.

## Methods

### Candidate Heritage Trees

Identify species and measure the diameter using a diameter tape. Visually assess trees for condition and defects. This involves viewing all sides from the root crown to the top of the crown.

Establish approximate tree locations. This was done with photographs and visually estimated position relative to fence lines likely to be near property lines; candidate trees are located on a schematic (Figure I). More exact locations were not determined at this time because only one marker from the 2022 survey was observed, and because survey work to produce final plans for the site can more efficiently define tree locations.

### Site

Walk the property and observe approximate property boundaries. Determine past disturbance history that may have affected the large trees. Identify Candidate Heritage Trees based on species and diameter.

## Results

### Number and Species of Candidate Heritage Trees

Eight Candidate Heritage Trees were identified by the assessor: all were Oregon White Oak (*Quercus garryana*) (Table I). Other tree species included Bitter Cherry (*Prunus avium*), Bigleaf Maple (*Acer macrophyllum*), Black Locust (*Robina pseudoacacia*), and Oregon Ash (*Fraxinus*

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Proposed Chandler Contract**

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*latifolia*); none of these were 18 in. dbh. Some fruit trees, cherries, were present that may have approached or exceeded 18 in. dbh, but these were non-maintained and in very poor condition.

**Likely Cons. HTPA+BSBL**

#	Sps	dbh	Ht.	Cond.	Impacts	Diameter (ft.)	Notes
1	Oak	15.8	40	Fair	None	43	High crown, lean to SE
2	Oak	22.2	40	Fair	Slight	48	High crown, lean to SE, basal opening
3	Oak	13.4	35	Fair	None	42	High crown, suppressed by maple, lean to S
4	Oak	16.9	25	Good	None	44	Full crown, old, barbed wire embedded
5	Oak	25.3	30	Good	None	51	Full crown to E, old, barbed wire embedded, adjacent to #6 to W
6	Oak	19.5	30	Good	None	47	Full crown to W, adjacent to #5 to E
7	Oak	13.5	35	Fair	None	42	One-sided crown to S, suppressed by #8
8	Oak	13.5	35	Fair	None	42	One sided high narrow crown to N (in clump NE of #7 and a third smaller stem)

**Table I. Candidate Heritage Trees.** All trees were measured at 4.5 ft. (dbh) from soil line on side-hill, except for trees #2 and #8, which were measured at the narrowest point at about 3 ft. Height and distance from fence lines (“boundaries”) were visually estimated. Trees in fair condition (1,2,3,7,8) had one sided crowns lacking low branches or suppressed by a taller tree nearby. Trees in good condition had larger crowns and were open grown (although #5 and #6 were a pair, and therefore had one-sided crowns). All were relatively young (estimated 30 - 50 years) and fast growing; some had light crown die-back likely caused by anthracnose disease (which the species tolerates); all were likely of sprout origin from old stumps; an old stump protruded from the basal opening of #2, and was within the clump made up of #7, #8, and a third smaller stem. The oak diameters of 13.4, 13.5, and 13.5 in. were considered to be 14 in. based on rounding and allowance for measurement error.

**Tree Locations and Protected Areas**

All trees were within the property lines based on old fence lines observed on site, and within property lines based on inspection of the Klickitat County Tax Lot Map (Klickitat County, 2023) and the 1992 property survey (Trantow Surveying, 1992). One surveyor lath stake (marked “PROPERTY CORNER LOT 3”) was observed 20 ft. north of oak #6 on the newer west fence line; this likely was from the 2022 survey referred to by Mr. Curtis. Trees depicted in Figure I.

**Incursion into Protected Areas by Proposed Construction**

Although the footprints of hardscapes, buried utilities, or buildings are not known at this time, construction impacts to the Candidate Heritage Trees are likely to be minimal. Mr. Curtis described the plans for the area as a multi home development, with the access road leaving Spring St. and traversing the narrow portion (101 ft. wide) to access the larger rectangular area to the north where the homes would be located (Klickitat County, 2023; Figure I). The first three oaks are 10 – 20 ft. from the west property line in the narrow area; the other trees are closer to



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other boundaries (< 1 to 4 ft.). Construction impacts to trees #2 - #8 are estimated to be “none” based on current information, but this assessment could change based on final plans (Table I).

Oak #2 would be closest to the access road of the three trees in the narrow area; its HTPA would be 18.3 ft. (22 in. dbh \* 10) + a BSBL of (15 ft.)\*2 ft., or a circle 48 ft. in diameter. This would put the edge of the protection area about 44 ft. from the west property line and 6 ft. west of the center of the 101 ft. wide area (the tree is about 20 ft. from the west boundary).



**Figure I. Candidate Heritage Trees.** Eight Oregon White Oaks qualify as Heritage Trees based on species and diameter. Condition was fair or good, and all were determined to be at a hazard level of “low risk”, based on improvements such as homes, common areas, sidewalks, and roads built within 1.5 tree heights of the trees. Diameter ranged from 14 to 25 in., and heights from 25 – 40 ft. Trees are near property boundaries: Oaks #1, #2, and #3 are along the west boundary in the southern, narrow neck of the property; oaks #4, #5, and #6 are along the west boundary, and oaks #7 and #8 are along the north boundary. Oak #2 was the farthest from a boundary, about 20 ft. east of the west boundary along the narrow neck of the property at bottom. The property approximated by the black lines is Tax Lot 4, 7.93 ac., # 0310247500400. Aerial photo date is July 24<sup>th</sup>, 2021.

## **Discussion**

### **Heritage Tree Protection Areas (HTPAs) and Setbacks (BSBLs)**

Heritage Trees receive protection in the form of Heritage Tree Protection Areas (HTPAs) and Building Set Back Lines (BSBLs), and the trees and protection areas are included on plans. Assuming the eight Candidate Heritage Trees will appear on final plans as Heritage Trees, entry into the protected zones is unlikely except for Oak #2. Retaining some of the existing trees and shrubs around the eight identified trees would also benefit the trees, although removal or pruning of some competing Bitter Cherry, Bigleaf Maple and Black Locust would improve vigor of trees #1 - #3.

### **Fate of Candidate Heritage Trees**

All the Candidate Heritage Trees were determined to be in fair or good health and low risk (Dunster, 2017). The trees can be retained as Heritage Trees, represent a benefit to the property, and will maintain other environmental benefits: the goal of the Critical Area Ordinance. Given all the activities on a home construction site, designation of HTPAs plus BSBLs and application of the mitigation discussed, at minimum, should ensure that this occurs.

### **Risk Assessment**

Tree risk assessment assigns a risk rating to trees based on the likelihood that a tree or tree part will fail and contact a target; overall risk is assigned based on the probability of that contact and the consequence (Dunster et al, 2017). Based on the assumption that buildings or roads or other improvements will be within 1.5 tree heights of the trees, overall risk was estimated to be minimal due to low failure risk, small tree size, and the types of targets.

### **Mitigation**

Besides erection of fencing, mulching and supplemental irrigation will likely be recommended once the development footprints are known. Grade changes or footings near or slightly in HTPAs will affect root health, so trees will benefit from this mitigation; it is of critical importance in the dry summer months. Removal or crown reduction of nearby trees will also improve health.

### **Recommendations**

The surveyor would ideally include tree locations, HTPAs and BSBLs for the flagged Candidate Heritage Trees on plans that depict grade changes, footings, roads, buildings, and buried utilities.

Depending on the type and location of construction related disturbance near the trees, mitigation can be recommended by a qualified arborist in a HTPA as a brief supplement to this report.

## Key Sections of the Heritage Tree Ordinance Relating to this Report

### 18.10.317-Special Provisions—Heritage Trees

- A. "...All heritage trees...shall be protected as critical areas. The tree protection area shall be equal to ten times the trunk diameter of the tree or the average diameter of the area enclosed by the outer edge of the drip line of the canopy, whichever is greater."
- B. "Heritage trees include:
1. Oregon White Oaks with a trunk diameter larger than fourteen inches,
  2. All tree species with a trunk diameter greater than eighteen inches, or
  3. Any tree designated as a heritage tree by the city council in accordance with the nomination process detailed below."
- E. Maintenance and preservation of heritage trees is required.
1. Any owner or applicant shall use reasonable efforts to maintain and preserve all heritage trees located thereon in a state of good health. ..."
    - a. Avoidance of grading, excavation, demolition, or construction activity within heritage tree protection area where possible.
    - b. Grading, excavation, demolition, or construction within the heritage tree protection area shall require submittal of a tree protection plan..."
  2. The critical area report ...shall include a heritage tree protection plan and shall be prepared by a certified arborist. The plan shall address issues related to protective fencing and protective techniques to minimize impacts ..."
  3. Building setback lines stipulated by subsection 18.10.212 shall be measured from the outer line of the tree protection area for heritage trees (18.10.212-Building Setback Line (BSBL): "Unless otherwise specified, a minimum BSBL of fifteen feet is required from the edge...").
- G. Exceptions to the provisions in this section include:
1. A heritage tree can be removed if it is dead, dangerous, or a nuisance, as attested by an arborists' report..."
  2. A heritage tree in or very close to the "building area" of an approved single-family residence design can be replaced by another tree. A heritage tree can be removed if its presence reduces the building area of the lot by more than 50 percent after all potential alternatives including possible setbacks to minimum yard depth and width requirements have been considered.

## References

City of White Salmon 2021. Chapter 18.10 – Critical Areas Ordinance, including 18.10.317-Special Provisions—Heritage Trees (18.10.317-Special Provisions—Heritage Trees) Accessed and downloaded November 3<sup>rd</sup>, 2023.

[https://library.municode.com/wa/white\\_salmon/codes/code\\_of\\_ordinances?nodeId=TIT18EN\\_CH18.10CRAROR](https://library.municode.com/wa/white_salmon/codes/code_of_ordinances?nodeId=TIT18EN_CH18.10CRAROR)

Dunster, J. A., T. Smiley, N. Matheny, and S. Lilly, 2017. Tree Risk Assessment Manual. International Society of Arboriculture, Champaign, IL. 194 pgs.

Google 2023. Google Earth Pro used to produce schematic based on aerial imagery, Tax Lot Map, and Trantow Survey. Schematic based on an image dated July 24<sup>th</sup>, 2021, and accessed November 4<sup>th</sup>, 2023. Google Earth Pro 7.3.3.7786(32-bit) Build Date July 21, 2020. Copyright 2020 Google LLC.

Klickitat County 2023. Klickitat County Tax Lot Maps. Accessed and downloaded Map on November 4<sup>th</sup>, 2023. Approximate boundaries transferred to schematic with drawing tools in Google Earth Pro. <https://imap.klickitatcounty.org/#10/45.8283/120.7404/c22ecdf827df6af49a>

Trantow Surveying, 1992. Klickitat County WA Short Plat No. SP – 91 – 17 NW ¼ NE1/4 SEC. 24, T. 3N., R. 10 E., W.M. "Cherry Hill Estates". T. N. Trantow Surveying P. L. S., Bingen, WA. Filed in Klickitat County, July 24<sup>th</sup>, 1992. Obtained via link from Tax Lot Map (Klickitat County, 2023).

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Proposed Chandler Contract**

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**Assessors Credentials**

David M. Braun Ph.D., Owner, Braun Arboricultural Consulting LLC  
Cell: 541-806-0347 [dave@braunarborcare.com](mailto:dave@braunarborcare.com) [www.braunarborcare.com](http://www.braunarborcare.com)  
Ph.D., Forest Ecology, 1998  
College of Forest Resources, University of Washington, Seattle, Washington.  
M.F.S., Forest Ecology, 1986.  
School of Forestry and Environmental Studies, Yale University, New Haven, Connecticut.  
B. S., Biology, 1982.  
Fairfield University, Fairfield, Connecticut.

**Memberships, Certifications, Licenses**

Certified Arborist, International Society of Arboriculture (ISA) #PN-6114A  
TRAQ Tree Risk Assessment Credential, ISA (being renewed)  
Member, American Society of Consulting Arborists (ASCA)  
Oregon CCB #188757; Washington Registration # BRAUNAC908DQ  
Oregon Commercial Pesticide Operator License AG-L1017983CPO  
Oregon Commercial Pesticide Applicator License AG-L1017982CPA (being renewed)  
Washington Commercial Pesticide Applicator License: 82597

**Insurance and Bond**

David M. Braun and Braun Arboricultural Consulting LLC, Reg. Num. 354066-93 (Nov. 2007), is insured with a standard business insurance policy through Columbia River Insurance, Hood River, OR. Phone: 541-386-2444. Coverage includes: \$1,000,000 Liability and Medical Expenses, \$2,000,000 Products –Completed Operations, \$1,000,000 Professional Liability Insurance, Workman’s Compensation Insurance, and a \$20,000 surety bond.

**Assumptions and Limiting Conditions**

1. Any legal description provided to the assessor (David M. Braun) is assumed to be correct. Any titles and ownerships to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is assessed or evaluated as though free and clear, under responsible ownership and competent management.
2. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the assessor can neither guarantee nor be responsible for the information provided by others.
3. The assessor shall not be required to give testimony or attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.
4. Loss or alteration of this report invalidates the entire report.
5. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the assessor.
6. Neither all or any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales, or other media, without the prior expressed written or verbal consent of the assessor particularly as to the conclusions or recommendations, identity of the assessor, or any reference to any professional society or institute or designation conferred upon the assessor as stated in his qualification.
7. This report and conclusions expressed herein, represents the opinion of the assessor, and the assessor’s fee is in no way contingent upon the reporting of a specified value, stipulated results, and the occurrence of a subsequent event nor upon any finding to be reported.
8. Unless expressed otherwise: (1) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring, except for those minimally invasive procedures that were performed and described in the report. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the tree or property in question may not arise in the future.

**Braun Arboricultural Consulting LLC  
Proposed Chandler Contract**

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**Certification of Performance**

Location of Assessed Trees: Lot 4, Tax Lot #0310247500400, Spring St., White Salmon, Washington  
I, David M. Braun certify to the best of my knowledge and belief that:

1. That the statements of fact contained in this Heritage Tree report are true and correct.
2. That the assessment, analysis, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and that they are my personal, unbiased professional analysis, opinions, and conclusions.
3. That I have no present or prospective interest in the trees that are the subject of the assessment, and that I have no personal interest or bias with respect to the client. Because Braun Arboricultural Consulting LLC provides multiple services, including appraisal, risk assessment, tree pruning, diagnosis and treatment of injurious insects and diseases, and tree removal, a bid for possible future work on the subject trees may be provided to the client, or the property owners, if one or more are requested. David M. Braun states that the methods, observations, conclusions, and recommendations contained in this tree Risk Assessment report were in no way influenced by a desire for a particular outcome that could form the basis of additional work on the subject trees; he also urges the client and property owners to obtain additional bids from other contractors if one is requested from Braun Arboricultural Consulting LLC.
4. That my compensation is not contingent upon a predetermined result or the occurrence of a subsequent event.
5. That my analysis, conclusions, and opinions were developed, and this assessment has been prepared, in conformity with industry standards and guidelines.
6. That methods found in this assessment were based on a request by the client to determine risk posed by the tree and provide recommendations for reducing it.
7. That my assessment is based on information known to me at this time. If more information is disclosed, I may have further opinions.
8. That, as a result of my examination, investigations, and analysis of the trees and all of the data pertinent thereto, and in the light of my experience, the recommendations for removing trees or retaining them while mitigating health impacts may be acted on with some assurance of success.

I further certify that I am a registered member in good standing of the American Society of Consulting Arborists (ASCA) and the International Society of Arboriculture (ISA), that I have a Tree Risk Assessment Qualification (TRAQ) and that I have been active in the field of Arboriculture for a period of 15 years.



**Signed**

**November 7th, 2023**

**Date**

**Selected Photos of Candidate Heritage Trees,**  
*for*

**Cameron Curtis  
Curtis Homes LLC**  
*by*

**David M. Braun  
Braun Arboricultural Consulting LLC  
Hood River OR  
November 7<sup>th</sup>, 2023**



**Photo 9725. View south along fence line towards southwest corner of property. Oak #2 in foreground, Oak #1 in background.  
Photo David M. Braun., November 3<sup>rd</sup>, 2023**



**Photo 9718. View north from Spring St. of southwest corner of property and along west fence line. Oak #1 at center, Oak #3 beyond it to left; Oak #2 obscured by blackberries behind and to right of Oak #1. Trees to right are Black Locust < 18 in. dbh. Photo David M. Braun., November 3<sup>rd</sup>, 2023**



August 16, 2024

Mr. Andrew Dirks  
Public Works Director  
City of White Salmon  
100 North Main Avenue  
P.O. Box 2139  
White Salmon, Washington 98672

**SUBJECT: CHERRY HILL SUBDIVISION TRANSPORTATION IMPACT STUDY  
CITY OF WHITE SALMON, KLUCKITAT COUNTY, WASHINGTON  
G&O #24859.01**

Dear Mr. Dirks:

At the City's request we have reviewed the Transportation Impact Study prepared by DKS Associates for the proposed Cherry Hill subdivision. The Study contains 59 total pages (including cover) that are dated by the Engineer of Record on May 24, 2023. Our review comments follow:

**GENERAL COMMENTS**

1. The report indicates (Page 5) that the subdivision will include up to 36 single family homes, and will have one access onto Spring Street. The International Fire Code requires 2 separate access roads for subdivisions that create more than 30, one-family dwellings. The fire code official should review the subdivision to confirm this requirement.
2. The report indicates (Page 8) that the City does not have a TSP. We recommend updating the report to include the City's recently completed TSP and ensure coordination with TSP-listed projects.
3. The report indicates (Page 17) that no concerns for conflicts with nearby accesses exist. We note that the Hillside Lane (private road) will be located adjacent to the proposed access. The misalignment of the proposed access and Hillside Lane may be undesirable for the City.





Mr. Andrew Dirks  
August 16, 2024  
Page 2

4. The report indicates (Page 17) that the project frontage along Spring Street is very limited (approximately 100 feet total) and that construction of pedestrian/bicycle facilities may be impractical within the overall project frontage. The City may wish to require the developer to consider the overall impacts to Spring Street as a result of the proposed development and require network improvements which can accommodate these impacts, outside of the limited project frontage.

Thank you for the opportunity to comment on this Study. Please feel free to contact us with any questions or further review of subsequent information related to this development.

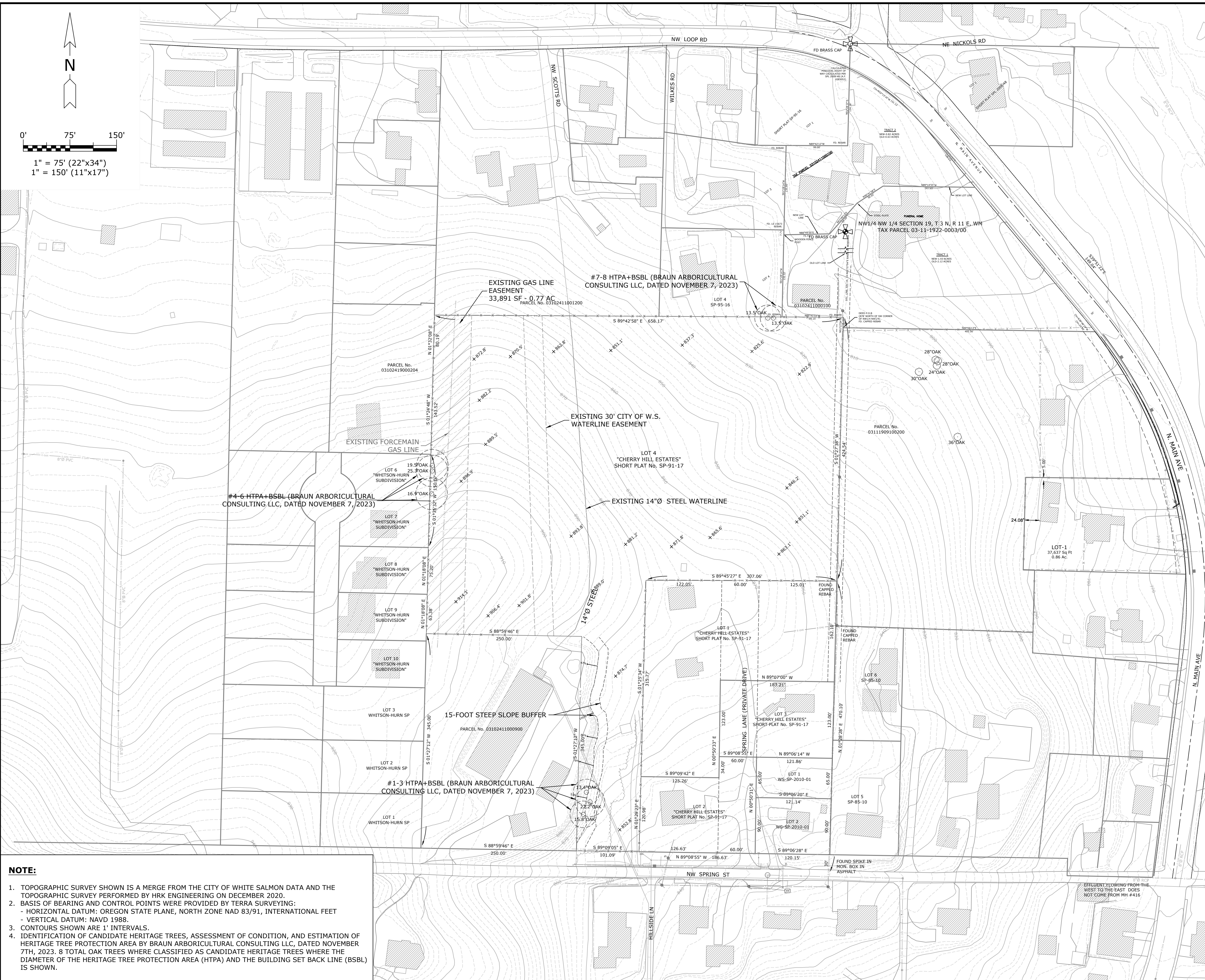
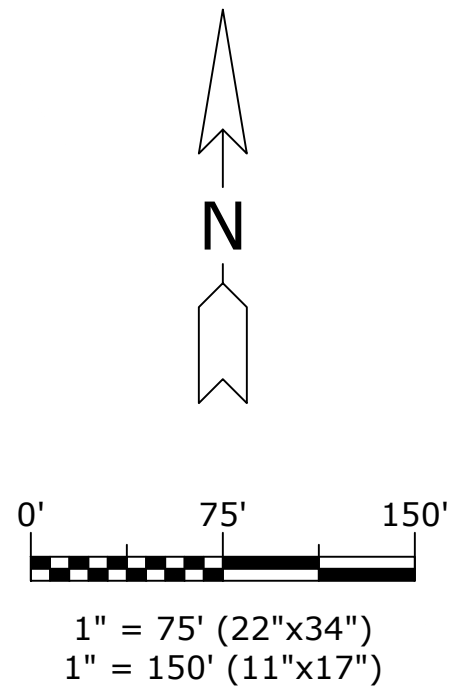
Sincerely,

GRAY & OSBORNE, INC.

Michael Woodkey, P.E.

MW/js  
Encl.  
By email





**NOTE:**

1. TOPOGRAPHIC SURVEY SHOWN IS A MERGE FROM THE CITY OF WHITE SALMON DATA AND THE TOPOGRAPHIC SURVEY PERFORMED BY HRK ENGINEERING ON DECEMBER 2020.
2. BASIS OF BEARING AND CONTROL POINTS WERE PROVIDED BY TERRA SURVEYING:  
- HORIZONTAL DATUM: OREGON STATE PLANE, NORTH ZONE NAD 83/91, INTERNATIONAL FEET  
- VERTICAL DATUM: NAVD 1988.
3. CONTOURS SHOWN ARE 1' INTERVALS.
4. IDENTIFICATION OF CANDIDATE HERITAGE TREES, ASSESSMENT OF CONDITION, AND ESTIMATION OF HERITAGE TREE PROTECTION AREA BY BRAUN ARBORICULTURAL CONSULTING LLC, DATED NOVEMBER 7TH, 2023. 8 TOTAL OAK TREES WHERE CLASSIFIED AS CANDIDATE HERITAGE TREES WHERE THE DIAMETER OF THE HERITAGE TREE PROTECTION AREA (HTPA) AND THE BUILDING SET BACK LINE (BSBL) IS SHOWN.

**LEGEND:**

	EXISTING FLOWLINE
	EXISTING STORM SEWER
	PROPOSED STORM SEWER
	EXISTING CATCH BASIN
	PROPOSED CATCH BASIN
	EXISTING STORM MANHOLE
	PROPOSED STORM MANHOLE
	EXISTING STORM DRAINAGE CLEANOUT
	PROPOSED STORM DRAINAGE CLEANOUT
	EXISTING SANITARY SEWER
	PROPOSED SANITARY SEWER
	EXISTING SANITARY MANHOLE
	PROPOSED SANITARY MANHOLE
	EXISTING SANITARY CLEANOUT
	PROPOSED SANITARY CLEANOUT
	EXISTING WATER LINE
	PROPOSED WATER LINE
	EXISTING FIRE HYDRANT
	PROPOSED FIRE HYDRANT
	EXISTING WATER VALVE
	PROPOSED WATER VALVE
	EXISTING BLOW-OFF VALVE
	PROPOSED BLOW-OFF VALVE
	EXISTING WATER METER
	PROPOSED WATER METER
	EXISTING IRRIGATION LINE
	PROPOSED IRRIGATION LINE
	EXISTING IRRIGATION VALVE
	PROPOSED IRRIGATION VALVE
	EXISTING OVERHEAD ELECTRICITY LINE
	PROPOSED OVERHEAD ELECTRICITY LINE
	EXISTING UNDERGROUND ELECTRICITY LINE
	PROPOSED UNDERGROUND ELECTRICITY LINE
	EXISTING POWER POLE
	PROPOSED POWER POLE
	EXISTING LIGHT POLE
	PROPOSED LIGHT POLE
	EXISTING ELECTRIC METER
	PROPOSED ELECTRIC METER
	EXISTING NATURAL GAS LINE
	PROPOSED NATURAL GAS LINE
	EXISTING GAS METER
	PROPOSED GAS METER
	EXISTING GAS VALVE
	PROPOSED GAS VALVE
	EXISTING INDEX CONTOUR LINE
	EXISTING CONTOUR LINE
	PROPOSED CONTOUR LINE - MAJOR
	PROPOSED CONTOUR LINE - MINOR
	EXISTING FENCE
	PROPOSED FENCE
	EXISTING PROPERTY LINE
	PROPOSED PROPERTY LINE
	EXISTING RIGHT OF WAY
	PROPOSED RIGHT OF WAY
	EXISTING PUBLIC UTILITY EASEMENT
	PROPOSED PUBLIC UTILITY EASEMENT

**HRK ENGINEERING & FIELD SERVICES**  
 489 N 8TH STREET - SUITE 201  
 HOOD RIVER, OREGON 97031  
 541-386-6480 - WWW.HRKUS.COM

CLIENT

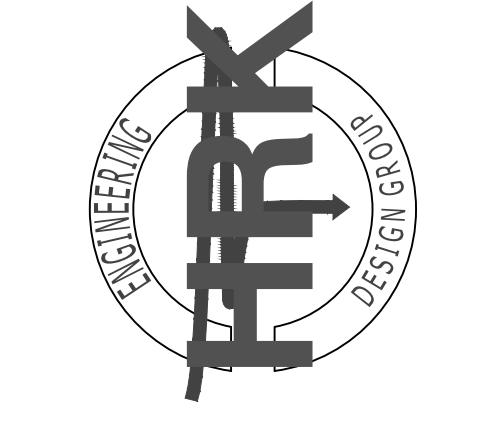
**LEGACY**  
 DEVELOPMENT GROUP, INC.  
 403 HIGHWAY 35  
 HOOD RIVER, OR 97031

PROJECT NAME  
**CHERRY HILL ESTATES SUBDIVISION**

PROJECT DATE  
**FEBRUARY 2021**

PROJECT NO.  
**21-002**

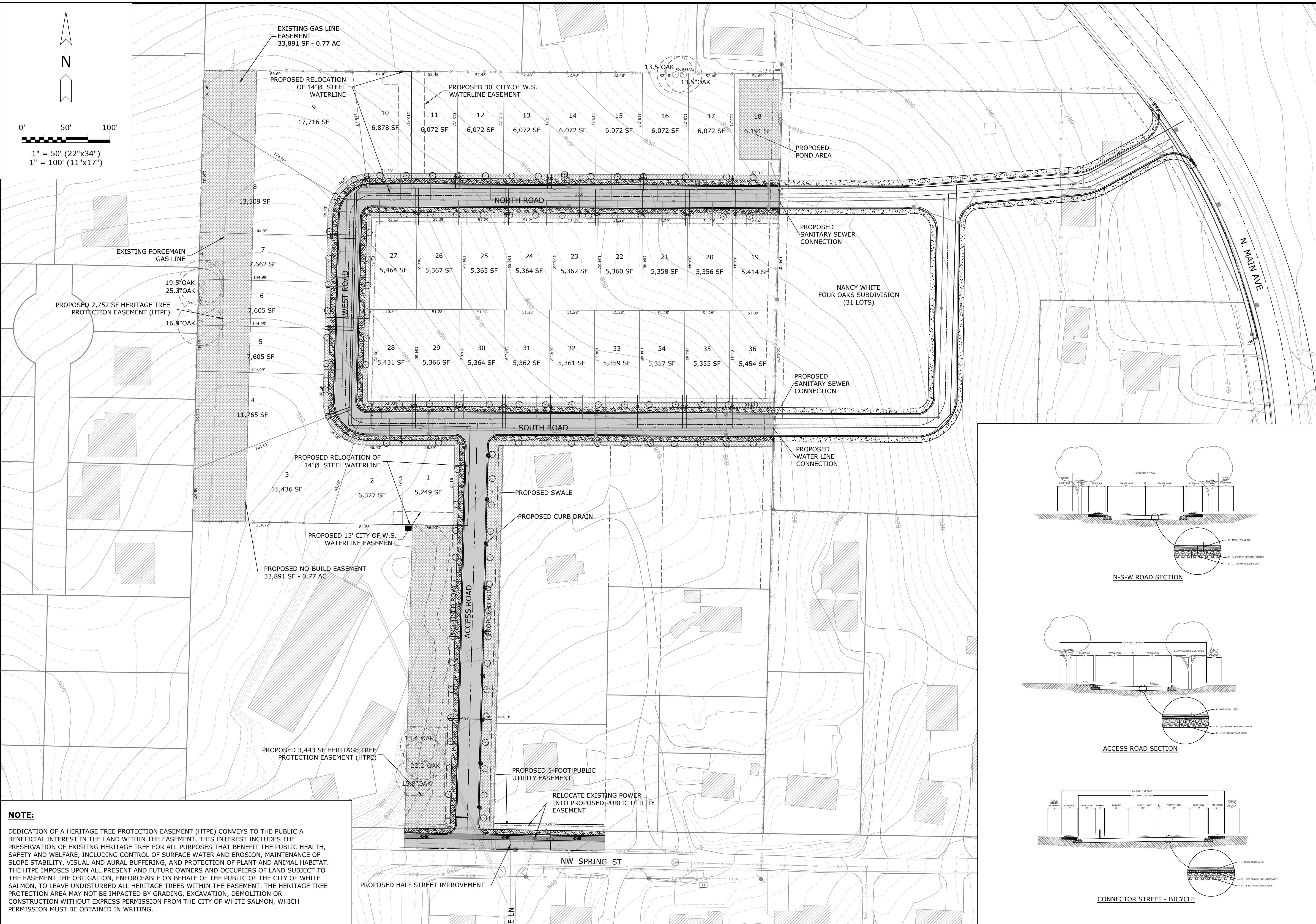
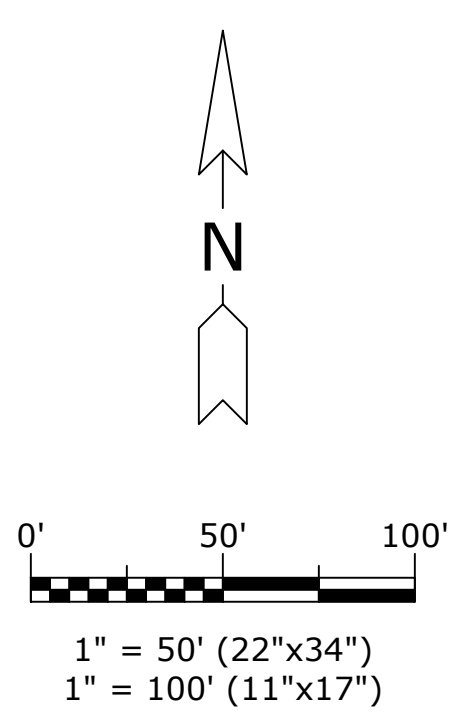
PHASE  
**SITE PLAN REVIEW**



NO.	DATE	DRWN	CHKD	DESCRIPTION
1	09/07/23	AP	CG	SITE PLAN REVIEW
2	11/08/23	AP	CG	CITY OF WHITE SALMON SPR COMMENTS 10/9/2023
3	11/28/23	AP	CG	CITY OF WHITE SALMON SPR COMMENTS 11/21/2023
4	05/13/24	AP	CG	CITY OF WHITE SALMON SPR COMMENTS REVIEW 05/04/2024
5	07/26/24	AP	CG	CITY OF WHITE SALMON 2ND CONSISTENCY REVIEW 06/14/2024

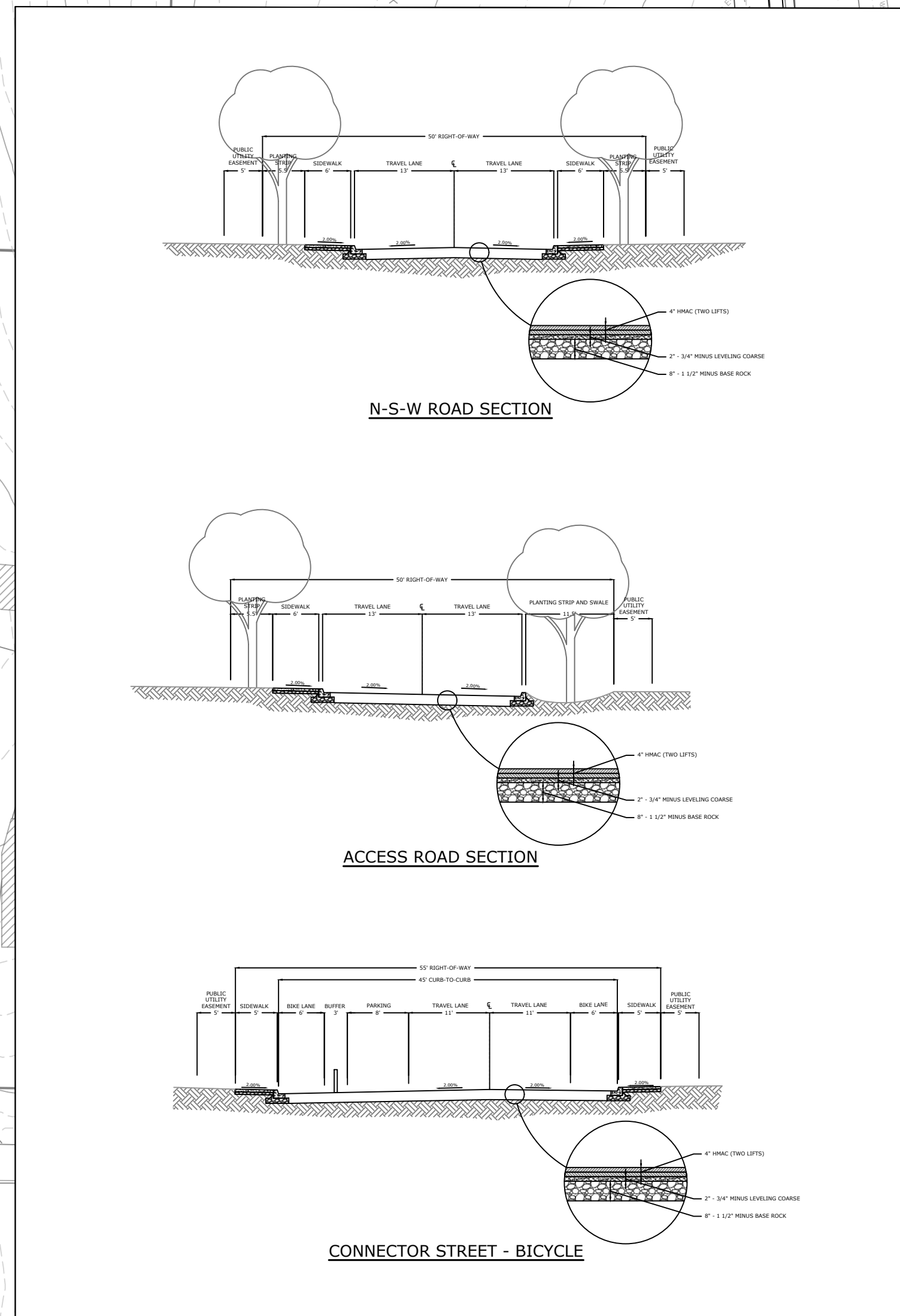
EXISTING CONDITIONS

SHEET NO. **2** OF 4



**NOTE:**

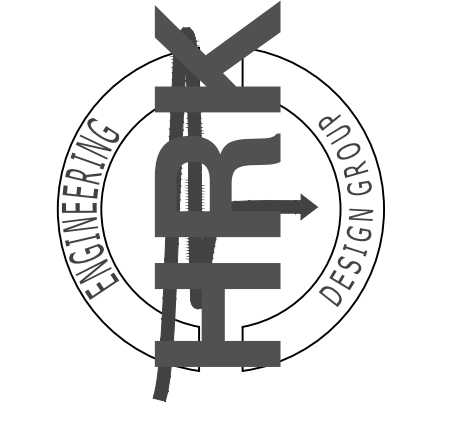
DEDICATION OF A HERITAGE TREE PROTECTION EASEMENT (HTPE) CONVEYS TO THE PUBLIC A BENEFICIAL INTEREST IN THE LAND WITHIN THE EASEMENT. THIS INTEREST INCLUDES THE PRESERVATION OF EXISTING HERITAGE TREE FOR ALL PURPOSES THAT BENEFIT THE PUBLIC HEALTH, SAFETY AND WELFARE, INCLUDING CONTROL OF SURFACE WATER AND EROSION, MAINTENANCE OF SLOPE STABILITY, VISUAL AND AURAL BUFFERING, AND PROTECTION OF PLANT AND ANIMAL HABITAT. THE HTPE IMPOSES UPON ALL PRESENT AND FUTURE OWNERS AND OCCUPIERS OF LAND SUBJECT TO THE EASEMENT THE OBLIGATION, ENFORCEABLE ON BEHALF OF THE PUBLIC OF THE CITY OF WHITE SALMON, TO LEAVE UNDISTURBED ALL HERITAGE TREES WITHIN THE EASEMENT. THE HERITAGE TREE PROTECTION AREA MAY NOT BE IMPACTED BY GRADING, EXCAVATION, DEMOLITION OR CONSTRUCTION WITHOUT EXPRESS PERMISSION FROM THE CITY OF WHITE SALMON, WHICH PERMISSION MUST BE OBTAINED IN WRITING.



**HRK ENGINEERING & FIELD SERVICES**  
 489 N 8TH STREET - SUITE 201  
 HOOD RIVER, OREGON 97031  
 541-386-6480 - WWW.HRKUS.COM

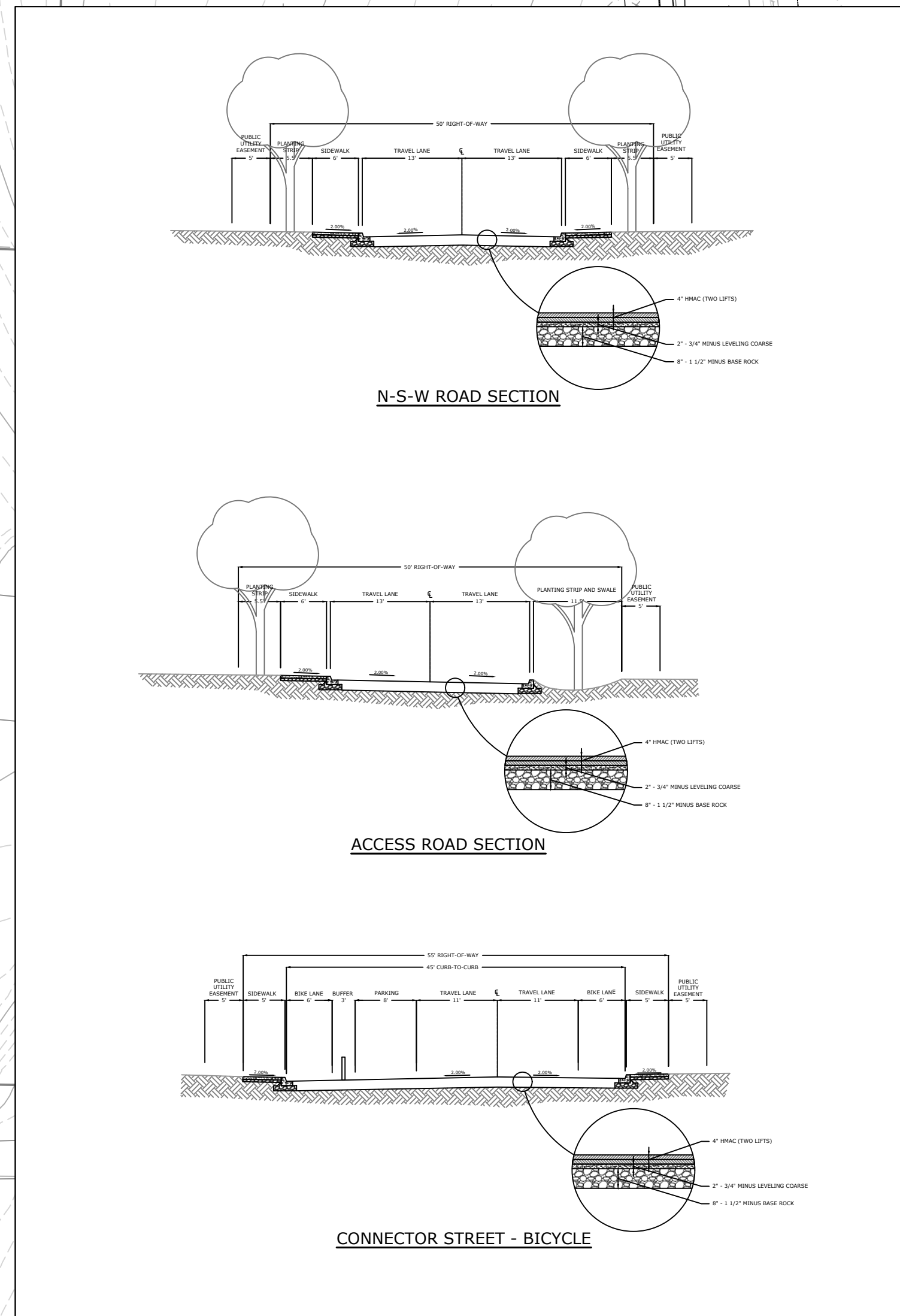
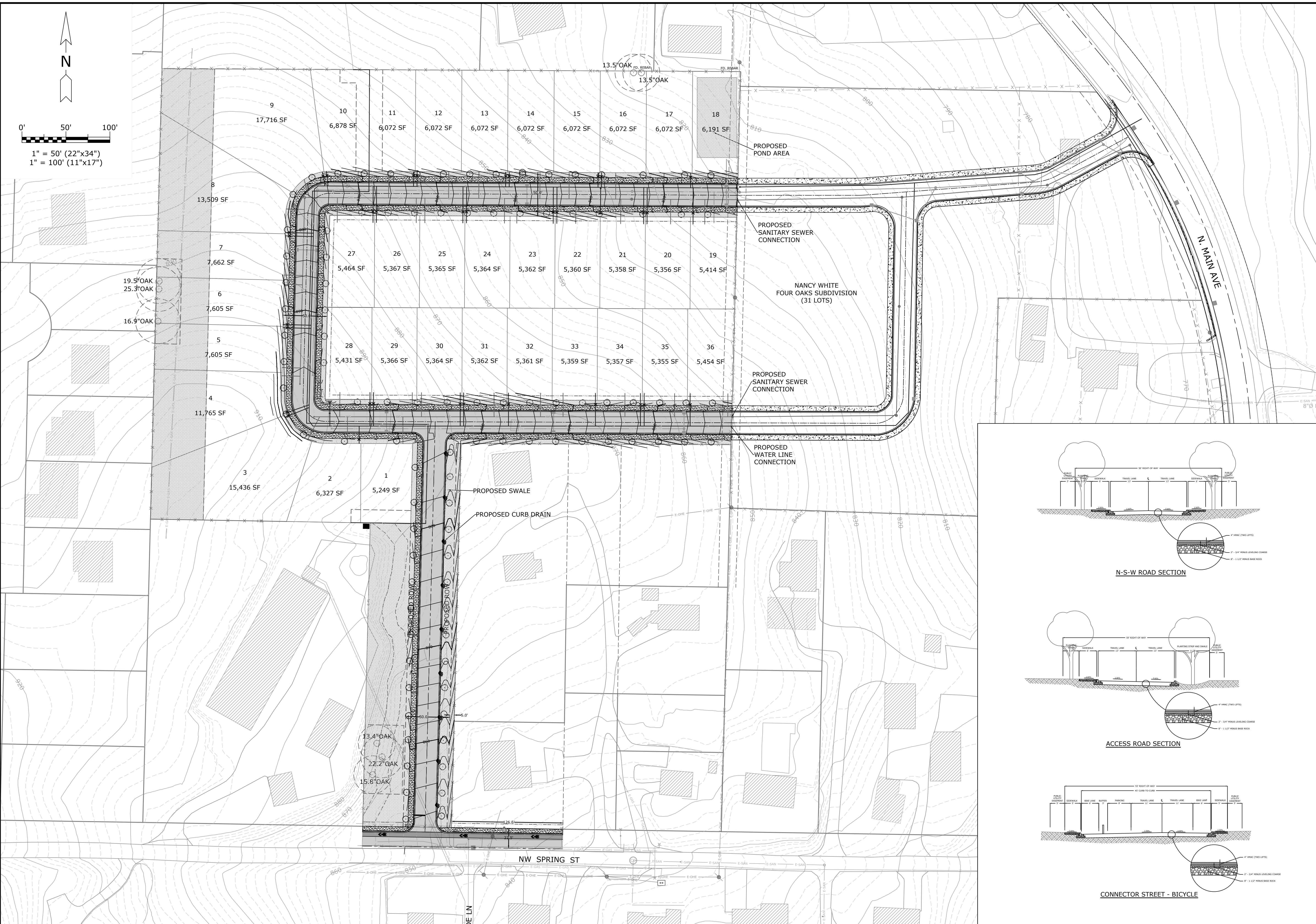
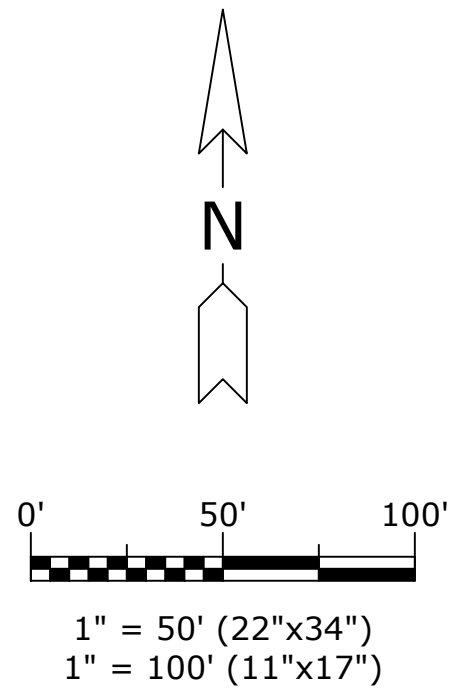
CLIENT  
**LEGACY DEVELOPMENT GROUP INC.**  
 403 HIGHWAY 35  
 HOOD RIVER, OR 97031

PROJECT NAME  
 CHERRY HILL ESTATES SUBDIVISION  
 PROJECT DATE  
 FEBRUARY 2021  
 PROJECT NO.  
 21-002  
 PHASE  
 SITE PLAN REVIEW



NO.	DATE	DRWN	CHKD	DESCRIPTION
1	09/07/23	AP	CG	SITE PLAN REVIEW
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5	07/26/24	AP	CG	CITY OF WHITE SALMON 2ND CONSISTENCY REVIEW 06/14/2024

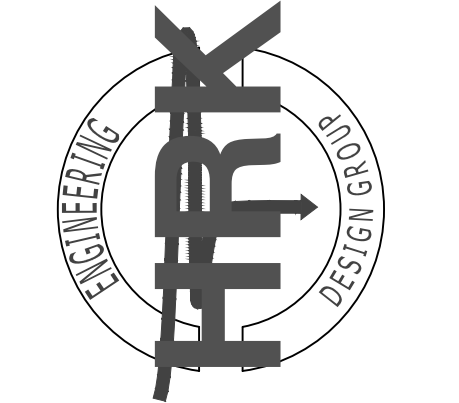
SHEET NAME  
 SITE PLAN  
 SHEET NO.  
 3 OF 4



**HRK ENGINEERING & FIELD SERVICES**  
 489 N 8TH STREET - SUITE 201  
 HOOD RIVER, OREGON 97031  
 541-386-6480 - WWW.HRKUS.COM

CLIENT  
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 403 HIGHWAY 35  
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PROJECT NAME  
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 21-002  
 PHASE  
 SITE PLAN REVIEW



NO.	DATE	DRWN	CHKD	DESCRIPTION
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4	05/13/24	AP	CG	CITY OF WHITE SALMON CONSISTENCY REVIEW 03/04/2024
5	07/26/24	AP	CG	CITY OF WHITE SALMON 2ND CONSISTENCY REVIEW 06/14/2024

SHEET NAME  
 GRADING PLAN  
 SHEET NO.  
 4 OF 4



# CITY OF WHITE SALMON

## CITY HALL

### Notice of Application/SEPA Determination (Optional DNS Process)

**NOTICE OF APPLICATION/SEPA Comment Period Deadline: February 8<sup>th</sup>, 2024**

**PROJECT NAME:** Cherry Hill NW Subdivision

**FILE NUMBERS:** WS-SUB-2024.001, WS-SEPA-2024.001

**DESCRIPTION:** The applicant, Alex Pedroza of HRK Engineering & Field Services, has submitted an application for a preliminary plat to subdivide one tax parcel (03102475000400) off NW Spring Street, between NW Cherry Hill Rd and Champion Ln into 33 residential lots. The project is located in the R1 zone in the City of White Salmon.

**DATE OF NOTICE OF COMPLETE APPLICATION:** January 11th, 2024

**DATE OF NOTICE OF APPLICATION (NOA):** January 25th, 2024

**APPROVALS REQUIRED (to the extent known):** Preliminary Plat, Final Plat, Building Permits.

**APPLICATION PROCESS:** A Preliminary Plat application for this development is required per City of White Salmon Municipal Code (WSMC) Chapter(s) 16.20 and 16.30. Preliminary Plat applications receive review and recommendation by the Planning Commission under procedures set forth in Chapter 19.10 (WSMC). The application requires a public hearing before the Planning Commission, which will receive and examine available information, conduct a fair and impartial public hearing, prepare a record thereof, and enter findings, conclusions, recommendations or decision per WSMC. No hearing is scheduled, as the application will undergo a consistency review of these requirements, in addition to consideration of public comment.

**STUDIES REQUIRED (to the extent known):** environmental checklist, geotechnical report and arborist report are provided. The SEPA comment period will end **February 8<sup>th</sup>, 2024**. It is probable that a Determination of Non-Significance or Mitigated Determination of Non-Significance will be issued for this proposal (WAC 197.11.355 optional DNS process). This may be the only opportunity to comment on the environmental impacts of this proposal or appeal any State Environmental Policy Act related decisions. A copy of the subsequent threshold determination and any other information concerning this action may be obtained by contacting the City of White Salmon Planning Department. These documents are available for review Tuesday - Friday, 8:30 - 5:00 p.m., at White Salmon City Hall, 100 N Main Street, White Salmon WA 98672, by request via e-mail, or via the public notice package:

[Cherry Hills Estates Plat / https://rb.gy/rmc7ek](https://rb.gy/rmc7ek)

**COMMENT PERIOD:** There is a 10-day public comment period per WSMC 19.10.150. Submit written comments on or before **5 p.m., February 8<sup>th</sup>, 2024**. Comments should address completeness of the application, quality or quantity of information presented, and the project's conformance to applicable plans or code.

**PUBLIC HEARING:** A public hearing is required for this project and will be noticed separately.

**STAFF CONTACT:** Erika Castro-Guzman at (509) 281-4077 or erikac@whitesalmonwa.gov



**WHITSON HUGH  
PO BOX 3  
WHITE SALMON WA 98672**

**ROGERSON KENNETH  
1055 CHAMPION LANE  
WHITE SALMON WA 98672**

**REYES MIGUEL  
PO BOX 2601  
WHITE SALMON WA 98672**

**CRISP DANIEL  
1035 CHAMPION LN  
WHITE SALMON WA 98672**

**WOOLPERT STEVEN  
PO BOX 1507  
WHITE SALMON WA 98672**

**MADSEN MORRES  
1060 CHAMPION LN  
WHITE SALMON WA 98672**

**TRABANT CARL  
1070 CHAMPION LN  
WHITE SALMON WA 98672**

**ANDERSON JAMES  
PO BOX 2409  
WHITE SALMON WA 98672**

**PUD #1 of Klickitat County  
PO Box 187  
White Salmon, WA 98672**

**WA Dept. of Transportation  
Planning Department  
11018 NE 51<sup>st</sup> Circle  
Vancouver, WA 98682-8866**

**Tonya Brumley, Community Affairs  
Mgr  
NW Natural  
1125 Bargeway Rd  
The Dalles, OR 97058**

**Amber Johnson, Habitat Biologist  
WA Dept of Fish and Wildlife  
PO Box 484  
White Salmon, WA 98672**

**Kim Gleason, Design Engineer/GIS  
Klickitat County Public Works  
228 W. Main St, MSCH 19  
Goldendale, WA 98620**

**Dept Fish and Wildlife  
PO Box 213  
Lyle, WA 98635**

**Klickitat County Assessor Office  
205 S Columbus, Room 200  
Goldendale, WA 98620**

**Klickitat County Treasurer  
205 S Columbus, MSCH 22, Room 201  
Goldendale, WA 98620**

**WA Dept of Archaeology  
PO Box 48343  
Olympia, WA 98504-8343**

**WA State Dept of Natural Resources  
Rivers Aquatic District  
PO Box 280  
Castle Rock, WA 98611**

**Department of Ecology, Central  
1250 West Alder Street  
Union Gap, WA 98903**

**SEPA CENTER  
Dept. Natural Resources  
PO Box 47015  
Olympia, WA 98504**

**Gary Burke, The Honorable Chairman  
Confederated Tribes of the Umatilla Indian Reservation  
46411 Timine Way  
Pendleton, OR 97801**

**Gerald Lewis, The Honorable Tribal Council  
Chairman  
The Confederated Tribes and Bands of the Yakama Nation  
PO Box 151  
Toppenish, WA 98948**

**Eugene Greene, Jr., The Honorable Council Chairman  
The Confederated Tribes of Warm Springs  
pPO Box C  
Warm Springs, OR 97761**

**Jennifer Oatman, The Honorable  
Chairman  
Nez Perce Tribe  
PO Box 305  
Lapwai, ID 83540**

**Klickitat County Health  
PO Box 159  
White Salmon, WA 98672**

**Underwood Conservation District  
PO Box 96  
White Salmon, WA 98672**

**WA State Dept of Natural Resources  
Southeast Region  
713 Bowers Rd  
Ellensburg, WA 98926**

**Department of Natural Resources  
PO Box 178  
Husum, WA 98623**

**SEPA Responsible Official  
600 Capitol Way North  
Olympia, WA 98501**

**City of Bingen  
PO Box 607  
Bingen, WA 98605**

GIBBS RUSSELL  
PO BOX 2486  
WHITE SALMON WA 98672

ERASMUS CHRISTIAAN  
PO BOX 655  
WHITE SALMON WA 98672

BAXTER SHELLEY  
1006 NW CHERRY HILL RD  
WHITE SALMON WA 98672-8248

FRAME TRUSTEE DAVID  
1025 CHAMPION LN  
WHITE SALMON WA 98672

CLARK REBECCA  
21520 SW ORNDUFF RD  
HILLSBORO OR 97123

COLSON JOHN  
1065 CHAMPION LN  
WHITE SALMON WA 98672

TAMA ROBIN  
1015 CHAMPION LN  
WHITE SALMON WA 98672

WITHERRITE LINDA  
633 SE EMIGRANT AVE  
PENDLETON OR 97801

CHERRY HILL NW LLC  
PO BOX 4  
HOOD RIVER OR 97031

HALLYBURTON II RICHARD  
PO BOX 104  
BINGEN WA 98605

JOSTAD-MADIAN FAMILY LLC  
PO BOX 1669  
WHITE SALMON WA 98672

GRAY DANIEL  
PO BOX 1071  
WHITE SALMON WA 98672

GERMAIN LINDA  
2863 HAZEL AVE  
HOOD RIVER OR 97031

WOODS LILLIAN  
PO BOX 402  
WHITE SALMON WA 98672

GARDNER FUNERAL HOME INC  
1270 N MAIN  
WHITE SALMON WA 98672

MORRIS BRIAN  
PO BOX 1548  
WHITE SALMON WA 98672

DELAY CAROL  
PO BOX 684  
WHITE SALMON WA 98672

WILKES JACCOB  
5 HILKEY LN  
WHITE SALMON WA 98672

SONNENTAG KYLER  
926 HILLSIDE LN  
WHITE SALMON WA 98672

RONDORF DENNIS  
PO BOX 237  
HUSUM WA 98623

JEWELL CLIFFORD  
180 SNOWDEN RD  
WHITE SALMON WA 98672

JOHNSON AMBER  
936 HILLSIDE LN  
WHITE SALMON WA 98672

WOODCOCK KATHERINE  
PO BOX 416  
CASCADE LOCKS OR 97014

DALLAS RUSSELL  
PO BOX 591  
WHITE SALMON WA 98672

FLINCHBAUGH RICHARD  
182 NW SPRING  
WHITE SALMON WA 98672

PICKENS TRUSTEE MICHAEL  
180 NW SPRING ST  
WHITE SALMON WA 98672

VAZQUEZ LAURA  
PO BOX 1454  
WHITE SALMON WA 98672

DALLAS RUSSELL  
PO BOX 591  
WHITE SALMON WA 98672

HERMAN DOROTHY  
1001 NW CHERRY HILL RD  
WHITE SALMON WA 98672

CUSTY TRUSTEE JUDITH  
1506 NE 84TH AVE  
VANCOUVER WA 98664



**GILDERHUS DANIELLE  
138 NW SPRING ST  
WHITE SALMON WA 98672**

**HUNSAKER WILLIAM  
178 NW SPRING ST  
WHITE SALMON WA 98672**

**GILDERHUS MICHAEL  
1080 NW PATTON DR  
WHITE SALMON WA 98672**

**MAIN STREET WHITE SALMON LLC  
40 ROCKY RD  
TROUT LAKE WA 98650**

**ANSON JERRY  
253 NW LOOP RD  
WHITE SALMON WA 98672**

**BANISH NOLAN  
PO BOX 867  
WHITE SALMON WA 98672**

**PERALA GREGORY  
245 NW LOOP RD  
WHITE SALMON WA 98672**

**HARRIS DOUGLAS  
PO BOX 350  
BINGEN WA 98605**



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## Planning

Page *Notice of Application/SEPA Determination - Cherry Hill NW Subdivision* has been updated.

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# Notice of Application/SEPA Determination - Cherry Hill NW Subdivision



## NOTICE OF APPLICATION/SEPA

**Comment Period Deadline: February 8<sup>th</sup>, 2024**

*See the supporting documents (below) for Subdivision and SEPA Application materials.*

**PROJECT NAME:** Cherry Hill NW Subdivision

**FILE NUMBERS:** WS-SUB-2024.001, WS-SEPA-2024.001

**DESCRIPTION:** The applicant, Alex Pedroza of HRK Engineering & Field Services, has submitted an application for a preliminary plat to subdivide one tax parcel (03102475000400) off NW Spring Street, between NW Cherry Hill Rd and Champion Ln into 33 residential lots. The project is located in the R1 zone in the City of White Salmon.

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**COMMENT PERIOD:** There is a minimum 10-day public comment period per WSMC 19.10.150. Submit written comments on or before **5 p.m., February 8<sup>th</sup>, 2024**. Comments should address completeness of the application, quality or quantity of information presented, and the project's conformance to applicable plans or code.

---

**PUBLIC HEARING:** A public hearing is required for this project and will be noticed separately.

**STAFF CONTACT:** Erika Castro-Guzman at (509) 281-4077 or erikac@whitesalmonwa.gov

-  NOA\_Optional DNS Process\_Cherry Hill Estates Subdivision (182 KB)
-  Letter of Transmittal\_Cherry Hill Estates Subdivision (305 KB)
-  SPR 8x11.5\_Cherry Hill Estates Subdivision (8 MB)
-  SPR 22x34\_Cherry Hill Estates Subdivision (6 MB)
-  Subdivision Application\_Cherry Hill Estates Subdivision (2 MB)
-  Completeness Response\_Cherry Hill Estates Subdivision (228 KB)
-  SEPA ENVI Checklist - Combined\_Cherry Hill Estates Subdivision (23 MB)
-  Easement Information\_Cherry Hill Estates Subdivision (56 KB)
-  Subdivision Guarantee\_Cherry Hill Estates Subdivision (199 KB)
-  Sample of Proposed CCRs\_Cherry Hill Estates Subdivision (1 MB)
-  Statement of critical Slope\_Cherry Hill Estates Subdivision (573 KB)
-  Arborist Report\_Cherry Hill Estates Subdivision (386 KB)
-  Arborist Report\_Photos\_Cherry Hill Estates Subdivision (784 KB)
-  Completeness Review\_Cherry Hill Estates Subdivision (4 MB)
-  Determination of Complete Application\_Cherry Hill Estates Subdivision (134 KB)

## Contact Information

---

**Phone:** 1-509-493-1133

**Hours:** Tues-Fri 8:30am-5pm

**White Salmon City Hall**

100 N Main St.

White Salmon, WA 98672

Erikac@whitesalmonwa.gov

[Edit Contact Details](#)

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100 N. Main Street | PO Box 2139 | White Salmon, WA 98672 | (509) 493-1133

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# State Environmental Policy Act (SEPA) Register

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## 202400404 - White Salmon City of

### Lead Agency

White Salmon City of

### File #

WS-SEPA-2024.001

### Website

<https://rb.gy/rmc7ek>

### Contact

Erika Castro Guzman  
(509) 281-4077  
[erikac@whitesalmonwa.gov](mailto:erikac@whitesalmonwa.gov)

**SEPA #** 202400404

**Document Type** ODNS/NOA

**Date Issued** 01/25/2024

**Comments Due** 02/08/2024

**Proposal Name** Cherry Hill NW Subdivision

**Proposal Description** The applicant, Alex Pedroza of HRK Engineering & Field Services, has submitted an application for a preliminary plat to subdivide one tax parcel (03102475000400) off NW Spring Street, between NW Cherry Hill Rd and Champion Ln into 33 residential lots. The project is located in the R1 zone in the City of White Salmon.

**Related Record**

**County** Regional  
KLI Central  
CK  
ITA  
T










**To Submit Comments**  
[erikac@whitesalmonwa.gov](mailto:erikac@whitesalmonwa.gov)

**Location** Address: NW Spring Street, White Salmon, WA 98672  
Parcel: 03102475000400  
Section/Township/Range: 24-3-1  
Other identifying information: Off NW Spring Street, between NW Cherry Hill Rd and Champion Ln.  
Legal Description: LOT 4 SP 91-17 IN NENE  
24-3-10: (CHERRY HILL ESTATES)


**Applicant** Alex Pedroza, EIT

**Applicant Contact** HRK Engineering & Field Services  
489 N 8th Street - Suite 201  
Hood River, OR 97031  
541-386-6480


**Documents**

-  0. Letter of Transmittal - 21-002 - 2023 1204.pdf (305 KB)
-  1. 2023 1129 - Cherry Hill Estates Sub - SPR 22x34.pdf (7 MB)
-  1. 2023 1129 - Cherry Hill Estates Sub - SPR 8x11.5.pdf (8 MB)
-  1. White Salmon Subdivision Application re Cherry Hill Estates.pdf (2 MB)
-  2. 2023 1204 Cherry Hill Estates - Completeness Response.pdf (229 KB)
-  2. Owners within 300 ft re Cherry Hill Estates.csv (10 KB)
-  3. 2023 1128 Cherry Hill Estates SEPA ENVI Checklist - Combined.pdf (23 MB)
-  3. Easement Information re Cherry Hill Estates.pdf (57 KB)
-  3. Subdivision Guarantee.pdf (200 KB)

 4. Sample of Proposed CCRs re Cherry Hill Estates.pdf (2 MB)


 4. StatementofCriticalSlopeCURTISHO MES.pdf (573 KB)

 5. Curtis\_TreeReport\_7Nov23.pdf (387 KB)

 5. Photos for Curtis Homes Braun\_7Nov23.docx (2 MB)

 Completeness Review - Cherry Hills Estates - 2023.11.21.pdf (4 MB)

 Determination of Complete Application - Cherry Hills Estates - 2024.01.11.pdf (135 KB)

 NOA\_Optional DNS Process\_Cherry Hill Estates Subdivision (1).pdf (182 KB)

Please email SEPA Help with any updates, problems, or questions about SEPA Register.

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Erika Castro-Guzman <erikac@ci.white-salmon.wa.us>

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## WS SEPA 2004.001 Cherry Hill NW Subdivision

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**Nathen Erickson** <nathene@klickitatcounty.org>  
To: Erika Castro-Guzman <erikac@ci.white-salmon.wa.us>

Mon, Feb 5, 2024 at 4:54 PM

Hi Erika,

Attached are Public Works comments for WS SEPA 2004.001 Cherry Hill NW Subdivision.

Let me know if you need any additional information.

Thanks,

### **Nathen Erickson**

Design Engineer I  
Klickitat County Public Works Department  
Ph. (509)-773-4616  
Fax (509) 773-5713

---

 **WS.SEPA 2024.001 Cherry Hills NW Subdivision.pdf**  
69K





KLICKITAT COUNTY

**PUBLIC WORKS DEPARTMENT**

115 WEST COURT STREET, MS 303, GOLDENDALE, WASHINGTON 98620 • FAX 509 773-5713 • VOICE 509 773-4616  
JEFF HUNTER – PUBLIC WORKS DIRECTOR

Date: February 5, 2024

To: Erika Castro-Guzman, City of White Salmon

From: Nathen Erickson, Public Works *Nathen Erickson*

Re: WS-SUB-2024.001 & WS-SEPA-2024.001; Cherry Hill NW Subdivision  
Parcel #04101210260100

The following are Public Works comments regarding the Cherry Hill NW Subdivision:

- According to the submitted SEPA, the estimated new trips for the project is 80 trips. This estimated amount of trips does not agree with the ITE Trip Generation Manual.
- **Traffic Access and Impact Study (TAIS)**
  - Since this project generates more than 40 ADT, a Traffic Access and Impact Study (TAIS) will be required for this Project.
  - The fitted curve equation shown in the ITE Trip Generation manual should be used instead of the average rate since the correlation rate of the fitted curve equation is so high.
  - Describe the distribution of traffic entering and exiting the project site.
  - Determine level of service for existing conditions, build out year with and without project at key intersections and segments. **LOCATION: Snowden Road/N Main Ave. and NW Loop Road Intersection; SR 141 and NW Loop Intersection; Snowden Road/N Main Ave and NW Spring St Intersection.**
  - Determine if mitigation is required for safety and/or LOS at the evaluated intersections shown above.
- The required study shall be prepared in a professional format comprising of the items marked above so they can be used by the various County departments and on occasion be reviewed by the public on request. A licensed engineer in the State of Washington who specializes in traffic engineering shall stamp every study.
- Please feel free to contact **Nathen Erickson (509) 773-4616** to review road requirements.
- Preliminary fees:

Review Type	Cost
Traffic Access and Impact Study Review	\$78/hr + Full Price of 3 <sup>rd</sup> Party Consultant if Required
SEPA Review	\$78

- Public Works shall not approve of access for the project onto the County road until the applicant submits a traffic study for review and said study is accepted by Klickitat County Public Works.



Erika Castro-Guzman <erikac@ci.white-salmon.wa.us>

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## SEPA 202400404 comments for WS-SEPA-2024.001

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ECY RE CRO SEPA Coordinator <crosepa@ecy.wa.gov>  
To: "erikac@whitesalmonwa.gov" <erikac@whitesalmonwa.gov>

Tue, Feb 6, 2024 at 3:47 PM

Please see the attached comment letter for the Cherry Hill NW Subdivision.

Share these comments with the applicant.

Thank you,

**Joy Espinoza**

SEPA/ERTS Coordinator – Central Region

Department of Ecology

Ph: 509.379.3967 | [crosepacoordinator@ecy.wa.gov](mailto:crosepacoordinator@ecy.wa.gov)

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STATE OF WASHINGTON  
**DEPARTMENT OF ECOLOGY**

Central Region Office

1250 West Alder St., Union Gap, WA 98903-0009 • 509-575-2490

February 6, 2024

Erika Castro Guzman  
City of White Salmon  
PO Box 2139  
White Salmon, WA 98672

**RE: 202400404; WS-SEPA-2024.001**

Dear Erika Castro Guzman:

Thank you for the opportunity to comment on the Notice of Application for the Cherry Hill NW Subdivision. We have reviewed the application and have the following comment.

**Toxics Cleanup**

Historical aerial photos indicate sections of your property was occupied by orchard during the period when the pesticide lead arsenate was applied, often resulting in shallow soil contamination from lead and/or arsenic. Ecology **requires** soil sampling if vacant, commercial, industrial, or agricultural properties are converted to residential use as there may be an increased risk of exposure to soil with elevated concentrations of arsenic and lead.

Ecology can provide sampling services at no cost. If sampling indicates elevated levels of lead and arsenic, cleanup will be required prior to occupancy. There are simple steps that can be taken to reduce exposure and Ecology can provide free technical assistance.

Additionally, Ecology uses Model Remedies to guide cleanup for lead and arsenic pesticide contamination in historical orchards of Central Washington. The Model Remedy document is an excellent source of technical guidance and is available at <https://apps.ecology.wa.gov/publications/SummaryPages/2109006.html>.

Compliance with a Model Remedy ensures your project meets the minimum standards of the Model Toxics Control Act, and if implemented as described, your property will be successfully cleaned up to Washington State standards.

Additional information, including precautions you can take to reduce exposure, is available at <https://ecology.wa.gov/dirtalert>.

February 6, 2024

Page 2 of 2

Please contact Hector Casique, Project Manager, at 509-208-1288 or email [hector.casique@ecy.wa.gov](mailto:hector.casique@ecy.wa.gov), for further information or to schedule your initial sampling.

Sincerely,

A handwritten signature in black ink that reads "Joy Espinoza". The signature is written in a cursive, flowing style.

Joy Espinoza  
SEPA Coordinator  
Central Regional Office  
509-379-3967  
[crosepacoordinator@ecy.wa.gov](mailto:crosepacoordinator@ecy.wa.gov)



Erika Castro-Guzman <erikac@ci.white-salmon.wa.us>

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## Spring St Development

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**Kevin Herman** <kevinmherman@gmail.com>  
To: Erika Castro-Guzman <erikac@ci.white-salmon.wa.us>

Thu, Feb 8, 2024 at 5:17 PM

Hi, Erika.

I understand that there is a traffic study that shows there's 340 estimated new trips a day out of that future development? How can this project continue forward without our road being finished?

The second most important reason given to us for us to be annexed was fixing our road. What does the mayor and council members plan to do about that? Or do they plan to do anything?

I also have concerns about drainage, as my house is right next to where water runoff would take place. Will the city also re-establish property markers?

In addition, I would like the easement going across my property reduced to 40 ft. There's absolutely no reason for a massive easement of 60 ft for the small drive way we have.

I appreciate your time.



Erika Castro-Guzman <erikac@ci.white-salmon.wa.us>

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## Cherry Hill NW subdivision

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lam at gorge.net <lam@gorge.net>  
To: erikac@whitesalmonwa.gov

Thu, Feb 8, 2024 at 3:57 PM

Hello Erika, this is a comment for the Cherry Hill NW subdivision. I am all for more housing especially affordable housing in the White Salmon area. Two concerns I have at this time are: 1) does the city have enough water capacity to supply 33 new homes? I know there was a water moratorium before Shambo development could be built. 2) It sure seems like with a development of this size Spring Street between Main and El Camino Real should be required to be upgraded to a full-width county road instead of the lane and a half it currently is. Thank you for including this in the public comments.

Lee Monroe  
[635 El Camino Real](#)  
White Salmon, WA



Erika Castro-Guzman <erikac@ci.white-salmon.wa.us>

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## Comment on Cherry Hill NW Subdivision Application

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**Shelley Baxter** <shelldolphin@gmail.com>  
To: Erika Castro-Guzman <erikac@ci.white-salmon.wa.us>

Thu, Feb 8, 2024 at 10:25 AM

Comment on Cherry Hill NW Subdivision Application

As the direct neighbor on the southern edge of this subdivision I am mostly concerned with the amount of daily traffic this will create. Current standard estimates have 10 daily trips per household on average. This would be 340 new trips onto Spring St. The city requirements are for the provision of a very short inadequate abatement on the north side of Spring St.

At least, a Traffic Access and Impact Study must be required.

In addition, the project must be on hold until the city has funds for a complete fix of Spring St. per the Transportation Lite Plan.

Regards,

Shelley Baxter

1006 NW Cherry Hill Rd.

[White Salmon.](#)

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5K

## Comment on Cherry Hill NW Subdivision Application

As the direct neighbor on the southern edge of this subdivision I am mostly concerned with the amount of daily traffic this will create. Current standard estimates have 10 daily trips per household on average. This would be 340 new trips onto Spring St. The city requirements are for the provision of a very short inadequate abatement on the north side of Spring St.

At least, a Traffic Access and Impact Study must be required.

In addition, the project must be on hold until the city has funds for a complete fix of Spring St. per the Transportation Lite Plan.

Regards,  
Shelley Baxter  
1006 NW Cherry Hill Rd.  
White Salmon.





Erika Castro-Guzman <erikac@ci.white-salmon.wa.us>

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## NW Cherry Hill Project

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**Sumati S.** <retrosuzk@gmail.com>  
To: erikac@whitesalmonwa.gov

Thu, Feb 8, 2024 at 10:16 AM

As a citizen of White Salmon for over 27 years I am making a statement in regards to the Curtis Homes Project NW Cherry Hill on Spring St.  
I am opposed to adding thirty three homes to the neighborhood until NW Spring Street gets repaired.  
Has a traffic study been done? If each home has two cars that's 66 more cars trying to share the tight lane that currently exists. The road has erosion damage from storm water with stuck drains.  
There is no room for walking traffic, not even a path.  
Safety is the issue here. Spring street needs some love and attention. The poison oak is out of control.  
This should be a lovely walking street with a path not necessarily more concrete but weed free. Something like Indian Creek has in Hood River.  
Thanks for listening,

Susan Svensson  
[495 NW Spring St.](#)  
[White Salmon, WA 98672](#)  
541 980-3584

February 8, 2024 11am

Into the forest I go to lose my mind and find my soul.  
John Muir



**E**arth  
**E**ngineers,  
**I**nc.

2411 Southeast 8<sup>th</sup> Avenue • Camas • WA 98607

Phone: 360-567-1806

[www.earth-engineers.com](http://www.earth-engineers.com)

---

November 15, 2021

Legacy Development Group  
PO Box 4  
Hood River, Oregon 97031  
Attention: Cameron Curtis, President

Phone: (541) 490-6339  
E-mail: [cameron@curtishomesllc.com](mailto:cameron@curtishomesllc.com)

**Subject: Geotechnical Investigation Report  
Proposed Spring Street Subdivision  
Klickitat County Tax Lot No. 0310247500400  
Intersection of Northwest Spring Street and Northwest Cherry Hill Road  
White Salmon, Klickitat County, Washington  
EEI Report No. 20-071-1**

Dear Mr. Curtis:

Earth Engineers, Inc. (EEI) is pleased to provide our attached Geotechnical Investigation Report for the above referenced project. This report includes the results of our field investigation, an evaluation of geotechnical factors that may influence the proposed construction, and geotechnical recommendations for the proposed structures and general site development.

We appreciate the opportunity to perform this geotechnical study and look forward to continued participation during the design and construction phases of this project. If you have any questions pertaining to this report, or if we may be of further service, please contact our office.

Sincerely,  
**Earth Engineers, Inc.**

Troy Hull, P.E.  
Principal Geotechnical Engineer

Jacqui Boyer  
Geotechnical Engineering Associate

Attachment: Geotechnical Investigation Report

Distribution (electronic copy only): Addressee

**GEOTECHNICAL INVESTIGATION REPORT**

For the:

**Proposed Spring Street Subdivision  
Klickitat County Tax Lot No. 0310247500400  
Intersection of Northwest Spring Street  
and Northwest Chery Hill Road  
White Salmon, Klickitat County, Washington**

Prepared for:

**Legacy Development Group  
PO Box 4  
Hood River, Oregon 97031  
Attention: Cameron Curtis**

Prepared by:

**Earth Engineers, Inc.  
2411 Southeast 8<sup>th</sup> Avenue  
Camas, Washington 98607  
Phone: 360-567-1806**

**EEl Report No. 21-071-1**

**November 15, 2021**



**Earth  
Engineers,  
Inc.**

A handwritten signature in black ink, appearing to read 'Jacquie Boyer', enclosed in a thin black rectangular border.

---

**Jacquie Boyer  
Geotechnical Engineering Associate**



**EXPIRES 09/06/ 23**

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**Troy Hull, P.E.  
Principal Geotechnical Engineer**

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## 1.0 PROJECT INFORMATION

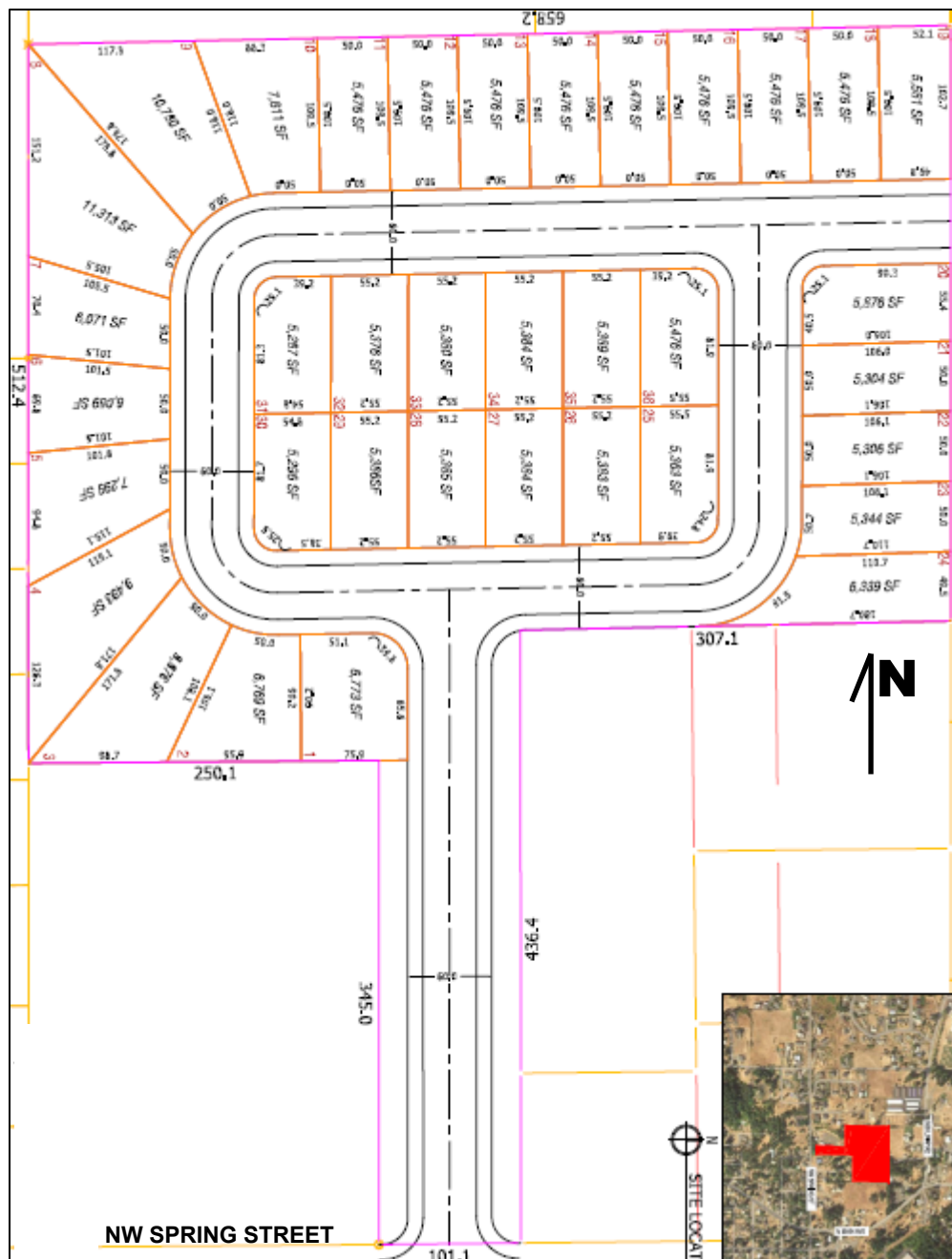
### 1.1 Project Authorization

Earth Engineers, Inc. (EEI) has completed a geotechnical investigation report for the proposed development to be located on Klickitat County Tax Lot No. 0310247500400 off of Northwest Spring Street near the intersection with Northwest Cherry Hill Road in White Salmon, Klickitat County, Washington. Our geotechnical services were authorized by Cameron Curtis with Legacy Development Group on September 24, 2021 by signing our Proposal No. 21-P066-R1 issued on February 18, 2021 and revised on May 6, 2021.

### 1.2 Project Description

Our current understanding of the project is based on the information Greg Hagbery (formerly with Legacy Development Group) provided to EEI Geotechnical Engineering Associate Jacqui Boyer via e-mail on February 17, 2021. We have also been provided with the following documents pertaining to the project:

- **A survey titled “Cherry Hill Estates” prepared by T.N. Trantrow Surveying, P.L.S. dated July 21, 1992.** This survey shows the boundaries of the subject property with respect to the surrounding properties. The survey indicates that the subject 7.93-acre property is Lot 4 of the Cherry Hill Estates.
- **A conceptual plan titled “Pre-App Proposal” prepared by Legacy Development Group Inc. dated January 2021.** This plan shows the preliminary neighborhood layout of the proposed subdivision, including the proposed roadway and lot divisions on the property. See Figure 1 below. The plan also shows a site location map for the subject property with respect to its vicinity. It should be noted that it is our understanding these plans are preliminary.
- **A survey titled “Property Boundary Survey for Curtis Homes, Location: Tract of Land Located in the Northeast Quarter of the Northeast Quarter of Section 24, Township 3 North, Range 10 East, Willamette Meridian, Klickitat County, Washington” prepared by Terra Surveying, dated December 2020.** This topographic property survey shows the existing property topography with 1-foot contour lines, and elevations based on the N.A.V.D. 99 vertical datum.



**Figure 1:** Preliminary site plan for the subject property. The subject property is outlined in pink and the proposed lots are outlined in orange. Base plan source: referenced above.

As shown on Figure 1 above, we understand that the plan is to divide the subject property into 36 residential lots ranging in size from 5,287 square feet to 11,313 square feet. The plan indicates that the proposed roadway is 60-feet wide, and accesses the property from Northwest Spring Street to the south.

At this time, we have not been provided detailed design drawings for the project. For the purposes of this report, we are assuming maximum house foundation loads of 3 kips per linear foot for wall footings, 40 kips for column footings, and 150 psf for floor slabs. We also assume maximum cuts

and fills will be minimal, on the order of 2 feet. Finally, we have assumed that the proposed subdivision residences will be constructed in accordance with the 2018 International Residential Code (IRC).

### 1.3 Purpose and Scope of Services

In order to provide geotechnical recommendations for the proposed development, we performed a subsurface investigation to better define the subsurface soil, rock, and groundwater properties. We performed 11 test pits (TP-1 through TP-11) around the subject property. The depths of the explorations ranged from 4 to 9.5 feet. In order to characterize soil strength, we supplemented some of the test pits with drive probe testing.

Select soil samples collected from the test pits were tested in the laboratory to determine the material's properties for our evaluation. Laboratory testing was accomplished in general accordance with ASTM procedures.

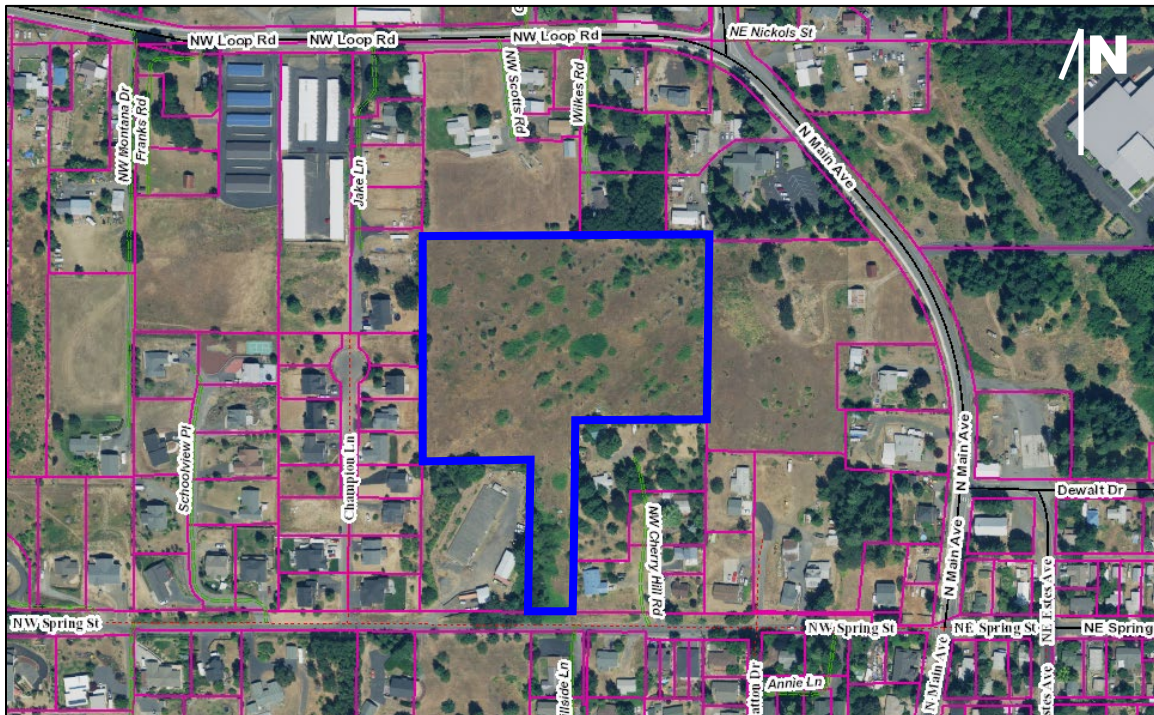
This report briefly outlines the testing procedures, presents available project information, describes the site and subsurface conditions, and presents geotechnical recommendations regarding the development of the single family residential lots as follows:

- A discussion of subsurface conditions encountered including pertinent soil and rock properties as well as the encountered groundwater conditions.
- Geotechnical related recommendations for foundation design including allowable bearing capacity and estimated settlements.
- A qualitative evaluation of slope stability.
- Seismic design parameters in accordance with the ASCE 7-16.
- Structural fill recommendations, including an evaluation of whether the in-situ soils can be used as structural fill.
- Floor slab support recommendations.
- Retaining wall design parameter recommendations, including earth pressures, backfill and drainage.
- Construction recommendations including wet/dry weather site preparation and drainage recommendations.
- Asphaltic concrete pavement section thickness design recommendations based on an assumed CBR value, as well as assumed traffic loading conditions.
- Discussions on geotechnical issues that may impact the project.

## 2.0 SITE AND SUBSURFACE CONDITIONS

### 2.1 Site Location and Description

As noted above, the project area is located on Klickitat County Tax Lot No. 0310247500400 in White Salmon, Washington. The property is accessed from Northwest Spring Street to the south, and is bounded by residential properties to the west, north and east. See Figure 2 below for the project vicinity map.



**Figure 2:** Vicinity map (base map source - <http://imap.klickitatcounty.org/>). The subject property is outlined in blue.

At the time of our investigation, the property was vacant. The site was vegetated with grass, shrubs, scattered trees, and blackberry bushes. It should be noted that some of the vegetation appeared burned. There is also an access road in the southern portion of the property off of Northwest Spring Street.

In terms of topography, the subject property is generally sloping down to the northeast at about 7H:1V (Horizontal:Vertical). Slopes in the area of the proposed lots (i.e. the northern portion of the property) are up to about 3.5H:1V. The steepest slope on the subject property is located along the access road (i.e. the southern portion of the property), up to 1.9H:1V. See Appendix B for the site topography taken from the survey referenced above.

While on site, we did not observe signs of previous or current soil movement, such as leaning tree trunks, clearly identifiable landslide head scarps, or surface cracking in the soils. See Photos 1 through 4 below for current site conditions.





**Photo 1:** Current site conditions (taken from TP-3, facing northeast).



**Photo 2:** Current site conditions (taken from TP-4, facing north).



**Photo 3:** Current site conditions (taken from TP-8, facing southwest).



**Photo 4:** Current site conditions (taken from TP-11, facing Northwest Spring Street to the south).

## 2.2 Mapped Geology and Soils

The underlying geologic unit mapped in the area of the subject property is Qtb – Olivine basalt and andesite from the upper Miocene to Quaternary<sup>1</sup>.

We reviewed the United States Department of Agriculture (USDA) Soil Survey<sup>2</sup> to define the surface soils on the subject property. The USDA maps the soils on the subject property to be Unit 86B-Chemawa ashy loam on 8 to 15 percent slopes, and 86C-Chemawa ashy loam on 15 to 30 percent slopes. This well drained soil unit is formed on terraces from a parent material of volcanic ash. A typical profile for this soil unit is ashy loam overlying ashy silt loam with a depth to a restrictive feature of more than 80 inches.

As part of our due diligence for this report, we reviewed the Washington State Department of Natural Resources (DNR) Geologic Information Portal (<https://geologyportal.dnr.wa.gov/>). According to the DNR portal, portions of the property are mapped within a moderate susceptibility to shallow landslides. It should be noted that the portal does not map any historic landslide deposits or fault lines on or in proximity to the subject property. In addition, the portal does not map the subject property within a liquefaction susceptibility area due to the presence of shallow bedrock.

According to the USGS Fault and Fold Database of the United States, the Hood River fault zone is located approximately 2.9 miles south of the site and the Faults near the Dalles is approximately 5.5 miles northeast of the site. The Hood River fault zone defines the eastern margin of a half graben, and is described to contain normal right lateral faults with a slip rate of less than 0.2mm/year<sup>3</sup>. The Faults near the Dalles are described as northwest striking, right-lateral strike slip faults, and are categorized as having a slip rate of less than 0.2mm/year, although no slip data in Quaternary deposits are available<sup>4</sup>.

## 2.3 Subsurface Materials

As stated above, we explored the site with 11 test pits (TP-1 through TP-11) located around the subject property. The test pits were advanced by Legacy Development Group of Hood River, Oregon using an excavator with a 2-foot wide toothed bucket. In addition, we performed supplemental drive probe testing at TP-5, TP-8, and TP-10. For the approximate exploration locations, see the “Exploration Location Plan” in Appendix B. Results of the test pits are reported in Appendix C. Upon completion, the test pits were loosely backfilled with the excavated soil and tamped down with the excavator bucket.

---

<sup>1</sup> Bela, J.L., 1982, Geologic and Neotectonic Evaluation of North-Central Oregon: The Dalles 1 degree x 2 degree Quadrangle, Oregon Department of Geology and Mineral Industries, Geological Map Series 27, scale 1:250,000.

<sup>2</sup> Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>.

<sup>3</sup> Personius, S.F., compiler, 2002, Fault number 866, Hood River fault zone, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, <https://earthquakes.usgs.gov/hazards/qfaults>.

<sup>4</sup> Personius, S.F., and Lidke, D.J., compilers, 2003, Fault number 580, Faults near The Dalles, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, <https://earthquakes.usgs.gov/hazards/qfaults>.

Drive probe tests extended from the ground surface at the locations referenced above to the depth of drive probe refusal. The drive probe test is based on a “relative density” exploration device used to determine the distribution and to estimate strength of the subsurface soil units. The resistance to penetration is measured in blows-per- $\frac{1}{2}$ -foot of an 11-pound hammer which free falls roughly 39 inches driving a  $\frac{3}{4}$ -inch outside diameter pipe with a 1-inch diameter endcap into the ground. This measure of resistance to penetration can be used to estimate relative density of soils. For a more detailed description of this geotechnical exploration method, please refer to the Slope Stability Reference Guide for National Forests in the United States, Volume I, USDA, EM-7170-13, August 1994, P 317-321. Results of the drive probe tests are reported in the exploration logs in Appendix C.

Select soil samples were tested in the laboratory to determine material properties for our evaluation. Laboratory testing was accomplished generally in accordance with ASTM procedures. The testing performed included moisture content tests (ASTM D2216), and fines content determinations (ASTM D1140). The test results have been included on the exploration logs located in Appendix C.

Generally, we encountered a surficial layer of topsoil overlying fill soils, overlying native soils with decomposed rock, which eventually transitioned to bedrock with depth. The thickness of the strata varied across the site. Each individual stratum encountered is discussed in further detail below.

## **TOPSOIL**

The surficial layer encountered in all of our explorations consisted of a dry to moist, light brown sandy silt with rootlets. The thickness of this stratum in our test pits was 6 to 12 inches.

## **FILL/TILLED SOILS**

In all of our test pits, we encountered what we interpret to be fill/tilled soils underlying the surficial topsoil layer. The soil was generally a light brown to brown sandy silt to silty sand with rootlets, wood chips and charcoal pieces. We also encountered boulders, as well as wood, plastic and metal debris within this stratum. It is possible these organic soils are the result of agricultural tilling or clearing the area in the past. Laboratory moisture content testing on samples obtained within this stratum ranged from 9 to 12 percent, indicating a dry condition. Fines content laboratory testing for samples obtained within this stratum ranged from 39 to 89 percent passing the #200 sieve. Based on the excavator digging effort and supplementary drive probe testing, we consider this stratum to be medium stiff/medium dense to very stiff/very dense. The fill/tilled soils extended to depths ranging from 2 to 4 feet bgs in our explorations. It should be noted that this stratum extended to the terminal depth of our exploration at TP-6 due to practical digging refusal on a boulder.

## **NATIVE SOILS**

In all of our explorations (except for TP-6), we encountered native soils underlying the fill soils. The soil was generally an orange-brown to reddish brown to dark brown silt with varying amounts of sand. We also encountered decomposed rock fragments in this stratum (red to black to gray to white). Laboratory moisture content testing on samples obtained within this stratum ranged from

8 to 50 percent, indicating a dry to wet condition. It should be noted that the relatively high moisture content was likely a result of the decomposed rock encountered in this stratum (i.e. the material may hold a significant amount of moisture, but it did not visually appear wet). While in the field, the native soils generally appeared to be moist. Fines content testing on samples obtained within this stratum ranged from 60 to 98 percent passing the #200 sieve. Based on the excavator digging effort and supplementary drive probe testing, we consider this native silt stratum to be very stiff to hard. The silt stratum extended to the terminal depths of our explorations at depths ranging from 5 to 9.5 feet bgs. It should be noted that all of our test pits terminated due to practical digging refusal on hard soil/decomposed rock, except for TP-5 and TP-8 which were terminated due to practical excavator reach.

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The exploration logs included in the Appendices should be reviewed for specific information at specific locations. These records include soil descriptions, stratifications, and locations of the samples. The stratifications shown on the logs represent the conditions only at the actual exploration locations. Variations may occur and should be expected between locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual. The fill extent at each exploration location was estimated based on an examination of the soil samples, the presence of foreign materials, field measurements, and the subsurface data. The explorations performed are not adequate to accurately identify the full extent of existing fill soil across the site. Consequently, the actual fill soil extent may be much greater than that shown on the exploration logs and discussed herein. The samples that were not altered by laboratory testing will be retained for at least 90 days from the date of this report and then will be discarded.

#### 2.4 Groundwater Information

Groundwater was not observed during out subsurface investigation. According to a historical well log (available from [http://apps.wrd.state.or.us/apps/gw/well\\_log/](http://apps.wrd.state.or.us/apps/gw/well_log/)) drilled approximately 700 feet north of the property, static groundwater was encountered 325 feet below the ground surface.

Although a static groundwater level was not encountered at the time of our subsurface investigation, it is possible for a perched groundwater level to be present within the depths explored at some future time depending upon climatic and rainfall conditions. In general, we do not expect that groundwater will influence the proposed construction.

#### 2.5 Seismic Design Parameters and Hazards

In accordance with ASCE 7-16, we recommend a Site Class C (very dense soil and soft rock profile) for this site when considering the average of the upper 100 feet of bearing material beneath the foundations. This recommendation is based on the results of our subsurface investigation as well as our understanding of the local geology.

Inputting our recommended Site Class as well as the site latitude and longitude into the Seismic Design Maps (SEAOC/OSHPD) website (<http://seismicmaps.org>), we obtained the seismic design parameters shown in Table 1 below.

**Table 1: Seismic Design Parameter Recommendations (ASCE 7-16)**

Parameter	Recommendation
Site Class	C
$S_s$	0.512g
$S_1$	0.235g
$F_a$	1.295
$F_v$	1.500
$S_{MS} (=S_s \times F_a)$	0.663g
$S_{M1} (=S_1 \times F_v)$	0.353g
$S_{DS} (=2/3 \times S_s \times F_a)$	0.442g
Design PGA ( $=S_{DS}/2.5$ )	0.177g
$MCE_G$ PGA	0.228g
$F_{PGA}$	1.200
$PGA_M (=MCE_G \text{ PGA} \times F_{PGA})$	0.273g

Note: Site latitude = 45.736933, longitude = -121.488038

The return interval for these ground motions is 2 percent probability of exceedance in 50 years.

As stated above, the property is not mapped within a liquefaction hazard zone; which coincides with the findings of our subsurface investigation. Because we do not consider the soils to be liquefiable (and because there are not any significant slopes on the property), there is not a risk of seismically induced lateral spreading.

With respect to slope stability, we do not consider the subject property to be oversteepened and at risk of sliding given the subject property slopes are generally not steeper than 2H:1V (except for a portion of the proposed access road). The slopes steeper than 2H:1V along the access road should be regraded to be 2H:1V to avoid the risk of shallow soil movement.

### **3.0 EVALUATION AND FOUNDATION RECOMMENDATIONS**

#### **3.1 Geotechnical Discussion**

The following geotechnical factors may influence the proposed construction:

- 1. Presence of possible fill/tilled soils** – As stated above, we encountered rootlets in the upper soils at all of our test pits to depths ranging from 2 to 4 feet bgs. It is possible these organic soils are the result of agricultural tilling or clearing the area in the past. The presence of such materials could result in excess settlements and unsatisfactory foundation performance. As such, for structures (i.e. buildings, pavement, retaining walls, etc.) we recommend overexcavating the fill/tilled soils down to the hard native soils encountered at depths of 2 to 4 feet bgs (i.e. any new foundations for the proposed subdivision penetrate through the compressible soils to bear on the sandy silt soils).
- 2. Moisture sensitive soils** – The fine-grained portion of the soils encountered at the site are expected to be moisture sensitive. The increase in moisture content during periods of wet weather can cause significant reduction in the soil strength and support capabilities and will also be slow to dry. As such, water should not be allowed to collect in foundation excavations or on prepared subgrades, and care should be taken when operating construction equipment on the exposed subgrade. While not required, we recommend consideration be given to performing construction in the dry summer months to reduce the risk of damaging the site soils with the construction equipment. See more detailed recommendations for drainage in Section 4.1.
- 3. Practical digging refusal encountered** – In our subsurface investigation, all of the test pits terminated with practical excavation refusal on hard soil/decomposed rock (except for TP-5 and TP-8 which were terminated due to practical excavator reach). The depth to practical excavation refusal ranged from 4 to 9.5 feet in our explorations. Excavations through this stratum may be difficult and require specialized equipment.
- 4. Lack of detailed design drawings** – We have not been provided with a detailed design drawing set for the proposed construction. Once the drawings for the project are complete, we should review those drawings to determine if the design complies with our recommendations or if our recommendations need to be modified.

In summary, provided the recommendations in this report are adhered to, we do not foresee any major issues that would preclude the proposed construction. The above-mentioned factors are listed to draw the attention of the reader to the issues to address during design and construction of the proposed development.

### 3.2 General Site Preparation

Prior to the start of any earthwork, the test pit locations performed for our subsurface investigation, that fall under or adjacent to structurally improved areas, should be located, excavated to their bottoms, and backfilled with well-graded granular structural fill in properly compacted lifts, under the observation of a representative of the Geotechnical Engineer.

We envision that the topsoil, vegetation, roots, soft soils, and any other deleterious soils will need to be stripped from beneath the proposed building areas and proposed roadways. Topsoil in our test pits ranged from about 6 to 12 inches thick. In addition, as stated above, beneath new structures we recommend overexcavating the fill/tilled soils encountered across the property to depths ranging from 2 feet to 4 feet. It should be expected that the depth of these materials may vary across the site. A representative of the Geotechnical Engineer should determine the depth of removal at the time of construction.

After stripping and excavating to the proposed subgrade level, as required, the building areas and roadways should be inspected by a representative of the Geotechnical Engineer and proofrolled with a fully loaded, tandem axle, rubber tire dump truck or water truck. Soils that are observed to rut or deflect excessively under the moving load, or are otherwise judged to be unsuitable, should be undercut and replaced with properly compacted fill. If the subgrade cannot be accessed with a dump truck, then the subgrade will need to be visually evaluated by a representative of the Geotechnical Engineer by soil probing.

Any utilities present beneath the proposed construction will need to be located and rerouted as necessary and any abandoned pipes or utility conduits should be removed to inhibit the potential for subsurface erosion. Utility trench excavations should be backfilled with properly compacted structural fill as discussed in Section 3.3 below.

### 3.3 Structural Fill

Structural fill should be free of organics or other deleterious materials, have a maximum particle size less than 3 inches, be relatively well graded, and have a liquid limit less than 45 and plasticity index less than 25. In our professional opinion the onsite native soils are likely not appropriate for use as structural fill due to their variable, fine grained, moisture sensitive nature. As such, it may be more practical to import granular, well graded, crushed rock gravel structural fill. We recommend all structural fill be moisture conditioned to within 3 percentage points below and 2 percentage points above optimum moisture as determined by ASTM D1557 (Modified Proctor). If water must be added, it should be uniformly applied and thoroughly mixed into the soil by disking or scarifying.

Fill should be placed in relatively uniform horizontal lifts on the prepared subgrade which has been stripped of deleterious materials and approved by the Geotechnical Engineer or their representative. If loose soils exist on the prepared subgrades, they should be re-compacted. Each loose lift should be about 1-foot thick. The type of compaction equipment used will ultimately



determine the maximum lift thickness. Structural fill should be compacted to at least 92 percent of the maximum dry density as determined by ASTM D1557. Each lift of compacted engineered fill should be tested by a representative of the Geotechnical Engineer prior to placement of subsequent lifts.

Any structural fill placed on slopes at or greater than 5H:1V should be properly benched. Level benches excavated into the existing slope should be a minimum of 4 feet wide laterally, and should be cut into the slope for no more than every five feet of vertical rise. The placement of fill should begin at the base of the fill. All benches should be inspected by a representative of the Geotechnical Engineer and approved prior to placement of structural fill lifts. If evidence of seepage is observed in the bench excavations, a supplemental drainage system may need to be designed and installed to prevent hydrostatic pressure buildup behind the fill. Final fill and/or cut slopes should be kept at or below a slope of 2H:1V. The fill should extend horizontally outward beyond the exterior perimeter of the building and pavements at least 5 feet and 3 feet respectively, prior to sloping.

To reiterate, each lift of compacted engineered fill should be tested by a representative of the Geotechnical Engineer prior to placement of subsequent lifts.

### 3.4 Foundation Recommendations

Once the site has been properly prepared as discussed above, the proposed residences can be supported on a conventional shallow foundation system. Spread footings for building columns and continuous footings for bearing walls can be designed for an allowable soil bearing pressure of up to 2,000 psf for foundations bearing on the very stiff to hard native soils first encountered in our test pits at depths of about 2 to 4 feet bgs, or on properly compacted, granular structural fill overlying the native soils. The above allowable soil bearing pressure can be increased by one-third when including short-term wind or seismic loads. Minimum footing dimensions should be in compliance with the 2018 IRC.

Lateral frictional resistance between the base of footings and the subgrade can be expressed as the applied vertical load multiplied by a coefficient of friction of 0.30 for concrete foundations bearing directly on the very stiff to hard native soils or structural fill. In addition, lateral loads may be resisted by passive earth pressures based on an equivalent fluid pressure of 300 pounds per cubic foot (pcf) for footings poured “neat” against the above-mentioned soil. These are ultimate values—we recommend a factor of safety of 1.5 be applied to the equivalent fluid pressure, which is appropriate due to the amount of movement required to develop full passive resistance. To be clear, no safety factor has been applied to the friction factor recommended above either.

Exterior footings and foundations in unheated areas should be located at a depth of at least 18 inches below the final exterior grade to provide adequate frost protection. If the residences are to be constructed during the winter months or if the foundation soils will likely be subjected to freezing temperatures after foundation construction, then the foundation soils should be

adequately protected from freezing. Otherwise, interior foundations can be located at nominal depths compatible with architectural and structural considerations.

The foundation excavations should be observed by a representative of the Geotechnical Engineer prior to steel or concrete placement to assess that the foundation materials are capable of supporting the design loads and are consistent with the materials discussed in this report. Unsuitable soil zones encountered at the bottom of the foundation excavations should be removed and replaced with properly compacted structural fill as directed by the Geotechnical Engineer.

After opening, foundation excavations should be observed and concrete placed as quickly as possible to avoid exposure of the excavation to wetting and drying. Surface run-off water should be drained away from the excavations and not be allowed to pond. If possible, the foundation concrete should be placed during the same day the excavation is made. If the soils will be exposed for more than 2 days or for any length of time during precipitation events, consideration should be given to placing a thin layer of rock atop the exposed subgrade to protect it from the elements.

Based on the known subsurface conditions we anticipate that properly designed and constructed foundations could experience maximum total and differential settlements on the order of 1-inch and 1/2-inch, respectively.

We recommend that the perimeter foundations include footing drains on the exterior of the buildings. The footing drains typically consist of a 3 or 4 inch diameter perforated drain pipe placed in a trench excavated next to the base of the footing and surrounded on the sides and above by drain rock. To increase the drain pipe life, we recommend it be sleeved with a sock (i.e. filter fabric). Footing drains do have a useful life and eventually need to be replaced—because they can get silted up. Footing drains should be discharged to an approved outlet point and should not be connected directly to crawl space drains or storm drains, unless there is a backflow preventer installed to prevent the different drain lines from backing up into each other.

### 3.5 Floor Slab Recommendations

For the purposes of this report, we have assumed that maximum floor slab loads will not exceed 150 psf. Based on the existing soil conditions, the design of slabs-on-grade can be based on a subgrade modulus (k) of 150 pci. This subgrade modulus value represents an anticipated value which would be obtained in a standard in-situ plate test with a 1-foot square plate.

It is our professional opinion that the floor slabs can be grade supported on a minimum of 6 inches of properly compacted well-graded granular structural fill placed on the very stiff to hard native soils first encountered in our test pits at depths of about 2 to 4 feet bgs. The structural fill should be placed as outlined in Section 3.3 above. The floor slabs should have an adequate number of joints to reduce cracking resulting from any differential movement and shrinkage.

Where feasible, the slab area native subgrade should be proof-rolled with a heavily loaded tandem axel dump truck, or similar rubber-tired vehicle, to identify as “soft” spots prior to the placement of any structural fill. Soils that are observed to rut or deflect excessively under the moving load, or are otherwise judged to be unsuitable, should be undercut and replaced with properly compacted structural fill. In the case that the subgrade area is not accessible to a large rubber-tired vehicle, the Geotechnical Engineer’s representative may need to approve the slab subgrade using a steel probe rod.

The 6-inch thick well graded granular structural fill should provide a capillary break to limit migration of moisture through the slab. If additional protection against moisture vapor is desired, a vapor retarding membrane may also be incorporated into the design. Factors such as cost, special considerations for construction, and the floor covering suggest that decisions on the use of vapor retarding membranes be made by the project design team, the contractor, and the owner.

### 3.6 Retaining Wall Recommendations

While we are not aware of any specific retaining walls for the project, we are providing these general recommendations for preliminary planning purposes. Once more detailed plans are known about retaining walls, we should be provided the drawings so that we can update our recommendations if necessary. For the purposes of this report, we have assumed that no walls will be greater than 10 feet tall.

Retaining wall footings should be designed in accordance with the recommendations contained in Section 3.4 above. Lateral earth pressures on walls, which are not restrained at the top, may be calculated on the basis of an “active” equivalent fluid pressure of 35 pcf for level backfill, and 60 pcf for sloping backfill with a maximum 2H:1V slope. Lateral earth pressures on walls that are restrained from yielding at the top (i.e. stem walls) may be calculated on the basis of an “at-rest” equivalent fluid pressure of 55 pcf for level backfill, and 90 pcf for sloping backfill with a maximum 2H:1V slope. The stated equivalent fluid pressures do not include surcharge loads, such as foundation, vehicle, equipment, etc., adjacent to walls, hydrostatic pressure buildup, or earthquake loading. Surcharge loads on walls should be calculated based on the attached formulas shown in Appendix E.

We recommend that retaining walls be designed for an earth pressure determined using the Mononobe-Okabe method to mitigate future seismic forces. Our calculations were based on one-half of the Design Peak Ground Acceleration (PGA) value of 0.177g, which was obtained from Table 1 above. We have assumed that the retained soil/rock will have a minimum friction angle of 29 degrees and a total unit weight of about 115 pounds per cubic foot. For seismic loading on retaining walls with level backfill, new research indicates that the seismic load is to be applied at 1/3 H of the wall instead of 2/3 H, where H is the height of the wall<sup>5</sup>. We recommend that a Mononobe-Okabe earthquake thrust per linear foot of  $4.7 \text{ psf} \cdot H^2$  be applied at 1/3 H, where H is the height of the wall measured in feet. Note that the recommended earthquake thrust value is appropriate for slopes

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<sup>5</sup> Lew, M., et al (2010). “Seismic Earth Pressures on Depp Building Basements,” SEAOC 2010 Convention Proceedings, Indian Wells, CA.

behind the retaining wall of up to 10 degrees. For a maximum 2H:1V slope, we recommend 16 psf \* H<sup>2</sup>. This assumes a granular backfill retained by the walls.

All backfill for retaining walls should be select granular material, such as sand or crushed rock with a maximum particle size between ¾ and 1 ½ inches, having less than 5 percent material passing the No. 200 sieve. Because of their fines content, the native soils do not meet this requirement, and it will be necessary to import material to the project for wall backfill. Non-expansive soils can be used for the last 18 to 24 inches of backfill, thus acting as a seal to the granular backfill. All backfill behind retaining walls should be moisture conditioned to within ± 2 percent of optimum moisture content, and compacted to a minimum of 90 percent of the material's maximum dry density as determined in accordance with ASTM D1557 (Modified Proctor). This recommendation applies to all backfill located within a horizontal distance equal to 75 percent of the wall height, but should be no less than 4 feet.

An adequate subsurface drain system will need to be designed and installed behind retaining walls to prevent hydrostatic buildup. A waterproofing system should be designed for any basement walls where moisture intrusion is not desirable.

### 3.7 Pavement Section Thickness Recommendations

After the site has been stripped and prepared in accordance with Section 3.2 of this report (i.e. the fill is overexcavated), the pavement subgrade should be proofrolled with a fully loaded dual axle dump truck. Areas found to be soft or yielding under the weight of a dump truck should be overexcavated as recommended by the Geotechnical Engineer's representative and replaced with additional crushed rock gravel fill.

The pavement section thickness recommendations presented below in Tables 2 and 3 are considered typical and minimum for the assumed parameters. In order to achieve the assumed 20-year design life, pavement does need regular maintenance to protect the underlying subgrade from being damaged. The primary concern is subgrade water saturation which can cause it to weaken. Proper site drainage should be maintained to protect pavement areas. In addition, cracks that develop in the pavement should be sealed on a regular basis.

Using the AASHTO method of flexible pavement design, the following design parameters have been assumed:

- An assumed California Bearing Ratio (CBR) value of 20 for the very stiff to hard native soils.
- A pavement life of 20 years.
- A terminal serviceability (Pt) of 2 (i.e. poor pavement condition).
- A regional factor (R) of 3.0.
- Assumed total car trips of:
  - 10 cars per day for car parking (which equates to 2.2 daily equivalent single axle loads, ESALs)

- 60 cars per day for drive lanes (which equates to 13.4 daily equivalent single axle loads, ESALs)

The project Civil Engineer should review our assumptions to confirm they are appropriate for the anticipated traffic loading. See Tables 2 and 3 below for recommended pavement section thicknesses based on the above assumptions.

**Table 2: Asphaltic Concrete - Recommended Minimum Thicknesses (inches)**

Pavement Materials	Parking Areas	Drive Lanes
Asphaltic Concrete	2.5 inches	3 inches
Crushed Aggregate Base Course (less than 5% fines)	6 inches	6 inches

**Table 3: Portland Cement Concrete - Recommended Minimum Thicknesses (inches)**

Pavement Materials	Parking Areas	Drive Lanes
Portland Cement Concrete	6 inches	6 inches
Crushed Aggregate Base Course (less than 5% fines)	6 inches	6 inches

Asphaltic concrete materials should be compacted to at least 91 percent of the material's theoretical maximum density as determined in general accordance with ASTM D2041 (Rice Specific Gravity). The crushed aggregate base course should consist of well-graded crushed stone with a maximum particle size no greater than 2 inches. Aggregate base course materials should be free of organics or other deleterious materials, be relatively clean (i.e. less than 5 percent soil passing the U.S. #200 sieve), well graded, and have a liquid limit less than 45 and plasticity index less than 25. The base course should be moisture conditioned to within 2 percent of optimum and compacted to a minimum of 95 percent of ASTM D1557 as outlined in Section 3.3 of this report. When placed, the lift base course thickness should generally not exceed 12 inches prior to compacting. The type of compaction equipment used will ultimately determine the maximum lift thickness. In addition, we recommend that the structural fill be placed within +/- 2 percent of the optimum moisture for that material.

## **4.0 CONSTRUCTION CONSIDERATIONS**

EEl should be retained to provide observation and testing of construction activities involved in the foundation, earthwork, and related activities of this project. EEl cannot accept any responsibility for any conditions that deviate from those described in this report, nor for the performance of the foundations if not engaged to also provide construction observation for this project.

### **4.1 Moisture Sensitive Soils/Weather Related Concerns**

The soils encountered at this site are expected to be sensitive to disturbances caused by construction traffic and to changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. In addition, soils that become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. It will, therefore, be advantageous to perform earthwork and foundation construction activities during dry weather.

### **4.2 Drainage and Groundwater Considerations**

Water should not be allowed to collect in the foundation excavations or on prepared subgrades for the floor sections during construction. Positive site drainage should be maintained throughout construction activities. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater, or surface runoff. If groundwater is encountered, a system of sumps and pumps may be required to keep footing excavations drained until the footing is placed to prevent softening of the subgrade soils.

A site grading plan should be developed to provide rapid drainage of surface water permanently away from the building areas and to inhibit infiltration of surface water around the perimeter of the building and beneath slabs. The grades should be sloped away from the building areas. Roof runoff should be piped (tightlined) away from the subdivision residences and commercial buildings. As discussed in Section 3.4, we recommend the foundations include footing drains on the exterior of the homes.

### **4.3 Excavations**

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document and subsequent updates were issued to better insure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches, basement excavations or footing excavations, be constructed in accordance with the new OSHA guidelines. It is our

understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

We are providing this information solely as a service to our client. EEI does not assume responsibility for construction site safety or the contractor's compliance with local, state, and federal safety or other regulations.

## **5.0 REPORT LIMITATIONS**

As is standard practice in the geotechnical industry, the conclusions contained in our report are considered preliminary because they are based on assumptions made about the soil, rock, and groundwater conditions exposed at the site during our subsurface investigation. A more complete extent of the actual subsurface conditions can only be identified when they are exposed during construction. Therefore, EEI should be retained as your consultant during construction to observe the actual conditions and to provide our final conclusions. If a different geotechnical consultant is retained to perform geotechnical inspection during construction, then they should be relied upon to provide final design conclusions and recommendations and should assume the role of geotechnical engineer of record, as is the typical procedure required by the governing jurisdiction.

The geotechnical recommendations presented in this report are based on the available project information, and the subsurface materials described in this report. If any of the noted information is incorrect, please inform EEI in writing so that we may amend the recommendations presented in this report, if appropriate, and if desired by the client. EEI will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

Once construction plans are finalized and a grading plan has been prepared, EEI should be retained to review those plans, and modify our existing recommendations related to the proposed construction, if determined to be necessary.

The Geotechnical Engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

This report has been prepared for the exclusive use of our client, Legacy Development Group for the proposed Spring Street Subdivision located on Klickitat County Tax Lot No. 0310247500400 off of Spring Street near the intersection with Northwest Cherry Hill Road in White Salmon, Klickitat County, Washington. EEI does not authorize the use of the advice herein nor the reliance upon the report by third parties without prior written authorization by EEI.



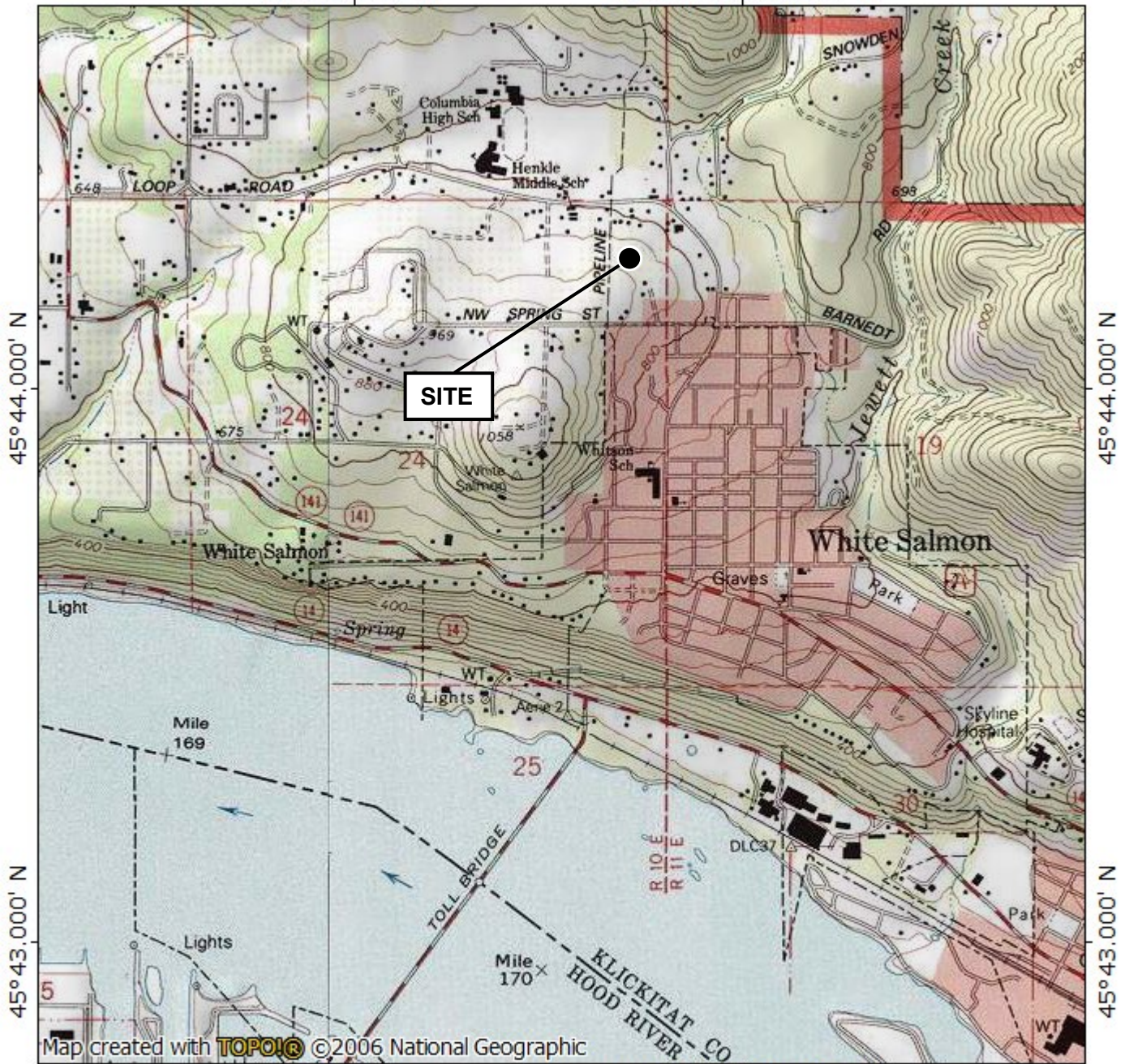
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## APPENDICES

# APPENDIX A – SITE LOCATION PLAN

121°30.000' W

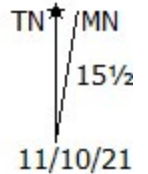
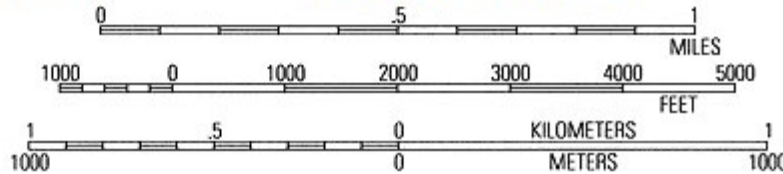
WGS84 121°29.000' W



Map created with TOPOIG ©2006 National Geographic

121°30.000' W

WGS84 121°29.000' W



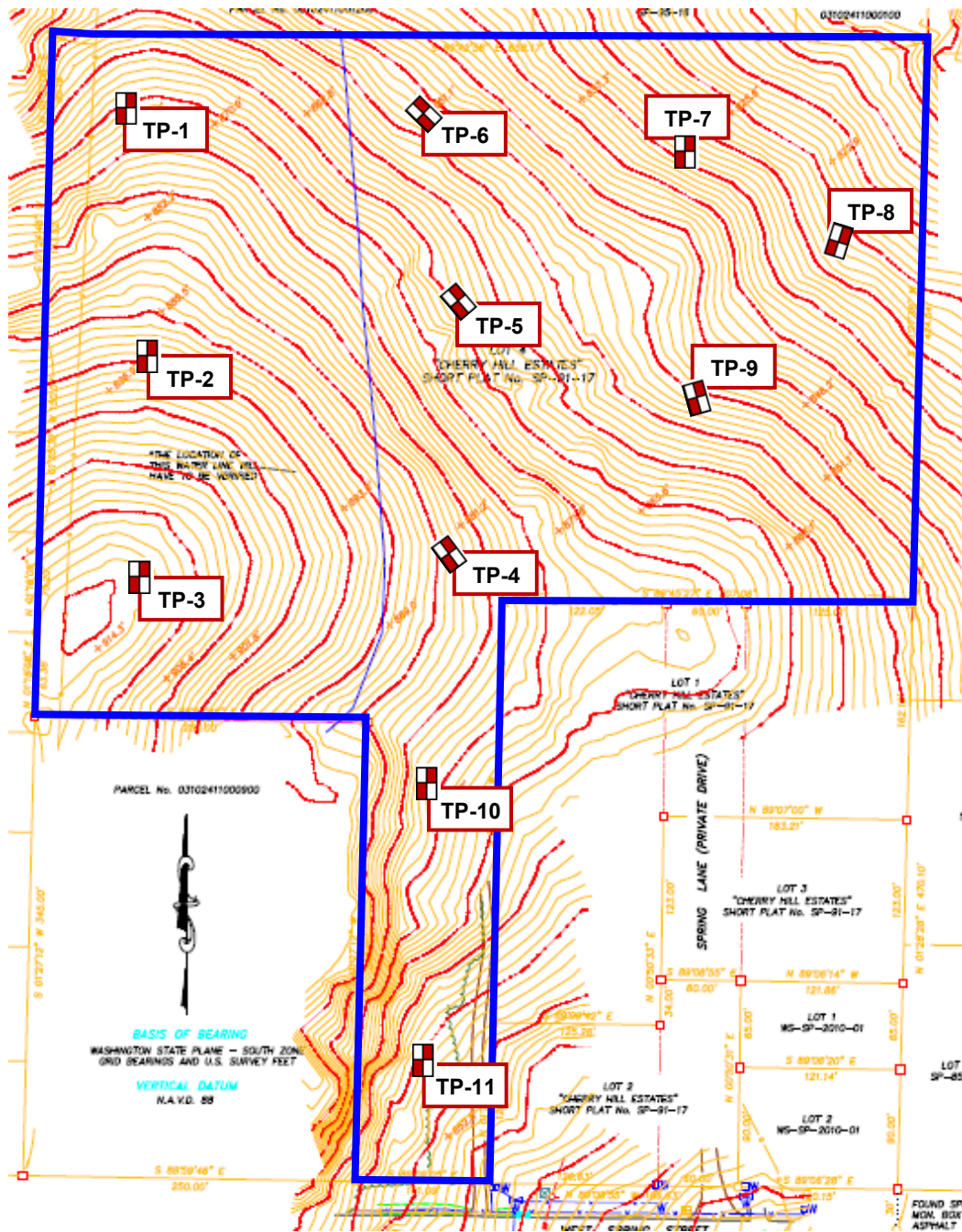
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**Proposed Spring Street Subdivision**  
**Klickitat County Tax Lot No. 0310247500400**  
**Intersection of Northwest Spring Street**  
**and Northwest Cherry Hill Road**  
**White Salmon, Klickitat County, Washington**

**Report No.**  
**21-071-1**

**November 15, 2021**

## APPENDIX B – SITE EXPLORATION PLAN



= Approximate Test Pit Location

Base plan source: "Property Boundary Survey for Curtis Homes" prepared by Terra Surveying, dated December 2020.



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**Proposed Spring Street Subdivision  
Klickitat County Tax Lot No. 0310247500400  
Intersection of Northwest Spring Street  
and Northwest Cherry Hill Road  
White Salmon, Klickitat County, Washington**

**Report No.  
21-071-1**

**November 15, 2021**



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# Appendix C: Test Pit TP-1

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 875  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (8-inches thick)		Mod.								
1			Fill - brown silt with few to little sand, rootlets, wood chips and charcoal pieces, dry, medium stiff to very stiff	GRAB 1			2.5	9	89				possible tilled soils
2			Silt (ML) - brown to reddish brown sandy silt with decomposed rock fragments (black to red) and few gravel, moist, very stiff to hard	GRAB 2				36	60				scraping on hard soil
3					Hard		4.5+						
4													
5													
6			dark brown to red to orange to gray decomposed basalt encountered	GRAB 3				28	98				practical digging refusal on hard soil/decomposed rock
7													
8													
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 6 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by T. Surveying, dated December 2020.



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# Appendix C: Test Pit TP-2

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 895  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks				
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit			
0			Topsoil - light brown sandy silt with rootlets, dry to moist (10-inches thick)		Easy										
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry, medium stiff to very stiff										possible tilled soils		
2			Silt (ML) - orange-brown to reddish brown sandy silt with decomposed rock fragments (black to red), moist, very stiff to hard	GRAB 1	Mod.		4.5+	50							
3															
4				GRAB 2										24	
5															
6			dark brown to red to orange to gray decomposed basalt encountered	GRAB 3	Hard			36							
7															
8													practical digging refusal on hard soil/decomposed rock		
9															
10															
11															
12															
13															
14															
15															

Notes: Test pit terminated at a depth of approximately 8 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by T. Surveying, dated December 2020.



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# Appendix C: Test Pit TP-3

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 914  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (12-inches thick)		Mod.								
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry, medium stiff to very stiff	GRAB 1				10					possible tilled soils
2													
3													
4			Silt (ML) - brown silt with few sand and gravel, decomposed rock fragments (black to red), moist, very stiff to hard	GRAB 2				15	94				
5				GRAB 3	Hard			15					
6			dark brown to red to orange to white decomposed basalt encountered	GRAB 4				19	95				
7													practical digging refusal on hard soil/decomposed rock
8													
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 7 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by T. Surveying, dated December 2020.



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# Appendix C: Test Pit TP-4

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 884  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (6-inches thick)		Easy								
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry, medium stiff to very stiff		Mod.								possible tilled soils
3			Silt (ML) - reddish brown sandy silt with decomposed rock fragments (black to red), moist, very stiff to hard		Hard								
4				GRAB 1				41					
6				GRAB 2				43					
7				GRAB 3				44					
8													practical digging refusal on consolidated soil
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 8 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by T. Surveying, dated December 2020.



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# Appendix C: Test Pit TP-5

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 870  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (6-inches thick)		Easy	5							
0.5			Fill - brown sandy silt with rootlets, wood chips and charcoal pieces, dry, medium stiff to hard			5							possible tilled soils
1						12							
2						10							
2.5						12							
3					Mod.	16							
3.5						39							
4			Silt (ML) - reddish brown sandy silt with decomposed rock fragments (black to red), moist, hard			32							
4.5						47							drive probe refusal at 5-inches
5				GRAB 1		50		39					
6													
7													
8				GRAB 2	Hard			44					
9													practical refusal due to excavator reach
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 9 feet bgs. Drive probe terminated at a depth of approximately 5 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by Terra Surveying, dated December 2020.





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# Appendix C: Test Pit TP-6

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 857  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (6-inches thick)		Easy								
1			Fill - brown silty sand with rootlets, wood chips and broken rock pieces, dry, medium dense to very dense										possible tilled soils
2													
3					Mod.								
4			boulder encountered	GRAB 1				12	39				practical digging refusal on boulder
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 4 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by T. Surveying, dated December 2020.



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# Appendix C: Test Pit TP-7

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 840  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (8-inches thick)		Easy								
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry, medium stiff to very stiff white plastic debris encountered (abandoned pipe)										possible tilled soils
2			Silt (ML) - orange-brown to reddish brown sandy silt with decomposed rock fragments (black to red), moist, very stiff to hard		Mod.			41					
3													
4													
5				GRAB 1	Hard								practical digging refusal on hard soil/decomposed rock
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 6 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by T. Surveying, dated December 2020.



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# Appendix C: Test Pit TP-8

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 833  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (10-inches thick)		Easy	6							
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry, medium stiff to very stiff			5							possible tilled soils
2				GRAB 1		11			12				
3						16							
4						18							
5			Silt (ML) - light brown to brown silt with few sand, decomposed rock fragments (black to red), moist, very stiff to hard		Mod.	21							drive probe refusal at 2-inches
6				GRAB 2		24		91					
7						29							
8						50							
9			weathered rock fragments encountered	GRAB 3					24				practical refusal due to excavator reach
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 9.5 feet bgs. Drive probe terminated at a depth of approximately 4.5 feet bgs. Groundwater was encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by Terra Surveying, dated December 2020.



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# Appendix C: Test Pit TP-9

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 859  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (8-inches thick)		Easy								
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry to moist, medium stiff to very stiff										possible tilled soils
2					Mod.								
3			Silt (ML) - brown to dark brown silt with few sand, decomposed rock fragments (black to red), moist, very stiff to hard										
4				GRAB 1				44					
5				GRAB 2	Hard			44					practical digging refusal on hard soil/decomposed rock
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 5.5 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by Terra Surveying, dated December 2020.



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# Appendix C: Test Pit TP-10

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 876  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (6-inches thick)		Easy	7							
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry to moist, medium stiff to hard metal debris and wood debris encountered			6							possible tilled soils
2			4-inch thick tree root encountered			7							
3						22							
4						49							drive probe refusal at 3-inches
5			Silt (ML) - gray-brown to dark brown silt with few to little sand and gravel, decomposed rock fragments (black to red), moist, hard		Mod.				29	90			
6				GRAB 1									
7					Hard								
8													
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 7 feet bgs. Drive probe terminated at a depth of approximately 4 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by Terra Surveying, dated December 2020.



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# Appendix C: Test Pit TP-11

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 860  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (8-inches thick)		Easy								
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry to moist, medium stiff to very stiff										possible tilled soils
2				GRAB 1									
3					Mod.			9					
4			Silt (ML) - red to brown sandy silt with decomposed rock fragments (black to red), dry to moist, very stiff to hard	GRAB 2	Hard			8	81				practical digging refusal on hard soil/decomposed rock
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 5 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by Surveying, dated December 2020.

# APPENDIX D: SOIL CLASSIFICATION LEGEND

APPARENT CONSISTENCY OF COHESIVE SOILS (PECK, HANSON & THORNBURN 1974, AASHTO 1988)				
Descriptor	SPT N <sub>60</sub> (blows/foot)*	Pocket Penetrometer, Qp (tsf)	Torvane (tsf)	Field Approximation
Very Soft	< 2	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	2 – 4	0.25 – 0.50	0.12 – 0.25	Easily penetrated several inches by thumb
Medium Stiff	5 – 8	0.50 – 1.0	0.25 – 0.50	Penetrated several inches by thumb w/moderate effort
Stiff	9 – 15	1.0 – 2.0	0.50 – 1.0	Readily indented by thumbnail
Very Stiff	16 – 30	2.0 – 4.0	1.0 – 2.0	Indented by thumb but penetrated only with great effort
Hard	> 30	> 4.0	> 2.0	Indented by thumbnail with difficulty

\* Using SPT N<sub>60</sub> is considered a crude approximation for cohesive soils.

APPARENT DENSITY OF COHESIONLESS SOILS (AASHTO 1988)	
Descriptor	SPT N <sub>60</sub> Value (blows/foot)
Very Loose	0 – 4
Loose	5 – 10
Medium Dense	11 – 30
Dense	31 – 50
Very Dense	> 50

MOISTURE (ASTM D2488-06)	
Descriptor	Criteria
Dry	Absence of moisture, dusty, dry to the touch, well below optimum moisture content (per ASTM D698 or D1557)
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table, well above optimum moisture content (per ASTM D698 or D1557)

PERCENT OR PROPORTION OF SOILS (ASTM D2488-06)	
Descriptor	Criteria
Trace	Particles are present but estimated < 5%
Few	5 – 10%
Little	15 – 25%
Some	30 – 45%
Mostly	50 – 100%
Percentages are estimated to nearest 5% in the field. Use "about" unless percentages are based on laboratory testing.	

SOIL PARTICLE SIZE (ASTM D2488-06)	
Descriptor	Size
Boulder	> 12 inches
Cobble	3 to 12 inches
Gravel - Coarse Fine	¾ inch to 3 inches No. 4 sieve to ¾ inch
Sand - Coarse Medium Fine	No. 10 to No. 4 sieve (4.75mm) No. 40 to No. 10 sieve (2mm) No. 200 to No. 40 sieve (.425mm)
Silt and Clay ("fines")	Passing No. 200 sieve (0.075mm)

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2488)				
Major Division			Group Symbol	Description
<b>Coarse Grained Soils</b>  (more than 50% retained on #200 sieve)	<b>Gravel</b> (50% or more retained on No. 4 sieve)	Clean Gravel	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
		Gravel with fines	GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
			GM	Silty gravels and gravel-sand-silt mixtures
	<b>Sand</b> (> 50% passing No. 4 sieve)	Clean sand	SW	Well-graded sands and gravelly sands, little or no fines
		Sand with fines	SP	Poorly-graded sands and gravelly sands, little or no fines
			SM	Silty sands and sand-silt mixtures
<b>Fine Grained Soils</b>  (50% or more passing #200 sieve)	<b>Silt and Clay</b> (liquid limit < 50)		SC	Clayey sands and sand-clay mixtures
			ML	Inorganic silts, rock flour and clayey silts
			CL	Inorganic clays of low-medium plasticity, gravelly, sandy & lean clays
	<b>Silt and Clay</b> (liquid limit > 50)		OL	Organic silts and organic silty clays of low plasticity
			MH	Inorganic silts and clayey silts
			CH	Inorganic clays or high plasticity, fat clays
	OH	Organic clays of medium to high plasticity		
<b>Highly Organic Soils</b>			PT	Peat, muck and other highly organic soils



GRAPHIC SYMBOL LEGEND		
GRAB	☒	Grab sample
SPT	■	Standard Penetration Test (2" OD), ASTM D1586
ST	▨	Shelby Tube, ASTM D1587 (pushed)
DM	▤	Dames and Moore ring sampler (3.25" OD and 140-pound hammer)
CORE	▥	Rock coring

# APPENDIX E: SURCHARGE-INDUCED LATERAL EARTH PRESSURES FOR WALL DESIGN

## LINE LOAD (applicable for retaining walls not exceeding 20 feet in height):

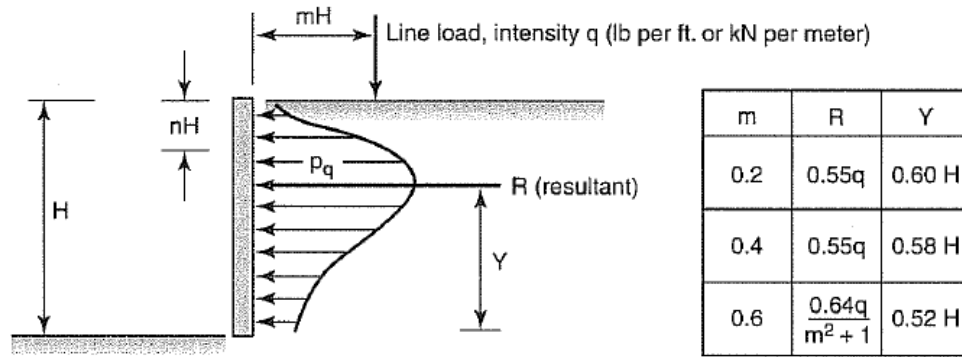


Figure 16-28 Pressure distribution against vertical wall resulting from line load of intensity  $q$ .

## CONCENTRATED POINT LOAD (applicable for retaining walls not exceeding 20 feet in height):

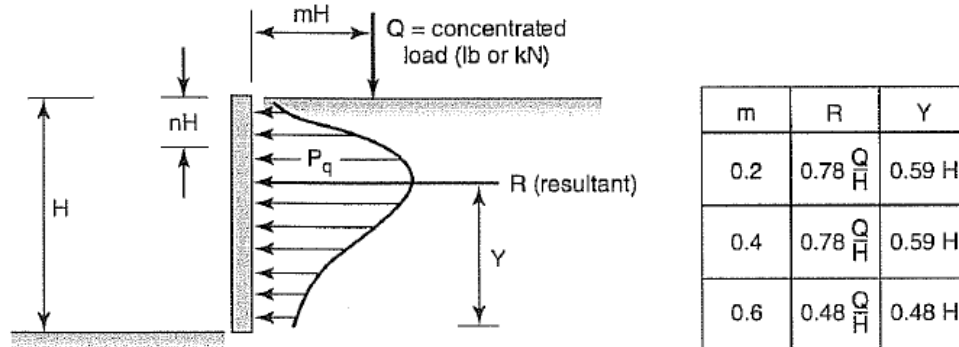


Figure 16-27 Pressure distribution against vertical wall resulting from point load,  $Q$ .

## AREAL LOAD:

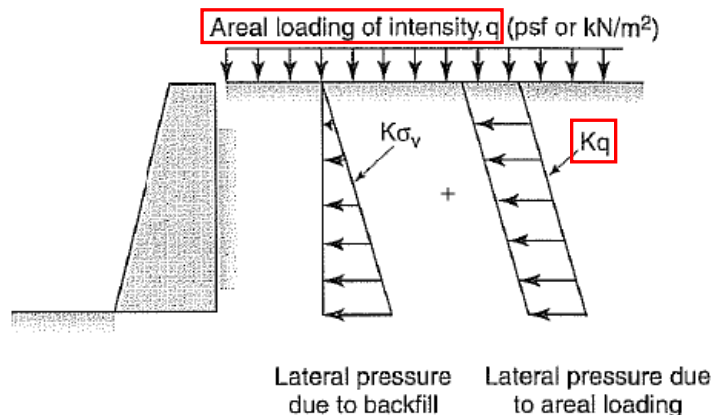
Figure 16-26 Influence of areal loading on wall pressures.

use  $K=0.4$  for active condition  
(i.e. top of wall allowed to  
deflect laterally)

use  $K=0.9$  for at-rest condition  
(i.e. top of wall not allowed to  
deflect laterally)

Resultant,  $R = K * q * H$

Where  $H$  = wall height (feet)



Source of Figures: McCarthy, D.F., 1998, "Essentials of Soil Mechanics and foundations, Basic Geotechnics, Fifth Edition."



**Earth  
Engineers,  
Inc.**

**Proposed Spring Street Subdivision  
Klickitat County Tax Lot No. 0310247500400  
Intersection of Northwest Spring Street  
and Northwest Cherry Hill Road  
White Salmon, Klickitat County, Washington**

**Report No.  
20-071-1**

**November 15, 2021**



**CITY OF WHITE SALMON PLANNING DEPARTMENT  
NOTICE OF PUBLIC HEARING FOR:**

**Cherry Hill NW, LLC Preliminary Plat  
File #WS-SUB-2024.001 and #WS-SEPA-2024.001**

**Planning Commission Public Hearing  
5:30 pm October 9, 2024 at Council Chambers  
119 NE Church Street, White Salmon, WA**

Public Hearing

The City of White Salmon will hold a public hearing on October 9<sup>th</sup> at 5:30pm to receive public testimony and seek Planning Commission recommendation prior to a land use decision on a preliminary plat subdivide one 7.93 acre tax parcel (03102475000400) off NW Spring Street, between NW Cherry Hill Rd and Champion Ln into 35 residential lots. The abbreviated legal description is: LOT 4, Cherry Hill Estates SP-91-17. The project is located in the R1 zone in the City of White Salmon. A Notice of Application was issued January 25<sup>th</sup>, 2024.

The applicant is Alex Pedroza of HRK Engineering & Field Services, representing Cherry Hill NW, LLC and Cameron Curtis of Legacy Development Group.

The application includes the SEPA checklist and preliminary plat plan. These and other application documents are available for viewing by e-mail request or at White Salmon City Hall, 100 N. Main, White Salmon, Washington during regular business hours Monday through Friday, 8:00 a.m. to 5:00 p.m.

Written comments regarding the subdivision proposal may be submitted until 4:30pm on October 9, 2024 and oral comments may be provided at the public hearing on October 9. Comments can be submitted by mail to City of White Salmon, PO Box 2139, White Salmon WA 98672 or in person at City Hall, 100 N. Main St., White Salmon WA 98672. E-mail correspondence should be sent to Erika Castro-Guzman at [erikac@ci.white-salmon.wa.us](mailto:erikac@ci.white-salmon.wa.us).

Notice of SEPA Determination of Non-significance (DNS)

The lead agency has determined that this proposal will not have a probable significant adverse impact on the environment. An Environmental Impact Statement (EIS) is not required under RCW 43.21C.030 (2)(c). This decision was made after review of an environmental checklist and other information on file with the lead agency. This DNS is issued using the Optional DNS process in WAC 197-11-355. As such, there is no further comment period on this DNS.

You may appeal this determination in writing no later than 5:00pm on Monday, September 23<sup>rd</sup> by filing a notice of appeal in accordance with White Salmon Municipal Code 18.20.170 and WAC 197-11-680. You should be prepared to make specific factual objections. Please e-mail Erika Castro-Guzman at [erikac@ci.white-salmon.wa.us](mailto:erikac@ci.white-salmon.wa.us) with questions to SEPA appeal procedures.

The lead agency is the City of White Salmon. The responsible official is Troy Rayburn, City Administrator, City of White Salmon, PO Box 2139, White Salmon WA 98672.

To publish on September 9, 2024.

March 25, 2024

Cameron Curtis  
Legacy Development Group  
403 highway 35 - Hood River, Oregon 97031

**Subject: Analytical Results for March 13, 2024 Cherry Hills Estates Soil Sampling Event**

Dear Mr. Curtis,

This letter is to provide the analytical results for the soil that was sampled by HRK Engineering & Field Services (HRK) per the Department of Ecology comment filed under the Notice of Application/SEPA Optional DNS comment period. The soil originated from the Cherry Hill Estates property (parcel 0310247500400) in White Salmon, WA.

Five composite samples were obtained by HRK on March 13, 2024, and sent to Specialty Analytical for the analysis of Arsenic (As) and lead (Pb) (see Attachment A for soil sampling locations). The analytical results were received by HRK on March 20, 2024, and a copy is provided as Attachment B. The analytical results indicate that As metal was detected in all of the five samples at concentrations ranging from 3.59 to 4.51 ppm. Pb was also detected in all five samples at concentrations ranging from 11.1 to 14.1 ppm. The As and Pb constituents detected in the soil samples are summarized in the table below and are compared to the statistical-based background concentration for the region where the soil originated and Washington state-wide average<sup>1</sup>.

Metal	Soil Sample 1 Analytical Result (ppm)	Soil Sample 2 Analytical Result (ppm)	Soil Sample 3 Analytical Result (ppm)	Soil Sample 4 Analytical Result (ppm)	Soil Sample 5 Analytical Result (ppm)	Background Concentration For Soil in the Yakima Basin <sup>2</sup> Region (ppm)	Washington State-Wide Background Concentration For Soil (ppm)
As	4.51	4.04	3.59	4.25	4.46	5.13*	6.99*
						41.79**	41.81**
Pb	14.1	12.7	11.1	11.6	11.4	11.00	17.09
*Result using Atomic Absorption (AA) analysis							
**Result using Inductively Coupled Plasma (ICP) analysis							

The results for the As and Pb metal constituents analyzed in the soil samples are at concentrations similar to, or within the background concentrations in the region where the soil originated and the average for Washington state.

<sup>1</sup>Natural Background Soil Metals Concentrations in Washington State, Washington State Department of Ecology, Toxics Cleanup Program publication, October 1994.

<sup>2</sup>The Yakima Basin Region consists of Yakima, Kittitas, Klickitat, Chelan, and Benton counties.

March 25, 2024

Page 2 of 2

In comparison, the Model Toxics Control Act (MTCA) Method A clean-up levels for As and Pb are 20 ppm and 250 ppm, respectively that were developed assuming direct human contact with the soil including protection of groundwater (As) and prevention of unacceptable levels in blood (Pb)<sup>3</sup>.

If you have any questions or require anything else, don't hesitate to contact me at the information provided below.



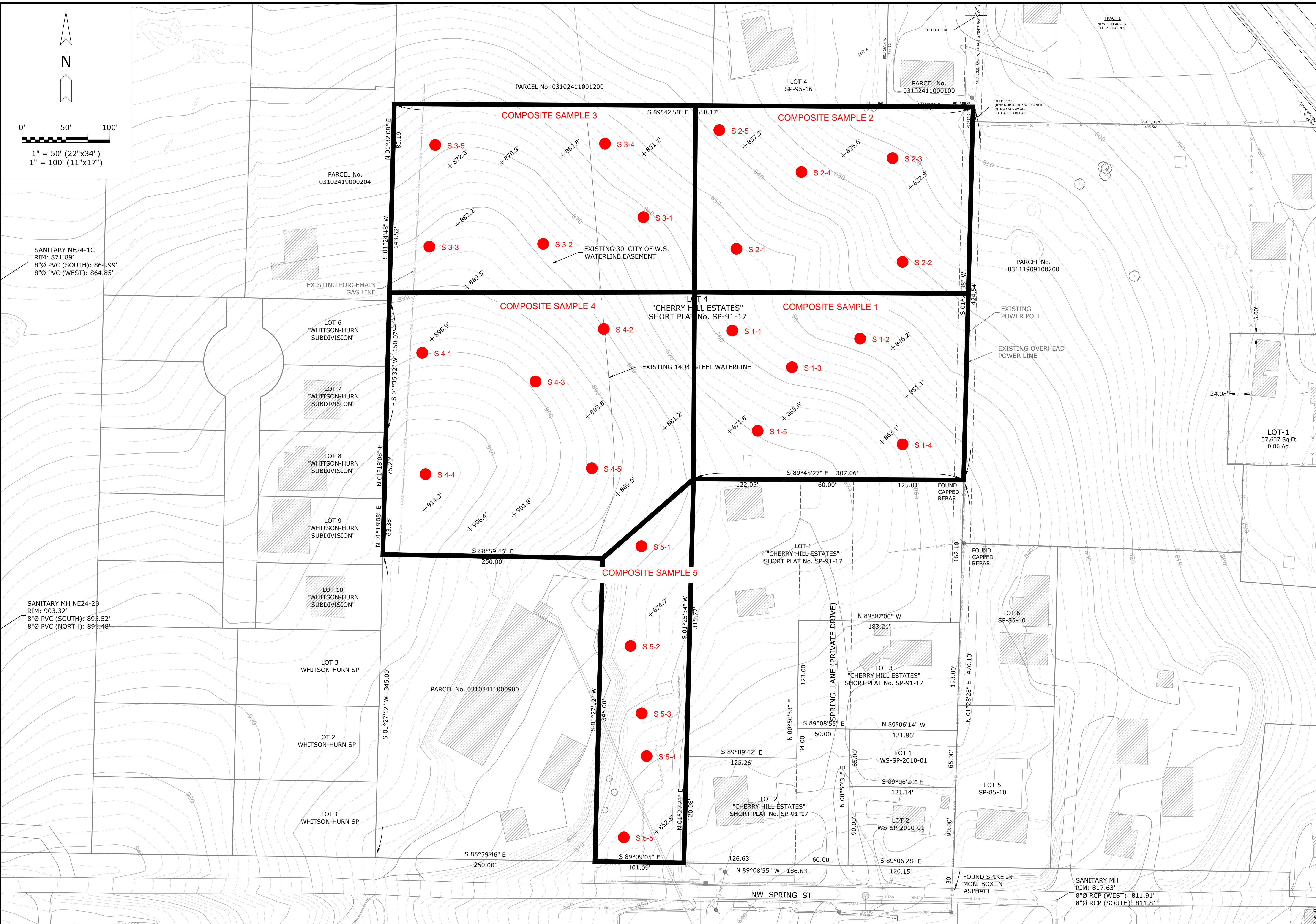
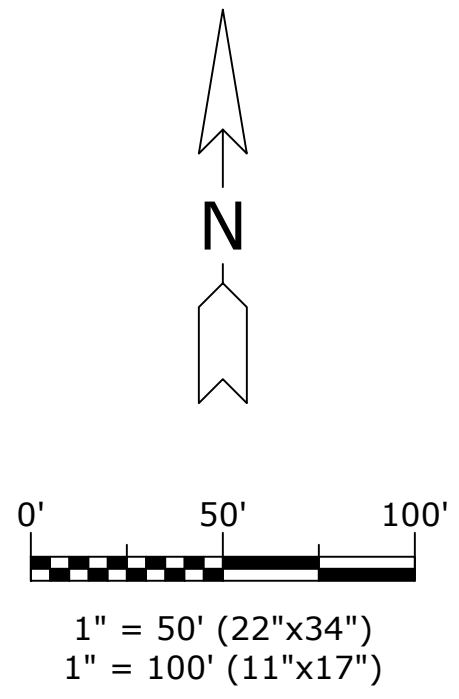
Phillip E. Kovacs, PE  
Senior Environmental Engineer  
[pkovacs@hrkus.com](mailto:pkovacs@hrkus.com)  
503-409-3346

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<sup>3</sup>Washington Administrative Code (WAC) 173-340-900.

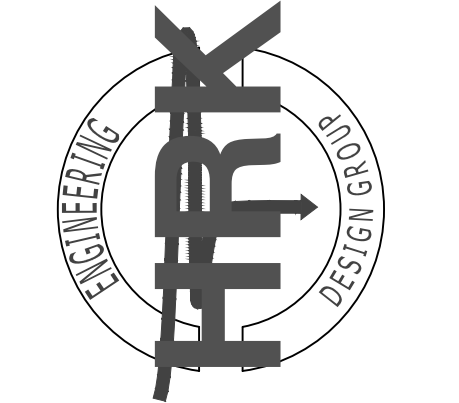
# **Attachment A**

## *Soil Sampling Locations*



CLIENT

PROJECT NAME  
 CHERRY HILL ESTATES  
 SUBDIVISION  
 PROJECT DATE  
 FEBRUARY 2021  
 PROJECT NO.  
 21-002  
 PHASE  
 SITE PLAN REVIEW

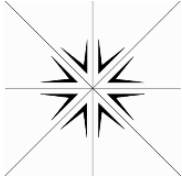


NO.	DATE	DESCRIPTION	DRWN	CHKD
01	09/07/23			

SOIL SAMPLING LOCATION  
 SHEET NO. 1 OF 1

# **Attachment B**

## *Analytical Results*



# Specialty Analytical

9011 SE Jannsen Rd  
Clackamas, OR 97015  
TEL: (503) 607-1331

Website: [www.specialtyanalytical.com](http://www.specialtyanalytical.com)

March 20, 2024

Apedroza  
HRK Engineering  
489 N. 8th Street  
Suite 201  
Hood River, OR 97031  
TEL: (541) 386-6480  
FAX:

RE: Cherry Hill Estates / Z1-002

Order No.: 2403148

Dear Apedroza:

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Marty French  
Lab Director

# Specialty Analytical

WO#: 2403148  
Date Reported: 3/20/2024

**CLIENT:** HRK Engineering  
**Project:** Cherry Hill Estates / Z1-002

**Lab ID:** 2403148-001 **Matrix:** SOIL  
**Client Sample ID:** Sample 1 **Collection Date:** 3/12/2024 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>ICP/MS METALS-TOTAL RECOVERABLE</b>				<b>SW 6020B</b>	<b>SW3050B</b>	Analyst: JRC
Arsenic	4510	1290		µg/Kg-dry	10	3/18/2024 3:52:28 PM
Lead	14100	323		µg/Kg-dry	10	3/18/2024 3:52:28 PM

**Lab ID:** 2403148-002 **Matrix:** SOIL  
**Client Sample ID:** Sample 2 **Collection Date:** 3/12/2024 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>ICP/MS METALS-TOTAL RECOVERABLE</b>				<b>SW 6020B</b>	<b>SW3050B</b>	Analyst: JRC
Arsenic	4040	1270		µg/Kg-dry	10	3/18/2024 3:55:47 PM
Lead	12700	318		µg/Kg-dry	10	3/18/2024 3:55:47 PM

**Lab ID:** 2403148-003 **Matrix:** SOIL  
**Client Sample ID:** Sample 3 **Collection Date:** 3/12/2024 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>ICP/MS METALS-TOTAL RECOVERABLE</b>				<b>SW 6020B</b>	<b>SW3050B</b>	Analyst: JRC
Arsenic	3590	1180		µg/Kg-dry	10	3/18/2024 3:25:27 PM
Lead	11100	295		µg/Kg-dry	10	3/18/2024 3:25:27 PM

**Lab ID:** 2403148-004 **Matrix:** SOIL  
**Client Sample ID:** Sample 4 **Collection Date:** 3/12/2024 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>ICP/MS METALS-TOTAL RECOVERABLE</b>				<b>SW 6020B</b>	<b>SW3050B</b>	Analyst: JRC
Arsenic	4250	1200		µg/Kg-dry	10	3/18/2024 3:59:06 PM
Lead	11600	301		µg/Kg-dry	10	3/18/2024 3:59:06 PM



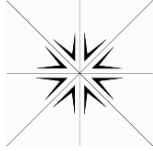
# Specialty Analytical

WO#: 2403148  
Date Reported: 3/20/2024

CLIENT: HRK Engineering  
Project: Cherry Hill Estates / Z1-002

Lab ID: 2403148-005 Matrix: SOIL  
Client Sample ID Sample 5 Collection Date: 3/12/2024 10:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>ICP/MS METALS-TOTAL RECOVERABLE</b>						
				<b>SW 6020B</b>	<b>SW3050B</b>	Analyst: JRC
Arsenic	4460	1260		µg/Kg-dry	10	3/18/2024 4:02:25 PM
Lead	11400	315		µg/Kg-dry	10	3/18/2024 4:02:25 PM



Specialty Analytical  
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## Accreditation Program Analytes Report

WO#: 2403148  
20-Mar-24

**Client:** HRK Engineering  
**Project:** Cherry Hill Estates / Z1-002

Program Name	Sample ID	ClientSampleID	Matrix	Test Name	Analyte	Status
ORELAP	2403148-001A	Sample 1	Soil	ICP/MS METALS-TOTAL RECOVERABLE	Lead	A
			Solid		Lead	A
					Arsenic	A
	2403148-002A	Sample 2	Soil	Arsenic	A	
				Arsenic	A	
			Solid	Lead	A	
	2403148-003A	Sample 3	Soil	Lead	A	
				Lead	A	
			Solid	Arsenic	A	
	2403148-004A	Sample 4	Soil	Lead	A	
				Lead	A	
			Solid	Lead	A	
	2403148-005A	Sample 5	Soil	Lead	A	
				Lead	A	
			Solid	Lead	A	
				Arsenic	A	

ORELAP A Accredited A

ACCRED

# QC SUMMARY REPORT

**Specialty Analytical**

WO#: 2403148  
3/20/2024

**Client:** HRK Engineering  
**Project:** Cherry Hill Estates / Z1-002

**TestCode:** 6020\_S

Sample ID: <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>53213</b>						
Client ID: <b>ICV</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/18/2024</b>	SeqNo: <b>687698</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	4910	100	5000	0	98.3	90	110				
Lead	4930	25.0	5000	0	98.6	90	110				

Sample ID: <b>MB-23233</b>	SampType: <b>MBLK</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>3/18/2024</b>	RunNo: <b>53213</b>						
Client ID: <b>PBS</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/18/2024</b>	SeqNo: <b>687700</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	100									
Lead	ND	25.0									

Sample ID: <b>LCS-23233</b>	SampType: <b>LCS</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>3/18/2024</b>	RunNo: <b>53213</b>						
Client ID: <b>LCSS</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/18/2024</b>	SeqNo: <b>687701</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	4510	1000	5000	0	90.2	73.4	120				
Lead	4990	250	5000	0	99.9	80	120				

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

# QC SUMMARY REPORT

## Specialty Analytical

WO#: 2403148  
3/20/2024

**Client:** HRK Engineering  
**Project:** Cherry Hill Estates / Z1-002

**TestCode:** 6020\_S

Sample ID: <b>LCSD-23233</b>	SampType: <b>LCSD</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg</b>	Prep Date: <b>3/18/2024</b>	RunNo: <b>53213</b>						
Client ID: <b>LCSS02</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/18/2024</b>	SeqNo: <b>687702</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	4600	1000	5000	0	92.0	80	120	4508	1.98	20	
Lead	4980	250	5000	0	99.5	80	120	4995	0.344	20	

Sample ID: <b>2403148-003ADUP</b>	SampType: <b>DUP</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg-dry</b>	Prep Date: <b>3/18/2024</b>	RunNo: <b>53213</b>						
Client ID: <b>Sample 3</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/18/2024</b>	SeqNo: <b>687704</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	3760	1260						3594	4.45	20	
Lead	11800	314						11150	5.46	20	

Sample ID: <b>2403148-003AMS</b>	SampType: <b>MS</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg-dry</b>	Prep Date: <b>3/18/2024</b>	RunNo: <b>53213</b>						
Client ID: <b>Sample 3</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/18/2024</b>	SeqNo: <b>687705</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10200	1150	5728	3594	116	70	130				
Lead	19100	286	5728	11150	138	70	130				SMI

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

# QC SUMMARY REPORT

## Specialty Analytical

WO#: 2403148  
3/20/2024

**Client:** HRK Engineering  
**Project:** Cherry Hill Estates / Z1-002

**TestCode:** 6020\_S

Sample ID: <b>2403148-003AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg-dry</b>	Prep Date: <b>3/18/2024</b>	RunNo: <b>53213</b>						
Client ID: <b>Sample 3</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/18/2024</b>	SeqNo: <b>687706</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	10000	1150	5727	3594	112	70	130	10240	2.06	20	
Lead	17100	286	5727	11150	104	70	130	19080	10.8	20	

Sample ID: <b>CCB</b>	SampType: <b>CCB</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>53213</b>						
Client ID: <b>CCB</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/18/2024</b>	SeqNo: <b>687710</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	100									
Lead	ND	25.0									

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>53213</b>						
Client ID: <b>CCV</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/18/2024</b>	SeqNo: <b>687760</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	100	5000	0	0.244	90	110				S
Lead	ND	25.0	5000	0	0.0376	90	110				S

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

# QC SUMMARY REPORT

**Specialty Analytical**

WO#: 2403148  
3/20/2024

**Client:** HRK Engineering  
**Project:** Cherry Hill Estates / Z1-002

**TestCode:** 6020\_S

Sample ID: <b>ICV</b>	SampType: <b>ICV</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>53213</b>						
Client ID: <b>ICV</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/19/2024</b>	SeqNo: <b>687952</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4990	25.0	5000	0	99.8	90	110				

Sample ID: <b>CCB</b>	SampType: <b>CCB</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>53213</b>						
Client ID: <b>CCB</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/19/2024</b>	SeqNo: <b>687955</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	25.0									

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>53213</b>						
Client ID: <b>CCV</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/19/2024</b>	SeqNo: <b>687959</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4960	25.0	5000	0	99.1	90	110				

Sample ID: <b>CCB</b>	SampType: <b>CCB</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>53213</b>						
Client ID: <b>CCB</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/19/2024</b>	SeqNo: <b>687960</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	25.0									

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits

# QC SUMMARY REPORT

**Specialty Analytical**

WO#: 2403148  
3/20/2024

**Client:** HRK Engineering  
**Project:** Cherry Hill Estates / Z1-002

**TestCode:** 6020\_S

Sample ID: <b>CCB</b>	SampType: <b>CCB</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>53213</b>						
Client ID: <b>CCB</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/19/2024</b>	SeqNo: <b>687960</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: <b>CCV</b>	SampType: <b>CCV</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>53213</b>						
Client ID: <b>CCV</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/19/2024</b>	SeqNo: <b>687968</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	4990	25.0	5000	0	99.8	90	110				

Sample ID: <b>CCB</b>	SampType: <b>CCB</b>	TestCode: <b>6020_S</b>	Units: <b>µg/Kg</b>	Prep Date:	RunNo: <b>53213</b>						
Client ID: <b>CCB</b>	Batch ID: <b>23233</b>	TestNo: <b>SW 6020B</b>	<b>SW3050B</b>	Analysis Date: <b>3/19/2024</b>	SeqNo: <b>687969</b>						
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	25.0									

**Qualifiers:** B Analyte detected in the associated Method Blank      H Holding times for preparation or analysis exceeded      R RPD outside accepted recovery limits  
S Spike Recovery outside accepted recovery limits



Specialty Analytical  
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# Sample Receipt Checklist

Client Name HRK\_ENGINEERING

Work Order Number 2403148

RcptNo: 1

Date and Time Receive 3/13/2024 1:50:30 PM

Received by: Julie Clay

Completed by

Reviewed by:

Completed Date: 3/13/2024 1:51:23 PM

Reviewed Date: 3/13/2024 4:02:38 PM

Carrier name: Client

- Chain of custody present? Yes  No
- Chain of custody signed when relinquished and received? Yes  No
- Chain of custody agrees with sample labels? Yes  No  Not Present
- Are matrices correctly identified on Chain of custody? Yes  No
- Is it clear what analyses were requested? Yes  No
- Custody seals intact on sample bottles? Yes  No  Not Present
- Samples in proper container/bottle? Yes  No
- Were correct preservatives used and noted? Yes  No  NA
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- Were container labels complete (ID, Pres, Date)? Yes  No
- All samples received within holding time? Yes  No
- Was an attempt made to cool the samples? Yes  No  NA
- All samples received at a temp. of > 0° C to 6.0° C? Yes  No  NA
- Response when temperature is outside of range: Not required
- Preservative added to bottles:
- Sample Temp. taken and recorded upon receipt? Yes  No  To 16.3 °C
- Water - Were bubbles absent in VOC vials? Yes  No  No Vials
- Water - Was there Chlorine Present? Yes  No  NA
- Water - pH acceptable upon receipt? Yes  No  NA
- Are Samples considered acceptable? Yes  No
- Custody Seals present? Yes  No
- Traffic Report or Packing Lists present? Yes  No
- Airbill or Sticker? Air Bill  Sticker  Not Present
- Airbill No:
- Sample Tags Present? Yes  No
- Sample Tags Listed on COC? Yes  No
- Tag Numbers:
- Sample Condition? Intact  Broken  Leaking

Case Number:

SDG:

SAS:

Adjusted? \_\_\_\_\_ Checked by \_\_\_\_\_

Any No and/or NA (not applicable) response must be detailed in the comments section be





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## Sample Receipt Checklist

---

Client Contacted?  Yes  No  NA Person Contacted: \_\_\_\_\_ Comments: \_\_\_\_\_  
Contact Mode:  Phone:  Fax:  Email:  In Person: \_\_\_\_\_  
Client Instructions: \_\_\_\_\_  
Date Contacted: \_\_\_\_\_ Contacted By: \_\_\_\_\_  
Regarding: \_\_\_\_\_  
CorrectiveAction: \_\_\_\_\_

---



9011 SE Jannsen Rd  
Clackamas, OR 97015  
Phone: 503-607-1331  
Fax: 503-607-1336

### Chain of Custody Record

Date: \_\_\_\_\_ Page: \_\_\_\_\_ of: \_\_\_\_\_  
 Laboratory Project No (internal): **2403148**  
 Project Name: **Cherry Hills Estate**  
 Temperature on Receipt: **16.3 °C**  
 Project No: **Z1-002** PO No: \_\_\_\_\_  
 Cooling: **Cooler** Shipped Via: **Client**  
 Collected by: **Alexander Pedroza**  
 Custody Seal: **Y**  Intact / Broken  Cooler / Bottle  
 State Collected: **OR**  WA  OTHER  
 Report To (PM): **Alexander Pedroza**  
 MDL TIER IV EDD  
 PM Email: **apedroza@hrkus.com**  
 Sample Disposal:  Return to client  Disposal by lab (after 60 days)

Client: **HRK Engineering**  
 Address: **489 N 3<sup>rd</sup> Street - Suite 201**  
 City, State, Zip: **Hood River, OR, 97031**  
 Telephone: **541-806-3629**  
 AP Email: **apedroza@hrkus.com**

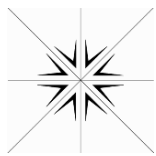
Sample Name	Sample Date	Sample Time	Sample Matrix*	# of Containers	Requested Tests												Comments			
					As some lead															
1 Sample 1	3/12/24	10:30	S	1	X	X														
2 Sample 2	3/12/24	10:30	S	1	X	X														
3 Sample 3	3/12/24	10:30	S	1	X	X														
4 Sample 4	3/12/24	10:30	S	1	X	X														
5 Sample 5	3/12/24	10:30	S	1	X	X														
6																				
7																				
8																				
9																				
10																				

\* Matrix: A=Air, AQ=Aqueous, L=Liquid, O=Oil, P=Product, S=Soil, SD=Sediment, SL=Solid, W=Water, DW=Drinking Water, GW=Ground Water, SW=Storm Water, WW=Waste Water, M=Miscellaneous

Turn-around Time: Standard: **X** 3 Day: \_\_\_\_\_ 2 Day: \_\_\_\_\_ Next Day: \_\_\_\_\_ Same Day: \_\_\_\_\_

Expedited turn-around requests should be coordinated in advance

Relinquished x	Date/Time <b>3/13/24</b>	Received x	Date/Time <b>3/13/24 1343</b>
Relinquished x	Date/Time	Received x	Date/Time
Relinquished x	Date/Time	Received x	Date/Time



## Definition Only

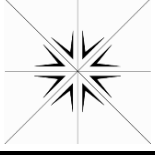
WO#: 2403148  
Date: 3/20/2024

---

### Definitions:

#### KEY TO FLAGS

- A: This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was qualified against gasoline calibration standards.
- A1: This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was qualified against diesel calibration standards.
- A2: This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was qualified against lube oil calibration standards.
- A3: The results was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type.
- A4: The product appears to be aged or degraded.
- B: The blank exhibited a positive result greater than the reporting limit for this compound.
- BC: Sample concentration is >10x positive result in blank. Data is considered acceptable.
- CN: See Case Narrative.
- E: Result exceeds the calibration range for this compound. The result should be considered an estimate.
- F: The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library.
- FS: Follow-up testing is suggested.
- G: Result may be biased high due to biogenic interferences. Clean up is recommended.
- H: Sample was analyzed outside recommended holding time.
- HT: At client's request, samples was analyzed outside of recommended holding time.
- HP: Sample was analyzed outside recommended holding time due to VOA having pH >2.
-



## Definition Only

WO#: 2403148

Date: 3/20/2024

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### Definitions:

J: The results for this analyte is between the MDL and the PQL and should be considered an estimated concentration.

K: Diesel result is biased high due to amount of Oil contained in the sample.

L: Diesel result is biased high due to amount of Gasoline contained in the sample.

M: Oil result is biased high due to amount of Diesel contained in the sample.

N: Gasoline result is biased high due to amount of Diesel contained in the sample.

MC: Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant.

MI: Result is outside control limits due to matrix interference.

NH: Sample matrix is non-homogeneous

MSA: Value determined by Method of Standard Addition.

O: Laboratory Control Standard (LCS) exceeded laboratory control limits but meets CCV criteria. Data meets EPA requirements.

Q: Detection levels elevated due to sample matrix.

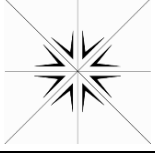
R: RPD control limits were exceeded

RF: Duplicate failed due to result being at or near the method-reporting limit.

RP: Matrix spike values exceed established QC limits; post digestion spike is in control.

S: Recovery is outside control limits.

SC: CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements.



*Specialty Analytical*  
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Clackamas, Oregon 97015  
TEL: 503-607-1331 FAX: 503-607-1336  
Website: [www.specialtyanalytical.com](http://www.specialtyanalytical.com)

## **Definition Only**

WO#: **2403148**

Date: **3/20/2024**

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### **Definitions:**

SL: LCS exceeded recovery control limits, but associated MS/MSD passing. Data meets EPA requirements.

SV: CCV exceeded low recovery control limits. ND as reported evaluated using EPA method 8260D section 11.4.3.2

TA: Sample treated with ascorbic acid for the removal of thiocyanates.

TS: Sample treated with Sodium Sulfite for the removal of chlorine.

# EXAMPLE OF CCRs TO BE CREATED AND RECORDED FOR THE PROPOSED CHERRY HILL ESTATES NEIGHBORHOOD

## DECLARATION OF COVENANTS, CONDITIONS, AND RESTRICTIONS FOR LOG CABIN SUBDIVISION

THIS DECLARATION OF COVENANTS, CONDITIONS, AND RESTRICTIONS FOR LOG CABIN SUBDIVISION, a Planned Unit Development, ("Declaration") is made by LEGACY DEVELOPMENT GROUP, INC., an Oregon corporation ("Declarant").

### RECITALS

Declarant is the owner of all the real property and improvements thereon located in the City and County of Hood River, Oregon, described as follows (the "Property"):

Lots 1-4, inclusive, and Tract A as shown on the attached Plat Map of LOG CABIN SUBDIVISION, a Planned Unit Development, hereinafter "LOG CABIN PUD," filed for record on JULY 16<sup>th</sup>, 2019, Recording No. 2019 2177, in the plat records of Hood River County, Oregon, and described more particularly on attached Exhibit "A."

Declarant desires to impose these mutually beneficial covenants, conditions, restrictions, and easements on the Property, under a comprehensive general plan of improvement and development for the benefit of all Lots and Common Area in LOG CABIN PUD.

Declarant has deemed it desirable for the efficient preservation of the values and amenities in LOG CABIN PUD to create an Architectural and Governance Committee, to which will be delegated and assigned the powers and authority to maintain and administer Log Cabin Lane, Tract A, and all other private common areas and improvements for the benefit of the Owners, and to administer and enforce the covenants, conditions, and restrictions of this Declaration, and to collect and disburse the assessments and charges hereinafter created.

NOW THEREFORE, Declarant declares that the Property shall be held, transferred, sold, conveyed, and occupied subject to the following covenants, conditions, restrictions, easements, charges, and assessments, which shall run with the land, which shall be binding on all parties having or acquiring any right, title, or interest in the Property or any part thereof, and which shall inure to the benefit of each Owner.

### ARTICLE 1 DEFINITIONS

1.1 *Architectural Review and Governance Committee* or "ARC" shall refer to that committee constituted and acting pursuant to Article 6 of this Declaration.

**1.2** *Common Area* shall mean and refer to Tract A shown on the recorded Plat of the Property, including any improvements located thereon, which areas and improvements are intended to be devoted to the common use and enjoyment of the owners. Tract "A" consists of open space, private drainage and stormwater facilities as well as a private road, and is a joint private and public pedestrian access and utility easement. Log Cabin Lane is a private road serving LOG CABIN PUD as well as Parcels 1 and 2 of Partition Plat 2016-11P (CS#2016-059). Tract A including Log Cabin Lane shall be maintained by the Owners of Lots 1-4, with the costs of such maintenance assessed equally to Lots 1-4 and the Owners of such Lots.

**1.3** *Commonly Maintained Property* shall mean the drainage and private stormwater facilities (including associated catch basins and fencing) as well as open space vegetation on Tract A consisting of the trees, shrubs and groundcover areas identified on the Planting Plan attached hereto as Exhibit "B," which have been preserved or installed by Declarant, and which shall be irrigated and maintained by the Owners of Lots 1-4, with the costs of such irrigation and maintenance shared equally by Lots 1-4.

**1.4** *Declaration* shall mean the covenants, conditions, restrictions, and all other provisions set forth in this Declaration.

**1.5** *Declarant* shall mean and refer to Legacy Development Group, Inc., an Oregon corporation, and its successors or assigns, or any successor or assign to all or the remainder of its interest in the Property.

**1.6** *General Plan of Development* shall mean Declarant's general plan of development of the Property, as approved by appropriate governmental agencies, as may be amended from time to time.

**1.7** *Home* shall mean and refer to any portion of a structure situated on a Lot and designed and intended for use and occupancy as a residence by a single family or household.

**1.8** *Lot* shall mean and refer to each and any of Lots 1-4; provided, however, that *Lot* shall not include Tract A.

**1.9** *Occupant* shall mean and refer to the occupant of a Home, whether such person is an Owner, a lessee, or any other person authorized by the Owner to occupy the Home.

**1.10** *Owner* shall mean and refer to the record owner, whether one or more persons or entities, of the fee simple title to any Lot or a purchaser in possession of a Lot under a land sale contract. The foregoing does not include persons or entities who hold an interest in any Lot merely as security for the performance of an obligation.

**1.11** *Plat* shall mean and refer to the Plat of Log Cabin Subdivision recorded in the Plat Records of Hood River County, Oregon, under Recording No. 2019 2177, on July 16<sup>th</sup>, 2019.

**1.12** *Property* shall have the meaning attributed to such term in the Recitals of this Declaration.

**1.13** *Tract* shall mean and refer to Tract A as shown on the Plat.

## ARTICLE 2

### PROPERTY SUBJECT TO THIS DECLARATION

**2.1** **Development.** The development of LOG CABIN PUD shall consist of the Property, which shall be held, transferred, sold, conveyed, and occupied subject to this Declaration.

**2.2 No Right to Annex Additional Property or to Withdraw Property.** Declarant reserves no right to annex additional property to or to withdraw property from LOG CABIN PUD.

**ARTICLE 3  
OWNERSHIP AND EASEMENTS**

**3.1 Nonseverability.** The interest of each Owner in the use and benefit of the Common Area shall be appurtenant to the Lot owned by the Owner. No Lot shall be conveyed by the Owner separately from the interest in the Common Area. Any conveyance of any Lot shall automatically transfer the right to use the Common Area without the necessity of express reference in the instrument of conveyance. There shall be no judicial partition of the Common Area. Each Owner, whether by deed, gift, devise, or operation of law, for such Owner's benefit and for the benefit of all other Owners, specifically waives and abandons all rights, interests, and causes of action for judicial partition of any interest in the Common Area and agrees that no action for judicial partition shall be instituted, prosecuted, or reduced to judgment. Ownership interests in the Common Area and Lots are subject to the easements granted and reserved in this Declaration. Each of the easements granted or reserved herein shall be deemed to be established upon the recordation of this Declaration and shall thenceforth be deemed to be covenants running with the land for the use and benefit of the Owners and their Lots and shall be superior to all other encumbrances applied against or in favor of any portion of LOG CABIN PUD.

**3.2 Ownership of Lots.** Title to each Lot in LOG CABIN PUD shall be conveyed in fee to an Owner. If more than one person and/or entity owns an undivided interest in the same Lot, such persons and/or entities shall constitute one Owner.

**3.3 Easements.** Individual deeds to Lots may, but shall not be required to, set forth the easements specified in this Article.

**3.4.1 Easements on Plat.** The Common Area and Lots are subject to the easements and rights-of-way shown on the Plat.

**3.4.2 Easements for Common Area.** Every Owner shall have a nonexclusive right and easement of use and enjoyment in and to the Common Area, which shall be appurtenant to and shall pass with the title to every Lot. Tract A is open space and includes public and private access and utility easements, including drainage and stormwater facilities, as shown on the Plat. Log Cabin Lane is a private road serving Lots 1-4 of the LOG CABIN PUD, as well as Parcels 1 and 2 of Partition Plat 2016-11P (CS#2016-059).

**3.4.3 Easements Reserved by Declarant.** As long as Declarant owns any Lot, Declarant reserves an easement over, under, and across the Common Area in order to carry out sales activities necessary or convenient for the sale of Lots. Declarant, for itself and its successors and assigns, hereby retains a right and easement of ingress and egress to, from, over, in, upon, under, and across the Common Area and the right to store materials thereon and to make such other use thereof as may be reasonably necessary or incident to the construction of the improvements on the Property in such a way as not to interfere unreasonably with the occupancy, use, enjoyment, or access to an Owner's Lot by such Owner or such Owner's family, tenants, employees, guests, or invitees.

**3.4.4 Additional Utility and Drainage Easements, Public Walkway Easement.** Notwithstanding anything expressed or implied to the contrary, this Declaration shall be subject to all easements granted by Declarant for the installation and maintenance of utilities and



drainage facilities necessary for the development of LOG CABIN PUD as shown on the Plat. Tract A includes a 15' public pedestrian access and public utility easement, and variable width public storm sewer easement as shown on the Plat. No structure, planting, or other material that may damage or interfere with the installation or maintenance of utilities, that may change the direction of flow of drainage channels in the easements, or that may obstruct or retard the flow of water through drainage channels in the easement areas shall be placed or permitted to remain within any easement area.

#### **ARTICLE 4 LOTS AND HOMES**

**4.1 Single Family Residential Use.** Lots shall only be used for single family residential purposes which may include accessory dwelling units (ADU's) subject to conformance with applicable standards. Except with the ARC's consent, no trade, craft, business, profession, commercial, or similar activity of any kind shall be conducted on any Lot, and no goods, equipment, materials, or supplies used in connection with any trade, service, or business shall be kept or stored on any Lot. Nothing in this Section 4.1 shall be deemed to prohibit (a) activities relating to the sale of residences, (b) the right of Declarant or any contractor or homebuilder to construct residences on any Lot, to store construction materials and equipment on such Lots in the normal course of construction, and to use any residence as a sales office or model home for purposes of sales in LOG CABIN PUD and (c) the right of the Owner of a Lot to maintain such Owner's personal business or professional library, keep such Owner's personal business or professional records or accounts, handle such Owner's personal business or professional telephone calls, or confer with business or professional associates, clients, or customers in such Owner's residence. The ARC shall not approve commercial activities otherwise prohibited by this Section 4.1 unless the ARC determines that only normal residential activities would be observable outside of the residence and that the activities would not be in violation of applicable local government ordinances.

**4.2 Minimum Square Feet.** No residence on any Lot shall have a minimum area of less than 1,200 square feet.

**4.3 Garages.** Each residence shall have an attached garage, capable of housing at least two vehicles.

**4.4 Maintenance of Lots and Homes.** Each Owner shall maintain such Owner's Lot and all improvements and landscaping thereon in a clean and attractive condition, in good repair, and in such fashion as not to create a fire hazard. Such maintenance shall include, without limitation, maintenance of windows, doors, garage doors, walks, patios, chimneys, and other exterior improvements and glass surfaces. All repainting or restaining and exterior remodeling shall be subject to prior review and approval by the ARC. Each Owner shall repair damage caused to such Owner's Lot or improvements located thereon by fire, flood, storm, earthquake, riot, vandalism, or other causes within a reasonable period.

**4.5 Rental of Homes.** An Owner may rent or lease such Owner's Home or a portion thereof, provided that the following conditions are met:

**4.5.1 Written Rental Agreements Required.** The Owner and the tenant enter into a written rental or lease agreement specifying that (i) the tenant shall be subject to all provisions of

the Declaration, and (ii) a failure to comply with any provision of the Declaration shall constitute a default under the rental or lease agreement;

**4.5.2 Minimum Rental Period.** The period of the rental or lease is not less than 30 days;

**4.5.3 Tenant Must be Given Documents.** The Owner gives each tenant a copy of the Declaration.

**4.6 Animals.** No animals, livestock, or poultry of any kind, other than a reasonable number of household pets that are not kept, bred, or raised for commercial purposes and that are reasonably controlled so as not to be a nuisance, shall be raised, bred, kept, or permitted within any Lot. Owners whose pets cause any inconvenience or unpleasantness to other Owners shall take all steps reasonably necessary to prevent recurrence thereof and Owners whose pets damage other Owners' Lots or personal property shall reimburse such other Owners for reasonable costs actually incurred by such other Owners in repairing such damage. An Owner shall ensure that such Owner's dog is leashed when on the Property and outside of such Owner's Lot.

**4.7 Nuisance.** No noxious, harmful, or offensive activities shall be carried out on any Lot or Common Area. Nor shall anything be done or placed on any Lot or Common Area that interferes with or jeopardizes the enjoyment of, or that is a source of annoyance to, the Owner or other Occupants.

**4.8 Parking.** Boats, trailers, commercial vehicles, mobile homes, campers, and other recreational vehicles or equipment, regardless of weight, shall not be parked on any part of the Common Area, Log Cabin Lane, or on any streets on or adjacent to the Property at any time or for any reason, including loading or unloading, and may not be parked on any Lot for more than six hours or such other period as may be permitted by the ARC. The garage on each Lot shall be used to park the occupant's primary passenger vehicle.

**4.9 Vehicles in Disrepair.** No Owner shall permit any vehicle that is in a state of disrepair or that is not currently licensed to be abandoned or to remain parked on the Common Area, Log Cabin Lane or on any street on or adjacent to the Property at any time and may not permit them on a Lot for a period in excess of 48 hours.

**4.10 Signs.** No signs shall be erected or maintained on any Lot except that not more than one "For Sale" or "For Rent" sign placed by the Owner or by a licensed real estate agent, not exceeding 24 inches high and 36 inches long, may be temporarily displayed on any Lot. The restrictions contained in this Section 4.10 shall not prohibit the temporary placement of "political" signs on any Lot by the Owner or Occupant. Provided, however, political signs shall be removed within three days after the election day pertaining to the subject of the sign. Real estate signs shall be removed within three days after the sale closing date.

**4.11 Rubbish and Trash.** No Lot or part of the Common Area shall be used as a dumping ground for trash or rubbish of any kind. All garbage and other waste shall be kept in appropriate containers for proper disposal and out of public view. Yard rakings, dirt, and other material resulting from landscaping work shall not be dumped onto streets, the Common Area, or any other Lots.

**4.12 Fences and Hedges.** No fences or boundary hedges shall be installed or replaced without prior written approval of the ARC. No fence shall be erected or otherwise located nearer to any street than the distance of the minimum building setback provided for by the applicable

section of the Hood River Municipal Code. No fence shall have a finished height greater than six feet. The existing rock wall located along the PUD's southern boundary shall not be removed, and shall be maintained in its present, naturally occurring condition to the greatest extent possible. In the event the rock wall requires maintenance or repair, it shall be at the equal expense of the Owners of Lots 1-4.

**4.13 Service Facilities.** Service facilities (garbage containers, fuel tanks, clotheslines, etc.) shall be screened so that such facilities are not visible at any time from the street or a neighboring property. All telephone, electrical, cable television, and other utility installations shall be placed underground in conformance with applicable law.

**4.14 Antennas and Satellite Dishes.** Except as otherwise provided by law or this section, no exterior antennas, satellite dishes, microwave, aerial, tower, or other devices for the transmission or reception of television, radio, or other forms of sound or electromagnetic radiation shall be erected, constructed, or placed on any Lot. With prior written consent from the ARC, exterior satellite dishes or antennas with a surface diameter of one meter or less and antennas designed to receive television broadcast signals only may be placed on any Lot if they are not visible from the street and are screened from neighboring Lots. The ARC may adopt reasonable rules and regulations governing the installation, safety, placement, and screening of such antennas, satellite dishes, and other transmission devices. Such rules shall not unreasonably delay or increase the cost of installation, maintenance, or use or preclude reception of a signal of acceptable quality. (The ARC, in its sole discretion, may determine what constitutes a signal of acceptable quality.) Such rules may prohibit installation of exterior satellite dishes or antennas if signals of acceptable quality can be received by placing antennas inside a Home without causing an unreasonable delay or cost increase.

**4.15 Exterior Lighting or Noise-Making Devices.** Except with the consent of the ARC, no noise-making devices, other than security and fire alarms, shall be installed or maintained on any Lot. All exterior lighting shall be hooded, shielded, and pointed downward.

**4.16 Grades, Slopes, and Drainage.** There shall be no interference with the established drainage patterns or systems over or through any Lot so as to affect any other Lot or Common Area or any real property outside LOG CABIN PUD unless adequate alternative provision is made for proper drainage and is approved by the ARC. The term *established drainage* shall mean the drainage swales, conduits, inlets, and outlets designed and constructed pursuant to the Stormwater Management Plan, on file with the ARC.

**4.17 Tree-Cutting Restrictions.** No trees identified on the Planting Plan attached hereto as Exhibit "B" shall be removed from Tract A, nor from the Planting Strips for Street Trees on Rocky Road, except in the event they should become safety hazards, as determined by a qualified arborist, or interfere with public utilities as determined by the City of Hood River. No other tree the diameter of which is six inches or more may be removed from any Lot without the prior approval of the ARC unless it is diseased or poses an immediate danger to persons or property and a qualified arborist determines that there is no remedy available to retain said tree.

**4.18 Landscaping.** All landscaping on any Lot shall be maintained and cared for by the Owner of such Lot. Weeds and diseased or dead lawn, tree, groundcover, or shrubs shall be removed and replaced. Lawns shall be neatly mowed and trees and shrubs shall be neatly trimmed. All landscaping shall be irrigated in a horticulturally proper manner, subject to water

use restrictions or moratoria by government bodies or agencies.

**4.19 Damage or Destruction to Home and/or Lot.** If all or any portion of a Lot or Home is damaged by fire or other casualty, the Owner shall either (a) restore the damaged improvements or (b) remove all damaged improvements, including foundations, and leave the Lot in a clean and safe condition. Any restoration proceeding under (a) above must be performed so that the improvements are in substantially the same condition in which they existed before the damage, unless the owner complies with the provisions of Article 6. The Owner must commence such work within 60 days after the damage occurs and must complete the work within nine months thereafter.

**4.20 Ordinances and Regulations.** The standards and restrictions set forth in this Article 4 shall be the minimum required. To the extent that local governmental ordinances and regulations are more restrictive or provide for a higher or different standard, such local governmental ordinances and regulations shall prevail.

**4.21 Declarant Exemptions.** Declarant shall be exempt from the application of Section 4.10.

## **ARTICLE 5 COMMON AREA, COMMONLY MAINTAINED PROPERTY, ROAD MAINTENANCE**

**5.1 Use of Common Areas.** There shall be no obstruction of any part of the Common Area or Commonly Maintained Property. Nothing shall be stored or kept in the Common Area or Commonly Maintained Property. The Common Area consists solely of Tract A. The Commonly Maintained Property consists of the private drainage and stormwater facilities as well as open space vegetation located on Tract A, identified on the attached Planting Plan (Exhibit "B").

**5.2 Maintenance of Common Area, Commonly Maintained Property.** The Owners shall be responsible for maintenance, repair, replacement, and upkeep of the Common Area, at the equal expense of the Owners of Lots 1-4. The Owners of Lots 1-4 shall be responsible for irrigation and maintenance of the Commonly Maintained Property, at the equal expense of Lots 1-4. The water meter located on Lot 1 will reflect water usage for irrigating Tract A. The Owner of Lot 1 shall remit the water bill for the irrigation of Tract A to the ARC for assessment and pro-rata reimbursement pursuant to Section 6.10.

**5.3 Road Maintenance.** Log Cabin Lane is a variable-width private right of way and loop driveway serving Lots 1-4, as depicted on the Plat, to be used in common by all Owners of Property within the subdivision. All costs for repairs, maintenance, snow removal, grading, rocking, sign and post repair or replacement, drainage cleaning/clearing, and right-of-way clearing/brushing/spraying of Log Cabin Lane shall be shared equally by the Owners of Lots 1-4. Repairs and maintenance shall be made at the discretion of the ARC. The Owners shall at all times use said roadway in a reasonable manner so as to not interfere with the use and enjoyment thereof by other Owners or their invitees.

**5.4 Street Trees.** Declarant has planted 5, 2" minimum caliper deciduous trees within the Planting Strips abutting Rocky Road, North of the PUD boundary, and bonded for the cost of replanting and maintaining the Street Trees for a period of two years after planting. These

Street Trees shall not be removed, and in the event that they are damaged or destroyed, Declarant shall be immediately notified for purposes of replanting. Reasonable costs incurred in connection with effecting such replanting shall become a special assessment on the Lot and against the Owner who caused or is responsible for the damaged or destroyed tree(s).

**5.5 Stormwater Facility.** Declarant constructed a privately-owned and maintained stormwater facility in Tract A. The Owners of Lots 1-4 are responsible for maintenance, irrigation and repair of this stormwater facility in accordance with the Stormwater Facility Operations and Maintenance Manual attached hereto as Exhibit "C." All costs for maintenance, irrigation and repairs shall be shared equally by the Owners of Lots 1-4. Declarant and Owners give the City and its authorized agents and employees the right, but not the obligation, of immediate entry to maintain access to the private stormwater facility to inspect, repair, or maintain the private stormwater facility in the event the person(s) responsible (i.e. owner/developer/their successors or assigns) fail to operate, maintain, and repair the private stormwater facility in a timely manner, as required. If upon inspection by the City, the private stormwater facility is not being properly operated, maintained, or repaired, the City shall make the necessary repairs and all expenses for those repairs or maintenance shall be paid by the person(s) responsible. The City is under no obligation to maintain or repair private stormwater facilities.

**5.6 Condemnation of Common Area.** If all or any portion of the Common Area is taken for any public or quasi-public use under any statute, by right of eminent domain, or by purchase in lieu of eminent domain, the Declarant shall receive and expend the entire award in a manner that, in the Declarant's discretion, is in the best interest of the Property and the Owners. The Declarant shall represent the interest of all Owners in any negotiations, suit, action, or settlement in connection with such matters.

**5.7 Damage or Destruction of Common Area.** If all or any portion of the Common Area is damaged or destroyed by an Owner or any of Owner's guests, occupants, tenants, licensees, agents, or members of Owner's family in a manner that would subject such Owner to liability for such damage under Oregon law, such Owner hereby authorizes the ARC to repair such damage. The ARC shall repair the damage and restore the area in a workmanlike manner as originally constituted or as may be modified or altered subsequently by the ARC in the discretion of the ARC. Reasonable costs incurred in connection with effecting such repairs shall become a special assessment on the Lot and against the Owner who caused or is responsible for such damage.

## ARTICLE 6

### ARCHITECTURAL REVIEW AND GOVERNANCE COMMITTEE

**6.1 Architectural Review.** No improvement shall be commenced, erected, placed, or altered on any Lot until the construction plans and specifications showing the nature, shape, heights, materials, colors, and proposed location of the improvement have been submitted to and approved in writing by the ARC. This Article's purpose is to assure quality of workmanship and materials and harmony between exterior design and the existing improvements and landscaping and as to location with respect to topography and finished grade elevations. The ARC shall not be responsible for determining compliance with structural and building codes, zoning codes, or other governmental regulations, all of which are the applicant's responsibility. The procedure and specific requirements for ARC approval or consent may be set forth in design guidelines and standards adopted from time to time by the ARC. The provisions of this Article shall apply in all instances in which this Declaration requires the ARC's consent.

**6.2 ARC Decision.** The ARC shall use all reasonable efforts to render its decision on an application for approval of the design and construction of an improvement or any other proposal submitted to it for approval or consent within 15 business days after its receipt of a complete written applications together with all materials required with respect to such application. If the ARC fails to render approval, conditional approval or disapproval of such applications within 30 business days after receipt of a complete application or request an extension, the application shall be deemed approved. The ARC shall be entitled to request one or more extensions of time, not to exceed 45 business days. In the event of such extension requests, if the ARC does not render a decision within 15 days after the expiration of the extension(s), the application shall be deemed approved. Provided, however, the applicant may agree to further extensions to allow the applicant to complete or supplement the application.

**6.3 ARC Discretion.** The ARC, at its sole discretion, may withhold consent to any proposed design, improvement or proposal submitted to it if the ARC finds the proposal would be inappropriate for the particular Lot or incompatible with the design standards that the ARC intends for the subdivision. Consideration of siting, shape, size, color, design, height, solar access, impairment of the view from other Lots within the subdivision, disturbance of existing terrain and vegetation, effect on enjoyment of other Lots, and other factors which the ARC reasonably believes to be relevant, may be taken into account in determining whether or not to approve, conditionally approve, or deny a proposal.

**6.4 Appointment of Architectural and Governance Committee; Turnover.** Until the earlier to occur of (a) six months following the conveyance of the last Lot owned by Declarant to a third party or (b) notification by Declarant to the Owners of Declarant's determination to relinquish control of the ARC (the "Turnover Date"), the Architectural and Governance Committee shall consist of one to three persons (who need not be Owners), appointed from time to time by Declarant. Thereafter, the ARC shall consist of three members elected by the Owners in accordance with section 6.8. Prior to the Turnover Date, Declarant shall have the right to remove or replace any member of the ARC at any time.

**6.5 Election by Owners.**

**6.5.1** The first meeting of Owners to elect members of the ARC shall occur not less than 30 days after the Turnover Date. At such meeting, the Owners shall elect three Owners to serve as members of the ARC. At such time, the members of the ARC appointed by Declarant shall resign.

**6.5.2** Subsequent meetings of the Owners shall occur on an annual basis during the month in which the initial meeting of Owners occurred, unless another annual date is agreed upon by the ARC. The purpose of the meetings shall be to determine annual repair and maintenance needs of Common Areas and Commonly Maintained Improvements, approve associated contracts including stormwater facilities inspection and maintenance, landscaping and snow removal, and to authorize assessments for the costs, in addition to any other business that may come before the ARC. The ARC shall give at least seven calendar days' notice of each such annual meeting. All meetings of Owners shall take place at a location in Hood River County, Oregon, specified in the notice. Notice of any meeting may be waived by any Owner at any time. No Owner who is present at a meeting may object to the adequacy of the notice given.

**6.5.3** An Owner may give proxy to any other Owner, so long as the proxy is in writing and signed and dated by such Owner. A proxy shall expire on the earlier to occur of (i) 11 months after the date of the proxy, or (ii) the date of sale of such Owner's Lot by such Owner. There shall be no quorum requirements with respect to meetings of the Owners. Each owner shall have one vote for each Lot owned by such Owner. If there is more than one Owner of any Lot, such owners together shall be considered a single Owner with respect to such Lot. Voting for members of the ARC shall be conducted on an at-large basis.

**6.5.4** Except as provided in section 6.7, all members of the ARC shall serve two-year terms. Any member may serve more than one term. In the event a member dies, resigns, or ceases to be an Owner of a Lot, the resulting vacancy shall be filled by designation of the ARC. The member so selected shall serve the remainder of the replaced member's term.

**6.6 Majority Action.** A majority of the members of the ARC shall have the power to act on behalf of the ARC, without the necessity of a meeting, provided that all members of the ARC have been delivered prior notice of the proposed action. The ARC may render its decision only by written instrument setting forth the action taken by its members consenting thereto.

**6.7 Nonwaiver.** Consent by the ARC to any matter proposed to it or within its jurisdiction shall not be deemed to constitute precedent or waiver impairing its right to withhold approval as to any similar matter thereafter proposed or submitted to it for consent.

**6.8 Effective Period of Consent.** The ARC's consent to any proposal shall automatically be revoked one year after issuance unless construction of the project has been commenced or the Owner has applied for and received an extension of time from the ARC.

**6.9 Liability.** Neither Declarant, the ARC nor any member thereof, shall be liable to anyone submitting plans to them for approval or to any Owner or Occupant by reason of mistake in judgment, negligence, or disapproval or failure to approve plans. Every person who submits plans to the ARC for approval agrees by submission of such plans and every Owner by acquiring title to their Lot or interest therein, agrees that they will not bring any action or suit against Declarant, the ARC, or any member thereof to recover damages of any nature. The ARC's review and approval or disapproval of plans and specifications shall not be relied upon by the applicant as an indication of sufficiency, structural soundness or in any other way, such review having been made solely to assure that the improvements contemplated would be aesthetically compatible with the existing and planned residences in the subdivision. The scope of the ARC's review is not intended to include any review or analysis of structural, geophysical, engineering, or other similar considerations nor of any compliance with applicable building codes, rules, laws and ordinances

**6.10 Collection of Costs for Maintenance, Repair and Insurance of Common Areas, Commonly Maintained Property and Streets, and Tract A Taxes.** The Declarant hereby covenants for all of the Property in LOG CABIN PUD, that each Owner and each vendee of any Lot, whether or not it shall be so expressed in any deed or other conveyance or agreement for conveyance, is deemed to covenant and agree to pay to the ARC (1) regular annual or periodic assessments or charges as established by the ARC for maintenance, repair and property and liability insurance for all Common Areas, Commonly Maintained Property, Log Cabin Lane, including snow removal, and a pro-rata share of the ad valorem real property taxes levied by the County for Tract A; and (2) special assessments for capital improvements, such assessments to be fixed, established, and collected from time to time as hereinafter provided. The regular and special assessments, together with such interest thereon and costs of

collection thereof, as hereinafter provided, shall be a charge on the Lot and shall be a continuing lien upon the property against which each such assessment is made. Each such assessment, together with interest, costs, and reasonable attorneys' fees, shall also be the personal obligation of the person or entity who was the Owner of such property at the time such assessment became due. The obligation shall remain a lien upon the property until paid or foreclosed, but shall not be a personal obligation of successors in title unless expressly assumed by them.

**ARTICLE 7**  
**ENFORCEMENT, AMENDMENT, GENERAL PROVISIONS**

**7.1 Enforcement; Attorney Fees.** These covenants, conditions and restrictions may be enforced by the ARC, the City of Hood River at its sole discretion, or the Owner of any Lot within the subdivision by any proceeding at law or in equity. Failure by the ARC or any Owner to enforce any covenant, condition, or restriction herein contained shall in no event be deemed a waiver of their right to do so thereafter. In the event any suit or action is instituted to enforce these covenants, conditions and restrictions, or any of them, the prevailing party in such suit or action shall recover its costs, disbursements, and reasonable attorney fees incurred, therein, at trial or on any appeal therefrom.

**7.2 Severability.** Invalidation of any one of these covenants, conditions, or restrictions by judgment or court order shall not affect the other provisions hereof and the same shall remain in full force and effect.

**7.3 Duration.** These covenants, conditions and restrictions shall run with the land and shall continue to remain in full force and effect at all times with respect to the Property, and each part thereof, now or hereafter made subject thereto (subject, however, to the right amend as provided in Section 7.4) in perpetuity.

**7.4 Amendment.** This Declaration or any provision hereof, or any covenant, condition or restriction contained herein, may be modified or amended, as to the whole of the Property or any part thereof with the written consent of the Owners of seventy-five percent (75%) of the Lots subject to this Declaration, provided such amendment shall not become effective until recorded in the Official Records of Hood River County, Oregon. Notwithstanding the foregoing, any modification or amendment pertaining to maintenance and repair of the Stormwater Facility addressed in Article 5.5 shall require prior approval of the Hood River City Council.

**7.5 Covenants Run with the Land.** This Declaration shall run with the land and shall be binding upon and inure to the benefit of the Declarant and the Owners of the Property and their respective successors and assigns

**7.6 Joint Owners.** In any case in which two or more persons share the ownership of any Lot, regardless of the form of ownership, the responsibility of such persons to comply with this Declaration shall be a joint and several responsibility and the act or consent of any one or more of such persons shall constitute the act or consent of the entire ownership interest.

**7.7 Lessees and Other Invitees.** Lessees, invitees, contractors, family members, and other persons, excluding the general public, entering Log Cabin Planned Unit Development under rights derived from an Owner shall comply with all of the provisions of this Declaration restricting or regulating the Owner's use, improvement, or enjoyment of such











## Stormwater Operations and Maintenance Plan Log Cabin Subdivision

June 2019

Prepared by : Ken Valentine, PE  
Project Engineer  
Harper Houf Peterson Righellis Inc.  
205 SE Spokane Street, Suite 200  
Portland, OR 97202

### Log Cabin PUD CC&Rs EXHIBIT "C"

#### **Introduction:**

This Operations and Maintenance manual is provided as a guidance for the Log Cabin Subdivision (LCS) home owners to maintain the stormwater Facilities on the site. This manual is considered the minimal effort required for maintenance and additional maintenance items may be required at the discretion of the homeowners and or the City of Hood River for the safety of the residents and proper function of the facilities. The City of Hood River has a right - but not an obligation – to enter into the LCS stormwater easement for needed maintenance or repairs and that any costs incurred by the City during such an event would become the responsibility of the homeowners and that the City would seek reimbursement for these costs. The City will agree to contact the association according to a time duration that best fits the needs of the situation – the contact person should be clearly identified with a list of alternate contacts in the event that the primary contact is not able to reply. This document should be recorded with the Log Cabin Subdivision Declarations of Covenants, conditions and restrictions.

#### **Cost Responsibility:**

All homeowners within the LCS will share the costs for maintaining and operating the stormwater system on the site as stated in the Declarations of Covenants, conditions and restrictions for the Log Cabin subdivision.

#### **Stormwater Management System:**

The LCS stormwater system includes a series of storm pipes, catch basins, manholes, water quality swale and detention facility. The system works by capturing stormwater from the roofs and other impervious surfaces and directing it to a water quality swale and detention pond area. The stormwater daylight to the swale. The stormwater is released from the pond through an outlet control structure fitted with an orifice on a metal plate. The orifice allows stormwater to be released from the site at a rate similar to the pre-developed condition. The stormwater is released into a public storm pipe within Rocky Road.

The onsite stormwater system consists of the following features and appurtenances:

- 3 manholes
- 1 catch basin
- 228 linear feet of 12-inch PVC pipe
- 100 linear feet of 4-inch PVC pipe
- 4 cleanouts
- 100 linear feet of fence
- 100 linear feet of water quality swale
- 4000 square foot detention basin
- Associated landscaping

**Operations and Maintenance Plan:**

The following section describes the minimum requirements for the operation and maintenance of the stormwater facility. The inspector should carry the following sheets and provide comments on the condition and findings. The entire system should be inspected annually and after every large storm event.

**CAUTION! NO ONE SHOULD ENTER MANHOLES OR OTHER CONFINED STRUCTURES DUE TO RISK OF DEATH. SEE THE UNITED STATE DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION STANDARD 1910.**

<p><b>Detention Basin</b></p>
<p><b>Detention basins</b> are constructed ponds with temporary storage for the detention of large storm events. The stormwater is stored and released slowly over a matter of hours.</p>
<p><b>Inspections</b>                  All facility components and vegetation shall be inspected for proper operations and structural stability. These inspections shall occur, at a minimum, quarterly for the first two years from the date of installation, and two times <i>per year thereafter</i>. It is recommended that a visual inspection be made within 48 hours after each major storm event to ensure proper function. The facility owner must keep a log, recording all inspection dates, observations, and maintenance activities. The following items shall be inspected and maintained as stated:                  Date: ____/____/____ Inspector's Name: _____</p>
<p><b>Inlet</b> shall ensure unrestricted stormwater flow to the detention basin.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Inlet pipe shall be kept clear at all times. Sources of sediment and debris shall be identified and corrected.</li> <li><input type="checkbox"/> Determine if pipe is in good condition:</li> <li><input type="checkbox"/> If more than 4 inches of settlement, add fill material and compact soils.</li> <li><input type="checkbox"/> If alignment is faulty, correct alignment.</li> </ul> <p>Inspection Comments: _____</p>
<p><b>Swale</b> shall ensure unrestricted stormwater flow to the detention basin. A minimum 1-foot freeboard shall be maintained.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Sediment exceeding 3 inches in depth, or so thick as to damage or kill vegetation, shall be removed.</li> <li><input type="checkbox"/> Sediment accumulation shall be hand-removed with minimum damage to vegetation using proper erosion control measures.</li> </ul> <p>Inspection Comments: _____</p>

**Embankment, dikes, berms, and side slopes** retain water in the detention basin.

- Slopes shall be stabilized using appropriate erosion control measures when soil is exposed or erosion channels are forming.
- Structural deficiencies shall be corrected upon discovery:
- If cracks exist, repair or replace structure.
- If erosion channels are forming, stabilize surface. Sources of erosion damage shall be identified and controlled.

Inspection Comments: \_\_\_\_\_

**Control devices** (e.g., weirs, baffles, etc.) shall direct and reduce flow velocity. Structural deficiencies shall be corrected upon discovery:

- If cracks exist, repair or replace structure.

Inspection Comments: \_\_\_\_\_

**Overflow structure** conveys flow exceeding detention basin capacity to an approved stormwater receiving system.

- Overflow structure shall be kept clear at all times.
- Orifice shall be kept clean at all times.
- Sources of erosion damage shall be identified and controlled when soil is exposed at the top of overflow structure or erosion channels are forming.
- Rocks or other armoring shall be replaced when only one layer of rock exists.

Inspection Comments: \_\_\_\_\_

**Sediment and debris management** shall prevent loss of detention basin volume caused by sedimentation.

Detention basin shall be cleaned of sediment when 1 foot of sediment accumulates in the pond.

- Gauges located at the opposite ends of the detention basin shall be maintained to monitor sedimentation.
- Gauges shall be checked two times per year.
- Sources of restricted sediment or debris, such as discarded lawn clippings, shall be identified and prevented.
- Debris in quantities sufficient to inhibit operation shall be removed routinely, e.g., no less than quarterly or upon discovery.
- Litter shall be removed upon discovery.

Inspection Comments: \_\_\_\_\_

**Vegetation** shall be healthy and dense enough to provide filtering while protecting underlying soils from erosion. Proper horticultural practices, consistent with the maintenance of a stormwater quality facility, shall be employed to ensure that plants are vigorous and healthy.

- Mulch shall be replenished as needed, but not inhibiting water flow.
- Vegetation, large shrubs, or trees that limit access or interfere with planter operation shall be pruned or removed.
- Fallen leaves and debris from deciduous plant foliage shall be raked and removed.
- Nuisance or prohibited vegetation from the City of Salem Non-Native Invasive Plant list shall be removed when discovered. Invasive vegetation shall be removed immediately upon discovery.
- Dead vegetation shall be removed upon discovery.
- Vegetation shall be replaced within as soon as possible to maintain cover density and control erosion where soils are exposed.

Inspection Comments: \_\_\_\_\_

**Spill prevention** measures shall be exercised when handling substances that can contaminate stormwater.

- Releases of pollutants shall be corrected as soon as identified.

Inspection Comments: \_\_\_\_\_

**Training and/or written guidance information** for operating and maintaining ponds shall be provided to all property owners and tenants. This Facility Maintenance Form can be used to meet this requirement.

Inspection Comments: \_\_\_\_\_

**Access** to the detention basin shall be safe and efficient. Egress and ingress routes shall be maintained to design standards. Roadways shall be maintained to accommodate size and weight of vehicles, if applicable.

- Obstacles preventing maintenance personnel and/or equipment access to the detention basin shall be removed.
- Gravel or ground cover shall be added if erosion has occurred.

Inspection Comments: \_\_\_\_\_

**Nuisance insects and rodents** shall not be harbored in the detention basin. Pest control measures shall be taken when nuisance insects/rodents are found to be present.

- Holes in the ground located in and around the infiltration basin shall be filled.

Inspection Comments: \_\_\_\_\_

**If used at this site, the following will be applicable:**

**Signage** shall clearly convey information.

- Broken or defaced signs shall be replaced or repaired.

**Fences** shall be maintained to preserve their functionality and appearance.

- Collapsed fences shall be restored to an upright position.
- Jagged edges and damaged fences shall be repaired or replaced.

Inspection Comments: \_\_\_\_\_



<b>Conveyance: Pipes</b>
Conveyance (pipes) system shall be routinely inspected and cleaned on a scheduled cycle.
<b>Inspection</b> should consist of cleaning main line as needed to keep pipes free of debris. Manholes and catch basins should be visually inspected annually and cleaned when sediment has reached 12 inches in depth or 50 percent of capacity has been taken. <b>No one should enter manholes without proper training and equipment for entering confined spaces.</b> <input type="checkbox"/> Structural deficiencies shall be corrected upon discovery: <input type="checkbox"/> If cracks exist, repair or replace structure. Date: ___/___/___ Inspector's Name: _____
<b>Access</b> to the conveyance system shall be safe and efficient. Egress and ingress routes shall be maintained to design standards. Roadways shall be maintained to accommodate size and weight of vehicles, if applicable. Obstacles preventing maintenance personnel and/or equipment access to the conveyance system shall be removed. <input type="checkbox"/> Gravel or ground cover shall be added if erosion has occurred. Inspection Comments: _____
<b>Spill prevention</b> measures shall be exercised when handling substances that contaminate stormwater. <input type="checkbox"/> Releases of pollutants shall be corrected as soon as identified. Inspection Comments: _____
<b>Debris and litter</b> shall be removed to prevent clogging. Inspection Comments: _____
<b>Training and/or written guidance information</b> for operating and maintaining closed channel conveyance systems shall be provided to all property owners and tenants. This Facility Maintenance Form can be used to meet this requirement. Inspection Comments: _____

**Fence Maintenance**

The metal fence protecting the stormwater detention facility should be inspected annually for signs of damage including finish, rails and footings. The damage should be immediately repaired with similar materials to the original fence.

Inspection Comments: \_\_\_\_\_  
\_\_\_\_\_

**Additional Inspection Comments:**

\_\_\_\_\_  
\_\_\_\_\_



# CITY OF WHITE SALMON

## CITY HALL

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October 9, 2023

Alex Pedroza, EIT  
489 North 8TH Street – Suite 201  
Hood River, Oregon 97031  
[apedroza@hrkus.com](mailto:apedroza@hrkus.com)

### **RE: Cherry Hill Estates Subdivision – Notice of Incomplete Application**

City staff have completed their completeness review of the Cherry Hills Estates Preliminary Plat application for a proposed 34-lot plat. The following information is needed to make your application complete.

#### **Planning**

1. Please provide an updated title report within the past 30 days to review encumbrances for this property. The title report filed is several years old.
2. Please include a statement from your surveyor confirming steep slope critical areas are presently not on-site.
3. Please indicate whether street lighting will be proposed for this development. If so, demonstrate compliance with lighting requirements prescribed under WSMC Chapter 8.40.
4. Please show the existing 30-foot easement for the City water transmission line on the existing conditions sheet, as reflected in the following Klickitat County Assessor link below:  
<https://imap.klickitatcounty.org/SurveyData/229623a.pdf>  
If this is proposed to be re-located by the applicant, provide the suitable re-location and request (in writing and on proposed plat sheet) for easement vacation. See Public Works consistency comment #6 below for further details.
5. Please provide an arborist report to evaluate the presence or absence of heritage trees, as defined and regulated under WSMC 18.10.317. If found, please provide an assessment of protection needs on-site.

***The following comment below is a consistency review-level comment and does not represent an entire compliance review. An initial response is anticipated, though not required at this stage.***

#### **Public Works**

6. Note, the existing 14" steel water line is a transmission line feeding the entire City from

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# CITY OF WHITE SALMON

## CITY HALL

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its water reservoir to the water treatment facility, located immediately west of the subject site's southernmost entrance. This steel water line re-location likely cannot be approved as shown. Please show an alternative location, alternate plat configuration, or present re-location options for City consideration.

A re-submittal will not be accepted without both responding to all completeness items #1 - #5 and including a cover letter describing where these changes are found within the re-submittal, or under what report.

For further questions, contact Erika Castro Guzman, City Community Development/Special Project Coordinator, at 493-1133 ext. 209.

Sincerely,

City of White Salmon

Alex Capron, AICP  
Consultant Land-Use Planner



# CITY OF WHITE SALMON

## CITY HALL

March 4, 2024

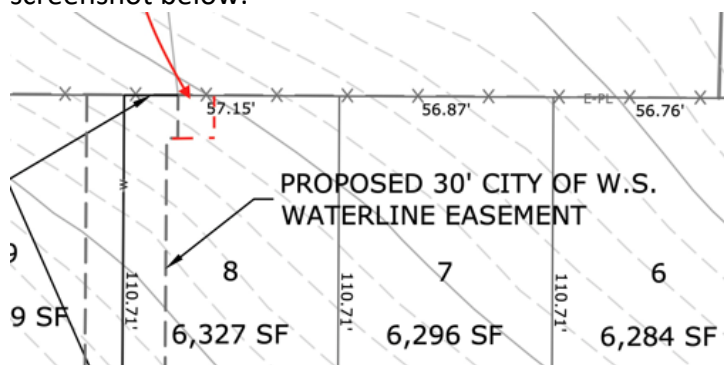
Alex Pedroza, EIT  
489 North 8TH Street – Suite 201  
Hood River, Oregon 97031  
[apedroza@hrkus.com](mailto:apedroza@hrkus.com)

### RE: Cherry Hill Estates Subdivision WS-SEPA-2024.001 – Consistency Review

City staff have completed their consistency review of the Cherry Hills Estates Preliminary Plat application located at parcel 0310247500400 for a proposed 34-lot plat (one of which houses a detention vault). The following information is needed to make your application compliant with City development standards and agency review feedback.

#### Planning

1. Please amend the amended water transmission easement on Lot 8 as shown in the screenshot below:



2. Please show regulated steep slopes and their buffers within the westerly edge of the southern narrow portion of the lot, as depicted by the surveyor.
  - a. If impacts to steep slopes and/or their buffers are proposed, please provide a narrative assessing the following per WSMC 18.10.413(B) and 18.10.415 (new ordinance attached), including:
    - (1) Improvements shall minimize alterations to the natural contours of the slope,
    - (2) There is no feasible alternative to realign/shift the roadway and associated grading impacts connecting NW Spring St to the plat,
    - (3) demonstration that proposed grading will not increase the threat of the geological hazard on adjacent properties,
    - (4) that any alterations contain a design to eliminate or mitigate geological

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# CITY OF WHITE SALMON

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hazardous areas,

- (5) The use of a retaining wall that allows the maintenance of existing natural slopes is preferred over graded artificial slopes and
  - (6) alterations are certified by a qualified geotechnical engineer or geologist licensed in the state of Washington.
3. Please provide a tree protection plan per WSMC 18.40(F) and describe how grading impacts in the south end of the site (if still proposed) will be mitigated to preserve mapped heritage trees.
  4. White Salmon recently adopted heritage tree regulations under WSMC 18.40 (ordinance attached) that are vested to this development. There are no substantive changes, save for removal of the 15-foot building setback. Per WSMC 18.40(F)(4), please show established heritage tree driplines referenced in the Braun Arboricultural Consulting LLC November 7<sup>th</sup> 2023 Report within a draft easement or face of plat with the following language:

*"Dedication of a Heritage Tree Protection Easement (HTPE) conveys to the public a beneficial interest in the land within the easement. This interest includes the preservation of existing heritage tree for all purposes that benefit the public health, safety and welfare, including control of surface water and erosion, maintenance of slope stability, visual and aural buffering, and protection of plant and animal habitat. The HTPE imposes upon all present and future owners and occupiers of land subject to the easement the obligation, enforceable on behalf of the public of the city of White Salmon, to leave undisturbed all heritage trees within the easement. The heritage tree protection area may not be impacted by grading, excavation, demolition or construction without express permission from the city of White Salmon, which permission must be obtained in writing."*
  5. Please indicate where proposed sewer and water connections will occur to the proposed plat from off-site, per WSMC 13.12.110 and 13.16.005.
  6. Per Klickitat County Public Works Department comment filed under the Notice of Application/SEPA Optional DNS comment period (attached) and supported by WSMC 16.45, please provide a traffic access and impact study to address their requirements and determine if mitigation or design modifications are necessary at the listed intersections within the comment letter.
  7. Per the Department of Ecology comment filed under the Notice of Application/SEPA Optional DNS comment period (attached), the applicant must show the City documentation soil sampling and cleanup requirements (if any) have occurred prior to final plat approval. Please indicate when this will be addressed, either prior to or post preliminary plat recommendation.



# CITY OF WHITE SALMON

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A re-submittal will not be accepted without both responding to all compliance items #1 - #7 and including a cover letter describing where these changes are found within the re-submittal, or under what report.

For further questions, contact Erika Castro Guzman, City Community Development/Special Project Coordinator, at 493-1133 ext. 209.

Sincerely,

City of White Salmon

A handwritten signature in black ink, appearing to read "Alex Capron".

Alex Capron, AICP  
Consultant Land-Use Planner

*Encl: Ord. 2023-11-1152 (WSMC 18.10), Ord. 2023-11-1153 (WSMC 18.40), Public comments (2) received*



# CITY OF WHITE SALMON

## CITY HALL

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June 14, 2024

Alex Pedroza, EIT  
489 North 8TH Street – Suite 201  
Hood River, Oregon 97031  
[apedroza@hrkus.com](mailto:apedroza@hrkus.com)

### RE: Cherry Hill Estates Subdivision WS-SEPA-2024.001 – 2<sup>nd</sup> Consistency Review

City staff have completed their 2nd consistency review of the Cherry Hills Estates Preliminary Plat application located at parcel 0310247500400 for a proposed 34-lot plat (one of which houses a detention vault). The following information is needed to make your application compliant with City development standards and agency review feedback.

#### Planning

1. **\*REPEAT COMMENT\*** If impacts to steep slopes and/or their buffers are proposed, please provide a narrative assessing the each of the following provisions pulled from WSMC 18.10.413(B) and 18.10.415 (new ordinance attached), including how your proposal meets the following criteria:
  - (1) Improvements shall minimize alterations to the natural contours of the slope,
    - a. **Appears satisfied.**
  - (2) There is no feasible alternative to realign/shift the roadway and associated grading impacts connecting NW Spring St to the plat,
    - a. **This subsection has not been addressed. Address this first. If road is shifted away from proposed 15-foot steep slope buffer, all other criteria do not need be addressed.**
  - (3) demonstration that proposed grading will not increase the threat of the geological hazard on adjacent properties,
    - a. **This subsection ties to #6 below.**
  - (4) that any alterations contain a design to eliminate or mitigate geological hazardous areas,
    - a. **Address #3 and #6 to satisfy this.**
  - (5) The use of a retaining wall that allows the maintenance of existing natural slopes is preferred over graded artificial slopes and
    - a. **Appears satisfied.**
  - (6) alterations are certified by a qualified geotechnical engineer or geologist licensed in the state of Washington.

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# CITY OF WHITE SALMON

## CITY HALL

a. This subsection has not been addressed.

2. Please provide a standard draft face of plat with the proposed subdivision, including a statement from all persons having interest in subdivided land (a below), formatted City Department Head signature lines and certification statements (Public Works, Engineering, Planning, Fire; b – e below) and Klickitat County Treasurer statement certifying taxes paid are up to date for face of plat, per [WSMC 16.60.010](#) – Preliminary Plat and [WSMC 16.60.020](#) – Final Plat. Statement lines are outlined below.
  - a. Ownership notary block. A certificate bearing the typed or printed names of all persons having an interest in the subdivided land, signed by such persons and acknowledged by them before a notary public, consenting to the subdivision of such land and reciting a dedication by them of all land shown on the plat to be dedicated for public uses and a waiver by them and their successors of all claims for damages against any governmental authority arising from the construction and maintenance of public facilities and public property within the subdivision (WSMC 16.60.020.D(7));
  - b. Fire. I hereby certify that this subdivision has been examined by me and that it contains adequate safe provisions for water supply and access for purposes of fire protection.
  - c. Engineering/City Administrator. I hereby certify that this subdivision has been reviewed and examined by me and that it conforms to the City of White Salmon standards for survey data, layout for roads, alley and easements, road names, and numbers, and other improvements as required or as applicable.
  - d. Public Works. I hereby certify that this subdivision has been examined by me and that it contains adequate provisions for water supply and sewage disposal for domestic and/or commercial use.
  - e. Planning. I hereby certify that this subdivision has been examined by me and that it conforms with the City of White Salmon Zoning Ordinance, Comprehensive Plan and any other applicable laws and/or policies.
  - f. A certification statement and signature line for the Klickitat County Treasurer should be included, as follows “I hereby certify that all taxes, and compensating taxes and/or penalties and property contained within the plat shown herein have been paid, discharged, or satisfied” per WSMC 16.60.020.D(8).

### Public Works

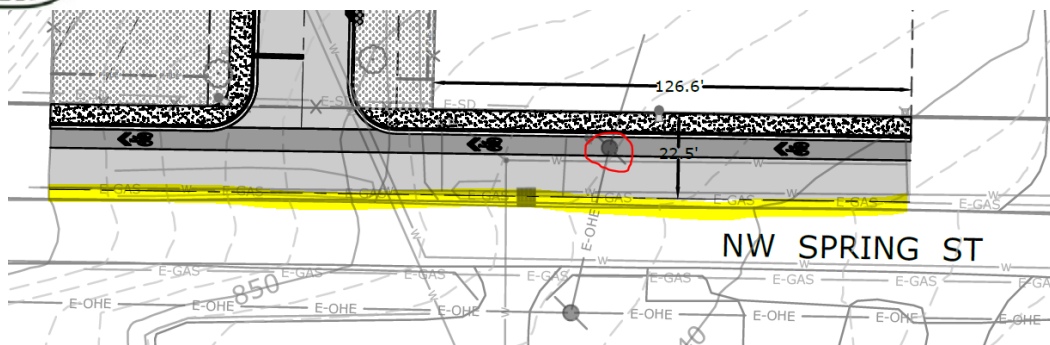
3. A full half street improvement on NW Spring Street is required, since there is no road base, and could otherwise create failures in the sidewalk in curb (see image below).





# CITY OF WHITE SALMON

## CITY HALL



4. please re-located the existing power pole out of the proposed bike lane and onto the abutting property.
5. The submitted Transportation Impact Study contains an expired PE stamp. Please submit a revised report with an up-to-date stamp, as well as address the following:
  - A. The 6-year Transportation Improvement Program (TIP) 2020 – 2025 is out of date, as the City has since adopted a 2023 – 2028 TIP.
  - B. Per the reference on page 14, the growth rate provided is inaccurate based upon current expected growth as of 2024 (5.12%). Please update.
  - C. Please confirm the LOS is accurate based upon the current version of the ITE Trip Generation Manual.
6. Note, while not required to be addressed for this preliminary plat application, all development must first demonstrate stormwater requirements, specifically Low Impact Development is infeasible before designing a stormwater detention vault, per WSMC 13.01.050. A geotechnical assessment (including boring pits to test soil infiltration) may be required to demonstrate whether LID is feasible. This design is due at civil site construction permit to also demonstrate no runoff goes off-site per WSMC 13.01.050(B)(1):

*If the development proposes more than two thousand square feet of impervious surface, the developer shall calculate the estimated runoff volume for the design storm specified by the city official. The runoff volume shall be calculated as follows:  $\text{impervious area (sf)} \times 0.10 \text{ (ft)} = \text{runoff volume (cf)}$ .*

A re-submittal will not be accepted without both responding to all compliance items #1 - #6 and including a cover letter describing where these changes are found within the re-submittal, or under what report.

For further questions, contact Erika Castro Guzman, City Community Development/Special Project Coordinator, at 493-1133 ext. 209.

Sincerely,

100 Main Street PO Box 2139 White Salmon, Washington 98672  
Telephone: (509) 493-1133 Web Site: [white-salmon.net](http://white-salmon.net)



# CITY OF WHITE SALMON

## CITY HALL

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City of White Salmon

A handwritten signature in black ink, appearing to read "Alex Capron". The signature is fluid and cursive, with a long horizontal stroke at the end.

Alex Capron, AICP  
Consultant Land-Use Planner

**CITY OF WHITE SALMON  
SUBDIVISION APPLICATION FORM**

Plat No. \_\_\_\_\_ Date Received \_\_\_\_\_

Environmental Checklist No. \_\_\_\_\_

Comprehensive Plan Zone Designation \_\_\_\_\_

Name of Plat Cherry Hill Estates

**Owner** Cherry Hill NW, LLC

Mailing Address: PO Box 4, Hood River, OR 97031

Phone 541-490-6339 FAX N/A

**Developer** Cherry Hill NW, LLC

Address PO Box 4, Hood River, OR 97031

Phone 541-490-6339

**Surveyor** HRK Engineering & Field Services

Address 489 N 8<sup>th</sup> St, Ste 201, Hood River, OR 97031

Phone 541-386-6480

**Engineer** Same as above

Address \_\_\_\_\_

Phone \_\_\_\_\_

Legal: Lot 4 SP 91-17 IN NENE; 24-3-10  
Section \_\_\_\_\_ Township \_\_\_\_\_ Range \_\_\_\_\_

Parcel No. from Tax Statement: 03102475000400

General Vicinity off of NW Spring St, Between NW Cherry Hill Rd and Champion Ln

Total Acreage 7.93

Number of Residential Lots 33

Smallest Lot Area 5,149sf Average Lot Area 5,962sf

Acreage in Park N/A Acreage in Commercial N/A

Length of Streets/Public 1679' Private N/A

Water Source City

Wastewater Source City

Road Classification Public 60' ROW - Major Collector.  
Chapter 16.65.070, Figure 1 shows travel lane, curb, planter and sidewalk; however to match Nancy White we would have to go sidewalk then planter

***(To be assigned by City Public Works Director before submittal of Application).***

Road Plans \_\_\_\_\_ Profiles \_\_\_\_\_ Required \_\_\_\_\_

Utility Plans \_\_\_\_\_ Profiles \_\_\_\_\_ Required \_\_\_\_\_

Stormwater Plans \_\_\_\_\_ Profiles \_\_\_\_\_ Required \_\_\_\_\_

***\*Signature of Director*** \_\_\_\_\_

What is the zoning for this area? Residential

Explain Usecode 91

Is this proposal within 200 feet of a lake, river or street?

No

If yes, which one? \_\_\_\_\_

Please describe the present land use and physical characteristics of the proposal area and surroundings.

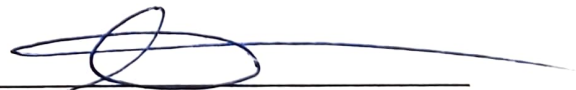
The property is vacant with various grass, scattered trees and blackberry bushes with general sloping of the property to the northeast. It is surrounded by residential properties.

**Attach a list of:**

- All owners and mailing addresses of property within a radius of 300 feet from and parallel to the boundaries of this project.
- The names, addresses and telephone numbers of all persons, firms, and corporations holding interests in the said land. Cherry Nill NW, LLC is sole owner
- All agencies or individuals, and their mailing addresses that have recorded easements that are in effect on the project site.
- Attach all restrictive covenants proposed to be imposed upon land within the subdivision.
- Include 3 large copies and 2 8 ½ x 11 inch copies and 2 copies of the road/utility plan and utilities.
- Attach a completed Environmental Checklist.
- Attach a recent Title Certificate from a recognized Title Company defining legal description, interest holders, easements, encumbrances, etc.

The applicant(s) hereby certify that all of the above statements and the statements in any exhibits and plats are true, and the applicant(s) acknowledge that any action taken on this application may be revoked if it develops that any such statements are false.

APPLICANT(S) SIGNATURE (s) \_\_\_\_\_



\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Dated: 9/8/23

Subscribed and sworn to/by me, this 8<sup>th</sup> day of Sept, 2023

[Signature] Notary expires 6/14/25  
Notary Public in and for the State of Oregon  
Residing at Deerlits County



~~We~~, the undersigned, hereby certify that ~~we~~ hold a vested interest of the said tract of land, that ~~we~~ give our consent for the proposed short subdivision of said land into lots as shown, and that the easements on the short plat are hereby granted for uses thereon.

[Signature] Date 7/8/23  
Cameron Curtis, President of Date XXXXXX  
Legacy Development Group Inc. Date XXXXXX  
Managing Member of Cherry Date XXXXXX  
Hill NW, LLC

STATE OF OREGON )

County of \_\_\_\_\_ )

On this day personally appeared before me \_\_\_\_\_  
Jeffery C Schopfer

to me known to be the individual described in and who executed the within and acknowledged to me that he/she/they signed the same as their free and voluntary act and deed for the purposes therein mentioned.

Given under my hand and official seal this 8<sup>th</sup> day of Sept, 2023.

[Signature]

Notary Public in and for the State of Oregon, residing at Douglas County. Notary expires 6/14/25





## ENVIRONMENTAL CHECKLIST GUIDANCE

# Cherry Hills Estate, White Salmon (WA)

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**AMENDED: NOVEMBER 28, 2023, BY HRK ENGINEERING & FIELD SERVICES**



**A. BACKGROUND**

**1. Name of the proposed project, if applicable:**

Cherry Hill Estates Subdivision

**2. Name of applicant:**

Legacy Development Group

**3. Address and phone number of applicant and contact person:**

Include e-mail, phone numbers and addresses of everyone listed under question #2.

Email: cameron@curtishomesllc.com

Phone Numbers: (541)490-6339

Address:

PO Box 1935

Hood River, OR 97031

**4. Date checklist prepared:**

September 2023

*Amended November 28<sup>th</sup>, 2023*

**5. Agency requesting checklist:**

City of White Salmon

**6. Proposed timing or schedule (including phasing, if applicable):**

December 1, 2023, to December 31, 2025

**7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.**

No

**8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.**

There are no major concerns regarding this project. Since the project will not disturb sensitive areas such as wetlands, waterbodies, sensitive ecological area, or areas within known historical/archaeological features.

A Stormwater Pollution and Prevention Plan (SWPPP) will be required to determine stormwater management.

*Also, on November 7<sup>th</sup>, 2023, an Arborist Report was written by Braun Arboricultural Consulting LLC, to evaluate the presence of heritage trees on the site. From the report, 8 oak trees were identified and were determined to be in fair or good health and low risk. Also, the diameter of*

*the Heritage Tree Protection Area and the Building Set Back Line were provided in the Report and recommendations for mitigation were provided and will be followed (See Appendix 7 for Arborist Report).*

**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.**

There are no applications pending at the time of this submittal.

**10. List any government approvals or permits that will be needed for your proposal, if known.**

The permits that will be required by the City of White Salmon pertain to fill/grading, construction, plat, utility, and the site plan.

**11. Give a 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 project consists of converting a vacant orchard into a residential subdivision on 7.93 acres of parcel 0310247500400. The lot will require activities such as minor grading, the removal of vegetative debris (e.g., Himalayan blackberry, burnt trees, etc.), the removal of miscellaneous debris (e.g., irrigation pipes, wood, metal, etc.), the addition of utilities, roads and the building of the units.

**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, 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 Cherry Hill Estates Subdivision project site is located on parcel 0310247500400 (Lot 4 SP 91-17 IN NEME: 24-3-10) at 45°44'13.0"N 121°29'17.4"W. This parcel is within the city limits of White Salmon, WA (Klickitat County), Section 24, Township 3N, Range 10E, WM.

**B: ENVIRONMENTAL ELEMENTS**

---

**1. EARTH**

**a. General description of the site (circle one): Flat, rolling, hilly, steep slopes, mountainous, other...**

The site sits on the top of Cherry Hill in the City of White Salmon, where the site is **hilly**.

*A portion of the westerly edge of the southerly leg of the property experiences steep slopes of 40% or greater (See Appendix 8 for Statement from Terra Surveying). However, based on the Geotechnical Report by Earths Engineers, Inc, dated November 15, 2021, it's stated that the subject property is not considered to be over steepened and at risk of sliding. It also states that*

*slopes steeper than 2H:1V along the proposed access road should be regraded to be 2H:1V to void the risk of shallow soil movement (See Appendix 9 for Geotechnical Report).*

There are no water bodies in the immediate vicinity of the project site.

The Columbia River is located 1 mile to the south, the White Salmon River is located 1.7 miles to the West and Jewett Creek is located 0.55 miles to the East.

The Site is not susceptible to landslides due to the high basaltic compositions of the bedrock and soil parent material (see Appendix 3).

**b. What is the steepest slope on the site (approximate percent slope)?**

*The steepest slope on the project site is approximately 40% on the westerly edge of the southerly leg of the property (See Appendix 8 for Statement from Terra Surveying).*

**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.**

The soils are classified as 86B Chemawa ashy loam (8 to 15 percent slopes) and 86C Chemawa ashy loam (15-30 percent slope). They are both in hydraulic group B (see Appendix 1 and 2). The proposal does not have the aim of removing soil from the site as any grading activities will relocate soil within the site boundaries.

**d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe**

There is no history or evidence of unstable soils on the project site, according to the USDA Natural Resources Conservation Service and the Department of Ecology landslide information.

**e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.**

The project will include 7.93 acres of disturbance. The work will consist of clearing, grading, and building the units. If additional fill is required, it will be sourced from WSDOT approved sources.

**f. Could erosion occur because of clearing, construction, or use? If so, generally describe.**

General erosion considerations are to be considered with site development of converting a decommissioned orchard into a residential neighborhood. A Stormwater Pollution Prevention Report and Plan will need to be done in order to minimize the impacts of erosion on the project site and the local area.

**g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?**

Approximately 75% of the land will be covered by impervious material and the site plan will include mitigation measures to reduce surface runoff.

**h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:**

Best management Practices (BMPs), and a SWPPP will aid in reducing erosion impacts from construction activities, such as mass grading or trenching for utilities.

---

**2. AIR**

**a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.**

Construction: Standard emissions associated with construction equipment (e.g., excavators, backhoe, etc.), and construction materials (asphalt, concrete, aggregate, painting, grading, etc.).

Post-Construction: Standard household emission associated with a residential area (e.g., houses, cars, etc.).

**b. Are there any off-site sources of emissions or odor that may affect your proposal?**

No, there are no off-site sources of emissions or odor that will affect this site.

**c. Proposed measures to reduce or control emissions or other impacts to air if any:**

There are currently no proposed management practices. The site, applicant and contractor will comply with all local air quality rules.

---

**3. WATER**

**a. Surface**

**1. Is there any surface waterbody 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.**

There are no water bodies in the immediate vicinity of the project site (~300 ft or 0.05 mi). The Columbia River is located 1 mile to the south, the White Salmon River is located 1.7 miles to the West and Jewett Creek is located 0.55 miles to the East.

**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.**

No work will be required in or adjacent to any of the described water bodies for this project.

**3. Estimate the amount of fill and dredge material that would be placed in or removed from the surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

No fill will be placed in or removed from surface water or wetlands.

**4. Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.**

There are no existing surface or ground water sources that would require withdrawals or diversions.

**5. Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

No. The proposal does not lie within a 100-year floodplain.

**6. Does the proposal involve any discharge of waste materials into surface waters? If so, describe the type of waste and anticipated volume of discharge.**

No. The proposal does not involve any discharge of waste material into surface waters.

**b. Ground:**

**1. Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well? Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.**

No water well is proposed. Water will be provided via the City of White Salmon municipal 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.**

No waste material will be discharged into the ground from septic tanks or other sources. Waste material will be removed via sewer lines which will hook up to the municipal sewer system.

**c. Water runoff (including storm water):**

**1. Describe the sources of runoff 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 only major potential source for runoff will be during the construction phase. However, a SWPPP will be made which will include a detention system and consider construction and post-construction run off. BMPs will also be put into action to reduce sources of runoff.

**2. Could waste materials enter ground or surface waters?**

No. All domestic waste materials will be captured, contained, and transported off the site in sewer system network connected to the municipal system.

**3. Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe?**

No. The proposal will not alter or affect drainage patterns in the vicinity of the site.

**d. Proposed measures to reduce or control surface, ground, runoff water, and drainage pattern impacts, if any:**

Surface runoff from impervious surfaces will be collected into a drainage control system consisting of pipes, catch basins and manholes. The runoff will be collected and directed to discharge into the planned storm water management system. Storm water detention will be provided as needed at the downhill area of the site.

---

**4. PLANTS**

**a. Check the types of vegetation found on the site:**

- **Deciduous tree: Alder, maple, aspen, other**
- **Evergreen tree: Fir, cedar, pine, other**
- **Shrubs**
- **Grass**
- **Pasture**
- **Crop or grain**
- **Orchards, vineyards or other permanent crops.**
- **Wet soil plants: Cattail, buttercup, bullrush, skunk cabbage, other**
- **Water plants: Water lily, eelgrass, milfoil, other**
- **Other types of vegetation**

The vegetative landscape consists of an old cherry orchard. There are grasses, weeds, burnt trees, blackberry bushes, shrubs, and a few live trees such as cedar, oak, and maple.

**b. What kind and amount of vegetation will be removed or altered?**

The entire area of the site will have to be cleared of most of the vegetation prior to construction activities. There is a minimal number of alive trees, due to the majority being burnt, on site which will be removal. Any volunteer cherry trees will be removed if necessary. The trees that do not need to get removed are located near fence lines, such as the oak, or the vegetation located on the natural gas embankment which does have native species such as snowberries.

*The 8 oak Candidate Heritage Trees on the site will not be removed or altered.*

**c. List threatened or endangered species known to the on or near the site**

There are no threatened or endangered plant species known to be near or on the site. Most of the plants are cherry trees, grasses and shrubs that are nonnative.

**d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:**

Landscaping will adhere to White Salmon requirements for residential development. The project will prioritize the planting of native plants. This will have a beneficial effect on the local fauna, insects and reduce irrigation needs on the sites.

*From Arborist Report, the 8 total oak Candidate Heritage Trees will be protected following the reports recommendations (See Appendix 7).*

**e. List all noxious weeds and invasive species known to be on or near the site.**

Blackberry (Himalayan), wild carrot (See Appendix 5)

---

**5. ANIMALS**

- a. List any birds and other animals, which have been observed on or near the site or are known to be on or near the site. Examples include:**  
**Birds: Hawk, heron, eagle, songbirds, other: Mammals: Deer, bear, elk, beaver, other: Fish: Bass, salmon, trout, herring, shellfish, other:**

There are a few birds and mammals present in the vicinity of the site. Examples include quail, deer, hawks, and songbirds.

**b. List any threatened and endangered species known to be on or near the site**

There are no threatened species known to be in the vicinity of the site (see Appendix 4).

**c. Is the site part of a migration route?**

The site is not part of a migration route.

**d. Proposed measures to preserve or enhance wildlife if any:**

There are no planned impacts on wildlife for this proposed project. Some measures to preserve or enhance wildlife is through the encouragement of planting native plants such as shrubs, trees, grasses, and flowers. This will help the local populations of insects, birds, mammals, and amphibians.

**e. List any invasive animal species known to be on or near the site.**

No known invasive species on 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.**

Construction: Energy will be used for the construction of the project. Diesel and gasoline will be used by construction equipment and vehicles.

Post Construction: Electric and natural gas utilities will be installed, to provide services for residential purposes.

- b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.**

No. The project will not affect the potential use of solar energy by adjacent property needs.

- 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:**

Currently, no energy conservation features are included in the plans of this proposal. However, the contractor may choose materials with lower transportation and other energy costs, using renewable energy sources, or designing the subdivision with maintenance measures that help reduce energy consumption and promote energy generation.

---

## 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 because of this proposal? If so, describe.**

There are no known health hazards, toxic chemicals, risk of explosion or fire, spill, or hazardous waste concerns associated with the project area and scope of work.

- 1. Describe any known or possible contamination at the site from present or past uses.**

There are no known contaminants located in the project boundary. The project site sits on a decommissioned orchard. The orchard may have used pesticides and fertilizers, but further testing will have to be done to determine the level of contamination.

- 2. Describe existing hazardous chemicals and 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.**

The site has gas and utility lines running through out, which will need to be rerouted before the construction of the site. The gas line sits on the western side going in the north-south direction. Before construction the lines will be located.

- 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.**



A limited amount of diesel fuel and machine lubricants will be used and stored on the project site for the use of excavation and construction equipment during the site development activities.

**4. Describe special emergency services that might be required.**

No special emergency services will be required.

**5. Proposed measures to reduce or control environmental health hazards, if any:**

Best Management Practices will be utilized during the site development process. The hazards will be minimized by mapping out the different utilities prior to construction to have a negligible impact on human and environmental health. Spill kits will be stored on site to ensure that all potential pollutants, if spilled, are absorbed/removed and the area cleaned to original condition.

**b. Noise**

**1. What types of noise exist in the area that may affect your project?**

There are no noises in the area which 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?**

The level of noise during the construction phase will be limited to standard workday hours. Post construction noise levels will be standard residential noises, which are to be expected.

**3. Proposed measures to reduce or control noise impacts, if any:**

To control noise levels, all construction will adhere to currently existing noise regulations or noise ordinance requirements (Klickitat County and/or City of White Salmon as applicable).

---

**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 usage of the project area is a vacant decommissioned orchard. The proposal will have no effect on the land usage of nearby/adjacent properties. site is in a residential neighborhood in the White Salmon UGB, zoned R-1 residential low density. There are no adverse effects that are anticipated.

**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 non-farm or non-forest use?**

This site was used an orchard (farmland). There will be no significant long-term commercial impacts because the lot has been vacant for a long time. The project will convert 100% of the lot into residential lands.

**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: Know Your Farming Neighbors.**

This project will not influence the surrounding working farm or forested lands.

**c. Describe any structures on the site.**

There are currently no structures on site.

**d. Will any structures be demolished? If so, what?**

There are currently no structures on site that need to be demolished.

**e. What is the current zoning classification of the site?**

The current zoning is R1 (Single Family Residential). The parcel will be split up into 35 lots with dwelling units adhering to the City of White Salmon Municipal Code (Chapter 17.24 - R1 SINGLE-FAMILY RESIDENTIAL DISTRICT)

**f. What is the current comprehensive plan designation of the site?**

2012 Comprehensive Plan Designation (Residential Low Density)

**g. If applicable, what is the current shoreline master program designation of the site?**

The area is not included within the Shoreline Master Program and is not within 200 feet of any of the listed water bodies within the Klickitat County SMP.

**h. Has any part of the site been classified as a critical area by the city or county? If so, specify.**

The site has not been classified as a critical area by the city or county.

**i. Approximately how many people would reside or work in the completed project?**

Approximately 72 to 100 people will be residing on the site once the project is complete.

2 persons per residence \* 35 = 70  
2.8 persons per residence \* 35 = 98

**j. Approximately how many people would the completed project displace?**

This project would not be displacing any residents as the site is vacant.

**k. Proposed measures to avoid or reduce displacement impacts, if any:**

The site is vacant and will create housing.

**I. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:**

Project proposal complies with current zoning and projected residential land use.

**m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forestlands of long-term commercial significance, if any:**

Not Applicable.

---

**9. HOUSING**

**a. Approximately how many units would be provided, if any?**

Approximately there will be 35 single family, fair market value units will be developed

**b. Approximately how many units, if any, would be eliminated?**

None. The lot is currently vacant.

**c. Proposed measures to reduce or control housing impacts, if any.**

There is no proposed measure to reduce or control housing impacts.

---

**10. AESTHETICS**

**a. What is the tallest height of any proposed structure(s), not including antennas; what is the principle exterior building material(s) proposed?**

White Salmon Municipal Code regulates residential building height to twenty-eight feet or less; exterior cladding will be residential siding.

**b. What views in the immediate vicinity would be altered or obstructed?**

Undeveloped site will become a residential neighborhood. Views will not be obstructed.

**c. Proposed measures to reduce or control aesthetic impacts, if any:**

There is no proposed measure to reduce or control aesthetic impacts as the aim is to construct high quality residential homes in conformance with local building code standards.

---

**11. LIGHT AND GLARE**

**a. What type of light or glare will the proposal produce? What time of day will it mainly occur?**

Minimal glare from residential windows may be present during extremely sunny days. Streetlights will be installed along new circulatory routes conforming to local regulations on placement and brightness.

**b. Could light or glare from the finished project be a safety hazard or interfere with views?**

No.

**c. What existing off-site sources of light or glare may affect your proposal?**

None.

---

## **12. RECREATION**

**a. What designated and informal recreational opportunities are in the immediate vicinity?**

There are no recreation facilities within the project boundary.  
Within a mile of the project there are two city parks and a school.

**b. Would the proposed project displace any existing recreational uses?**

No.

**c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:**

There are currently no proposed measures to mitigate impacts on recreation.

---

## **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 located on or near the site? If so, specifically describe.**

There are no structures present on the site.

**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.**

There are no landmarks on the site.

**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.**

The current method used to reduce impacts to cultural and historical resources will be to halt construction if an object is found. Then consult the Inadvertent Discovery Plan (IDP) prepared by the Department of Ecology (Appendix 6). The IDP outlines the protocols and procedures involved is a discovery is made and will also include the appropriate list of contacts to notify such as the local archaeological department, historic preservation societies and local tribes.

**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.**

There are no anticipated impacts to archaeological resources for this project, and as such avoidance/ minimization/ compensation measures are not proposed at this time.

---

**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 parcel has direct connection to Spring Street which is connected to Main Avenue. A second means of egress is proposed to the East that will connect to Main Avenue through a neighboring parcel that is being developed in tandem.

**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?**

There are currently no public transit operations near the site. The Mount Adams Transportation Service (MATS) offers transportation in this region and is located approximately 3000 feet away from the project site.

A traffic control plan will be prepared.

**c. 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 proposal will require installation of a new road network, to include pedestrian sidewalks within the parcel to facilitate adequate circulation. The streets and sidewalks will be a dedicated Right of Way for the City of White Salmon.

*Also, the proposal will require extended frontage improvements along NW Spring Street following the Typical Cross-Section for Connector Street on the Bicycle Network per the City`s recently adopted Transportation System Plan (TSP) "Lite", (August 30, 2023).*

**d. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.**

No. There will be no water, rail, or air transportation in the immediate vicinity of the project site.

**e. 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 non-passenger vehicles). What data or transportation models were used to make these estimates?**

A maximum of 80 trips per day would be generated with peak ours being from 6-9 am and 3-6 pm. Please note that with the increase of work from home offices there is more variation in trips.

**f. 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.**

No.

**g. Proposed measures to reduce or control transportation impacts, if any: Identify public streets and highways serving the site and describe proposed access to the existing street system.**

A Traffic Control Plan (TCP) might be needed in order to determine traffic impacts prior to construction.

---

## **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.**

The impacts of additional home sites on public services have not been quantified.

**b. Proposed measures to reduce or control direct impacts on public services, if any.**

There are no proposed measures to reduce or control direct impacts on public services at the moment.

---

## **16. UTILITIES**

**a. Circle utilities currently available at the site: Electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.**

All are available but need to be connected to the site, except there will be not septic system.

**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 that might be needed.**

A water and a sanitary sewer system will be added to the project site, these services are available and will be integrated into the city's infrastructure.

Electric, natural gas and other utilities are also present in the site vicinity and will be added accordingly.

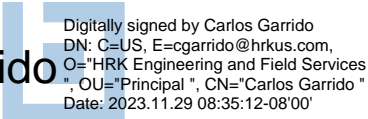
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## SECTION C. SIGNATURE

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:**

Carlos Garrido



Digitally signed by Carlos Garrido  
DN: C=US, E=cgarrido@hrkus.com,  
O="HRK Engineering and Field Services",  
OU="Principal ", CN="Carlos Garrido "  
Date: 2023.11.29 08:35:12-08'00'

**Name of Signee:** Carlos Garrido

**Position and Agency/Organization:** Project Manager, HRK Engineering & Field Services

**Date Submitted:** September 8, 2023

Amended: November 28, 2023

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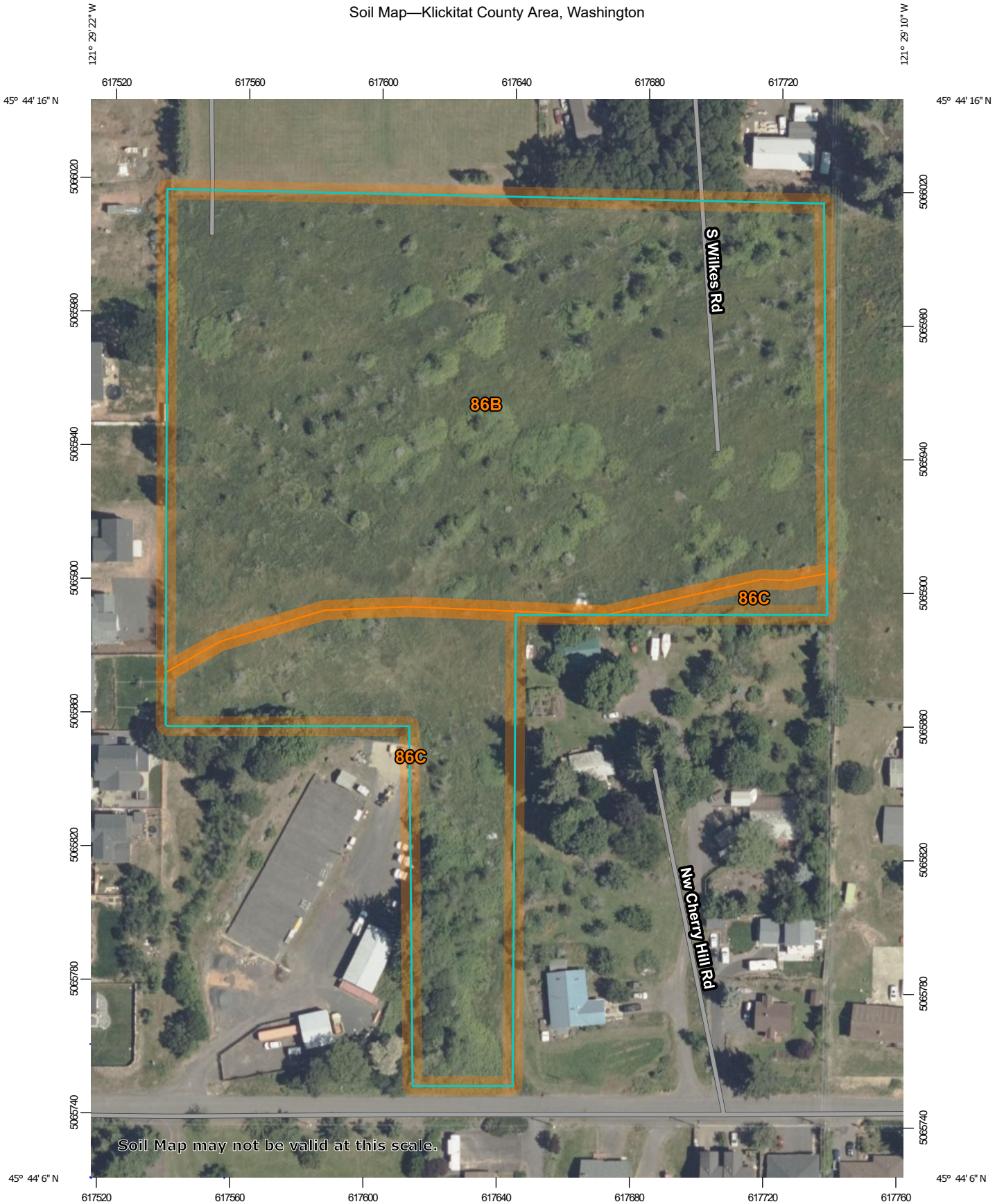
## APPENDIX

1. Soil Map
2. Soil Types
  - a. 86C
  - b. 86B
3. Liquefaction Susceptibility Map of Klickitat County, Washington
4. State Listed Species AND Priority Habitats and Species on the Site
5. Invasive and Noxious Weed List
6. Inadvertent Discovery Plan (IDP)
7. Arborist Report
8. Statement of Critical Slopes by Terra Surveying
9. Geotechnical Report

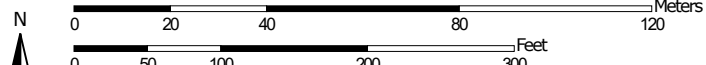
# **APPENDIX 1**



Soil Map—Klickitat County Area, Washington



Map Scale: 1:1,570 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84



Natural Resources  
Conservation Service

Web Soil Survey  
National Cooperative Soil Survey

11/1/2021  
Page 1 of 3

### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)




















**Soils**




 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

**Special Point Features**






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

**Water Features**

 Streams and Canals

**Transportation**

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

**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: Klickitat County Area, Washington  
 Survey Area Data: Version 16, Aug 31, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 28, 2020—May 29, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
86B	Chemawa ashy loam, 8 to 15 percent slopes	6.1	77.5%
86C	Chemawa ashy loam, 15 to 30 percent slopes	1.8	22.5%
<b>Totals for Area of Interest</b>		<b>7.8</b>	<b>100.0%</b>

# **APPENDIX 2**

## Klickitat County Area, Washington

### 86B—Chemawa ashy loam, 8 to 15 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2kmy

*Elevation:* 600 to 2,100 feet

*Mean annual precipitation:* 45 to 65 inches

*Mean annual air temperature:* 46 to 48 degrees F

*Frost-free period:* 110 to 160 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Chemawa and similar soils:* 95 percent

*Minor components:* 5 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Chemawa

##### Setting

*Landform:* Terraces

*Parent material:* Volcanic ash

##### Typical profile

*H1 - 0 to 26 inches:* ashy loam

*H2 - 26 to 60 inches:* ashy silt loam

##### Properties and qualities

*Slope:* 8 to 15 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Well drained

*Capacity of the most limiting layer to transmit water*

*(Ksat):* Moderately high to high (0.57 to 1.98 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* High (about 11.1 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3e

*Hydrologic Soil Group:* B

*Ecological site:* F006XC003WA - Cool Frigid Moist Xeric Mountain

*Slopes (Grand fir Cool, Moist Shrub /Herb)*

*Other vegetative classification:* grand fir/vanillaleaf (CWS524)

*Hydric soil rating:* No

#### Minor Components

##### Timberhead

*Percent of map unit:* 5 percent

## Klickitat County Area, Washington

### 86C—Chemawa ashy loam, 15 to 30 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2kmz  
*Elevation:* 500 to 2,200 feet  
*Mean annual precipitation:* 45 to 65 inches  
*Mean annual air temperature:* 46 to 48 degrees F  
*Frost-free period:* 110 to 160 days  
*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Chemawa and similar soils:* 90 percent  
*Minor components:* 10 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Chemawa

##### Setting

*Landform:* Terraces  
*Parent material:* Volcanic ash

##### Typical profile

*H1 - 0 to 26 inches:* ashy loam  
*H2 - 26 to 60 inches:* ashy silt loam

##### Properties and qualities

*Slope:* 15 to 30 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water supply, 0 to 60 inches:* High (about 11.1 inches)

##### Interpretive groups

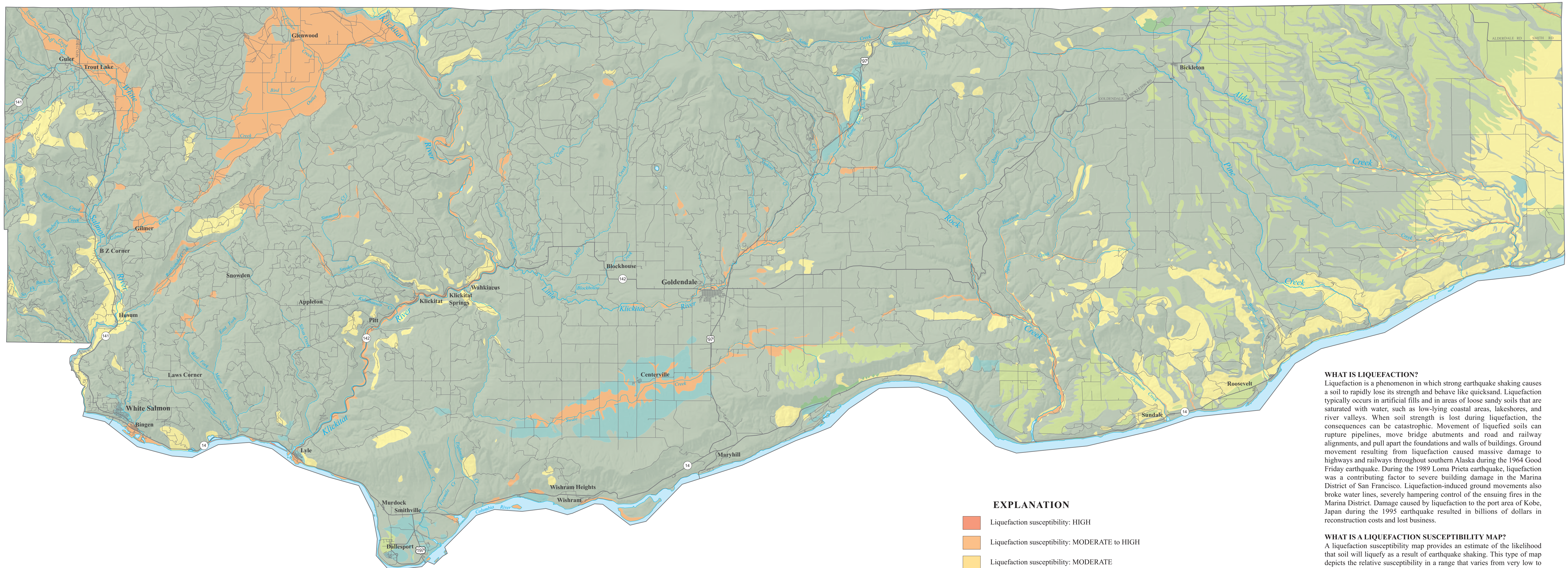
*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4e  
*Hydrologic Soil Group:* B  
*Ecological site:* F006XC003WA - Cool Frigid Moist Xeric Mountain Slopes (Grand fir Cool, Moist Shrub /Herb)  
*Other vegetative classification:* grand fir/vanillaleaf (CWS524)  
*Hydric soil rating:* No

#### Minor Components

##### Timberhead

*Percent of map unit:* 5 percent  
*Hydric soil rating:* No

# APPENDIX 3



**EXPLANATION**

- Liquefaction susceptibility: HIGH
- Liquefaction susceptibility: MODERATE TO HIGH
- Liquefaction susceptibility: MODERATE
- Liquefaction susceptibility: LOW TO MODERATE
- Liquefaction susceptibility: LOW
- Liquefaction susceptibility: VERY LOW TO LOW
- Liquefaction susceptibility: VERY LOW
- Bedrock
- Peat deposit Peat is not susceptible to liquefaction but may undergo permanent displacement or loss of strength as a result of earthquake shaking.
- Water
- Ice

This explanation is standardized for this series of county-based liquefaction maps; some categories may not appear on this map.

**WHAT IS LIQUEFACTION?**

Liquefaction is a phenomenon in which strong earthquake shaking causes a soil to rapidly lose its strength and behave like quicksand. Liquefaction typically occurs in artificial fills and in areas of loose sandy soils that are saturated with water, such as low-lying coastal areas, lakeshores, and river valleys. When soil strength is lost during liquefaction, the consequences can be catastrophic. Movement of liquefied soils can rupture pipelines, move bridge abutments and road and railway alignments, and pull apart the foundations and walls of buildings. Ground movement resulting from liquefaction caused massive damage to highways and railways throughout southern Alaska during the 1964 Good Friday earthquake. During the 1989 Loma Prieta earthquake, liquefaction was a contributing factor to severe building damage in the Marina District of San Francisco. Liquefaction-induced ground movements also broke water lines, severely hampering control of the ensuing fires in the Marina District. Damage caused by the port area of Kobe, Japan during the 1995 earthquake resulted in billions of dollars in reconstruction costs and lost business.

**WHAT IS A LIQUEFACTION SUSCEPTIBILITY MAP?**

A liquefaction susceptibility map provides an estimate of the likelihood that soil will liquefy as a result of earthquake shaking. This type of map depicts the relative susceptibility in a range that varies from very low to high. Areas underlain by bedrock or peat are mapped separately as these earth materials are not liquefiable, although peat deposits may be subject to permanent ground deformation caused by earthquake shaking.

This map is based solely on surficial geology published at a scale of 1:100,000 by the Washington State Department of Natural Resources, Division of Geology and Earth Resources (Washington Division of Geology and Earth Resources staff, 2001). We have assigned liquefaction susceptibility based on published geologic correlations (Youd and Perkins, 1978) and similarity of the geologic units in the map area to units that have been subjected to a quantitative susceptibility analysis (Grant and others, 1998; Palmer, 1995; Palmer and others, 1994, 1995, 1999, 2002, 2003, *in press*). The assignment of liquefaction susceptibility represents our best professional judgment.

**HOW CAN THIS MAP BE USED?**

Liquefaction susceptibility maps such as this can be used for many different purposes by a variety of users. For example:

- Emergency managers can determine which critical facilities and lifelines are located in hazardous areas.
- Building officials and engineers can select areas where detailed geotechnical studies should be performed before new construction or retrofitting of older structures.
- Facilities managers can assess the vulnerability of corporate and public facilities, including schools, and recommend actions required to maximize public safety and minimize earthquake damage and loss.
- Insurance providers can determine relative seismic risk to aid in the calculation of insurance rates and premiums.
- Land-use planners can reduce vulnerability by recommending appropriate zoning and land use in high hazard areas to promote long-term mitigation of earthquake losses.
- Private property owners can guide their decisions on purchasing, retrofitting, and upgrading their properties.

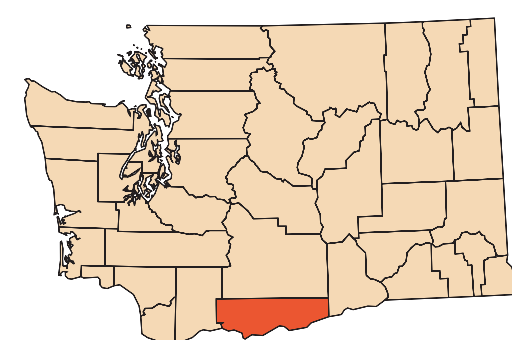
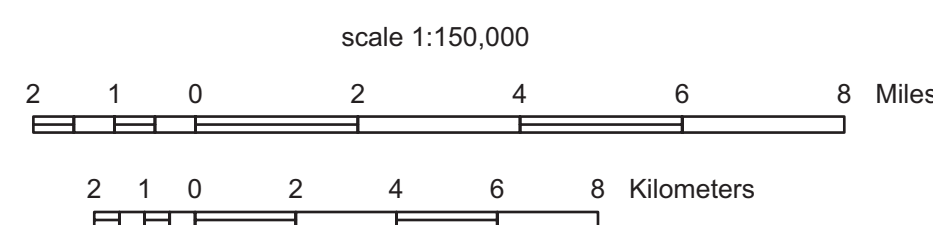
This map is meant only as a general guide to delineate areas prone to liquefaction. It is not a substitute for site-specific investigation to assess the potential for liquefaction for any development project. Because the data used in the liquefaction susceptibility assessment have been subdivided on the basis of regional geologic mapping, this map cannot be used to determine the presence or absence of liquefiable soils beneath any specific locality. This determination requires a site-specific geotechnical investigation performed by a qualified practitioner.

This map is intended to be printed at a scale of 1:150,000 in order to present the entire study area on a single standard-size plate. However, the map was generated using 1:100,000-scale digital coverages of the geologic mapping; therefore, the digital data reflect the original 1:100,000-scale of the hazard mapping. As with all maps, it is recommended that the user does not apply this map, either digitally or on paper, at scales greater than the source data.

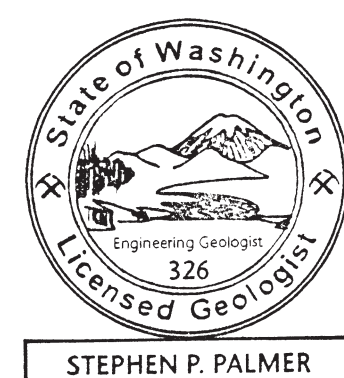
# Liquefaction Susceptibility Map of Klickitat County, Washington

by Stephen P. Palmer, Sammantha L. Magsino, Eric L. Bilderback, James L. Poelstra, Derek S. Folger, and Rebecca A. Niggemann

September 2004



Lambert conformal conic projection  
North American Datum of 1983 (NAD83)  
Shaded relief generated from U.S. Geological Survey 30-meter Digital Elevation Model, 2x vertical exaggeration  
Production by Anne C. Heintz, Rebecca A. Niggemann, and Jaretha M. Roloff  
Editing by Karen D. Meyers



STEPHEN P. PALMER  
*Stephen P. Palmer*  
9/1/04

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**REFERENCES CITED**

Grant, W. P.; Perkins, W. J.; Youd, T. L., 1998, Evaluation of liquefaction potential in Seattle, Washington. In Rogers, A. M.; Walsh, T. J.; Kockelman, W. J.; Priest, G. R., editors, Assessing earthquake hazards and reducing risk in the Pacific Northwest: U.S. Geological Survey Professional Paper 1560, v. 2, p. 441-473, 1 plate. [accessed Sep. 9, 2004 at <http://greenwood.cr.usgs.gov/pub/ppapers/p1560/p1560p0.pdf>]

Palmer, S. P., 1995, Liquefaction analysis of soil deposits found in the Sumner quadrangle. In Dragovich, J. D.; Pringle, P. T., Liquefaction susceptibility for the Sumner 7.5-minute quadrangle, Washington: Washington Division of Geology and Earth Resources Geologic Map GM-44, p. 13-26.

Palmer, S. P.; Perkins, W. J.; Youd, T. L., 1998, Evaluation of liquefaction potential of the Greater Eastside area, King County, Washington: Washington Division of Geology and Earth Resources Geologic Map GM-48, 1 sheet, scale 1:36,000, with 14 p. text.

Palmer, S. P.; Magsino, S. L.; Poelstra, J. L.; Niggemann, R. A., *in press*, Liquefaction susceptibility map of Clark County, Washington: Washington Division of Geology and Earth Resources, 1 sheet, scale 1:100,000.

Palmer, S. P.; Perkins, W. J.; Grant, W. P., 2003, Liquefaction susceptibility of the greater Tacoma urban area, Pierce and King Counties, Washington: Washington Division of Geology and Earth Resources Geologic Map GM-51, 1 sheet, scale 1:30,000 with 11 p. text. [accessed Sep. 9, 2004 at <http://www.dnr.wa.gov/geology/pdf/gm51.zip>]

Palmer, S. P.; Schasse, H. W.; Norman, D. K., 1994, Liquefaction susceptibility for the Des Moines and Renton 7.5-minute quadrangles, Washington: Washington Division of Geology and Earth Resources Geologic Map GM-41, 2 sheets, scale 1:24,000, with 15 p. text.

Palmer, S. P.; Walsh, T. J.; Gerstel, W. J., 1999, Geologic folio of the Olympia-Lacey-Tumwater urban area, Washington-Liquefaction susceptibility map. Washington Division of Geology and Earth Resources Geologic Map GM-47, 1 sheet, scale 1:48,000, with 16 p. text.

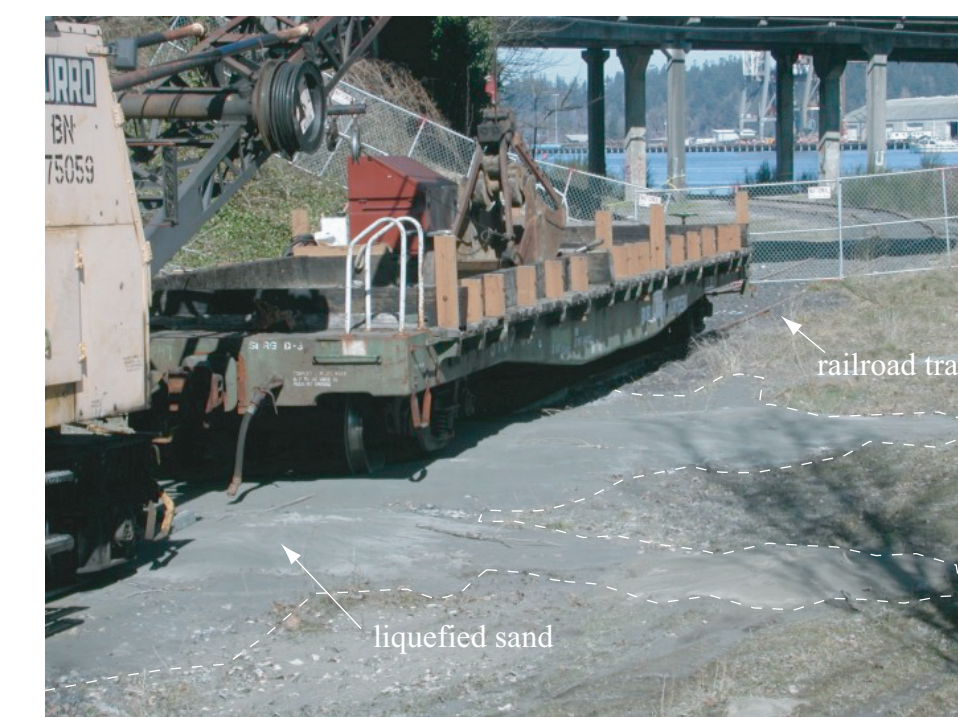
Palmer, S. P.; Walsh, T. J.; Logan, R. L.; Gerstel, W. J., 1995, Liquefaction susceptibility for the Auburn and Poverty Bay 7.5-minute quadrangles, Washington: Washington Division of Geology and Earth Resources Geologic Map GM-43, 2 sheets, scale 1:24,000, with 15 p. text.

Washington Division of Geology and Earth Resources staff, 2001, Digital geologic maps of the 1:100,000 quadrangles of Washington: Washington Division of Geology and Earth Resources Digital Report 2, June 2003 version, 1 CD-ROM disk.

Youd, T. L.; Perkins, D. M., 1978, Mapping liquefaction-induced ground failure potential: American Society of Civil Engineers, Journal of the Geotechnical Engineering Division, v. 104, no. GT4, p. 433-446.



Liquefaction during the 1965 SoTac earthquake caused both lateral and vertical movement of the ground in the Port of Seattle. Cargo cranes such as the one in the background are vulnerable to liquefaction-induced ground displacement. Lateral spreading such as this can cause severe damage to both above-ground structures and underground utilities. Photo courtesy of the Karl V. Steinbrugge Collection, Earthquake Engineering Research Center [[http://misc.berkeley.edu/visual\\_resources/steinbrugge\\_collection.html](http://misc.berkeley.edu/visual_resources/steinbrugge_collection.html)].



During the 2001 Nisqually earthquake, liquefied sand was extruded onto the ground surface beneath the railroad tracks near Capito Lake in Olympia. The vented sand is called a sand blow, and is clear evidence of liquefaction of the underlying soil. Photo by Stephen P. Palmer.



# APPENDIX 4

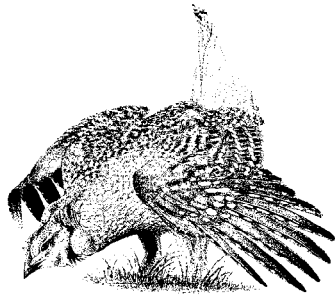


Washington  
Department of  
**FISH and  
WILDLIFE**

## STATE LISTED SPECIES

Revised October 2021

The Washington Fish and Wildlife Commission has classified the following 46 species as Endangered, Threatened, or Sensitive. The federal status of species under the Endangered Species Act differs in some cases from state status; federal status is indicated by: Federal Endangered (FE), Threatened (FT), Candidate (FC), USFWS has made a 90-day finding that listing may be warranted (90d), or a NOAA Species of Concern (FSC).

<p><b>STATE ENDANGERED</b></p> <p><i>A species native to the State of Washington that is seriously threatened with extinction throughout all or a significant portion of its range within the state.</i></p> <p>The 35 State Endangered species listed below are designated in Washington Administrative Code 220-610-010</p>	<p><b>STATE THREATENED</b></p> <p><i>A species native to the state of Washington that is likely to become endangered within the foreseeable future throughout a significant portion of its range within the state without cooperative management or removal of threats.</i></p> <p>The 5 State Threatened species are designated in Washington Administrative Code 220-200-100</p>	<p><b>STATE SENSITIVE</b></p> <p><i>A species native to the state ...that is vulnerable or declining and is likely to become endangered or threatened in a significant portion of its range within the state without cooperative management or removal of threats.</i></p> <p>The 6 State Sensitive species are designated in Washington Administrative Code 220-200-100</p>
<p><b>MAMMALS (14)</b></p> <p>Fin Whale FE</p> <p>Sei Whale FE</p> <p>Blue Whale FE</p> <p>Humpback Whale FT/FE# <i>*Mexico DPS=T; Central America DPS=E</i></p> <p>North Pacific Right Whale FE</p> <p>Sperm Whale FE</p> <p>Killer Whale FE# <i>*Southern Residents only</i></p> <p>Gray Wolf 90d</p> <p>Grizzly Bear FT</p> <p>Lynx FT</p> <p>Fisher -</p> <p>Columbian White-tailed Deer FT</p> <p>Woodland Caribou<sup>x</sup> FE</p> <p>Pygmy Rabbit FE</p> <p><b>BIRDS (12)</b></p> <p>Sandhill Crane -</p> <p>Snowy Plover FT</p> <p>Upland Sandpiper<sup>x</sup> -</p> <p>Marbled Murrelet FT</p> <p>Tufted Puffin -</p> <p>Columbian Sharp-tailed Grouse -</p> <p>Greater Sage-Grouse -</p> <p>Ferruginous Hawk -</p> <p>Northern Spotted Owl FT</p> <p>Yellow-billed Cuckoo<sup>x</sup> FT</p> <p>Streaked Horned Lark FT</p> <p>Oregon Vesper Sparrow 90d</p> <p><b>REPTILES (3)</b></p> <p>Western Pond Turtle 90d</p> <p>Leatherback Sea Turtle FE</p> <p>Loggerhead Sea Turtle FE</p> <p><b>AMPHIBIANS (2)</b></p> <p>Oregon Spotted Frog FT</p> <p>Northern Leopard Frog -</p> <p><b>INVERTEBRATES (4)</b></p> <p>Oregon Silverspot Butterfly<sup>x</sup> FT</p> <p>Taylor's Checkerspot FE</p> <p>Mardon Skipper -</p> <p>Pinto Abalone -</p>	<p><b>MAMMALS (3)</b></p> <p>Sea Otter -</p> <p>Western Gray Squirrel -</p> <p>Mazama Pocket Gopher</p> <p>    subsp. <i>glacialis</i>, <i>pugetensis</i>, <i>tumuli</i>, <i>yelmensis</i> FT</p> <p>    ...subsp. <i>couchi</i>, <i>louiei</i><sup>x</sup>, <i>melanops</i> -</p> <p><b>BIRDS (1)</b></p> <p>American White Pelican -</p> <p><b>REPTILES (1)</b></p> <p>Green Sea Turtle FT</p> <p><i>*These species are, or may be, extirpated from all of their historical range in Washington</i></p> <p>For more information, check our website: <a href="https://wdfw.wa.gov/species-habitats/species">https://wdfw.wa.gov/species-habitats/species</a></p> <p>Or contact us at: <a href="mailto:wildthing@dfw.wa.gov">wildthing@dfw.wa.gov</a> or Wildlife Program (360) 902-2515 Fish Program (360) 902-2700</p> <p><i>For more information on federal status, check the US Fish and Wildlife Service or the NOAA National Marine Fisheries Service</i></p>	<p><b>MAMMALS (1)</b></p> <p>Gray Whale FE# <i>*Western North Pacific Stock</i></p> <p><b>BIRDS (1)</b></p> <p>Common Loon -</p> <p><b>FISH (3)</b></p> <p>Pygmy Whitefish -</p> <p>Margined Sculpin -</p> <p>Olympic Mudminnow -</p> <p><b>AMPHIBIAN (1)</b></p> <p>Larch Mountain Salamander -</p> 



Washington  
Department of  
**FISH and  
WILDLIFE**

## STATE CANDIDATE SPECIES

Revised October 2021

The Washington Department of Fish and Wildlife has designated the following 71 species as Candidates for listing in Washington as State Endangered, Threatened, or Sensitive. The Department reviews species for listing following procedures in Washington Administrative Code 220-610-110. The federal status of species under the Endangered Species Act differs in some cases from state status; federal status is indicated by: Federal Endangered (FE), Threatened (FT), Candidate (FC), USFWS has made a 90-day finding that listing may be warranted (90d), or a NOAA Fisheries Species of Concern (FSC).

### MAMMALS (10)

Townsend's Big-eared Bat	-
Keen's Myotis Bat	-
White-tailed Jackrabbit	-
Black-tailed Jackrabbit	-
Washington Ground Squirrel	-
Townsend's Ground Squirrel	-
South of the Yakima River	-
Olympic Marmot	-
Cascade Red Fox	-
Wolverine	FC
Pacific Harbor Porpoise	-

### BIRDS (14)

Western Grebe	-
Clark's Grebe	-
Short-tailed Albatross	FE
Northern Goshawk	-
Golden Eagle	-
Cassin's Auklet	-
Flammulated Owl	-
Burrowing Owl	-
White-headed Woodpecker	-
Black-backed Woodpecker	-
Loggerhead Shrike	-
Slender-billed White-breasted Nuthatch	-
Sage Thrasher	-
Sagebrush Sparrow	-

### REPTILES and AMPHIBIANS (10)

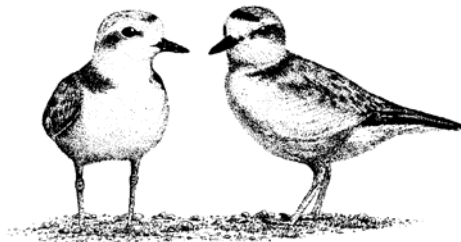
Sagebrush Lizard	-
Common Sharp-tailed Snake	-
California Mountain Kingsnake	-
Striped Whipsnake	-
Dunn's Salamander	-
Van Dyke's Salamander	-
Cascade Torrent Salamander	90d
Western Toad	-
Columbia Spotted Frog	-
Rocky Mountain Tailed Frog	-

### FISH (10)

Mountain Sucker	-
Lake Chub	-
Leopard Dace	-
Umatilla Dace	-
River Lamprey	-
<b>Steelhead</b>	
Snake River	FT
Upper Columbia	FT
Middle Columbia	FT
Lower Columbia	FT
Bull Trout	FT

### MOLLUSKS (7)

Shortface Lanx	-
Ashy (Columbia) Pebblesnail	-
California Floater	-
Columbia Oregonian (snail)	90d
Poplar Oregonian (snail)	-
Dalles Sideband (snail)	90d
Blue-gray Taildropper (slug)	-



Many species of uncertain conservation need are listed in our State Wildlife Action Plan:

<https://wdfw.wa.gov/species-habitats/at-risk/swap>

### INSECTS (18)

Beller's Ground Beetle	-
Mann's Mollusk-eating Ground Beetle	-
Columbia River Tiger Beetle	-
Hatch's Click Beetle	-
Columbia Clubtail (dragonfly)	-
Pacific Clubtail	-
Sand-verbena Moth	-
Yuma Skipper	-
Makah Copper	-
Chinquapin Hairstreak	-
Johnson's Hairstreak	-
Juniper Hairstreak	-
Puget Blue	-
Valley Silverspot	-
Silver-bordered Fritillary	-
Great Arctic	-
Island Marble	FE
Western Bumble Bee	90d

### OTHER INVERTEBRATES (2)

Giant Palouse Earthworm	-
Leschi's Millipede	-

For more information, check our website:

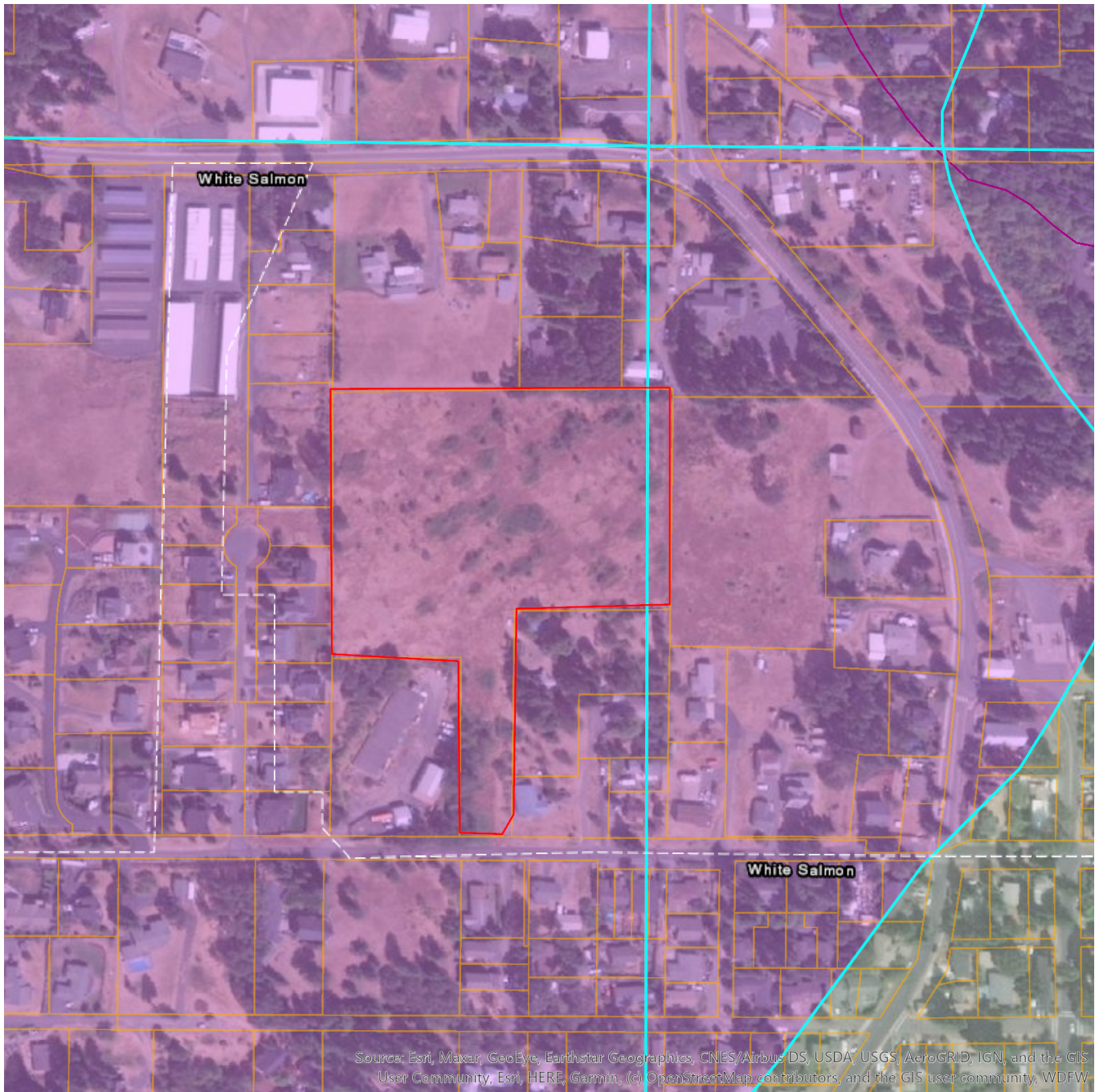
<https://wdfw.wa.gov/species-habitats/species>

Or contact us:

Wildlife Program (360) 902-2515  
Fish Program (360) 902-2700



# Priority Habitats and Species on the Web



**Report Date: 10/29/2021**

## PHS Species/Habitats Overview:

Occurrence Name	Federal Status	State Status	Sensitive Location
Mule and black-tailed deer	N/A	N/A	No
California mountain kingsnake	N/A	Candidate	Yes
Northern Spotted Owl	Threatened	Endangered	Yes
Little Brown Bat	N/A	N/A	Yes
Yuma myotis	N/A	N/A	Yes

## PHS Species/Habitats Details:

Mule and black-tailed deer	
Scientific Name	<i>Odocoileus hemionus</i>
Priority Area	Regular Concentration
Site Name	LOWER WHITE SALMON WINTER RANGE DAMAGE AREAS
Accuracy	1/4 mile (Quarter Section)
Notes	BLACK-TAIL DEER WINTER RANGE AGRICULTURAL LAND AND RURAL HOUSING ALONG THE LOWER WHITE SALMON RIVER USED CONSISTANTLY BY WINTERING DEER RESULTING IN DAMAGE COMPLAINTS
Source Record	905012
Source Dataset	PHSREGION
Source Name	BICKNELL, BOB WDW
Source Entity	WA Dept. of Fish and Wildlife
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS LISTED OCCURRENCE
Sensitive	N
SGCN	N
Display Resolution	AS MAPPED
ManagementRecommendations	<a href="http://wdfw.wa.gov/publications/pub.php?id=00612">http://wdfw.wa.gov/publications/pub.php?id=00612</a>
Geometry Type	Polygons

California mountain kingsnake	
Scientific Name	<i>Lampropeltis zonata</i>
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release (360-902-2543) for obtaining information about masked sensitive species and habitats.
Federal Status	N/A
State Status	Candidate
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
SGCN	Y
Display Resolution	QTR-TWP
ManagementRecommendations	<a href="http://wdfw.wa.gov/publications/pub.php?id=00025">http://wdfw.wa.gov/publications/pub.php?id=00025</a>

California mountain kingsnake	
Scientific Name	<i>Lampropeltis zonata</i>
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release (360-902-2543) for obtaining information about masked sensitive species and habitats.
Federal Status	N/A
State Status	Candidate
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
SGCN	Y
Display Resolution	QTR-TWP
ManagementRecommendations	<a href="http://wdfw.wa.gov/publications/pub.php?id=00025">http://wdfw.wa.gov/publications/pub.php?id=00025</a>

Northern Spotted Owl	
Scientific Name	<i>Strix occidentalis</i>
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release (360-902-2543) for obtaining information about masked sensitive species and habitats.
Federal Status	Threatened
State Status	Endangered
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
SGCN	Y
Display Resolution	TOWNSHIP
ManagementRecommendations	<a href="http://wdfw.wa.gov/publications/pub.php?id=00026">http://wdfw.wa.gov/publications/pub.php?id=00026</a>

Little Brown Bat	
Scientific Name	<i>Myotis lucifugus</i>
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release (360-902-2543) for obtaining information about masked sensitive species and habitats.
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
SGCN	N
Display Resolution	TOWNSHIP
ManagementRecommendations	<a href="http://wdfw.wa.gov/publications/pub.php?id=00605">http://wdfw.wa.gov/publications/pub.php?id=00605</a>

Northern Spotted Owl	
Scientific Name	<i>Strix occidentalis</i>
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release (360-902-2543) for obtaining information about masked sensitive species and habitats.
Federal Status	Threatened
State Status	Endangered
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
SGCN	Y
Display Resolution	TOWNSHIP
ManagementRecommendations	<a href="http://wdfw.wa.gov/publications/pub.php?id=00026">http://wdfw.wa.gov/publications/pub.php?id=00026</a>

Yuma myotis	
Scientific Name	<i>Myotis yumanensis</i>
Notes	This polygon mask represents one or more records of the above species or habitat occurrence. Contact PHS Data Release (360-902-2543) for obtaining information about masked sensitive species and habitats.
Federal Status	N/A
State Status	N/A
PHS Listing Status	PHS Listed Occurrence
Sensitive	Y
SGCN	N
Display Resolution	TOWNSHIP
ManagementRecommendations	<a href="http://wdfw.wa.gov/publications/pub.php?id=00605">http://wdfw.wa.gov/publications/pub.php?id=00605</a>

DISCLAIMER. This report includes information that the Washington Department of Fish and Wildlife (WDFW) maintains in a central computer database. It is not an attempt to provide you with an official agency response as to the impacts of your project on fish and wildlife. This information only documents the location of fish and wildlife resources to the best of our knowledge. It is not a complete inventory and it is important to note that fish and wildlife resources may occur in areas not currently known to WDFW biologists, or in areas for which comprehensive surveys have not been conducted. Site specific surveys are frequently necessary to rule out the presence of priority resources. Locations of fish and wildlife resources are subject to variation caused by disturbance, changes in season and weather, and other factors. WDFW does not recommend using reports more than six months old.

# APPENDIX 5



# Klickitat County Noxious Weed List



**Turkish thistle, *Carduus cinereus*,**  
is a new Class A noxious weed for 2021.

This annual thistle is found close to Washington in northeastern Oregon and the adjacent area in Idaho. Eradication is required of Turkish thistle when found in Washington

Noxious weeds are non-native plants introduced to Washington through human actions. Because of their aggressive growth and lack of natural enemies in the state, these species can be highly destructive, competitive or difficult to control. These exotic species can reduce crop yields, destroy native plant and animal habitat, damage recreational opportunities, clog water-ways, lower land values and poison humans and livestock.

To help protect the county's resources, the Klickitat County Noxious Weed Control Board adopts a County Noxious Weed List each year. This list categorizes weeds into three major classes - A, B and C – according to the seriousness of the threat they pose to the county.

## Class C Weeds

**Class C weeds** are non-native weeds found in Washington. Many of these species are widespread in the state. Long-term programs of suppression and control are a local option, depending upon local threats and the feasibility of control in local areas.

<u>Common name</u>	<u>Scientific name</u>
Austrian fieldcress *	<i>Rorippa austriaca</i>
black henbane	<i>Hyoscyamus niger</i>
buffalobur *	<i>Solanum rostratum</i>
common St. Johnswort *	<i>Hypericum perforatum</i>
common teasel *	<i>Dipsacus fullonum</i>
Eurasian watermilfoil *	<i>Myriophyllum spicatum</i> x
hybrid	<i>Myriophyllum sibiricum</i>
hairy whitetop *	<i>Lepidium appelianum</i>
hoary cress *	<i>Lepidium draba</i>
Italian arum *	<i>Arum italicum</i>
jointed goatgrass *	<i>Aegilops cylindrica</i>
jubata grass	<i>Cortaderia jubata</i>
longspine sandbur *	<i>Cenchrus longispinus</i>
nonnative cattail species & hybrids (reminder, does not include the native common cattail, <i>Typha latifolia</i> )	<i>Typha</i> species
oxeye daisy	<i>Leucanthemum vulgare</i>
Pampas grass *	<i>Cortaderia selloana</i>
spikeweed *	<i>Centromadia pungens</i>
spiny cocklebur *	<i>Xanthium spinosum</i>
spotted jewelweed *	<i>Impatiens capensis</i>
Swainsonpea *	<i>Sphaerophysa salsula</i>
thistle, Canada *	<i>Cirsium arvense</i>
tree-of-heaven *	<i>Ailanthus altissima</i>
wild carrot *	<i>Daucus carota</i>
yellow flag iris *	<i>Iris pseudacorus</i>

\* indicates known population in Klickitat County

## To find out more about weeds and weed control in Washington, contact:

Klickitat County  
Noxious Weed Control Board  
228 West Main St., MS-CH-23  
Goldendale, WA 98620  
509-773-5810  
Email: [noxiousweed@klickitatcounty.org](mailto:noxiousweed@klickitatcounty.org)  
Web site:  
<https://www.klickitatcounty.org/562/Weed-Control>

or

Washington State  
Noxious Weed Control Board  
1111 Washington Street  
P.O. Box 42560  
Olympia, WA 98504-2560  
360-725-5764  
Email: [noxiousweeds@agr.wa.gov](mailto:noxiousweeds@agr.wa.gov)  
Web site:  
<http://www.nwcb.wa.gov/>

or

Washington State  
Department of Agriculture  
21 North First Avenue #103  
Yakima, WA 98902  
509-225-2604



### **Class A Weeds**

**Class A weeds** are non-native species with a limited distribution in Washington. Preventing new infestations and eradicating existing infestations is the highest priority. Eradication is required by law.

<u>Common name</u>	<u>Scientific name</u>
common crupina	<i>Crupina vulgaris</i>
cordgrass, common	<i>Spartina anglica</i>
cordgrass, dense-flowered	<i>Spartina densiflora</i>
cordgrass, saltmeadow	<i>Spartina patens</i>
cordgrass, smooth	<i>Spartina alterniflora</i>
dyer's woad	<i>Isatis tinctoria</i>
eggleaf spurge *	<i>Euphorbia oblongata</i>
false brome	<i>Brachypodium sylvaticum</i>
floating primrose-willow	<i>Ludwigia peploides</i>
flowering rush	<i>Butomus umbellatus</i>
French broom	<i>Genista monspessulana</i>
garlic mustard	<i>Alliaria petiolata</i>
giant hogweed *	<i>Heracleum mantegazzianum</i>
goatsrue	<i>Galega officinalis</i>
hydrilla	<i>Hydrilla verticillata</i>
Johnsongrass *	<i>Sorghum halepense</i>
knapweed, bighead *	<i>Centaurea macrocephala</i>
knapweed, Vochin *	<i>Centaurea nigrescens</i>
kudzu	<i>Pueraria montana</i> var. <i>lobata</i>
meadow clary	<i>Salvia pratensis</i>
oriental clematis *	<i>Clematis orientalis</i>
purple starthistle	<i>Centaurea calcitrapa</i>
reed sweetgrass	<i>Glyceria maxima</i>
ricefield bulrush	<i>Schoenoplectus mucronatus</i>
sage, clary	<i>Salvia sclarea</i>
sage, Mediterranean *	<i>Salvia aethiopis</i>
silverleaf nightshade	<i>Solanum elaeagnifolium</i>
small-flowered jewelweed	<i>Impatiens parviflora</i>
South American spongeplant	<i>Limnobium laevigatum</i>
Spanish broom	<i>Spartium junceum</i>
Syrian beancaper	<i>Zygophyllum fabago</i>
Texas blueweed	<i>Helianthus ciliaris</i>
thistle, Italian	<i>Carduus pycnocephalus</i>
thistle, milk	<i>Silybum marianum</i>
thistle, slenderflower	<i>Carduus tenuiflorus</i>
thistle, Turkish	<i>Carduus cinereus</i>
variable-leaf milfoil	<i>Myriophyllum heterophyllum</i>
wild four o'clock	<i>Mirabilis nyctaginea</i>

### **Class B Weeds**

**Class B weeds** are non-native species presently limited to portions of the state. Class B species are designated for control in regions where they are not yet widespread. Preventing infestations in these areas is a high priority. In regions where a Class B species is already abundant, control is decided at the local level, with containment as the primary goal.

#### **Class B Designate Weeds in Klickitat County**

<u>Common name</u>	<u>Scientific name</u>
blueweed	<i>Echium vulgare</i>
Brazilian elodea	<i>Egeria densa</i>
bugloss, annual	<i>Lycopsis arvensis</i>
bugloss, common	<i>Anchusa officinalis</i>
camelthorn	<i>Alhagi maurorum</i>
common fennel, (except bulbing fennel)	<i>Foeniculum vulgare</i>
common reed, nonnative	<i>Phragmites australis</i>
fanwort	<i>Cabomba caroliniana</i>
gorse	<i>Ulex europaeus</i>
grass-leaved arrowhead	<i>Sagittaria graminea</i>
hawkweed oxtongue	<i>Picris hieracioides</i>
hawkweed, orange	<i>Hieracium aurantiacum</i>
hawkweeds: All non-native species/hybrids of the WALL subgenus	<i>Hieracium</i> , subgenus <i>Hieracium</i>
herb-Robert *	<i>Geranium robertianum</i>
knapweed, black	<i>Centaurea nigra</i>
knapweed, brown	<i>Centaurea jacea</i>
knotweed, Bohemian *	<i>Fallopia x bohémica</i>
knotweed, giant *	<i>Fallopia sachalinensis</i>
knotweed, Himalayan	<i>Persicaria wallichii</i>
knotweed, Japanese *	<i>Fallopia japonica</i>
loosestrife, garden	<i>Lysimachia vulgaris</i>
loosestrife, purple *	<i>Lythrum salicaria</i>
loosestrife, wand	<i>Lythrum virgatum</i>
Malta starthistle	<i>Centaurea melitensis</i>
parrotfeather	<i>Myriophyllum aquaticum</i>
policeman's helmet	<i>Impatiens glandulifera</i>
saltcedar *	<i>Tamarix ramosissima</i> (unless intentionally planted prior to 2004)
shiny geranium	<i>Geranium lucidum</i>
spurge flax	<i>Thymelaea passerina</i>
spurge laurel	<i>Daphne laureola</i>
spurge, leafy *	<i>Euphorbia virgata</i>
spurge, myrtle *	<i>Euphorbia myrsinites</i>
thistle, musk *	<i>Carduus nutans</i>
thistle, plumeless *	<i>Carduus acanthoides</i>

thistle, Scotch *	<i>Onopordum acanthium</i>
velvetleaf	<i>Abutilon theophrasti</i>
water primrose	<i>Ludwigia hexapetala</i>
white bryony	<i>Bryonia alba</i>
wild chervil	<i>Anthriscus sylvestris</i>
yellow archangel *	<i>Lamiastrum galeobdolon</i>
yellow floatingheart	<i>Nymphoides peltata</i>

#### **Class B Non-Designate Weeds in Klickitat County**

<u>Common name</u>	<u>Scientific name</u>
butterfly bush *	<i>Buddleja davidii</i>
Dalmatian toadflax *	<i>Linaria dalmatICA</i> ssp. <i>dalmatICA</i>
Eurasian watermilfoil *	<i>Myriophyllum spicatum</i>
European coltsfoot	<i>Tussilago farfara</i>
hairy willowherb *	<i>Epilobium hirsutum</i>
hawkweeds: All non-native species/hybrids of the MEADOW subgenus	<i>Hieracium</i> , subgenus <i>Pilosella</i>
hoary alyssum *	<i>Berteroa incana</i>
houndstongue *	<i>Cynoglossum officinale</i>
indigobush *	<i>Amorpha fruticosa</i>
knapweed, diffuse *	<i>Centaurea diffusa</i>
knapweed, meadow *	<i>Centaurea x gerstlaueri</i>
knapweed, Russian *	<i>Rhaponticum repens</i>
knapweed, spotted *	<i>Centaurea stoebe</i>
kochia *	<i>Bassia scoparia</i>
lesser celandine *	<i>Ficaria verna</i>
perennial pepperweed *	<i>Lepidium latifolium</i>
poison hemlock *	<i>Conium maculatum</i>
puncturevine *	<i>Tribulus terrestris</i>
Ravenna grass	<i>Tripsidium ravennae</i>
rush skeletonweed *	<i>Chondrilla juncea</i>
Scotch broom *	<i>Cytisus scoparius</i>
sulfur cinquefoil *	<i>Potentilla recta</i>
tansy ragwort *	<i>Jacobaea vulgaris</i>
yellow nutsedge *	<i>Cyperus esculentus</i>
yellow starthistle *	<i>Centaurea solstitialis</i>

### Class C Weeds

absinth wormwood	<i>Artemisia absinthium</i>
Austrian fieldcress	<i>Rorippa austriaca</i>
babysbreath	<i>Gypsophila paniculata</i>
black henbane	<i>Hyoscyamus niger</i>
blackgrass	<i>Alopecurus myosuroides</i>
buffalobur	<i>Solanum rostratum</i>
cereal rye	<i>Secale cereale</i>
common barberry	<i>Berberis vulgaris</i>
common catsear	<i>Hypochaeris radicata</i>
common groundsel	<i>Senecio vulgaris</i>
common St. Johnswort	<i>Hypericum perforatum</i>
common tansy	<i>Tanacetum vulgare</i>
common teasel	<i>Dipsacus fullonum</i>
curlyleaf pondweed	<i>Potamogeton crispus</i>
English hawthorn	<i>Crataegus monogyna</i>
English ivy - four cultivars only	<i>Hedera helix</i> 'Baltica', 'Pittsburgh', and 'Star', and <i>H. hibernica</i> 'Hibernica'
Eurasian watermilfoil hybrid	<i>Myriophyllum spicatum</i> x <i>Myriophyllum sibiricum</i>
evergreen blackberry	<i>Rubus laciniatus</i>
field bindweed	<i>Convolvulus arvensis</i>
fragrant waterlily	<i>Nymphaea odorata</i>
hairy whitetop	<i>Lepidium appelianum</i>
Himalayan blackberry	<i>Rubus bifrons</i> ( <i>Rubus armeniacus</i> )
hoary cress	<i>Lepidium draba</i>
Italian arum	<i>Arum italicum</i>
Japanese eelgrass	<i>Nanozostera japonica</i>
jubata grass	<i>Cortaderia jubata</i>
jointed goatgrass	<i>Aegilops cylindrica</i>
lawnweed	<i>Soliva sessilis</i>
longspine sandbur	<i>Cenchrus longispinus</i>
medusahead	<i>Taeniatherum caput-medusae</i>
nonnative cattail species and hybrids (reminder, does not include the native common cattail, <i>Typha latifolia</i> )	<i>Typha</i> species
old man's beard	<i>Clematis vitalba</i>
oxeye daisy	<i>Leucanthemum vulgare</i>
Pampas grass	<i>Cortaderia selloana</i>
perennial sowthistle	<i>Sonchus arvensis</i>
reed canarygrass	<i>Phalaris arundinacea</i>

### Class C Weeds continued

Russian olive	<i>Elaeagnus angustifolia</i>
scentless mayweed	<i>Tripleurospermum inodorum</i>
smoothseed alfalfa dodder	<i>Cuscuta approximata</i>
spikeweed	<i>Centromadia pungens</i>
spiny cocklebur	<i>Xanthium spinosum</i>
spotted jewelweed	<i>Impatiens capensis</i>
Swainsonpea	<i>Sphaerophysa salsula</i>
thistle, bull	<i>Cirsium vulgare</i>
thistle, Canada	<i>Cirsium arvense</i>
tree-of-heaven	<i>Ailanthus altissima</i>
ventenata	<i>Ventenata dubia</i>
white cockle	<i>Silene latifolia</i>
wild carrot (except where commercially grown)	<i>Daucus carota</i>
yellow flag iris	<i>Iris pseudacorus</i>
yellow toadflax	<i>Linaria vulgaris</i>

To learn more about noxious weeds and noxious weed control in Washington State, please contact:

#### WA State Noxious Weed Control Board

P.O. Box 42560  
Olympia, WA 98504-2560  
(360) 725-5764

Email: [noxiousweeds@agr.wa.gov](mailto:noxiousweeds@agr.wa.gov)  
Website: <http://www.nwcb.wa.gov>

Or

**WA State Department of Agriculture**  
(509) 249-6973

Or

**Your County Noxious Weed Control Board**

**Please help protect Washington's economy and environment from noxious weeds!**

Cover photo of Turkish thistle by Mark Porter, Oregon  
Department of Agriculture

# 2021

## Washington State Noxious Weed List



Turkish thistle, *Carduus cinereus*, is a new Class A noxious weed for 2021. This annual thistle is found close to Washington in northeastern Oregon and the adjacent area in Idaho. Eradication is required of Turkish thistle when found in Washington.

List arranged alphabetically by:

**COMMON NAME**



**Class A Weeds:** Non-native species whose distribution in Washington is still limited. Preventing new infestations and eradicating existing infestations are the highest priority.

**Eradication of all Class A plants is required by law.**

**Class B Weeds:** Non-native species presently limited to portions of the State. Species are **designated** for required control in regions where they are not yet widespread. Preventing new infestations in these areas is a high priority. In regions where a Class B species is already abundant, control is decided at the local level, with containment as the primary goal. Please contact your County Noxious Weed Control Board to learn which species are designated for control in your area.

**Class C Weeds:** Noxious weeds that are typically widespread in WA or are of special interest to the state's agricultural industry. The Class C status allows county weed boards to require control if locally desired, or they may choose to provide education or technical consultation.

### Class A Weeds Eradication is required

common crupina	<i>Crupina vulgaris</i>
cordgrass, common	<i>Spartina anglica</i>
cordgrass, dense-flowered	<i>Spartina densiflora</i>
cordgrass, saltmeadow	<i>Spartina patens</i>
cordgrass, smooth	<i>Spartina alterniflora</i>
dyer's woad	<i>Isatis tinctoria</i>
eggleaf spurge	<i>Euphorbia oblongata</i>
false brome	<i>Brachypodium sylvaticum</i>
floating primrose-willow	<i>Ludwigia peploides</i>
flowering rush	<i>Butomus umbellatus</i>
French broom	<i>Genista monspessulana</i>
garlic mustard	<i>Alliaria petiolata</i>
giant hogweed	<i>Heracleum mantegazzianum</i>
goatsrue	<i>Galega officinalis</i>
hydrilla	<i>Hydrilla verticillata</i>
Johnsongrass	<i>Sorghum halepense</i>
knapweed, bighead	<i>Centaurea macrocephala</i>
knapweed, Vochin	<i>Centaurea nigrescens</i>
kudzu	<i>Pueraria montana</i> var. <i>lobata</i>
meadow clary	<i>Salvia pratensis</i>
oriental clematis	<i>Clematis orientalis</i>
purple starthistle	<i>Centaurea calcitrapa</i>
reed sweetgrass	<i>Glyceria maxima</i>

ricefield bulrush	<i>Schoenoplectus mucronatus</i>
sage, clary	<i>Salvia sclarea</i>
sage, Mediterranean	<i>Salvia aethiopsis</i>
silverleaf nightshade	<i>Solanum elaeagnifolium</i>
small-flowered jewelweed	<i>Impatiens parviflora</i>
South American spongeplant	<i>Limnium laevigatum</i>
Spanish broom	<i>Spartium junceum</i>
Syrian beancaper	<i>Zygophyllum fabago</i>
Texas blueweed	<i>Helianthus ciliaris</i>
thistle, Italian	<i>Carduus pycnocephalus</i>
thistle, milk	<i>Silybum marianum</i>
thistle, slenderflower	<i>Carduus tenuiflorus</i>
thistle, Turkish	<i>Carduus cinereus</i>
variable-leaf milfoil	<i>Myriophyllum heterophyllum</i>
wild four-o'clock	<i>Mirabilis nyctaginea</i>

### Class B Weeds

blueweed	<i>Echium vulgare</i>
Brazilian elodea	<i>Egeria densa</i>
bugloss, annual	<i>Lycopsis arvensis</i>
bugloss, common	<i>Anchusa officinalis</i>
butterfly bush	<i>Buddleja davidii</i>
camelthorn	<i>Alhagi maurorum</i>
common fennel, (except bulbous fennel)	<i>Foeniculum vulgare</i> except <i>F. vulgare</i> var. <i>azoricum</i> )
common reed (nonnative genotypes only)	<i>Phragmites australis</i>
Dalmatian toadflax	<i>Linaria dalmatica</i> ssp. <i>dalmatica</i>
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>
European coltsfoot	<i>Tussilago farfara</i>
fanwort	<i>Cabomba caroliniana</i>
gorse	<i>Ulex europaeus</i>
grass-leaved arrowhead	<i>Sagittaria graminea</i>
hairy willowherb	<i>Epilobium hirsutum</i>
hawkweed oxtongue	<i>Picris hieracioides</i>
hawkweed, orange	<i>Hieracium aurantiacum</i>
hawkweeds: All nonnative species and hybrids of the meadow subgenus	<i>Hieracium</i> , subgenus <i>Pilosella</i>
hawkweeds: All nonnative species and hybrids of the wall subgenus	<i>Hieracium</i> , subgenus <i>Hieracium</i>
herb-Robert	<i>Geranium robertianum</i>

hoary alyssum	<i>Berteroa incana</i>
houndstongue	<i>Cynoglossum officinale</i>
indigobush	<i>Amorpha fruticosa</i>
knapweed, black	<i>Centaurea nigra</i>
knapweed, brown	<i>Centaurea jacea</i>
knapweed, diffuse	<i>Centaurea diffusa</i>
knapweed, meadow	<i>Centaurea × gerstlaueri</i>
knapweed, Russian	<i>Rhaponticum repens</i>
knapweed, spotted	<i>Centaurea stoebe</i>
knotweed, Bohemian	<i>Fallopia × bohémica</i>
knotweed, giant	<i>Fallopia sachalinensis</i>
knotweed, Himalayan	<i>Persicaria wallichii</i>
knotweed, Japanese	<i>Fallopia japonica</i>
kochia	<i>Bassia scoparia</i>
lesser celandine	<i>Ficaria verna</i>
loosestrife, garden	<i>Lysimachia vulgaris</i>
loosestrife, purple	<i>Lythrum salicaria</i>
loosestrife, wand	<i>Lythrum virgatum</i>
Malta starthistle	<i>Centaurea melitensis</i>
parrotfeather	<i>Myriophyllum aquaticum</i>
perennial pepperweed	<i>Lepidium latifolium</i>
poison hemlock	<i>Conium maculatum</i>
policeman's helmet	<i>Impatiens glandulifera</i>
puncturevine	<i>Tribulus terrestris</i>
Ravenna grass	<i>Triplidium ravennae</i>
rush skeletonweed	<i>Chondrilla juncea</i>
saltcedar	<i>Tamarix ramosissima</i>
Scotch broom	<i>Cytisus scoparius</i>
shiny geranium	<i>Geranium lucidum</i>
spurge flax	<i>Thymelaea passerina</i>
spurge laurel	<i>Daphne laureola</i>
spurge, leafy	<i>Euphorbia virgata</i>
spurge, myrtle	<i>Euphorbia myrsinites</i>
sulfur cinquefoil	<i>Potentilla recta</i>
tansy ragwort	<i>Jacobaea vulgaris</i>
thistle, musk	<i>Carduus nutans</i>
thistle, plumeless	<i>Carduus acanthoides</i>
thistle, Scotch	<i>Onopordum acanthium</i>
velvetleaf	<i>Abutilon theophrasti</i>
water primrose	<i>Ludwigia hexapetala</i>
white bryony	<i>Bryonia alba</i>
wild chervil	<i>Anthriscus sylvestris</i>
yellow archangel	<i>Lamium galeobdolon</i>
yellow floating heart	<i>Nymphoides peltata</i>
yellow nutsedge	<i>Cyperus esculentus</i>
yellow starthistle	<i>Centaurea solstitialis</i>

# APPENDIX 6



# INADVERTENT DISCOVERY PLAN PLAN AND PROCEDURES FOR THE DISCOVERY OF CULTURAL RESOURCES AND HUMAN SKELETAL REMAINS

To request ADA accommodation, including materials in a format for the visually impaired, call Ecology at 360-407-6000 or visit <https://ecology.wa.gov/accessibility>. People with impaired hearing may call Washington Relay Service at 711. People with a speech disability may call TTY at 877-833-6341.

Site Name(s):  Location:

Project Lead/Organization:  County:

*If this Inadvertent Discovery Plan (IDP) is for multiple (batched) projects, ensure the location information covers all project areas.*

## 1. INTRODUCTION

The IDP outlines procedures to perform in the event of a discovery of archaeological materials or human remains, in accordance with applicable state and federal laws. An IDP is required, as part of Agency Terms and Conditions for all grants and loans, for any project that creates disturbance above or below the ground. An IDP is not a substitute for a formal cultural resource review (Executive 21-02 or Section 106).

Once completed, **the IDP should always be kept at the project site** during all project activities. All staff, contractors, and volunteers should be familiar with its contents and know where to find it.

## 2. CULTURAL RESOURCE DISCOVERIES

A cultural resource discovery could be prehistoric or historic. Examples include (see images for further examples):

- An accumulation of shell, burned rocks, or other food related materials.
- Bones, intact or in small pieces.
- An area of charcoal or very dark stained soil with artifacts.
- Stone tools or waste flakes (for example, an arrowhead or stone chips).
- Modified or stripped trees, often cedar or aspen, or other modified natural features, such as rock drawings.
- Agricultural or logging materials that appear older than 50 years. These could include equipment, fencing, canals, spillways, chutes, derelict sawmills, tools, and many other items.
- Clusters of tin cans or bottles, or other debris that appear older than 50 years.
- Old munitions casings. **Always assume these are live and never touch or move.**
- Buried railroad tracks, decking, foundations, or other industrial materials.
- Remnants of homesteading. These could include bricks, nails, household items, toys, food containers, and other items associated with homes or farming sites.

The above list does not cover every possible cultural resource. When in doubt, assume the material is a cultural resource.

### 3. ON-SITE RESPONSIBILITIES

If any employee, contractor, or subcontractor believes that they have uncovered cultural resources or human remains at any point in the project, take the following steps to **Stop-Protect-Notify**. **If you suspect that the discovery includes human remains, also follow Sections 5 and 6.**

#### STEP A: Stop Work.

All work must stop immediately in the vicinity of the discovery.

#### STEP B: Protect the Discovery.

Leave the discovery and the surrounding area untouched and create a clear, identifiable, and wide boundary (30 feet or larger) with temporary fencing, flagging, stakes, or other clear markings. Provide protection and ensure integrity of the discovery until cleared by the Department of Archaeological and Historical Preservation (DAHP) or a licensed, professional archaeologist.

Do not permit vehicles, equipment, or unauthorized personnel to traverse the discovery site. Do not allow work to resume within the boundary until the requirements of this IDP are met.

#### STEP C: Notify Project Archaeologist (if applicable).

If the project has an archaeologist, notify that person. If there is a monitoring plan in place, the archaeologist will follow the outlined procedure.

#### STEP D: Notify Project and Washington Department of Ecology (Ecology) contacts.

##### Project Lead Contacts

###### Primary Contact

Name:   
Organization:   
Phone:   
Email:

###### Alternate Contact

Name:   
Organization:   
Phone:   
Email:

##### Ecology Contacts (completed by Ecology Project Manager)

###### Ecology Project Manager

Name:   
Program:   
Phone:   
Email:

###### Alternate or Cultural Resource Contact

Name:   
Program:   
Phone:   
Email:

**STEP E: Ecology will notify DAHP.**

Once notified, the Ecology Cultural Resource Contact or the Ecology Project Manager will contact DAHP to report and confirm the discovery. To avoid delay, the Project Lead/Organization will contact DAHP if they are not able to reach Ecology.

DAHP will provide the steps to assist with identification. DAHP, Ecology, and Tribal representatives may coordinate a site visit following any necessary safety protocols. DAHP may also inform the Project Lead/Organization and Ecology of additional steps to further protect the site.

**Do not continue work until DAHP has issued an approval for work to proceed in the area of, or near, the discovery.**

DAHP Contacts:

Name: Rob Whitlam, PhD  
Title: State Archaeologist  
Cell: 360-890-2615  
Email: [Rob.Whitlam@dahp.wa.gov](mailto:Rob.Whitlam@dahp.wa.gov)  
Main Office: 360-586-3065

**Human Remains/Bones:**

Name: Guy Tasa, PhD  
Title: State Anthropologist  
Cell: 360-790-1633 (24/7)  
Email: [Guy.Tasa@dahp.wa.gov](mailto:Guy.Tasa@dahp.wa.gov)

**4. TRIBAL CONTACTS**

In the event cultural resources are discovered, the following tribes will be contacted. See Section 10 for Additional Resources.

Tribe:	<input type="text"/>	Tribe:	<input type="text"/>
Name:	<input type="text"/>	Name:	<input type="text"/>
Title:	<input type="text"/>	Title:	<input type="text"/>
Phone:	<input type="text"/>	Phone:	<input type="text"/>
Email:	<input type="text"/>	Email:	<input type="text"/>
Tribe:	<input type="text"/>	Tribe:	<input type="text"/>
Name:	<input type="text"/>	Name:	<input type="text"/>
Title:	<input type="text"/>	Title:	<input type="text"/>
Phone:	<input type="text"/>	Phone:	<input type="text"/>
Email:	<input type="text"/>	Email:	<input type="text"/>

Please provide contact information for additional tribes within your project area, if needed, in Section 11.

**5. FURTHER CONTACTS (if applicable)**

If the discovery is confirmed by DAHP as a cultural or archaeological resource, or as human remains, and there is a partnering federal or state agency, Ecology or the Project Lead/Organization will ensure the partnering agency is immediately notified.



Federal Agency:

Agency:

Name:

Title:

Phone:

Email:

State Agency:

Agency:

Name:

Title:

Phone:

Email:

**6. SPECIAL PROCEDURES FOR THE DISCOVERY OF HUMAN SKELETAL MATERIAL**

Any human skeletal remains, regardless of antiquity or ethnic origin, will at all times be treated with dignity and respect. Follow the steps under **Stop-Protect-Notify**. For specific instructions on how to handle a human remains discovery, see: [RCW 68.50.645: Skeletal human remains—Duty to notify—Ground disturbing activities—Coroner determination—Definitions](#).

**Suggestion:** If you are unsure whether the discovery is human bone or not, contact Guy Tasa with DAHP, for identification and next steps. Do not pick up the discovery.

Guy Tasa, PhD State Physical Anthropologist  
[Guy.Tasa@dahp.wa.gov](mailto:Guy.Tasa@dahp.wa.gov)  
(360) 790-1633 (Cell/Office)

For discoveries that are confirmed or suspected human remains, follow these steps:

1. Notify law enforcement and the Medical Examiner/Coroner using the contacts below. **Do not call 911** unless it is the only number available to you.

Enter contact information below (required):

- Local Medical Examiner or Coroner name and phone:

- Local Law Enforcement main name and phone:

- Local Non-Emergency phone number (911 if without a non-emergency number):

2. The Medical Examiner/Coroner (with assistance of law enforcement personnel) will determine if the remains are human or if the discovery site constitutes a crime scene and will notify DAHP.
3. **DO NOT speak with the media, allow photography or disturbance of the remains, or release any information about the discovery on social media.**
4. If the remains are determined to be non-forensic, Cover the remains with a tarp or other materials (not soil or rocks) for temporary protection and to shield them from being photographed by others or disturbed.

Further activities:

- Per [RCW 27.44.055](#), [RCW 68.50](#), and [RCW 68.60](#), DAHP will have jurisdiction over non-forensic human remains. Ecology staff will participate in consultation. Organizations may also participate in consultation.
- Documentation of human skeletal remains and funerary objects will be agreed upon through the consultation process described in [RCW 27.44.055](#), [RCW 68.50](#), and [RCW 68.60](#).
- When consultation and documentation activities are complete, work in the discovery area may resume as described in Section 8.

If the project occurs on federal lands (such as a national forest or park or a military reservation) the provisions of the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) apply and the responsible federal agency will follow its provisions. Note that state highways that cross federal lands are on an easement and are not owned by the state.

If the project occurs on non-federal lands, the Project Lead/Organization will comply with applicable state and federal laws, and the above protocol.

## **7. DOCUMENTATION OF ARCHAEOLOGICAL MATERIALS**

Archaeological resources discovered during construction are protected by state law [RCW 27.53](#) and assumed eligible for inclusion in the National Register of Historic Places under Criterion D until a formal Determination of Eligibility is made.

The Project Lead/Organization must ensure that proper documentation and field assessment are made of all discovered cultural resources in cooperation with all parties: the federal agencies (if any), DAHP, Ecology, affected tribes, and the archaeologist.

The archaeologist will record all prehistoric and historic cultural material discovered during project construction on a standard DAHP archaeological site or isolate inventory form. They will photograph site overviews, features, and artifacts and prepare stratigraphic profiles and soil/sediment descriptions for minimal subsurface exposures. They will document discovery locations on scaled site plans and site location maps.

Cultural features, horizons, and artifacts detected in buried sediments may require the archaeologist to conduct further evaluation using hand-dug test units. They will excavate units in a controlled fashion to expose features, collect samples from undisturbed contexts, or to interpret complex stratigraphy. They may also use a test unit or trench excavation to determine if an intact occupation surface is present. They will only use test units when necessary to gather information on the nature, extent, and integrity of subsurface cultural deposits to evaluate the site's significance. They will conduct excavations using standard archaeological techniques to precisely document the location of cultural deposits, artifacts, and features.

The archaeologist will record spatial information, depth of excavation levels, natural and cultural stratigraphy, presence or absence of cultural material, and depth to sterile soil, regolith, or bedrock for each unit on a standard form. They will complete test excavation unit level forms, which will include plan maps for each excavation level and artifact counts and material types, number, and vertical provenience (depth below

surface and stratum association where applicable) for all recovered artifacts. They will draw a stratigraphic profile for at least one wall of each test excavation unit.

The archaeologist will screen sediments excavated for purposes of cultural resources investigation through 1/8-inch mesh, unless soil conditions warrant 1/4-inch mesh.

The archaeologist will analyze, catalogue, and temporarily curate all prehistoric and historic artifacts collected from the surface and from probes and excavation units. The ultimate disposition of cultural materials will be determined in consultation with the federal agencies (if any), DAHP, Ecology, and the affected tribe(s).

Within 90 days of concluding fieldwork, the archaeologist will provide a technical report describing any and all monitoring and resultant archaeological excavations to the Project Lead/Organization, who will forward the report to Ecology, the federal agencies (if any), DAHP, and the affected tribe(s) for review and comment.

If assessment activities expose human remains (burials, isolated teeth, or bones), the archaeologist and Project Lead/Organization will follow the process described in **Section 6**.

## **8. PROCEEDING WITH WORK**

The Project Lead/Organization shall work with the archaeologist, DAHP, and affected tribe(s) to determine the appropriate discovery boundary and where work can continue.

Work may continue at the discovery location only after the process outlined in this plan is followed and the Project Lead/Organization, DAHP, any affected tribe(s), Ecology, and the federal agencies (if any) determine that compliance with state and federal laws is complete.

## **9. ORGANIZATION RESPONSIBILITY**

The Project Lead/Organization is responsible for ensuring:

- This IDP has complete and accurate information.
- This IDP is immediately available to all field staff at the sites and available by request to any party.
- This IDP is implemented to address any discovery at the site.
- That all field staff, contractors, and volunteers are instructed on how to implement this IDP.

## **10. ADDITIONAL RESOURCES**

### **Informative Video**

Ecology recommends that all project staff, contractors, and volunteers view this informative video explaining the value of IDP protocol and what to do in the event of a discovery. The target audience is anyone working on the project who could unexpectedly find cultural resources or human remains while excavating or digging. The video is also posted on DAHP's inadvertent discovery language website.

[Ecology's IDP Video](https://www.youtube.com/watch?v=ioX-4cXfbDY) (<https://www.youtube.com/watch?v=ioX-4cXfbDY>)

## Informational Resources

[DAHP \(https://dahp.wa.gov\)](https://dahp.wa.gov)

[Washington State Archeology \(DAHP 2003\)](https://dahp.wa.gov/sites/default/files/Field%20Guide%20to%20WA%20Arch_0.pdf)

[\(https://dahp.wa.gov/sites/default/files/Field%20Guide%20to%20WA%20Arch\\_0.pdf\)](https://dahp.wa.gov/sites/default/files/Field%20Guide%20to%20WA%20Arch_0.pdf)

[Association of Washington Archaeologists \(https://www.archaeologyinwashington.com\)](https://www.archaeologyinwashington.com)

## Potentially Interested Tribes

[Interactive Map of Tribes by Area](https://dahp.wa.gov/archaeology/tribal-consultation-information)

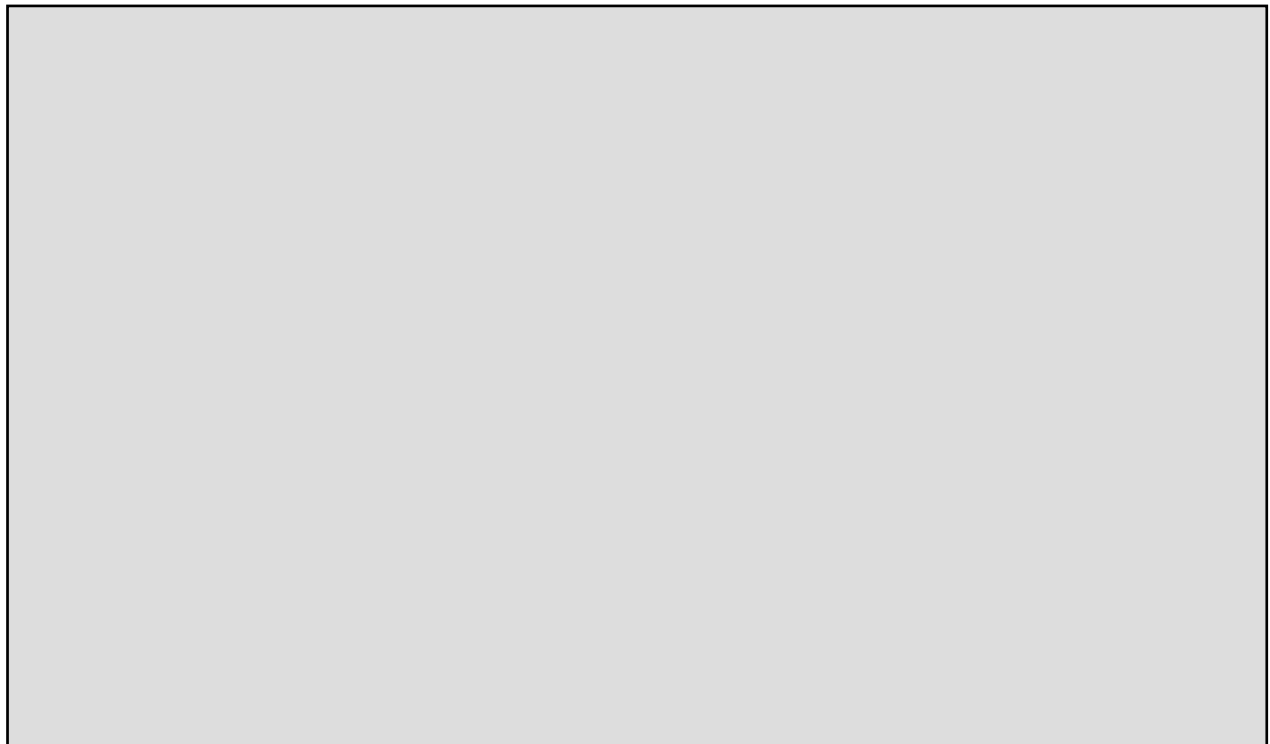
[\(https://dahp.wa.gov/archaeology/tribal-consultation-information\)](https://dahp.wa.gov/archaeology/tribal-consultation-information)

[WSDOT Tribal Contact Website](https://wsdot.wa.gov/tribal/TribalContacts.htm)

[\(https://wsdot.wa.gov/tribal/TribalContacts.htm\)](https://wsdot.wa.gov/tribal/TribalContacts.htm)

## 11. ADDITIONAL INFORMATION

Please add any additional contact information or other information needed within this IDP.



**Implement the IDP if you see...**

**Chipped stone artifacts.**

Examples are:

- Glass-like material.
- Angular material.
- “Unusual” material or shape for the area.
- Regularity of flaking.
- Variability of size.



*Stone artifacts from Oregon.*



*Stone artifacts from Washington.*



*Biface-knife, scraper, or pre-form found in NE Washington. Thought to be a well knapped object of great antiquity. Courtesy of Methow Salmon Rec. Foundation.*

## Implement the IDP if you see...

### Ground stone artifacts.

Examples are:

- Unusual or unnatural shapes or unusual stone.
- Striations or scratching.
- Etching, perforations, or pecking.
- Regularity in modifications.
- Variability of size, function, or complexity.



Above: Fishing Weight - credit [CRITFC Treaty Fishing Rights website](#).



Artifacts from unknown locations (left and right images).

**Implement the IDP if you see...**

**Bone or shell artifacts, tools, or beads.**

Examples are:

- Smooth or carved materials.
- Unusual shape.
- Pointed as if used as a tool.
- Wedge shaped like a “shoehorn”.
- Variability of size.
- Beads from shell (‘dentalium’) or tusk.



Upper Left: *Bone Awls from Oregon.*

Upper Center: *Bone Wedge from California.*

Upper Right: *Plateau dentalium choker and bracelet, from Nez Perce National Historical Park, 19th century, made using Antalis pretiosa shells Credit: Nez Perce - Nez Perce National Historical Park, NEPE 8762, [Public Domain](#).*

Above: *Tooth Pendants. Right: Bone Pendants. Both from Oregon and Washington.*

## Implement the IDP if you see...

### Culturally modified trees, fiber, or wood artifacts.

Examples are:

- Trees with bark stripped or peeled, carvings, axe cuts, de-limbing, wood removal, and other human modifications.
- Fiber or wood artifacts in a wet environment.
- Variability of size, function, and complexity.



Left and Below: *Culturally modified tree and an old carving on an aspen (Courtesy of DAHP).*

Right, Top to Bottom: *Artifacts from Mud Bay, Olympia: Toy war club, two strand cedar rope, wet basketry.*





## Implement the IDP if you see...

### Strange, different, or interesting looking dirt, rocks, or shells.

Human activities leave traces in the ground that may or may not have artifacts associated with them. Examples are:

- “Unusual” accumulations of rock (especially fire-cracked rock).
- “Unusual” shaped accumulations of rock (such as a shape similar to a fire ring).
- Charcoal or charcoal-stained soils, burnt-looking soils, or soil that has a “layer cake” appearance.
- Accumulations of shell, bones, or artifacts. Shells may be crushed.
- Look for the “unusual” or out of place (for example, rock piles in areas with otherwise few rocks).



*Shell Midden pocket in modern fill discovered in sewer trench.*



*Underground oven. Courtesy of DAHP.*

*Shell midden with fire cracked rock.*



*Hearth excavated near Hamilton, WA.*

**Implement the IDP if you see...**

**Historic period artifacts (historic archaeology considered older than 50 years).**

Examples are:

- Agricultural or logging equipment. May include equipment, fencing, canals, spillways, chutes, derelict sawmills, tools, etc.
- Domestic items including square or wire nails, amethyst colored glass, or painted stoneware.



Left: Top to Bottom: *Willow pattern serving bowl and slip joint pocket knife discovered during Seattle Smith Cove shantytown (45-KI-1200) excavation.*

Right: *Collections of historic artifacts discovered during excavations in eastern Washington cities.*



**Implement the IDP if you see...**

**Historic period artifacts (historic archaeology considered older than 50 years).**

Examples are:

- Railway tokens, coins, and buttons.
- Spectacles, toys, clothing, and personal items.
- Items helping to understand a culture or identity.
- Food containers and dishware.



Main Image: *Dishes, bottles, workboot found at the North Shore Japanese bath house (ofuro) site, Courtesy Bob Muckle, Archaeologist, Capilano University, B.C. This is an example of an above ground resource.*



Right, from Top to Bottom:  
*Coins, token, spectacles and Montgomery Ward pitchfork toy discovered during Seattle Smith Cove shantytown (45-KI-1200) excavation.*



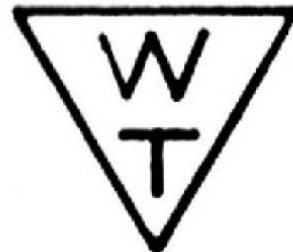
**Implement the IDP if you see...**

- Old munition casings – if you see ammunition of any type – ***always assume they are live and never touch or move!***
- Tin cans or glass bottles with an older manufacturer's technique – maker's mark, distinct colors such as turquoise, or an older method of opening the container.



Far Left: .303 British cartridge found by a WCC planting crew on Skagit River. Don't ever touch something like this!  
Left: Maker's mark on bottom of old bottle.

Right: Old beer can found in Oregon. ACME was owned by Olympia Brewery. Courtesy of Heather Simmons.



Logo employed by Whithall Tatum & Co. between 1924 to 1938 (Lockhart et al. 2016).



Can opening dates, courtesy of W.M. Schroeder.

Implement the IDP if you see...

You see historic foundations or buried structures.

Examples are:

- Foundations.
- Railroad and trolley tracks.
- Remnants of structures.



Counter Clockwise, Left to Right: *Historic structure 45KI924, in WSDOT right of way for SR99 tunnel. Remnants of Smith Cove shantytown (45-KI-1200) discovered during Ecology CSO excavation, City of Spokane historic trolley tracks uncovered during stormwater project, intact foundation of historic home that survived the Great Ellensburg Fire of July 4, 1889, uncovered beneath parking lot in Ellensburg.*

## Implement the IDP if you see...

### Potential human remains.

Examples are:

- Grave headstones that appear to be older than 50 years.
- Bones or bone tools--intact or in small pieces. It can be difficult to differentiate animal from human so they must be identified by an expert.
- These are all examples of animal bones and are not human.

Center: *Bone wedge tool, courtesy of Smith Cove Shantytown excavation (45KI1200).*

*Other images (Top Right, Bottom Left, and Bottom) Center: Courtesy of DAHP.*



Directly Above: This is a real discovery at an Ecology sewer project site.

*What would you do if you found these items at a site? Who would be the first person you would call?*

*Hint: Read the plan!*

# **APPENDIX 7**

**Preliminary Report:  
Identification of Candidate Heritage Trees,  
Assessment of Condition, and  
Estimation of Heritage Tree Protection Areas**

*for*

**Cameron Curtis  
Curtis Homes LLC  
*by***

**David M. Braun  
Braun Arboricultural Consulting LLC  
Hood River OR  
November 7<sup>th</sup>, 2023**

## **Background**

I was contacted by Cameron Curtis in early November 2023 regarding the need for an arborist’s assessment of candidate heritage trees potentially present on a lot and covered by the White Salmon Heritage Tree Ordinance. The lot is on the north side of Spring St. in White Salmon (Lot 4, Klickitat County Tax Lot #0310247500400, 7.93 ac.; Klickitat County, 2023).

Mr. Curtis requires an arborist’s assessment of Candidate Heritage Trees to facilitate final development plans and obtain permit approvals. The focus of this Report is to provide location and condition information on trees likely qualifying as Heritage Trees based on the Heritage Tree portion (18.10.317- Special Provisions-Heritage Trees) of the White Salmon Critical Areas Ordinance (Chapter 18.10) of Title 18 – Environment, White Salmon Code of Ordinances.

The following is my interpretation of the meaning and application of Section 18.10.317:

**HTPAs:** designation of Heritage Tree Protection Areas (HTPAs) is required for qualifying trees; dimensions are 10 times tree diameter at breast height (diameter at 4.5 ft.) plus a 15 ft. wide Building Set Back Line (BSBL), e.g., a 20 in. diameter oak would require a circle 200 in. (16.7 ft.) wide plus 15 ft. on all sides, adding up to a 46.7 ft. (47 ft.) wide protection zone (alternative is average crown width plus BSBL). Trees over 14 in. dbh (Oregon White Oak) or 18 in. dbh (other species) may be designated Heritage Trees. I refer to such trees as “Candidate Heritage Trees” before a final determination is made by the City as to what trees will be retained (see Tree removal, below). Significant incursions that are likely to significantly decrease tree health or stability are not allowed, such as cuts, fills, buried utilities, or building footprints over a significant portion of a HTPA; mitigation including fencing, mulching, temporary irrigation, are recommended to reduce impacts by minor incursions inside or work outside the HTPA.

**Tree removal:** If a property can’t be reasonably developed based on zoning due to extensive coverage of the parcel area by HTPAs, some Candidate Heritage Trees may be removed; dead, high risk, “weed” tree species such as *Ailanthus altissima* (Tree of Heaven), non-maintained fruit trees, or trees in very poor condition may also be removed even if they meet diameter requirements. Key sections of the Heritage Tree Ordinance are included at the end of this report.



## Scope

Two objectives are the subject of this report:

Describe the large trees on the property: their species, location, size (diameter, height, and spread), and overall condition. Trees over 14 in. dbh (Oregon White Oak) or 18 in. dbh (other species) may be designated Heritage Trees and protected during and after construction activities under the White Salmon Critical Areas Ordinance.

Identify Candidate Heritage Trees and estimate Heritage Tree Protection Areas (HTPAs) in relation to development plans. A Heritage Tree Protection Plan (HTPP) for mitigation of impacts to specific HTPAs will be prepared as a supplement to this Preliminary Report upon request that describes likely construction impacts and proposes mitigation. The HTPP will be based on this preliminary report, updated with revised recommendations for mitigation of likely construction impacts to Heritage Trees, and include a revised schematic showing the HTPAs, BSBLs, and building and other construction footprints; this schematic would ideally be prepared by the surveyor producing plans for the site.

## Methods

### Candidate Heritage Trees

Identify species and measure the diameter using a diameter tape. Visually assess trees for condition and defects. This involves viewing all sides from the root crown to the top of the crown.

Establish approximate tree locations. This was done with photographs and visually estimated position relative to fence lines likely to be near property lines; candidate trees are located on a schematic (Figure I). More exact locations were not determined at this time because only one marker from the 2022 survey was observed, and because survey work to produce final plans for the site can more efficiently define tree locations.

### Site

Walk the property and observe approximate property boundaries. Determine past disturbance history that may have affected the large trees. Identify Candidate Heritage Trees based on species and diameter.

## Results

### Number and Species of Candidate Heritage Trees

Eight Candidate Heritage Trees were identified by the assessor: all were Oregon White Oak (*Quercus garryana*) (Table I). Other tree species included Bitter Cherry (*Prunus avium*), Bigleaf Maple (*Acer macrophyllum*), Black Locust (*Robina pseudoacacia*), and Oregon Ash (*Fraxinus*

**Braun Arboricultural Consulting LLC  
Proposed Chandler Contract**

1193 22<sup>nd</sup> St. Hood River, OR 97031 (541) 806-0347 [dave@braunarborecare.com](mailto:dave@braunarborecare.com) - [www.braunarborecare.com](http://www.braunarborecare.com)

*latifolia*); none of these were 18 in. dbh. Some fruit trees, cherries, were present that may have approached or exceeded 18 in. dbh, but these were non-maintained and in very poor condition.

**Likely Cons. HTPA+BSBL**

#	Sps	dbh	Ht.	Cond.	Impacts	Diameter (ft.)	Notes
1	Oak	15.8	40	Fair	None	43	High crown, lean to SE
2	Oak	22.2	40	Fair	Slight	48	High crown, lean to SE, basal opening
3	Oak	13.4	35	Fair	None	42	High crown, suppressed by maple, lean to S
4	Oak	16.9	25	Good	None	44	Full crown, old, barbed wire embedded
5	Oak	25.3	30	Good	None	51	Full crown to E, old, barbed wire embedded, adjacent to #6 to W
6	Oak	19.5	30	Good	None	47	Full crown to W, adjacent to #5 to E
7	Oak	13.5	35	Fair	None	42	One-sided crown to S, suppressed by #8
8	Oak	13.5	35	Fair	None	42	One sided high narrow crown to N (in clump NE of #7 and a third smaller stem)

**Table I. Candidate Heritage Trees.** All trees were measured at 4.5 ft. (dbh) from soil line on side-hill, except for trees #2 and #8, which were measured at the narrowest point at about 3 ft. Height and distance from fence lines (“boundaries”) were visually estimated. Trees in fair condition (1,2,3,7,8) had one sided crowns lacking low branches or suppressed by a taller tree nearby. Trees in good condition had larger crowns and were open grown (although #5 and #6 were a pair, and therefore had one-sided crowns). All were relatively young (estimated 30 - 50 years) and fast growing; some had light crown die-back likely caused by anthracnose disease (which the species tolerates); all were likely of sprout origin from old stumps; an old stump protruded from the basal opening of #2, and was within the clump made up of #7, #8, and a third smaller stem. The oak diameters of 13.4, 13.5, and 13.5 in. were considered to be 14 in. based on rounding and allowance for measurement error.

**Tree Locations and Protected Areas**

All trees were within the property lines based on old fence lines observed on site, and within property lines based on inspection of the Klickitat County Tax Lot Map (Klickitat County, 2023) and the 1992 property survey (Trantow Surveying, 1992). One surveyor lath stake (marked “PROPERTY CORNER LOT 3”) was observed 20 ft. north of oak #6 on the newer west fence line; this likely was from the 2022 survey referred to by Mr. Curtis. Trees depicted in Figure I.

**Incursion into Protected Areas by Proposed Construction**

Although the footprints of hardscapes, buried utilities, or buildings are not known at this time, construction impacts to the Candidate Heritage Trees are likely to be minimal. Mr. Curtis described the plans for the area as a multi home development, with the access road leaving Spring St. and traversing the narrow portion (101 ft. wide) to access the larger rectangular area to the north where the homes would be located (Klickitat County, 2023; Figure I). The first three oaks are 10 – 20 ft. from the west property line in the narrow area; the other trees are closer to

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other boundaries (< 1 to 4 ft.). Construction impacts to trees #2 - #8 are estimated to be “none” based on current information, but this assessment could change based on final plans (Table I).

Oak #2 would be closest to the access road of the three trees in the narrow area; its HTPA would be 18.3 ft. (22 in. dbh \* 10) + a BSBL of (15 ft.)\*2 ft., or a circle 48 ft. in diameter. This would put the edge of the protection area about 44 ft. from the west property line and 6 ft. west of the center of the 101 ft. wide area (the tree is about 20 ft. from the west boundary).



**Figure I. Candidate Heritage Trees.** Eight Oregon White Oaks qualify as Heritage Trees based on species and diameter. Condition was fair or good, and all were determined to be at a hazard level of “low risk”, based on improvements such as homes, common areas, sidewalks, and roads built within 1.5 tree heights of the trees. Diameter ranged from 14 to 25 in., and heights from 25 – 40 ft. Trees are near property boundaries: Oaks #1, #2, and #3 are along the west boundary in the southern, narrow neck of the property; oaks #4, #5, and #6 are along the west boundary, and oaks #7 and #8 are along the north boundary. Oak #2 was the farthest from a boundary, about 20 ft. east of the west boundary along the narrow neck of the property at bottom. The property approximated by the black lines is Tax Lot 4, 7.93 ac., # 0310247500400. Aerial photo date is July 24<sup>th</sup>, 2021.

## **Discussion**

### **Heritage Tree Protection Areas (HTPAs) and Setbacks (BSBLs)**

Heritage Trees receive protection in the form of Heritage Tree Protection Areas (HTPAs) and Building Set Back Lines (BSBLs), and the trees and protection areas are included on plans. Assuming the eight Candidate Heritage Trees will appear on final plans as Heritage Trees, entry into the protected zones is unlikely except for Oak #2. Retaining some of the existing trees and shrubs around the eight identified trees would also benefit the trees, although removal or pruning of some competing Bitter Cherry, Bigleaf Maple and Black Locust would improve vigor of trees #1 - #3.

### **Fate of Candidate Heritage Trees**

All the Candidate Heritage Trees were determined to be in fair or good health and low risk (Dunster, 2017). The trees can be retained as Heritage Trees, represent a benefit to the property, and will maintain other environmental benefits: the goal of the Critical Area Ordinance. Given all the activities on a home construction site, designation of HTPAs plus BSBLs and application of the mitigation discussed, at minimum, should ensure that this occurs.

### **Risk Assessment**

Tree risk assessment assigns a risk rating to trees based on the likelihood that a tree or tree part will fail and contact a target; overall risk is assigned based on the probability of that contact and the consequence (Dunster et al, 2017). Based on the assumption that buildings or roads or other improvements will be within 1.5 tree heights of the trees, overall risk was estimated to be minimal due to low failure risk, small tree size, and the types of targets.

### **Mitigation**

Besides erection of fencing, mulching and supplemental irrigation will likely be recommended once the development footprints are known. Grade changes or footings near or slightly in HTPAs will affect root health, so trees will benefit from this mitigation; it is of critical importance in the dry summer months. Removal or crown reduction of nearby trees will also improve health.

### **Recommendations**

The surveyor would ideally include tree locations, HTPAs and BSBLs for the flagged Candidate Heritage Trees on plans that depict grade changes, footings, roads, buildings, and buried utilities.

Depending on the type and location of construction related disturbance near the trees, mitigation can be recommended by a qualified arborist in a HTPA as a brief supplement to this report.

## Key Sections of the Heritage Tree Ordinance Relating to this Report

### 18.10.317-Special Provisions—Heritage Trees

- A. "...All heritage trees...shall be protected as critical areas. The tree protection area shall be equal to ten times the trunk diameter of the tree or the average diameter of the area enclosed by the outer edge of the drip line of the canopy, whichever is greater."
- B. "Heritage trees include:
1. Oregon White Oaks with a trunk diameter larger than fourteen inches,
  2. All tree species with a trunk diameter greater than eighteen inches, or
  3. Any tree designated as a heritage tree by the city council in accordance with the nomination process detailed below."
- E. Maintenance and preservation of heritage trees is required.
1. Any owner or applicant shall use reasonable efforts to maintain and preserve all heritage trees located thereon in a state of good health. ..."
    - a. Avoidance of grading, excavation, demolition, or construction activity within heritage tree protection area where possible.
    - b. Grading, excavation, demolition, or construction within the heritage tree protection area shall require submittal of a tree protection plan..."
  2. The critical area report ...shall include a heritage tree protection plan and shall be prepared by a certified arborist. The plan shall address issues related to protective fencing and protective techniques to minimize impacts ..."
  3. Building setback lines stipulated by subsection 18.10.212 shall be measured from the outer line of the tree protection area for heritage trees (18.10.212-Building Setback Line (BSBL): "Unless otherwise specified, a minimum BSBL of fifteen feet is required from the edge...").
- G. Exceptions to the provisions in this section include:
1. A heritage tree can be removed if it is dead, dangerous, or a nuisance, as attested by an arborists' report..."
  2. A heritage tree in or very close to the "building area" of an approved single-family residence design can be replaced by another tree. A heritage tree can be removed if its presence reduces the building area of the lot by more than 50 percent after all potential alternatives including possible setbacks to minimum yard depth and width requirements have been considered.

## References

City of White Salmon 2021. Chapter 18.10 – Critical Areas Ordinance, including 18.10.317-Special Provisions—Heritage Trees (18.10.317-Special Provisions—Heritage Trees) Accessed and downloaded November 3<sup>rd</sup>, 2023.

[https://library.municode.com/wa/white\\_salmon/codes/code\\_of\\_ordinances?nodeId=TIT18EN\\_CH18.10CRAROR](https://library.municode.com/wa/white_salmon/codes/code_of_ordinances?nodeId=TIT18EN_CH18.10CRAROR)

Dunster, J. A., T. Smiley, N. Matheny, and S. Lilly, 2017. Tree Risk Assessment Manual. International Society of Arboriculture, Champaign, IL. 194 pgs.

Google 2023. Google Earth Pro used to produce schematic based on aerial imagery, Tax Lot Map, and Trantow Survey. Schematic based on an image dated July 24<sup>th</sup>, 2021, and accessed November 4<sup>th</sup>, 2023. Google Earth Pro 7.3.3.7786(32-bit) Build Date July 21, 2020. Copyright 2020 Google LLC.

Klickitat County 2023. Klickitat County Tax Lot Maps. Accessed and downloaded Map on November 4<sup>th</sup>, 2023. Approximate boundaries transferred to schematic with drawing tools in Google Earth Pro. <https://imap.klickitatcounty.org/#10/45.8283/120.7404/c22ecdf827df6af49a>

Trantow Surveying, 1992. Klickitat County WA Short Plat No. SP – 91 – 17 NW ¼ NE1/4 SEC. 24, T. 3N., R. 10 E., W.M. "Cherry Hill Estates". T. N. Trantow Surveying P. L. S., Bingen, WA. Filed in Klickitat County, July 24<sup>th</sup>, 1992. Obtained via link from Tax Lot Map (Klickitat County, 2023).

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Proposed Chandler Contract**

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**Assessors Credentials**

David M. Braun Ph.D., Owner, Braun Arboricultural Consulting LLC  
Cell: 541-806-0347 [dave@braunarborecare.com](mailto:dave@braunarborecare.com) [www.braunarborecare.com](http://www.braunarborecare.com)  
Ph.D., Forest Ecology, 1998  
College of Forest Resources, University of Washington, Seattle, Washington.  
M.F.S., Forest Ecology, 1986.  
School of Forestry and Environmental Studies, Yale University, New Haven, Connecticut.  
B. S., Biology, 1982.  
Fairfield University, Fairfield, Connecticut.

**Memberships, Certifications, Licenses**

Certified Arborist, International Society of Arboriculture (ISA) #PN-6114A  
TRAQ Tree Risk Assessment Credential, ISA (being renewed)  
Member, American Society of Consulting Arborists (ASCA)  
Oregon CCB #188757; Washington Registration # BRAUNAC908DQ  
Oregon Commercial Pesticide Operator License AG-L1017983CPO  
Oregon Commercial Pesticide Applicator License AG-L1017982CPA (being renewed)  
Washington Commercial Pesticide Applicator License: 82597

**Insurance and Bond**

David M. Braun and Braun Arboricultural Consulting LLC, Reg. Num. 354066-93 (Nov. 2007), is insured with a standard business insurance policy through Columbia River Insurance, Hood River, OR. Phone: 541-386-2444. Coverage includes: \$1,000,000 Liability and Medical Expenses, \$2,000,000 Products –Completed Operations, \$1,000,000 Professional Liability Insurance, Workman’s Compensation Insurance, and a \$20,000 surety bond.

**Assumptions and Limiting Conditions**

1. Any legal description provided to the assessor (David M. Braun) is assumed to be correct. Any titles and ownerships to any property are assumed to be good and marketable. No responsibility is assumed for matters legal in character. Any and all property is assessed or evaluated as though free and clear, under responsible ownership and competent management.
2. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the assessor can neither guarantee nor be responsible for the information provided by others.
3. The assessor shall not be required to give testimony or attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.
4. Loss or alteration of this report invalidates the entire report.
5. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the assessor.
6. Neither all or any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales, or other media, without the prior expressed written or verbal consent of the assessor particularly as to the conclusions or recommendations, identity of the assessor, or any reference to any professional society or institute or designation conferred upon the assessor as stated in his qualification.
7. This report and conclusions expressed herein, represents the opinion of the assessor, and the assessor’s fee is in no way contingent upon the reporting of a specified value, stipulated results, and the occurrence of a subsequent event nor upon any finding to be reported.
8. Unless expressed otherwise: (1) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring, except for those minimally invasive procedures that were performed and described in the report. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the tree or property in question may not arise in the future.

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Proposed Chandler Contract**

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**Certification of Performance**

Location of Assessed Trees: Lot 4, Tax Lot #0310247500400, Spring St., White Salmon, Washington  
I, David M. Braun certify to the best of my knowledge and belief that:

1. That the statements of fact contained in this Heritage Tree report are true and correct.
2. That the assessment, analysis, opinions, and conclusions are limited only by the reported assumptions and limiting conditions, and that they are my personal, unbiased professional analysis, opinions, and conclusions.
3. That I have no present or prospective interest in the trees that are the subject of the assessment, and that I have no personal interest or bias with respect to the client. Because Braun Arboricultural Consulting LLC provides multiple services, including appraisal, risk assessment, tree pruning, diagnosis and treatment of injurious insects and diseases, and tree removal, a bid for possible future work on the subject trees may be provided to the client, or the property owners, if one or more are requested. David M. Braun states that the methods, observations, conclusions, and recommendations contained in this tree Risk Assessment report were in no way influenced by a desire for a particular outcome that could form the basis of additional work on the subject trees; he also urges the client and property owners to obtain additional bids from other contractors if one is requested from Braun Arboricultural Consulting LLC.
4. That my compensation is not contingent upon a predetermined result or the occurrence of a subsequent event.
5. That my analysis, conclusions, and opinions were developed, and this assessment has been prepared, in conformity with industry standards and guidelines.
6. That methods found in this assessment were based on a request by the client to determine risk posed by the tree and provide recommendations for reducing it.
7. That my assessment is based on information known to me at this time. If more information is disclosed, I may have further opinions.
8. That, as a result of my examination, investigations, and analysis of the trees and all of the data pertinent thereto, and in the light of my experience, the recommendations for removing trees or retaining them while mitigating health impacts may be acted on with some assurance of success.

I further certify that I am a registered member in good standing of the American Society of Consulting Arborists (ASCA) and the International Society of Arboriculture (ISA), that I have a Tree Risk Assessment Qualification (TRAQ) and that I have been active in the field of Arboriculture for a period of 15 years.



**Signed**

**November 7th, 2023**

**Date**

# APPENDIX 8





November 6, 2023

The City of White Salmon, Community Department  
Attn: Erika Castro Guzman  
100 N. Main Street  
White Salmon, WA 98672

Re: Statement regarding slopes on Cherry Hill Estates

Erika,

The purpose of this statement is to verify the existence of steep slope critical areas being defined by slopes exceeding 40 percent on the Cherry Hill Estates project. The topographic detail being used for design was derived by using the State of Washington Lidar data, wasco-B, data blocks. This data was field checked in December 2020 with a grid of ground shots for quality control. The majority of the property is well under the 40 percent slope, however the portion on the westerly edge of the southerly leg of the property does have slope at or exceeding the 40 percent slope.

Please reach out if you have questions.

Erik M. Carlson, P.L.S.  
President  
Terra Surveying

# APPENDIX 9



**Earth  
Engineers,  
Inc.**

2411 Southeast 8<sup>th</sup> Avenue • Camas • WA 98607

Phone: 360-567-1806

[www.earth-engineers.com](http://www.earth-engineers.com)

---

November 15, 2021

Legacy Development Group  
PO Box 4  
Hood River, Oregon 97031  
Attention: Cameron Curtis, President

Phone: (541) 490-6339  
E-mail: [cameron@curtishomesllc.com](mailto:cameron@curtishomesllc.com)

**Subject: Geotechnical Investigation Report  
Proposed Spring Street Subdivision  
Klickitat County Tax Lot No. 0310247500400  
Intersection of Northwest Spring Street and Northwest Cherry Hill Road  
White Salmon, Klickitat County, Washington  
EEI Report No. 20-071-1**

Dear Mr. Curtis:

Earth Engineers, Inc. (EEI) is pleased to provide our attached Geotechnical Investigation Report for the above referenced project. This report includes the results of our field investigation, an evaluation of geotechnical factors that may influence the proposed construction, and geotechnical recommendations for the proposed structures and general site development.

We appreciate the opportunity to perform this geotechnical study and look forward to continued participation during the design and construction phases of this project. If you have any questions pertaining to this report, or if we may be of further service, please contact our office.

Sincerely,  
**Earth Engineers, Inc.**

Troy Hull, P.E.  
Principal Geotechnical Engineer

Jacqui Boyer  
Geotechnical Engineering Associate

Attachment: Geotechnical Investigation Report

Distribution (electronic copy only): Addressee

**GEOTECHNICAL INVESTIGATION REPORT**

For the:

**Proposed Spring Street Subdivision  
Klickitat County Tax Lot No. 0310247500400  
Intersection of Northwest Spring Street  
and Northwest Chery Hill Road  
White Salmon, Klickitat County, Washington**

Prepared for:

**Legacy Development Group  
PO Box 4  
Hood River, Oregon 97031  
Attention: Cameron Curtis**

Prepared by:

**Earth Engineers, Inc.  
2411 Southeast 8<sup>th</sup> Avenue  
Camas, Washington 98607  
Phone: 360-567-1806**

**EEl Report No. 21-071-1**

**November 15, 2021**



**Earth  
Engineers,  
Inc.**

A handwritten signature in black ink, appearing to read "Jacquie", enclosed in a thin black rectangular border.

---

**Jacquie Boyer  
Geotechnical Engineering Associate**



**EXPIRES 09/06/ 23**

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**Troy Hull, P.E.  
Principal Geotechnical Engineer**

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## 1.0 PROJECT INFORMATION

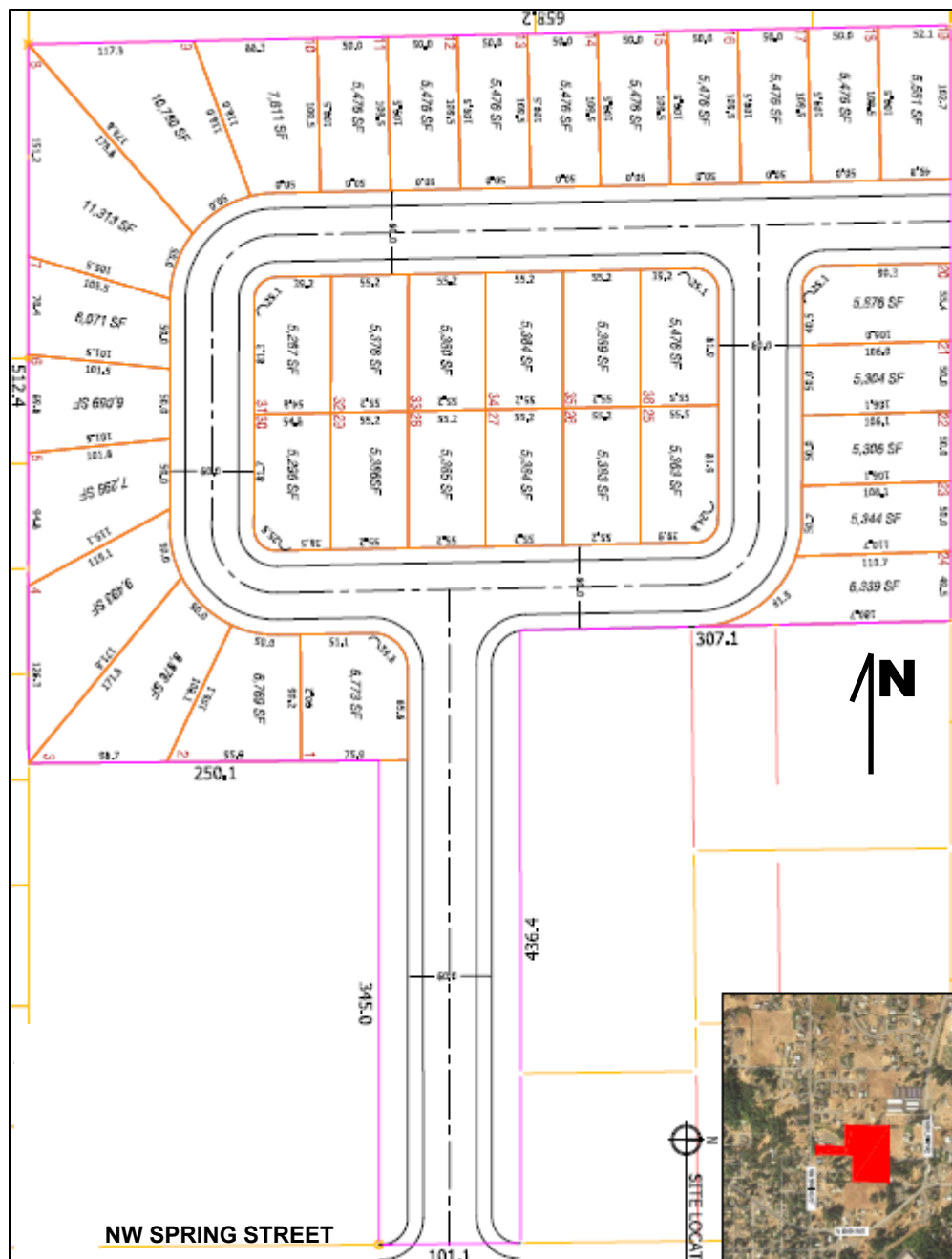
### 1.1 Project Authorization

Earth Engineers, Inc. (EEI) has completed a geotechnical investigation report for the proposed development to be located on Klickitat County Tax Lot No. 0310247500400 off of Northwest Spring Street near the intersection with Northwest Cherry Hill Road in White Salmon, Klickitat County, Washington. Our geotechnical services were authorized by Cameron Curtis with Legacy Development Group on September 24, 2021 by signing our Proposal No. 21-P066-R1 issued on February 18, 2021 and revised on May 6, 2021.

### 1.2 Project Description

Our current understanding of the project is based on the information Greg Hagbery (formerly with Legacy Development Group) provided to EEI Geotechnical Engineering Associate Jacqui Boyer via e-mail on February 17, 2021. We have also been provided with the following documents pertaining to the project:

- **A survey titled “Cherry Hill Estates” prepared by T.N. Trantrow Surveying, P.L.S. dated July 21, 1992.** This survey shows the boundaries of the subject property with respect to the surrounding properties. The survey indicates that the subject 7.93-acre property is Lot 4 of the Cherry Hill Estates.
- **A conceptual plan titled “Pre-App Proposal” prepared by Legacy Development Group Inc. dated January 2021.** This plan shows the preliminary neighborhood layout of the proposed subdivision, including the proposed roadway and lot divisions on the property. See Figure 1 below. The plan also shows a site location map for the subject property with respect to its vicinity. It should be noted that it is our understanding these plans are preliminary.
- **A survey titled “Property Boundary Survey for Curtis Homes, Location: Tract of Land Located in the Northeast Quarter of the Northeast Quarter of Section 24, Township 3 North, Range 10 East, Willamette Meridian, Klickitat County, Washington” prepared by Terra Surveying, dated December 2020.** This topographic property survey shows the existing property topography with 1-foot contour lines, and elevations based on the N.A.V.D. 99 vertical datum.



**Figure 1:** Preliminary site plan for the subject property. The subject property is outlined in pink and the proposed lots are outlined in orange. Base plan source: referenced above.

As shown on Figure 1 above, we understand that the plan is to divide the subject property into 36 residential lots ranging in size from 5,287 square feet to 11,313 square feet. The plan indicates that the proposed roadway is 60-feet wide, and accesses the property from Northwest Spring Street to the south.

At this time, we have not been provided detailed design drawings for the project. For the purposes of this report, we are assuming maximum house foundation loads of 3 kips per linear foot for wall footings, 40 kips for column footings, and 150 psf for floor slabs. We also assume maximum cuts

and fills will be minimal, on the order of 2 feet. Finally, we have assumed that the proposed subdivision residences will be constructed in accordance with the 2018 International Residential Code (IRC).

### 1.3 Purpose and Scope of Services

In order to provide geotechnical recommendations for the proposed development, we performed a subsurface investigation to better define the subsurface soil, rock, and groundwater properties. We performed 11 test pits (TP-1 through TP-11) around the subject property. The depths of the explorations ranged from 4 to 9.5 feet. In order to characterize soil strength, we supplemented some of the test pits with drive probe testing.

Select soil samples collected from the test pits were tested in the laboratory to determine the material's properties for our evaluation. Laboratory testing was accomplished in general accordance with ASTM procedures.

This report briefly outlines the testing procedures, presents available project information, describes the site and subsurface conditions, and presents geotechnical recommendations regarding the development of the single family residential lots as follows:

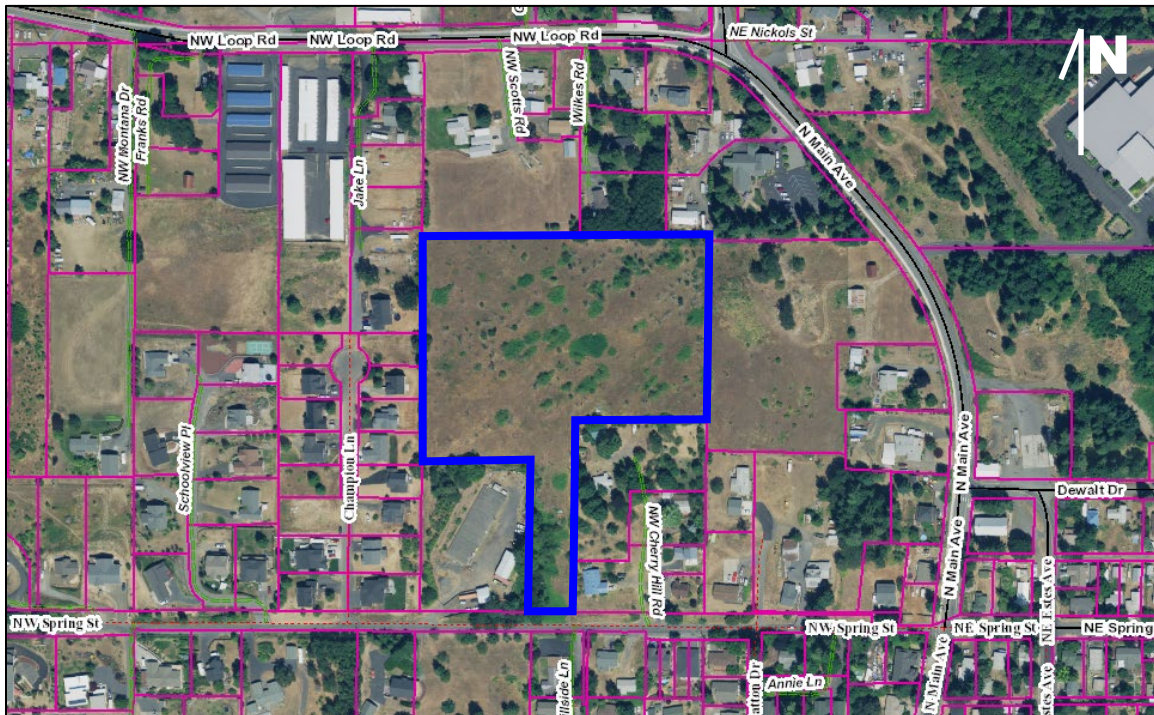
- A discussion of subsurface conditions encountered including pertinent soil and rock properties as well as the encountered groundwater conditions.
- Geotechnical related recommendations for foundation design including allowable bearing capacity and estimated settlements.
- A qualitative evaluation of slope stability.
- Seismic design parameters in accordance with the ASCE 7-16.
- Structural fill recommendations, including an evaluation of whether the in-situ soils can be used as structural fill.
- Floor slab support recommendations.
- Retaining wall design parameter recommendations, including earth pressures, backfill and drainage.
- Construction recommendations including wet/dry weather site preparation and drainage recommendations.
- Asphaltic concrete pavement section thickness design recommendations based on an assumed CBR value, as well as assumed traffic loading conditions.
- Discussions on geotechnical issues that may impact the project.



## 2.0 SITE AND SUBSURFACE CONDITIONS

### 2.1 Site Location and Description

As noted above, the project area is located on Klickitat County Tax Lot No. 0310247500400 in White Salmon, Washington. The property is accessed from Northwest Spring Street to the south, and is bounded by residential properties to the west, north and east. See Figure 2 below for the project vicinity map.



**Figure 2:** Vicinity map (base map source - <http://imap.klickitatcounty.org/>). The subject property is outlined in blue.

At the time of our investigation, the property was vacant. The site was vegetated with grass, shrubs, scattered trees, and blackberry bushes. It should be noted that some of the vegetation appeared burned. There is also an access road in the southern portion of the property off of Northwest Spring Street.

In terms of topography, the subject property is generally sloping down to the northeast at about 7H:1V (Horizontal:Vertical). Slopes in the area of the proposed lots (i.e. the northern portion of the property) are up to about 3.5H:1V. The steepest slope on the subject property is located along the access road (i.e. the southern portion of the property), up to 1.9H:1V. See Appendix B for the site topography taken from the survey referenced above.

While on site, we did not observe signs of previous or current soil movement, such as leaning tree trunks, clearly identifiable landslide head scarps, or surface cracking in the soils. See Photos 1 through 4 below for current site conditions.



**Photo 1:** Current site conditions (taken from TP-3, facing northeast).



**Photo 2:** Current site conditions (taken from TP-4, facing north).



**Photo 3:** Current site conditions (taken from TP-8, facing southwest).



**Photo 4:** Current site conditions (taken from TP-11, facing Northwest Spring Street to the south).

## 2.2 Mapped Geology and Soils

The underlying geologic unit mapped in the area of the subject property is Qtb – Olivine basalt and andesite from the upper Miocene to Quaternary<sup>1</sup>.

We reviewed the United States Department of Agriculture (USDA) Soil Survey<sup>2</sup> to define the surface soils on the subject property. The USDA maps the soils on the subject property to be Unit 86B-Chemawa ashy loam on 8 to 15 percent slopes, and 86C-Chemawa ashy loam on 15 to 30 percent slopes. This well drained soil unit is formed on terraces from a parent material of volcanic ash. A typical profile for this soil unit is ashy loam overlying ashy silt loam with a depth to a restrictive feature of more than 80 inches.

As part of our due diligence for this report, we reviewed the Washington State Department of Natural Resources (DNR) Geologic Information Portal (<https://geologyportal.dnr.wa.gov/>). According to the DNR portal, portions of the property are mapped within a moderate susceptibility to shallow landslides. It should be noted that the portal does not map any historic landslide deposits or fault lines on or in proximity to the subject property. In addition, the portal does not map the subject property within a liquefaction susceptibility area due to the presence of shallow bedrock.

According to the USGS Fault and Fold Database of the United States, the Hood River fault zone is located approximately 2.9 miles south of the site and the Faults near the Dalles is approximately 5.5 miles northeast of the site. The Hood River fault zone defines the eastern margin of a half graben, and is described to contain normal right lateral faults with a slip rate of less than 0.2mm/year<sup>3</sup>. The Faults near the Dalles are described as northwest striking, right-lateral strike slip faults, and are categorized as having a slip rate of less than 0.2mm/year, although no slip data in Quaternary deposits are available<sup>4</sup>.

## 2.3 Subsurface Materials

As stated above, we explored the site with 11 test pits (TP-1 through TP-11) located around the subject property. The test pits were advanced by Legacy Development Group of Hood River, Oregon using an excavator with a 2-foot wide toothed bucket. In addition, we performed supplemental drive probe testing at TP-5, TP-8, and TP-10. For the approximate exploration locations, see the “Exploration Location Plan” in Appendix B. Results of the test pits are reported in Appendix C. Upon completion, the test pits were loosely backfilled with the excavated soil and tamped down with the excavator bucket.

<sup>1</sup> Bela, J.L., 1982, Geologic and Neotectonic Evaluation of North-Central Oregon: The Dalles 1 degree x 2 degree Quadrangle, Oregon Department of Geology and Mineral Industries, Geological Map Series 27, scale 1:250,000.

<sup>2</sup> Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at <http://websoilsurvey.nrcs.usda.gov/>.

<sup>3</sup> Personius, S.F., compiler, 2002, Fault number 866, Hood River fault zone, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, <https://earthquakes.usgs.gov/hazards/qfaults>.

<sup>4</sup> Personius, S.F., and Lidke, D.J., compilers, 2003, Fault number 580, Faults near The Dalles, in Quaternary fault and fold database of the United States: U.S. Geological Survey website, <https://earthquakes.usgs.gov/hazards/qfaults>.

Drive probe tests extended from the ground surface at the locations referenced above to the depth of drive probe refusal. The drive probe test is based on a “relative density” exploration device used to determine the distribution and to estimate strength of the subsurface soil units. The resistance to penetration is measured in blows-per- $\frac{1}{2}$ -foot of an 11-pound hammer which free falls roughly 39 inches driving a  $\frac{3}{4}$ -inch outside diameter pipe with a 1-inch diameter endcap into the ground. This measure of resistance to penetration can be used to estimate relative density of soils. For a more detailed description of this geotechnical exploration method, please refer to the Slope Stability Reference Guide for National Forests in the United States, Volume I, USDA, EM-7170-13, August 1994, P 317-321. Results of the drive probe tests are reported in the exploration logs in Appendix C.

Select soil samples were tested in the laboratory to determine material properties for our evaluation. Laboratory testing was accomplished generally in accordance with ASTM procedures. The testing performed included moisture content tests (ASTM D2216), and fines content determinations (ASTM D1140). The test results have been included on the exploration logs located in Appendix C.

Generally, we encountered a surficial layer of topsoil overlying fill soils, overlying native soils with decomposed rock, which eventually transitioned to bedrock with depth. The thickness of the strata varied across the site. Each individual stratum encountered is discussed in further detail below.

## **TOPSOIL**

The surficial layer encountered in all of our explorations consisted of a dry to moist, light brown sandy silt with rootlets. The thickness of this stratum in our test pits was 6 to 12 inches.

## **FILL/TILLED SOILS**

In all of our test pits, we encountered what we interpret to be fill/tilled soils underlying the surficial topsoil layer. The soil was generally a light brown to brown sandy silt to silty sand with rootlets, wood chips and charcoal pieces. We also encountered boulders, as well as wood, plastic and metal debris within this stratum. It is possible these organic soils are the result of agricultural tilling or clearing the area in the past. Laboratory moisture content testing on samples obtained within this stratum ranged from 9 to 12 percent, indicating a dry condition. Fines content laboratory testing for samples obtained within this stratum ranged from 39 to 89 percent passing the #200 sieve. Based on the excavator digging effort and supplementary drive probe testing, we consider this stratum to be medium stiff/medium dense to very stiff/very dense. The fill/tilled soils extended to depths ranging from 2 to 4 feet bgs in our explorations. It should be noted that this stratum extended to the terminal depth of our exploration at TP-6 due to practical digging refusal on a boulder.

## **NATIVE SOILS**

In all of our explorations (except for TP-6), we encountered native soils underlying the fill soils. The soil was generally an orange-brown to reddish brown to dark brown silt with varying amounts of sand. We also encountered decomposed rock fragments in this stratum (red to black to gray to white). Laboratory moisture content testing on samples obtained within this stratum ranged from

8 to 50 percent, indicating a dry to wet condition. It should be noted that the relatively high moisture content was likely a result of the decomposed rock encountered in this stratum (i.e. the material may hold a significant amount of moisture, but it did not visually appear wet). While in the field, the native soils generally appeared to be moist. Fines content testing on samples obtained within this stratum ranged from 60 to 98 percent passing the #200 sieve. Based on the excavator digging effort and supplementary drive probe testing, we consider this native silt stratum to be very stiff to hard. The silt stratum extended to the terminal depths of our explorations at depths ranging from 5 to 9.5 feet bgs. It should be noted that all of our test pits terminated due to practical digging refusal on hard soil/decomposed rock, except for TP-5 and TP-8 which were terminated due to practical excavator reach.

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The exploration logs included in the Appendices should be reviewed for specific information at specific locations. These records include soil descriptions, stratifications, and locations of the samples. The stratifications shown on the logs represent the conditions only at the actual exploration locations. Variations may occur and should be expected between locations. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual. The fill extent at each exploration location was estimated based on an examination of the soil samples, the presence of foreign materials, field measurements, and the subsurface data. The explorations performed are not adequate to accurately identify the full extent of existing fill soil across the site. Consequently, the actual fill soil extent may be much greater than that shown on the exploration logs and discussed herein. The samples that were not altered by laboratory testing will be retained for at least 90 days from the date of this report and then will be discarded.

#### 2.4 Groundwater Information

Groundwater was not observed during our subsurface investigation. According to a historical well log (available from [http://apps.wrd.state.or.us/apps/gw/well\\_log/](http://apps.wrd.state.or.us/apps/gw/well_log/)) drilled approximately 700 feet north of the property, static groundwater was encountered 325 feet below the ground surface.

Although a static groundwater level was not encountered at the time of our subsurface investigation, it is possible for a perched groundwater level to be present within the depths explored at some future time depending upon climatic and rainfall conditions. In general, we do not expect that groundwater will influence the proposed construction.

#### 2.5 Seismic Design Parameters and Hazards

In accordance with ASCE 7-16, we recommend a Site Class C (very dense soil and soft rock profile) for this site when considering the average of the upper 100 feet of bearing material beneath the foundations. This recommendation is based on the results of our subsurface investigation as well as our understanding of the local geology.

Inputting our recommended Site Class as well as the site latitude and longitude into the Seismic Design Maps (SEAOC/OSHPD) website (<http://seismicmaps.org>), we obtained the seismic design parameters shown in Table 1 below.

**Table 1: Seismic Design Parameter Recommendations (ASCE 7-16)**

Parameter	Recommendation
Site Class	C
$S_s$	0.512g
$S_1$	0.235g
$F_a$	1.295
$F_v$	1.500
$S_{MS} (=S_s \times F_a)$	0.663g
$S_{M1} (=S_1 \times F_v)$	0.353g
$S_{DS} (=2/3 \times S_s \times F_a)$	0.442g
Design PGA ( $=S_{DS}/2.5$ )	0.177g
$MCE_G$ PGA	0.228g
$F_{PGA}$	1.200
$PGA_M (=MCE_G \text{ PGA} \times F_{PGA})$	0.273g

Note: Site latitude = 45.736933, longitude = -121.488038

The return interval for these ground motions is 2 percent probability of exceedance in 50 years.

As stated above, the property is not mapped within a liquefaction hazard zone; which coincides with the findings of our subsurface investigation. Because we do not consider the soils to be liquefiable (and because there are not any significant slopes on the property), there is not a risk of seismically induced lateral spreading.

With respect to slope stability, we do not consider the subject property to be oversteepened and at risk of sliding given the subject property slopes are generally not steeper than 2H:1V (except for a portion of the proposed access road). The slopes steeper than 2H:1V along the access road should be regraded to be 2H:1V to avoid the risk of shallow soil movement.

### **3.0 EVALUATION AND FOUNDATION RECOMMENDATIONS**

#### **3.1 Geotechnical Discussion**

The following geotechnical factors may influence the proposed construction:

- 1. Presence of possible fill/tilled soils** – As stated above, we encountered rootlets in the upper soils at all of our test pits to depths ranging from 2 to 4 feet bgs. It is possible these organic soils are the result of agricultural tilling or clearing the area in the past. The presence of such materials could result in excess settlements and unsatisfactory foundation performance. As such, for structures (i.e. buildings, pavement, retaining walls, etc.) we recommend overexcavating the fill/tilled soils down to the hard native soils encountered at depths of 2 to 4 feet bgs (i.e. any new foundations for the proposed subdivision penetrate through the compressible soils to bear on the sandy silt soils).
- 2. Moisture sensitive soils** – The fine-grained portion of the soils encountered at the site are expected to be moisture sensitive. The increase in moisture content during periods of wet weather can cause significant reduction in the soil strength and support capabilities and will also be slow to dry. As such, water should not be allowed to collect in foundation excavations or on prepared subgrades, and care should be taken when operating construction equipment on the exposed subgrade. While not required, we recommend consideration be given to performing construction in the dry summer months to reduce the risk of damaging the site soils with the construction equipment. See more detailed recommendations for drainage in Section 4.1.
- 3. Practical digging refusal encountered** – In our subsurface investigation, all of the test pits terminated with practical excavation refusal on hard soil/decomposed rock (except for TP-5 and TP-8 which were terminated due to practical excavator reach). The depth to practical excavation refusal ranged from 4 to 9.5 feet in our explorations. Excavations through this stratum may be difficult and require specialized equipment.
- 4. Lack of detailed design drawings** – We have not been provided with a detailed design drawing set for the proposed construction. Once the drawings for the project are complete, we should review those drawings to determine if the design complies with our recommendations or if our recommendations need to be modified.

In summary, provided the recommendations in this report are adhered to, we do not foresee any major issues that would preclude the proposed construction. The above-mentioned factors are listed to draw the attention of the reader to the issues to address during design and construction of the proposed development.



### 3.2 General Site Preparation

Prior to the start of any earthwork, the test pit locations performed for our subsurface investigation, that fall under or adjacent to structurally improved areas, should be located, excavated to their bottoms, and backfilled with well-graded granular structural fill in properly compacted lifts, under the observation of a representative of the Geotechnical Engineer.

We envision that the topsoil, vegetation, roots, soft soils, and any other deleterious soils will need to be stripped from beneath the proposed building areas and proposed roadways. Topsoil in our test pits ranged from about 6 to 12 inches thick. In addition, as stated above, beneath new structures we recommend overexcavating the fill/tilled soils encountered across the property to depths ranging from 2 feet to 4 feet. It should be expected that the depth of these materials may vary across the site. A representative of the Geotechnical Engineer should determine the depth of removal at the time of construction.

After stripping and excavating to the proposed subgrade level, as required, the building areas and roadways should be inspected by a representative of the Geotechnical Engineer and proofrolled with a fully loaded, tandem axle, rubber tire dump truck or water truck. Soils that are observed to rut or deflect excessively under the moving load, or are otherwise judged to be unsuitable, should be undercut and replaced with properly compacted fill. If the subgrade cannot be accessed with a dump truck, then the subgrade will need to be visually evaluated by a representative of the Geotechnical Engineer by soil probing.

Any utilities present beneath the proposed construction will need to be located and rerouted as necessary and any abandoned pipes or utility conduits should be removed to inhibit the potential for subsurface erosion. Utility trench excavations should be backfilled with properly compacted structural fill as discussed in Section 3.3 below.

### 3.3 Structural Fill

Structural fill should be free of organics or other deleterious materials, have a maximum particle size less than 3 inches, be relatively well graded, and have a liquid limit less than 45 and plasticity index less than 25. In our professional opinion the onsite native soils are likely not appropriate for use as structural fill due to their variable, fine grained, moisture sensitive nature. As such, it may be more practical to import granular, well graded, crushed rock gravel structural fill. We recommend all structural fill be moisture conditioned to within 3 percentage points below and 2 percentage points above optimum moisture as determined by ASTM D1557 (Modified Proctor). If water must be added, it should be uniformly applied and thoroughly mixed into the soil by disking or scarifying.

Fill should be placed in relatively uniform horizontal lifts on the prepared subgrade which has been stripped of deleterious materials and approved by the Geotechnical Engineer or their representative. If loose soils exist on the prepared subgrades, they should be re-compacted. Each loose lift should be about 1-foot thick. The type of compaction equipment used will ultimately

determine the maximum lift thickness. Structural fill should be compacted to at least 92 percent of the maximum dry density as determined by ASTM D1557. Each lift of compacted engineered fill should be tested by a representative of the Geotechnical Engineer prior to placement of subsequent lifts.

Any structural fill placed on slopes at or greater than 5H:1V should be properly benched. Level benches excavated into the existing slope should be a minimum of 4 feet wide laterally, and should be cut into the slope for no more than every five feet of vertical rise. The placement of fill should begin at the base of the fill. All benches should be inspected by a representative of the Geotechnical Engineer and approved prior to placement of structural fill lifts. If evidence of seepage is observed in the bench excavations, a supplemental drainage system may need to be designed and installed to prevent hydrostatic pressure buildup behind the fill. Final fill and/or cut slopes should be kept at or below a slope of 2H:1V. The fill should extend horizontally outward beyond the exterior perimeter of the building and pavements at least 5 feet and 3 feet respectively, prior to sloping.

To reiterate, each lift of compacted engineered fill should be tested by a representative of the Geotechnical Engineer prior to placement of subsequent lifts.

### 3.4 Foundation Recommendations

Once the site has been properly prepared as discussed above, the proposed residences can be supported on a conventional shallow foundation system. Spread footings for building columns and continuous footings for bearing walls can be designed for an allowable soil bearing pressure of up to 2,000 psf for foundations bearing on the very stiff to hard native soils first encountered in our test pits at depths of about 2 to 4 feet bgs, or on properly compacted, granular structural fill overlying the native soils. The above allowable soil bearing pressure can be increased by one-third when including short-term wind or seismic loads. Minimum footing dimensions should be in compliance with the 2018 IRC.

Lateral frictional resistance between the base of footings and the subgrade can be expressed as the applied vertical load multiplied by a coefficient of friction of 0.30 for concrete foundations bearing directly on the very stiff to hard native soils or structural fill. In addition, lateral loads may be resisted by passive earth pressures based on an equivalent fluid pressure of 300 pounds per cubic foot (pcf) for footings poured “neat” against the above-mentioned soil. These are ultimate values—we recommend a factor of safety of 1.5 be applied to the equivalent fluid pressure, which is appropriate due to the amount of movement required to develop full passive resistance. To be clear, no safety factor has been applied to the friction factor recommended above either.

Exterior footings and foundations in unheated areas should be located at a depth of at least 18 inches below the final exterior grade to provide adequate frost protection. If the residences are to be constructed during the winter months or if the foundation soils will likely be subjected to freezing temperatures after foundation construction, then the foundation soils should be

adequately protected from freezing. Otherwise, interior foundations can be located at nominal depths compatible with architectural and structural considerations.

The foundation excavations should be observed by a representative of the Geotechnical Engineer prior to steel or concrete placement to assess that the foundation materials are capable of supporting the design loads and are consistent with the materials discussed in this report. Unsuitable soil zones encountered at the bottom of the foundation excavations should be removed and replaced with properly compacted structural fill as directed by the Geotechnical Engineer.

After opening, foundation excavations should be observed and concrete placed as quickly as possible to avoid exposure of the excavation to wetting and drying. Surface run-off water should be drained away from the excavations and not be allowed to pond. If possible, the foundation concrete should be placed during the same day the excavation is made. If the soils will be exposed for more than 2 days or for any length of time during precipitation events, consideration should be given to placing a thin layer of rock atop the exposed subgrade to protect it from the elements.

Based on the known subsurface conditions we anticipate that properly designed and constructed foundations could experience maximum total and differential settlements on the order of 1-inch and 1/2-inch, respectively.

We recommend that the perimeter foundations include footing drains on the exterior of the buildings. The footing drains typically consist of a 3 or 4 inch diameter perforated drain pipe placed in a trench excavated next to the base of the footing and surrounded on the sides and above by drain rock. To increase the drain pipe life, we recommend it be sleeved with a sock (i.e. filter fabric). Footing drains do have a useful life and eventually need to be replaced—because they can get silted up. Footing drains should be discharged to an approved outlet point and should not be connected directly to crawl space drains or storm drains, unless there is a backflow preventer installed to prevent the different drain lines from backing up into each other.

### 3.5 Floor Slab Recommendations

For the purposes of this report, we have assumed that maximum floor slab loads will not exceed 150 psf. Based on the existing soil conditions, the design of slabs-on-grade can be based on a subgrade modulus (k) of 150 pci. This subgrade modulus value represents an anticipated value which would be obtained in a standard in-situ plate test with a 1-foot square plate.

It is our professional opinion that the floor slabs can be grade supported on a minimum of 6 inches of properly compacted well-graded granular structural fill placed on the very stiff to hard native soils first encountered in our test pits at depths of about 2 to 4 feet bgs. The structural fill should be placed as outlined in Section 3.3 above. The floor slabs should have an adequate number of joints to reduce cracking resulting from any differential movement and shrinkage.

Where feasible, the slab area native subgrade should be proof-rolled with a heavily loaded tandem axel dump truck, or similar rubber-tired vehicle, to identify as “soft” spots prior to the placement of any structural fill. Soils that are observed to rut or deflect excessively under the moving load, or are otherwise judged to be unsuitable, should be undercut and replaced with properly compacted structural fill. In the case that the subgrade area is not accessible to a large rubber-tired vehicle, the Geotechnical Engineer’s representative may need to approve the slab subgrade using a steel probe rod.

The 6-inch thick well graded granular structural fill should provide a capillary break to limit migration of moisture through the slab. If additional protection against moisture vapor is desired, a vapor retarding membrane may also be incorporated into the design. Factors such as cost, special considerations for construction, and the floor covering suggest that decisions on the use of vapor retarding membranes be made by the project design team, the contractor, and the owner.

### 3.6 Retaining Wall Recommendations

While we are not aware of any specific retaining walls for the project, we are providing these general recommendations for preliminary planning purposes. Once more detailed plans are known about retaining walls, we should be provided the drawings so that we can update our recommendations if necessary. For the purposes of this report, we have assumed that no walls will be greater than 10 feet tall.

Retaining wall footings should be designed in accordance with the recommendations contained in Section 3.4 above. Lateral earth pressures on walls, which are not restrained at the top, may be calculated on the basis of an “active” equivalent fluid pressure of 35 pcf for level backfill, and 60 pcf for sloping backfill with a maximum 2H:1V slope. Lateral earth pressures on walls that are restrained from yielding at the top (i.e. stem walls) may be calculated on the basis of an “at-rest” equivalent fluid pressure of 55 pcf for level backfill, and 90 pcf for sloping backfill with a maximum 2H:1V slope. The stated equivalent fluid pressures do not include surcharge loads, such as foundation, vehicle, equipment, etc., adjacent to walls, hydrostatic pressure buildup, or earthquake loading. Surcharge loads on walls should be calculated based on the attached formulas shown in Appendix E.

We recommend that retaining walls be designed for an earth pressure determined using the Mononobe-Okabe method to mitigate future seismic forces. Our calculations were based on one-half of the Design Peak Ground Acceleration (PGA) value of 0.177g, which was obtained from Table 1 above. We have assumed that the retained soil/rock will have a minimum friction angle of 29 degrees and a total unit weight of about 115 pounds per cubic foot. For seismic loading on retaining walls with level backfill, new research indicates that the seismic load is to be applied at 1/3 H of the wall instead of 2/3 H, where H is the height of the wall<sup>5</sup>. We recommend that a Mononobe-Okabe earthquake thrust per linear foot of  $4.7 \text{ psf} \cdot H^2$  be applied at 1/3 H, where H is the height of the wall measured in feet. Note that the recommended earthquake thrust value is appropriate for slopes

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<sup>5</sup> Lew, M., et al (2010). “Seismic Earth Pressures on Depp Building Basements,” SEAOC 2010 Convention Proceedings, Indian Wells, CA.

behind the retaining wall of up to 10 degrees. For a maximum 2H:1V slope, we recommend 16 psf \* H<sup>2</sup>. This assumes a granular backfill retained by the walls.

All backfill for retaining walls should be select granular material, such as sand or crushed rock with a maximum particle size between ¾ and 1 ½ inches, having less than 5 percent material passing the No. 200 sieve. Because of their fines content, the native soils do not meet this requirement, and it will be necessary to import material to the project for wall backfill. Non-expansive soils can be used for the last 18 to 24 inches of backfill, thus acting as a seal to the granular backfill. All backfill behind retaining walls should be moisture conditioned to within ± 2 percent of optimum moisture content, and compacted to a minimum of 90 percent of the material's maximum dry density as determined in accordance with ASTM D1557 (Modified Proctor). This recommendation applies to all backfill located within a horizontal distance equal to 75 percent of the wall height, but should be no less than 4 feet.

An adequate subsurface drain system will need to be designed and installed behind retaining walls to prevent hydrostatic buildup. A waterproofing system should be designed for any basement walls where moisture intrusion is not desirable.

### 3.7 Pavement Section Thickness Recommendations

After the site has been stripped and prepared in accordance with Section 3.2 of this report (i.e. the fill is overexcavated), the pavement subgrade should be proofrolled with a fully loaded dual axle dump truck. Areas found to be soft or yielding under the weight of a dump truck should be overexcavated as recommended by the Geotechnical Engineer's representative and replaced with additional crushed rock gravel fill.

The pavement section thickness recommendations presented below in Tables 2 and 3 are considered typical and minimum for the assumed parameters. In order to achieve the assumed 20-year design life, pavement does need regular maintenance to protect the underlying subgrade from being damaged. The primary concern is subgrade water saturation which can cause it to weaken. Proper site drainage should be maintained to protect pavement areas. In addition, cracks that develop in the pavement should be sealed on a regular basis.

Using the AASHTO method of flexible pavement design, the following design parameters have been assumed:

- An assumed California Bearing Ratio (CBR) value of 20 for the very stiff to hard native soils.
- A pavement life of 20 years.
- A terminal serviceability (Pt) of 2 (i.e. poor pavement condition).
- A regional factor (R) of 3.0.
- Assumed total car trips of:
  - 10 cars per day for car parking (which equates to 2.2 daily equivalent single axle loads, ESALs)

- 60 cars per day for drive lanes (which equates to 13.4 daily equivalent single axle loads, ESALs)

The project Civil Engineer should review our assumptions to confirm they are appropriate for the anticipated traffic loading. See Tables 2 and 3 below for recommended pavement section thicknesses based on the above assumptions.

**Table 2: Asphaltic Concrete - Recommended Minimum Thicknesses (inches)**

Pavement Materials	Parking Areas	Drive Lanes
Asphaltic Concrete	2.5 inches	3 inches
Crushed Aggregate Base Course (less than 5% fines)	6 inches	6 inches

**Table 3: Portland Cement Concrete - Recommended Minimum Thicknesses (inches)**

Pavement Materials	Parking Areas	Drive Lanes
Portland Cement Concrete	6 inches	6 inches
Crushed Aggregate Base Course (less than 5% fines)	6 inches	6 inches

Asphaltic concrete materials should be compacted to at least 91 percent of the material's theoretical maximum density as determined in general accordance with ASTM D2041 (Rice Specific Gravity). The crushed aggregate base course should consist of well-graded crushed stone with a maximum particle size no greater than 2 inches. Aggregate base course materials should be free of organics or other deleterious materials, be relatively clean (i.e. less than 5 percent soil passing the U.S. #200 sieve), well graded, and have a liquid limit less than 45 and plasticity index less than 25. The base course should be moisture conditioned to within 2 percent of optimum and compacted to a minimum of 95 percent of ASTM D1557 as outlined in Section 3.3 of this report. When placed, the lift base course thickness should generally not exceed 12 inches prior to compacting. The type of compaction equipment used will ultimately determine the maximum lift thickness. In addition, we recommend that the structural fill be placed within +/- 2 percent of the optimum moisture for that material.

## **4.0 CONSTRUCTION CONSIDERATIONS**

EEl should be retained to provide observation and testing of construction activities involved in the foundation, earthwork, and related activities of this project. EEl cannot accept any responsibility for any conditions that deviate from those described in this report, nor for the performance of the foundations if not engaged to also provide construction observation for this project.

### **4.1 Moisture Sensitive Soils/Weather Related Concerns**

The soils encountered at this site are expected to be sensitive to disturbances caused by construction traffic and to changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. In addition, soils that become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. It will, therefore, be advantageous to perform earthwork and foundation construction activities during dry weather.

### **4.2 Drainage and Groundwater Considerations**

Water should not be allowed to collect in the foundation excavations or on prepared subgrades for the floor sections during construction. Positive site drainage should be maintained throughout construction activities. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater, or surface runoff. If groundwater is encountered, a system of sumps and pumps may be required to keep footing excavations drained until the footing is placed to prevent softening of the subgrade soils.

A site grading plan should be developed to provide rapid drainage of surface water permanently away from the building areas and to inhibit infiltration of surface water around the perimeter of the building and beneath slabs. The grades should be sloped away from the building areas. Roof runoff should be piped (tightlined) away from the subdivision residences and commercial buildings. As discussed in Section 3.4, we recommend the foundations include footing drains on the exterior of the homes.

### **4.3 Excavations**

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document and subsequent updates were issued to better insure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches, basement excavations or footing excavations, be constructed in accordance with the new OSHA guidelines. It is our

understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

We are providing this information solely as a service to our client. EEI does not assume responsibility for construction site safety or the contractor's compliance with local, state, and federal safety or other regulations.



## **5.0 REPORT LIMITATIONS**

As is standard practice in the geotechnical industry, the conclusions contained in our report are considered preliminary because they are based on assumptions made about the soil, rock, and groundwater conditions exposed at the site during our subsurface investigation. A more complete extent of the actual subsurface conditions can only be identified when they are exposed during construction. Therefore, EEI should be retained as your consultant during construction to observe the actual conditions and to provide our final conclusions. If a different geotechnical consultant is retained to perform geotechnical inspection during construction, then they should be relied upon to provide final design conclusions and recommendations and should assume the role of geotechnical engineer of record, as is the typical procedure required by the governing jurisdiction.

The geotechnical recommendations presented in this report are based on the available project information, and the subsurface materials described in this report. If any of the noted information is incorrect, please inform EEI in writing so that we may amend the recommendations presented in this report, if appropriate, and if desired by the client. EEI will not be responsible for the implementation of its recommendations when it is not notified of changes in the project.

Once construction plans are finalized and a grading plan has been prepared, EEI should be retained to review those plans, and modify our existing recommendations related to the proposed construction, if determined to be necessary.

The Geotechnical Engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

This report has been prepared for the exclusive use of our client, Legacy Development Group for the proposed Spring Street Subdivision located on Klickitat County Tax Lot No. 0310247500400 off of Spring Street near the intersection with Northwest Cherry Hill Road in White Salmon, Klickitat County, Washington. EEI does not authorize the use of the advice herein nor the reliance upon the report by third parties without prior written authorization by EEI.

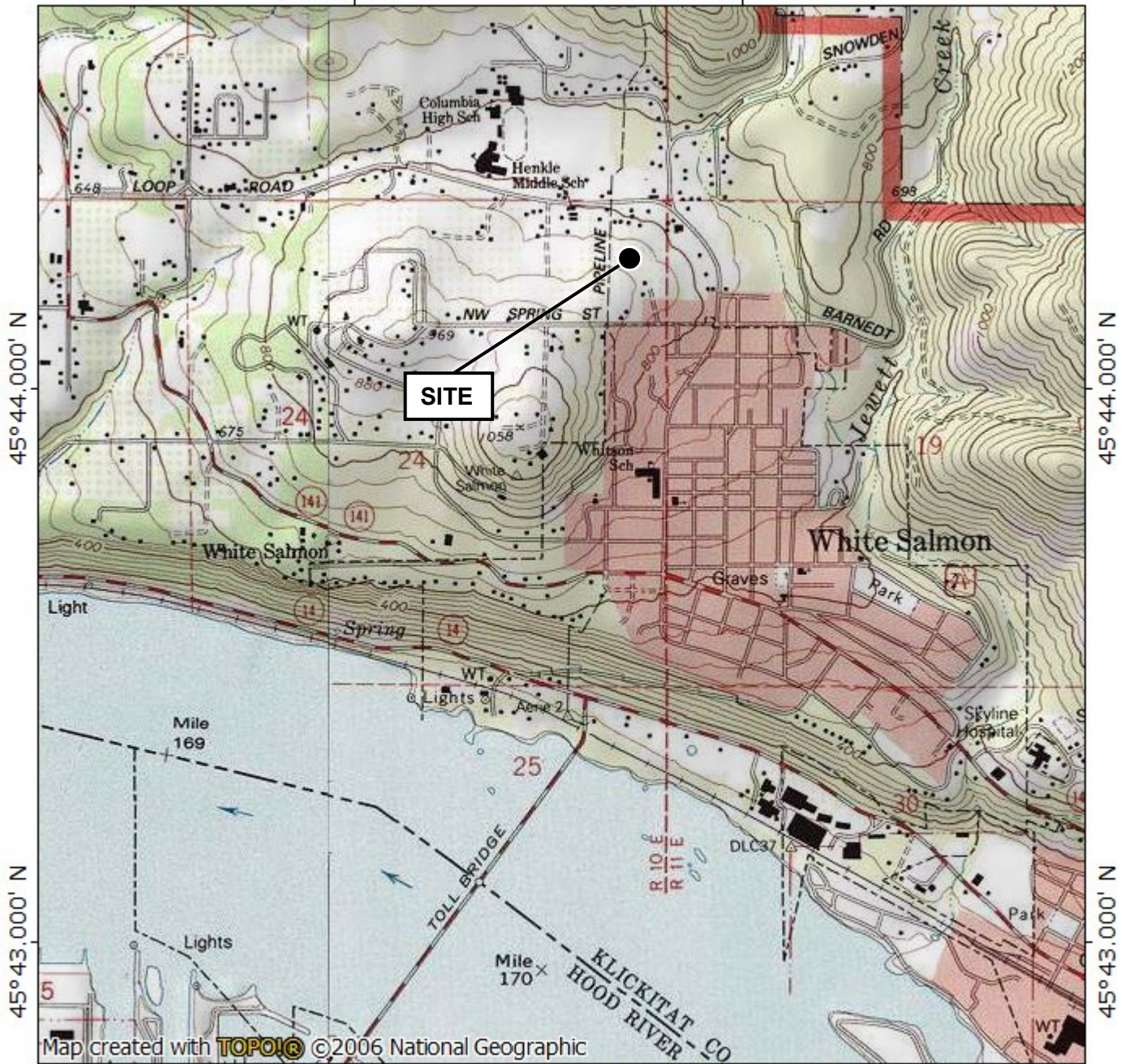
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## APPENDICES

# APPENDIX A – SITE LOCATION PLAN

121°30.000' W

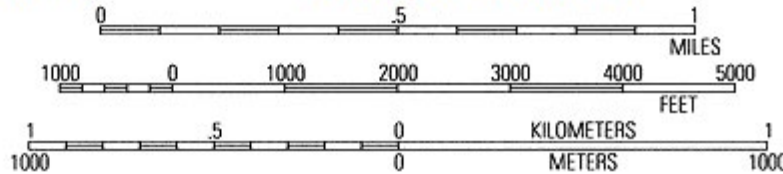
WGS84 121°29.000' W



Map created with **TOPOIG** ©2006 National Geographic

121°30.000' W

WGS84 121°29.000' W



TN  $\uparrow$  MN  
15 1/2  
11/10/21



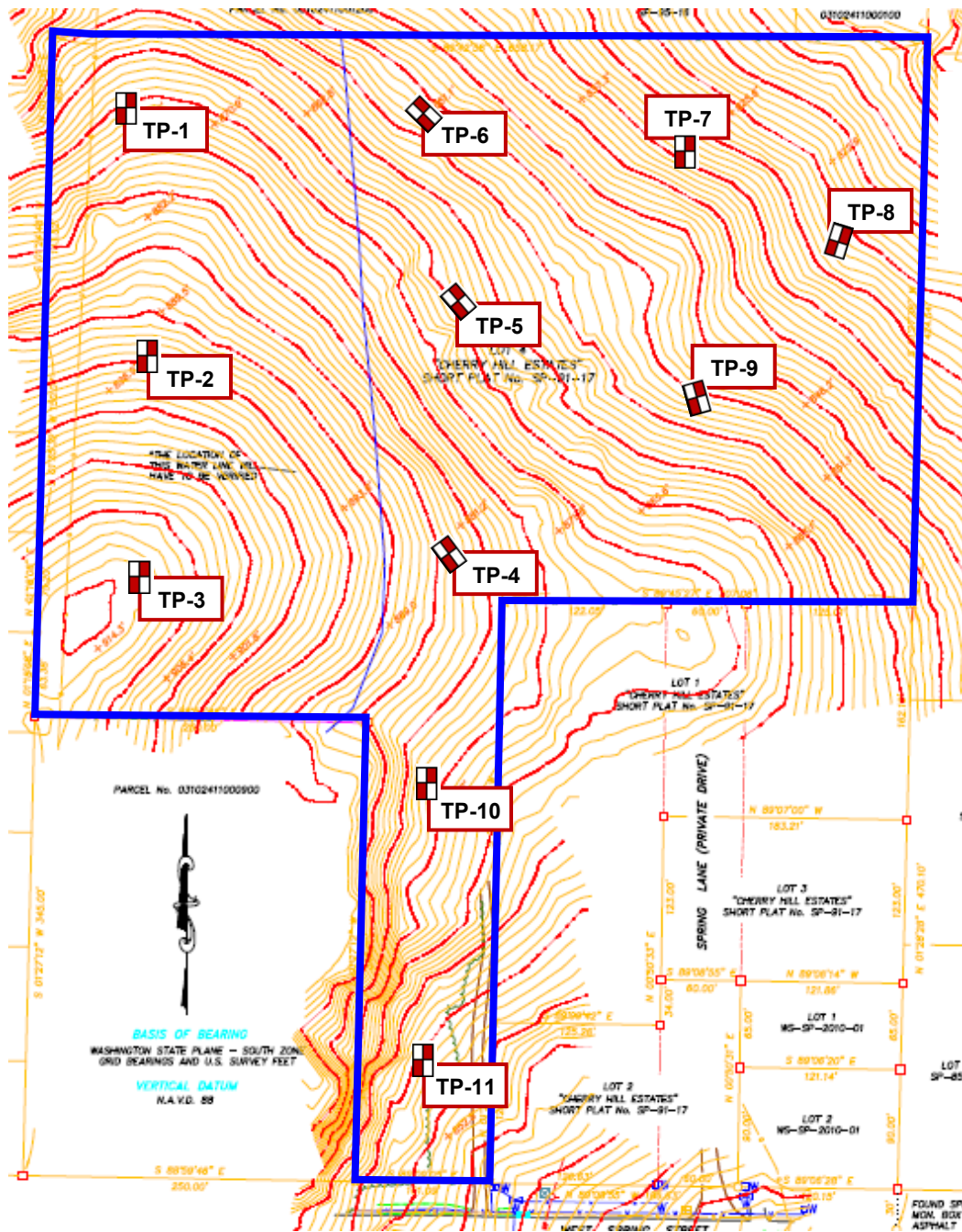
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**Proposed Spring Street Subdivision**  
**Klickitat County Tax Lot No. 0310247500400**  
**Intersection of Northwest Spring Street**  
**and Northwest Cherry Hill Road**  
**White Salmon, Klickitat County, Washington**

**Report No.**  
**21-071-1**

**November 15, 2021**

# APPENDIX B – SITE EXPLORATION PLAN



 = Approximate Test Pit Location

Base plan source: "Property Boundary Survey for Curtis Homes" prepared by Terra Surveying, dated December 2020.



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**Proposed Spring Street Subdivision  
Klickitat County Tax Lot No. 0310247500400  
Intersection of Northwest Spring Street  
and Northwest Cherry Hill Road  
White Salmon, Klickitat County, Washington**

**Report No.  
21-071-1**

**November 15, 2021**



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# Appendix C: Test Pit TP-1

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 875  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (8-inches thick)		Mod.								
1			Fill - brown silt with few to little sand, rootlets, wood chips and charcoal pieces, dry, medium stiff to very stiff	GRAB 1			2.5	9	89				possible tilled soils
2			Silt (ML) - brown to reddish brown sandy silt with decomposed rock fragments (black to red) and few gravel, moist, very stiff to hard	GRAB 2				36	60				scraping on hard soil
3					Hard		4.5+						
4													
5													practical digging refusal on hard soil/decomposed rock
6			dark brown to red to orange to gray decomposed basalt encountered	GRAB 3				28	98				
7													
8													
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 6 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by [redacted] Surveying, dated December 2020.



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# Appendix C: Test Pit TP-2

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 895  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (10-inches thick)		Easy								
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry, medium stiff to very stiff										possible tilled soils
2			Silt (ML) - orange-brown to reddish brown sandy silt with decomposed rock fragments (black to red), moist, very stiff to hard	GRAB 1	Mod.		4.5+	50					
3													
4				GRAB 2				24					
5													
6			dark brown to red to orange to gray decomposed basalt encountered	GRAB 3	Hard			36					
7													
8													practical digging refusal on hard soil/decomposed rock
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 8 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by [redacted] Surveying, dated December 2020.



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# Appendix C: Test Pit TP-3

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 914  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (12-inches thick)		Mod.								
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry, medium stiff to very stiff	GRAB 1				10					possible tilled soils
2													
3													
4			Silt (ML) - brown silt with few sand and gravel, decomposed rock fragments (black to red), moist, very stiff to hard	GRAB 2				15	94				
5				GRAB 3	Hard			15					
6			dark brown to red to orange to white decomposed basalt encountered	GRAB 4				19	95				
7													practical digging refusal on hard soil/decomposed rock
8													
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 7 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by Surveying, dated December 2020.



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# Appendix C: Test Pit TP-4

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 884  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (6-inches thick)		Easy								
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry, medium stiff to very stiff		Mod.								possible tilled soils
3			Silt (ML) - reddish brown sandy silt with decomposed rock fragments (black to red), moist, very stiff to hard		Hard								
4				GRAB 1				41					
6				GRAB 2				43					
7				GRAB 3				44					
8													practical digging refusal on consolidated soil
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 8 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by Surveying, dated December 2020.





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# Appendix C: Test Pit TP-5

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 870  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (6-inches thick)		Easy	5							
0.5			Fill - brown sandy silt with rootlets, wood chips and charcoal pieces, dry, medium stiff to hard			5							possible tilled soils
1						12							
2						10							
2.5						12							
3					Mod.	16							
3.5						39							
4			Silt (ML) - reddish brown sandy silt with decomposed rock fragments (black to red), moist, hard			32							
4.5						47							drive probe refusal at 5-inches
5				GRAB 1		50		39					
6													
7													
8				GRAB 2	Hard			44					
9													practical refusal due to excavator reach
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 9 feet bgs. Drive probe terminated at a depth of approximately 5 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by Terra Surveying, dated December 2020.



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# Appendix C: Test Pit TP-6

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 857  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (6-inches thick)		Easy								
1			Fill - brown silty sand with rootlets, wood chips and broken rock pieces, dry, medium dense to very dense										possible tilled soils
2													
3					Mod.								
4			boulder encountered	GRAB 1				12	39				practical digging refusal on boulder
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 4 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by Surveying, dated December 2020.



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# Appendix C: Test Pit TP-7

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 840  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (8-inches thick)		Easy								
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry, medium stiff to very stiff white plastic debris encountered (abandoned pipe)										possible tilled soils
2			Silt (ML) - orange-brown to reddish brown sandy silt with decomposed rock fragments (black to red), moist, very stiff to hard		Mod.			41					
3													
4													
5				GRAB 1	Hard								practical digging refusal on hard soil/decomposed rock
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 6 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by Surveying, dated December 2020.



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# Appendix C: Test Pit TP-8

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 833  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (10-inches thick)		Easy	6							
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry, medium stiff to very stiff			5							possible tilled soils
2				GRAB 1		11		12					
3						16							
4						18							
5			Silt (ML) - light brown to brown silt with few sand, decomposed rock fragments (black to red), moist, very stiff to hard		Mod.	21							drive probe refusal at 2-inches
6				GRAB 2		24		24	91				
7						29							
8						50							
9			weathered rock fragments encountered	GRAB 3				24					practical refusal due to excavator reach
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 9.5 feet bgs. Drive probe terminated at a depth of approximately 4.5 feet bgs. Groundwater was encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by Terra Surveying, dated December 2020.



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# Appendix C: Test Pit TP-9

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 859  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (8-inches thick)		Easy								
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry to moist, medium stiff to very stiff										possible tilled soils
2					Mod.								
3			Silt (ML) - brown to dark brown silt with few sand, decomposed rock fragments (black to red), moist, very stiff to hard										
4				GRAB 1				44					
5				GRAB 2	Hard			44					practical digging refusal on hard soil/decomposed rock
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 5.5 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by Terra Surveying, dated December 2020.



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# Appendix C: Test Pit TP-10

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 876  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (6-inches thick)		Easy	7							
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry to moist, medium stiff to hard metal debris and wood debris encountered			6							possible tilled soils
2			4-inch thick tree root encountered			7							
3						22							
4						49							drive probe refusal at 3-inches
5			Silt (ML) - gray-brown to dark brown silt with few to little sand and gravel, decomposed rock fragments (black to red), moist, hard		Mod.				29	90			
6				GRAB 1									
7					Hard								
8													
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 7 feet bgs. Drive probe terminated at a depth of approximately 4 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by Terra Surveying, dated December 2020.



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# Appendix C: Test Pit TP-11

Sheet 1 of 1

Client: Legacy Development Group  
 Project: Proposed Spring Street Subdivision  
 Site Address: Tax Lot No. 0310247500400  
 White Salmon, Klickitat County, Washington  
 Location of Exploration: See Appendix B  
 Logged By: Jacqui Boyer

Report Number: 21-071-1  
 Excavation Contractor: Legacy Development Group  
 Excavation Method: Excavator with 2 foot toothed bucket  
 Excavation Equipment: Takeuchi TB240  
 Approximate Ground Surface Elevation (ft msl): 860  
 Date of Exploration: October 15, 2021

Depth (ft)	Water Level	Lithology		Sampling Data							Remarks		
		Lithologic Symbol	Geologic Description of Soil and Rock Strata	Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit		Plastic Limit	
0			Topsoil - light brown sandy silt with rootlets, dry to moist (8-inches thick)		Easy								
1			Fill - light brown sandy silt with rootlets, wood chips and charcoal pieces, dry to moist, medium stiff to very stiff										possible tilled soils
2				GRAB 1									
3					Mod.			9					
4			Silt (ML) - red to brown sandy silt with decomposed rock fragments (black to red), dry to moist, very stiff to hard	GRAB 2	Hard			8	81				practical digging refusal on hard soil/decomposed rock
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

Notes: Test pit terminated at a depth of approximately 5 feet bgs. Groundwater was not encountered at the time of the exploration. Test pit loosely backfilled with excavated soil on 10/15/2021. Approximate elevation interpolated from survey titled "Property Boundary Survey for Curtis Homes" prepared by Surveying, dated December 2020.

# APPENDIX D: SOIL CLASSIFICATION LEGEND

APPARENT CONSISTENCY OF COHESIVE SOILS (PECK, HANSON & THORNBURN 1974, AASHTO 1988)				
Descriptor	SPT N <sub>60</sub> (blows/foot)*	Pocket Penetrometer, Qp (tsf)	Torvane (tsf)	Field Approximation
Very Soft	< 2	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	2 – 4	0.25 – 0.50	0.12 – 0.25	Easily penetrated several inches by thumb
Medium Stiff	5 – 8	0.50 – 1.0	0.25 – 0.50	Penetrated several inches by thumb w/moderate effort
Stiff	9 – 15	1.0 – 2.0	0.50 – 1.0	Readily indented by thumbnail
Very Stiff	16 – 30	2.0 – 4.0	1.0 – 2.0	Indented by thumb but penetrated only with great effort
Hard	> 30	> 4.0	> 2.0	Indented by thumbnail with difficulty

\* Using SPT N<sub>60</sub> is considered a crude approximation for cohesive soils.

APPARENT DENSITY OF COHESIONLESS SOILS (AASHTO 1988)	
Descriptor	SPT N <sub>60</sub> Value (blows/foot)
Very Loose	0 – 4
Loose	5 – 10
Medium Dense	11 – 30
Dense	31 – 50
Very Dense	> 50

MOISTURE (ASTM D2488-06)	
Descriptor	Criteria
Dry	Absence of moisture, dusty, dry to the touch, well below optimum moisture content (per ASTM D698 or D1557)
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table, well above optimum moisture content (per ASTM D698 or D1557)

PERCENT OR PROPORTION OF SOILS (ASTM D2488-06)	
Descriptor	Criteria
Trace	Particles are present but estimated < 5%
Few	5 – 10%
Little	15 – 25%
Some	30 – 45%
Mostly	50 – 100%

Percentages are estimated to nearest 5% in the field. Use "about" unless percentages are based on laboratory testing.

SOIL PARTICLE SIZE (ASTM D2488-06)	
Descriptor	Size
Boulder	> 12 inches
Cobble	3 to 12 inches
Gravel - Coarse Fine	¾ inch to 3 inches No. 4 sieve to ¾ inch
Sand - Coarse Medium Fine	No. 10 to No. 4 sieve (4.75mm) No. 40 to No. 10 sieve (2mm) No. 200 to No. 40 sieve (.425mm)
Silt and Clay ("fines")	Passing No. 200 sieve (0.075mm)

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2488)				
Major Division			Group Symbol	Description
<b>Coarse Grained Soils</b>  (more than 50% retained on #200 sieve)	<b>Gravel</b> (50% or more retained on No. 4 sieve)	Clean Gravel	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
		Gravel with fines	GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
			GM	Silty gravels and gravel-sand-silt mixtures
	<b>Sand</b> (> 50% passing No. 4 sieve)	Clean sand	GC	Clayey gravels and gravel-sand-clay mixtures
		Sand with fines	SW	Well-graded sands and gravelly sands, little or no fines
			SP	Poorly-graded sands and gravelly sands, little or no fines
<b>Fine Grained Soils</b>  (50% or more passing #200 sieve)	<b>Silt and Clay</b> (liquid limit < 50)	SM	Silty sands and sand-silt mixtures	
		SC	Clayey sands and sand-clay mixtures	
		ML	Inorganic silts, rock flour and clayey silts	
	<b>Silt and Clay</b> (liquid limit > 50)	CL	Inorganic clays of low-medium plasticity, gravelly, sandy & lean clays	
		OL	Organic silts and organic silty clays of low plasticity	
		MH	Inorganic silts and clayey silts	
<b>Highly Organic Soils</b>	CH	Inorganic clays or high plasticity, fat clays		
	OH	Organic clays of medium to high plasticity		
		PT	Peat, muck and other highly organic soils	



GRAPHIC SYMBOL LEGEND		
GRAB	☒	Grab sample
SPT	■	Standard Penetration Test (2" OD), ASTM D1586
ST	▨	Shelby Tube, ASTM D1587 (pushed)
DM	▤	Dames and Moore ring sampler (3.25" OD and 140-pound hammer)
CORE	▥	Rock coring



## APPENDIX E: SURCHARGE-INDUCED LATERAL EARTH PRESSURES FOR WALL DESIGN

### LINE LOAD (applicable for retaining walls not exceeding 20 feet in height):

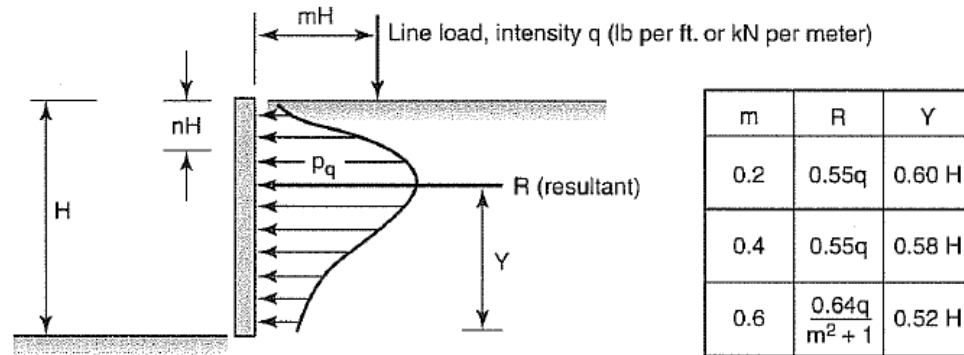


Figure 16-28 Pressure distribution against vertical wall resulting from line load of intensity  $q$ .

### CONCENTRATED POINT LOAD (applicable for retaining walls not exceeding 20 feet in height):

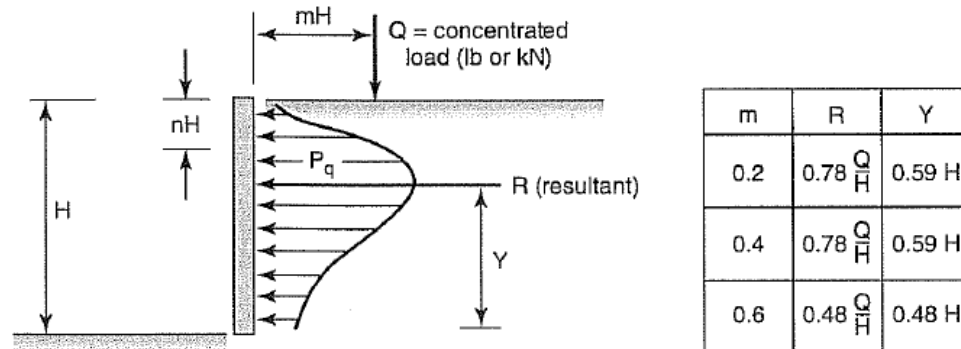


Figure 16-27 Pressure distribution against vertical wall resulting from point load,  $Q$ .

### AREAL LOAD:

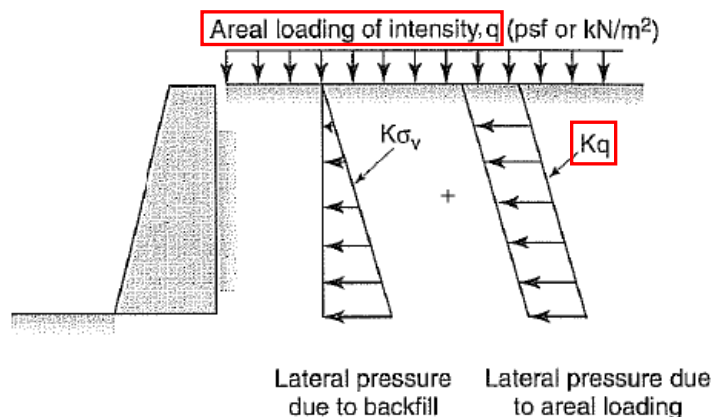
Figure 16-26 Influence of areal loading on wall pressures.

use  $K=0.4$  for active condition  
(i.e. top of wall allowed to  
deflect laterally)

use  $K=0.9$  for at-rest condition  
(i.e. top of wall not allowed to  
deflect laterally)

Resultant,  $R = K * q * H$

Where  $H$  = wall height (feet)



Source of Figures: McCarthy, D.F., 1998, "Essentials of Soil Mechanics and foundations, Basic Geotechnics, Fifth Edition."



**Earth  
Engineers,  
Inc.**

**Proposed Spring Street Subdivision  
Klickitat County Tax Lot No. 0310247500400  
Intersection of Northwest Spring Street  
and Northwest Cherry Hill Road  
White Salmon, Klickitat County, Washington**

**Report No.  
20-071-1**

**November 15, 2021**



# WHITE SALMON CHERRY HILL SUBDIVISION TRANSPORTATION IMPACT STUDY

JULY 2024

**PREPARED FOR:**

Curtis Homes, LLC



**PREPARED BY:**

Jenna Bogert, P.E.

Casey Dobbert



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## INTRODUCTION

This study evaluates the transportation impacts associated with the proposed Cherry Hill housing development located in White Salmon, Washington. The project sponsor desires to build a subdivision of 36 single-family homes on a vacant 7.93-acre parcel north of Spring Street and west of Main Avenue. The development will have access onto Spring Street as well as N Main Avenue through the recently approved adjacent development, Four Oaks. The Four Oaks subdivision will construct a new public street east-west through their site that will intersect N Main Ave and continue west into the Cherry Hill Subdivision.

The purpose of this transportation impact analysis is to identify potential mitigation measures needed to offset transportation impacts that the proposed development may have on the nearby transportation network. The impact analysis is focused on the study intersections, which were selected for evaluation in coordination with City staff.<sup>1</sup> The intersections are listed below and shown in Figure 1.

1. Main Avenue/Loop Road (Two-Way Stop-Controlled)
2. Main Avenue/New Public Street/Business Driveway (Two-Way Stop-Controlled)
3. Main Avenue/Spring Street (Two-Way Stop-Controlled)

Table 1 on the following page lists important characteristics of the study area and proposed project.



**FIGURE 1. PROJECT LOCATION AND STUDY INTERSECTIONS**

<sup>1</sup> Phone conversation between Lacy Brown (DKS) and Pat Munyan (White Salmon Public Works Director) on March 3, 2021.

**TABLE 1: STUDY AREA AND PROPOSED PROJECT CHARACTERISTICS**

<b>STUDY AREA</b>	
<b>NUMBER OF STUDY INTERSECTIONS</b>	Three
<b>ANALYSIS PERIODS</b>	Weekday AM peak hour (7:00 am – 9:00 am) and PM peak hour (4:00 pm – 6:00 pm)
<b>PROPOSED DEVELOPMENT</b>	
<b>SIZE AND LAND USE</b>	Single-family subdivision on 7.93-acre parcel containing 36 units
<b>PROJECT TRIPS</b>	29 AM peak hour trips, 38 PM peak hour trips, and 394 daily trips
<b>VEHICLE ACCESS POINTS</b>	One new, full-access driveway to the site will be provided on Spring Street. A new street connection will also provide access to N Main Ave.
<b>OTHER TRANSPORTATION FACILITIES</b>	
<b>PEDESTRIAN AND BICYCLE FACILITIES</b>	There are no sidewalks or marked bicycle facilities along Spring Street near the project site. Sidewalks are provided on the west side of Main Avenue from Loop Road to past Spring Street.
<b>TRANSIT FACILITIES</b>	There are two bus stops approximately 0.8 miles from the project site in downtown White Salmon which is served by Mount Adams Transportation Services.

## EXISTING CONDITIONS

This chapter provides documentation of existing study area conditions including the roadway network, pedestrian and bicycle facilities, and existing traffic volumes and operations.

### STUDY AREA ROADWAY NETWORK

Key roadways in the study area are summarized in Table 2 along with their existing roadway characteristics. The functional classifications for the County streets are provided in the Klickitat County Regional Transportation Plan (RTP).<sup>2</sup> The functional classification for the City streets is provided in the City’s Urbanization Study.<sup>3</sup>

**TABLE 2: STUDY AREA ROADWAY CHARACTERISTICS**

ROADWAY	JURISDICTION	FUNCTIONAL CLASSIFICATION	LANES	POSTED SPEED	SIDE-WALKS	BIKE FACILITIES
SPRING STREET	City of White Salmon	Major Collector	2	20 mph	None	None
MAIN AVENUE	City of White Salmon <sup>a</sup>	Major Collector	2	25 mph	Partial <sup>c</sup>	None
	Klickitat County <sup>b</sup>	Rural Major Collector				
LOOP ROAD	Klickitat County	Rural Major Collector	2	25 mph	Both Sides	None

<sup>a</sup> City jurisdiction south of Spring Street

<sup>b</sup> County jurisdiction north of Spring Street

<sup>c</sup> Sidewalks on west side only of Main Avenue north of Spring Street and both sides of Main Avenue south of Spring Street.

### BICYCLE AND PEDESTRIAN FACILITIES

There are no marked bicycle lanes or sidewalks that currently exist on either side of Spring Street fronting the project site. Sidewalks (5 feet wide) are provided on the west side of Main Avenue from Loop Road to past Spring Street. There are no marked bicycle facilities on Main Avenue in the study area.

### PUBLIC TRANSIT SERVICE

Mount Adams Transportation Service (MATS) provides public transportation services within White Salmon and Bingen. There are four bus stops located in downtown White Salmon, the closest stops are approximately 0.8 miles from the project site. Service is provided Monday through Friday with six daily loops provided between 9am and 4pm.

<sup>2</sup> Klickitat County Regional Transportation Plan, Adopted November 2018.

<sup>3</sup> White Salmon Urbanization Study, Columbia Planning + Design, June 2009.

## PLANNED TRANSPORTATION PROJECTS

The City of White Salmon has a Transportation Improvement Program (TIP)<sup>4</sup> and an Urbanization Study (2009) which list the City's desired transportation projects. Klickitat County Regional Transportation Plan (RTP) also provides a list of future planned transportation projects. A list of projects located near the proposed project site from these three documents are described below.

### City of White Salmon Transportation Improvement Program (TIP)

- Spring Street (from Estes Avenue to east City Limits) – Reconstruction and sidewalk on one side, approximately 0.27 miles.

### White Salmon Urbanization Study (2009)

- Main Avenue/Loop Road: Either remove the stop sign from eastbound Loop Road or install stop signs at all three approaches.

### Klickitat County Regional Transportation Plan (RTP)

- No projects in the study area

The City of White Salmon is currently in the process of developing a Transportation Plan Lite, which will identify key transportation projects that will improve the access and walkability through town for residents and visitors.

## EXISTING TRAFFIC VOLUMES

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Intersection traffic counts were collected in March 2021 that include pedestrian volumes, bicycle volumes, and heavy truck percentages for the AM peak period (7:00-9:00 a.m.) and PM peak period (4:00-6:00 p.m.) at the following study intersections:

1. Main Avenue/Loop Road (Two-Way Stop-Controlled)
2. Main Avenue/Innovative Composite Engineering Driveway (Two-Way Stop-Controlled)
3. Main Avenue/Spring Street (Two-Way Stop-Controlled)

The unadjusted 2-hour traffic counts are provided in the appendix.

Due to COVID-19 restrictions, the collected traffic count data was adjusted to account for the current atypical travel patterns. Although no traffic count data on City or County streets in the study area prior to COVID-19 were available, historic traffic data on WSDOT facilities (i.e., State Route 14) were available and utilized to estimate the adjustment factor needed.

Using the traffic count data from Permanent Traffic Recorder (R076W: SR 14 at MP 100), the difference between 2019 and 2020 traffic volumes was an average decrease of 12% for the months

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<sup>4</sup> Six Year Transportation Improvement Program 2020 - 2025

of August to November (most recent months of data available in 2020). Therefore, a factor of 1.12 was applied to the study intersection traffic counts to account for COVID-19 impacts.

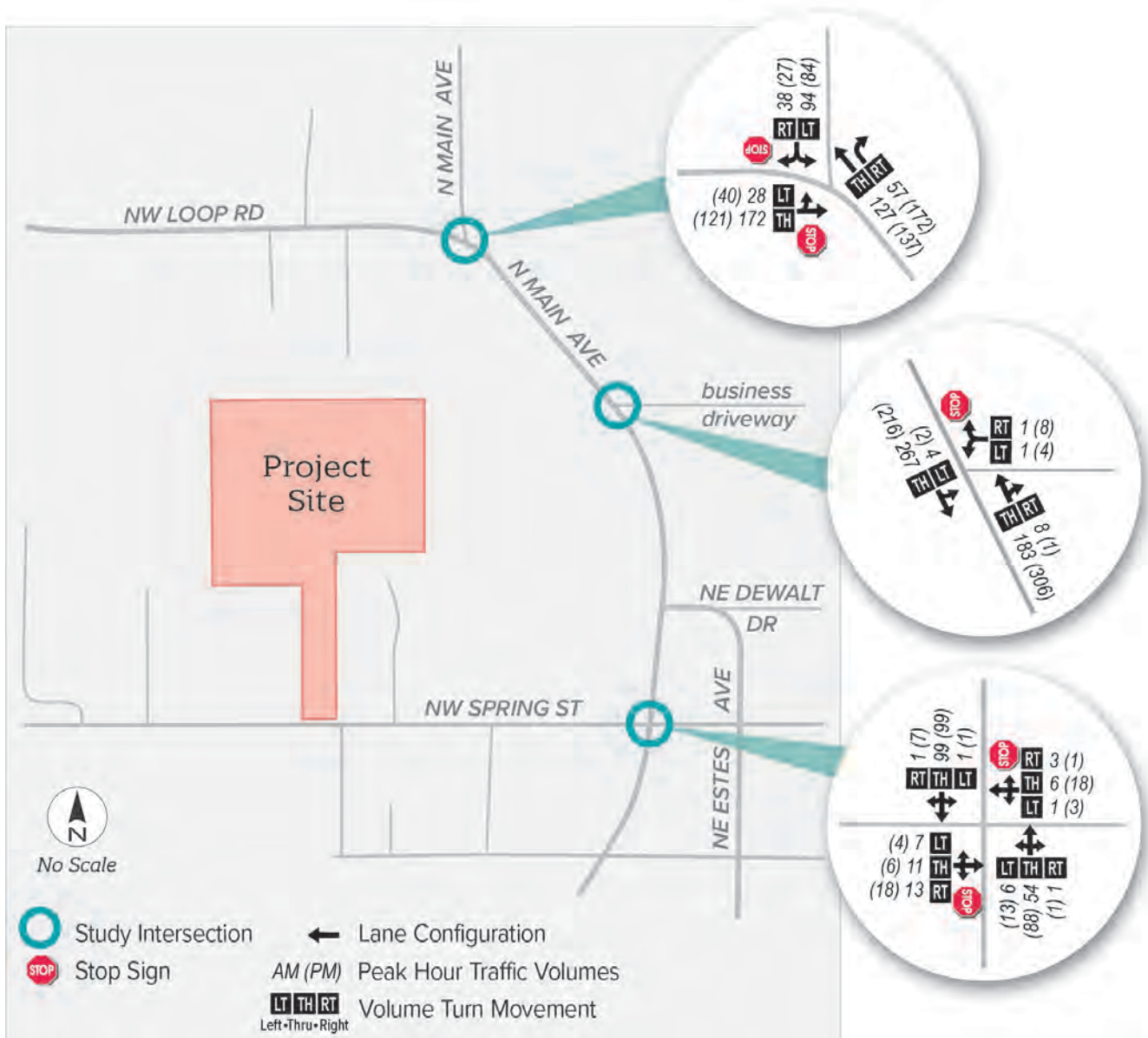
For comparison, the traffic volume difference between 2019 and 2021 was a decrease of 6% in late March for all of Washington and SR 14 (near Vancouver).<sup>5</sup> As another comparison, the traffic volume difference between 2019 and 2021 was a decrease of 1% for weekdays on I-84 in Oregon. In general, the difference in pre-COVID-19 volumes and current volumes seem to be decreasing in 2021. It should be noted that both of these percentages represent more urban areas of SR 14 and I-84 and are not as representative of rural areas like White Salmon. But these numbers still help provide context to the impacts of COVID-19 restrictions on 2021 conditions across the region as a whole.

Figure 2 shows the adjusted 2021 AM and PM peak hour traffic volumes for the study intersections, along with the lane configurations and traffic control.

---

<sup>5</sup> <https://www.wsdot.wa.gov/about/covid-19-transportation-report>





**FIGURE 2: 2021 EXISTING TRAFFIC VOLUMES, LANE GEOMETRIES, AND TRAFFIC CONTROL**

## INTERSECTION PERFORMANCE MEASURES

Agency operating standards often require intersections to meet level of service (LOS) or volume-to-capacity (V/C) intersection operation thresholds. Additional details about LOS and delay are provided in the Appendix.

- The intersection LOS is similar to a “report card” rating based upon average vehicle delay. Level of service A, B, and C indicate conditions where traffic moves without significant delays over periods of peak hour travel demand. Level of service D and E are progressively worse operating conditions. Level of service F represents conditions where average vehicle

delay has become excessive and demand has exceeded capacity. This condition is typically evident in long queues and delays.

- The volume-to-capacity (v/c) ratio represents the level of saturation of the intersection or individual movement. It is determined by dividing the peak hour traffic volume by the maximum hourly capacity of an intersection or turn movement. When the V/C ratio approaches 0.95, operations become unstable and small disruptions can cause the traffic flow to break down, resulting in the formation of excessive queues.

**City of White Salmon:** The City of White Salmon does not have any specified transportation operating standards. Therefore, any City intersections will be compared to Klickitat County operations standards.

**Klickitat County:** The Klickitat RTP does not provide any v/c ratio or LOS standards for non-state facilities. Therefore, the LOS standard for state facilities in Klickitat County shall apply to the study intersections for the project, which is LOS C.

## EXISTING INTERSECTION OPERATIONS

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An analysis of the 2021 existing intersection operations was performed at the three study intersections to determine the current operating conditions of the study area. Intersection operations were analyzed for the AM and PM peak hours using Highway Capacity Manual (HCM) 6th Edition methodology.<sup>6</sup> The volume to capacity (v/c) ratio, delay, and level of service (LOS) of each study intersection are presented in Table 3.

It should be noted that the Main Avenue/Loop Road intersection has three approaches with stop signs on two of the approaches (southbound Main Avenue and eastbound Loop Road). This configuration cannot be analyzed using typical HCM analysis software. Therefore, the intersection was evaluated assuming only the southbound Main Avenue approach is stop-controlled and the westbound Main Avenue and eastbound Loop Road approaches are free. This traffic control configuration is the most conservative estimate of operations using HCM analysis software.

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<sup>6</sup> Highway Capacity Manual, 6th Edition, Transportation Research Board, 2017.

**TABLE 3: EXISTING 2021 STUDY INTERSECTION OPERATIONS**

GINTERSECTION	JURISDICTION	OPERATING STANDARD	AM PEAK HOUR			PM PEAK HOUR		
			V/C	DELAY	LOS	V/C	DELAY	LOS
<b>UNSIGNALIZED</b>								
MAIN AVE/ LOOP RD	Klickitat County	LOS C	0.34	14.6	A/B	0.20	12.0	A/B
MAIN AVE/ ENGINEERING SITE	Klickitat County	LOS C	0.01	11.4	A/B	0.02	10.9	A/B
MAIN AVE/ SPRING ST	City of White Salmon	LOS C	0.07	10.4	A/B	0.04	10.6	A/B
<b>Two-Way Stop (TWSC) Intersections:</b> Delay = Average Stopped Delay per Vehicle (sec) of Worst Movement LOS = Level of Service (Major Street/Minor Street) v/c = Volume-to-Capacity Ratio of Worst Movement								

As shown, all study intersections meet the operating standard for the existing conditions. The HCM reports are provided in the Appendix.

### CRASH ANALYSIS

The most recent five years (2018 - 2022) of available crash data for the study area was obtained from the WSDOT crash database<sup>7</sup>. A total of 4 collisions occurred along the study area roadways in the vicinity of the project site. There were no fatalities or serious injury crashes in the study area. A list of the four collisions is provided below:

- **2018:** One crash at Loop Street/Main Street intersection, no apparent injury
- **2020:** Three crashes at Main Street/Spring Street intersection, two with no apparent injury and one with possible injury

Based on the crash history, there are no safety concerns in the vicinity of this project.

<sup>7</sup> <https://remoteapps.wsdot.wa.gov/highwaysafety/collision/data/portal/public/>

## PROJECT IMPACTS

This chapter reviews the impacts that the proposed development may have on the study area transportation system. This analysis includes site plan evaluation, trip generation, trip distribution, and future year traffic volumes and operating conditions for the four study intersections.

### PROPOSED DEVELOPMENT

The proposed Cherry Hill subdivision will include up to 36 single family homes on a vacant 7.93-acre parcel north of Spring Street and west of Main Avenue. The development will access onto Spring Street, and onto Main Ave through the adjacent Four Oaks development. It is assumed that the development will be completed and occupied by 2027.

### FUTURE ANALYSIS SCENARIOS

Operating conditions were analyzed at the study intersections for the following future traffic scenarios. The future year 2027 was selected as it is the estimated year of project completion. The comparison of the following scenarios enables the assessment of project impacts:

- 2027 No Build Conditions
- 2027 Build Conditions

The future 2027 No Build and Build Conditions include the vehicle trips generated by the adjacent Four Oaks Subdivision, which will include 31 single-family homes on the property just east of the Cherry Hill Subdivision.

### TRIP GENERATION

Trip generation is the method used to estimate the number of vehicles added to site driveways and the adjacent roadway network by a development during a specified period (e.g., the PM peak hour). For this study, the number of trips generated by the proposed development was based on the fitted curve equation for Land Use 210 from the ITE Trip Generation Manual, 11th Edition. The total trip generation for the proposed development is shown in Table 4. The project trips at the study intersections are shown in Figure 3 in the following section.

**TABLE 4: VEHICLE TRIP GENERATION**

TRIP GENERATOR CATEGORIES	DAILY TRIPS			AM PEAK HOUR TRIPS			PM PEAK HOUR TRIPS		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
LAND USE 210: SINGLE-FAMILY HOUSING	197	197	394	7	22	29	24	14	38

As shown, the proposed development (at the highest anticipated density of 36 units) is expected to generate a total of 394 daily trips, 29 AM peak hour trips, and 38 PM peak hour trips on a typical weekday day.

### VEHICLE TRIP DISTRIBUTION

Vehicle trip distribution provides an estimation of where vehicles would be coming from and going to. It is given as a percentage at key gateways to the study area and is used to route project trips through the study intersections. Figure 3 shows the trip distribution for the proposed site. The trip distribution was based on the existing traffic counts at Spring Street and Main Avenue. Based on the counts, it is assumed that approximately 5% of site-generated trips will travel west on Spring Street, 15% will travel north of the project site, 45% will travel south to Downtown and SR 14, and 35% will travel east on Spring Street.

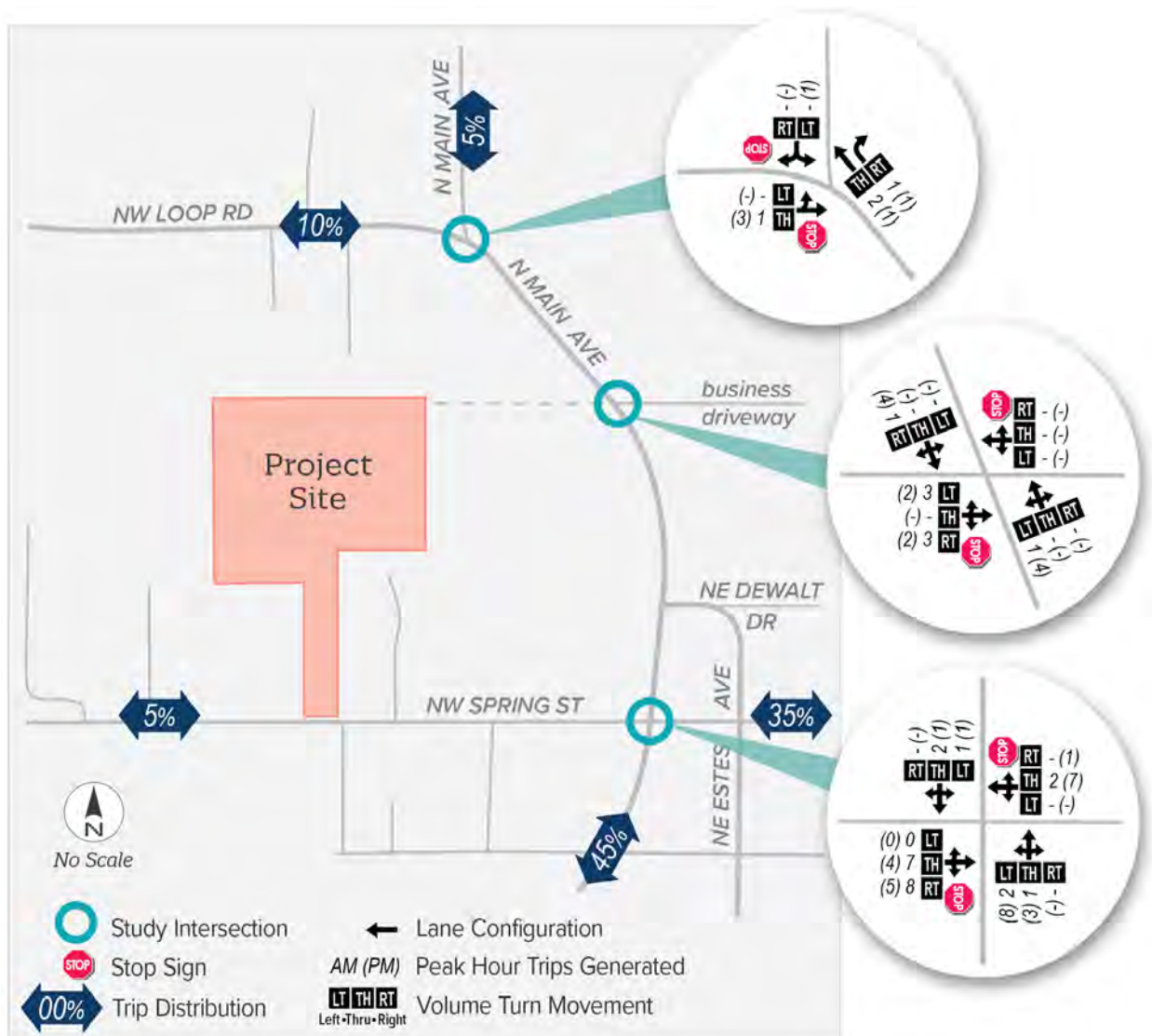
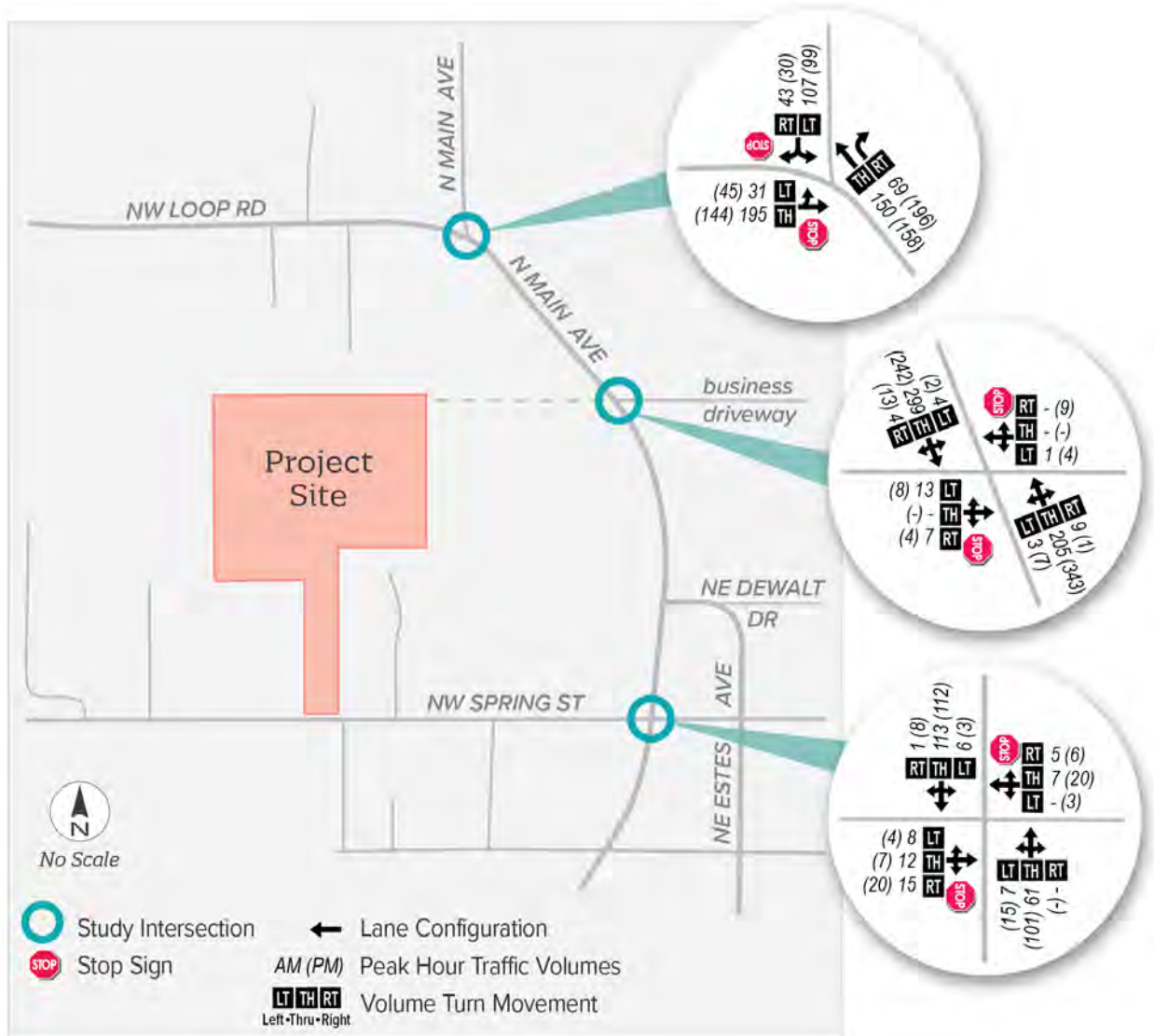


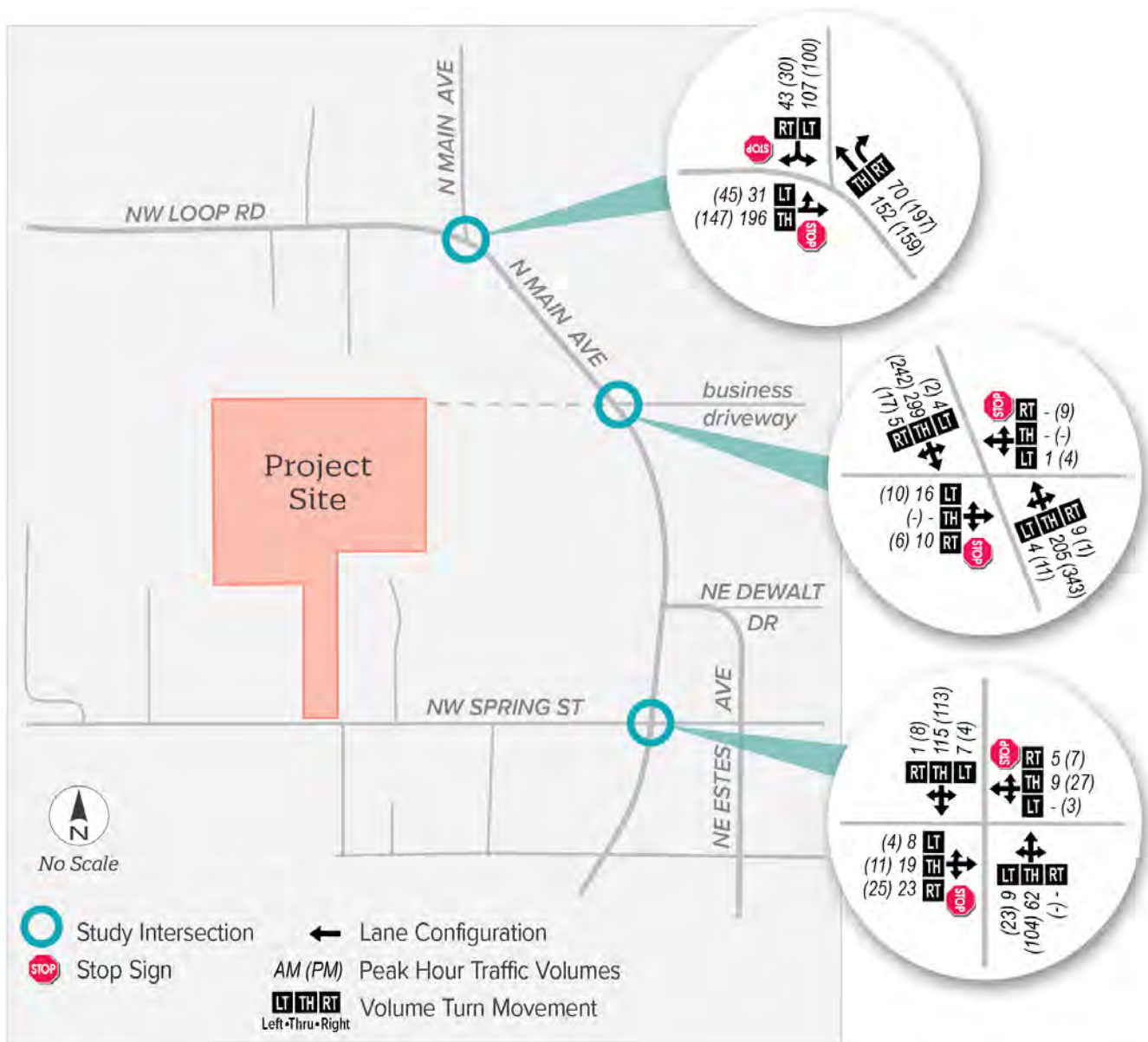
FIGURE 3: TRIP DISTRIBUTION AND PROJECT TRIPS

## FUTURE TRAFFIC VOLUMES

A traffic study for the adjacent Four Oaks subdivision development, conducted in April 2024, determined a growth rate of 2%. In keeping consistent with this finding for the adjacent area, this study also assumed a projected growth rate of 2%. This growth rate was applied to all of the 2021 traffic counts to estimate the 2027 No Build volumes. The vehicle trips generated by the Four Oak subdivision was included in the 2027 No Build volumes. The 2027 Build volumes are the sum of the 2027 No Build volumes and the Cherry Hill subdivision estimated trip generation (Table 4). Figure 4 and Figure 5 show the peak hour traffic volumes for the No Build and Build scenarios, respectively.



**FIGURE 4: FUTURE 2027 NO BUILD AM & PM PEAK HOUR TRAFFIC VOLUMES**



**FIGURE 5: FUTURE 2027 BUILD AM & PM PEAK HOUR TRAFFIC VOLUMES**

### FUTURE INTERSECTION OPERATIONS

All future analysis scenarios assume the same traffic control as 2021 existing conditions. Future operating conditions were analyzed based on the traffic volumes shown in Figure 4 and Figure 5. The intersection operations for the future scenarios are shown in

Table 5. The HCM reports can be found in the Appendix. As shown, the study intersections are expected to meet the operating standard under the future analysis scenarios.

It should be noted that the Main Avenue/Loop Road intersection has three approaches with stop signs on two of the approaches (southbound Main Avenue and eastbound Loop Road). This configuration cannot be analyzed using typical HCM analysis software. Therefore, the intersection

was evaluated assuming only the southbound Main Avenue approach is stop-controlled and the westbound Main Avenue and eastbound Loop Road approaches are free. This traffic control configuration is the most conservative estimate of operations using HCM analysis software.

**TABLE 5: FUTURE 2027 NO BUILD AND BUILD STUDY INTERSECTION OPERATIONS**

INTERSECTION	JURISDICTION	OPERATING STANDARD	AM PEAK HOUR			PM PEAK HOUR		
			V/C	DELAY	LOS	V/C	DELAY	LOS
<b>FUTURE 2027 NO BUILD</b>								
MAIN AVE/ LOOP RD	Klickitat County	LOS C	0.42	17.2	C	0.26	13.2	B
MAIN AVE/ ENGINEERING SITE	Klickitat County	LOS C	0.01	15.8	C	0.29	13.2	B
MAIN AVE/ SPRING ST	City of White Salmon	LOS C	0.08	10.8	B	0.05	10.7	B
<b>FUTURE 2027 BUILD</b>								
MAIN AVE/ LOOP RD	Klickitat County	LOS C	0.43	17.3	C	0.26	13.3	B
MAIN AVE/ ENGINEERING SITE	Klickitat County	LOS C	0.01	16	C	0.03	11.8	B
MAIN AVE/ SPRING ST	City of White Salmon	LOS C	0.12	11.1	B	0.06	11	B
SPRING ST/ SITE DRIVEWAY	City of White Salmon	LOS C	0.04	9.0	A	0.02	9.0	A
<b>Two-Way Stop (TWSC) Intersections:</b> Delay = Average Stopped Delay per Vehicle (sec) of Worst Movement LOS = Level of Service (Major Street/Minor Street) v/c = Volume-to-Capacity Ratio of Worst Movement								

## SITE REVIEW

The following sections discuss the access spacing, sight distance, frontage improvements, on-site pedestrian and bicycle facilities, and the parking for the proposed development.

Access to N Main Avenue will be provided through the adjacent Four Oaks property, which will be responsible for constructing a new east-west street that will connect the Cherry Hill Subdivision to N Main Avenue. The site plan is provided in the Appendix.



## **SITE ACCESS REQUIREMENTS**

Based on the site plan, there is a direct access to the site on Spring Street. According to the City's Development Code<sup>8</sup>, the site access location and design shall comply with the requirements of the city official. The code also states that the driveway grades shall be compatible with the adjoining roadway profile and shall be designed to prevent access conflicts, spacing problems, or any similar safety problems relative to the right-of-way. Based on a field visit, there are no concerns for access conflicts with nearby accesses or any other safety problems.

## **SIGHT DISTANCE**

With a posted speed of 20 miles per hour, the design speed of the roadway is assumed to be 25 mph. Based on this and the AASHTO standards,<sup>9</sup> the sight distance required for vehicles to safely turn left out of the proposed driveway along Spring Street is 280 feet. A preliminary sight distance evaluation was completed at the proposed driveway location on Spring Street. The sight distance was found to be sufficient to meet the stated requirement, exceeding 550 feet in both directions, despite some steep grades to the west and east of the proposed driveway. Prior to occupancy, sight distance at any new or modified access points will need to be verified, documented, and stamped by a registered professional Civil or Traffic Engineer licensed in the State of Washington.

## **FRONTAGE IMPROVEMENTS**

The project parcel is adjacent to Spring Street, which is under the jurisdiction of White Salmon and is classified as a Major Collector. Based on City Development Code<sup>10</sup>, the developer is responsible for providing appropriate accommodation for bicyclists, pedestrians, transit users and persons of all abilities in a comprehensive and connected network.

The developer should coordinate with the City Public Works department to determine the appropriate right-of-way dedication or frontage improvements necessary along the project frontage on Spring Street. Because the project frontage along Spring Street is very limited (approximately 100 feet in total, including a driveway and apron) and no bicycle or pedestrian facilities are currently present on Spring Street, it may be impractical to construct frontage improvements. However, the developer should ensure that the design of the access onto Spring Street will accommodate any future bicycle and pedestrian facilities.

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<sup>8</sup> White Salmon Code of Ordinances, 13.01.070, Updated September 11, 2023.

<sup>9</sup> American Association of State Highway and Transportation Officials (AASHTO), 2018, Table 9-7.

<sup>10</sup> White Salmon Code of Ordinances, 12.26.030, Updated September 11, 2023.

## SUMMARY OF PROJECT IMPACTS

The key findings of the transportation impact study for proposed Cherry Hill subdivision in White Salmon, WA are discussed below.

- The proposed Cherry Hill subdivision will include up to 36 single family homes on a vacant 7.93-acre parcel north of Spring Street and west of Main Avenue. The development will have access to Spring Street and N Main Avenue.
- The proposed development is expected to generate a total of 394 daily trips, 29 AM peak hour trips, and 38 PM peak hour trips on a typical weekday day.
- The traffic operations at the three study intersections and project driveway are expected to operate within operating standards under all analysis scenarios.
- There are no concerns for access conflicts with nearby accesses nor any other safety concerns at the proposed driveway on Spring Street.
- A preliminary sight distance evaluation was completed at the proposed driveway location on Spring Street and was found to be sufficient to meet AASHTO requirements. Prior to occupancy, sight distance at any new or modified project access points will need to be verified, documented, and stamped by a registered professional Civil or Traffic Engineer licensed in the State of Washington.
- The developer should coordinate with the City Public Works department to determine the appropriate right-of-way dedication or frontage improvements necessary along the (approximately) 100 feet of project frontage on Spring Street.

# APPENDIX

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- A. TRAFFIC COUNT DATA
- B. LOS DESCRIPTION
- C. HCM REPORT – EXISTING CONDITIONS
- D. HCM REPORT – FUTURE 2027 NO BUILD
- E. HCM REPORT – FUTURE 2027 BUILD
- F. SITE PLAN



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## **APPENDIX A.**

### **TRAFFIC COUNT DATA**



(303) 216-2439  
www.alltrafficdata.net

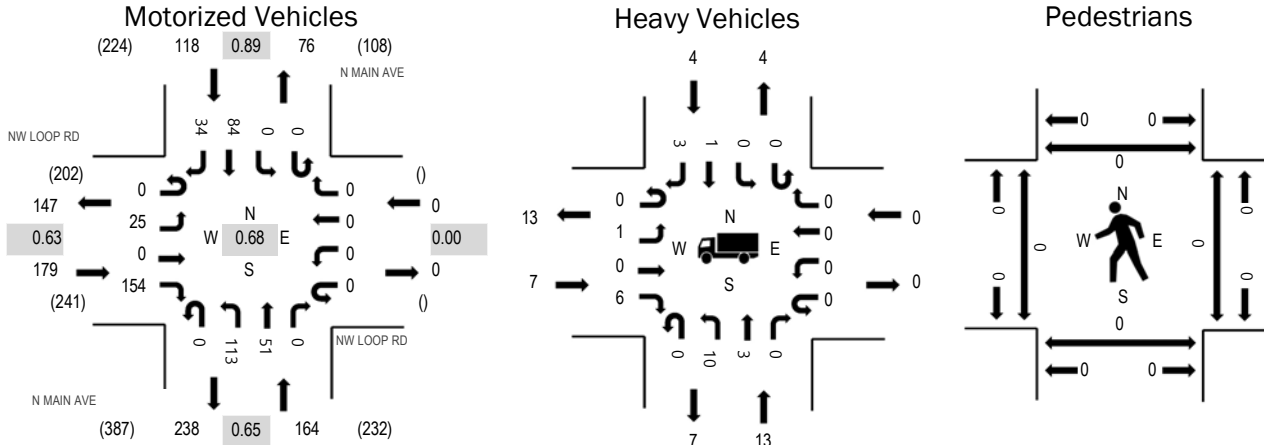
Location: 1 N MAIN AVE & NW LOOP RD AM

Date: Tuesday, March 23, 2021

Peak Hour: 07:35 AM - 08:35 AM

Peak 15-Minutes: 07:55 AM - 08:10 AM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	3.9%	0.63
WB	0.0%	0.00
NB	7.9%	0.65
SB	3.4%	0.89
All	5.2%	0.68

Traffic Counts - Motorized Vehicles

Interval Start Time	NW LOOP RD Eastbound				NW LOOP RD Westbound				N MAIN AVE Northbound			N MAIN AVE Southbound				Total	Rolling Hour	
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru			Right
7:00 AM	0	1	0	4	0	0	0	0	0	5	1	0	0	0	7	1	19	323
7:05 AM	0	1	0	1	0	0	0	0	0	2	0	0	0	0	7	0	11	363
7:10 AM	0	0	0	4	0	0	0	0	0	5	3	0	0	0	4	0	16	406
7:15 AM	0	1	0	1	0	0	0	0	0	1	2	0	0	0	6	4	15	428
7:20 AM	0	0	0	7	0	0	0	0	0	4	1	0	0	0	9	0	21	454
7:25 AM	0	0	0	7	0	0	0	0	0	3	2	0	0	0	11	2	25	455
7:30 AM	0	1	0	6	0	0	0	0	0	5	3	0	0	0	9	1	25	458
7:35 AM	0	0	0	7	0	0	0	0	0	1	4	0	0	0	12	1	25	461
7:40 AM	0	2	0	7	0	0	0	0	0	10	5	0	0	0	7	2	33	455
7:45 AM	0	0	0	13	0	0	0	0	0	11	4	0	0	0	5	5	38	448
7:50 AM	0	1	0	14	0	0	0	0	0	13	2	0	0	0	5	4	39	433
7:55 AM	0	4	0	18	0	0	0	0	0	19	8	0	0	0	5	2	56	411
8:00 AM	0	3	0	23	0	0	0	0	0	17	3	0	0	0	8	5	59	374
8:05 AM	0	6	0	17	0	0	0	0	0	11	6	0	0	0	9	5	54	
8:10 AM	0	1	0	15	0	0	0	0	0	6	10	0	0	0	2	4	38	
8:15 AM	0	3	0	18	0	0	0	0	0	3	3	0	0	0	11	3	41	
8:20 AM	0	1	0	5	0	0	0	0	0	5	1	0	0	0	7	3	22	
8:25 AM	0	2	0	7	0	0	0	0	0	7	3	0	0	0	9	0	28	
8:30 AM	0	2	0	10	0	0	0	0	0	10	2	0	0	0	4	0	28	
8:35 AM	0	0	0	3	0	0	0	0	0	5	2	0	0	0	9	0	19	
8:40 AM	0	1	0	6	0	0	0	0	0	3	2	0	0	0	12	2	26	
8:45 AM	0	1	0	6	0	0	0	0	0	2	1	0	0	0	11	2	23	
8:50 AM	0	0	0	5	0	0	0	0	0	3	4	0	0	0	5	0	17	
8:55 AM	0	0	0	6	0	0	0	0	0	4	5	0	0	0	3	1	19	
Count Total	0	31	0	210	0	0	0	0	0	155	77	0	0	0	177	47	697	
Peak Hour	0	25	0	154	0	0	0	0	0	113	51	0	0	0	84	34	461	

Location: 1 N MAIN AVE & NW LOOP RD AM

**Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk**

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	1	0	0	0	1	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	1	0	0	0	1	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	2	0	0	0	2	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	1	0	0	1	7:25 AM	0	0	0	0	0	7:25 AM	0	0	0	0	0
7:30 AM	0	1	0	0	1	7:30 AM	0	1	0	0	1	7:30 AM	0	0	0	0	0
7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	0	0	1	1	7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0
7:45 AM	3	0	0	1	4	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	1	3	0	0	4	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	2	3	0	0	5	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	2	0	0	2	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	1	0	0	1	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	0	0	1	1	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	1	0	0	1	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	1	3	0	1	5	8:30 AM	0	1	0	0	1	8:30 AM	0	0	0	0	0
8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	1	0	1	2	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	1	0	0	1	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	1	0	0	1	8:50 AM	0	0	0	1	1	8:50 AM	0	0	0	0	0
8:55 AM	0	0	0	1	1	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	11	18	0	6	35	Count Total	0	2	0	1	3	Count Total	0	0	0	0	0
Peak Hour	7	13	0	4	24	Peak Hour	0	1	0	0	1	Peak Hour	0	0	0	0	0

Location: 2 N MAIN AVE & DRIVEWAY ACCESS AM



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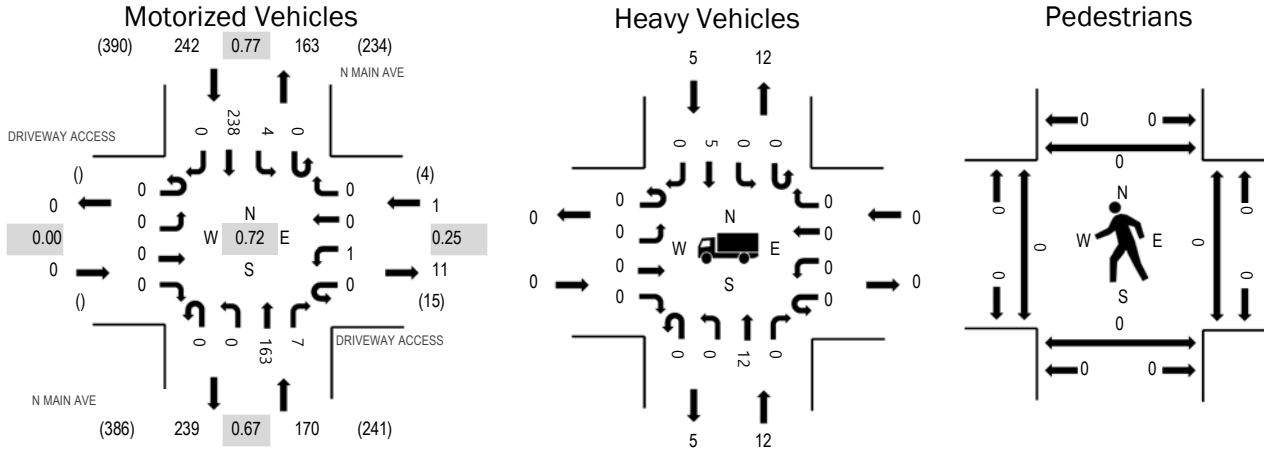
Location: 2 N MAIN AVE & DRIVEWAY ACCESS AM

Date: Tuesday, March 23, 2021

Peak Hour: 07:30 AM - 08:30 AM

Peak 15-Minutes: 07:55 AM - 08:10 AM

**Peak Hour**



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	0.0%	0.25
NB	7.1%	0.67
SB	2.1%	0.77
All	4.1%	0.72

**Traffic Counts - Motorized Vehicles**

Interval Start Time	DRIVEWAY ACCESS Eastbound				DRIVEWAY ACCESS Westbound				N MAIN AVE Northbound				N MAIN AVE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
7:00 AM	0	0	0	0	0	0	0	0	0	0	5	0	0	0	11	0	16	296
7:05 AM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	8	0	9	328
7:10 AM	0	0	0	0	0	0	0	0	0	0	8	0	0	0	8	0	16	365
7:15 AM	0	0	0	0	0	0	0	0	0	0	3	0	0	1	6	0	10	385
7:20 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	16	0	22	409
7:25 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	1	15	0	22	409
7:30 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	17	0	24	413
7:35 AM	0	0	0	0	0	0	0	0	0	0	5	1	0	2	17	0	25	412
7:40 AM	0	0	0	0	0	1	0	0	0	0	15	0	0	0	14	0	30	403
7:45 AM	0	0	0	0	0	0	0	0	0	0	21	2	0	0	15	0	38	397
7:50 AM	0	0	0	0	0	0	0	0	0	0	14	0	0	0	20	0	34	381
7:55 AM	0	0	0	0	0	0	0	0	0	0	25	1	0	1	23	0	50	372
8:00 AM	0	0	0	0	0	0	0	0	0	0	20	0	0	0	28	0	48	339
8:05 AM	0	0	0	0	0	0	0	0	0	0	17	2	0	0	27	0	46	
8:10 AM	0	0	0	0	0	0	0	0	0	0	15	0	0	0	21	0	36	
8:15 AM	0	0	0	0	0	0	0	0	0	0	7	0	0	0	27	0	34	
8:20 AM	0	0	0	0	0	0	0	0	0	0	5	1	0	0	16	0	22	
8:25 AM	0	0	0	0	0	0	0	0	0	0	12	0	0	1	13	0	26	
8:30 AM	0	0	0	0	0	0	0	0	0	0	10	1	0	0	12	0	23	
8:35 AM	0	0	0	0	0	0	0	0	0	0	6	0	0	0	10	0	16	
8:40 AM	0	0	0	0	0	1	0	0	0	0	5	0	0	0	18	0	24	
8:45 AM	0	0	0	0	0	0	0	0	0	0	4	0	0	0	18	0	22	
8:50 AM	0	0	0	0	0	1	0	1	0	0	8	0	0	1	14	0	25	
8:55 AM	0	0	0	0	0	0	0	0	0	0	8	0	0	0	9	0	17	
Count Total	0	0	0	0	0	3	0	1	0	0	233	8	0	7	383	0	635	
Peak Hour	0	0	0	0	0	1	0	0	0	0	163	7	0	4	238	0	413	

Location: 2 N MAIN AVE & DRIVEWAY ACCESS AM

**Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk**

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	1	0	0	1	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0
7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0
7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	0	1	0	2	3	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	0	0	0	0	7:25 AM	0	1	0	0	1	7:25 AM	0	0	0	0	0
7:30 AM	0	1	0	0	1	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0	7:35 AM	0	0	0	0	0
7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	1	1	7:40 AM	0	0	0	0	0
7:45 AM	0	0	0	3	3	7:45 AM	0	0	0	0	0	7:45 AM	0	0	0	0	0
7:50 AM	0	3	0	1	4	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	3	0	1	4	7:55 AM	0	0	0	0	0	7:55 AM	0	0	0	0	0
8:00 AM	0	2	0	0	2	8:00 AM	0	0	0	0	0	8:00 AM	0	0	0	0	0
8:05 AM	0	1	0	0	1	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0
8:25 AM	0	2	0	0	2	8:25 AM	0	1	0	0	1	8:25 AM	0	0	0	0	0
8:30 AM	0	3	0	2	5	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	0	1	0	1	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	1	0	1	2	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	1	0	0	1	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	0	0	1	1	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	0	19	1	11	31	Count Total	0	2	0	1	3	Count Total	0	0	0	0	0
Peak Hour	0	12	0	5	17	Peak Hour	0	1	0	1	2	Peak Hour	0	0	0	0	0





Location: 3 N MAIN AVE & NE SPRING ST AM

**Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk**

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
7:00 AM	0	1	0	0	1	7:00 AM	0	0	0	0	0	7:00 AM	0	0	0	0	0
7:05 AM	0	0	0	0	0	7:05 AM	0	0	0	0	0	7:05 AM	0	1	0	0	1
7:10 AM	0	0	0	0	0	7:10 AM	0	0	0	0	0	7:10 AM	1	0	0	0	1
7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0	7:15 AM	0	0	0	0	0
7:20 AM	0	0	0	2	2	7:20 AM	0	0	0	0	0	7:20 AM	0	0	0	0	0
7:25 AM	0	0	0	0	0	7:25 AM	0	0	1	0	1	7:25 AM	0	0	1	0	1
7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0	7:30 AM	0	0	0	0	0
7:35 AM	0	1	0	0	1	7:35 AM	0	0	0	0	0	7:35 AM	2	0	0	0	2
7:40 AM	0	0	0	0	0	7:40 AM	0	0	0	0	0	7:40 AM	0	2	0	2	4
7:45 AM	0	0	0	3	3	7:45 AM	0	0	0	0	0	7:45 AM	1	0	0	0	1
7:50 AM	0	3	0	0	3	7:50 AM	0	0	0	0	0	7:50 AM	0	0	0	0	0
7:55 AM	0	3	0	2	5	7:55 AM	0	0	0	0	0	7:55 AM	1	0	0	0	1
8:00 AM	0	2	0	0	2	8:00 AM	0	0	0	0	0	8:00 AM	2	0	0	0	2
8:05 AM	0	1	0	0	1	8:05 AM	0	0	0	0	0	8:05 AM	0	0	0	0	0
8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0	8:10 AM	0	0	0	0	0
8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0	8:15 AM	0	0	0	0	0
8:20 AM	0	0	0	0	0	8:20 AM	0	0	0	0	0	8:20 AM	1	0	0	0	1
8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0	8:25 AM	0	0	0	0	0
8:30 AM	0	1	0	1	2	8:30 AM	0	0	0	0	0	8:30 AM	0	0	0	0	0
8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0	8:35 AM	0	0	0	0	0
8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0	8:40 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0	8:45 AM	0	0	0	0	0
8:50 AM	0	1	0	0	1	8:50 AM	0	0	0	0	0	8:50 AM	0	0	0	0	0
8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0	8:55 AM	0	0	0	0	0
Count Total	0	13	0	8	21	Count Total	0	0	1	0	1	Count Total	8	3	1	2	14
Peak Hour	0	11	0	6	17	Peak Hour	0	0	0	0	0	Peak Hour	7	2	0	2	11



Location: 1 N MAIN AVE & NW LOOP RD PM

**Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk**

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	1	0	0	0	1	4:00 PM	0	0	0	0	0	4:00 PM	1	0	0	0	1
4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0	4:05 PM	0	0	0	0	0
4:10 PM	0	1	0	0	1	4:10 PM	0	1	0	0	1	4:10 PM	0	0	0	0	0
4:15 PM	0	3	0	0	3	4:15 PM	0	0	0	1	1	4:15 PM	0	0	0	0	0
4:20 PM	0	2	0	0	2	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0	4:25 PM	1	0	0	0	1
4:30 PM	0	0	0	1	1	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0	4:40 PM	2	0	0	0	2
4:45 PM	0	0	0	0	0	4:45 PM	0	1	0	0	1	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	1	0	0	1	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	1	1	5:00 PM	0	0	0	0	0	5:00 PM	1	0	0	0	1
5:05 PM	0	2	0	0	2	5:05 PM	0	1	0	0	1	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	1	1	5:15 PM	0	2	0	0	2	5:15 PM	0	0	0	0	0
5:20 PM	1	0	0	0	1	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	1	0	0	0	1	5:25 PM	1	0	0	0	1	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	2	0	0	0	2	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	1	0	0	1	5:45 PM	1	0	0	0	1
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	1	1	5:50 PM	1	0	0	0	1
5:55 PM	0	0	0	0	0	5:55 PM	1	0	0	1	2	5:55 PM	0	0	0	0	0
Count Total	3	9	0	3	15	Count Total	4	6	0	3	13	Count Total	7	0	0	0	7
Peak Hour	2	3	0	2	7	Peak Hour	3	4	0	0	7	Peak Hour	1	0	0	0	1

Location: 2 N MAIN AVE & DRIVEWAY ACCESS PM



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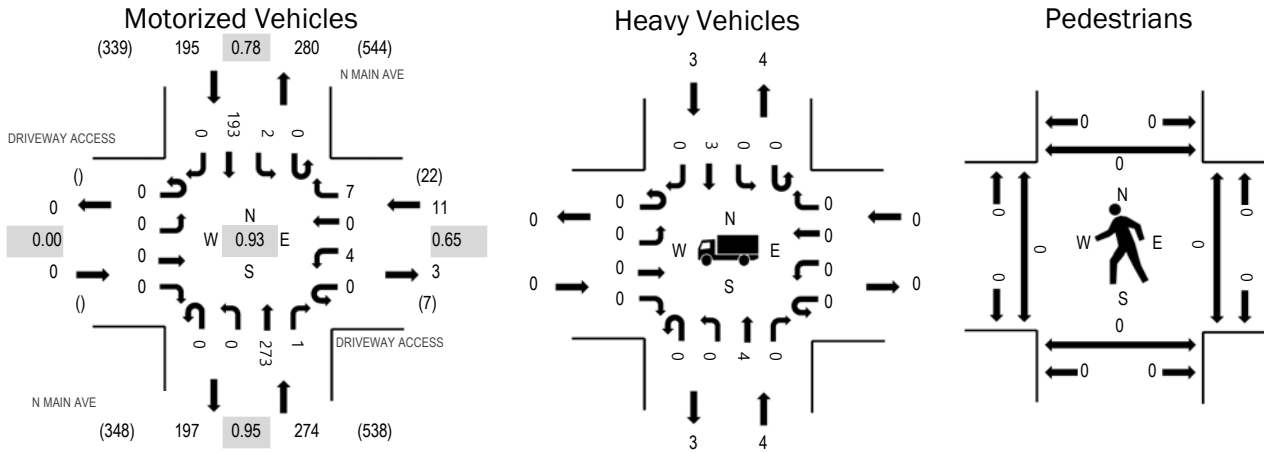
Location: 2 N MAIN AVE & DRIVEWAY ACCESS PM

Date: Tuesday, March 23, 2021

Peak Hour: 04:45 PM - 05:45 PM

Peak 15-Minutes: 05:20 PM - 05:35 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.00
WB	0.0%	0.65
NB	1.5%	0.95
SB	1.5%	0.78
All	1.5%	0.93

Traffic Counts - Motorized Vehicles

Interval Start Time	DRIVEWAY ACCESS Eastbound				DRIVEWAY ACCESS Westbound				N MAIN AVE Northbound				N MAIN AVE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	0	0	1	0	0	0	0	23	0	0	0	9	0	33	438
4:05 PM	0	0	0	0	0	1	0	1	0	0	19	0	0	0	8	0	29	448
4:10 PM	0	0	0	0	0	0	0	0	0	0	33	2	0	0	8	0	43	464
4:15 PM	0	0	0	0	0	0	0	0	0	0	22	0	0	0	17	0	39	452
4:20 PM	0	0	0	0	0	0	0	0	0	0	20	0	0	0	14	0	34	447
4:25 PM	0	0	0	0	0	0	0	0	0	0	28	0	0	0	7	0	35	469
4:30 PM	0	0	0	0	0	2	0	0	0	0	19	0	0	0	12	0	33	460
4:35 PM	0	0	0	0	0	1	0	1	0	0	23	1	0	0	10	0	36	474
4:40 PM	0	0	0	0	0	1	0	0	0	0	22	1	0	0	14	0	38	479
4:45 PM	0	0	0	0	0	1	0	0	0	0	21	1	0	2	14	0	39	480
4:50 PM	0	0	0	0	0	0	0	0	0	0	24	0	0	0	20	0	44	476
4:55 PM	0	0	0	0	0	0	0	0	0	0	28	0	0	0	7	0	35	461
5:00 PM	0	0	0	0	0	2	0	0	0	0	24	0	0	0	17	0	43	461
5:05 PM	0	0	0	0	0	0	0	1	0	0	26	0	0	0	18	0	45	
5:10 PM	0	0	0	0	0	0	0	1	0	0	18	0	0	0	12	0	31	
5:15 PM	0	0	0	0	0	0	0	1	0	0	19	0	0	0	14	0	34	
5:20 PM	0	0	0	0	0	0	0	2	0	0	23	0	0	0	31	0	56	
5:25 PM	0	0	0	0	0	0	0	0	0	0	17	0	0	0	9	0	26	
5:30 PM	0	0	0	0	0	0	0	1	0	0	23	0	0	0	23	0	47	
5:35 PM	0	0	0	0	0	0	0	0	0	0	25	0	0	0	16	0	41	
5:40 PM	0	0	0	0	0	1	0	1	0	0	25	0	0	0	12	0	39	
5:45 PM	0	0	0	0	0	1	0	1	0	0	16	0	0	0	17	0	35	
5:50 PM	0	0	0	0	0	0	0	1	0	0	17	0	0	0	11	0	29	
5:55 PM	0	0	0	0	0	0	0	0	0	0	18	0	0	0	17	0	35	
Count Total	0	0	0	0	0	11	0	11	0	0	533	5	0	2	337	0	899	
Peak Hour	0	0	0	0	0	4	0	7	0	0	273	1	0	2	193	0	480	

Location: 2 N MAIN AVE & DRIVEWAY ACCESS PM

**Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk**

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0
4:05 PM	0	0	0	1	1	4:05 PM	0	1	0	0	1	4:05 PM	0	0	0	0	0
4:10 PM	0	1	0	0	1	4:10 PM	0	1	0	0	1	4:10 PM	0	0	0	0	0
4:15 PM	0	3	0	0	3	4:15 PM	0	0	0	1	1	4:15 PM	0	0	0	0	0
4:20 PM	0	2	0	0	2	4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0
4:30 PM	0	0	0	1	1	4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0
4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	1	0	0	1	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	1	0	0	1	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	0	0	1	1	5:00 PM	0	0	0	0	0	5:00 PM	0	0	0	0	0
5:05 PM	0	2	0	0	2	5:05 PM	0	1	0	0	1	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0
5:15 PM	0	0	0	1	1	5:15 PM	0	2	0	0	2	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0
5:25 PM	0	0	0	1	1	5:25 PM	0	0	0	1	1	5:25 PM	0	0	0	0	0
5:30 PM	0	1	0	0	1	5:30 PM	0	0	0	2	2	5:30 PM	0	0	0	0	0
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	1	0	1	5:45 PM	0	0	0	0	0
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	1	1	5:50 PM	0	0	0	0	0
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	0	10	0	5	15	Count Total	0	6	1	5	12	Count Total	0	0	0	0	0
Peak Hour	0	4	0	3	7	Peak Hour	0	4	0	3	7	Peak Hour	0	0	0	0	0

Location: 3 N MAIN AVE & NE SPRING ST PM



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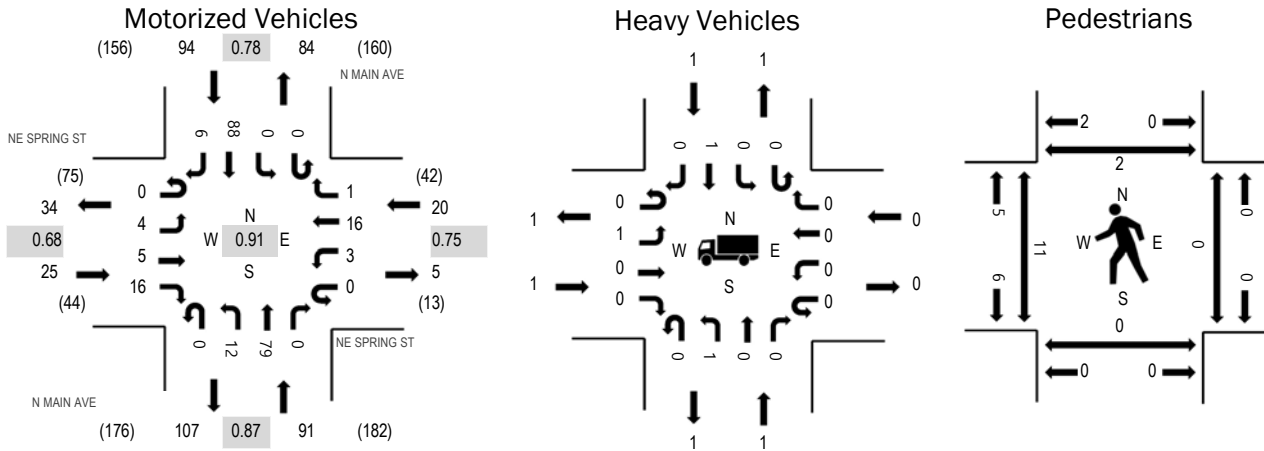
Location: 3 N MAIN AVE & NE SPRING ST PM

Date: Tuesday, March 23, 2021

Peak Hour: 04:35 PM - 05:35 PM

Peak 15-Minutes: 05:10 PM - 05:25 PM

Peak Hour



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	4.0%	0.68
WB	0.0%	0.75
NB	1.1%	0.87
SB	1.1%	0.78
All	1.3%	0.91

Traffic Counts - Motorized Vehicles

Interval Start Time	NE SPRING ST Eastbound				NE SPRING ST Westbound				N MAIN AVE Northbound				N MAIN AVE Southbound				Total	Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right		
4:00 PM	0	0	0	2	0	1	0	0	0	2	6	0	0	0	2	0	13	214
4:05 PM	0	0	0	2	0	0	2	0	0	0	5	0	0	0	2	1	12	220
4:10 PM	0	1	2	1	0	0	2	1	0	2	8	0	0	0	3	0	20	222
4:15 PM	0	0	1	1	0	0	0	0	0	0	5	1	0	0	7	1	16	222
4:20 PM	0	1	1	1	0	0	3	0	0	0	9	0	0	0	6	1	22	225
4:25 PM	0	0	0	0	0	0	1	0	0	0	12	0	0	0	4	0	17	227
4:30 PM	0	0	0	0	0	1	2	0	0	2	5	0	0	0	8	0	18	225
4:35 PM	0	0	0	1	0	0	3	0	0	1	5	0	0	0	6	0	16	230
4:40 PM	0	0	0	2	0	1	0	1	0	0	5	0	0	0	9	1	19	225
4:45 PM	0	1	0	2	0	0	2	0	0	2	7	0	0	0	6	0	20	223
4:50 PM	0	1	0	0	0	0	2	0	0	3	8	0	0	0	5	2	21	221
4:55 PM	0	1	1	3	0	1	1	0	0	2	6	0	0	0	4	1	20	212
5:00 PM	0	0	2	1	0	0	0	0	0	1	8	0	0	0	6	1	19	210
5:05 PM	0	1	1	0	0	0	0	0	0	0	4	0	0	0	8	0	14	
5:10 PM	0	0	1	4	0	0	0	0	0	2	6	0	0	0	7	0	20	
5:15 PM	0	0	0	0	0	0	2	0	0	0	7	0	0	0	10	0	19	
5:20 PM	0	0	0	0	0	0	3	0	0	0	8	0	0	0	13	0	24	
5:25 PM	0	0	0	2	0	0	1	0	0	0	6	0	0	0	6	0	15	
5:30 PM	0	0	0	1	0	1	2	0	0	1	9	0	0	0	8	1	23	
5:35 PM	0	0	0	0	0	0	1	0	0	3	4	0	0	0	3	0	11	
5:40 PM	0	0	0	2	0	0	4	0	0	1	6	0	0	0	4	0	17	
5:45 PM	0	0	2	2	0	0	1	0	0	3	4	0	0	0	5	1	18	
5:50 PM	0	0	0	0	0	0	2	0	0	2	4	0	0	0	4	0	12	
5:55 PM	0	0	0	0	0	0	1	0	0	2	5	0	0	1	8	1	18	
Count Total	0	6	11	27	0	5	35	2	0	29	152	1	0	1	144	11	424	
Peak Hour	0	4	5	16	0	3	16	1	0	12	79	0	0	0	88	6	230	

Location: 3 N MAIN AVE & NE SPRING ST PM

**Traffic Counts - Heavy Vehicles, Bicycles on Road, and Pedestrians/Bicycles on Crosswalk**

Interval Start Time	Heavy Vehicles					Interval Start Time	Bicycles on Roadway					Interval Start Time	Pedestrians/Bicycles on Crosswalk				
	EB	NB	WB	SB	Total		EB	NB	WB	SB	Total		EB	NB	WB	SB	Total
4:00 PM	0	0	0	0	0	4:00 PM	0	0	0	0	0	4:00 PM	1	0	0	2	3
4:05 PM	0	0	0	0	0	4:05 PM	1	0	0	0	1	4:05 PM	0	0	2	2	4
4:10 PM	0	0	1	0	1	4:10 PM	0	0	0	0	0	4:10 PM	2	2	0	0	4
4:15 PM	0	1	0	0	1	4:15 PM	0	0	0	1	1	4:15 PM	0	0	0	0	0
4:20 PM	0	0	0	0	0	4:20 PM	0	0	0	0	0	4:20 PM	1	0	0	0	1
4:25 PM	0	0	0	0	0	4:25 PM	0	0	0	0	0	4:25 PM	0	0	1	0	1
4:30 PM	0	0	0	0	0	4:30 PM	0	0	0	0	0	4:30 PM	1	0	0	0	1
4:35 PM	0	0	0	0	0	4:35 PM	0	0	0	0	0	4:35 PM	4	0	0	0	4
4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0	4:40 PM	0	0	0	0	0
4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0	4:45 PM	0	0	0	0	0
4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0	4:50 PM	0	0	0	0	0
4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0	4:55 PM	0	0	0	0	0
5:00 PM	0	1	0	0	1	5:00 PM	0	0	0	0	0	5:00 PM	2	0	0	0	2
5:05 PM	1	0	0	0	1	5:05 PM	0	0	0	0	0	5:05 PM	0	0	0	0	0
5:10 PM	0	0	0	0	0	5:10 PM	0	0	0	0	0	5:10 PM	4	0	0	0	4
5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0	5:15 PM	0	0	0	0	0
5:20 PM	0	0	0	0	0	5:20 PM	0	0	0	0	0	5:20 PM	1	0	0	0	1
5:25 PM	0	0	0	1	1	5:25 PM	0	0	0	0	0	5:25 PM	0	0	0	0	0
5:30 PM	0	0	0	0	0	5:30 PM	0	0	0	1	1	5:30 PM	0	0	2	2	4
5:35 PM	0	0	0	0	0	5:35 PM	0	0	0	0	0	5:35 PM	2	0	1	0	3
5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0	5:40 PM	0	0	0	0	0
5:45 PM	0	0	0	0	0	5:45 PM	0	0	0	0	0	5:45 PM	0	2	1	0	3
5:50 PM	0	0	0	0	0	5:50 PM	0	0	0	0	0	5:50 PM	2	0	0	0	2
5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0	5:55 PM	0	0	0	0	0
Count Total	1	2	1	1	5	Count Total	1	0	0	2	3	Count Total	20	4	7	6	37
Peak Hour	1	1	0	1	3	Peak Hour	0	0	0	1	1	Peak Hour	11	0	2	2	15



**APPENDIX B**

**LOS DESCRIPTION**

## TRAFFIC LEVELS OF SERVICE

Analysis of traffic volumes is useful in understanding the general nature of traffic in an area, but by itself indicates neither the ability of the street network to carry additional traffic nor the quality of service afforded by the street facilities. For this, the concept of level of service has been developed to subjectively describe traffic performance. Level of service can be measured at intersections and along key roadway segments.

Levels of service categories are similar to report card ratings for traffic performance. Intersections are typically the controlling bottlenecks of traffic flow and the ability of a roadway system to carry traffic efficiently is generally diminished in their vicinities. Levels of Service A, B and C indicate conditions where traffic moves without significant delays over periods of peak travel demand. Level of service D and E are progressively worse peak hour operating conditions and F conditions represent where demand exceeds the capacity of an intersection. Most urban communities set level of service D as the minimum acceptable level of service for peak hour operation and plan for level of service C or better for all other times of the day. The Highway Capacity Manual provides level of service calculation methodology for both intersections and arterials<sup>1</sup>. The following two sections provide interpretations of the analysis approaches.

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<sup>1</sup> 2000 *Highway Capacity Manual*, Transportation Research Board, Washington D.C., 2000, Chapter 16 and 17.

## UNSIGNALIZED INTERSECTIONS (Two-Way Stop Controlled)

Unsignalized intersection level of service is reported for the major street and minor street (generally, left turn movements). The method assesses available and critical gaps in the traffic stream which make it possible for side street traffic to enter the main street flow. The 2010 Highway Capacity Manual describes the detailed methodology. It is not unusual for an intersection to experience level of service E or F conditions for the minor street left turn movement. It should be understood that, often, a poor level of service is experienced by only a few vehicles and the intersection as a whole operates acceptably.

Unsignalized intersection levels of service are described in the following table.

### *Level-of-Service Criteria: Automobile Mode*

Control Delay (s/vehicle)	LOS by Volume-to-Capacity Ratio	
	$v/c \leq 1.0$	$v/c > 1.0$
0-10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

Note: The LOS criteria apply to each lane on a given approach and to each approach on the minor street.  
LOS is not calculated for major-street approaches or for the intersection as a whole

## SIGNALIZED INTERSECTIONS

For signalized intersections, level of service is evaluated based upon average vehicle delay experienced by vehicles entering an intersection. Control delay (or signal delay) includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. In previous versions of this chapter of the HCM (1994 and earlier), delay included only stopped delay. As delay increases, the level of service decreases. Calculations for signalized and unsignalized intersections are different due to the variation in traffic control. The 2000 Highway Capacity Manual provides the basis for these calculations.

Level of Service	Delay (secs.)	Description
A	<10.00	<b>Free Flow/Insignificant Delays:</b> No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication. Most vehicles do not stop at all. Progression is extremely favorable and most vehicles arrive during the green phase.
B	10.1-20.0	<b>Stable Operation/Minimal Delays:</b> An occasional approach phase is fully utilized. Many drivers begin to feel somewhat restricted within platoons of vehicles. This level generally occurs with good progression, short cycle lengths, or both.
C	20.1-35.0	<b>Stable Operation/Acceptable Delays:</b> Major approach phases fully utilized. Most drivers feel somewhat restricted. Higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, and the number of vehicles stopping is significant.
D	35.1-55.0	<b>Approaching Unstable/Tolerable Delays:</b> The influence of congestion becomes more noticeable. Drivers may have to wait through more than one red signal indication. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. The proportion of vehicles not stopping declines, and individual cycle failures are noticeable.
E	55.1-80.0	<b>Unstable Operation/Significant Delays:</b> Volumes at or near capacity. Vehicles may wait through several signal cycles. Long queues form upstream from intersection. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are a frequent occurrence.
F	>80.0	<b>Forced Flow/Excessive Delays:</b> Represents jammed conditions. Queues may block upstream intersections. This level occurs when arrival flow rates exceed intersection capacity, and is considered to be unacceptable to most drivers. Poor progression, long cycle lengths, and v/c ratios approaching 1.0 may contribute to these high delay levels.

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Source: 2000 Highway Capacity Manual, Transportation Research Board, Washington D.C.

**APPENDIX C**

**HCM REPORT – EXISTING CONDITIONS**

Intersection						
Int Delay, s/veh	4.7					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	28	172	127	57	94	38
Future Vol, veh/h	28	172	127	57	94	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	4	0	0	0	0	9
Mvmt Flow	41	253	187	84	138	56

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	187	0	0	522	187
Stage 1	-	-	-	187	-
Stage 2	-	-	-	335	-
Critical Hdwy	4.14	-	-	6.4	6.29
Critical Hdwy Stg 1	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	5.4	-
Follow-up Hdwy	2.236	-	-	3.5	3.381
Pot Cap-1 Maneuver	1375	-	0	519	837
Stage 1	-	-	0	850	-
Stage 2	-	-	0	729	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1375	-	-	501	837
Mov Cap-2 Maneuver	-	-	-	501	-
Stage 1	-	-	-	820	-
Stage 2	-	-	-	729	-

Approach	EB	WB	SB
HCM Control Delay, s	1.1	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	1375	-	-	566
HCM Lane V/C Ratio	0.03	-	-	0.343
HCM Control Delay (s)	7.7	0	-	14.6
HCM Lane LOS	A	A	-	B
HCM 95th %tile Q(veh)	0.1	-	-	1.5

Intersection						
Int Delay, s/veh	0.1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	183	8	4	267
Future Vol, veh/h	1	1	183	8	4	267
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	72	72	72	72	72	72
Heavy Vehicles, %	0	0	7	0	0	2
Mvmt Flow	1	1	254	11	6	371

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	643	260	0	0	265	0
Stage 1	260	-	-	-	-	-
Stage 2	383	-	-	-	-	-
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	441	784	-	-	1311	-
Stage 1	788	-	-	-	-	-
Stage 2	694	-	-	-	-	-
Platoon blocked, %			-	-		
Mov Cap-1 Maneuver	438	784	-	-	1311	-
Mov Cap-2 Maneuver	438	-	-	-	-	-
Stage 1	788	-	-	-	-	-
Stage 2	690	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	562	1311
HCM Lane V/C Ratio	-	-	0.005	0.004
HCM Control Delay (s)	-	-	11.4	7.8
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0	0

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	7	11	13	1	6	3	6	54	1	1	99	1
Future Vol, veh/h	7	11	13	1	6	3	6	54	1	1	99	1
Conflicting Peds, #/hr	3	0	4	4	0	3	4	0	0	0	0	4
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	62	62	62	62	62	62	62	62	62	62	62	62
Heavy Vehicles, %	0	0	0	0	0	0	0	23	0	0	7	0
Mvmt Flow	11	18	21	2	10	5	10	87	2	2	160	2

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	288	278	169	297	278	91	166	0	0	89	0	0
Stage 1	169	169	-	108	108	-	-	-	-	-	-	-
Stage 2	119	109	-	189	170	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	668	633	880	659	633	972	1424	-	-	1519	-	-
Stage 1	838	763	-	902	810	-	-	-	-	-	-	-
Stage 2	890	809	-	817	762	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	649	626	874	623	626	970	1419	-	-	1519	-	-
Mov Cap-2 Maneuver	649	626	-	623	626	-	-	-	-	-	-	-
Stage 1	830	760	-	896	804	-	-	-	-	-	-	-
Stage 2	867	803	-	775	759	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s	10.4		10.3		0.7		0.1	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1419	-	-	717	700	1519	-	-
HCM Lane V/C Ratio	0.007	-	-	0.07	0.023	0.001	-	-
HCM Control Delay (s)	7.6	0	-	10.4	10.3	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-



Intersection						
Int Delay, s/veh	4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↑	↗	↘	
Traffic Vol, veh/h	40	121	137	172	84	27
Future Vol, veh/h	40	121	137	172	84	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	47	142	161	202	99	32

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	161	0	0	397	161
Stage 1	-	-	-	161	-
Stage 2	-	-	-	236	-
Critical Hdwy	4.1	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	3.5	3.3
Pot Cap-1 Maneuver	1430	-	0	612	889
Stage 1	-	-	0	873	-
Stage 2	-	-	0	808	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1430	-	-	590	889
Mov Cap-2 Maneuver	-	-	-	590	-
Stage 1	-	-	-	842	-
Stage 2	-	-	-	808	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	1430	-	-	643
HCM Lane V/C Ratio	0.033	-	-	0.203
HCM Control Delay (s)	7.6	0	-	12
HCM Lane LOS	A	A	-	B
HCM 95th %tile Q(veh)	0.1	-	-	0.8

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	4	8	306	1	2	216
Future Vol, veh/h	4	8	306	1	2	216
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	0	0	2	0	0	2
Mvmt Flow	4	9	329	1	2	232

Major/Minor	Minor1	Major1	Major2		
Conflicting Flow All	566	330	0	0	330
Stage 1	330	-	-	-	-
Stage 2	236	-	-	-	-
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	489	716	-	-	1241
Stage 1	733	-	-	-	-
Stage 2	808	-	-	-	-
Platoon blocked, %			-	-	-
Mov Cap-1 Maneuver	488	716	-	-	1241
Mov Cap-2 Maneuver	488	-	-	-	-
Stage 1	733	-	-	-	-
Stage 2	806	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	0	0.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	620	1241
HCM Lane V/C Ratio	-	-	0.021	0.002
HCM Control Delay (s)	-	-	10.9	7.9
HCM Lane LOS	-	-	B	A
HCM 95th %tile Q(veh)	-	-	0.1	0

Intersection												
Int Delay, s/veh	2.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	6	18	3	18	1	13	88	1	1	99	7
Future Vol, veh/h	4	6	18	3	18	1	13	88	1	1	99	7
Conflicting Peds, #/hr	5	0	6	6	0	5	2	0	0	0	0	2
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	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	25	0	0	0	0	0	8	0	0	0	1	0
Mvmt Flow	4	7	20	3	20	1	14	97	1	1	109	8

Major/Minor	Minor2		Minor1			Major1		Major2				
Conflicting Flow All	258	243	121	261	247	103	119	0	0	98	0	0
Stage 1	117	117	-	126	126	-	-	-	-	-	-	-
Stage 2	141	126	-	135	121	-	-	-	-	-	-	-
Critical Hdwy	7.35	6.5	6.2	7.1	6.5	6.2	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.35	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.35	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.725	4	3.3	3.5	4	3.3	2.272	-	-	2.2	-	-
Pot Cap-1 Maneuver	650	662	936	696	659	957	1432	-	-	1508	-	-
Stage 1	835	803	-	883	796	-	-	-	-	-	-	-
Stage 2	810	796	-	873	800	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	625	653	930	667	650	953	1430	-	-	1508	-	-
Mov Cap-2 Maneuver	625	653	-	667	650	-	-	-	-	-	-	-
Stage 1	825	801	-	874	788	-	-	-	-	-	-	-
Stage 2	778	788	-	842	798	-	-	-	-	-	-	-

Approach	EB		WB			NB		SB		
HCM Control Delay, s	9.7		10.6			1		0.1		
HCM LOS	A		B							

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1430	-	-	801	662	1508	-	-
HCM Lane V/C Ratio	0.01	-	-	0.038	0.037	0.001	-	-
HCM Control Delay (s)	7.5	0	-	9.7	10.6	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

**APPENDIX D**

**HCM REPORT – FUTURE 2027 NO BUILD**

HCM 7th TWSC  
1: Loop Rd & Main Ave

07/17/2024

Intersection						
Int Delay, s/veh	5.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↕	↕	↕
Traffic Vol, veh/h	31	195	150	69	107	43
Future Vol, veh/h	31	195	150	69	107	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	4	0	0	0	0	9
Mvmt Flow	46	287	221	101	157	63

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	221	0	-	0	599 221
Stage 1	-	-	-	-	221 -
Stage 2	-	-	-	-	378 -
Critical Hdwy	4.14	-	-	-	6.4 6.29
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.236	-	-	-	3.5 3.381
Pot Cap-1 Maneuver	1337	-	-	0	468 802
Stage 1	-	-	-	0	821 -
Stage 2	-	-	-	0	697 -
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1337	-	-	-	449 802
Mov Cap-2 Maneuver	-	-	-	-	449 -
Stage 1	-	-	-	-	788 -
Stage 2	-	-	-	-	697 -

Approach	EB	WB	SB
HCM Control Delay, s/v	1.07	0	17.17
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	247	-	-	514
HCM Lane V/C Ratio	0.034	-	-	0.429
HCM Control Delay (s/veh)	7.8	0	-	17.2
HCM Lane LOS	A	A	-	C
HCM 95th %tile Q(veh)	0.1	-	-	2.1

HCM 7th TWSC  
2: Main Ave & Engr Driveway

07/17/2024

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	13	0	7	1	0	0	3	205	9	4	299	4
Future Vol, veh/h	13	0	7	1	0	0	3	205	9	4	299	4
Conflicting Peds, #/hr	0	0	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	0	0	0	0	0	0	0	7	0	0	2	0
Mvmt Flow	18	0	10	1	0	0	4	285	13	6	415	6

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	722	735	418	726	731	291	421	0	0	297	0	0
Stage 1	429	429	-	299	299	-	-	-	-	-	-	-
Stage 2	293	306	-	426	432	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	345	349	639	343	351	753	1149	-	-	1276	-	-
Stage 1	608	587	-	714	670	-	-	-	-	-	-	-
Stage 2	719	665	-	610	586	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	341	346	639	334	348	753	1149	-	-	1276	-	-
Mov Cap-2 Maneuver	341	346	-	334	348	-	-	-	-	-	-	-
Stage 1	604	584	-	711	667	-	-	-	-	-	-	-
Stage 2	716	663	-	597	582	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v14.48		15.82	0.11	0.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	25	-	-	408	334	23	-	-
HCM Lane V/C Ratio	0.004	-	-	0.068	0.004	0.004	-	-
HCM Control Delay (s/veh)	8.1	0	-	14.5	15.8	7.8	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	-	-

HCM 7th TWSC  
3: Main Ave & Spring St

07/17/2024

Intersection												
Int Delay, s/veh	2.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	12	15	0	7	5	7	61	0	6	113	1
Future Vol, veh/h	8	12	15	0	7	5	7	61	0	6	113	1
Conflicting Peds, #/hr	3	0	4	4	0	3	4	0	0	0	0	4
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	62	62	62	62	62	62	62	62	62	62	62	62
Heavy Vehicles, %	0	0	0	0	0	0	0	23	0	0	7	0
Mvmt Flow	13	19	24	0	11	8	11	98	0	10	182	2

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	336	327	191	336	328	101	188	0	0	98	0	0
Stage 1	206	206	-	121	121	-	-	-	-	-	-	-
Stage 2	130	121	-	215	207	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	621	594	856	621	594	959	1398	-	-	1507	-	-
Stage 1	800	735	-	888	800	-	-	-	-	-	-	-
Stage 2	879	800	-	792	734	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	592	583	850	573	583	957	1394	-	-	1507	-	-
Mov Cap-2 Maneuver	592	583	-	573	583	-	-	-	-	-	-	-
Stage 1	792	727	-	881	793	-	-	-	-	-	-	-
Stage 2	850	793	-	741	726	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v10.81		10.32	0.78	0.37
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	185	-	-	676	696	90	-	-
HCM Lane V/C Ratio	0.008	-	-	0.083	0.028	0.006	-	-
HCM Control Delay (s/veh)	7.6	0	-	10.8	10.3	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0	-	-

HCM 7th TWSC  
1: Loop Rd & Main Ave

07/17/2024

Intersection						
Int Delay, s/veh	4.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↕	↕	
Traffic Vol, veh/h	45	144	158	196	99	30
Future Vol, veh/h	45	144	158	196	99	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	53	169	186	231	116	35

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	186	0	0	461	186
Stage 1	-	-	-	186	-
Stage 2	-	-	-	275	-
Critical Hdwy	4.1	-	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	5.4	-
Follow-up Hdwy	2.2	-	-	3.5	3.3
Pot Cap-1 Maneuver	1401	-	0	562	861
Stage 1	-	-	0	851	-
Stage 2	-	-	0	776	-
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1401	-	-	539	861
Mov Cap-2 Maneuver	-	-	-	539	-
Stage 1	-	-	-	815	-
Stage 2	-	-	-	776	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.83	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	429	-	-	590
HCM Lane V/C Ratio	0.038	-	-	0.257
HCM Control Delay (s/veh)	7.7	0	-	13.2
HCM Lane LOS	A	A	-	B
HCM 95th %tile Q(veh)	0.1	-	-	1



HCM 7th TWSC  
2: Main Ave & Engr Driveway

07/17/2024

Intersection												
Int Delay, s/veh	0.6											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	0	4	4	0	9	7	343	1	2	242	13
Future Vol, veh/h	8	0	4	4	0	9	7	343	1	2	242	13
Conflicting Peds, #/hr	0	0	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	9	0	4	4	0	10	8	369	1	2	260	14

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	655	656	267	649	663	369	274	0	0	370	0	0
Stage 1	272	272	-	384	384	-	-	-	-	-	-	-
Stage 2	384	385	-	265	278	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	382	388	776	386	384	681	1301	-	-	1200	-	-
Stage 1	739	689	-	643	615	-	-	-	-	-	-	-
Stage 2	643	614	-	745	684	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	373	384	776	380	381	681	1301	-	-	1200	-	-
Mov Cap-2 Maneuver	373	384	-	380	381	-	-	-	-	-	-	-
Stage 1	737	687	-	638	610	-	-	-	-	-	-	-
Stage 2	629	610	-	739	682	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s/v13.22			11.75		0.16		0.06	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	36	-	-	451	547	14	-	-
HCM Lane V/C Ratio	0.006	-	-	0.029	0.026	0.002	-	-
HCM Control Delay (s/veh)	7.8	0	-	13.2	11.7	8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

HCM 7th TWSC  
3: Main Ave & Spring St

07/17/2024

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	4	7	20	3	20	6	15	101	0	3	112	8
Future Vol, veh/h	4	7	20	3	20	6	15	101	0	3	112	8
Conflicting Peds, #/hr	5	0	6	6	0	5	2	0	0	0	0	2
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	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	25	0	0	0	0	0	8	0	0	0	1	0
Mvmt Flow	4	8	22	3	22	7	16	111	0	3	123	9

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	296	280	135	283	284	116	134	0	0	111	0	0
Stage 1	136	136	-	144	144	-	-	-	-	-	-	-
Stage 2	160	144	-	140	140	-	-	-	-	-	-	-
Critical Hdwy	7.35	6.5	6.2	7.1	6.5	6.2	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.35	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.35	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.725	4	3.3	3.5	4	3.3	2.272	-	-	2.2	-	-
Pot Cap-1 Maneuver	613	632	919	673	628	942	1415	-	-	1492	-	-
Stage 1	815	788	-	864	782	-	-	-	-	-	-	-
Stage 2	791	782	-	868	784	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	575	621	913	636	618	938	1412	-	-	1492	-	-
Mov Cap-2 Maneuver	575	621	-	636	618	-	-	-	-	-	-	-
Stage 1	812	785	-	853	772	-	-	-	-	-	-	-
Stage 2	750	772	-	833	781	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	9.88	10.67	0.98	0.18
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	233	-	-	772	667	43	-	-
HCM Lane V/C Ratio	0.012	-	-	0.044	0.048	0.002	-	-
HCM Control Delay (s/veh)	7.6	0	-	9.9	10.7	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

**APPENDIX E**

**HCM REPORT – FUTURE 2027 BUILD**

HCM 7th TWSC  
1: Loop Rd & Main Ave

07/17/2024

Intersection						
Int Delay, s/veh	5.4					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↕	↕	
Traffic Vol, veh/h	31	196	152	70	107	43
Future Vol, veh/h	31	196	152	70	107	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	68	68	68	68	68	68
Heavy Vehicles, %	4	0	0	0	0	9
Mvmt Flow	46	288	224	103	157	63

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	224	0	0	603	224
Stage 1	-	-	-	224	-
Stage 2	-	-	-	379	-
Critical Hdwy	4.14	-	-	6.4	6.29
Critical Hdwy Stg 1	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	5.4	-
Follow-up Hdwy	2.236	-	-	3.5	3.381
Pot Cap-1 Maneuver	1333	-	0	465	799
Stage 1	-	-	0	818	-
Stage 2	-	-	0	696	-
Platoon blocked, %	-	-	-	-	-
Mov Cap-1 Maneuver	1333	-	-	446	799
Mov Cap-2 Maneuver	-	-	-	446	-
Stage 1	-	-	-	785	-
Stage 2	-	-	-	696	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.06	0	17.29
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	246	-	-	511
HCM Lane V/C Ratio	0.034	-	-	0.432
HCM Control Delay (s/veh)	7.8	0	-	17.3
HCM Lane LOS	A	A	-	C
HCM 95th %tile Q(veh)	0.1	-	-	2.2

HCM 7th TWSC  
2: Main Ave & Engr Driveway

07/17/2024

Intersection												
Int Delay, s/veh	0.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	16	0	10	1	0	0	4	205	9	4	299	5
Future Vol, veh/h	16	0	10	1	0	0	4	205	9	4	299	5
Conflicting Peds, #/hr	0	0	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	72	72	72	72	72	72	72	72	72	72	72	72
Heavy Vehicles, %	0	0	0	0	0	0	0	7	0	0	2	0
Mvmt Flow	22	0	14	1	0	0	6	285	13	6	415	7

Major/Minor	Minor2		Minor1		Major1			Major2				
Conflicting Flow All	726	738	419	728	735	291	422	0	0	297	0	0
Stage 1	430	430	-	302	302	-	-	-	-	-	-	-
Stage 2	296	308	-	426	433	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	343	348	639	341	349	753	1148	-	-	1276	-	-
Stage 1	607	587	-	711	668	-	-	-	-	-	-	-
Stage 2	717	664	-	610	585	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	339	344	639	330	345	753	1148	-	-	1276	-	-
Mov Cap-2 Maneuver	339	344	-	330	345	-	-	-	-	-	-	-
Stage 1	604	584	-	707	664	-	-	-	-	-	-	-
Stage 2	713	660	-	593	582	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s/v14.54			15.96		0.15		0.1	
HCM LOS	B		C					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1148	-	-	413	330	23	-	-
HCM Lane V/C Ratio	0.005	-	-	0.087	0.004	0.004	-	-
HCM Control Delay (s/veh)	8.2	-	-	14.5	16	7.8	0	-
HCM Lane LOS	A	-	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0	0	-	-

HCM 7th TWSC  
3: Main Ave & Spring St

07/17/2024

Intersection												
Int Delay, s/veh	3.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	8	19	23	0	9	5	9	62	0	7	115	1
Future Vol, veh/h	8	19	23	0	9	5	9	62	0	7	115	1
Conflicting Peds, #/hr	3	0	4	4	0	3	4	0	0	0	0	4
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	62	62	62	62	62	62	62	62	62	62	62	62
Heavy Vehicles, %	0	0	0	0	0	0	0	23	0	0	7	0
Mvmt Flow	13	31	37	0	15	8	15	100	0	11	185	2

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	352	342	194	356	343	103	191	0	0	100	0	0
Stage 1	213	213	-	129	129	-	-	-	-	-	-	-
Stage 2	139	129	-	227	214	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	606	583	852	603	583	957	1395	-	-	1505	-	-
Stage 1	794	730	-	880	793	-	-	-	-	-	-	-
Stage 2	869	793	-	780	729	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	572	570	847	533	570	955	1390	-	-	1505	-	-
Mov Cap-2 Maneuver	572	570	-	533	570	-	-	-	-	-	-	-
Stage 1	785	722	-	870	784	-	-	-	-	-	-	-
Stage 2	834	784	-	706	721	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v11.09		10.6	0.97	0.42
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	228	-	-	671	666	102	-
HCM Lane V/C Ratio	0.01	-	-	0.12	0.034	0.008	-
HCM Control Delay (s/veh)	7.6	0	-	11.1	10.6	7.4	0
HCM Lane LOS	A	A	-	B	B	A	A
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-

HCM 7th TWSC  
4: Spring St & Site Driveway

07/17/2024

Intersection						
Int Delay, s/veh	2.6					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	36	15	7	22	1
Future Vol, veh/h	1	36	15	7	22	1
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	70	70	70	70	70	70
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	1	51	21	10	31	1

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	31	0	-	0	81 26
Stage 1	-	-	-	-	26 -
Stage 2	-	-	-	-	54 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1594	-	-	-	926 1055
Stage 1	-	-	-	-	1001 -
Stage 2	-	-	-	-	973 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1594	-	-	-	926 1055
Mov Cap-2 Maneuver	-	-	-	-	926 -
Stage 1	-	-	-	-	1000 -
Stage 2	-	-	-	-	973 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0.2	0	9.01
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	49	-	-	-	931
HCM Lane V/C Ratio	0.001	-	-	-	0.035
HCM Control Delay (s/veh)	7.3	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

HCM 7th TWSC  
1: Loop Rd & Main Ave

07/17/2024

Intersection						
Int Delay, s/veh	4.3					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕	↕	↕	
Traffic Vol, veh/h	45	147	159	197	100	30
Future Vol, veh/h	45	147	159	197	100	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	Free	-	None
Storage Length	-	-	-	125	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	0	0	0	0	0	0
Mvmt Flow	53	173	187	232	118	35

Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	187	0	-	0	466 187
Stage 1	-	-	-	-	187 -
Stage 2	-	-	-	-	279 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1399	-	-	0	559 860
Stage 1	-	-	-	0	850 -
Stage 2	-	-	-	0	773 -
Platoon blocked, %		-	-		
Mov Cap-1 Maneuver	1399	-	-	-	535 860
Mov Cap-2 Maneuver	-	-	-	-	535 -
Stage 1	-	-	-	-	814 -
Stage 2	-	-	-	-	773 -

Approach	EB	WB	SB
HCM Control Delay, s/v	1.8	0	13.29
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	SBLn1
Capacity (veh/h)	422	-	-	586
HCM Lane V/C Ratio	0.038	-	-	0.261
HCM Control Delay (s/veh)	7.7	0	-	13.3
HCM Lane LOS	A	A	-	B
HCM 95th %tile Q(veh)	0.1	-	-	1



HCM 7th TWSC  
2: Main Ave & Engr Driveway

07/17/2024

Intersection												
Int Delay, s/veh	0.7											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	0	6	4	0	9	11	343	1	2	242	17
Future Vol, veh/h	10	0	6	4	0	9	11	343	1	2	242	17
Conflicting Peds, #/hr	0	0	0	0	0	0	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	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	0	0	0	0	0	2	0	0	2	0
Mvmt Flow	11	0	6	4	0	10	12	369	1	2	260	18

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	666	667	269	658	676	369	278	0	0	370	0	0
Stage 1	274	274	-	393	393	-	-	-	-	-	-	-
Stage 2	392	394	-	265	283	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
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	3.5	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	376	382	774	381	378	681	1296	-	-	1200	-	-
Stage 1	737	687	-	636	609	-	-	-	-	-	-	-
Stage 2	636	609	-	745	681	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	365	377	774	372	373	681	1296	-	-	1200	-	-
Mov Cap-2 Maneuver	365	377	-	372	373	-	-	-	-	-	-	-
Stage 1	735	686	-	629	602	-	-	-	-	-	-	-
Stage 2	620	602	-	737	679	-	-	-	-	-	-	-

Approach	EB		WB		NB		SB	
HCM Control Delay, s/v13.21			11.81		0.24		0.06	
HCM LOS	B		B					

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	56	-	-	455	542	14	-	-
HCM Lane V/C Ratio	0.009	-	-	0.038	0.026	0.002	-	-
HCM Control Delay (s/veh)	7.8	0	-	13.2	11.8	8	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

HCM 7th TWSC  
3: Main Ave & Spring St

07/17/2024

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	4	11	25	3	27	7	23	104	0	4	113	8
Future Vol, veh/h	4	11	25	3	27	7	23	104	0	4	113	8
Conflicting Peds, #/hr	5	0	6	6	0	5	2	0	0	0	0	2
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	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	25	0	0	0	0	0	8	0	0	0	1	0
Mvmt Flow	4	12	27	3	30	8	25	114	0	4	124	9

Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	324	304	137	310	309	119	135	0	0	114	0	0
Stage 1	139	139	-	165	165	-	-	-	-	-	-	-
Stage 2	185	165	-	145	144	-	-	-	-	-	-	-
Critical Hdwy	7.35	6.5	6.2	7.1	6.5	6.2	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.35	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.35	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.725	4	3.3	3.5	4	3.3	2.272	-	-	2.2	-	-
Pot Cap-1 Maneuver	587	612	917	647	609	938	1413	-	-	1487	-	-
Stage 1	812	785	-	842	766	-	-	-	-	-	-	-
Stage 2	767	766	-	863	782	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	538	598	911	598	594	934	1411	-	-	1487	-	-
Mov Cap-2 Maneuver	538	598	-	598	594	-	-	-	-	-	-	-
Stage 1	808	781	-	826	751	-	-	-	-	-	-	-
Stage 2	713	751	-	817	778	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v10.09		11.02	1.38	0.24
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR
Capacity (veh/h)	326	-	-	751	639	57	-
HCM Lane V/C Ratio	0.018	-	-	0.059	0.064	0.003	-
HCM Control Delay (s/veh)	7.6	0	-	10.1	11	7.4	0
HCM Lane LOS	A	A	-	B	B	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.2	0	-

Intersection						
Int Delay, s/veh	1.2					
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↕	↕		↕	
Traffic Vol, veh/h	1	33	44	23	13	1
Future Vol, veh/h	1	33	44	23	13	1
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	90	90	90	90	90	90
Heavy Vehicles, %	0	2	2	0	0	0
Mvmt Flow	1	37	49	26	14	1

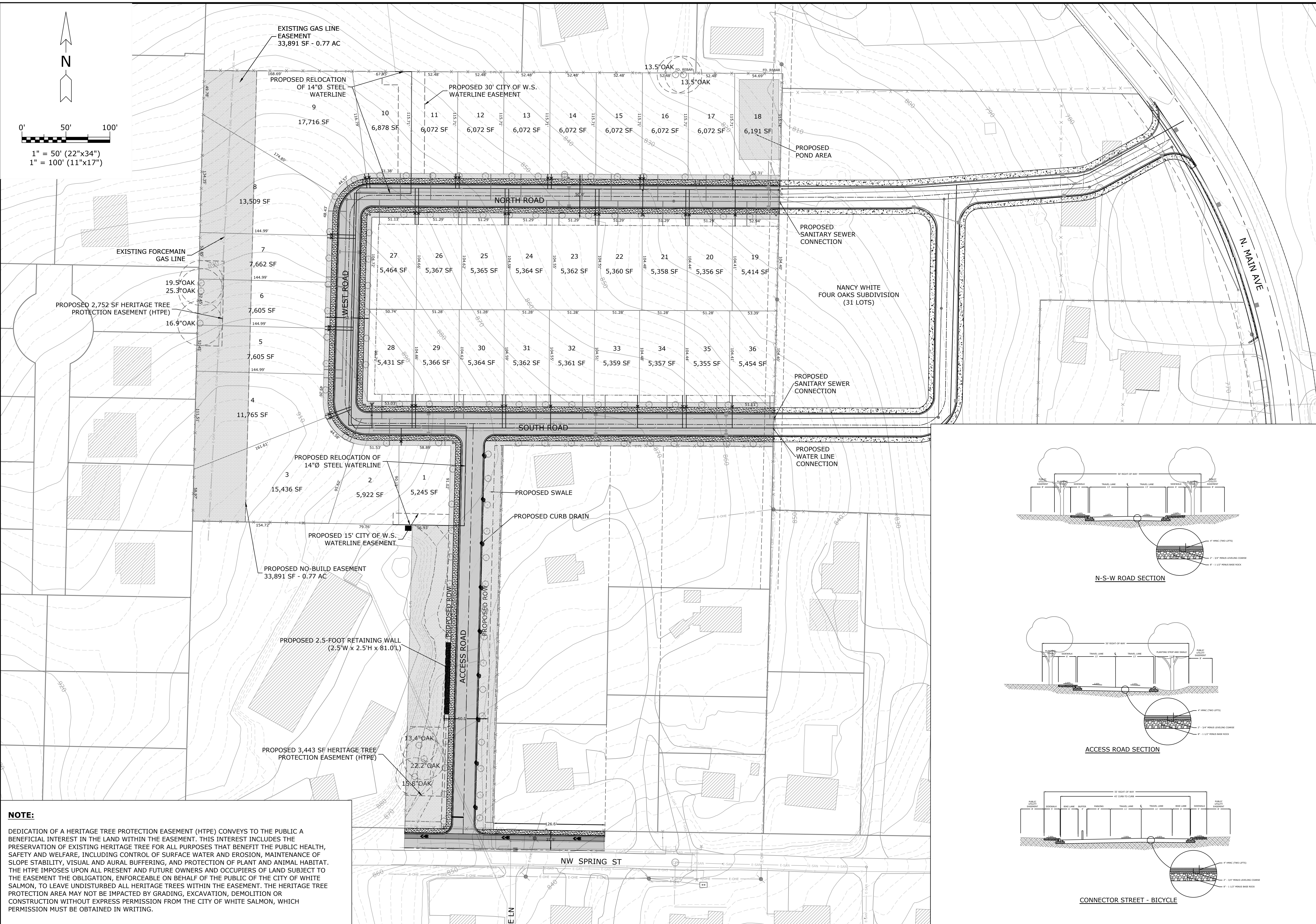
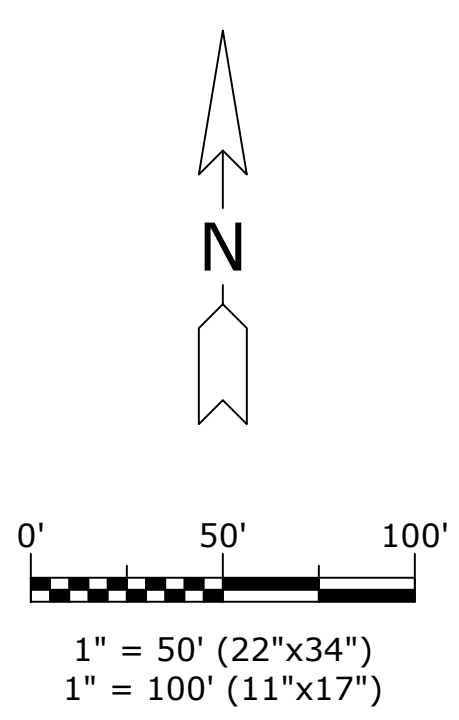
Major/Minor	Major1	Major2	Minor2		
Conflicting Flow All	74	0	-	0	101 62
Stage 1	-	-	-	-	62 -
Stage 2	-	-	-	-	39 -
Critical Hdwy	4.1	-	-	-	6.4 6.2
Critical Hdwy Stg 1	-	-	-	-	5.4 -
Critical Hdwy Stg 2	-	-	-	-	5.4 -
Follow-up Hdwy	2.2	-	-	-	3.5 3.3
Pot Cap-1 Maneuver	1538	-	-	-	903 1009
Stage 1	-	-	-	-	966 -
Stage 2	-	-	-	-	989 -
Platoon blocked, %		-	-	-	
Mov Cap-1 Maneuver	1538	-	-	-	902 1009
Mov Cap-2 Maneuver	-	-	-	-	902 -
Stage 1	-	-	-	-	965 -
Stage 2	-	-	-	-	989 -

Approach	EB	WB	SB
HCM Control Delay, s/v	0.22	0	9.03
HCM LOS			A

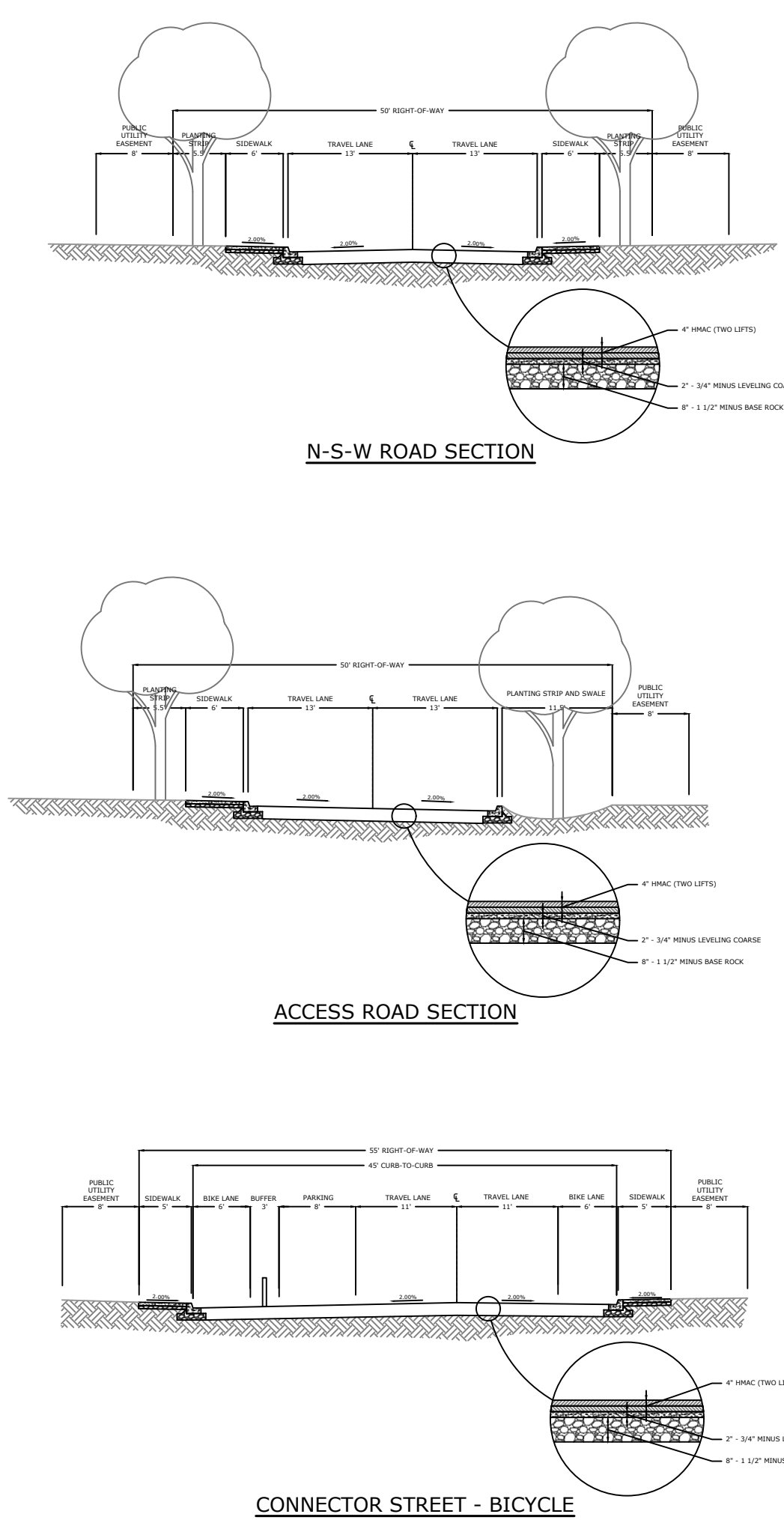
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	53	-	-	-	909
HCM Lane V/C Ratio	0.001	-	-	-	0.017
HCM Control Delay (s/veh)	7.3	0	-	-	9
HCM Lane LOS	A	A	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	0.1

**APPENDIX F**

**HCM REPORT – SITE PLAN**



**NOTE:**  
DEDICATION OF A HERITAGE TREE PROTECTION EASEMENT (HTPE) CONVEYS TO THE PUBLIC A BENEFICIAL INTEREST IN THE LAND WITHIN THE EASEMENT. THIS INTEREST INCLUDES THE PRESERVATION OF EXISTING HERITAGE TREE FOR ALL PURPOSES THAT BENEFIT THE PUBLIC HEALTH, SAFETY AND WELFARE, INCLUDING CONTROL OF SURFACE WATER AND EROSION, MAINTENANCE OF SLOPE STABILITY, VISUAL AND AURAL BUFFERING, AND PROTECTION OF PLANT AND ANIMAL HABITAT. THE HTPE IMPOSES UPON ALL PRESENT AND FUTURE OWNERS AND OCCUPIERS OF LAND SUBJECT TO THE EASEMENT THE OBLIGATION, ENFORCEABLE ON BEHALF OF THE PUBLIC OF THE CITY OF WHITE SALMON, TO LEAVE UNDISTURBED ALL HERITAGE TREES WITHIN THE EASEMENT. THE HERITAGE TREE PROTECTION AREA MAY NOT BE IMPACTED BY GRADING, EXCAVATION, DEMOLITION OR CONSTRUCTION WITHOUT EXPRESS PERMISSION FROM THE CITY OF WHITE SALMON, WHICH PERMISSION MUST BE OBTAINED IN WRITING.



NO.	DATE	DRWN	CHKD	DESCRIPTION
1	09/07/23	AP	CG	SITE PLAN REVIEW
2	11/08/23	AP	CG	CITY OF WHITE SALMON SPR COMMENTS 10/9/2023
3	11/28/23	AP	CG	CITY OF WHITE SALMON SPR COMMENTS 11/21/2023
4	05/13/24	AP	CG	CITY OF WHITE SALMON CONSISTENCY REVIEW 03/04/2024



# CITY OF WHITE SALMON

## CITY HALL

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November 21, 2023

Alex Pedroza, EIT  
489 North 8TH Street – Suite 201  
Hood River, Oregon 97031  
[apedroza@hrkus.com](mailto:apedroza@hrkus.com)

### **RE: Cherry Hill Estates Subdivision – Notice of Incomplete Application #2**

City staff have completed their 2<sup>nd</sup> completeness review of the Cherry Hills Estates Preliminary Plat application for a proposed 34-lot plat. The following information is needed to make your application complete.

#### **Planning**

1. With steep slopes confirmed by the surveyor, please both provide an amended SEPA Checklist and delineate steep slopes on site, per WSMC 18.10.414. If alterations to steep slopes or buffers are proposed, please submit a geotechnical report addressing the following requirements under both WSMC 18.10.413 and WSMC 18.10.414.
2. Please show the proposed water line easement benefitting the City, bordering proposed lots 8, 9 and 18, as shown on sheet 3 of the site plan.
3. *Please provide an arborist report to evaluate the presence or absence of heritage trees, as defined and regulated under WSMC 18.10.317. If found, please provide an assessment of protection needs on-site.*
  - **Staff follow-up:** Please reflect arborist report recommendations (Braun Arboricultural Consulting LLC, dated November 7<sup>th</sup>, 2023) on the proposed site plan/plat, including delineated heritage tree protection areas (Oak trees #1-8 as shown on Figure I. Candidate Heritage Trees). This includes a 15-foot building setback line for proposed lots, per WSMC 18.10.317.E(3) and WSMC 18.10.212. The access road and sidewalk will likely need to be shifted to the east of the current alignment to account for these protection areas, including the sidewalk on the east side, not the west side of the road.
  - **Staff follow-up:** Please provide a draft heritage tree protection easement exhibit or exhibits for future recording and approximate areas shown on the face of the plat, per WSMC 18.10.317.E(5).

***The following comment below is a consistency review-level comment and does not represent an entire compliance review. An initial response is anticipated, though not required at this stage.***



# CITY OF WHITE SALMON

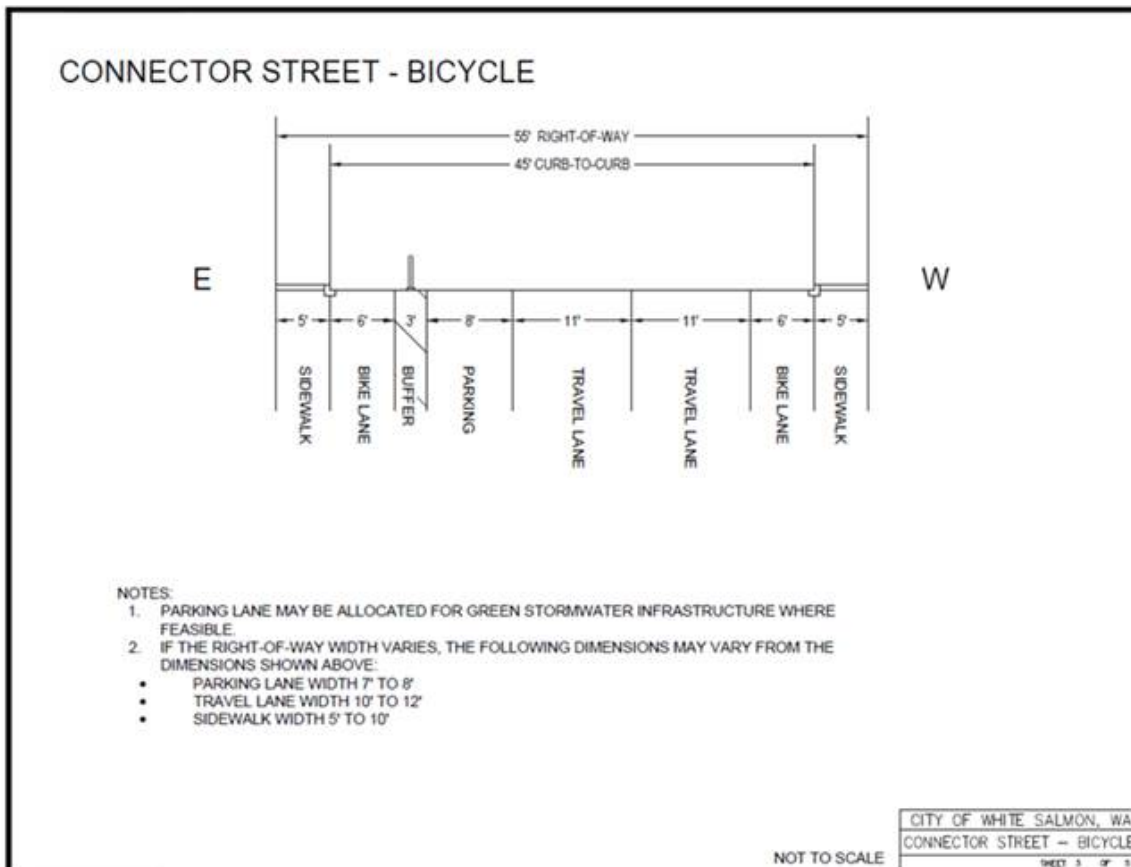
## CITY HALL

### Public Works

- Per the City's recently-adopted Transportation Systems Plan (TSP) "Lite", (August 30, 2023), the City will require extended frontage improvements along NW Spring Street, per the adopted Safe Routes to School network shown on Figure 7 and described on page 3-10 of the plan (excerpt attached). This includes extending right-of-way frontage improvements east 127 feet from the project's entrance to where Lot 2 of the original Cherry Hills Estates Plat SP 91-17 terminates (1001 NW Cherry Hill Rd, parcel 03102475000200). Improvements must be installed or bonded prior to issuance of a future building permit certificate of occupancy.

Note, As shown in the attached Appendix C: Project List and Maps, NW Spring Street is a high-priority project for pedestrian and bike improvements. The City is currently applying for state funding to construct these improvements. If the City receives funding and constructs these improvements on the north side of NW Spring Street, the City may elect to waive this requirement. Please see the below cross-section from the City's TSP "Lite":

Figure 3 Typical Cross-Section for Connector Street on the Bicycle Network





# CITY OF WHITE SALMON

## CITY HALL

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A re-submittal will not be accepted without both responding to all completeness items #1 - #5 and including a cover letter describing where these changes are found within the re-submittal, or under what report.

For further questions, contact Erika Castro Guzman, City Community Development/Special Project Coordinator, at 493-1133 ext. 209.

Sincerely,

City of White Salmon

Alex Capron, AICP  
Consultant Land-Use Planner

*Encl: Transportation Systems Plan "Lite" – Safe Routes to Schools excerpt and Appendix C:  
Project List and Maps*



## Safe Routes to School

White Salmon has designated a network of streets and walking paths as a Safe Routes to School (SRTS) network connecting to Whitson Elementary, the only public school inside the city limits. The network includes portions of Center, O’Keefe, Tohomish, Hood, Main, Jewett, Wauna, Fields, and Spring streets (Figure 7). This plan includes a December 2021 resolution considered by Klickitat County, which would extend the SRTS network to include areas outside the city limits connecting to Henkle Middle School and Columbia High School along NW Loop Road and NW Jewett Boulevard. Appropriate safety and access improvements for students along and across school walking and bicycling routes may include traffic calming (e.g., speed humps and neighborhood traffic circles), crosswalk and crossing improvements, modifications to speed limits and zones, lighting improvements, pathway connections, and bikeways. Projects along and across this SRTS network may be eligible for Washington State Safe Routes to School program funding (see the Funding section of Chapter 6 below for further detail). The City will work with the White Salmon Valley School District to update the SRTS map shown on the following page (Figure 7).

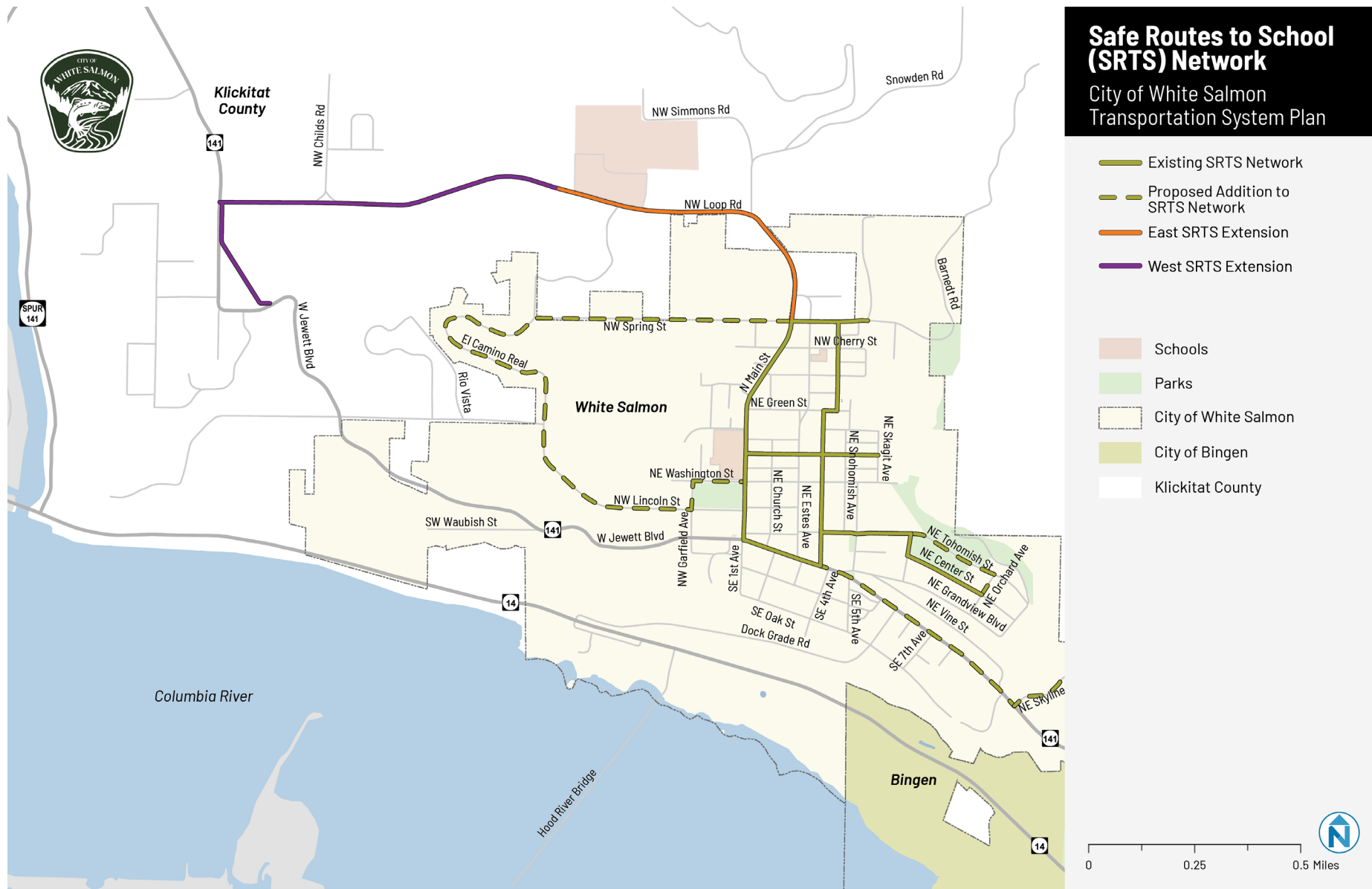


Many streets do not have sidewalks.



# White Salmon Transportation System Plan

Figure 7 Safe Routes to School Network and County Extensions



City of White Salmon

# White Salmon TSP "Lite" Appendix C: Project List and Maps

August 2023

**N** NELSON  
NYGAARD



White Salmon TSP "Lite" Project List

Category	Status	Source	Description	Project Name (Near-Term Projects)	On the Bike Network?	Map ID	Location	Final Score	Phase
Bicycle and Pedestrian	Recommended	TSP	Designate as bike boulevard for entire length. Add curb and sidewalk west of Estes or consider pedestrian lane between Country View Road and Estes.	NW Spring Street Pedestrian and Bike Improvements	Yes	11	NW Spring St from Country View to Barnedt	35.5	1 - Near Term
Pedestrian	Planned	STIP & TSP	Reconstruct, add sidewalk one side. Add high-visibility pedestrian and bicycle crossing with curb extensions on Estes freight corridor.	Spring Street Pedestrian Improvements and Street Rebuild	Yes	14	Spring St from Estes to Barnedt, and crossing improvements at Estes and Spring	35.0	1 - Near Term
Pedestrian	Planned	STIP	Reconstruct with curb on both sides and sidewalk on west side.	Church Avenue Sidewalk and Street Rebuild	Yes	39	Church Ave from Columbia to Jewett	33.6	1 - Near Term
Pedestrian	Planned	STIP	Reconstruct with sidewalk on one side. Columbia between Main and Estes	Columbia Street Sidewalk and Street Rebuild	No	24	Columbia St from Main to Estes	28.8	1 - Near Term
Pedestrian	Planned	STIP	Reconstruct road and add sidewalks to both sides.	Scenic Street Sidewalk and Street Rebuild	No	31	Scenic St from Main to Estes	23.2	1 - Near Term
Pedestrian	Planned	STIP	Reconstruct with sidewalk one side.	Grandview Boulevard Sidewalk and Street Rebuild	Yes	57	Grandview Blvd from Pioneer to O'Keefe	20.2	1 - Near Term
Bicycle and Pedestrian	Planned	STIP & TSP	Reconstruct Oak from 1st to Dock Grade with sidewalk on one side. Designate as bike boulevard with shared lane marking until Dock Grade/6th. Reconstruct 2nd Ave with sidewalk on one side.	Oak Street Multimodal Improvements and Street Rebuild	Yes	65	Oak St from 1st to Dock Grade, 1st from Wyers to Oak, and 2nd Ave from Wyers to Oak	16.7	1 - Near Term
Roadway	Planned	STIP	Reconstruct with sidewalk on south side.	Waubish Street Sidewalk and Street Rebuild	No	44	Waubish St from SR 141 to west end	10.5	1 - Near Term
Bicycle	Recommended	TSP	Construct dedicated bicycle lanes with protective buffers. Green stormwater infrastructure where possible instead of parking.		Yes	19	N Main St	43.3	2 - Medium Term
Intersection	Recommended	TSP	Add high-visibility pedestrian and bicycle crossing across Main. Repaint crossing on Cherry if needed.		Yes	16	Main St & Cherry St	32.8	2 - Medium Term
Bicycle and Pedestrian	Recommended	TSP	Designate as bike boulevard with shared lane marking and striped pedestrian lane.		Yes	18	Fields Ave	28.1	2 - Medium Term
Bicycle and Pedestrian	Recommended	TSP	Build new shared-use path on the south side of SR-14 and along SR 141, via Oak St in Bingen, connecting Heritage Plaza to new Bluff Trail crossing, riverside park, dock, and downtown White Salmon to downtown Bingen. Construct planted parkway, and narrow travel lanes.	White Salmon-Bingen Loop Trail	No	73	New Multi-Use Trail	27.7	2 - Medium Term
Bicycle and Pedestrian	Recommended	TSP	Consider a bike path on the north side adjacent to the sidewalk for students bicycling to school. Consider widening existing asphalt shared-use path on south side.		Yes	5	NW Loop Rd	26.8	2 - Medium Term
Bicycle and Pedestrian	Recommended	TSP	Designate as bike boulevard with sidewalk or pedestrian lane on one side. Provides option for pedestrians and bicyclists who prefer not using Jewett/141.		Yes	68	NE Vine St	26.3	2 - Medium Term
Bicycle and Pedestrian	Recommended	TSP	Shared-use path.		No	29	SR-141	26.1	2 - Medium Term
Bicycle and Pedestrian	Recommended	TSP	Reconstruct with sidewalks on both sides, and designate as bike boulevard.		Yes	22	NE Green St	25.9	2 - Medium Term
Pedestrian	Recommended	TSP	Add sidewalk on north side east of Main, consider pedestrian lane west of Main.		No	15	NE Cherry St	25.5	2 - Medium Term
Pedestrian	Recommended	TSP	Add pedestrian facilities such as sidewalks or pedestrian lanes along the El Camino Real - Lincoln corridor.		No	34	NW Lincoln St	25.0	2 - Medium Term
Transit	Recommended	TSP	Bus stop improvements and possible relocation.		No	30	Main St Bus Stop	24.0	2 - Medium Term
Pedestrian	Recommended	TSP	Reconstruct with sidewalk and curb on both sides.		No	36	NE Washington St	23.6	2 - Medium Term
Intersection	Recommended	TSP	Mini traffic circle to intersect bicycle boulevard with bike facilities on Main and act as traffic calming device.		Yes	12	Spring St & Main St	23.5	2 - Medium Term
Intersection	Recommended	TSP	Consider curb extensions and bike route signage.		Yes	45	Tohomish St & Wauna Ave	22.5	2 - Medium Term
Roadway	Recommended	TSP	Freight route. Incorporate green stormwater infrastructure where possible instead of parking.		No	25	NE Estes Ave	21.7	2 - Medium Term

White Salmon TSP "Lite" Project List

Intersection	Recommended	TSP	Create bicycle and pedestrian pathway through Firemen's Park, connecting to high-visibility crosswalks on Grandview and Jewett. Repaint 5th St ped crossing. Add ped-activated signal or RRFB for Jewett crossing.		Yes	55	Jewett/141 & Grandview, Pioneer, and 5th	21.5	2 - Medium Term
Bicycle and Pedestrian	Recommended	TSP	Short-term railing on Dock Grade Rd, longer-term protected shared-use path.		No	70	Dock Grade Rd	21.5	2 - Medium Term
Bicycle and Pedestrian	Recommended	TSP	Repave until extent of residential settlement. Add sidepath for walking and bicycling along one side of roadway for full extent.		No	41	NW Lincoln St	18.6	2 - Medium Term
Pedestrian	Recommended	TSP	Stairway/pedestrian trail proposed to connect White Salmon with Hood River Bridgehead and the Park & Ride, with viewing platforms and north- and south-end trailheads.	Bluff Connector Trail	No	66	Bluff Trail	12.3	2 - Medium Term
Pedestrian	Recommended	TSP	Add pedestrian facilities such as sidewalks or pedestrian lanes along the El Camino Real - Lincoln corridor.		No	17	El Camino Real	14.0	3 - Long Term
New connection to existing street	Recommended	TSP	Street extension between Spring St and Loop Rd.		No	9	New Street	14.0	3 - Long Term
Bicycle and Pedestrian	Recommended	TSP	Designate as bike boulevard east of Estes. Fill sidewalk gaps on north side. Provide wayfinding signage towards the Bike Park.		Yes	48	Tohomish St	13.7	3 - Long Term
Roadway	Planned	STIP	Chipseal paving.		No	26	Hood St	13.7	3 - Long Term
New connection to existing street	Recommended	TSP	Concept for new one-way multimodal road in parallel to existing Dock Grade Road.		No	74	New Street (Dock Grade Rd)	13.3	3 - Long Term
Transit	Recommended	TSP	Bus stop improvements.		No	50	Downtown White Salmon Bus Stop	13.0	3 - Long Term
New connection to existing street	Recommended	TSP	Street extension between Spring St and Loop Rd.		No	8	New Street	13.0	3 - Long Term
Bicycle	Recommended	TSP	Designate as bike boulevard with shared lane markings between Pioneer and Orchard.		Yes	59	NE Grandview Blvd	12.7	3 - Long Term
Intersection	Recommended	TSP	Add traffic circle to calm and control traffic access to hospital.		No	77	Jewett/141 & Skyline Dr	12.0	3 - Long Term
Intersection	Planned	WSDOT	Planned traffic circle project.		No	64	Jewett/141 & Dock Grade Rd	12.0	3 - Long Term
Intersection	Planned	WSDOT	Planned traffic circle project.		No	52	Jewett/141 & Estes Ave	12.0	3 - Long Term
Intersection	Recommended	TSP	Add high visibility bicycle/pedestrian crosswalk across Estes on south side of Green, using the island median as a mid landing. Consider adding pedestrian crossing signage or RRFB.		Yes	23	Estes Ave & Green St	12.0	3 - Long Term
Intersection	Recommended	TSP	Traffic circle, potential to add RRFB to crossing with advance signage on Main northbound before the curve.		Yes	6	Main Ave/Loop Rd & Snowden Rd	12.0	3 - Long Term
Intersection	Recommended	TSP	Add traffic circle to calm and control traffic access to schools.		No	4	Loop Rd & Bruin Country Rd	12.0	3 - Long Term
Intersection	Recommended	TSP	Add protected crossing with potential median island. High visibility crosswalk with signage and ped/bike-activated signal.		Yes	75	Jewett/141 & Vine St	11.7	3 - Long Term
Pedestrian	Planned	STIP	Reconstruct road, add sidewalk on east side.		No	43	Garfield Ave	11.7	3 - Long Term
Bicycle and Pedestrian	Recommended	TSP	Add separated shared-use path for students cycling to school.		Yes	3	NW Simmons Rd	11.3	3 - Long Term
Intersection	Planned	WSDOT	Crosswalk and landing across Jewett/141 at Grandview.		No	54	Jewett and Grandview	11.0	3 - Long Term
Intersection	Planned	STIP	Add traffic circle and crosswalk.		No	47	Jewett and Garfield	11.0	3 - Long Term
Bicycle and Pedestrian	Recommended	TSP	Designate as bike boulevard. Continue sidewalk, filling gaps between Washington St and Green St.		Yes	32	NE Snohomish Ave	10.3	3 - Long Term
Intersection	Recommended	TSP	Add high-visibility crossing at the three-way stop controlled intersection.		Yes	46	O'Keefe Ave & Tohomish St	10.0	3 - Long Term
New connection to existing street	Recommended	TSP	Extend SW Waubish St and formalize SW Dogwood Ln.		No	38	SW Waubish St	10.0	3 - Long Term
Intersection	Planned	WSDOT	Hood River Bridge and SR 14 Interchange upgrade project.		No	72	Hood River Bridge & SR 14	9.0	3 - Long Term
Intersection	Recommended	TSP	Add traffic signal if 7th becomes connection to new parallel Dock Grade Road.		No	69	Jewett/141 & 7th Ave	9.0	3 - Long Term
Intersection	Recommended	TSP	Traffic circle/roundabout.		No	67	Dock Grade Rd and SR-14	9.0	3 - Long Term
Transit	Recommended	TSP	Bus stop improvements.		No	40	Pioneer Center/Senior Services Bus Stop	9.0	3 - Long Term
Intersection	Recommended	TSP	Potential signalisation (full or ped-activated) of intersection. Add high-visibility bike/ped crossing.		Yes	71	Dock Grade Rd & Oak St	8.0	3 - Long Term

White Salmon TSP "Lite" Project List

Pedestrian	Recommended	TSP	Reconstruct/repave road and add sidewalk on East side from Oak to Wyers. Add full sidewalk and curb on West side to Jewett.		No	60	SE 4th Ave	8.0	3 - Long Term
Bicycle	Recommended	TSP	Designate as bike boulevard with shared lane marking between Grandview and Tohomish.		Yes	49	NE Pioneer Pl	8.0	3 - Long Term
Intersection	Recommended	TSP	Add roundabout/traffic circle to alleviate dangerous intersection.		No	42	SR 14 & SPUR 141	8.0	3 - Long Term
New connection to existing street	Recommended	TSP	New street connecting Main St and Spring St.		No	10	New Street	8.0	3 - Long Term
New connection to existing street	Recommended	TSP	Extend NE Tillotson Dr to Snowdon Rd.		No	7	NE Tillotson Dr	8.0	3 - Long Term
Other	Recommended	TSP	Build a public boat dock along the river bank.		No	78	Columbia River	7.7	3 - Long Term
Bicycle and Pedestrian	Recommended	TSP	Designate as bike boulevard with shared lane marking and striped pedestrian lane.		Yes	63	SE 5th Ave	7.7	3 - Long Term
Roadway	Planned	STIP	Reconstruct road.		No	21	Achor Ave	7.7	3 - Long Term
New connection to existing street	Recommended	TSP	Build new street network with sidewalks in undeveloped area with residential zoning.		No	37	New Street	6.0	3 - Long Term
New connection to existing street	Recommended	TSP	Formalize and complete Dogwood Ln to Jewett/151.		No	35	SW Dogwood Ln	6.0	3 - Long Term
New connection to existing street	Recommended	TSP	Build new road completing a new street network to the north and west of the schools. Include bike and pedestrian facilities.		No	2	New Street	6.0	3 - Long Term
New connection to existing street	Recommended	TSP	Build new street network with sidewalks in undeveloped area with residential zoning.		No	27	New Street	5.0	3 - Long Term
Bicycle and Pedestrian	Recommended	TSP	Add bike route with signage.		Yes	61	NE Orchard Ave	4.7	3 - Long Term
Pedestrian	Recommended	TSP	Reconstruct with sidewalk and curb on north side to access Pioneer Park Sports Complex.		No	56	NE Center St	4.7	3 - Long Term
Bicycle and Pedestrian	Recommended	TSP	Reconstruct with curb and sidewalk on one side and designate as bike boulevard.		Yes	51	NE O'Keefe Ave	4.7	3 - Long Term
New connection to existing street	Recommended	TSP	Complete Snohomish Ave between Green St and Wisconsin St.		No	20	NE Snohomish Ave	4.7	3 - Long Term
New connection to existing street	Recommended	TSP	Build new road completing a new street network to the north and west of the schools. Include bike and pedestrian facilities.		No	1	New Street	4.0	3 - Long Term
New connection to existing street	Recommended	TSP	Formalize and build new street connection between W Winds Rd and SW Eyrie Rd via Amos Bertie Ln and Cherry Blossom Ln.		No	28	New Street	0.0	3 - Long Term



# Recommended & Long-Term Projects

## City of White Salmon Transportation System Plan



- Recommended TSP Projects
- Long-term projects (not in TSP time frame)

### Project Types

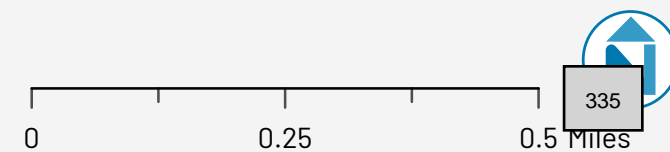
#### Linear/Corridor-Based Projects

- Bicycle
- Bicycle and Pedestrian
- New connection to existing street
- Pedestrian
- Roadway

#### Point-Based Projects

- Intersection
- Transit
- Other
- xx Project ID Number

- Schools
- Parks
- City of White Salmon
- City of Bingen
- Klickitat County



**File Attachments for Item:**

2. DRAFT Parking Ordinance



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**CITY OF WHITE SALMON  
ORDINANCE NO. \_\_\_\_\_**

**AN ORDINANCE OF THE CITY OF WHITE SALMON, WASHINGTON, AMENDING TITLE 17 BY REVISING CHAPTERS 17.23, 17.24, 17.28, 17.48, 17.72, 17.73, AND 17.74 TO UPDATE THEIR ZONING PROVISIONS, INCLUDING SEVERABILITY AND AN EFFECTIVE DATE**

**WHEREAS**, the City of White Salmon (“City”) acknowledges the need to update its residential zoning regulations to better reflect the current needs of citizens, and the demand for more diverse and affordable housing; and

**WHEREAS**, the City recognizes the role of higher off-street parking standards in contributing to housing unaffordability and lack of equitable access for all citizens; and

**WHEREAS**, the City recognizes the benefits of reduced parking surfaces in meeting climate goals, reducing urban heating, improving water quality, and improving public health and well-being; and

**WHEREAS**, the City recognizes that market trends and professional standards have shifted toward the reduction of off-street parking mandates, combined with parking demand management strategies; and

**WHEREAS**, the City has conducted extensive public outreach and gathered extensive public comments in accordance with the City’s Public Participation Plan, sufficient to establish regulations in accordance with RCW 36.70A;

**NOW THEREFORE, THE CITY COUNCIL OF THE CITY OF WHITE SALMON DOES ORDAIN AS FOLLOWS:**

That the following amendments be made to White Salmon Municipal Code Title 17:

**SECTION 1. Amendment to Title 17, Chapters 17.08, 17.23, 17.24, 17.28, 17.32, 17.36, 17.40, 17.48, 17.50, 17.64, 17.68, and 17.72.** The City hereby repeals WSMC Title 17 Chapters 17.08.290, 17.23, 17.24, 17.28, 17.32, 17.36, 17.40, 17.48, 17.50, 17.64, and 17.68, in their entirety, and adopts the following to be codified as WSMC Title 17 Chapters 17.08.290, 17.23, 17.24, 17.28, 17.32, 17.36, 17.40, 17.48, 17.50, 17.64, 17.68, 17.72, and 17.79:

**Key:**     Underlined = added language  
          ~~Strikethrough~~ = deleted language

## Chapter 17.23 RL SINGLE-FAMILY LARGE LOT RESIDENTIAL DISTRICT

### 17.23.010 Principal uses permitted outright.

Principal uses permitted outright in the RL district include:

- A. One single-family detached dwelling structure per lot, including manufactured homes, but excluding mobile homes;
- B. Hobby-type gardening and horticultural activities and related structures are permitted, provided they shall be solely for noncommercial purposes.

(Ord. No. 2012-11-905, 11-26-2012)

### 17.23.020 Accessory uses.

Accessory uses permitted in the RL district include:

- A. Uses customarily incidental to a principal use permitted outright, such as private garages, or parking areas for commercial vehicles, but not including any vehicles of over twelve thousand pounds gross weight;
- B. Home occupations; see Section 17.08.230;
- C. Non-flashing residential nameplates not exceeding two square feet, bearing only the name and address of the occupant; non-flashing bulletin boards or signs not exceeding sixteen square feet for quasi-public institutional buildings;
- D. Up to two accessory dwelling units; subject to Chapter 17.64.
- E. Outdoor parking of fully licensed and operable motor vehicles equal to the number of licensed drivers plus two per household.
- [F.] Other accessory uses may be authorized by the board of adjustment in this district are those customarily incidental to permitted and conditional uses allowed.

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

### 17.23.025 Prohibited uses.

- A. Outside storage of wrecked, dismantled or partially dismantled, inoperable, or unlicensed (vehicle licensing plates and current tabs) and uninsured vehicles.
- B. Use of mobile homes, trailers, motor homes or campers.
- C. Parking or storage of industrial or agriculture vehicles and equipment on lots.
- D. Outside collections of automobile, truck or other motor vehicle parts or paints, fuels, and lubricants.
- E. Outside accumulations of garbage, trash, household goods, yard trimmings, or other materials which create a public nuisance or fire hazard.

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- F. On premise storage of flammable, toxic, corrosive, or explosive chemicals, gases, or materials other than reasonable amounts of normal household paints, cleaners, solvents, fuels.

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

### **17.23.030 Conditional use.**

See Section 17.40.010.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.23.035 Property development standards.**

A. Dwelling standards:

1. A single-family residential dwelling shall have a minimum floor area of four hundred square feet, as measured from interior wall to interior wall, excluding porches, carports, garages, and basement or other rooms used exclusively for the storage or housing of mechanical or central heating equipment.
2. All single-family dwellings shall be placed on permanent foundations.
3. No more than twenty-five percent of the ground floor may be less than fourteen feet from exterior wall to exterior wall in width at the narrowest point.
  - a. Any street-facing portion of the structure shall be no narrower than fourteen feet in width. Residences on corner lots shall have all elevations facing a street considered street-facing.
  - b. Architectural features, including, but not limited to entryways, porches, bay windows, offset facades, offset elevations, and the like, may be part of street-facing portions of structures and may be narrower than fourteen feet in width as long as the overall face of that side of the residence is not narrower than fourteen feet.
  - c. The narrowest portion of a residence designed for living space shall not be less than six feet in width. Architectural features, such as unenclosed porches, bay windows, offset facades, offset elevations and the like, may be narrower than six feet in width.
  - d. For structures that are two stories or more stories in height and are built on a slope and more than one floor touches the ground, all floors touching the ground shall be considered ground floors.
4. All manufactured homes must be new on the date of installation and comply with applicable siting standards in Section 17.68.130 - Manufactured home siting standards.
5. Maximum building height shall not exceed twenty-eight feet.
6. No business signs shall be erected or displayed on residential lots or adjacent street right-of-way buffer strips, except as provided in Sign Ordinance, Chapter 15.12 of this code.
7. No contour or existing topography shall be substantially altered by fill, excavation, channeling, or other device that would cause flooding, inundation, siltation, or erosion by stormwater on adjoining lots, open spaces, or rights-of-way.

B. Accessory use, accessory buildings and garages.

1. Any plumbing and/or sewer facilities in any accessory building or garage shall be subject to International Building Code requirements and limited to the exclusive private use of the residents of the principal building.

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2. Sewer stub-out facilities shall not be provided in or adjacent to any garage or accessory building for use within that building with the exception of an approved accessory dwelling unit.
  3. Garages and all accessory buildings used as studios, workshops or for home occupations shall conform to International Building Code requirements and to the setback requirements for principal buildings except that such structures may be located up to three feet from the rear lot line if the rear lot line abuts a dedicated alleyway of at least fifteen feet in width.

C. Fences.

1. Fence heights shall not exceed six feet along rear or side lot lines.
2. Fence heights shall not exceed five feet along front lot lines.
3. On corner lots the fence height along the side yard adjacent to the street shall not exceed four feet for the first twenty-five feet from the lot corner to ensure adequate view clearance per Section 17.68.090.
4. Fences shall not be constructed or kept in any manner which could constitute a safety hazard to the person or property of adjoining landowners or to the general public.

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-06-1143, § 1, 6-21-2023; Ord. No. 2023-12-1155, § 1, 12-20-2023)

### 17.23.040 Density provisions.

Density provisions for the RL district are as follows:

- A. Maximum number of primary dwelling structures per lot: one;
- B. Minimum area of lot: eleven thousand square feet;
- C. Maximum depth of lot: two hundred feet; alternate lot depth may be approved for lots with future street plan and shadow platting demonstrating potential access for future further division of proposed large lot division.
- D. Minimum width of lot: fifty feet; alternate lot width may be approved for lots with future street plan and shadow platting demonstrating potential access for future further division of proposed large lot division.
- E. Minimum front yard depth: twenty feet;
- F. Minimum side yard width: five feet;
- G. Minimum side yard width along flanking street of corner lot: fifteen feet;
- H. Minimum rear yard required: fifteen feet.

NOTE: Accessory structures are allowed within rear yards subject to five-foot setback from rear lot lines.

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

### 17.23.050 Off-street parking space.

In the RL district, at least two permanently maintained off-street parking spaces or a private garage shall be on the same lot as the dwelling, or be attached thereto or made a part of the main building. Each parking space shall be not less than ~~ten~~ **nine** feet wide and ~~twenty~~ **eighteen** feet long. The size of the garage shall not exceed the size of the dwelling.

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(Ord. No. 2012-11-905, 11-26-2012)

**17.23.060 Utility requirements.**

In the RL district, all new structures shall be serviced by underground utilities.

(Ord. No. 2012-11-905, 11-26-2012)

**Chapter 17.24 R1 SINGLE-FAMILY RESIDENTIAL DISTRICT**

**17.24.010 Principal uses permitted outright.**

Principal uses permitted outright in the R1 district include:

- A. One single-family detached dwelling structure per lot, including manufactured homes, but excluding mobile homes;
- B. Hobby-type gardening and horticultural activities and related structures are permitted, provided they shall be solely for noncommercial purposes.

(Ord. No. 2012-11-905, 11-26-2012)

**17.24.020 Accessory uses.**

Accessory uses permitted in the R1 district include:

- A. Uses customarily incidental to a principal use permitted outright, such as private garages, or parking areas for commercial vehicles, but not including any vehicles of over twelve thousand pounds gross weight;
- B. Home occupations; see Section 17.08.230.
- C. Non-flashing residential nameplates not exceeding two square feet, bearing only the name and address of the occupant; non-flashing bulletin boards or signs not exceeding sixteen square feet for quasi-public institutional buildings;
- D. Up to two accessory dwelling units, subject to Chapter 17.64; operable motor vehicles equal to the number of licensed drivers plus two per household, provided that no boat or RV with an overall length of more than thirty feet shall be stored or parked in the R1 zone without special permission from the city to do so.
- E. Other accessory uses may be authorized by the board of adjustment in this district are those customarily incidental to permitted and conditional uses allowed.

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

**17.24.025 Prohibited uses.**

- A. Outside storage of wrecked, dismantled or partially dismantled, inoperable, or unlicensed (vehicle licensing plates and current tabs) and uninsured vehicles.
- B. Use of mobile homes, trailers, motor homes or campers.

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- C. Parking or storage of industrial or agriculture vehicles and equipment on lots.
  - D. Outside collections of automobile, truck or other motor vehicle parts or paints, fuels, and lubricants.
  - E. Outside accumulations of garbage, trash, household goods, yard trimmings, or other materials which create a public nuisance or fire hazard.
  - F. On premise storage of flammable, toxic, corrosive, or explosive chemicals, gases, or materials other than reasonable amounts of normal household paints, cleaners, solvents, fuels.

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

#### **17.24.030 Conditional use.**

See Section 17.40.010. ;hn0; (Ord. No. 2012-11-905, 11-26-2012)

#### **17.24.035 Property development standards.**

- A. Dwelling standards:
  - 1. A primary (not accessory) single-family residential dwelling shall have a minimum floor area of four hundred square feet, as measured from interior wall to interior wall, excluding porches, carports, garages, and basement or other rooms used exclusively for the storage or housing of mechanical or central heating equipment.
  - 2. All single-family dwellings shall be placed on permanent foundations.
  - 3. No more than twenty-five percent of the ground floor may be less than fourteen feet from exterior wall to exterior wall in width at the narrowest point.
    - a. Any street-facing portion of the structure shall be no narrower than fourteen feet in width. Residences on corner lots shall have all elevations facing a street considered street-facing.
    - b. Architectural features, including, but not limited to entryways, porches, bay windows, offset facades, offset elevations, and the like, may be part of street-facing portions of structures and may be narrower than fourteen feet in width as long as the overall face of that side of the residence is not narrower than fourteen feet.
    - c. The narrowest portion of a residence designed for living space shall not be less than six feet in width. Architectural features, such as unenclosed porches, bay windows, offset facades, offset elevations and the like, may be narrower than six feet in width.
    - d. For structures that are two stories or more stories in height and are built on a slope and more than one floor touches the ground, all floors touching the ground shall be considered ground floors.
  - 4. All manufactured homes must be new on the date of installation and comply with applicable siting standards in Section 17.68.130
  - 5. Maximum building height shall not exceed twenty-eight feet in single-family residential zones.
  - 6. No business signs shall be erected or displayed on residential lots or adjacent street right-of-way buffer strips, except as provided in Sign Ordinance, Chapter 15.12 of this code.
  - 7. No contour or existing topography shall be substantially altered by fill, excavation, channeling, or other device that would cause flooding, inundation, siltation, or erosion by stormwater on adjoining lots, open spaces, or rights-of-way.

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B. Accessory use, accessory buildings, and garages.

1. Any plumbing and/or sewer facilities in any accessory building or garage shall be subject to International Building Code requirements and limited to the exclusive private use of the residents of the principal building.
2. Sewer stub-out facilities shall not be provided in or adjacent to any garage or accessory building for use within that building with the exception of approved accessory dwelling units.
3. Garages and all accessory buildings used as studios, workshops or for home occupations shall conform to International Building Code requirements and to the setback requirements for principal buildings except that such structures may be located up to three feet from the rear lot line if the rear lot line abuts a dedicated alleyway of at least fifteen feet in width.

C. Fences.

1. Fence heights shall not exceed six feet along rear or side lot lines.
2. Fence heights shall not exceed five feet along front lot lines.
3. On corner lots the fence height along the side yard adjacent to the street shall not exceed four feet for the first twenty-five feet from the lot corner to ensure adequate view clearance per Section 17.68.090.
4. Fences shall not be constructed or kept in any manner which could constitute a safety hazard to the person or property of adjoining landowners or to the general public.

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-06-1143, § 1, 6-21-2023; Ord. No. 2023-12-1155, § 1, 12-20-2023)

### 17.24.040 Density provisions.

Density provisions for the R1 district are as follows:

- A. Maximum number of primary dwelling structures per lot: one;
- B. Maximum height of building: not to exceed twenty-eight feet;
- C. Minimum area of lot: three thousand square feet for each single-family structure;
- D. Minimum depth of lot: fifty feet;
- E. Minimum width of lot: thirty feet for each single-family structure.
- F. Maximum percentage of lot coverage: seventy-five percent;
- G. Minimum front yard depth: twelve feet, except that porches, stoops or other transitional structures may encroach up to eight feet into this frontage zone;
- H. Minimum side yard width: five feet.
- I. Minimum side yard width along flanking street of corner lot: ten feet;
- J. Minimum rear yard required: ten feet.

NOTE: accessory structures are allowed within rear yards and subject to five-foot setback from rear lot lines, and also subject to development standards in this zone. If the rear lot line is on an alley, a three-foot setback is required.

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

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### **17.24.050 Off-street parking space.**

In the R1 district, **for units with two bedrooms or greater**, at least two permanently maintained off-street parking spaces or a private garage shall be on the same lot as the dwelling, or be attached thereto or made a part of the main building. **For units with one bedroom or fewer, at least one permanently maintained off-street parking space or a private garage shall be on the same lot as the dwelling, or be attached thereto or made a part of the main building.** Each parking space shall be not less than ~~ten~~ **nine** feet wide and ~~twenty~~ **eighteen** feet long. The size of the garage shall not exceed the size of the dwelling.

Assigned parking in remote lots, including lots under the same ownership as the dwelling(s), or joint use parking under binding agreement, may be substituted if they are within two hundred feet of the subject property. (Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

### **17.24.060 Utility requirements.**

In the R1 district, all new structures shall be serviced by underground utilities. (Ord. No. 2012-11-905, 11-26-2012)

## **Chapter 17.28 R2 MULTIPLEX RESIDENTIAL DISTRICT**

### **17.28.010 Principal uses permitted outright.**

Principal uses permitted outright in the R2 district include:

- A. Principal uses permitted outright in residential district R1.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.28.020 Accessory uses.**

Accessory uses in the R2 district include:

- A. Uses customarily incidental to private uses permitted outright, such as private garages or parking areas for non-commercial vehicles only, but not including any business, trade or industry;
- B. Home occupations; see Section 17.08.230;
- C. Non-flashing residential nameplates not exceeding two square feet, bearing only the name and address of the occupant; non-flashing bulletin boards or signs not exceeding sixteen square feet for quasi-public institutional buildings;
- D. Up to two accessory dwelling units; subject to Chapter 17.64;
- E. Outdoor parking of fully licensed and operable motor vehicles equal to the number of licensed drivers plus two per household, provided that no boat or RV with an overall length of more than thirty feet shall be stored or parked in the R2 zone without special permission from the city to do so.
- [F.] Other accessory uses may be authorized by city council; those customarily incidental to permitted and conditional uses allowed.

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)



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**17.28.025 Reserved.**

Editor's note(s)—Ord. No. 2023-12-1155, § 1, adopted Dec. 20, 2024, repealed § 17.28.025, which pertained to principal uses permitted subject to site plan review and derived from Ord. No. 2012-11-905, 11-26-2012.

**17.28.030 Conditional uses.**

See Section 17.40.010.

(Ord. No. 2012-11-905, 11-26-2012)

**17.28.032 Prohibited uses.**

- A. Outside storage of wrecked, dismantled or partially dismantled, inoperable, or unlicensed (vehicle licensing plates and current tabs) and uninsured vehicles.
- B. Use of mobile homes, trailers, motor homes or campers.
- C. Parking or storage of industrial or agriculture vehicles and equipment on lots.
- D. Outside collections of automobile, truck or other motor vehicle parts or paints, fuels, and lubricants.
- E. Outside accumulations of garbage, trash, household goods, yard trimmings, or other materials which create a public nuisance or fire hazard.
- F. On premise storage of flammable, toxic, corrosive, or explosive chemicals, gases, or materials other than reasonable amounts of normal household paints, cleaners, solvents, fuels.

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

**17.28.034 Property development standards.**

- A. Dwelling standards:
  - 1. A primary (not accessory) single-family residential dwelling shall have a minimum floor area of four hundred square feet excluding porches, carports, garages, and basement or other rooms used exclusively for the storage or housing of mechanical or central heating equipment.
  - 2. All primary (not accessory) single-family dwellings shall be placed on permanent foundations.
  - 3. No more than twenty-five percent of the ground floor may be less than fourteen feet from exterior wall to exterior wall in width at the narrowest point.
    - a. Any street-facing portion of the structure shall be no narrower than fourteen feet in width. Residences on corner lots shall have all elevations facing a street considered street-facing.
    - b. Architectural features, including, but not limited to entryways, porches, bay windows, offset facades, offset elevations, and the like, may be part of street-facing portions of structures and may be narrower than fourteen feet in width as long as the overall face of that side of the residence is not narrower than fourteen feet.
    - c. The narrowest portion of a residence designed for living space shall not be less than six feet in width. Architectural features, such as unenclosed porches, bay windows, offset facades, offset elevations and the like, may be narrower than six feet in width.

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- d. For structures that are two stories or more stories in height and are built on a slope and more than one floor touches the ground, all floors touching the ground shall be considered ground floors.
  - 4. Maximum building height shall not exceed twenty-eight feet.
  - 5. No business signs shall be erected or displayed on residential lots or adjacent street right-of-way buffer strips, except as provided in Sign Ordinance, Chapter 15.12 of this code.
  - 6. No contour or existing topography shall be substantially altered by fill, excavation, channeling or other device that would cause flooding, inundation, siltation, or erosion by stormwater on adjoining lots, open spaces, or rights-of-way.
- B. Accessory use, accessory buildings and garages.
- 1. Any plumbing and/or sewer facilities in any accessory building or garage shall be subject to International Building Code requirements and limited to the exclusive private use of the residents of the principal building.
  - 2. Sewer stub-out facilities shall not be provided in or adjacent to any garage or accessory building for use within that building unless the building contains an approved ADU, where it is allowed.
  - 3. Garages and all accessory buildings used as studios, workshops or for home occupations shall conform to International Building Code requirements and to the setback requirements for principal buildings except that such structures may be located up to five feet from the rear lot line if the rear lot line abuts a dedicated alleyway of at least fifteen feet in width.
- C. Fences.
- 1. Fence heights shall not exceed six feet along rear or side lot lines.
  - 2. Fence heights shall not exceed five feet along front lot lines.
  - 3. On corner lots the fence height along the side yard adjacent to the street shall not exceed four feet for the first twenty-five feet from the lot corner to ensure adequate view clearance per Section 17.68.090.
  - 4. Fences shall not be constructed or kept in any manner which could constitute a safety hazard to the person or property of adjoining landowners or to the general public.

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-06-1143, § 1, 6-21-2023; Ord. No. 2023-12-1155, § 1, 12-20-2023)

### **17.28.040 Density provisions.**

Density provisions for the R2 district are as follows:

- A. Maximum number of primary dwelling structures per lot: four;
- B. Minimum area of lot: three thousand square feet for each single-family structure or up to four rowhomes, duplexes or multiplexes on the same lot; four thousand feet for duplexes on separate lots; and eight hundred square feet for rowhomes on separate lots;
- C. Minimum depth of lot: fifty feet;
- D. Minimum width of lot: thirty feet for each single-family structure or up to four rowhomes or multiplex units on the same lot; and twelve feet for duplexes or rowhomes on separate lots;
- E. Maximum percentage of lot coverage: seventy-five percent;

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- F. Minimum front yard depth: twelve feet, except that porches, stoops or other transitional structures may encroach up to 8 feet into this frontage zone;
  - G. Minimum side yard width: Five feet, or zero feet for approved rowhomes;
  - H. Minimum side yard width along flanking street of corner lot: ten feet;
  - I. Minimum rear yard required: ten feet.

NOTE: accessory structures are allowed within rear yards and subject to five-foot setback from rear lot lines, and also subject to development standards in this zone. If the rear lot line is on an alley, a three-foot setback is required.

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

### **17.28.050 Off-street parking space.**

In the R2 district, **for units with two bedrooms or greater**, at least two permanently maintained off-street parking spaces or a private garage shall be on the same lot as the dwelling, or be attached thereto or made a part of the main building. **For units with one bedroom or fewer, at least one permanently maintained off-street parking space or a private garage shall be on the same lot as the dwelling, or be attached thereto or made a part of the main building.** Each parking space shall not be less than ~~ten nine~~ **ten nine** feet wide and ~~twenty eighteen~~ **twenty eight** feet long. The size of the garage is not to exceed the size of the dwelling. Assigned parking in remote lots, including approved joint use parking under binding agreements, may be substituted if they are within 200 feet of the subject property.

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

### **17.28.060 Utility requirements.**

In the R2 district, all new structures shall be serviced by underground utilities.

(Ord. No. 2012-11-905, 11-26-2012)

## **Chapter 17.48 C GENERAL COMMERCIAL DISTRICTS<sup>1</sup>**

### **17.48.010 Purpose—Use restrictions generally.**

In the C district, it is intended that structures, premises and facilities would provide a mix of uses including major shopping, business facilities and civic uses serving an urban and/or agricultural area of sufficient population to support the facilities provided.

(Ord. No. 2012-12-910, 12-19-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

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<sup>1</sup>Editor's note(s)—Ord. No. 2012-12-910, adopted Dec. 19, 2012, repealed Ch. 17.48, in its entirety and enacted new provisions to read as herein set out. Prior to this amendment, Ch. 17.48 pertained to "C2 General Commercial Districts." See Ordinance List and Disposition Table for derivation.

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### **17.48.020 Principal uses permitted outright.**

Principal use listed as uses permitted outright in the C district are intended to be retail and service oriented uses focused on sales of goods and services to end users. Permitted uses include:

- A. Retail - Retail stores and shops providing goods and services, including hardware, dry goods, apparel, home appliances, jewelry, photographic studio, furniture and boat sales; gift shop;
- B. Service and Professional Space - Cafe, tavern, theater (including outdoor), radio and television, bank, business or professional office;
- C. Repair and Sales - Automobile, truck and machinery dealer (new and used), garage, and automobile, truck and other passenger vehicle repair reconditioning, painting, upholstery, motor rebuilding, body and fender work; refrigerated locker rental, shoe repair, bakery, supermarket, tailoring;
- D. Preparation and Sales - Formulating and preparing for sale such products as bakery goods, candy, cosmetics, dairy products, drugs, food and beverage products; including brewer, distillery, or winery in conjunction with a pub eatery or tasting room;
- E. Hospitality - Hotel, motel and tourist facilities; places of public assembly; commercial recreation does not include short-term rental, see WSMC 17.48.030.D;
- F. Artisan Manufacture and Sales - Boatbuilding; instruments, dishware, candles, glassware; metal work and welding; other items assembled from various raw materials such as wood, bone, cellophane, canvas, cloth and glass; spinning or knitting of cotton, wool, flax or other fibrous materials; stone, marble and granite monument works;
- G. Other commercial uses determined to be similar to the above uses may be permitted, subject to approval of the planning commission.

(Ord. No. 2012-12-910, 12-19-2012; Ord. No. 2022-02-1096, § 1, 2-16-2022)

### **17.48.030 Conditional uses.**

Uses which may be authorized subject to conditional use permit review by the planning commission or where otherwise delegated to the planning administrator within subject sections in a C district are intended to provide for compatible manufacturing, light industrial, residential, and storage uses especially in conjunction with retail use. Uses possible to permit conditionally include:

- A. Light manufacturing, repair, and storage - Including equipment repair, and machine shop uses such as:
  - 1. Assembly, fabrication and distribution of metal products, electrical appliances, electronic instruments and devices;
  - 2. Research and development including testing sites for instruments and devices developed for proprietary use or sale;
  - 3. Repair, reconditioning, or rebuilding of fleet vehicles, farm equipment, heavy commercial equipment;
  - 4. Wholesale distribution of fuel or foodstuffs including: heating oil or natural gas, brewery, distillery, winery, cereal mill;
  - 5. Equipment storage of contractors' or loggers' equipment and truck storage yard, plant, repair, rental; storage of materials and parking of vehicles integral to the principal uses permitted

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outright; storage and parking; contained within an enclosed building or screened in a manner to avoid conflicts with surrounding permitted uses.

6. Other storage conducted within an enclosed building or otherwise screened and shielded in a manner to achieve compatibility with surrounding uses.
- B. Small animal hospitals, veterinary facilities or offices.
- C. Short-term rentals pursuant to the standards of WSMC Ch. 5.02 and WSMC Ch. 17.57.
- D. Any other uses judged by the planning commission to be no more detrimental to adjacent properties than, and of the same type and character as, the above-listed uses.

In addition to conditions applied in response to conditional use permit criteria; clear and objective design standards listed in the commercial zone will be applied and included as conditions of approval when necessary to achieve compatibility with existing and permitted uses in the area.

(Ord. No. 2012-12-910, 12-19-2012; Ord. No. 2022-02-1096, § 1, 2-16-2022; Ord. No. 2023-12-1155, § 1, 12-20-2023)

#### **17.48.040 Accessory uses.**

Accessory uses permitted outright in a C district are as follows:

- A. Uses and structures customarily incidental to principal uses permitted outright;
- B. Signs as permitted by the Sign Ordinance, Chapter 15.12 of this code;
- C. Commercial parking lots for private passenger vehicles only.

(Ord. No. 2012-12-910, 12-19-2012)

#### **17.48.060 Density provisions.**

Density provisions for the C district are as follows:

- A. Maximum building height: thirty-five feet;
- B. Minimum lot: none;
- C. Minimum front yard depth: none required;
- D. Minimum side yard, interior lot: none required;
- E. Minimum side yard, corner lot: none required;
- F. Minimum side yard, zone transition lot: same as requirement of adjoining more-restrictive district;
- G. Minimum rear yard: none; except when abutting an R district, twenty feet.

(Ord. No. 2012-12-910, 12-19-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

#### **17.48.070 Prohibited uses.**

- A. Industrial and manufacturing uses or services unless limited in nature and permitted in accordance with uses listed above.

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- B. Warehouses and storage facilities unless limited in nature and permitted in accordance with uses listed above.
  - C. Junk and salvage yards, automobile or truck wrecking yards.
  - D. Open storage areas.
  - E. Any business, service, repair, processing or storage not conducted wholly within an enclosed building, except for open-air markets, pop-up shops, food trucks, off-street parking, off-street loading, automobile service stations and limited outside seating for restaurants and cafes.
  - F. Processes and equipment and goods processed or sold determined to be objectionable by reason of odor, dust, smoke, cinders, gas, noise, vibration, refuse matter, water-carried waste, or not in compliance with the fire code.

(Ord. No. 2012-12-910, 12-19-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

### **17.48.075 Development and design standards.**

- A. Property development standards—All new development shall conform to Chapter 17.81, Site and Building Plan Review, and to any and all architectural and design standards which may be adopted by the city.
- B. Roof standards/surfacing:
  - 1. Finished roof material shall meet Class "C" roof standards. Dark and non-reflective roofing material shall be used for all visible roof surfaces.
- C. Roof standards/mechanical equipment and venting:
  - 1. All mechanical equipment located on roof surfaces such as, but not limited to, air conditioners, heat pumps, fans, ventilator shafts, duct work, or related devices or support work, shall be screened from view when possible and visible equipment shall be of a matte and/or non-reflective finish, unless reviewed and determined by the planning commission to be compatible with or a positive addition to the design and character of the commercial area. This restriction shall not apply to radio/television antennas or dishes (see Chapter 17.78).
  - 2. All exposed metal flashing, roof jacks and plumbing vents shall be matte finishes/non-reflective.
- D. Drainage—All stormwater concentrated by the structure and related impervious surfaces must be handled on site. Concentration of roof drainage shall not be shed by drip or overflow at points that cross pedestrian walkways or paths. A plan of the roof and surface drainage shall insure that pedestrian walkways and paths remain free from concentrated water shedding. Such plans shall be included in the proposed site drainage plan required for site and building plan review in Chapter 17.81.
- E. Exterior walls/siding—Acceptable siding shall be of lap, plank, shingle, board and batten style. Siding with brushed, sanded or rough sawn texture may be permitted, if approved by the planning commission. Siding shall be finished in natural or earth-tone colors. Other colors or styles may be permitted if approved by the planning commission. All other composition materials shall be carefully reviewed for visual compatibility by the planning commission.
- F. Exterior walls/masonry—Masonry walls or walls with masonry veneer may be native or cultured stone or standard-sized brick of natural or earth-tone colors. Ceramic tile, manufactured concrete block or slabs may be permitted, but shall be subject to review by the planning commission to insure use of earth-tone colors, matte finish, and compatible relationship to native materials.
- G. Exterior walls/metal—Metal walls, panels, partitions, facing or surfacing of any type is subject to review by the planning commission and must be found to be compatibly designed and intentionally applied rather than

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relied on solely as a less expensive option. Window panel fillers, exterior metal doors, door casings and windows shall be allowed.

- H. Windows and doors—All window and door frames shall be dark or earth-tone in color. Doors may be painted graphic colors as a part of the ten percent graphic color and signing limitation.
- I. Garbage and refuse areas—Building plans shall include provisions for the storage of garbage containers. Garbage containers shall be fully enclosed and covered. Disposal and storage of hazardous or toxic substances in garbage or refuse receptacles is strictly prohibited. On-site hazardous waste treatment and storage facilities shall conform to State Siting Criteria, RCW 70.105.210.
- J. Orientation of entry and display space—Entry and window display area shall be oriented toward the city street. Parking may and will often be provided behind and/or under the rear or side portion of a new commercial structure. In this case additional entry may be oriented toward the parking area but such additional entry area will be in addition to rather than in place of window display and entry area addressing the street and sidewalk.
- K. Utilities—All electrical, telephone, and other utilities shall be brought underground into the site and to the buildings.
- L. Loading—All loading must be on-site and no on-street loading is permitted. All truck loading aprons and other loading areas shall be paved with concrete or asphalt, be well-drained and of strength adequate for the truck traffic expected.
- M. Parking—All vehicles must be parked on the site unless otherwise provided for in accordance with [Chapter] 17.72. No on-street parking is permitted. Minimum parking stall width should be eight feet, six inches and length ~~nineteen~~ eighteen feet. feet. All parking areas shall be paved with concrete or asphalt and shall conform to all regulations hereinafter in effect.
- N. Outside storage—All storage and refuse shall be visually screened by landscaping barriers, walls or coverings and be included in plans and specifications. Such barriers, walls or coverings shall not restrict access to emergency exits.
- O. Noxious effects:
  - 1. No vibration other than that caused by highway vehicles or trains shall be permitted which is discernible at the property line of the use concerned.
  - 2. Except for exterior lighting, operations producing heat or glare shall be conducted entirely within an enclosed building. Exterior lighting shall be directed away from adjacent properties.
  - 3. All materials, including wastes, shall be stored and all grounds shall be maintained in a manner which will not attract or aid the propagation of insects or rodents or create a hazard.

(Ord. No. 2012-12-910, 12-19-2012; Ord. No. 2016-10-995, § 1, 11-16-2016)

### **17.48.080 Off-street parking space.**

In the C district, minimum off-street parking for commercial uses shall be provided as specified in Chapter 17.72. Section 17.72.060 exempts some existing structures from being required to meet off street parking standards and limits the instances in which expanded building areas are required to meet a parking standard. Allowances for parking to be located walking distance from a new structure and joint use of spaces per Section 17.72.070 may also be authorized when determined by the planning commission or city administrator to provide appropriate flexibility in the application of parking requirements in the core downtown area. (Jewett commercial street front.)

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For residential uses in the C district, one space is required per unit, and one-half space per ADU, with a minimum of one space provided. Assigned parking in remote lots, including lots under the same ownership as the dwelling(s), or joint use parking under binding agreement, may be substituted if they are within two hundred feet of the subject property.

(Ord. No. 2012-12-910, 12-19-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

## **Chapter 17.72 OFF-STREET PARKING AND LOADING**

### **17.72.010 Standards generally.**

It is the intent of this chapter to allow for parking and loading standards.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.72.020 Purpose of provisions.**

The provision of off-street parking and loading space in accordance with the needs and requirements of particular property use is a necessary public policy in the interest of traffic safety, minimizing congestion, and to provide harmonious development.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.72.030 New uses—Minimum requirements.**

New uses in all districts shall meet the minimum standards of this title.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.72.040 Parking spaces—Size and access.**

- A. Each off-street parking space shall have a net area of not less than one hundred sixty square feet, exclusive of access drives or aisles, and shall be of usable space and condition. If determined on a gross-area basis, three hundred square feet shall be allowed per vehicle.
- B. If the required parking space for a one-family or two-family dwelling is not provided in a covered garage, then such space ~~shall not be less than two hundred square feet, and~~ shall be so located and/or constructed that it may later be covered by a garage in accordance with the provisions of this title and the city building code.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.72.050 Parking spaces—Location.**

Off-street facilities shall be located as hereinafter specified. Where a distance is 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 one-family and two-family dwellings: on the home lot with the building they are required to serve;

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- B. For multiple dwellings: one hundred fifty feet;
  - C. For hospitals, sanitariums, homes for the aged, asylums, orphanages, club rooms, fraternity and sorority houses, as approved by city council.
  - D. For residential units in all zones except R-L, assigned parking in remote lots may be substituted for the required off-street parking if they are located within two hundred feet of the subject property, and a binding agreement is furnished to the city for review and approval under 17.72.070.

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

### **17.72.060 Parking spaces—Expanded or enlarged uses.**

Whenever any building is enlarged in height or in ground coverage, off-street parking shall be provided for expansion or enlargement, in accordance with the requirements of the schedule set out in Section 17.72.090; provided, however, that no parking space need be provided in the case of enlargement or expansion where the number of parking spaces required for such expansion or enlargement since the effective date of the ordinance codified in this title is less than ten percent of the parking space specified in the schedule for the building. Nothing in this provision shall be construed to require off-street parking spaces for the portion of such building existing as of September 12, 1973.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.72.070 Joint use—Authorized when.**

The city may authorize the joint use of parking facilities for the following uses or activities under the conditions specified:

- A. Up to fifty percent of the parking facilities required by this chapter for a theater, bowling alley, dancehall, restaurant, or other similar uses, may be supplied by the off-street parking provided by other "daytime" types of uses;
- B. Up to fifty percent of the off-street parking facilities required by this chapter for any "daytime" buildings or uses may be supplied by the parking facilities provided by uses herein referred to as "nighttime" uses;
- C. Up to one hundred percent of the parking facilities required by this chapter for a church or auditorium incidental to a public or parochial school may be supplied by the off-street parking facilities serving primarily "daytime" uses.
- D. Up to one hundred percent of the parking facilities required for residential uses in all zones except R-L, when the joint use facility serves primarily "daytime" uses.
- E. If the required amount of off-street parking has been proposed to be provided off-site, the applicant shall provide written contracts with affected landowners showing that required off-street parking is and will continue to be provided in a manner consistent with the provisions of this chapter. The contracts shall be reviewed by the city for compliance with this chapter, and if approved, the contracts shall be recorded with the county records and elections division as a deed restriction on the title to all applicable properties. These deed restrictions may not be revoked or modified without authorization by the city.

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

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**17.72.080 Joint use—Location and other conditions.**

- A. The building or use for which application is being made to utilize the off-street parking facilities provided by another building or use shall be demonstrated to the city to be within suitable walking distance for the nature of the use being served.
- B. The applicant shall show that there is no substantial conflict in the principal operating hours of the two buildings or uses for which joint use of off-street parking facilities is proposed.

(Ord. No. 2012-11-905, 11-26-2012)

**17.72.090 Number of spaces for designated uses.**

The following table sets out minimum standards for parking spaces:

Use	Spaces Required
Residential structures	2 for each dwelling unit unless otherwise specified; 1 for each ADU unless otherwise specified
Auto courts, motels	1 for each sleeping unit
Hospitals and institutions	1 for each 4 beds
Theaters	1 for each 4 seats except 1 for each 8 seats in excess of 800 seats
Churches, auditoriums and similar open assembly	1 for each 50 square feet of floor area for assembly not containing fixed seats
Stadiums, sports arenas, and similar open assembly	1 for each 6 seats and/or 1 for each 100 square feet of assembly space without fixed seats
Dancehalls	1 for each 50 square feet of gross floor area
Bowling alleys	6 for each alley
Medical and dental clinics	1 for each 150 square feet of gross floor area
Banks, business and professional offices with on-site customer service	1 for each 400 square feet of gross floor area
Offices not providing customer services on premises	1 for each 4 employees or 1 for each 800 square feet of gross floor area
Warehouse, storage and wholesale business	1 for each 2 employees
Food and beverage places with sale and consumption on premises	1 for each 200 square feet of gross floor area
Furniture, appliance, hardware, clothing, shoe, personal service stores	1 for each 600 square feet of gross floor area
Other retail stores	1 for each 300 square feet of floor area, or at a ratio of 1 inside to 1 outside

Manufacturing uses, research, testing, assembly, all industries	1 for each 2 employees on the maximum working shift and not less than 1 for each 800 square feet of gross floor area
Uses not specified	Determined by planning commission

(Ord. No. 2012-11-905, 11-26-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

## Chapter 17.73 COTTAGE INFILL PROJECTS

### 17.73.010 Location and purpose.

The cottage housing overlay shall be applicable in R-2 and R-3 zoning districts only. The general purposes of the cottage housing development design standards are as follows:

- A. A cottage housing development is provided for as an alternative type of detached housing comprised of small residences suited to accommodate a typical household of one or two individuals. Cottage housing is provided as part of the city's overall housing strategy which intends to encourage affordability, innovation and variety in housing design and site development while ensuring compatibility with existing neighborhoods, and to promote a variety of housing choices to meet the needs of a population diverse in age, income, household composition and individual needs.
- B. The cottage housing development design standards contained in this section are intended to create a permit path for small communities of cottage infill development where it can be oriented around open space in a manner that minimizes the visibility of off-street parking. These design standards are intended to ensure that cottage housing developments include pedestrian amenities and take advantage of existing natural features on the site including topography and vegetation. These same standards are intended to provide for traditional cottage amenities and to regulate proportions in order to ensure that cottage housing developments contribute to the overall community character.
- C. Cottage housing may allow higher residential density than is normally allowed in the underlying zone district. This increased density is possible through the use of smaller than average home sizes, clustered parking, and the application of overall site design standards applied via approval of a binding site plan that governs the long term use of master planned lots and structures as ownership may shift over time.
- D. Cottage housing developments are subject to special site plan review and conditional use permit approval criteria in addition to the special standards contained in this section.
- E. All cottage housing developments are subject to current city stormwater standards and shall incorporate stormwater low impact development techniques whenever possible.

(Ord. No. 2012-11-905, 11-26-2012)

### 17.73.020 Density and lot area.

Zoning District	R-2	R-3
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Maximum Cottage Density	1 cottage dwelling unit per 3,500 sf	1 cottage dwelling unit per 3,000 s.f.
Minimum number of cottages per cottage housing development	4	4
Maximum number of cottages per cottage housing development	10	12
Minimum size cottage infill site	21,000 sf (approx ½ acre)	14,000 sf (approx ⅓ acre)
<p>NOTE:  All density calculations shall follow procedure for computing net density from Section 17.74.040 MU-PUD permitted density computation. Every unit must be allotted a minimum of eight hundred square feet to accommodate the residential unit (private open space, storage).</p>		

(Ord. No. 2012-11-905, 11-26-2012)

**17.73.025 Existing nonconforming structures and accessory dwelling units.**

- A. On a lot to be used for a cottage housing development, an existing detached single-family residential structure, which may be nonconforming with respect to the standards of this chapter, shall be permitted to remain, but the extent of the nonconformity may not be increased. Such nonconforming dwelling units shall be included in the maximum permitted cottage density.

Nonconforming dwelling units may be modified to be more consistent with this chapter. For example, roof pitches may be increased consistent with the provisions of this chapter, but the building ground floor or total floor area may not be increased greater than permitted by WSMC 17.73.030.

- B. Accessory dwelling units (ADUs) must be permitted and approved as a part of the binding site plan covering the entire development in order to be allowed in a cottage housing developments. All residential units in a cottage housing development, including accessory dwelling units, count toward the maximum permitted density. An attached or detached ADU located on the same lot as a primary single-family structure may be counted as a cottage unit if the property is developed subject to the provisions of this chapter.

(Ord. No. 2012-11-905, 11-26-2012)

**17.73.030 Unit size.**

- A. Floor Area Allowances. To ensure that the overall size, including bulk and mass of cottage structures and cottage housing developments remain smaller and create less visual and physical impact than standard sized single-family dwellings that are required to be located on larger lots, the following floor area limitations shall apply to cottage housing. Two types of housing development are provided for to allow for a mixture of building sizes and footprints, while anticipating and addressing the varied impacts from each housing type.

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	Total Floor Area (square feet)	Ground Floor Area (square feet)	Upper Floor Area (square feet)	Garage Floor Area
Small	<900	400—800	60% of ground floor	Included in ground floor if attached
Large	>900 <1,400	600—900	60% of ground floor	Included in ground floor if attached

Floor area is measured to the outside wall on the ground floor including the stairs (building footprint). Floor area includes all upper floor area with a ceiling height of six feet or more not including the stairs which are counted as part of the ground floor.

Some units may be allowed to exceed the upper floor area ratio if the average of the upper floor areas for all cottages in a cluster does not exceed sixty percent of the ground floor areas in the cluster. Approval of this variation in the standard is not subject to variance criteria and does require a finding that the variation of the standard provides for design flexibility that improves the appearance of and spatial relationships between structures in the cottage cluster.

- B. A notice to the title of each unit shall prohibit any increase in the total floor area of any cottage or addition of accessory structures within the development unless the entire binding site plan is amended. Such notice shall be recorded with the Klickitat County Assessor's Office.

(Ord. No. 2012-11-905, 11-26-2012)

**17.73.040 Lot coverage.**

Lot coverage is limited to no more than forty-five percent impervious surface area. Impervious surfaces include driveways, building footprints, sidewalks, paved parking, compact gravel, and other surfaces that do not allow rain to percolate into the soil. NOTE: un-compacted gravel surfaces or pervious pavers may be demonstrated to be partially pervious using a professionally accepted methodology. If this calculation is prepared by the applicant's engineer and approved by the city public works director, the graveled or permeable paved surface shall be counted in the lot coverage figure in accordance with its relative permeability. e.g., If a graveled path is demonstrated to be fifteen percent permeable then eighty-five percent of the graveled path area would be counted in the impervious surface calculation. The purpose of this requirement is to help insure that surface and stormwater are contained on site.

Stormwater low impact development techniques that encourage the natural treatment and infiltration of stormwater to mimic pre-development site conditions shall also be employed. Examples of low impact development techniques include directing stormwater to landscape areas with amended soils or into improved drainage areas under porches or eaves, green or living roofs, the use of pervious pavers, and retention of existing mature trees. Aggressive employment of stormwater low impact development techniques may allow for additional lot coverage if an applicant develops a project design that demonstrates the ability to handle surface and stormwater in common areas without limiting the community or public benefits of the established common areas. Private areas may also be relied on for stormwater infiltration if determined to be adequately protected by easement to ensure the continued availability of these areas as infiltration areas.

An on-site stormwater analysis shall be performed by a qualified, Washington licensed professional engineer, considering at a minimum a twenty-five year storm event of fifteen minutes duration. The stormwater control plan

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shall be approved by the director of public works and shall provide for the onsite collection, containment and release of stormwater such that it will not have a deleterious impact to other properties, public or private. All improvements shall be inspected by the public works director prior to completion. the applicant's licensed engineer shall provide a minimum of two sets of infrastructure 'as built' drawings and confirm that all stormwater infrastructure was constructed as per approved design.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.73.050 Open space.**

- A. Common open space. Common open space is intended to provide a centrally located area that can be developed and maintained so it is usable for active and passive recreation. Unless the shape or topography of the site precludes the ability to locate units adjacent to common open space, the following requirements shall be met:
1. There shall be a minimum of four hundred square feet of common open space provided for each unit.
  2. Common open space shall abut at least fifty percent of the cottages in a cottage housing development.
  3. Common open space shall have cottages abutting on at least two sides, and be easily accessible to all dwellings within the development.
  4. Common open space shall not include portions of private yards, and shall be jointly owned by all residents.
  5. The common open space shall be outside of wetlands, streams and sensitive area buffers, and shall be on slopes of twelve percent or less.
  6. Landscaping located in common open space shall be designed to allow for easy access and use of the space by all residents, and to facilitate maintenance needs. Where feasible; existing mature trees should be retained.
- B. Private open space. Private open space is intended to provide private areas around the individual cottages and to enable diversity in landscape design. Private open space shall be subject to the following requirements:
1. There shall be a minimum of three hundred square feet of contiguous, usable private open space provided adjacent to each unit for the exclusive use of the cottage resident.
  2. The main entry of the cottages shall be oriented toward the common open space as much as possible.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.73.060 Building separation.**

All units shall maintain ten feet of separation between vertical exterior walls, except that eaves and architectural projections such as balconies may encroach up to a maximum of eighteen inches.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.73.070 Setbacks.**

The emphasis of cottage development is to provide for development that focuses on and benefits from useful common areas. For this reason peripheral set backs (generally the side and rear yard areas) may be

minimized to allow for a more useful yard area (generally the front yard) oriented to benefit from common area, open space and facilities.

- A. Cottage dwellings and their accessory structures must meet setbacks or yard requirements for single family detached development in the zone in which they are located with respect to the outside perimeter of the planned cottage development.
- B. Setback averaging may be used to meet the front or rear yard setback from the outer perimeter of the planned cottage development but front and rear yard setbacks shall not be less than ten feet from the outer perimeter of the cottage development.
- C. Cottage dwellings and their accessory structures must meet the following set backs from lot lines through the interior of the cottage development:

Setback/Yard Area	Dimension
Primary Yard (typically front, back, or corner side)	10 feet*
Peripheral Yards (the three sides not included in the primary yard)	5 feet*

\* Set backs assume parking takes place in a separate parking area. A minimum eighteen-foot driveway length shall be maintained inside of curb and sidewalk if a drive way curb cut is provided for parking immediately adjacent to a cottage dwelling. This shall be done to eliminate the parking of vehicles on or over curbs or sidewalks and may require deeper yard areas than the minimums provided.

- D. Extensions of small storage or accessory structures into a peripheral setback may be approved as long as the extension does not exceed one hundred twenty square feet and the resulting building configuration is acceptable to the fire chief and is designed and constructed in accordance with all applicable fire codes.

(Ord. No. 2012-11-905, 11-26-2012)

### 17.73.080 Building height.

Standard height limit for cottage dwellings and accessory structures shall be twenty feet. Cottage dwellings having a minimum roof pitch of 6:12 may be permitted a maximum height of twenty-eight feet at a minimum of ten feet from any property line. The twenty-eight-foot allowance will accommodate a second story living area partially under roofline and dormers. Cottage heights shall be measured from the average grade along each side of the structure to the top of roof.

(Ord. No. 2012-11-905, 11-26-2012)

### 17.73.090 Parking and covered storage.

- A. Parking requirements are dependent on size of cottage dwelling units and whether or not street designs accommodate on street parking within the cottage development.

	Dedicated	Total
Small (<900 s.f.)	1	<del>1.5</del> <u>1</u>

Large (<1,400 s.f.)	1	2
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- B. Parking location and screening shall be designed to accomplish the following:
1. Ensure minimal visual impact to residents surrounding the cottage development. Screening may be accomplished by covering parking with a structure compatible with residential use (e.g., parking under pitched roof structure or under carriage house or studio/workshop area) or by relying on grading and landscaping.
  2. Occupy the cottage development site.
  3. Be grouped to correspond with cottage clusters and avoid single large parking areas that are difficult to screen from view.
  4. Locate to the side or rear of the site where parking areas are less visible and clustered to limit curb cuts and need for impervious surface.
  5. Covered storage must be provided for cottage development when covered parking is not provided.
  6. On street parking shall be provided for around the perimeter of the cottage development where feasible unless the city agrees to increase off street parking requirements in lieu of provision for on street parking.
- C. Shared detached garage structures:
1. Shared carports or garages shall be limited to a maximum of four stalls per structure and shall be detached from the dwelling units.
  2. The design of carports, garages and community buildings must include roof lines similar and compatible to that of the dwelling units within the development.
  3. Shall be reserved for the parking of vehicles owned by the residents of the development. Storage of items which preclude the use of the parking spaces for vehicles is prohibited.

(Ord. No. 2012-11-905, 11-26-2012)

### 17.73.100 Design guidelines.

- A. Site Design.
1. The common open space shall be centrally located within a cottage housing development.
  2. Where feasible, each dwelling unit that abuts a common open space shall have a primary entry and/or covered porch oriented toward common open space.
  3. Pedestrian connections should link all buildings to the public rights-of-way, common open space and parking areas.
  - [4.] Exterior lighting shall be minimized and may be allowed if shielded or hooded and directed downward so as to light only the intended area without shining into a neighboring house or business. All lighting shall be included on the site plan required with to complete a submittal.
  - [5.] Exterior heating or cooling facilities shall be designed and sited to minimize the noise and visual impacts they can have on a site.



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[6.] If streets within the PUD are determined to be low volume local roads and emergency vehicle access and safety and traffic flow issues are addressed, then alternate street standards may be deemed acceptable if approved by the public works director. The possibility of flexibility in internal street design standards shall be considered initially in a preapplication conference prior to completing an application. Notwithstanding, private streets shall have a minimum improved width of ten feet for each lane of traffic for a two way street and fourteen feet for a one way street, not to include street parking.

B. Building Design.

1. Roofs of cottages shall be pitched and eave depths shall be a minimum of eighteen inches.
2. Covered porches measuring at least sixty square feet shall be incorporated into building design of the cottages.
3. Window and door trim with a minimum of three and one-half inches shall be provided on all cottage units.

C. Community Buildings.

1. Community buildings or space shall be clearly incidental in use and size to the dwelling units.
2. Building height for community buildings shall be no more than one story. Where the community space is located above another common structure, such as a detached garage or storage building, standard building heights apply.
3. Community buildings must be located on the same site as the cottage housing development, and be commonly owned by the residents.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.73.110 Alternative cottage housing development designs.**

The cottage housing infill chapter is created to support design innovation and in-fill development. Design standards and approval criteria provide essential guidance to applicants and administrators but not every circumstance can be anticipated in the drafting of standards and criteria. The city recognizes that cottage infill can be designed in alternate ways and still achieve the overall objectives of this chapter. An applicant may request a variation to specific standards during development review. A specific request for variation within a cottage is not subject to variance criteria. Approval of a specific variation can only be granted with findings that the specific variation requested provides for an equal or better way to meet the purpose of the written standard.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.73.120 Neighborhood meeting required.**

Any Cottage Infill Development application requires a specially noticed neighborhood meeting to be held and documented prior to completion of the development application and before any public hearing is scheduled. Such meeting shall comply with Section 17.74.120 - Special use - neighborhood meeting requirements.

(Ord. No. 2012-11-905, 11-26-2012)

## **Chapter 17.74 MIXED USE PLANNED UNIT DEVELOPMENT (MU-PUD)**

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### **17.74.010 Purpose.**

The purpose of this chapter is to provide regulations and procedures to guide mixed use planned unit development in order to:

- A. Provide flexibility for development (including infill development) in mixed use areas;
- B. Support implementation of innovative plans that address transitions between residential and commercial uses;
- C. Allow for varied, compatible housing and commercial uses to coexist;
- D. Ensure efficient and adequate provision/extension of services in areas where both commercial and residential uses are permitted while addressing anticipated increased demands for services;
- E. Provide opportunities for households of various sizes, ages, and incomes to live in a neighborhood by promoting diversity in the size, type and price of new development in the city;
- F. Provide for live/work opportunities in mixed commercial/residential areas to create or maintain neighborhood character; particularly in neighborhoods having a predominance of small to moderately sized dwelling units, located close to shopping and other community services;
- G. Provide appealing streetscapes that reduce vehicle use and promote foot traffic to strengthen communities and support businesses by enhancing the local customer base;
- H. Facilitate efficient use of land through the application of flexible standards and maximize opportunities for innovative and diversified living environments through creative placement of structures, open space and access ways;
- I. Preserve existing landscape features including established trees through the use of a planning procedure that considers particular site characteristics;
- J. Encourage provision of affordability options.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.74.020 Permitted uses in a MU-PUD.**

Uses listed in each underlying zone within the project area may be permitted in the MU-PUD. Different uses must interface in a compatible manner. Special uses are permitted subject to specific development criteria.

- A. Permitted uses include:
  - 1. Mixed commercial and residential uses including attached residential uses above and below commercial in commercial areas;
  - 2. Varied single and multifamily residential in residential areas;
- B. Special uses include:
  - 1. Cottage development on smaller lots; and
  - 2. Accessory dwellings.

(Ord. No. 2012-11-905, 11-26-2012)

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### **17.74.030 Permitted modifications and conditions of approval.**

- A. Mixed use planned unit developments allowing for master planned mixed uses may be permitted to modify the zoning and subdivision requirements of Title 16 and the balance of Title 17 if consistent with the purposes expressed in Section 17.74.010 and the other applicable requirements of this chapter, except:
  - 1. Exterior setbacks from public streets along the perimeter of the MU-PUD unless set back averaging is requested and approved as shown on a preliminary plat and implemented in accordance with the binding site plan;
  - 2. Surveying standards;
  - 3. Engineering design and construction standards of public improvements (not including street right-of-way width and street development standards); and
  - 4. Stormwater and erosion control standards.
- B. Modifications of setbacks and other standards in the underlying zones must be shown clearly on a binding site plan.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.74.040 MU-PUD development standards.**

- A. Size and Permitted Location of MU-PUD. A mixed use planned unit development (MU-PUD) may only be permitted if:
  - 1. The subject lot or tract of land greater than or equal to two contiguous acres;
  - 2. The subject lot or tract includes two or more zoning districts allowing for both residential and commercial uses.
- B. Permitted Density.
  - 1. The number of single-family dwelling units permitted in a MU-PUD may be increased above the number permitted in the applicable zone as follows:
    - a. R-1 detached single-family residential district density may be increased to one hundred twenty-five percent of the single-family density permitted in the underlying zone.
    - b. R-2 two-family residential district may be increased to one hundred fifty percent of the detached single-family density permitted in the underlying zone.
    - c. MHR-mobile home residential zones may be increased to one hundred fifty percent of the detached single-family density permitted in the R-2 zone.
    - d. R-3 multifamily residential district may be increased to two hundred percent of the detached single-family density permitted in the underlying zone.
  - 2. The permitted density shall be computed to reflect net density as follows:
    - a. Determine the gross development area-subtract from the total site area all land unsuitable for development e.g., wetland, flood hazard areas, steep or unstable slopes, publicly owned land, and industrial area.
    - b. Determine the net development area-subtract from the gross development area the actual percentage of area devoted to the street system to a maximum of twenty percent of the gross development area.

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- c. Determine the permitted density-divide the net development area by the minimum single-family lot size of the zone district.
      - d. Determine maximum increased density-multiply the resulting number of units by 1.25 in R-1, 1.50 in R-2 or MHR, or 2.0 in R-3 zones rounded to the next lowest full integer.
    3. The average lot size of single-family dwellings and townhouses in the MU-PUD shall not be less than:
      - a. Sixty-five percent of the minimum single-family lot size for the district in the R-1 single-family residential district
      - b. Fifty percent of the minimum single-family lot size for the district in the R-2 two-family residential district
      - c. Fifty percent of the minimum single-family lot size for the R-2 two-family residential district in the MHR zone.
      - d. Forty percent of the minimum single-family lot size for the district in the R-3 multifamily residential district
    4. Density bonus of up to twenty percent over enhanced MU-PUD density permitted by subsection B of this section, may be allowed for provision of affordable housing for low and moderate income families (those who have family income of not more than sixty percent of Klickitat County median household income), with appropriate recorded covenants, conditions and restrictions (CC&Rs) which define such affordable housing as follows and require that the housing remain affordable. For the purpose of this chapter, such affordable housing is defined as residential housing for home ownership where the occupants pay no more than thirty percent of said gross family income for total housing costs, including utilities other than telephone and cable/satellite television.
    5. Protection of Trees. Master planning a larger site provides the opportunity to maintain some valuable native vegetation. A tree inventory shall be completed and submitted with the preliminary master plan. Native trees measuring eight inch caliper or greater measured four feet from ground level (dbh) shall be shown on the inventory and clearly identified for preservation or removal. Large native trees should be preserved wherever practicable in the common areas. Where the decision maker determines it is impracticable or unsafe to preserve these trees, the applicant may be allowed to remove the trees.

If the developer determines it is necessary to remove more than half the large native trees shown on the site inventory, the developer can be permitted to do so as long as the trees removed are replaced by new native trees in accordance with an approved landscape plan that includes new plantings at least two inches to two and one-half inches in caliper.

Where this requirement would cause an undue hardship, the requirement may be modified in a manner which reasonably satisfies the purpose and intent of this section. Conditions may be imposed to avoid disturbance to tree roots by grading activities and to protect trees and other significant vegetation identified for retention from harm. Such conditions may include, if necessary, the advisory expertise of a qualified consulting arborist or horticulturist both during and after site preparation, and a special maintenance/management program to provide protection to the resource as recommended by the arborist or horticulturist.

C. Dimensional and Improvement Requirements.

1. Building setbacks and heights may be modified in accordance with approval of a binding site plan with the following exceptions:
  - a. Single- and multifamily dwellings must meet setbacks and height limits required in the zone in which they are located with respect to the outside perimeter of the MU-PUD.

- b. Setback averaging will be allowed from internal lot lines and may be allowed from external lot lines where adjoining parcels are zoned commercial or where setback averaging is determined to improve the traffic safety and flow, streetscape and/or be compatible with surrounding uses.
- c. Standard building setbacks from lot lines through the interior of the MU-PUD shall be:

Setback	Dimension
Front and rear	10 feet*
Side	5 feet (except town house common walls)
Side (corner)	10 feet

\* A minimum eighteen foot driveway length shall be maintained inside of curb and sidewalk where a driveway curb cut is provided. This shall be done to eliminate the parking of vehicles on or over curbs or sidewalks.

- 2. Street width, street alignment, ROW width, and other street design standards shall comply with the subdivision ordinance unless access routes through the MU-PUD are to serve primarily low volume local traffic. Low volume would be less than four hundred average daily trips. Local road means a road primarily serving a destination in or adjacent to the proposed development and not collecting traffic from other local roads or transporting through traffic. (American Association of State Highway and Transportation Officials, Guidelines for Geometric Design of Very Low Volume Roads, 2005 as hereafter amended.)

If streets within the MU-PUD are determined to be low volume local roads and emergency vehicle access and safety and traffic flow issues are addressed, then alternate street standards may be deemed acceptable if approved by the public works director. The possibility of flexibility in street design standards shall be considered initially in a preapplication conference prior to completing an application. Notwithstanding, private streets shall have a minimum improved width of ten feet for each lane of traffic for a two way street and fourteen feet for a one way street, not to include street parking.

- 3. Engineering design and construction standards for all other public improvements, such as water, sewer, on site stormwater retention, etc., will not be modified for MU-PUDs.
- 4. Off-street parking shall be provided in accordance with the requirements of the zone in which the development is located. Additional off street parking may be required in lieu of on street parking if street widths are decreased to preclude on street parking. Shared parking with commercial establishments may be accepted to meet additional residential parking requirements or to decrease off-street parking requirements if commercial parking can be demonstrated to adequately serve residential development and vice versa.

D. Homeowners Association, Common Facilities, Open Space, Roads, Easements.

- 1. In any MU-PUD twenty percent of the net development area shall be established, maintained and preserved as open space and community facilities by the landowner until such obligations are vested in the MU-PUD homeowners' association pursuant to RCW Chapter 64.38 and this chapter. The landowner shall establish a Washington nonprofit corporation for the MU-PUD homeowners' association. Within three years of MU-PUD approval, ownership and maintenance of all open space, common areas and common facilities shall be vested in the homeowners' association. Common area or amenities established by easement over private lots, may be considered part of the open space and community facility calculation if such easements provide continuing irrevocable community benefits. Articles and bylaws of the homeowners' association and CC&Rs in a form acceptable to the city attorney shall be recorded with the county auditor and shall be binding on all heirs, successors and transferees of landowner, guaranteeing the following:

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- a. The continued use of such land consistent with the MU-PUD approval;
  - b. Continuity of maintenance of roads, landscaping, irrigation, public facilities and open space;
  - c. Availability of funds required for such maintenance;
  - d. Adequate insurance protection of community facilities; and
  - e. That all conditions of MU-PUD approval continue to be met and maintained.
2. Open space provided in the MU-PUD shall be planned to provide for connectivity with and enhancement of other public improvements, park lands, natural areas or community amenities. Open space means an area intended for common use and shall be designed for outdoor living and recreation or the retention of an area in its natural state. Open space may include swimming pools, recreation courts, gazebos and patios, open landscaped areas and community gardens, and green belts with pedestrian and bicycle trails. Open space does not include off street parking or loading areas.
  3. Direction to Plant Natives. Planting plans for common areas shall be developed with a predominance of drought tolerant and native vegetation. Owners of independently owned parcels are encouraged to plant natives. Planting of native and drought tolerant species in the common areas is required as a means to decrease water demands for irrigation and increase the survivability of selected plant materials.
  4. Landowner shall be required to grant appropriate easements to the city for repair, replacement and maintenance of city utilities and services installed within the MU-PUD.
  5. At the option of the city or applicant, conditions of approval and other standards can be addressed through a development agreement pursuant to RCW Chapter 36.70B in lieu of or in conjunction with CC&Rs.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.74.050 MU-PUD approval criteria.**

An applicant for a MU-PUD has the burden of proving, by a preponderance of the evidence that:

- A. All applicable standards have been met, modified or can be adequately addressed by conditions of approval;
- B. The master plan uses an innovative approach to meet the purposes stated in Section 17.74.010, e.g., it integrates mixed commercial and residential uses, provides community and public benefits, protects existing natural resources, and provides adequate and efficient public services and utilities;
- C. The streets, buildings, open space, public facilities and landscaping are designed and located to preserve existing trees, topography and natural drainage;
- D. Structures located on the site are located on ground that is not subject to instability;
- E. Public services will not be over burdened by the proposed development:
  1. The MU-PUD plan shall provide direct access to collector or through streets or demonstrate that minor or local streets have the capacity to carry increased traffic to collector or through streets.
  2. The applicant shall work with the director of public works and/or city engineer to confirm adequacy of water, sanitary sewer, on site surface/stormwater, and all other utilities. If improvements are determined necessary to accommodate increased demand, improvements will be made at the developer's expense or the city and developer may enter into a development agreement pursuant to RCW 36.70B.170(4) and other relevant provisions of RCW Chapter

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36.70B. All utilities shall be constructed to city approved standards of design, consistent with accepted engineering practices. All utilities shall be underground only.

3. An applicant shall submit proof of adequacy of services including but not limited to: fire and police protection, schools, health care.
- F. Incorporation of Existing Dwelling(s) can be Accommodated in a MU-PUD. An existing detached or attached single-family dwelling that is incorporated into a mixed use MU-PUD as a residence and is nonconforming, with respect to the standards of the general MU-PUD or special use sections, shall be permitted to remain on a MU-PUD site. Noncompliance of the structure may not be increased unless the proposed change is determined by the city to be consistent in character, scale and design with the MU-PUD as controlled by the binding site plan. If an existing dwelling is retained it is counted as a standard single-family dwelling for density calculations unless it complies with the size requirements to be counted as a special use cottage or accessory dwelling.

(Ord. No. 2012-11-905, 11-26-2012)

### **17.74.060 Submittal requirements and review procedures.**

- A. A MU-PUD application shall be reviewed as a subdivision application subject to Title 16 and site plan review pursuant to [Chapter 17.81]. A pre-submission conference pursuant to Section [18.10.115] will help identify application requirements.
- B. Applicant shall comply with [Title 16] and include the following additional tabular data and mapped items:
  1. Existing zoning;
  2. Total site area;
  3. Gross project area;
  4. Net project area;
  5. Total number of dwelling units proposed;
  6. Total square feet of commercial area proposed;
  7. Residential density calculation;
  8. Open space, common area, and facilities calculation;
  9. General description of natural setting and/or aerial and other photos of the site;
  10. Proposed development schedule and any plans to phase development;
  11. Resulting type of ownership, plans to rent [or] sell and type of ownership planned for common areas;
  12. Site maps with graphic scale and north arrow, and topography shown at five-foot intervals, water bodies, critical areas, and important natural features including rock outcroppings, steep slopes, and flood hazard areas;
  13. Location and function of all buildings, including heights, nearest setbacks and closest distance between structures;
  14. Location and measurement, where applicable, of other proposed improvements;
  15. Preliminary landscape diagram identifying use areas, general types of landscape treatment, and areas of irrigated versus drought tolerant vegetation;

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16. Tree survey indicating location of all native trees measuring eight-inch caliper or greater measured four feet from ground and identifying inventoried trees to be removed and to be protected;
  17. Preliminary grading plan showing areas of substantial grading or recontouring;
  18. Any additional information required by staff and planning commission as necessary to evaluate the character and impact of the proposed MU-PUD development;
  19. Initial lighting diagram indicating areas of the site to be lighted at night and a qualitative discussion of the type of lighting planned for those areas;
  20. Record of neighborhood meeting, if required;
  21. Standards which applicant requests be modified and reasons for the modification; and
  22. Applicant's proposed conditions of approval.
- C. If the proposed site is within shoreline management jurisdiction an application for shoreline substantial development permit along with any other permits required, such as a flood plain permit or other local, state, or federal permits shall be filed.
  - D. An environmental checklist shall be completed.
  - E. A completed application shall be evaluated by staff, including emergency personnel, and it shall be reviewed at a public hearing held by the planning commission. If an environmental impact statement is required the final EIS shall be available for at least ten days before the hearing on the proposal.
  - F. Site Grading and Clearing. Grading and site clearing in preparation for planned development shall not commence prior to approval of a preliminary master plan. This requirement is necessary to ensure that all necessary erosion control measures are in place prior to disturbance and is intended to limit disturbance to that necessary to accommodate the approved planned development.
  - G. Planning commission recommendation shall be forwarded to the city council for review on the record. City staff and the applicant shall be available. Staff may provide supplemental information and to respond to questions from the city council. The city council may approve the preliminary plat with some or all of the planning commission's recommended conditions, and may impose additional conditions. The city council may remand the application to the planning commission to address specific articulated concerns of the city council and/or the council's proposed changes to the preliminary plat and/or conditions. The council may deny the application upon findings of noncompliance with applicable standards. The city council may direct staff or the city attorney to draft proposed form of findings and decision for review and consideration as specified at regularly scheduled council meeting not more than six weeks hence.
  - H. If the preliminary plat is approved, the applicant shall have three years to submit the binding site plan in accordance with [Chapter 16.15]. If a binding site plan cannot be recorded within three years, the applicant shall make written request for extension prior to the close of the three year recording period, and may be granted an additional year upon demonstration of good faith effort to file the site plan. Evaluation of requested extensions will include consideration of whether land use regulations affecting the application have changed since the decision was originally made.
  - I. If the development is phased the final binding site plans and plat for each phase may be reviewed independently in accordance with the approved time frame.
  - J. A binding site plan of a MU-PUD and all accompanying documents, together with CC&Rs approved by the city attorney, binding the site to development in accordance with all the terms and conditions of approval shall be recorded by the county auditor, at the applicant's expense.

(Ord. No. 2012-11-905, 11-26-2012)



**17.74.070 MU-PUD application costs/compliance required before building permits.**

A MU-PUD applicant shall pay for all costs incurred by the city in processing the MU-PUD application including legal, engineering and planning costs. In addition, the city may require engineering or transportation studies or plans which shall be provided at applicant's expense. No building permits shall be issued until all such fees have been paid and all approval requirements and conditions have been satisfied. An initial deposit to cover estimated costs shall be paid by applicant prior to the city's processing of the MU-PUD application.

(Ord. No. 2012-11-905, 11-26-2012)

**17.74.080 Special use—Cottage dwellings within mixed use MU-PUD.**

Smaller housing units on smaller lots (cottage development) within a mixed use planned unit development are a special use, subject to the following site and structural requirements.

- A. Purpose. The purpose of this section is to:
  1. Provide opportunities for ownership of small, detached dwelling units within a mixed use planned unit development close to or in a commercial area;
  2. Encourage creation of more usable open space for residents and businesses in the development through flexibility in density and lot standards;
  3. Further the goal of efficient use of urban residential land and public facilities; and
  4. Provide guidelines to ensure compatibility with surrounding land uses.
- B. Special Site Requirements for Cottage Dwellings. The site requirements applicable to cottage development within a MU-PUD are intended to define design parameters of cottages to achieve compatibility with existing and permitted adjacent uses. Density increases and design standards applicable to cottage development are only applicable in that portion of the MU-PUD that accommodates cottages.
  1. Floor Area Allowances. To ensure that the overall size, including bulk and mass of cottage structures and cottage housing developments remain smaller and create less visual and physical impact than standard sized single-family dwellings that are required to be located on larger lots, the following floor area limitations shall apply to cottage housing. Two types of housing development are provided for to allow for a mixture of building sizes and footprints, while anticipating and addressing the varied impacts from each housing type.

	Total Floor Area (square feet)	Ground Floor Area (square feet)	Upper Floor Area (square feet)	Garage Floor Area
Small	<900	400—800	60% of ground floor	Included in ground floor if attached
Large	>900 <1,200	600—900	60% of ground floor	Included in ground floor if attached

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Floor area is measured to the outside wall on the ground floor including the stairs (building footprint). Floor area includes all upper floor area with a ceiling height of six feet or more not including the stairs which are counted as part of the ground floor.

Some units may be allowed to exceed the upper floor area ratio if the average of the upper floor areas for all cottages in a cluster does not exceed sixty percent of the ground floor areas in the cluster. Approval of this variation in the standard is not subject to variance criteria and does require a finding that the variation of the standard provides for design flexibility that improves the appearance of and spatial relationships between structures in the cottage cluster.

2. Lot Coverage and On Site Stormwater Development Techniques. Lot coverage is limited to no more than forty-five percent impervious surface area. Impervious surfaces include driveways, building footprints, sidewalks, paved parking, compact gravel, and other surfaces that do not allow rain to percolate into the soil. NOTE: un-compacted gravel surfaces or pervious pavers may be demonstrated to be partially pervious using a professionally accepted methodology. If this calculation is prepared by the applicant's engineer and approved by the city public works director, the graveled or permeable paved surface shall be counted in the lot coverage figure in accordance with its relative permeability, e.g., if a graveled path is demonstrated to be fifteen percent permeable then eighty-five percent of the graveled path area would be counted in the impervious surface calculation. The purpose of this requirement is to help insure that surface and stormwater are contained on site.

Stormwater low impact development techniques that encourage the natural treatment and infiltration of stormwater to mimic pre-development site conditions shall also be employed. Examples of low impact development techniques include directing stormwater to landscape areas with amended soils or into improved drainage areas under porches or eaves, green or living roofs, the use of pervious pavers, and retention of existing mature trees. Aggressive employment of stormwater low impact development techniques may allow for additional lot coverage if an applicant develops a project design that demonstrates the ability to handle surface and stormwater in common areas without limiting the community or public benefits of the established common areas. Private areas may also be relied on for stormwater infiltration if determined to be adequately protected by easement to ensure the continued availability of these areas as infiltration areas.

An on-site stormwater analysis shall be performed by a qualified, Washington licensed professional engineer, considering at a minimum a twenty-five year storm event of fifteen minutes duration. The stormwater control plan shall be approved by the director of public works and shall provide for the on site collection, containment and release of stormwater such that it will not have a deleterious impact to other properties, public or private. All improvements shall be inspected by the public works director prior to completion. The applicant's licensed engineer shall provide a minimum of two sets of infrastructure "as built" drawings and confirm that all stormwater infrastructure was constructed as per approved design.

3. Cluster Sizes. A minimum of four and a maximum of ten cottage units clustered and focused on a shared common area must be developed to use cottage development density and standards.

More than a single ten unit cluster may be permitted under cottage development standards but separate points of focus (e.g., common areas, parking facilities, meeting rooms or recreational elements) must be provided for each cluster. Special setbacks or buffer areas may be required between clusters if deemed necessary to insure compatibility with surrounding development or adequate separation of cluster communities.

4. Heights. To insure heights are in scale with smaller lots and smaller structures allowed in a cottage development the following height limits shall be employed. Standard height limit for cottage dwellings and accessory structures shall be eighteen feet. Cottage dwellings having a minimum roof pitch of 6:12 may be permitted a maximum height of twenty-five feet to allow second story living area partially under roofline and dormers.

Cottage heights shall be measured from the average grade along each side of the structure to the top of roof. A small portion of a cottage may be allowed to exceed cottage height limits up to the height limit allowed in the underlying zone or twenty-eight feet whichever is less. This allowance may be allowed for an area of the structure not to exceed fifteen percent of the building footprint

5. Common Areas, Open Space and Facilities. Common area shall be provided in accordance with the general MU-PUD requirements (this section). Densities allowed through cottage development require that common areas provide some of the amenities and open area that would be provided for on individual lots in standard single-family developments. In addition to the requirements for a general MU-PUD; common areas, open space and facilities, in cottage developments shall be located to provide shared focal points and amenities for each cottage development cluster.
6. Max Densities in Cottage Clusters. The number of dwelling units permitted in a cottage development cluster within a MU-PUD may be increased above the permitted single-family density as follows:
  - a. R-2 two-family residential zone may be increased to two hundred percent of the single-family density permitted in the underlying zone.
  - b. RMH-residential mobile home zone may be increased to two hundred percent of the single-family density in the R-2 zone.
  - c. R-3 multifamily residential zone may be increased to two hundred twenty-five percent of the single-family density permitted in the underlying zone.

NOTE: Minimum lot sizes for cottage development will be minimized. The minimum lot sizes will be the product of compliance with all other standards and criteria applicable to the cottage development as a special use within a MU-PUD.

7. Setbacks. The emphasis of cottage development is to provide for development that focuses on and benefits from useful common areas. For this reason peripheral setbacks (generally the side and rear yard areas) may be minimized to allow for a more useful yard area (generally the front yard) oriented to benefit from common area, open space and facilities.
  - a. Cottage dwellings and their accessory structures must meet setbacks or yard requirements for single-family detached development in the zone in which they are located with respect to the outside perimeter of the MU-PUD.
  - b. Setback averaging may be used to meet the front or rear yard setback from the outer perimeter of the MU-PUD but front and rear yard setbacks shall not be less than ten feet from the outer perimeter of the MU-PUD.
  - c. Cottage dwellings and their accessory structures must meet the following set backs from lot lines through the interior of the MU-PUD:

Setback/Yard Area	Dimension
Primary yard (typically front, back, or corner side)	10 feet*
Peripheral yards (the three sides not included in the primary yard)	5 feet*

\* Setbacks assume parking takes place in a separate parking area. A minimum eighteen foot driveway length shall be maintained inside of curb and sidewalk if a driveway curb cut is provided

for parking immediately adjacent to a cottage dwelling. This shall be done to eliminate the parking of vehicles on or over curbs or sidewalks and may require deeper yard areas than the minimums provided.

- d. Extensions of small storage or accessory structures into a peripheral setback may be approved as long as the extension does not exceed one hundred twenty square feet and the resulting building configuration is acceptable to the fire chief and is designed and constructed in accordance with all applicable fire codes.
8. Parking and Covered Storage. Parking requirements are dependent on size of cottage dwelling units and whether or not street designs accommodate on street parking within the cottage development.

	Dedicated	Total
Small (≤900 s.f.)	1	<del>1</del> 1
Large (≤1,200 s.f.)	1	2

- a. The use of primarily commercial parking spaces within the cottage development to meet both commercial and residential parking requirements will be considered. If reasonable shared parking is available it may be allowed to substitute for undedicated parking requirements. The proximity of commercial parking within the cottage development to the locations served and likely timing of demand for shared parking spaces and availability of other on street parking within the cottage development will be considered.
- b. Parking location and screening shall be designed to accomplish the following:
  - i. Ensure minimal visual impact to residents surrounding and within the MU-PUD. Screening may be accomplished by covering parking with a structure compatible with residential use (e.g., parking under pitched roof structure or under carriage house or studio/workshop area) or by relying on grading and landscaping;
  - ii. Occupy the MU-PUD development site;
  - iii. Be grouped to correspond with cottage clusters and avoid single large parking areas that are difficult to screen from view;
  - iv. Avoid locating around the perimeter of the MU-PUD where parking areas are visible and out of character with surrounding residential development;
  - v. Covered storage must be provided for cottage development when covered parking is not provided.

(Ord. No. 2012-11-905, 11-26-2012)

**17.74.090 Special use—Accessory dwelling units in a mixed use MU-PUD.**

Accessory dwelling units (ADUs) include habitable living units provided in conjunction with a primary dwelling and meeting the basic requirements of shelter, heating, cooking and sanitation.

- A. Purpose:
  - 1. Provide homeowners with a means of obtaining through tenants in either the ADU or principal unit, rental income, companionship, security, and services.

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2. Add affordability options to the existing housing base.
  3. Allow for development of housing units in mixed use MU-PUDs that are appropriate for people at a variety of life stages.
  4. Protect neighborhood stability, property values, and the single-family residential appearance of the community by ensuring ADUs are installed under conditions of this ordinance.

B. Approval Criteria for ADUs.

1. The design and size of an ADU shall conform to all applicable building code standards and is subject to all structural permit requirements for a dwelling. Any modification of structural codes necessary to accomplish construction of an ADU must be granted by the building official responsible for structural review in the city.
2. The ADU shall not exceed forty percent of the primary dwelling's floor area, nor more than eight hundred square feet.
3. A maximum of two bedrooms may be provided in an ADU.
4. An ADU may be developed in either an existing or new residence.
5. A maximum of one ADU per regularly permitted detached single-family dwelling may be permitted. Lots reserving the right to add accessory dwelling units must be identified when the MU-PUD preliminary plan is submitted. For example: if the base zoning would allow five detached single-family dwellings at the development site, but the MU-PUD would allow for ten, only five ADUs may be developed. The lots reserving the five rights to develop an ADU must reserve that right through site plan review as recorded on the binding site plan. Construction of the ADU may be deferred until a later date after the MU-PUD has been completed and lots sold.
6. Cottage development lots are not eligible for ADUs based on the minimal size of the individually owned parcels.
7. Applicant must be able to demonstrate adequate public facilities to accommodate the projected number of residents.
8. Any additions to an existing building shall not exceed the allowable lot coverage or encroach into existing setbacks.
9. The ADU may be attached to or detached from the primary dwelling and must be designed to retain the appearance of a single residence to the greatest degree possible.
10. The property owner must occupy either the primary dwelling or the ADU as their permanent residence for at least six months of any calendar year. The CC&Rs will specify that rent may be received only for the unit not occupied by the owner and must be verified by the city clerk-treasurer with a one-year lease signed by the owner and renter.
11. One off street parking space, or the potential to create a parking space when the ADU is developed, must be provided for on the binding site plan. This parking space is in addition to spaces required for primary resident(s).
12. To encourage development of housing for people with disabilities, the city may allow reasonable deviation from the stated requirements to accommodate features required to achieve accessibility in an ADU. Such accommodations shall be provided in accordance with the International Building Code (IBC).

C. Review Process for ADUs in a Mixed Use MU-PUD.

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1. The right to construct an ADU shall be requested with submittal of the preliminary plan and recorded on the final binding site plan.
  2. Building permits are required for ADUs. If the ADU is not constructed during the development of the MU-PUD, the building permit applicant will be required to demonstrate compliance with the above standards prior to receiving land use approval on a building permit.
  3. A letter of application must be received from the owner(s) stating that the owner(s) shall occupy one of the dwelling units on the premises, except for bona fide temporary absences, not to exceed six months of any calendar year.
  4. A notarized acknowledgement signed by the owners, acknowledging the requirements for creating and maintaining an ADU in conjunction with the primary dwelling on the owner's parcel, shall be recorded with the county so that it is a matter of public record and will come to the attention of any future owners.
  5. An ADU may be cancelled by the owner filing a notarized certificate with the city for recording with the county making the termination of the ADU a matter of public record. Cancellation of an ADU may also result from enforcement action if land use approval for the ADU is withdrawn.

(Ord. No. 2012-11-905, 11-26-2012)

#### **17.74.100 Special use—Cottage and accessory dwelling structural design standards.**

To provide for further compatibility with surrounding development, special uses allowed in a MU-PUD are subject to the following additional structural and design standards:

- A. Window and door trim with a minimum of three and one-half inches shall be provided on all special use dwelling units.
- B. Minimum roof eave depths of at least eighteen inches are also required for all special use dwelling units. Eaves are required along all sides of each special use structure unless a variation of this structural standard is accepted by the city through the MU-PUD process.
- C. Front porches having a minimum area of sixty square feet shall be provided for all cottage dwellings.
- D. Exterior lighting shall be minimized and may be allowed if shielded or hooded and directed downward so as to light only the intended area without shining into a neighboring house or business. All lighting shall be included on the required exterior lighting plan required with to complete a submittal.
- E. Exterior heating or cooling facilities shall be designed and sited to minimize the noise and visual impacts they can have on a site.

(Ord. No. 2012-11-905, 11-26-2012)

#### **17.74.110 Alternative special use—Cottage and accessory dwelling unit designs.**

The MU-PUD ordinance and special use sections are created to support design innovation. Design standards and approval criteria provide essential guidance to applicants and administrators but not every circumstance can be anticipated in the drafting of standards and criteria. The city recognizes that cottages and ADUs, in particular, could be designed in alternate ways and still achieve the overall objectives of the special use standards. An applicant may request a variation to specific standards during special use MU-PUD review. A specific request for variation within a special use area is not subject to variance criteria. Approval of a specific variation can only be granted with findings that the specific variation requested provides for an equal or better way to meet the purpose of the written standard.

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(Ord. No. 2012-11-905, 11-26-2012)

**17.74.120 Special use—Neighborhood meeting requirements.**

- A. Any planned unit development or other application utilizing special uses which allow smaller housing on smaller lots must hold and document a specially noticed neighborhood meeting as required by this title prior to completing the development application and before any public hearing is scheduled. The neighborhood meeting process is available to any applicant wishing to more fully explore a contentious application prior to completing their application for submittal and may be recommended by city staff during pre-application conference.
- B. The "neighborhood meeting" must meet the following requirements:
  - 1. Pre-notice identifying the time and place for discussion and providing sufficient description of intended project to allow neighborhood comment shall be mailed to property owners within three hundred feet a minimum of ten days prior to the meeting.
  - 2. The applicant is responsible for setting, noticing and documenting the presentation to and input received from the neighborhood meeting.
  - 3. The applicant must keep a record of all who attend the neighborhood meeting including their stated names and addresses.
  - 4. The applicant must notify the city a minimum of fourteen days prior to the meeting and allow for attendance of city staff or other representatives at the meeting.
  - 5. Post notice of the meeting shall be provided to participants by mail documenting the presentation and input received within thirty days following the neighborhood meeting.
  - 6. A record of the meeting shall be included with the applicant's completed application. The applicant shall include responses to input with the application or to identify where a proposal is modified to address neighborhood comments.
- C. A MU-PUD involving a special use dwelling type will follow the Mixed Use MU-PUD review process once a neighborhood meeting is held and a land use application completed.

(Ord. No. 2012-11-905, 11-26-2012)

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**SECTION 2. Severability / Validity.** The provisions of this ordinance are declared separate and severable. If any section, paragraph, subsection, clause or phrase of this ordinance is for any reason held to be unconstitutional or invalid, such decision shall not affect the validity of the remaining portion of this ordinance.

**SECTION 3. Effective Date.** This ordinance shall take effect and be in force five (5) days after its approval, passage and publication as required by law.

**SECTION 4: Transmittal to the State.** Pursuant to RCW 36.70A.106, a complete and accurate copy of this ordinance shall be transmitted to the Department of Commerce within ten (10) days of adoption.

**PASSED** this \_\_\_ day of \_\_\_\_\_ by the City Council of the City of White Salmon, Washington, and signed in authentication of its passage.

\_\_\_\_\_  
Marla Keethler, Mayor

ATTEST:

\_\_\_\_\_  
City Clerk/Treasurer

APPROVED AS TO FORM:

\_\_\_\_\_  
City Attorney





**File Attachments for Item:**

. Zoning Update Workshop

## Chapter 17.48 - C GENERAL COMMERCIAL DISTRICTS

### White Salmon Municipal Code

#### 17.48.060 Density provisions.

Density provisions for the C district are as follows:

- A. Maximum building height: thirty-five feet;
- B. Minimum lot: none;
- C. Minimum front yard depth: none required;
- D. Maximum front yard depth: fifteen feet, with exceptions for courtyards and pedestrian spaces no greater than 50 feet in frontage length;
- E. Minimum side yard, interior lot: none required;
- F. Minimum side yard, corner lot: none required;
- G. Minimum side yard, zone transition lot: same as requirement of adjoining more-restrictive district;
- H. Minimum rear yard: none; except when abutting an R district, twenty feet.

(Ord. No. 2012-12-910, 12-19-2012; Ord. No. 2023-12-1155, § 1, 12-20-2023)

#### 17.48.075 Development and design standards.

- A. Property development standards—All new development shall conform to Chapter 17.81, Site and Building Plan Review, and to any and all architectural and design standards which may be adopted by the city.
- B. Roof standards/surfacing:
  - 1. Finished roof material shall meet Class "C" roof standards. Dark and non-reflective roofing material shall be used for all visible roof surfaces.
- C. Roof standards/mechanical equipment and venting:
  - 1. All mechanical equipment located on roof surfaces such as, but not limited to, air conditioners, heat pumps, fans, ventilator shafts, duct work, or related devices or support work, shall be screened from view when possible and visible equipment shall be of a matte and/or non-reflective finish, unless reviewed and determined by the planning commission to be compatible with or a positive addition to the design and character of the commercial area. This restriction shall not apply to radio/television antennas or dishes (see Chapter 17.78).
  - 2. All exposed metal flashing, roof jacks and plumbing vents shall be matte finishes/non-reflective.
- D. Drainage—All stormwater concentrated by the structure and related impervious surfaces must be handled on site. Concentration of roof drainage shall not be shed by drip or overflow at points that cross pedestrian walkways or paths. A plan of the roof and surface drainage shall insure that pedestrian walkways and paths remain free from concentrated water shedding. Such plans shall be included in the proposed site drainage plan required for site and building plan review in Chapter 17.81.
- E. Exterior walls/siding—Acceptable siding shall be of lap, plank, shingle, board and batten style. Siding with brushed, sanded or rough sawn texture may be permitted, if approved by the planning commission. Siding shall be finished in natural or earth-tone colors. Other colors or styles may be permitted if approved by the planning commission. All other composition materials shall be carefully reviewed for visual compatibility by the planning commission.

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- F. Exterior walls/masonry—Masonry walls or walls with masonry veneer may be native or cultured stone or standard-sized brick of natural or earth-tone colors. Ceramic tile, manufactured concrete block or slabs may be permitted, but shall be subject to review by the planning commission to insure use of earth-tone colors, matte finish, and compatible relationship to native materials.
  - G. Exterior walls/metal—Metal walls, panels, partitions, facing or surfacing of any type is subject to review by the planning commission and must be found to be compatibly designed and intentionally applied rather than relied on solely as a less expensive option. Window panel fillers, exterior metal doors, door casings and windows shall be allowed.
  - H. Windows and doors—All window and door frames shall be dark or earth-tone in color. Doors may be painted graphic colors as a part of the ten percent graphic color and signing limitation.
  - I. Garbage and refuse areas—Building plans shall include provisions for the storage of garbage containers. Garbage containers shall be fully enclosed and covered. Disposal and storage of hazardous or toxic substances in garbage or refuse receptacles is strictly prohibited. On-site hazardous waste treatment and storage facilities shall conform to State Siting Criteria, RCW 70.105.210.
  - J. Orientation of entry and display space—Entry and window display area shall be oriented toward the city street. Parking may and will often be provided behind and/or under the rear or side portion of a new commercial structure. In this case additional entry may be oriented toward the parking area but such additional entry area will be in addition to rather than in place of window display and entry area addressing the street and sidewalk.
  - K. Utilities—All electrical, telephone, and other utilities shall be brought underground into the site and to the buildings.
  - L. Loading—All loading must be on-site and no on-street loading is permitted. All truck loading aprons and other loading areas shall be paved with concrete or asphalt, be well-drained and of strength adequate for the truck traffic expected.
  - M. Parking—All vehicles must be parked on the site unless otherwise provided for in accordance with [Chapter] 17.72. No on-street parking is permitted. Minimum parking stall width should be eight feet, six inches and length nineteen feet. All parking areas shall be paved with concrete or asphalt and shall conform to all regulations hereinafter in effect.
  - N. Outside storage—All storage and refuse shall be visually screened by landscaping barriers, walls or coverings and be included in plans and specifications. Such barriers, walls or coverings shall not restrict access to emergency exits.
  - O. Noxious effects:
    - 1. No vibration other than that caused by highway vehicles or trains shall be permitted which is discernible at the property line of the use concerned.
    - 2. Except for exterior lighting, operations producing heat or glare shall be conducted entirely within an enclosed building. Exterior lighting shall be directed away from adjacent properties.
    - 3. All materials, including wastes, shall be stored and all grounds shall be maintained in a manner which will not attract or aid the propagation of insects or rodents or create a hazard.
  - P. **Form-Based Code Requirements:**
    - 1. **Building Orientation and Entrances**
      - 1.1 **Street Orientation – All buildings within the district must be oriented toward the street, with at least one primary entrance directly facing the street. This entrance must be fully accessible from the public sidewalk or pedestrian way. The entrance may be on a building corner.**

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- 1.2 Entrance Design – Primary entrances must be easily identifiable, distinguishable, and designed to encourage pedestrian access.
2. Parking Location and Configuration
- 2.1 Off-Street Parking Location – All off-street parking shall be located at the rear of the building. Parking may also be located at the side of the building, but such parking areas shall not exceed a width of 60 feet along the street frontage.
- 2.2 Parking Lot Access – Access to rear or side parking must not disrupt the pedestrian experience along the street and should be located at a safe distance from street intersections.
3. Building Articulation
- 3.1 Wall Articulation Requirements – All building walls, except those enclosing screened loading areas, must be articulated with pilasters, piers, or other vertical elements at intervals of no less than every 20 feet to create visual interest and avoid long, uninterrupted facades.
4. Glazing Requirements
- 4.1 Front Façade Glazing – At least 40% of the ground-floor façade facing the street must be comprised of transparent glazing (windows, display cases, etc.) to promote visual interaction between the building interior and the street.
- 4.2 Side and Rear Façade Glazing – At least 20% of each remaining building façade (side and rear) must consist of transparent glazing, ensuring a consistent aesthetic treatment on all visible sides of the structure.
5. Canopies, Awnings, and Trim
- 5.1 Window and Door Treatment – All windows and doors must be equipped with canopies, awnings, or decorative trim to enhance visual interest and provide weather protection for pedestrians.
6. Signage Restrictions
- 6.1 Permitted Sign Types – Blade signs or surface-mounted signs are allowed. No "can" or internally illuminated box signs are permitted.
- 6.2 Pylon Sign Restrictions – Pylon signs, where permitted, shall not exceed a maximum height of ten (10) feet and a maximum width of five (5) feet.
7. Screening of Utilities and Service Areas
- 7.1 Screening Requirements – All mechanical equipment, utility pedestals, trash enclosures, and loading docks must be fully screened from public view using fencing, walls, or dense vegetation.
8. Parking Lot Landscaping
- 8.1 Tree Requirements – In all parking areas, one (1) shade tree shall be planted for every twelve (12) parking stalls. Each tree must be planted in a dedicated planter of no less than five (5) feet by five (5) feet to ensure adequate root space.
- 8.2 Landscape Buffer – A landscape buffer of no less than four (4) feet in width is required along the outer edges of all parking lots, including those adjacent to the street or public rights-of-way, to provide screening and soften the visual impact of parked vehicles.

(Ord. No. 2012-12-910, 12-19-2012; Ord. No. 2016-10-995, § 1, 11-16-2016; xxx)