EXHIBIT 1

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 8th 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 8th day of Sept, 2023

[signature] Notary expires 6/14/25

Notary Public in ~~and~~ for the State of Oregon

Residing at Deschutes County

OFFICIAL STAMP
JEFFERY CARL SCHOPFER
NOTARY PUBLIC-OREGON
COMMISSION NO. 1013490
MY COMMISSION EXPIRES JUNE 14, 2026

~~We~~ I, the undersigned, hereby certify that ~~we~~ I hold a vested interest of the said tract of land, that ~~we~~ I give ~~our~~ my 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 9/8/23

Cameron Curtis, President of Legacy Development Group Inc. Managing Member of Cherry Hill RV, LLC Date ~~XXXXX~~

Date ~~XXXXX~~

Date ~~XXXXX~~

.....

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 day of Sept. 2023.

_____
Notary Public in and for the State of Oregon, residing at Deschutes County. Notary expires 6/14/25

OFFICIAL STAMP
JEFFERY CARL SCHOPFER
NOTARY PUBLIC-OREGON
COMMISSION NO. 1013490
MY COMMISSION EXPIRES JUNE 14, 2025

EXHIBIT 2

TERRA SURVEYING

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

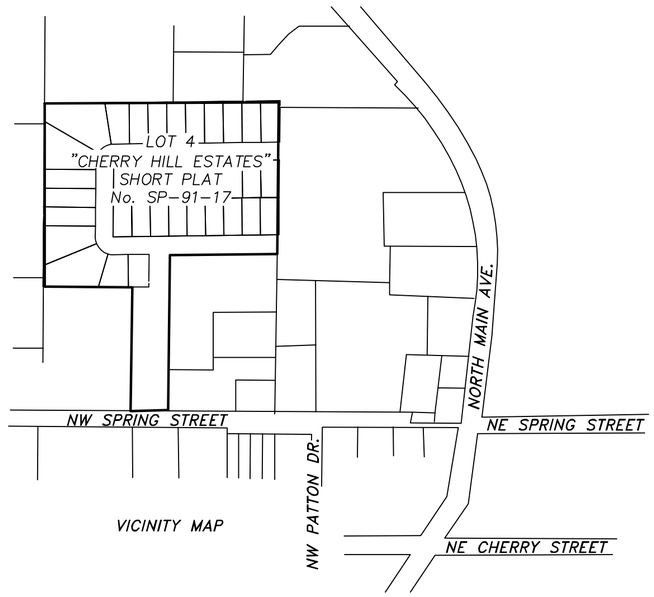
PLAT OF CHERRY HILL ESTATES SUBDIVISION SUB-2024-###

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.

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.



VICINITY MAP

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 ORIGNAL 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 UNCLEAR.

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

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

ERIK M. CARLSON
STATE OF WASHINGTON
DRAFT
43141
REGISTERED
PROFESSIONAL LAND SURVEYOR

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

TERRA SURVEYING

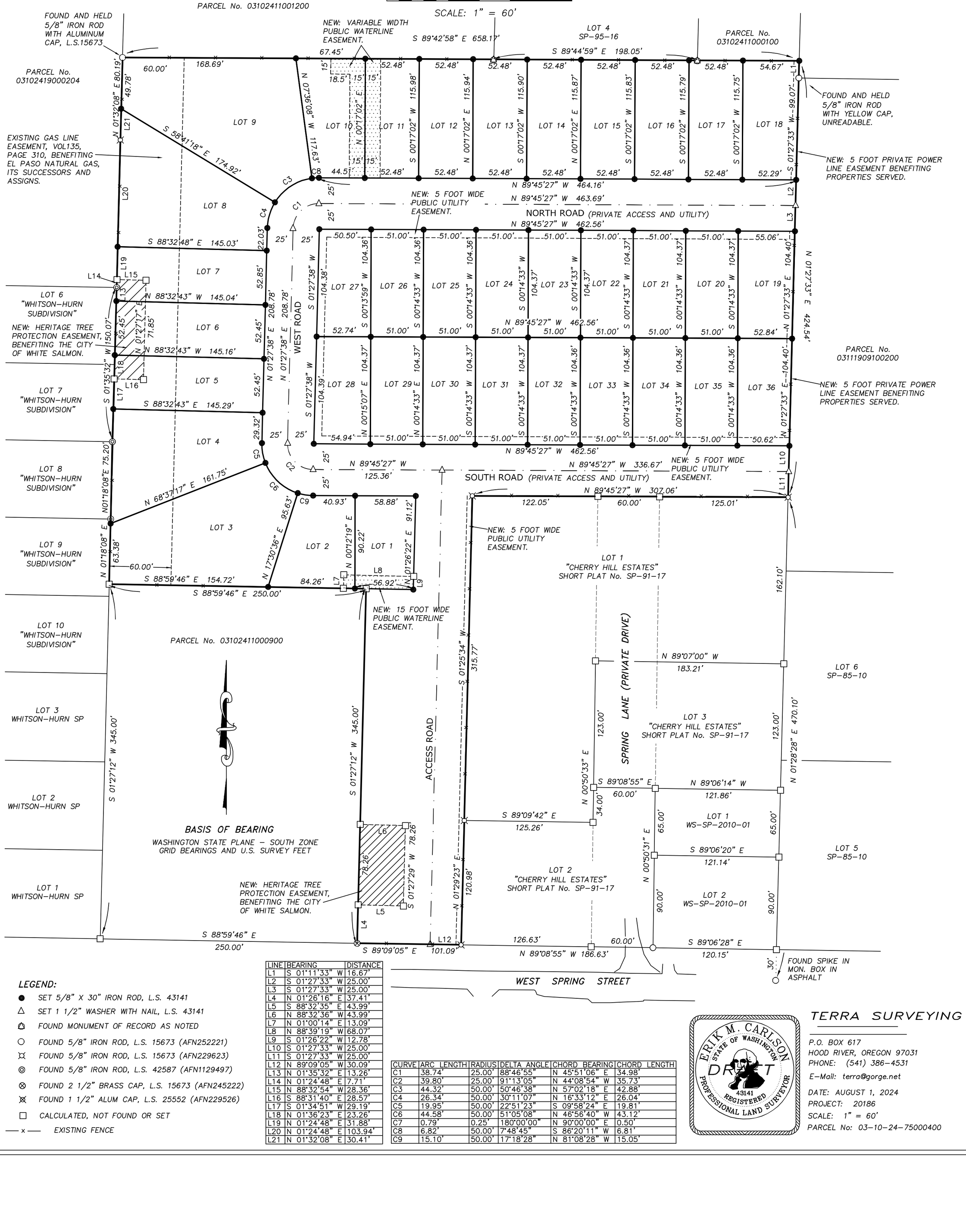
PLAT OF CHERRY HILL ESTATES SUBDIVISION SUB-2024-###

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.

0' 60' 120' 180'

SCALE: 1" = 60'



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'

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 (AFN1129497)
- ⊗ 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

ERIK M. CARLSON STATE OF WASHINGTON DRAFT 43141 REGISTERED PROFESSIONAL LAND SURVEYOR

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

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

PROJECT MANAGER:

CARLOS A. GARRIDO, PRINCIPAL
PH: 541-490-4923
EM:CGARRIDO@HRKUS.COM

ENGINEER OF RECORD:

THOMAS CAMERO, PE
PH: 541-386-6480
EM: TCAMERO@HRKUS.COM

PROJECT ENGINEER:

ALEX PEDROZA
PH: 541-806-3629
EM:APEDROZA@HRKUS.COM

CLIENT:

LEGACY DEVELOPMENT GROUP
403 HIGHWAY 35
HOOD RIVER, OR 97031
CONTACT: CAMERON CURTIS
PH: 541-490-6339
EM: CAMERON@CURTISHOMESLLC.COM

SITE ADDRESS:

SPRING STREET
WHITE SALMON, WA 98672

PERMITTING JURISDICTION:

CITY OF WHITE SALMON PUBLIC WORKS
100 N MAIN STREET
WHITE SALMON, WA 98672
DIRECTOR: ANDREW DIRKS
CONTACT: ERIKA CASTRO-GUZMAN
PH: 509-493-1133 #209
EM: ERIKAC@CI.WHITE-SALMON.WA.US

SANITARY/WATER/STORM:

KLICKITAT PUBLIC UTILITY DISTRICT No 1
110 NE ESTES AVENUE
WHITE SALMON, WA 98672
CONTACT: MIKE BLUMENSTEIN
PH: 509-493-2255

EXHIBIT 3

LEGACY
DEVELOPMENT GROUP INC

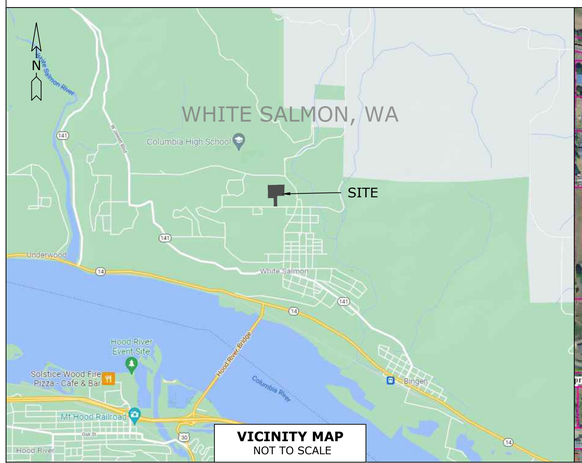
CHERRY HILL ESTATES SUBDIVISION

CONSTRUCTION OF 35 RESIDENTIAL LOTS.

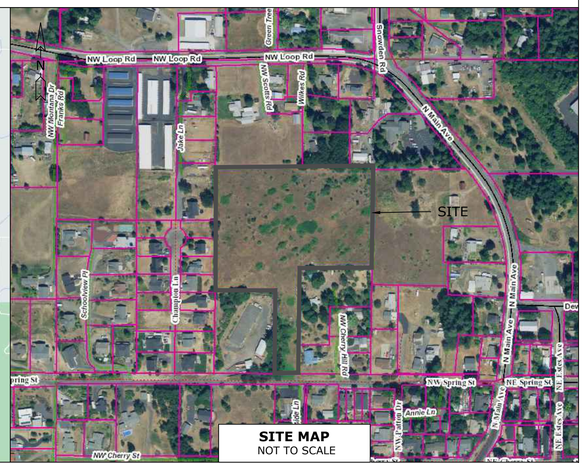
TAX LOT 0310247500400,
NE 1/4 OF NE 1/4 OF SECTION 24, TOWNSHIP 3 NORTH, RANGE 10 EAST, W.M.,
CITY OF WHITE SALMON, KLICKITAT COUNTY, WASHINGTON

PROJECT #: 21-002 - FEBRUARY 2021

SITE PLAN REVIEW



VICINITY MAP
NOT TO SCALE



SITE MAP
NOT TO SCALE

CALL BEFORE YOU DIG:

ONE CALL UTILITY LOCATE (WASHINGTON) - 811
ATTENTION EXCAVATORS: WASHINGTON LAW REQUIRES THE CONTRACTOR TO FOLLOW RULES ADOPTED BY THE WASHINGTON UTILITY NOTIFICATION CENTER.
THOSES RULES ARE SET FORTH IN RCW 19.122.10 THROUGH RCW 19.122.901. THE CONTRACTOR MAY OBTAIN COPIES OF THESE RULES FROM THE CENTER BY CALLING 800-424-5555 OR BY ACCESSING THE INTERNET AT APPS.LEG.WA.GOV/RWC/.
THE CONTRACTOR MUST NOTIFY THE CENTER AT LEAST 2 BUSINESS DAYS, BUT NOT MORE THAN 10 BUSINESS DAYS, BEFORE COMMENCING AN EXCAVATION. CALL 811.

INDEX:

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

ENGINEERING DESIGN GROUP

REVISION

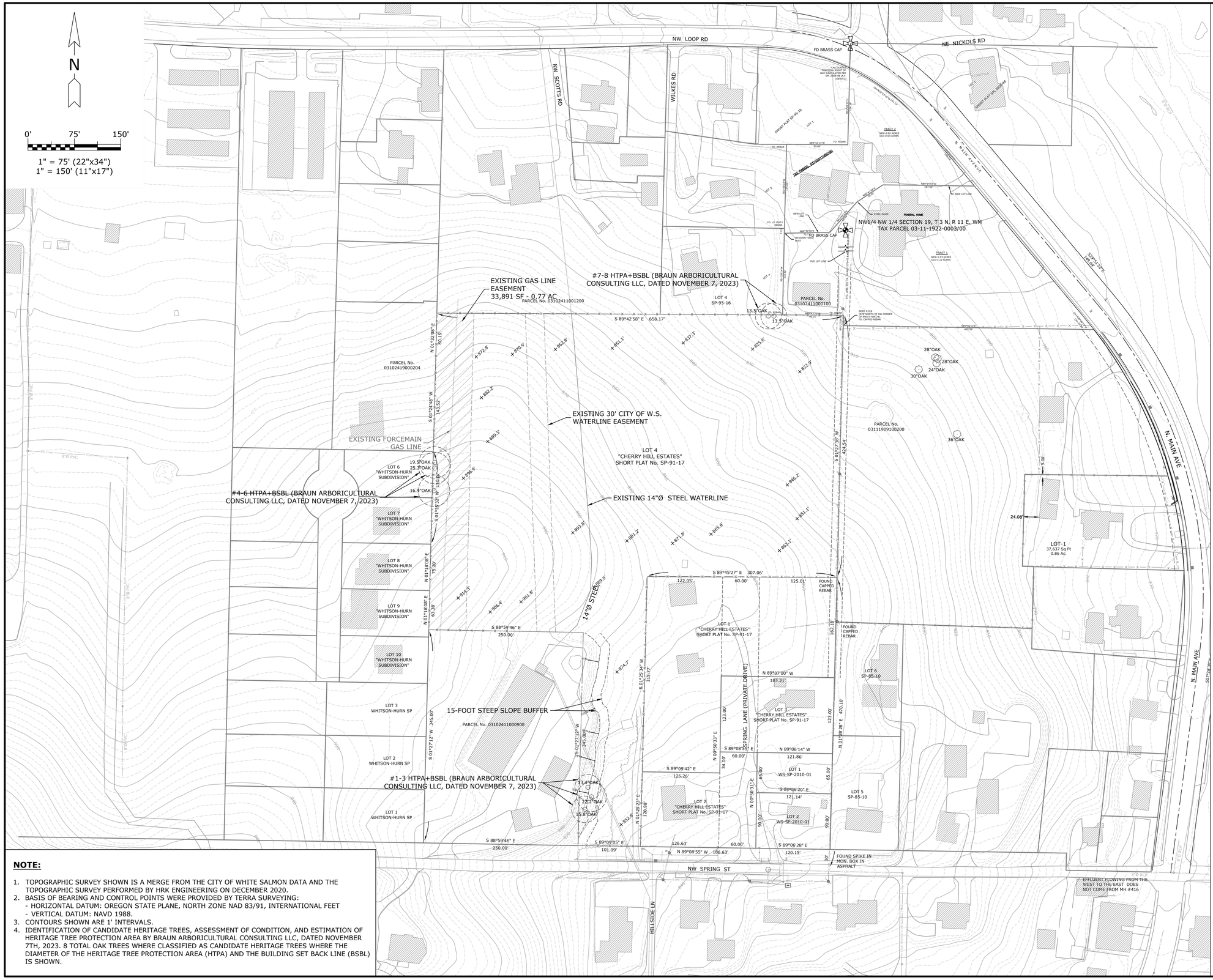
NO.	DATE	DRWN	CHKD	DESCRIPTION
1	09/07/23	AP	CG	SITE PLAN REVIEW
2	11/08/23	AP	CG	CITY OF WHITE SALMON SPR COMMENTS 10/9/2023
3	11/28/23	AP	CG	CITY OF WHITE SALMON SPR COMMENTS 11/21/2023
4	05/13/24	AP	CG	CITY OF WHITE SALMON CONSISTENCY REVIEW 03/04/2024
5	07/26/24	AP	CG	CITY OF WHITE SALMON 2ND CONSISTENCY REVIEW 06/14/2024

SHEET NAME

COVER SHEET

SHEET NO. OF 4

1



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
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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

ENGINEERING & DESIGN GROUP

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
5	07/26/24	AP	CG	CITY OF WHITE SALMON 2ND CONSISTENCY REVIEW 06/14/2024

SHEET NAME
EXISTING CONDITIONS

SHEET NO. 2 OF 4

N

0' 50' 100'

1" = 50' (22"x34")
1" = 100' (11"x17")

EXISTING GAS LINE EASEMENT
33,891 SF - 0.77 AC

PROPOSED RELOCATION OF 14"Ø STEEL WATERLINE

PROPOSED 30' CITY OF W.S. WATERLINE EASEMENT

EXISTING FORCEMAIN GAS LINE

19.5"OAK
25.3"OAK

PROPOSED 2,752 SF HERITAGE TREE PROTECTION EASEMENT (HTPE)

16.9"OAK

13.5"OAK
13.5"OAK

PROPOSED POND AREA

PROPOSED SANITARY SEWER CONNECTION

NANCY WHITE FOUR OAKS SUBDIVISION (31 LOTS)

PROPOSED SANITARY SEWER CONNECTION

PROPOSED WATER LINE CONNECTION

PROPOSED RELOCATION OF 14"Ø STEEL WATERLINE

PROPOSED SWALE

PROPOSED CURB DRAIN

PROPOSED 15' CITY OF W.S. WATERLINE EASEMENT

PROPOSED NO-BUILD EASEMENT
33,891 SF - 0.77 AC

PROPOSED 3,443 SF HERITAGE TREE PROTECTION EASEMENT (HTPE)

13.4"OAK
22.2"OAK
15.8"OAK

PROPOSED 5-FOOT PUBLIC UTILITY EASEMENT

RELOCATE EXISTING POWER INTO PROPOSED PUBLIC UTILITY EASEMENT

PROPOSED HALF STREET IMPROVEMENT

NORTH ROAD

WEST ROAD

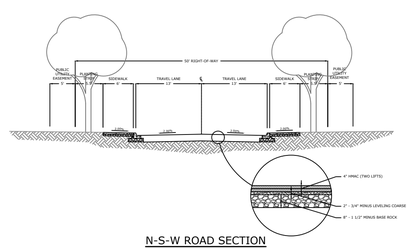
SOUTH ROAD

ACCESS ROAD

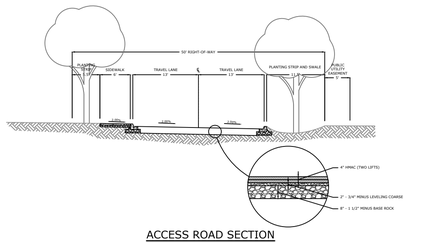
NW SPRING ST

N. MAIN AVE

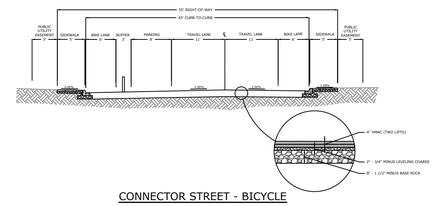
LOT	AREA
1	5,249 SF
2	6,327 SF
3	15,436 SF
4	11,765 SF
5	7,605 SF
6	7,605 SF
7	7,662 SF
8	13,509 SF
9	17,716 SF
10	6,878 SF
11	6,072 SF
12	6,072 SF
13	6,072 SF
14	6,072 SF
15	6,072 SF
16	6,072 SF
17	6,072 SF
18	6,191 SF
19	5,414 SF
20	5,356 SF
21	5,358 SF
22	5,360 SF
23	5,362 SF
24	5,364 SF
25	5,365 SF
26	5,367 SF
27	5,464 SF
28	5,431 SF
29	5,366 SF
30	5,364 SF
31	5,362 SF
32	5,361 SF
33	5,359 SF
34	5,357 SF
35	5,355 SF
36	5,454 SF



N-S-W ROAD SECTION



ACCESS ROAD SECTION



CONNECTOR STREET - BICYCLE

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

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SHEET NAME
SITE PLAN

SHEET NO. 3 OF 4

N

0' 50' 100'

1" = 50' (22"x34")
1" = 100' (11"x17")

9
17,716 SF

10
6,878 SF

11
6,072 SF

12
6,072 SF

13
6,072 SF

14
6,072 SF

15
6,072 SF

16
6,072 SF

17
6,072 SF

18
6,191 SF

13.5" OAK
FD. REBAR
13.5" OAK
FD. REBAR

PROPOSED
POND AREA

8
13,509 SF

7
7,662 SF

19.5" OAK
25.3" OAK

6
7,605 SF

16.9" OAK

5
7,605 SF

4
11,765 SF

3
15,436 SF

2
6,327 SF

1
5,249 SF

PROPOSED
SANITARY SEWER
CONNECTION

27
5,464 SF

26
5,367 SF

25
5,365 SF

24
5,364 SF

23
5,362 SF

22
5,360 SF

21
5,358 SF

20
5,356 SF

19
5,414 SF

NANCY WHITE
FOUR OAKS SUBDIVISION
(31 LOTS)

28
5,431 SF

29
5,366 SF

30
5,364 SF

31
5,362 SF

32
5,361 SF

33
5,359 SF

34
5,357 SF

35
5,355 SF

36
5,454 SF

PROPOSED
SANITARY SEWER
CONNECTION

PROPOSED
WATER LINE
CONNECTION

PROPOSED SWALE

PROPOSED CURB DRAIN

PROPOSED ROW

PROPOSED ROW

50.0'

5.0'

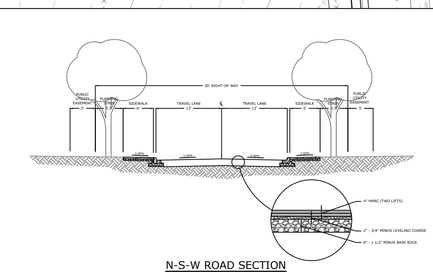
26.6'

13.4" OAK
22.2" OAK
15.8" OAK

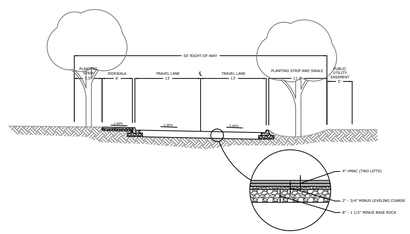
N. MAIN AVE

NW SPRING ST

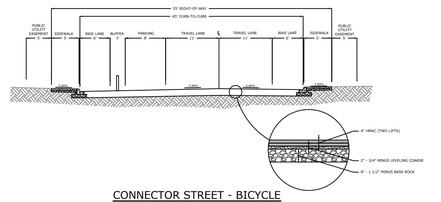
DE LN



N-S-W ROAD SECTION



ACCESS ROAD SECTION



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SHEET NAME
GRADING PLAN

SHEET NO. 4 OF 4

EXHIBIT 4

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

CHICAGO TITLE INSURANCE COMPANY

By: _____ President

ATTEST _____ Secretary

CHICAGO TITLE INSURANCE COMPANY CORPORATE SEAL

Arika Klawitter

Authorized Signer

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

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,

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 Ordinanace, 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.

EXHIBIT 5

Recorded Easement Information regarding Cherry Hill Estates:

Pacific Power

PH: 503-813-6800
constructionproject@pacificcorp.com

Northwest Natural

Ryan Winfree
218 NE 66th St., Vancouver, WA 98662
(503) 226-4211 EXT. 2045

City of White Salmon Public Works

Andrew Dirks
100 N Main Ave, White Salmon, WA 98672
(509) 493-1133

Public Utility District No 1 for Klickitat County

Mike Blumenstein
110 NE Estes Ave., White Salmon, WA 98672
(509) 493-2255

EXHIBIT 6A

ENVIRONMENTAL CHECKLIST GUIDANCE

Cherry Hills Estate, White Salmon (WA)

Contents

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 28th, 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 7th, 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 been 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.

l. 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.

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

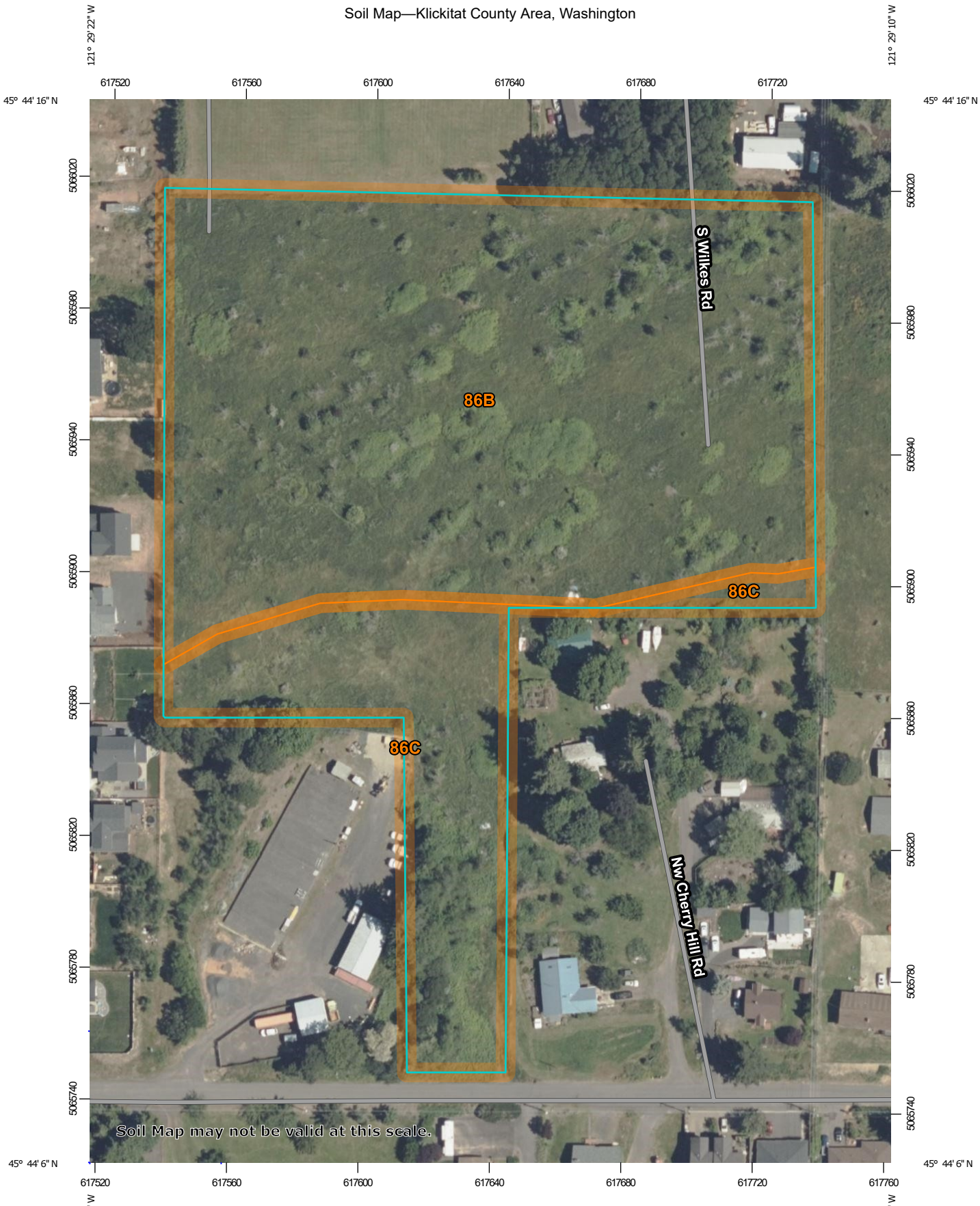
Date Submitted: September 8, 2023

Amended: November 28, 2023

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



Map Scale: 1:1,570 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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%
Totals for Area of Interest		**7.8**	**100.0%**

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

WASHINGTON STATE DEPARTMENT OF
Natural Resources
Doug Sutherland - Commissioner of Public Lands

Division of Geology and Earth Resources
Ron Teissere - State Geologist

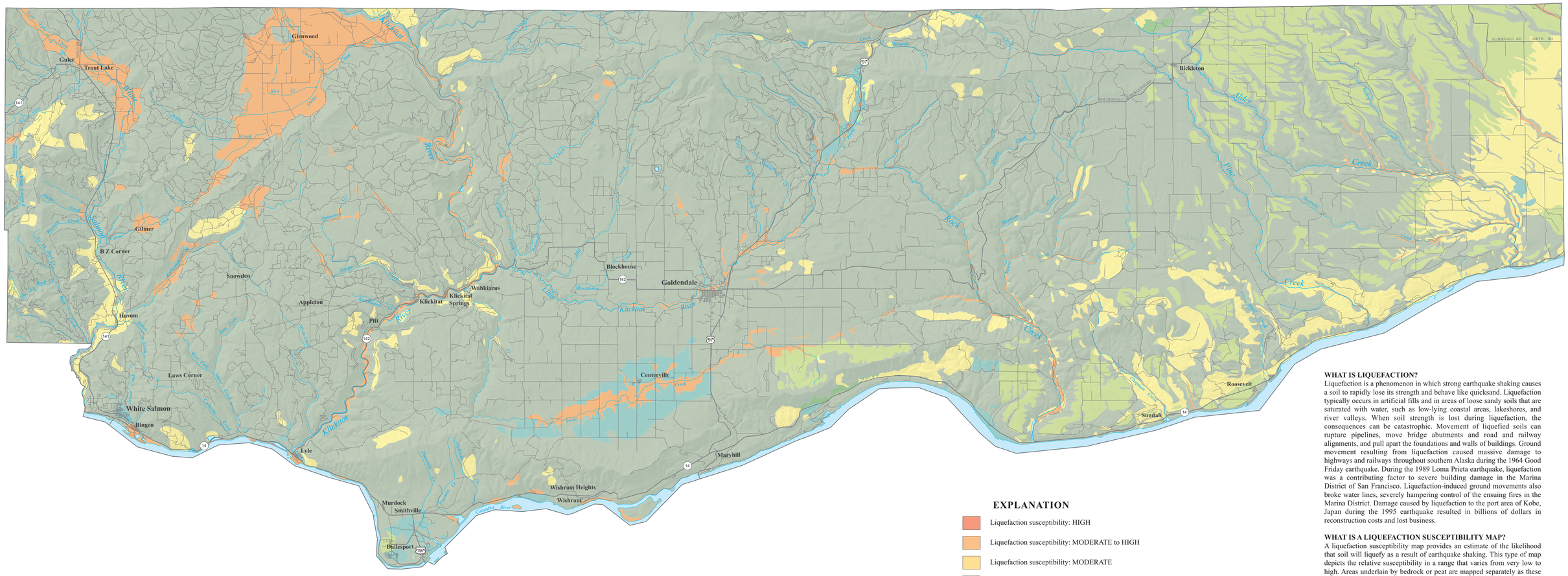
Department of Homeland Security
Federal Emergency Management Agency
Region 10

Washington Military Department
Emergency Management Division

WASHINGTON DIVISION OF GEOLOGY AND EARTH RESOURCES
OPEN FILE REPORT 2004-20

Liquefaction Susceptibility and Site Class Maps of Washington State, By County
Map 20A—Klickitat County Liquefaction Susceptibility
Sheet 39 of 78

Pamphlet accompanies maps



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

scale 1:150,000

2 1 0 2 4 6 8 Miles

2 1 0 2 4 6 8 Kilometers

Lambert conformal conic projection
North American Datum of 1983 HARN
Shaded relief generated from U.S. Geological Survey 30-meter Digital Elevation Model, 2x vertical exaggeration
Production by Anne C. Heinitz, Rebecca A. Niggemann, and Jaretta M. Roloff
Editing by Karen D. Meyers

State of Washington
Engineering Geologist
326
Licensed Geologist
STEPHEN P. PALMER
Stephen P. Palmer
9/1/04

Disclaimer: This product is provided 'as is' without warranty of any kind, either expressed or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular use. The Washington Department of Natural Resources will not be liable to the user of this product for any activity involving the product with respect to the following: (a) lost profits, lost savings, or any other consequential damages; (b) the fitness of the product for a particular purpose; or (c) use of the product or results obtained from use of the product.

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 liquefaction to 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 ratings 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 during the 1965 SeaTac 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://nisee.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 Capitol 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.

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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).

STATE ENDANGERED

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.

The 35 State Endangered species listed below are designated in Washington Administrative Code 220-610-010

MAMMALS (14)

Fin Whale	FE
Sei Whale	FE
Blue Whale	FE
Humpback Whale	FT/FE[#]
[#]*Mexico DPS=T; Central America DPS=E*	
North Pacific Right Whale	FE
Sperm Whale	FE
Killer Whale	FE[#]
[#]*Southern Residents only*	
Gray Wolf	90d
Grizzly Bear	FT
Lynx	FT
Fisher	-
Columbian White-tailed Deer	FT
Woodland Caribou[x]	FE
Pygmy Rabbit	FE

BIRDS (12)

Sandhill Crane	-
Snowy Plover	FT
Upland Sandpiper[x]	-
Marbled Murrelet	FT
Tufted Puffin	-
Columbian Sharp-tailed Grouse	-
Greater Sage-Grouse	-
Ferruginous Hawk	-
Northern Spotted Owl	FT
Yellow-billed Cuckoo[x]	FT
Streaked Horned Lark	FT
Oregon Vesper Sparrow	90d

REPTILES (3)

Western Pond Turtle	90d
Leatherback Sea Turtle	FE
Loggerhead Sea Turtle	FE

AMPHIBIANS (2)

Oregon Spotted Frog	FT
Northern Leopard Frog	-

INVERTEBRATES (4)

Oregon Silverspot Butterfly[x]	FT
Taylor's Checkerspot	FE
Mardon Skipper	-
Pinto Abalone	-

STATE THREATENED

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.

The 5 State Threatened species are designated in Washington Administrative Code 220-200-100

MAMMALS (3)

Sea Otter	-
Western Gray Squirrel	-
Mazama Pocket Gopher	
subsp. *glacialis, pugetensis, tumuli, yelmensis*	FT
...subsp. *couchi, louiei*[x]*, melanops*	-

BIRDS (1)

American White Pelican	-

REPTILES (1)

Green Sea Turtle	FT

[x]*These species are, or may be, extirpated from all of their historical range in Washington*

For more information, check our website:
https://wdfw.wa.gov/species-habitats/species

Or contact us at:
wildthing@dfw.wa.gov
or
Wildlife Program (360) 902-2515
Fish Program (360) 902-2700

For more information on federal status, check the US Fish and Wildlife Service or the NOAA National Marine Fisheries Service

STATE SENSITIVE

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.

The 6 State Sensitive species are designated in Washington Administrative Code 220-200-100

MAMMALS (1)

Gray Whale	FE[#]
[#]*Western North Pacific Stock*	

BIRDS (1)

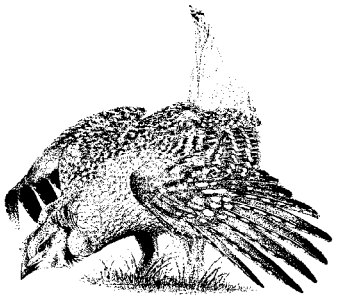
Common Loon	-

FISH (3)

Pygmy Whitefish	-
Margined Sculpin	-
Olympic Mudminnow	-

AMPHIBIAN (1)

Larch Mountain Salamander	-



STATE CANDIDATE SPECIES

Revised October 2021

Washington Department of FISH and WILDLIFE

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)

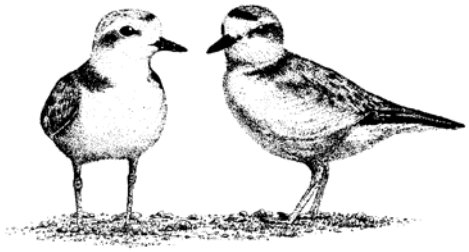
Sagebrush Lizard	-
Common Sharp-tailed Snake	-
California Mountain Kingsnake	-
Striped Whipsnake	-
Dunn's Salamander	-
Van Dyke's Salamander	-
Cascade Torrent Salamander	90d
Western Toad	-
Columbia Spotted Frog	-
Rocky Mountain Tailed Frog	-

FISH (10)

Mountain Sucker	-
Lake Chub	-
Leopard Dace	-
Umatilla Dace	-
River Lamprey	-
Steelhead	
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)

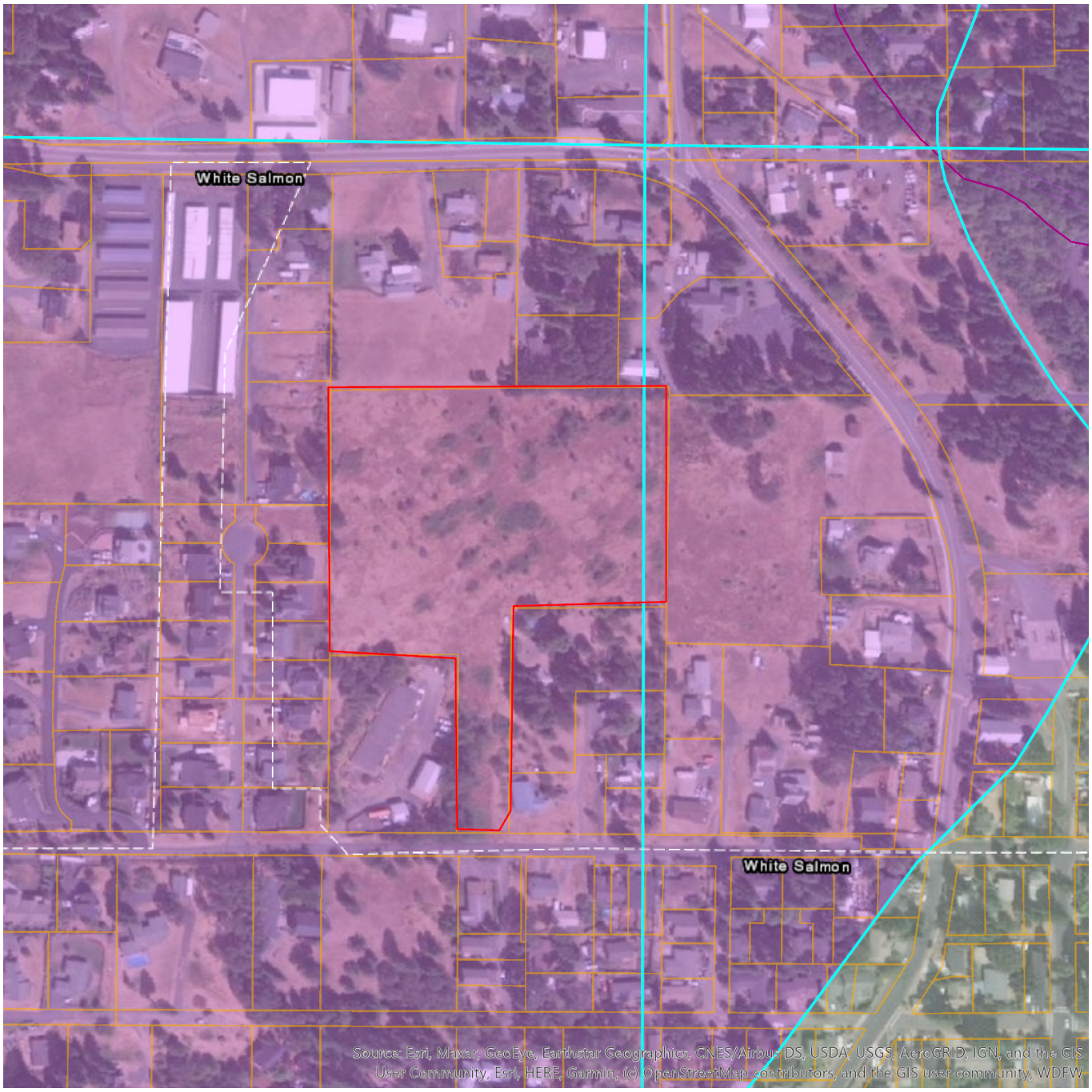
Beller's Ground Beetle	-
Mann's Mollusk-eating Ground Beetle	
Columbia River Tiger Beetle	-
Hatch's Click Beetle	-
Columbia Clubtail (dragonfly)	-
Pacific Clubtail	-
Sand-verbena Moth	-
Yuma Skipper	-
Makah Copper	-
Chinquapin Hairstreak	-
Johnson's Hairstreak	-
Juniper Hairstreak	-
Puget Blue	-
Valley 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:

Occurence 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	*Odocoileus hemionus*
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	http://wdfw.wa.gov/publications/pub.php?id=00612
Geometry Type	Polygons

California mountain kingsnake	
Scientific Name	*Lampropeltis zonata*
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	http://wdfw.wa.gov/publications/pub.php?id=00025

California mountain kingsnake	
Scientific Name	*Lampropeltis zonata*
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	http://wdfw.wa.gov/publications/pub.php?id=00025

Northern Spotted Owl	
Scientific Name	*Strix occidentalis*
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	http://wdfw.wa.gov/publications/pub.php?id=00026

Little Brown Bat	
Scientific Name	*Myotis lucifugus*
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	http://wdfw.wa.gov/publications/pub.php?id=00605

Northern Spotted Owl	
Scientific Name	*Strix occidentalis*
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	http://wdfw.wa.gov/publications/pub.php?id=00026

Yuma myotis	
Scientific Name	*Myotis yumanensis*
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	http://wdfw.wa.gov/publications/pub.php?id=00605

APPENDIX 5

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.

Common name	**Scientific name**
Austrian fieldcress *	*Rorippa austriaca*
black henbane	*Hyoscyamus niger*
buffalobur *	*Solanum rostratum*
common St. Johnswort *	*Hypericum perforatum*
common teasel *	*Dipsacus fullonum*
Eurasian watermilfoil * hybrid	*Myriophyllum spicatum x Myriophyllum sibiricum*
hairy whitetop *	*Lepidium appelianum*
hoary cress *	*Lepidium draba*
Italian arum *	*Arum italicum*
jointed goatgrass *	*Aegilops cylindrica*
jubata grass	*Cortaderia jubata*
longspine sandbur *	*Cenchrus longispinus*
nonnative cattail species & hybrids (reminder, does not include the native common cattail, *Typha latifolia*)	*Typha* species
oxeye daisy	*Leucanthemum vulgare*
Pampas grass *	*Cortaderia selloana*
spikeweed *	*Centromadia pungens*
spiny cocklebur *	*Xanthium spinosum*
spotted jewelweed *	*Impatiens capensis*
Swainsonpea *	*Sphaerophysa salsula*
thistle, Canada *	*Cirsium arvense*
tree-of-heaven *	*Ailanthus altissima*
wild carrot *	*Daucus carota*
yellow flag iris *	*Iris pseudacorus*

**** 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
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
Web site:
http://www.nwcb.wa.gov/

or

Washington State
Department of Agriculture
21 North First Avenue #103
Yakima, WA 98902
509-225-2604

WEED'EM OUT
NOXIOUS WEEDS DAMAGE OUR RESOURCES

2021

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

*N*oxious 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 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.

Common name	Scientific name
common crupina	*Crupina vulgaris*
cordgrass, common	*Spartina anglica*
cordgrass, dense-flowered	*Spartina densiflora*
cordgrass, saltmeadow	*Spartina patens*
cordgrass, smooth	*Spartina alterniflora*
dyer's woad	*Isatis tinctoria*
eggleaf spurge *	*Euphorbia oblongata*
false brome	*Brachypodium sylvaticum*
floating primrose-willow	*Ludwigia peploides*
flowering rush	*Butomus umbellatus*
French broom	*Genista monspessulana*
garlic mustard	*Alliaria petiolata*
giant hogweed *	*Heracleum mantegazzianum*
goatsrue	*Galega officinalis*
hydrilla	*Hydrilla verticillata*
Johnsongrass *	*Sorghum halepense*
knapweed, bighead *	*Centaurea macrocephala*
knapweed, Vochin *	*Centaurea nigrescens*
kudzu	*Pueraria montana var. lobata*
meadow clary	*Salvia pratensis*
oriental clematis *	*Clematis orientalis*
purple starthistle	*Centaurea calcitrapa*
reed sweetgrass	*Glyceria maxima*
ricefield bulrush	*Schoenoplectus mucronatus*
sage, clary	*Salvia sclarea*
sage, Mediterranean *	*Salvia aethiopis*
silverleaf nightshade	*Solanum elaeagnifolium*
small-flowered jewelweed	*Impatiens parviflora*
South American spongeplant	*Limnobium laevigatum*
Spanish broom	*Spartium junceum*
Syrian beancaper	*Zygophyllum fabago*
Texas blueweed	*Helianthus ciliaris*
thistle, Italian	*Carduus pycnocephalus*
thistle, milk	*Silybum marianum*
thistle, slenderflower	*Carduus tenuiflorus*
thistle, Turkish	*Carduus cinereus*
variable-leaf milfoil	*Myriophyllum heterophyllum*
wild four o'clock	*Mirabilis nyctaginea*

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

Common name	Scientific name
blueweed	*Echium vulgare*
Brazilian elodea	*Egeria densa*
bugloss, annual	*Lycopsis arvensis*
bugloss, common	*Anchusa officinalis*
camelthorn	*Alhagi maurorum*
common fennel, (except bulbing fennel)	*Foeniculum vulgare*
common reed, nonnative	*Phragmites australis*
fanwort	*Cabomba caroliniana*
gorse	*Ulex europaeus*
grass-leaved arrowhead	*Sagittaria graminea*
hawkweed oxtongue	*Picris hieracioides*
hawkweed, orange	*Hieracium aurantiacum*
hawkweeds: All non-native species/hybrids of the WALL subgenus	*Hieracium, subgenus Hieracium*
herb-Robert *	*Geranium robertianum*
knapweed, black	*Centaurea nigra*
knapweeed, brown	*Centaurea jacea*
knotweed, Bohemian *	*Fallopia x bohemica*
knotweed, giant *	*Fallopia sachalinensis*
knotweed, Himalayan	*Persicaria wallichii*
knotweed, Japanese *	*Fallopia japonica*
loosestrife, garden	*Lysimachia vulgaris*
loosestrife, purple *	*Lythrum salicaria*
loosestrife, wand	*Lythrum virgatum*
Malta starthistle	*Centaurea melitensis*
parrotfeather	*Myriophyllum aquaticum*
policeman's helmet	*Impatiens glandulifera*
saltcedar * (unless intentionally planted prior to 2004)	*Tamarix ramosissima*
shiny geranium	*Geranium lucidum*
spurge flax	*Thymelaea passerina*
spurge laurel	*Daphne laureola*
spurge, leafy *	*Euphorbia virgata*
spurge, myrtle *	*Euphorbia myrsinites*
thistle, musk *	*Carduus nutans*
thistle, plumeless *	*Carduus acanthoides*
thistle, Scotch *	*Onopordum acanthium*
velvetleaf	*Abutilon theophrasti*
water primrose	*Ludwigia hexapetala*
white bryony	*Bryonia alba*
wild chervil	*Anthriscus sylvestris*
yellow archangel *	*Lamiastrum galeobdolon*
yellow floatingheart	*Nymphoides peltata*

Class B Non-Designate Weeds in Klickitat County

Common name	Scientific name
butterfly bush *	*Buddleja davidii*
Dalmatian toadflax *	*Linaria dalmatica* ssp. *dalmatica*
Eurasian watermilfoil *	*Myriophyllum spicatum*
European coltsfoot	*Tussilago farfara*
hairy willowherb *	*Epilobium hirsutum*
hawkweeds: All non-native species/hybrids of the MEADOW subgenus	*Hieracium, subgenus Pilosella*
hoary alyssum *	*Berteroa incana*
houndstongue *	*Cynoglossum officinale*
indigobush *	*Amorpha fruticosa*
knapweed, diffuse *	*Centaurea diffusa*
knapweed, meadow *	*Centaurea x gerstlaueri*
knapweed, Russian *	*Rhaponticum repens*
knapweed, spotted *	*Centaurea stoebe*
kochia *	*Bassia scoparia*
lesser celandine *	*Ficaria verna*
perennial pepperweed *	*Lepidium latifolium*
poison hemlock *	*Conium maculatum*
puncturevine *	*Tribulus terrestris*
Ravenna grass	*Tripidium ravennae*
rush skeletonweed *	*Chondrilla juncea*
Scotch broom *	*Cytisus scoparius*
sulfur cinquefoil *	*Potentilla recta*
tansy ragwort *	*Jacobaea vulgaris*
yellow nutsedge *	*Cyperus esculentus*
yellow starthistle *	*Centaurea solstitialis*

Class C Weeds

absinth wormwood	*Artemisia absinthium*
Austrian fieldcress	*Rorippa austriaca*
babysbreath	*Gypsophila paniculata*
black henbane	*Hyoscyamus niger*
blackgrass	*Alopecurus myosuroides*
buffalobur	*Solanum rostratum*
cereal rye	*Secale cereale*
common barberry	*Berberis vulgaris*
common catsear	*Hypochaeris radicata*
common groundsel	*Senecio vulgaris*
common St. Johnswort	*Hypericum perforatum*
common tansy	*Tanacetum vulgare*
common teasel	*Dipsacus fullonum*
curlyleaf pondweed	*Potamogeton crispus*
English hawthorn	*Crataegus monogyna*
English ivy - four cultivars only	*Hedera helix* 'Baltica', 'Pittsburgh', and 'Star', and *H. hibernica 'Hibernica'*
Eurasian watermilfoil hybrid	*Myriophyllum spicatum* x *Myriophyllum sibiricum*
evergreen blackberry	*Rubus laciniatus*
field bindweed	*Convolvulus arvensis*
fragrant waterlily	*Nymphaea odorata*
hairy whitetop	*Lepidium appelianum*
Himalayan blackberry	*Rubus bifrons* (*Rubus armeniacus*)
hoary cress	*Lepidium draba*
Italian arum	*Arum italicum*
Japanese eelgrass	*Nanozostera japonica*
jubata grass	*Cortaderia jubata*
jointed goatgrass	*Aegilops cylindrica*
lawnweed	*Soliva sessilis*
longspine sandbur	*Cenchrus longispinus*
medusahead	*Taeniatherum caput-medusae*
nonnative cattail species and hybrids (reminder, does not include the native common cattail, *Typha latifolia*)	*Typha* species
old man's beard	*Clematis vitalba*
oxeye daisy	*Leucanthemum vulgare*
Pampas grass	*Cortaderia selloana*
perennial sowthistle	*Sonchus arvensis*
reed canarygrass	*Phalaris arundinacea*

Class C Weeds continued

Russian olive	*Elaeagnus angustifolia*
scentless mayweed	*Tripleurospermum inodorum*
smoothseed alfalfa dodder	*Cuscuta approximata*
spikeweed	*Centromadia pungens*
spiny cocklebur	*Xanthium spinosum*
spotted jewelweed	*Impatiens capensis*
Swainsonpea	*Sphaerophysa salsula*
thistle, bull	*Cirsium vulgare*
thistle, Canada	*Cirsium arvense*
tree-of-heaven	*Ailanthus altissima*
ventenata	*Ventenata dubia*
white cockle	*Silene latifolia*
wild carrot (except where commercially grown)	*Daucus carota*
yellow flag iris	*Iris pseudacorus*
yellow toadflax	*Linaria vulgaris*

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
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

Washington State Noxious Weed Control Board

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	*Crupina vulgaris*
cordgrass, common	*Spartina anglica*
cordgrass, dense-flowered	*Spartina densiflora*
cordgrass, saltmeadow	*Spartina patens*
cordgrass, smooth	*Spartina alterniflora*
dyer's woad	*Isatis tinctoria*
eggleaf spurge	*Euphorbia oblongata*
false brome	*Brachypodium sylvaticum*
floating primrose-willow	*Ludwigia peploides*
flowering rush	*Butomus umbellatus*
French broom	*Genista monspessulana*
garlic mustard	*Alliaria petiolata*
giant hogweed	*Heracleum mantegazzianum*
goatsrue	*Galega officinalis*
hydrilla	*Hydrilla verticillata*
Johnsongrass	*Sorghum halepense*
knapweed, bighead	*Centaurea macrocephala*
knapweed, Vochin	*Centaurea nigrescens*
kudzu	*Pueraria montana* var. *lobata*
meadow clary	*Salvia pratensis*
oriental clematis	*Clematis orientalis*
purple starthistle	*Centaurea calcitrapa*
reed sweetgrass	*Glyceria maxima*
ricefield bulrush	*Schoenoplectus mucronatus*
sage, clary	*Salvia sclarea*
sage, Mediterranean	*Salvia aethiopis*
silverleaf nightshade	*Solanum elaeagnifolium*
small-flowered jewelweed	*Impatiens parviflora*
South American spongeplant	*Limnobium laevigatum*
Spanish broom	*Spartium junceum*
Syrian beancaper	*Zygophyllum fabago*
Texas blueweed	*Helianthus ciliaris*
thistle, Italian	*Carduus pycnocephalus*
thistle, milk	*Silybum marianum*
thistle, slenderflower	*Carduus tenuiflorus*
thistle, Turkish	*Carduus cinereus*
variable-leaf milfoil	*Myriophyllum heterophyllum*
wild four-o'clock	*Mirabilis nyctaginea*

Class B Weeds

blueweed	*Echium vulgare*
Brazilian elodea	*Egeria densa*
bugloss, annual	*Lycopsis arvensis*
bugloss, common	*Anchusa officinalis*
butterfly bush	*Buddleja davidii*
camelthorn	*Alhagi maurorum*
common fennel, (except bulbing fennel)	*Foeniculum vulgare* except *F. vulgare* var. *azoricum)*
common reed (nonnative genotypes only)	*Phragmites australis*
Dalmatian toadflax	*Linaria dalmatica* ssp. *dalmatica*
Eurasian watermilfoil	*Myriophyllum spicatum*
European coltsfoot	*Tussilago farfara*
fanwort	*Cabomba caroliniana*
gorse	*Ulex europaeus*
grass-leaved arrowhead	*Sagittaria graminea*
hairy willowherb	*Epilobium hirsutum*
hawkweed oxtongue	*Picris hieracioides*
hawkweed, orange	*Hieracium aurantiacum*
hawkweeds: All nonnative species and hybrids of the meadow subgenus	*Hieracium,* subgenus *Pilosella*
hawkweeds: All nonnative species and hybrids of the wall subgenus	*Hieracium,* subgenus *Hieracium*
herb-Robert	*Geranium robertianum*
hoary alyssum	*Berteroa incana*
houndstongue	*Cynoglossum officinale*
indigobush	*Amorpha fruticosa*
knapweed, black	*Centaurea nigra*
knapweed, brown	*Centaurea jacea*
knapweed, diffuse	*Centaurea diffusa*
knapweed, meadow	*Centaurea × gerstlaueri*
knapweed, Russian	*Rhaponticum repens*
knapweed, spotted	*Centaurea stoebe*
knotweed, Bohemian	*Fallopia × bohemica*
knotweed, giant	*Fallopia sachalinensis*
knotweed, Himalayan	*Persicaria wallichii*
knotweed, Japanese	*Fallopia japonica*
kochia	*Bassia scoparia*
lesser celandine	*Ficaria verna*
loosestrife, garden	*Lysimachia vulgaris*
loosestrife, purple	*Lythrum salicaria*
loosestrife, wand	*Lythrum virgatum*
Malta starthistle	*Centaurea melitensis*
parrotfeather	*Myriophyllum aquaticum*
perennial pepperweed	*Lepidium latifolium*
poison hemlock	*Conium maculatum*
policeman's helmet	*Impatiens glandulifera*
puncturevine	*Tribulus terrestris*
Ravenna grass	*Tripidium ravennae*
rush skeletonweed	*Chondrilla juncea*
saltcedar	*Tamarix ramosissima*
Scotch broom	*Cytisus scoparius*
shiny geranium	*Geranium lucidum*
spurge flax	*Thymelaea passerina*
spurge laurel	*Daphne laureola*
spurge, leafy	*Euphorbia virgata*
spurge, myrtle	*Euphorbia myrsinites*
sulfur cinquefoil	*Potentilla recta*
tansy ragwort	*Jacobaea vulgaris*
thistle, musk	*Carduus nutans*
thistle, plumeless	*Carduus acanthoides*
thistle, Scotch	*Onopordum acanthium*
velvetleaf	*Abutilon theophrasti*
water primrose	*Ludwigia hexapetala*
white bryony	*Bryonia alba*
wild chervil	*Anthriscus sylvestris*
yellow archangel	*Lamiastrum galeobdolon*
yellow floating heart	*Nymphoides peltata*
yellow nutsedge	*Cyperus esculentus*
yellow starthistle	*Centaurea solstitialis*

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		Alternate Contact	
Name:		Name:	
Organization:		Organization:	
Phone:		Phone:	
Email:		Email:	

Ecology Contacts (completed by Ecology Project Manager)

Ecology Project Manager		Alternate or Cultural Resource Contact	
Name:		Name:	
Program:		Program:	
Phone:		Phone:	
Email:		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
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

4. TRIBAL CONTACTS

In the event cultural resources are discovered, the following tribes will be contacted. See Section 10 for Additional Resources.

Tribe:		Tribe:	
Name:		Name:	
Title:		Title:	
Phone:		Phone:	
Email:		Email:	
Tribe:		Tribe:	
Name:		Name:	
Title:		Title:	
Phone:		Phone:	
Email:		Email:	

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:		State Agency:	
Agency:		Agency:	
Name:		Name:	
Title:		Title:	
Phone:		Phone:	
Email:		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
(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)

Informational Resources

DAHP (https://dahp.wa.gov)

Washington State Archeology (DAHP 2003)
(https://dahp.wa.gov/sites/default/files/Field%20Guide%20to%20WA%20Arch_0.pdf)

Association of Washington Archaeologists (https://www.archaeologyinwashington.com)

Potentially Interested Tribes

Interactive Map of Tribes by Area
(https://dahp.wa.gov/archaeology/tribal-consultation-information)

WSDOT Tribal Contact Website
(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.*

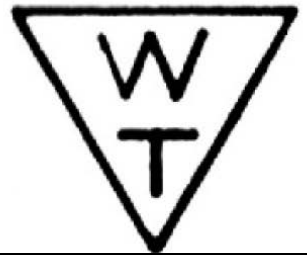
Right, from Top to Bottom: *Coins, token, spectacles and Montgomery Ward pitchfork toy discovered during Seattle Smith Cove shantytown (45-KI-1200) excavation.*

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...

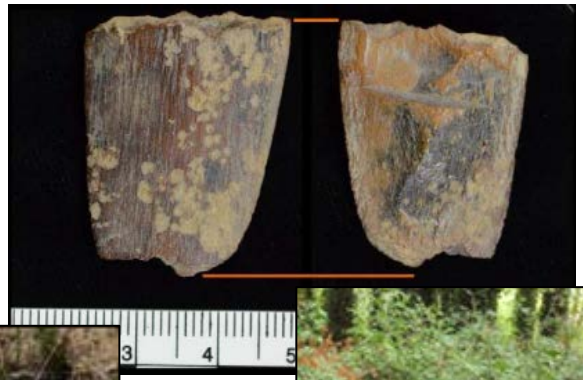
Potential human remains.

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 7th, 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 HTTP 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*

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.

#	Sps	dbh	Ht.	Cond.	Likely Cons. Impacts HTPA+BSBL	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

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 24th, 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 HTTP 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 tee 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 3rd, 2023. 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 24th, 2021, and accessed November 4th, 2023. Google Earth Pro 7.3.3.7786(32-bit) Build Date July 21, 2020. Copywrite 2020 Google LLC.

Klickitat County 2023. Klickitat County Tax Lot Maps. Accessed and downloaded Map on November 4th, 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 24th, 1992. Obtained via link from Tax Lot Map (Klickitat County, 2023).

Assessors Credentials

David M. Braun Ph.D., Owner, Braun Arboricultural Consulting LLC
Cell: 541-806-0347 dave@braunarborcare.com 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 preformed 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.

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

TERRA SURVEYING
1406 12th Street, Suite 100
Hood River, Oregon
Phone: 541.386.4531 Email: terra@gorge.net Web: terralandsurveying.com

APPENDIX 9

Earth Engineers, Inc.

2411 Southeast 8th Avenue • Camas • WA 98607
Phone: 360-567-1806
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

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

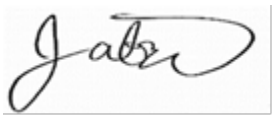
Prepared by:

Earth Engineers, Inc.
2411 Southeast 8th Avenue
Camas, Washington 98607
Phone: 360-567-1806

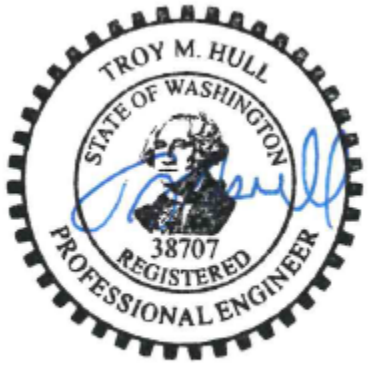
EEI Report No. 21-071-1

November 15, 2021

Earth Engineers, Inc.



Jacqui Boyer
Geotechnical Engineering Associate



Troy Hull, P.E.
Principal Geotechnical Engineer

TABLE OF CONTENTS

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.

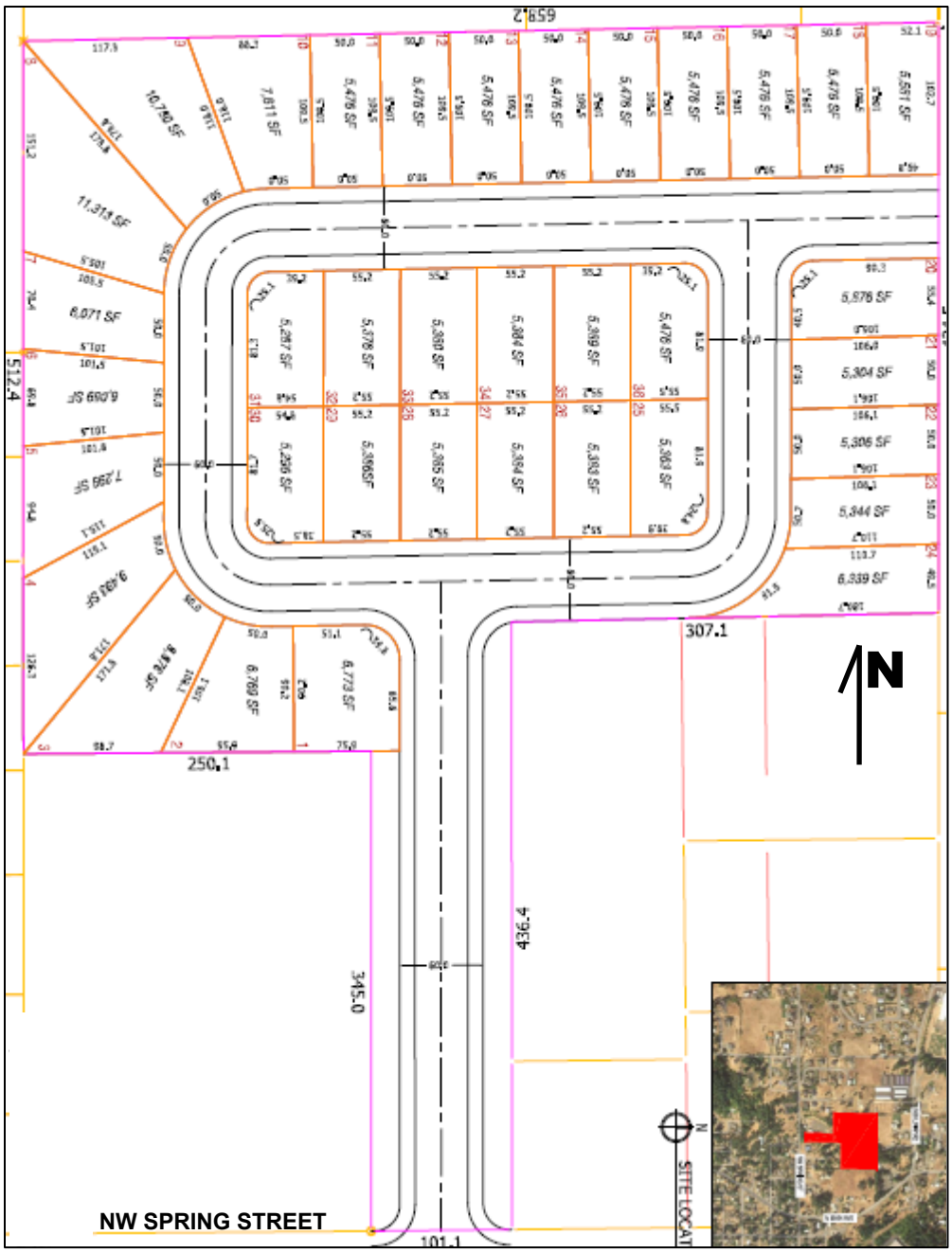


Figure 1: Preliminary site plan for the subject property. The subject property is outlined in pink and the proposed lots are outlined in orange. Base plan source: referenced above.

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.

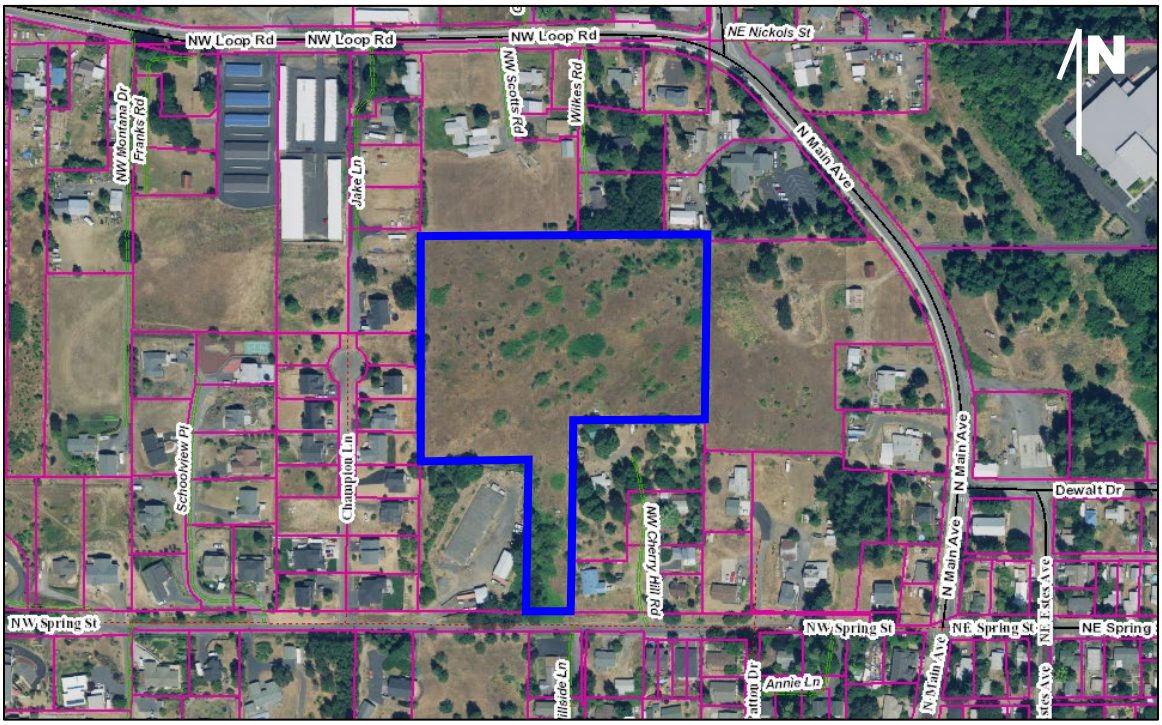


Figure 2: Vicinity map (base map source - http://imap.klickitatcounty.org/). The subject property is outlined in blue.

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[1].

We reviewed the United States Department of Agriculture (USDA) Soil Survey[2] 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[3]. 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[4].

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.

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[1] 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.
[2] Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/.
[3] 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.
[4] 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-½-foot of an 11-pound hammer which free falls roughly 39 inches driving a 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/) 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 x F_a)	0.663g
S_{M1} (=S_1 x F_v)	0.353g
S_{DS} (=2/3 x S_s x 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 PGA x 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 a 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[5]. We recommend that a Mononobe-Okabe earthquake thrust per linear foot of 4.7 psf * 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

[5] 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^2. 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

EEI should be retained to provide observation and testing of construction activities involved in the foundation, earthwork, and related activities of this project. EEI 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.

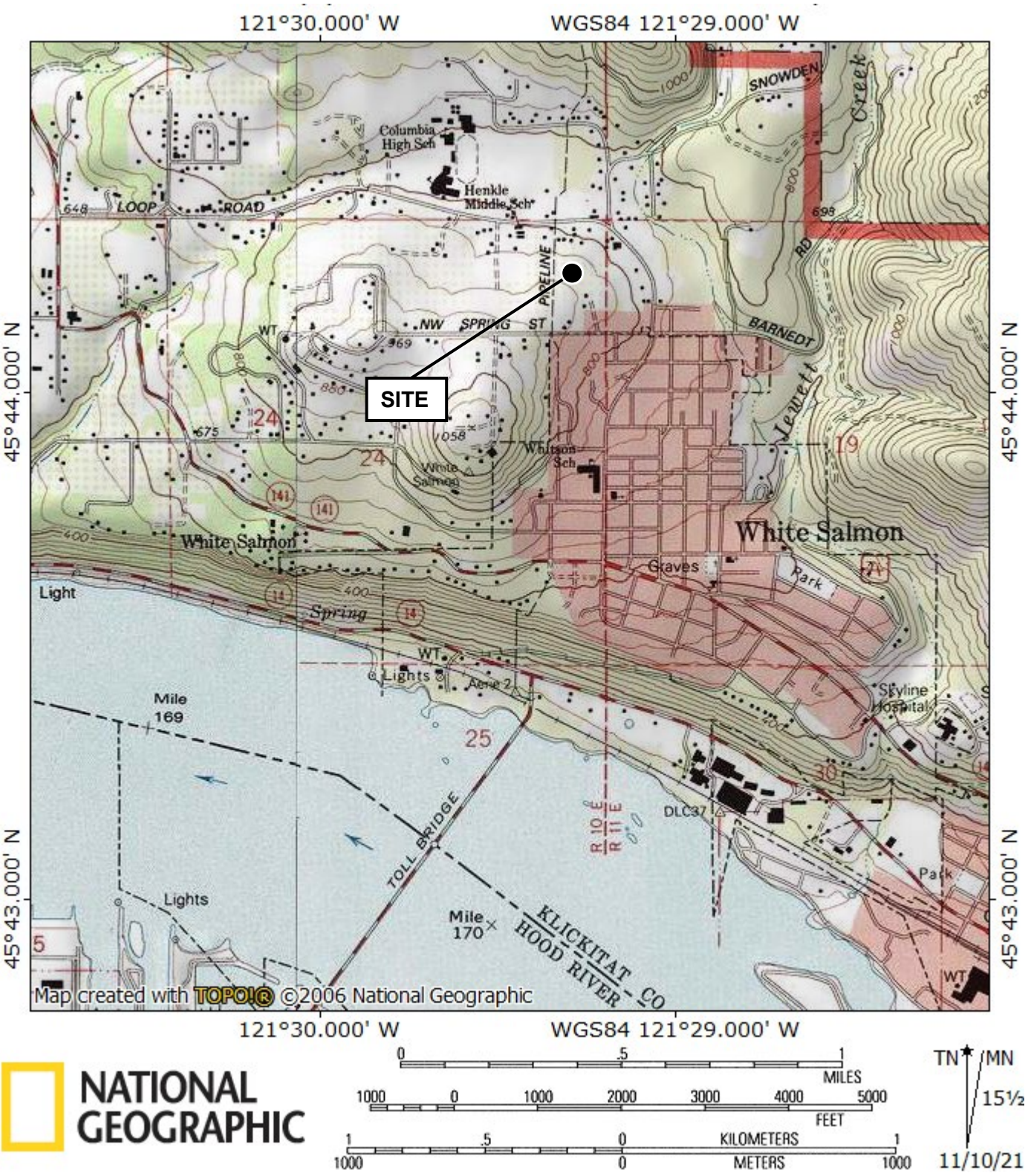
Once construction plans are finalized and a grading plan has been prepared, EEI should be retained to review those plans, and modify our existing recommendations related to the proposed construction, if determined to be necessary.

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.

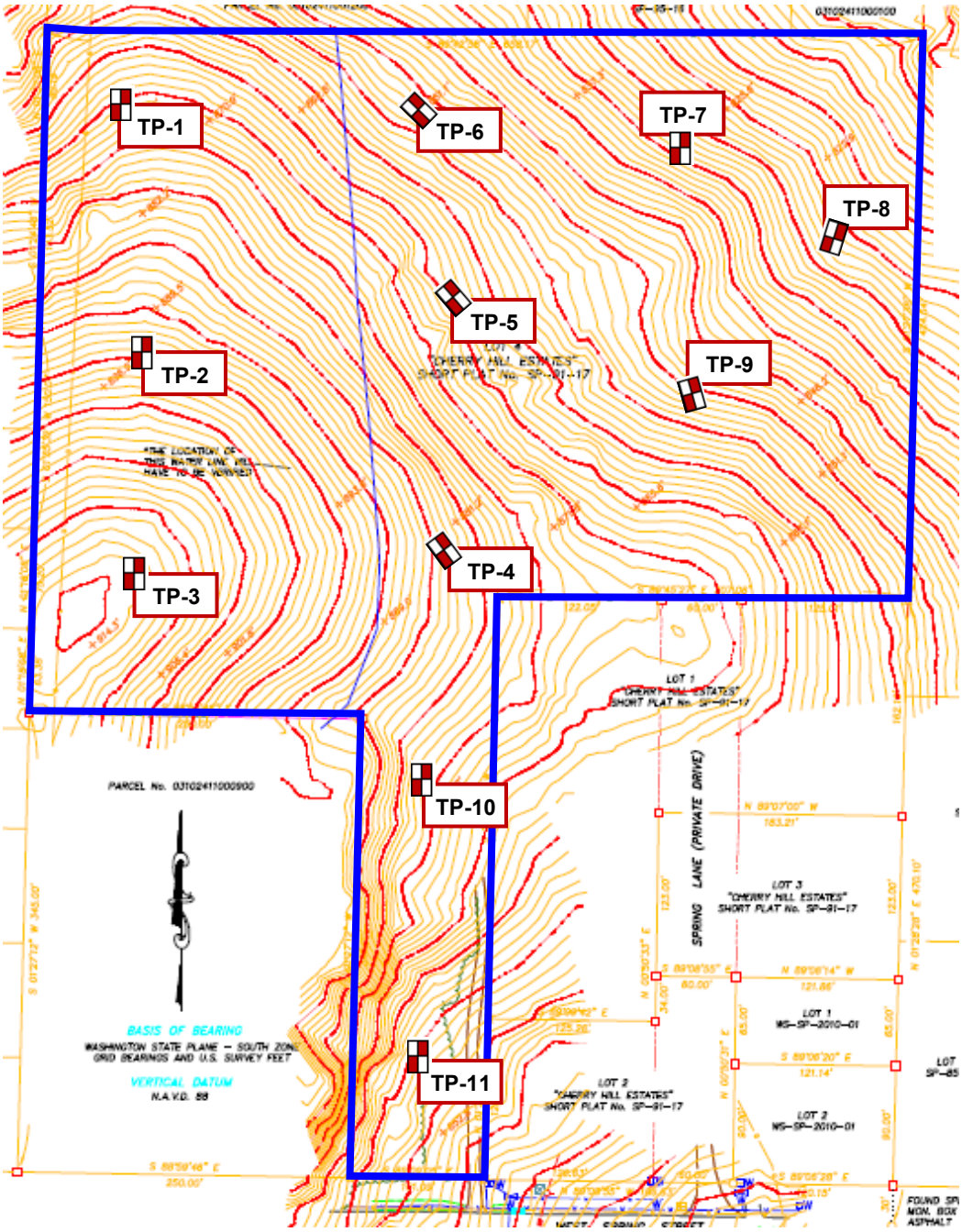
APPENDICES

APPENDIX A – SITE LOCATION PLAN



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. 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.

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. 21-071-1** **November 15, 2021**

Appendix C: Test Pit TP-1

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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			
3					Hard		4.5+					scraping on hard soil
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 Terra Surveying, dated December 2020.

Appendix C: Test Pit TP-2

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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												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 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 Terra Surveying, dated December 2020.

Appendix C: Test Pit TP-3

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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	Hard			15	94			
5			dark brown to red to orange to white decomposed basalt encountered	GRAB 3				15				
6				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 Terra Surveying, dated December 2020.

Appendix C: Test Pit TP-4

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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
2												
3			Silt (ML) - reddish brown sandy silt with decomposed rock fragments (black to red), moist, very stiff to hard									
4				GRAB 1	Hard			41				
5												
6				GRAB 2				43				
7				GRAB 3				44				practical digging refusal on consolidated soil
8												
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 Terra Surveying, dated December 2020.

Appendix C: Test Pit TP-5

Earth Engineers, Inc.

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

Appendix C: Test Pit TP-6

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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 Terra Surveying, dated December 2020.

Appendix C: Test Pit TP-7

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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												
3			Silt (ML) - orange-brown to reddish brown sandy silt with decomposed rock fragments (black to red), moist, very stiff to hard		Mod.							
4				GRAB 1				41				
5					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 Terra Surveying, dated December 2020.

Appendix C: Test Pit TP-8

Earth Engineers, Inc.

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

Earth Engineers, Inc.

Appendix C: Test Pit TP-9

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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												
3					Mod.							
4			Silt (ML) - brown to dark brown silt with few sand, decomposed rock fragments (black to red), moist, very stiff to hard	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.

Appendix C: Test Pit TP-10

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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 7 22						possible tilled soils
2			4-inch thick tree root encountered			49						
3						43 49 50						drive probe refusal at 3-inches
4			Silt (ML) - gray-brown to dark brown silt with few to little sand and gravel, decomposed rock fragments (black to red), moist, hard		Mod.							
5				GRAB 1				29	90			
6					Hard							
7												
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.

Appendix C: Test Pit TP-11

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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	GRAB 1	Mod.			9				possible tilled soils
2												
3												
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 Terra Surveying, dated December 2020.

APPENDIX D: SOIL CLASSIFICATION LEGEND

APPARENT CONSISTENCY OF COHESIVE SOILS (PECK, HANSON & THORNBURN 1974, AASHTO 1988)				
Descriptor	**SPT N_{60} (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_{60} is considered a crude approximation for cohesive soils.

APPARENT DENSITY OF COHESIONLESS SOILS (AASHTO 1988)	
Descriptor	**SPT N_{60} 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)

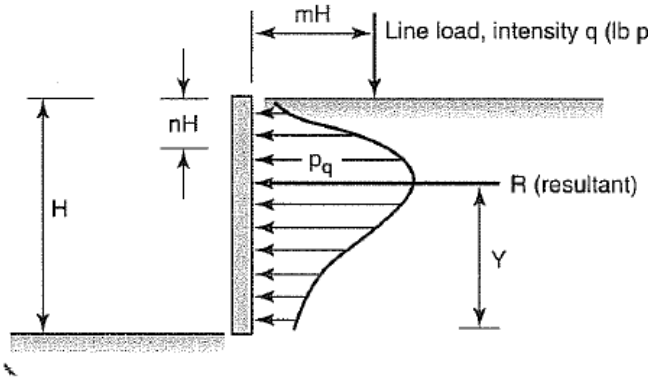
UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2488)				
Major Division			**Group Symbol**	**Description**
Coarse Grained Soils (more than 50% retained on #200 sieve)	**Gravel** (50% or more retained on No. 4 sieve)	Clean Gravel	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly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

Earth Engineers, Inc.

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

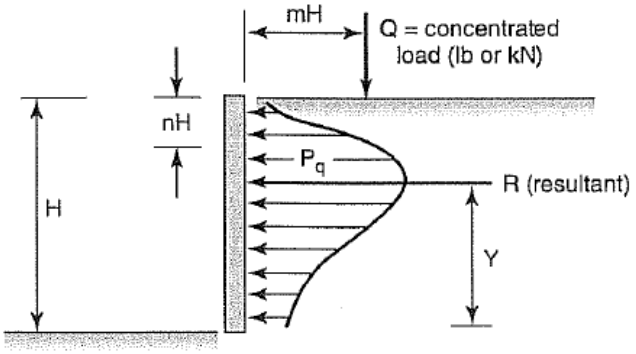
LINE LOAD (applicable for retaining walls not exceeding 20 feet in height):



m	R	Y
0.2	0.55q	0.60 H
0.4	0.55q	0.58 H
0.6	$\frac{0.64q}{m^2+1}$	0.52 H

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):



m	R	Y
0.2	$0.78\frac{Q}{H}$	0.59 H
0.4	$0.78\frac{Q}{H}$	0.59 H
0.6	$0.48\frac{Q}{H}$	0.48 H

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

AREAL LOAD:

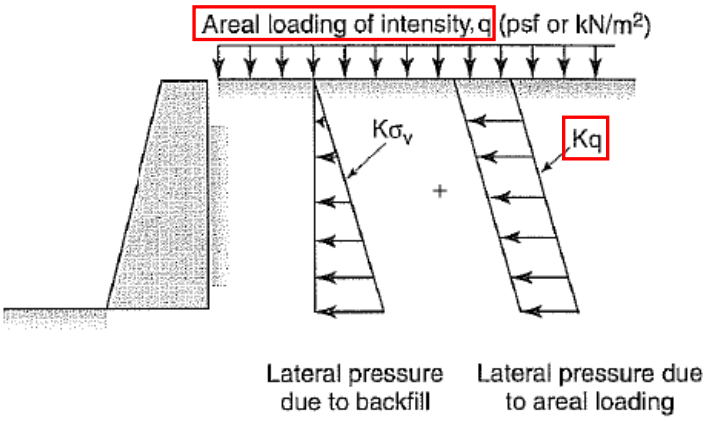
Figure 16-26 Influence of areal loading on wall pressures.

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."

CITY OF WHITE SALMON
CITY HALL OFFICE

EXHIBIT 6B

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

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 23rd.

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.

CITY OF WHITE SALMON
CITY HALL OFFICE

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

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

DATED this 6th day of September 2024

Troy Rayburn
SEPA Responsible Official

EXHIBIT 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 7th, 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 HTTP 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*

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.

#	Sps	dbh	Ht.	Cond.	Likely Cons. Impacts HTPA+BSBL	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

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 24th, 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 HTTP 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 tee 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 3rd, 2023. 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 24th, 2021, and accessed November 4th, 2023. Google Earth Pro 7.3.3.7786(32-bit) Build Date July 21, 2020. Copywrite 2020 Google LLC.

Klickitat County 2023. Klickitat County Tax Lot Maps. Accessed and downloaded Map on November 4th, 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 24th, 1992. Obtained via link from Tax Lot Map (Klickitat County, 2023).

Assessors Credentials

David M. Braun Ph.D., Owner, Braun Arboricultural Consulting LLC
Cell: 541-806-0347 dave@braunarborcare.com 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 preformed 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.

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 7th, 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 3rd, 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 3rd, 2023

EXHIBIT 8A

WHITE SALMON CHERRY HILL SUBDIVISION

TRANSPORTATION IMPACT STUDY

JULY 2024

PREPARED FOR:

Curtis Homes, LLC

CURTIS HOMES LLC
BUILDING A LEGACY YOU CAN LIVE IN

PREPARED BY:

Jenna Bogert, P.E.

Casey Dobbert

DKS

JENNA C. BOGERT
STATE OF WASHINGTON
22002086
REGISTERED
PROFESSIONAL ENGINEER

Exp: 10/02/24

DKS

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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.[1] 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

[1] 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

STUDY AREA	
NUMBER OF STUDY INTERSECTIONS	Three
ANALYSIS PERIODS	Weekday AM peak hour (7:00 am – 9:00 am) and PM peak hour (4:00 pm – 6:00 pm)
PROPOSED DEVELOPMENT	
SIZE AND LAND USE	Single-family subdivision on 7.93-acre parcel containing 36 units
PROJECT TRIPS	29 AM peak hour trips, 38 PM peak hour trips, and 394 daily trips
VEHICLE ACCESS POINTS	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.
OTHER TRANSPORTATION FACILITIES	
PEDESTRIAN AND BICYCLE FACILITIES	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.
TRANSIT FACILITIES	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).[2] The functional classification for the City streets is provided in the City's Urbanization Study.[3]

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 [a]	Major Collector	2	25 mph	Partial [c]	None
	Klickitat County [b]	Rural Major Collector				
LOOP ROAD	Klickitat County	Rural Major Collector	2	25 mph	Both Sides	None

[a] City jurisdiction south of Spring Street
[b] County jurisdiction north of Spring Street
[c] 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.

[2] Klickitat County Regional Transportation Plan, Adopted November 2018.

[3] White Salmon Urbanization Study, Columbia Planning + Design, June 2009.

PLANNED TRANSPORTATION PROJECTS

The City of White Salmon has a Transportation Improvement Program (TIP)[4] 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

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

[4] 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).[5] 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.

[5] https://www.wsdot.wa.gov/about/covid-19-transportation-report

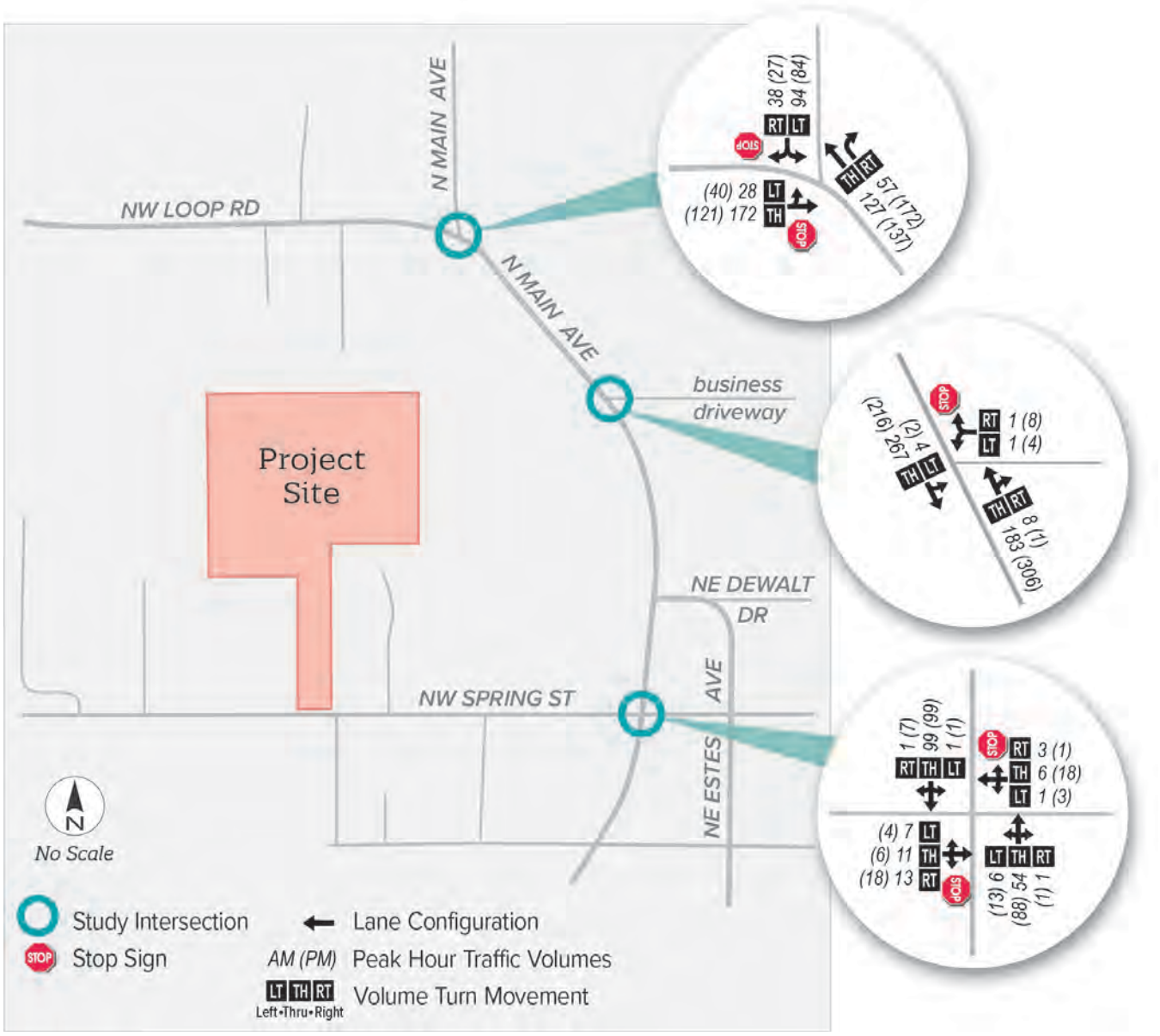

FIGURE 2: 2021 EXISTING TRAFFIC VOLUMES, LANE GEOMETRIES, AND TRAFFIC CONTROL

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

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.[6] 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.

[6] 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
UNSIGNALIZED								
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

Two-Way Stop (TWSC) Intersections:
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[7]. 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.

[7] 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.

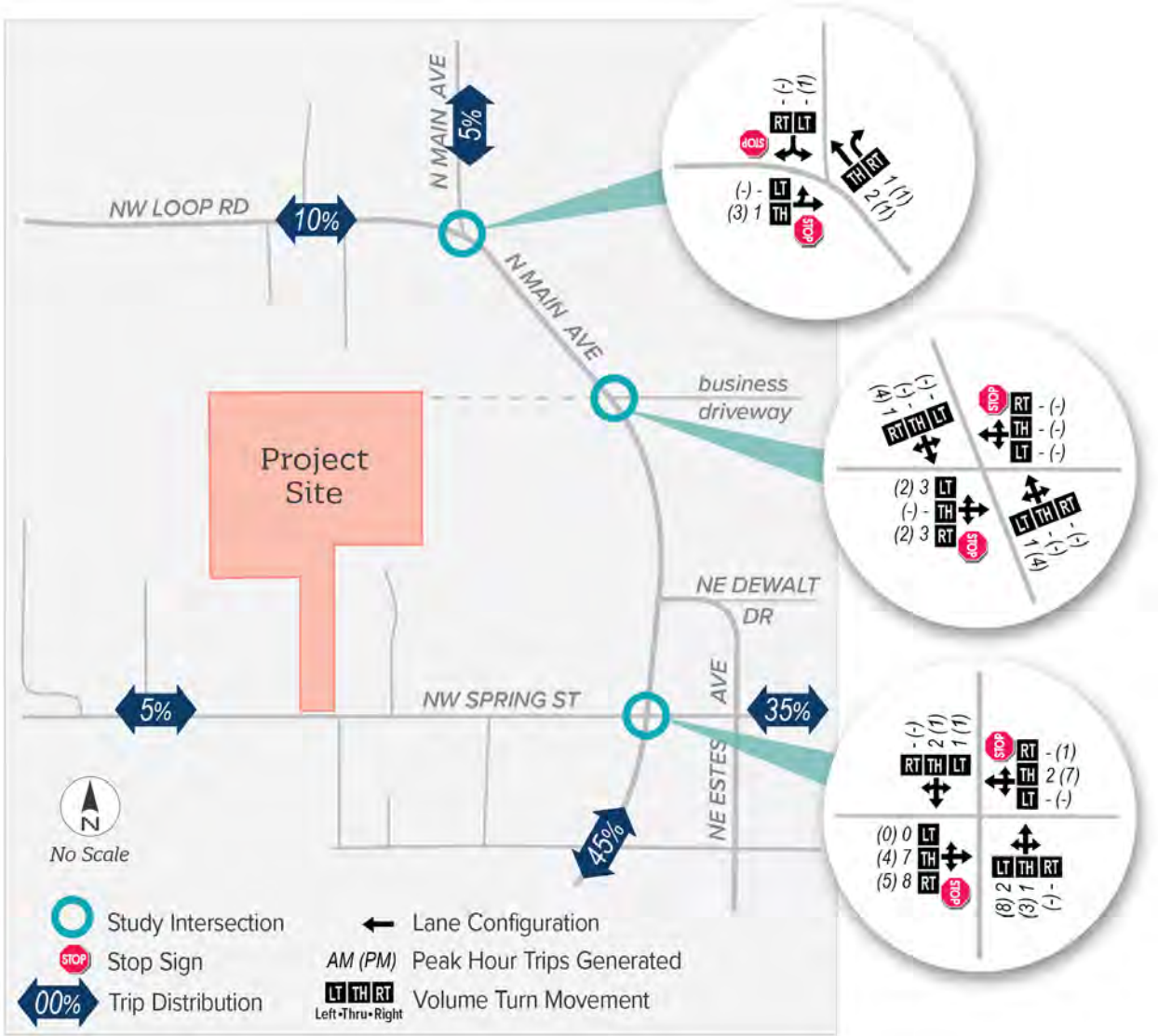

FIGURE 3: TRIP DISTRIBUTION AND PROJECT TRIPS

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.

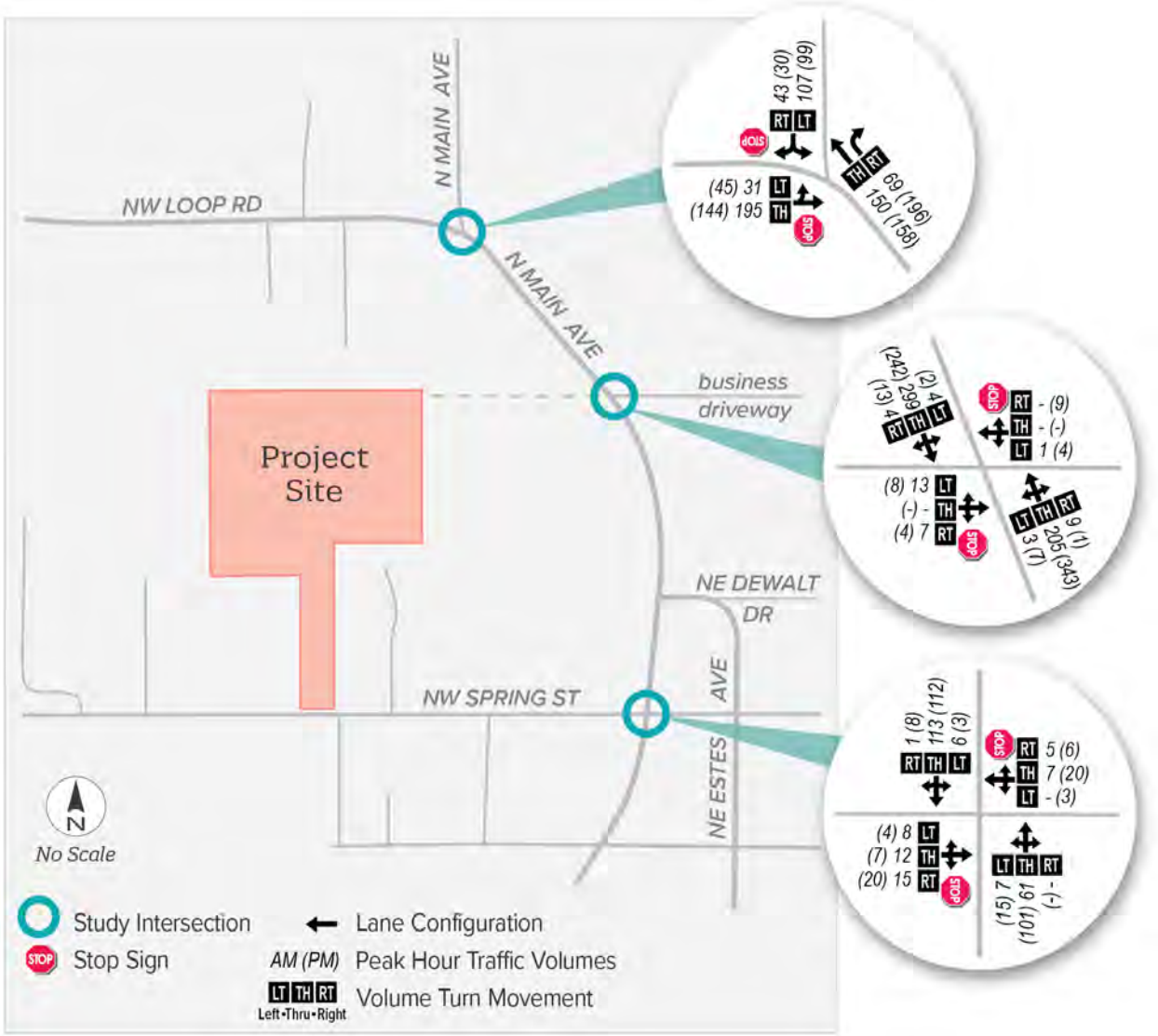

FIGURE 4: FUTURE 2027 NO BUILD AM & PM PEAK HOUR TRAFFIC VOLUMES

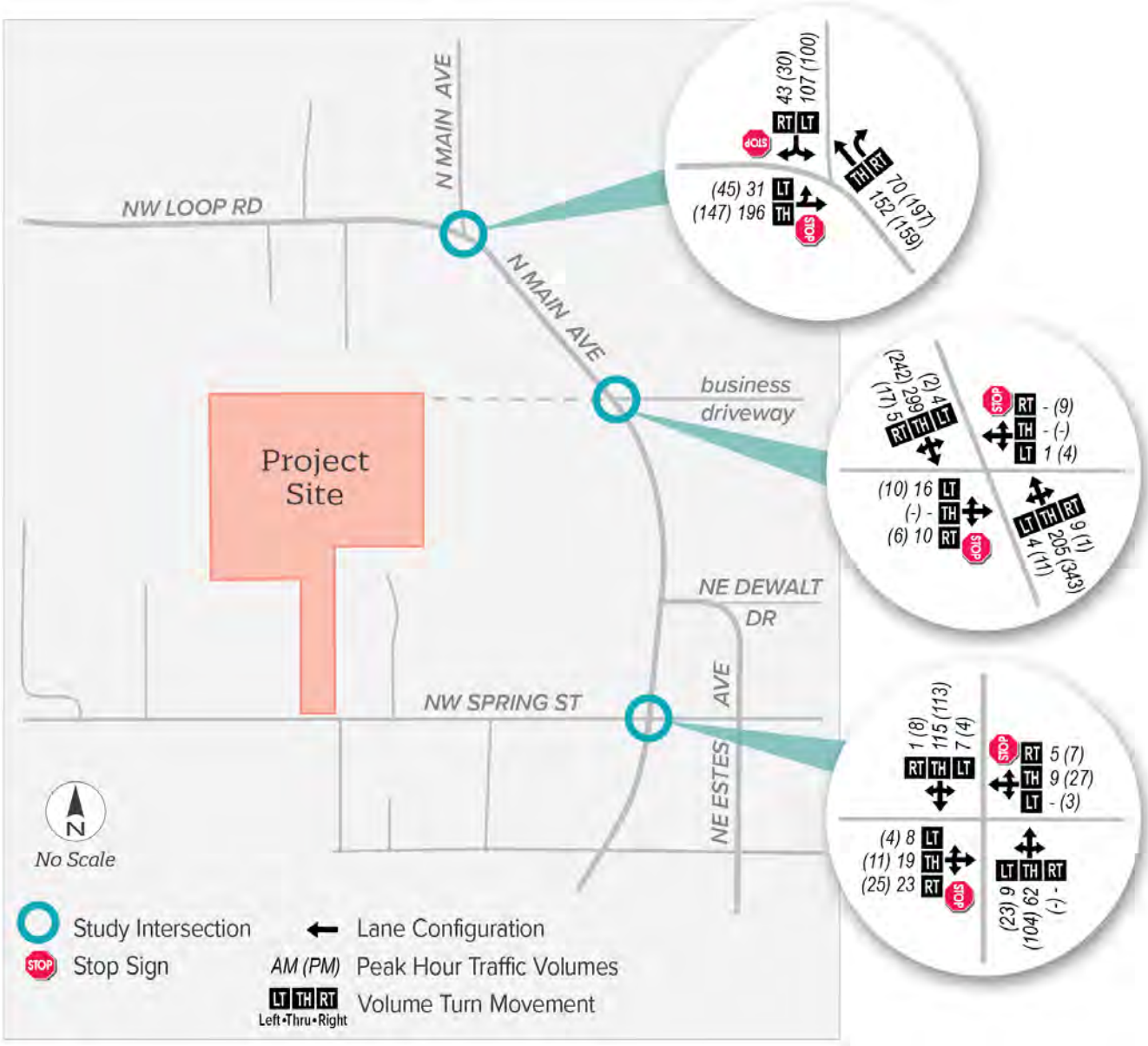

FIGURE 5: FUTURE 2027 BUILD AM & PM PEAK HOUR TRAFFIC VOLUMES

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
FUTURE 2027 NO BUILD								
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
FUTURE 2027 BUILD								
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

Two-Way Stop (TWSC) Intersections:
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[8], 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,[9] 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[10], 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.

[8] White Salmon Code of Ordinances, 13.01.070, Updated September 11, 2023.

[9] American Association of State Highway and Transportation Officials (AASHTO), 2018, Table 9-7.

[10] 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

CONTENTS

DKS

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APPENDIX A.

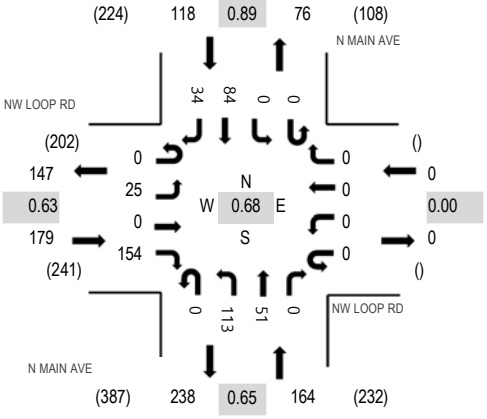
TRAFFIC COUNT DATA

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

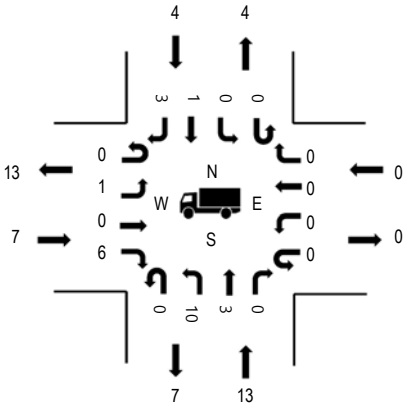
Location: 1 N MAIN AVE & NW LOOP RD AM
Date: Tuesday, March 23, 2021
Peak Hour: 07:35 AM - 08:35 AM
Peak 15-Minutes: 07:55 AM - 08:10 AM

Peak Hour

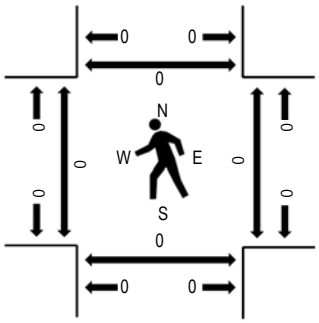
Motorized Vehicles



Heavy Vehicles



Pedestrians



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					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
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
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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

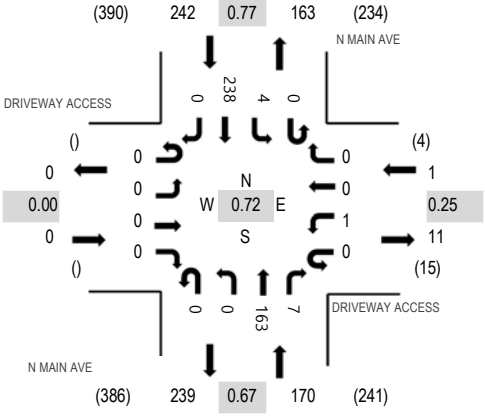
Location: 2 N MAIN AVE & DRIVEWAY ACCESS AM

(303) 216-2439
www.alltrafficdata.net

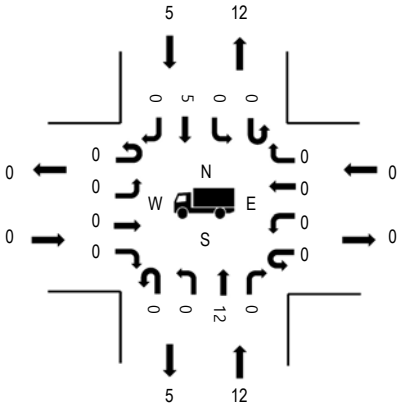
Location: 2 N MAIN AVE & DRIVEWAY ACCESS AM
Date: Tuesday, March 23, 2021
Peak Hour: 07:30 AM - 08:30 AM
Peak 15-Minutes: 07:55 AM - 08:10 AM

Peak Hour

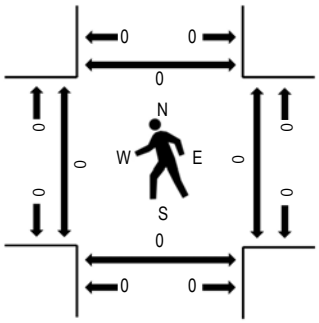
Motorized Vehicles



Heavy Vehicles



Pedestrians



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					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
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

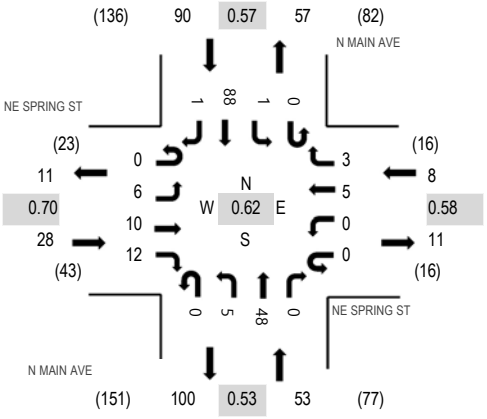
Location: 3 N MAIN AVE & NE SPRING ST AM

ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

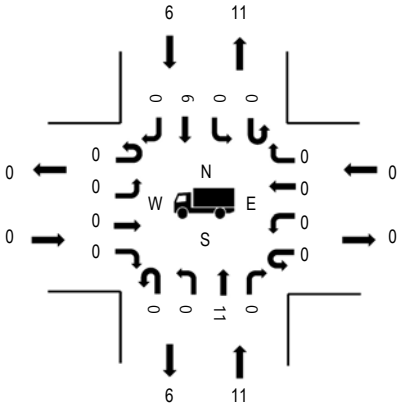
Location: 3 N MAIN AVE & NE SPRING ST AM
Date: Tuesday, March 23, 2021
Peak Hour: 07:35 AM - 08:35 AM
Peak 15-Minutes: 07:55 AM - 08:10 AM

Peak Hour

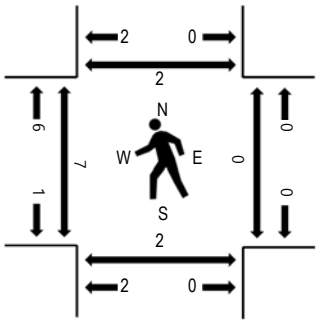
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	0.0%	0.70
WB	0.0%	0.58
NB	20.8%	0.53
SB	6.7%	0.57
All	9.5%	0.62

Traffic Counts - Motorized Vehicles

Interval Start Time	NE SPRING ST Eastbound				NE SPRING ST Westbound				N MAIN AVE Northbound				N MAIN AVE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
7:00 AM	0	0	1	0	0	0	0	0	0	1	4	0	0	0	4	0	10	109
7:05 AM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	3	122
7:10 AM	0	0	0	1	0	0	0	0	0	0	1	0	0	0	3	0	5	146
7:15 AM	0	0	0	1	0	0	0	0	0	0	2	0	0	0	1	0	4	155
7:20 AM	0	0	1	0	0	0	0	0	0	0	2	0	0	1	7	0	11	166
7:25 AM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	3	162
7:30 AM	0	1	0	1	0	0	0	0	0	0	1	0	0	0	4	0	7	175
7:35 AM	0	0	0	1	0	0	0	1	0	0	2	0	0	0	6	0	10	179
7:40 AM	0	1	1	2	0	0	0	0	0	0	1	0	0	0	3	0	8	175
7:45 AM	0	1	0	0	0	0	0	0	0	0	4	0	0	0	6	0	11	176
7:50 AM	0	0	1	1	0	0	0	0	0	0	8	0	0	0	5	0	15	172
7:55 AM	0	0	0	1	0	0	0	0	0	1	6	0	0	0	14	0	22	177
8:00 AM	0	1	2	1	0	0	0	0	0	0	10	0	0	0	9	0	23	163
8:05 AM	0	0	0	3	0	0	1	0	0	0	6	0	0	0	17	0	27	
8:10 AM	0	0	2	1	0	0	0	0	0	1	2	0	0	0	8	0	14	
8:15 AM	0	0	1	0	0	0	2	0	0	2	2	0	0	0	8	0	15	
8:20 AM	0	0	0	0	0	0	1	0	0	0	1	0	0	0	5	0	7	
8:25 AM	0	2	2	1	0	0	1	1	0	1	2	0	0	0	5	1	16	
8:30 AM	0	1	1	1	0	0	0	1	0	0	4	0	0	1	2	0	11	
8:35 AM	0	0	0	1	0	0	1	0	0	0	1	0	0	0	3	0	6	
8:40 AM	0	0	0	0	0	0	1	0	0	0	2	0	0	0	6	0	9	
8:45 AM	0	1	0	0	0	0	1	0	0	0	0	1	0	0	3	1	7	
8:50 AM	0	0	0	3	0	0	4	0	0	0	7	0	0	0	5	1	20	
8:55 AM	0	1	1	1	0	0	0	0	0	0	1	0	0	0	4	0	8	
Count Total	0	10	13	20	0	0	13	3	0	7	69	1	0	2	131	3	272	
Peak Hour	0	6	10	12	0	0	5	3	0	5	48	0	0	1	88	1	179	

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

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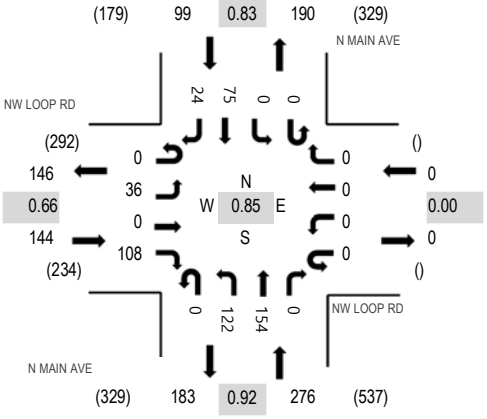
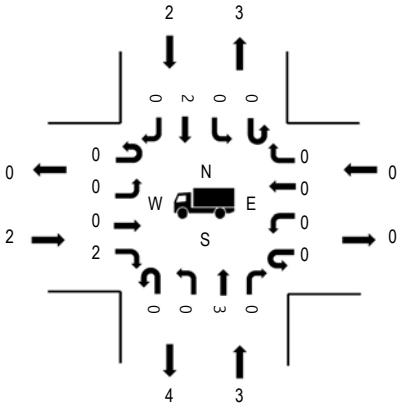
Location: 1 N MAIN AVE & NW LOOP RD PM
Date: Tuesday, March 23, 2021
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:20 PM - 05:35 PM

Peak Hour

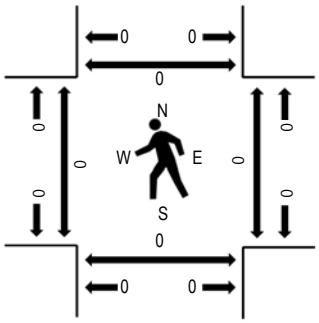
Motorized Vehicles



Heavy Vehicles



Pedestrians



Note: Total study counts contained in parentheses.

	HV%	PHF
EB	1.4%	0.66
WB	0.0%	0.00
NB	1.1%	0.92
SB	2.0%	0.83
All	1.3%	0.85

Traffic Counts - Motorized Vehicles

Interval Start Time	NW LOOP RD Eastbound				NW LOOP RD Westbound				N MAIN AVE Northbound				N MAIN AVE Southbound					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
4:00 PM	0	2	0	7	0	0	0	0	0	13	8	0	0	0	4	0	34	442
4:05 PM	0	1	0	4	0	0	0	0	0	11	9	0	0	0	3	2	30	453
4:10 PM	0	0	0	2	0	0	0	0	0	18	16	0	0	0	6	0	42	471
4:15 PM	0	0	0	10	0	0	0	0	0	11	9	0	0	0	7	3	40	466
4:20 PM	0	1	0	9	0	0	0	0	0	11	12	0	0	0	3	1	37	468
4:25 PM	1	1	0	4	0	0	0	0	0	12	14	0	0	0	3	1	36	493
4:30 PM	0	2	0	5	0	0	0	0	0	9	11	0	0	0	7	0	34	494
4:35 PM	0	1	0	5	0	0	0	0	0	12	12	0	0	0	7	0	37	513
4:40 PM	0	0	0	8	0	0	0	0	0	8	13	0	0	0	6	2	37	516
4:45 PM	0	2	0	6	0	0	0	0	0	7	14	0	0	0	8	0	37	519
4:50 PM	0	0	0	6	0	0	0	0	0	7	14	0	0	0	11	1	39	519
4:55 PM	0	3	0	5	0	0	0	0	0	12	15	0	0	0	3	1	39	514
5:00 PM	0	2	0	8	0	0	0	0	0	9	16	0	0	0	8	2	45	508
5:05 PM	0	4	0	14	0	0	0	0	0	14	12	0	0	0	2	2	48	
5:10 PM	0	2	0	7	0	0	0	0	0	11	10	0	0	0	5	2	37	
5:15 PM	0	4	0	10	0	0	0	0	0	10	10	0	0	0	6	2	42	
5:20 PM	0	4	0	20	0	0	0	0	0	16	8	0	0	0	9	5	62	
5:25 PM	0	5	0	6	0	0	0	0	0	8	10	0	0	0	3	5	37	
5:30 PM	0	5	0	17	0	0	0	0	0	8	15	0	0	0	6	2	53	
5:35 PM	0	3	0	7	0	0	0	0	0	12	12	0	0	0	6	0	40	
5:40 PM	0	2	0	2	0	0	0	0	0	8	18	0	0	0	8	2	40	
5:45 PM	0	2	0	11	0	0	0	0	0	10	7	0	0	0	6	1	37	
5:50 PM	0	2	0	6	0	0	0	0	0	8	11	0	0	0	6	1	34	
5:55 PM	0	0	0	6	0	0	0	0	0	11	5	0	0	0	11	0	33	
Count Total	1	48	0	185	0	0	0	0	0	256	281	0	0	0	144	35	950	
Peak Hour	0	36	0	108	0	0	0	0	0	122	154	0	0	0	75	24	519	

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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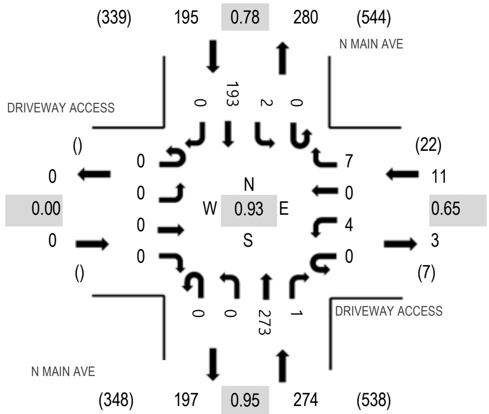
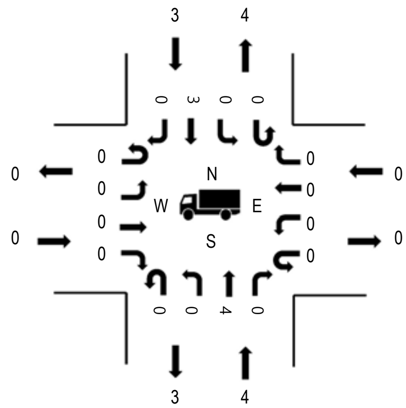
Location: 2 N MAIN AVE & DRIVEWAY ACCESS PM
Date: Tuesday, March 23, 2021
Peak Hour: 04:45 PM - 05:45 PM
Peak 15-Minutes: 05:20 PM - 05:35 PM

Peak Hour

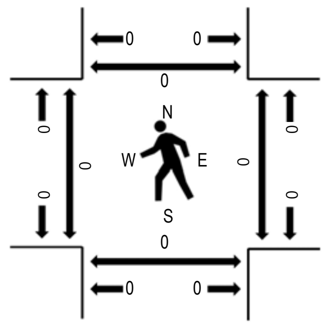
Motorized Vehicles



Heavy Vehicles



Pedestrians



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	DRIVEWAY ACCESS Eastbound				DRIVEWAY ACCESS Westbound				N MAIN AVE Northbound				N MAIN AVE Southbound					Rolling
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	Hour
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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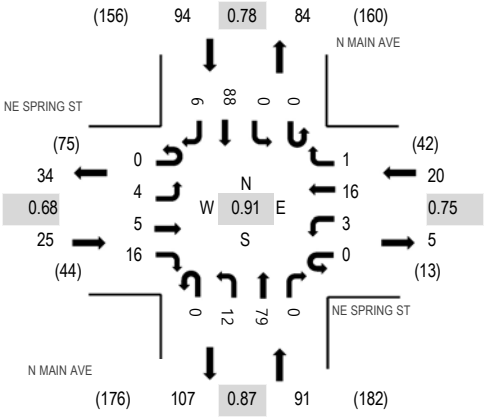
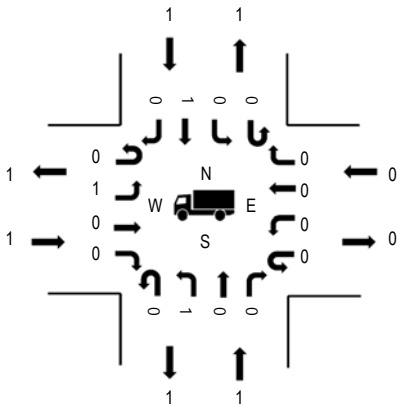
Location: 3 N MAIN AVE & NE SPRING ST PM
Date: Tuesday, March 23, 2021
Peak Hour: 04:35 PM - 05:35 PM
Peak 15-Minutes: 05:10 PM - 05:25 PM

Peak Hour

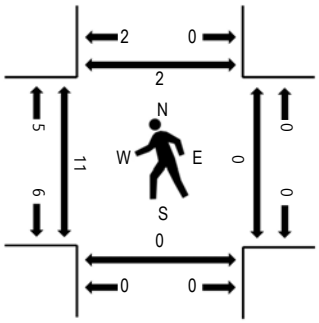
Motorized Vehicles



Heavy Vehicles



Pedestrians



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					Rolling Hour
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total	
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[1]. The following two sections provide interpretations of the analysis approaches.

[1] *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* ≤ 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	**Free Flow/Insignificant Delays:** 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	**Stable Operation/Minimal Delays:** 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	**Stable Operation/Acceptable Delays:** 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	**Approaching Unstable/Tolerable Delays:** 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	**Unstable Operation/Significant Delays:** Volumes at or near capacity. Vehicles may wait though 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	**Forced Flow/Excessive Delays:** 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.

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	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	562	1311	-
HCM Lane V/C Ratio	-	-	0.005	0.004	-
HCM Control Delay (s)	-	-	11.4	7.8	0
HCM Lane LOS	-	-	B	A	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	0
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	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	620	1241	-
HCM Lane V/C Ratio	-	-	0.021	0.002	-
HCM Control Delay (s)	-	-	10.9	7.9	0
HCM Lane LOS	-	-	B	A	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

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

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/v	14.48	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	-	-

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/v	10.81	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	-	-

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

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/v	13.22	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	-	-

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

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

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/v	14.54	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	-	-

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/v	11.09	10.6	0.97	0.42
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	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	-	-

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

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

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/v	13.21	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	-	-

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/v	10.09	11.02	1.38	0.24
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	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

N

0' 50' 100'

1" = 50' (22"x34")
1" = 100' (11"x17")

EXISTING GAS LINE EASEMENT
33,891 SF - 0.77 AC

PROPOSED RELOCATION OF 14"Ø STEEL WATERLINE

PROPOSED 30' CITY OF W.S. WATERLINE EASEMENT

9 — 17,716 SF
10 — 6,878 SF
11 — 6,072 SF
12 — 6,072 SF
13 — 6,072 SF
14 — 6,072 SF
15 — 6,072 SF
16 — 6,072 SF
17 — 6,072 SF
18 — 6,191 SF

13.5"OAK
13.5"OAK

PROPOSED POND AREA

NORTH ROAD

PROPOSED SANITARY SEWER CONNECTION

8 — 13,509 SF
7 — 7,662 SF
6 — 7,605 SF
5 — 7,605 SF
4 — 11,765 SF

EXISTING FORCEMAIN GAS LINE

19.5"OAK
25.3"OAK

PROPOSED 2,752 SF HERITAGE TREE PROTECTION EASEMENT (HTPE)

16.9"OAK

WEST ROAD

27 — 5,464 SF
26 — 5,367 SF
25 — 5,365 SF
24 — 5,364 SF
23 — 5,362 SF
22 — 5,360 SF
21 — 5,358 SF
20 — 5,356 SF
19 — 5,414 SF

NANCY WHITE
FOUR OAKS SUBDIVISION
(31 LOTS)

28 — 5,431 SF
29 — 5,366 SF
30 — 5,364 SF
31 — 5,362 SF
32 — 5,361 SF
33 — 5,359 SF
34 — 5,357 SF
35 — 5,355 SF
36 — 5,454 SF

N. MAIN AVE

PROPOSED SANITARY SEWER CONNECTION

SOUTH ROAD

PROPOSED WATER LINE CONNECTION

PROPOSED RELOCATION OF 14"Ø STEEL WATERLINE

3 — 15,436 SF
2 — 5,922 SF
1 — 5,245 SF

PROPOSED SWALE

PROPOSED CURB DRAIN

PROPOSED 15' CITY OF W.S. WATERLINE EASEMENT

PROPOSED NO-BUILD EASEMENT
33,891 SF - 0.77 AC

PROPOSED ROW

ACCESS ROAD

PROPOSED ROW

PROPOSED 2.5-FOOT RETAINING WALL
(2.5'W x 2.5'H x 81.0'L)

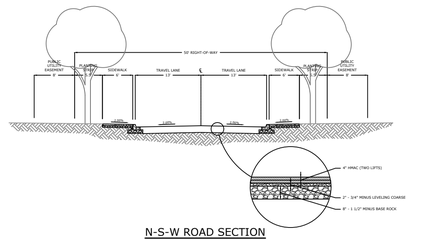
13.4"OAK
22.2"OAK
15.8"OAK

PROPOSED 3,443 SF HERITAGE TREE PROTECTION EASEMENT (HTPE)

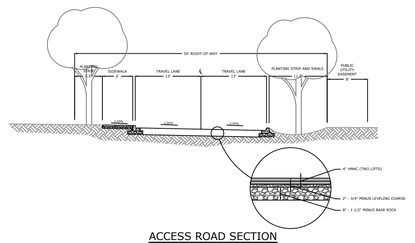
NW SPRING ST

NOTE:

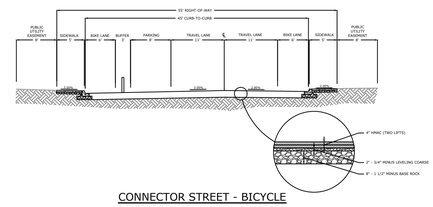
DEDICATION OF A HERITAGE TREE PROTECTION EASEMENT (HTPE) CONVEYS TO THE PUBLIC A BENEFICIAL INTEREST IN THE LAND WITHIN THE EASEMENT. THIS INTEREST INCLUDES THE PRESERVATION OF EXISTING HERITAGE TREE FOR ALL PURPOSES THAT BENEFIT THE PUBLIC HEALTH, SAFETY AND WELFARE, INCLUDING CONTROL OF SURFACE WATER 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.



N-S-W ROAD SECTION



ACCESS ROAD SECTION



CONNECTOR STREET - BICYCLE

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

REVISION 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

SHEET NAME
SITE PLAN

SHEET NO. 3 OF 4

Gray & Osborne, Inc.
CONSULTING ENGINEERS

EXHIBIT 8B

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 SUBDIVISON TRANSPORTATION IMPACT STUDY
CITY OF WHITE SALMON, KLICKITAT 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 contain 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.

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 with in 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

Earth Engineers, Inc.

2411 Southeast 8th Avenue • Camas • WA 98607
Phone: 360-567-1806
www.earth-engineers.com

EXHIBIT 9

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

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

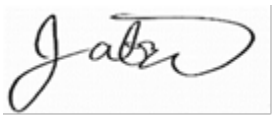
Prepared by:

Earth Engineers, Inc.
2411 Southeast 8th Avenue
Camas, Washington 98607
Phone: 360-567-1806

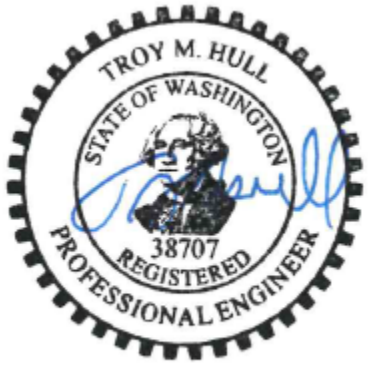
EEI Report No. 21-071-1

November 15, 2021

Earth Engineers, Inc.



Jacqui Boyer
Geotechnical Engineering Associate



Troy Hull, P.E.
Principal Geotechnical Engineer

TABLE OF CONTENTS

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.

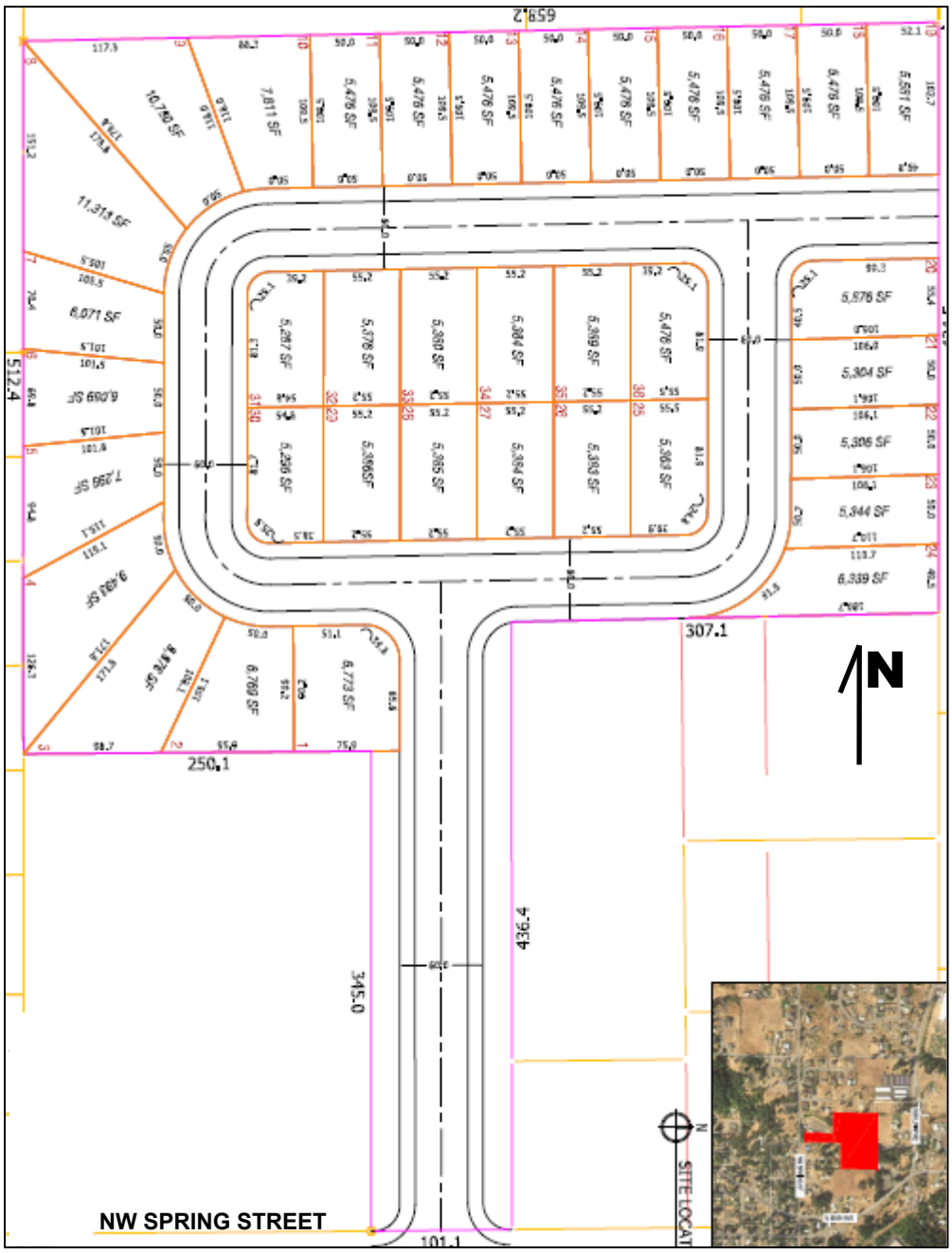


Figure 1: Preliminary site plan for the subject property. The subject property is outlined in pink and the proposed lots are outlined in orange. Base plan source: referenced above.

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.

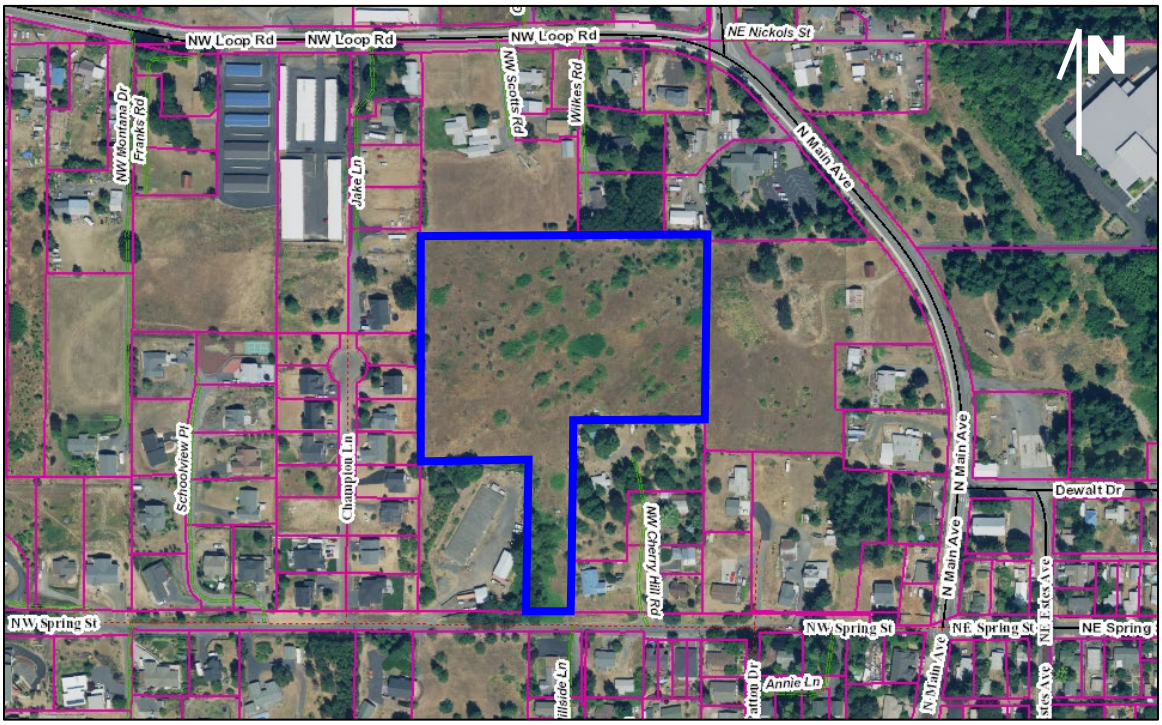


Figure 2: Vicinity map (base map source - http://imap.klickitatcounty.org/). The subject property is outlined in blue.

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[1].

We reviewed the United States Department of Agriculture (USDA) Soil Survey[2] 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[3]. 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[4].

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.

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[1] 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.
[2] Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at http://websoilsurvey.nrcs.usda.gov/.
[3] 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.
[4] 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-½-foot of an 11-pound hammer which free falls roughly 39 inches driving a 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/) 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 x F_a)	0.663g
S_{M1} (=S_1 x F_v)	0.353g
S_{DS} (=2/3 x S_s x 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 PGA x 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 a 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[5]. We recommend that a Mononobe-Okabe earthquake thrust per linear foot of 4.7 psf * 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

[5] 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^2. 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

EEI should be retained to provide observation and testing of construction activities involved in the foundation, earthwork, and related activities of this project. EEI 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.

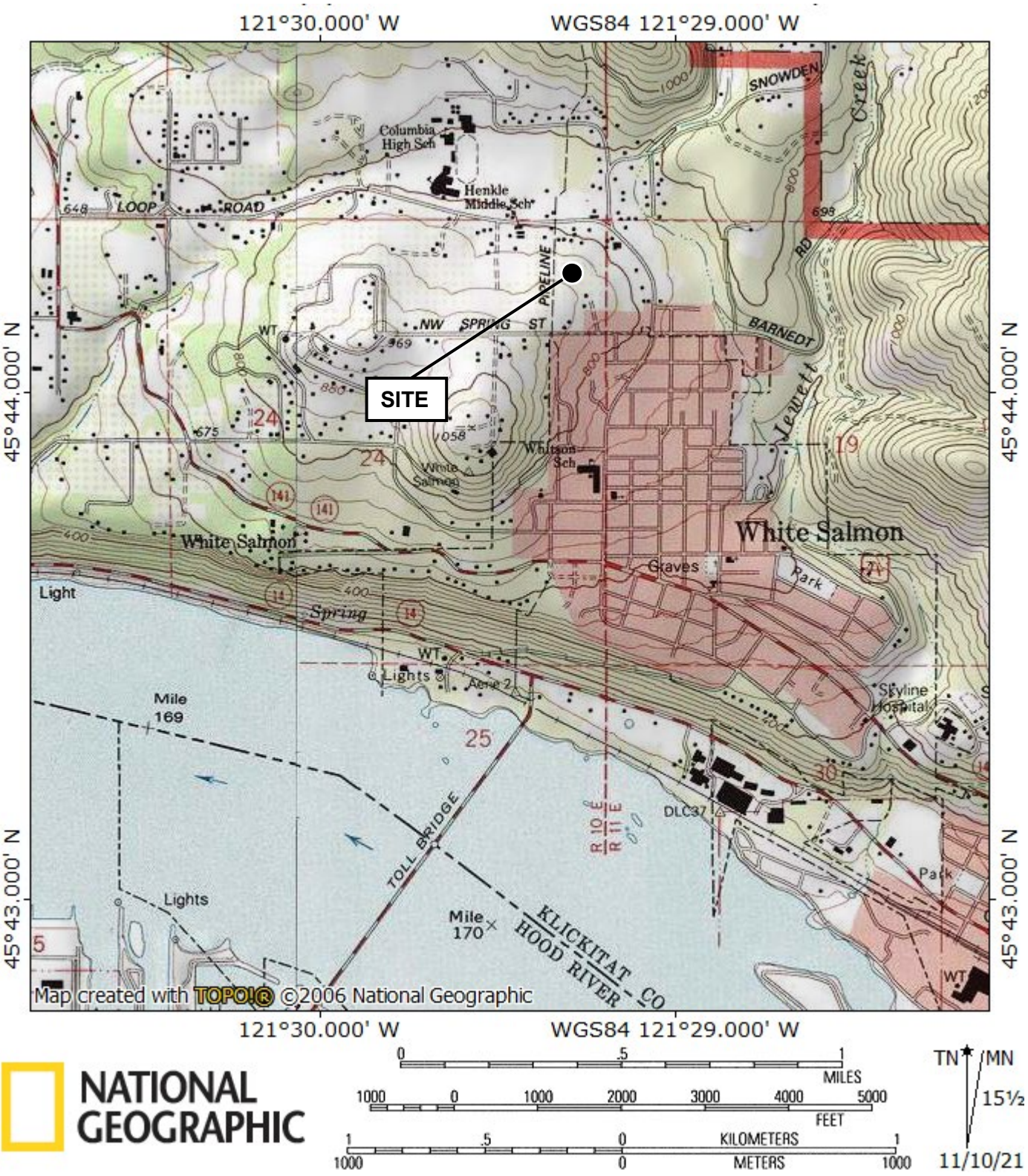
Once construction plans are finalized and a grading plan has been prepared, EEI should be retained to review those plans, and modify our existing recommendations related to the proposed construction, if determined to be necessary.

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.

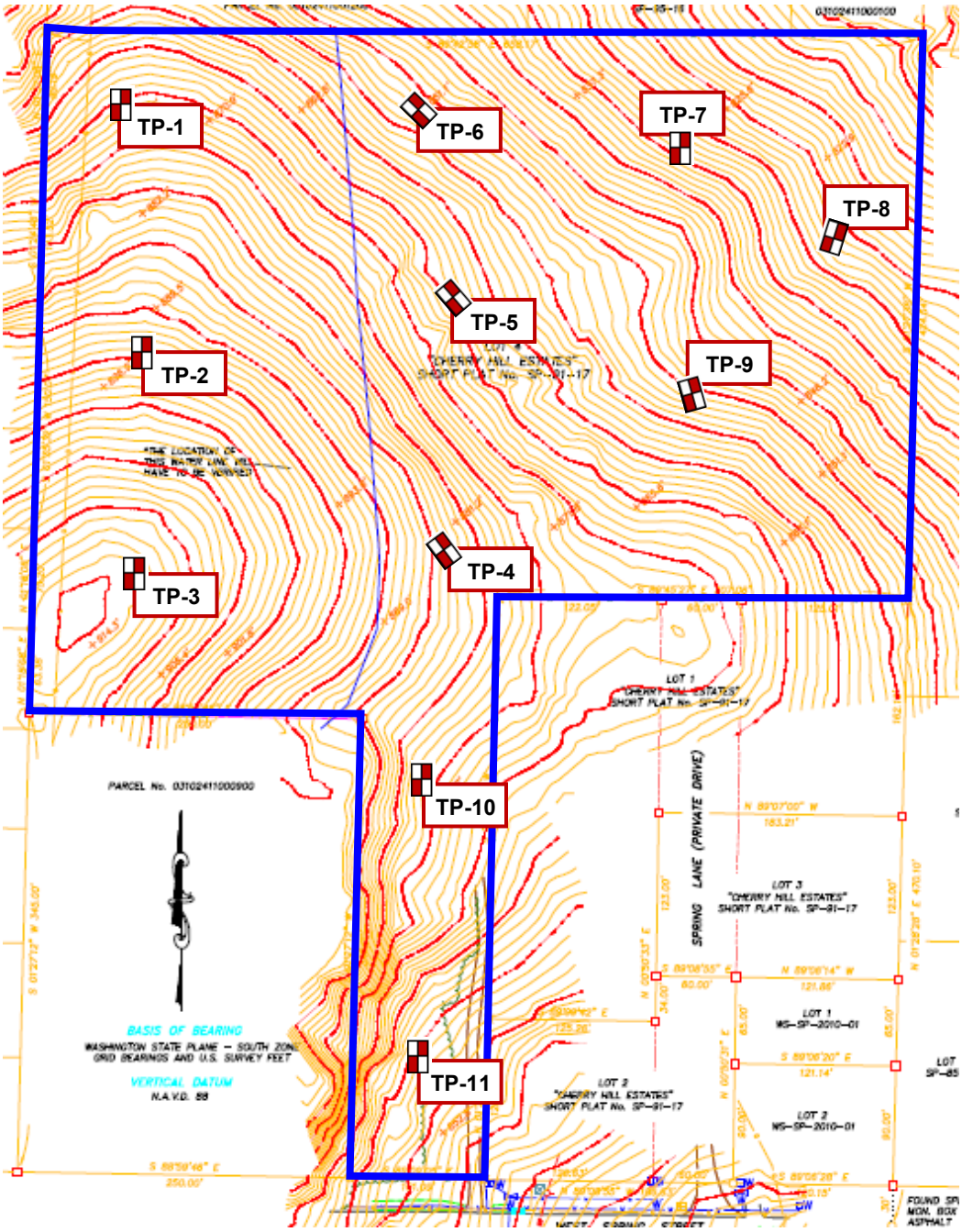
APPENDICES

APPENDIX A – SITE LOCATION PLAN



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. 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.

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. 21-071-1** **November 15, 2021**

Appendix C: Test Pit TP-1

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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			
3					Hard		4.5+					scraping on hard soil
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 Terra Surveying, dated December 2020.

Appendix C: Test Pit TP-2

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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												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 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 Terra Surveying, dated December 2020.

Appendix C: Test Pit TP-3

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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	Hard			15	94			
5			dark brown to red to orange to white decomposed basalt encountered	GRAB 3				15				
6				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 Terra Surveying, dated December 2020.

Appendix C: Test Pit TP-4

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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
2												
3			Silt (ML) - reddish brown sandy silt with decomposed rock fragments (black to red), moist, very stiff to hard									
4				GRAB 1	Hard			41				
5												
6				GRAB 2				43				
7				GRAB 3				44				practical digging refusal on consolidated soil
8												
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 Terra Surveying, dated December 2020.

Appendix C: Test Pit TP-5

Earth Engineers, Inc.

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

Appendix C: Test Pit TP-6

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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 Terra Surveying, dated December 2020.

Appendix C: Test Pit TP-7

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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												
3			Silt (ML) - orange-brown to reddish brown sandy silt with decomposed rock fragments (black to red), moist, very stiff to hard		Mod.							
4				GRAB 1				41				
5					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 Terra Surveying, dated December 2020.

Appendix C: Test Pit TP-8

Earth Engineers, Inc.

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

Earth Engineers, Inc.

Appendix C: Test Pit TP-9

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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												
3					Mod.							
4			Silt (ML) - brown to dark brown silt with few sand, decomposed rock fragments (black to red), moist, very stiff to hard	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.

Appendix C: Test Pit TP-10

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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 7 22						possible tilled soils
2			4-inch thick tree root encountered			49						
3						43 49 50						drive probe refusal at 3-inches
4			Silt (ML) - gray-brown to dark brown silt with few to little sand and gravel, decomposed rock fragments (black to red), moist, hard		Mod.							
5				GRAB 1				29	90			
6					Hard							
7												
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.

Appendix C: Test Pit TP-11

Earth Engineers, Inc.

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: Lithologic Symbol	Lithology: Geologic Description of Soil and Rock Strata	Sampling Data: Sample Number	Digging Effort	Drive Probe Blows Per 6 Inches (0 20 40 60)	Pocket Pen. (tsf)	Moisture Content (%)	% Passing #200 Sieve	Liquid Limit	Plastic Limit	Remarks
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	GRAB 1	Mod.			9				possible tilled soils
2												
3												
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 Terra Surveying, dated December 2020.

APPENDIX D: SOIL CLASSIFICATION LEGEND

APPARENT CONSISTENCY OF COHESIVE SOILS (PECK, HANSON & THORNBURN 1974, AASHTO 1988)				
Descriptor	**SPT N_{60} (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_{60} is considered a crude approximation for cohesive soils.

APPARENT DENSITY OF COHESIONLESS SOILS (AASHTO 1988)	
Descriptor	**SPT N_{60} 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)

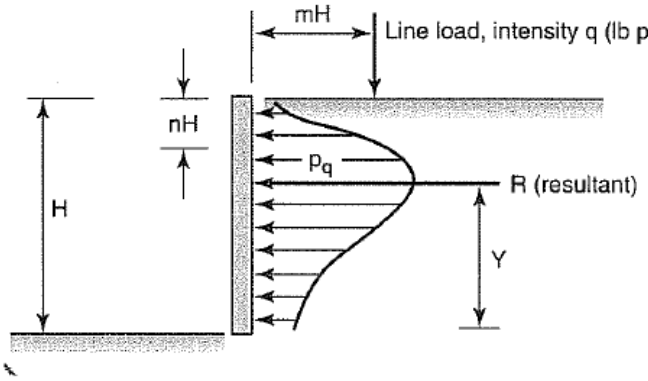
UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2488)				
Major Division			**Group Symbol**	**Description**
Coarse Grained Soils (more than 50% retained on #200 sieve)	**Gravel** (50% or more retained on No. 4 sieve)	Clean Gravel	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly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

Earth Engineers, Inc.

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

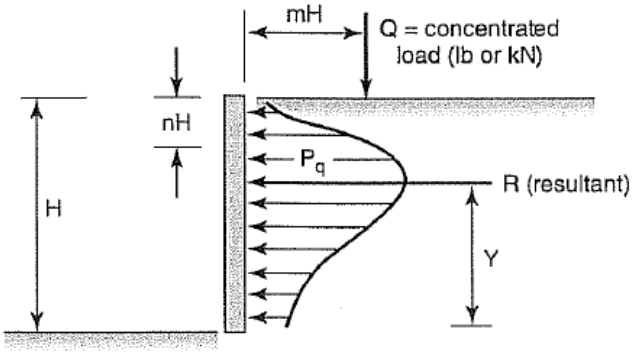
LINE LOAD (applicable for retaining walls not exceeding 20 feet in height):



m	R	Y
0.2	0.55q	0.60 H
0.4	0.55q	0.58 H
0.6	$\frac{0.64q}{m^2+1}$	0.52 H

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):



m	R	Y
0.2	$0.78\frac{Q}{H}$	0.59 H
0.4	$0.78\frac{Q}{H}$	0.59 H
0.6	$0.48\frac{Q}{H}$	0.48 H

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

AREAL LOAD:

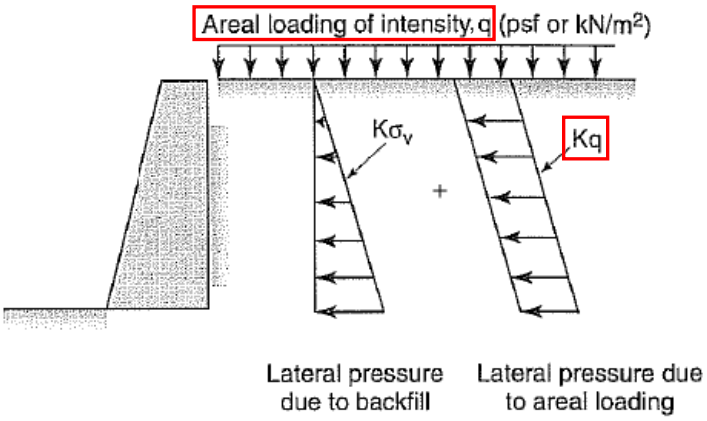
Figure 16-26 Influence of areal loading on wall pressures.

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."

CITY OF WHITE SALMON
CITY HALL

EXHIBIT 10A

Notice of Application/SEPA Determination
(Optional DNS Process)

NOTICE OF APPLICATION/SEPA Comment Period Deadline: February 8th, 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 8th, 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

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 8th, 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

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

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

ROGERSON KENNETH
1055 CHAMPION LANE
WHITE SALMON WA 98672

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

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

REYES MIGUEL
PO BOX 2601
WHITE SALMON WA 98672

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

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

CRISP DANIEL
1035 CHAMPION LN
WHITE SALMON WA 98672

Dept Fish and Wildlife
PO Box 213
Lyle, WA 98635

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

WOOLPERT STEVEN
PO BOX 1507
WHITE SALMON WA 98672

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

Klickitat County Health
PO Box 159
White Salmon, WA 98672

MADSEN MORRES
1060 CHAMPION LN
WHITE SALMON WA 98672

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

Underwood Conservation District
PO Box 96
White Salmon, WA 98672

TRABANT CARL
1070 CHAMPION LN
WHITE SALMON WA 98672

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

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

ANDERSON JAMES
PO BOX 2409
WHITE SALMON WA 98672

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

Department of Natural Resources
PO Box 178
Husum, WA 98623

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

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

SEPA Responsible Official
600 Capitol Way North
Olympia, WA 98501

WA Dept. of Transportation
Planning Department
11018 NE 51st Circle
Vancouver, WA 98682-8866

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

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

Planning

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

Notice of Application/SEPA Determination - Cherry Hill NW Subdivision

NOTICE OF APPLICATION/SEPA

Comment Period Deadline: February 8th, 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.

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 8th, 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 below in the supporting documents.

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 8th, 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

Supporting Documents

- 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

View Full Contact Details

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

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	Region
KLICKITAT	Central

To Submit Comments
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. StatementofCritialSlopeCURTISHOMES.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.

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

EXHIBIT 10B

WS SEPA 2004.001 Cherry Hill NW Subdivision

Nathen Erickson <nathene@klickitatcounty.org> Mon, Feb 5, 2024 at 4:54 PM
To: Erika Castro-Guzman <erikac@ci.white-salmon.wa.us>

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

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 3rd 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>

SEPA 202400404 comments for WS-SEPA-2024.001

ECY RE CRO SEPA Coordinator <crosepa@ecy.wa.gov> Tue, Feb 6, 2024 at 3:47 PM
To: "erikac@whitesalmonwa.gov" <erikac@whitesalmonwa.gov>

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

202400404_Klickitat_Cherry Hill NW Subdivision.pdf
197K

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.

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

Sincerely,

Joy Espinoza

Joy Espinoza
SEPA Coordinator
Central Regional Office
509-379-3967
crosepacoordinator@ecy.wa.gov

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

Spring St Development

Kevin Herman <kevinmherman@gmail.com> Thu, Feb 8, 2024 at 5:17 PM
To: Erika Castro-Guzman <erikac@ci.white-salmon.wa.us>

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>

Cherry Hill NW subdivision

lam at gorge.net <lam@gorge.net> Thu, Feb 8, 2024 at 3:57 PM
To: erikac@whitesalmonwa.gov

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>

Comment on Cherry Hill NW Subdivision Application

Shelley Baxter <shelldolphin@gmail.com> Thu, Feb 8, 2024 at 10:25 AM
To: Erika Castro-Guzman <erikac@ci.white-salmon.wa.us>

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.

Cherry Hill Sepa comment Feb 2024.docx
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>

NW Cherry Hill Project

Sumati S. <retrosuzk@gmail.com> Thu, Feb 8, 2024 at 10:16 AM
To: erikac@whitesalmonwa.gov

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

EXHIBIT 10C

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 9th 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 25th, 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.

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 23rd 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 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.

HRK ENGINEERING & FIELD SERVICES

489 N. 8TH STREET, SUITE 201
HOOD RIVER, OREGON 97031 ■ 541.386.6480

EXHIBIT 11

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[1].

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[2] 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.

[1]Natural Background Soil Metals Concentrations in Washington State, Washington State Department of Ecology, Toxics Cleanup Program publication, October 1994.
[2]The Yakima Basin Region consists of Yakima, Kittitas, Klickitat, Chelan, and Benton counties.

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)[3].

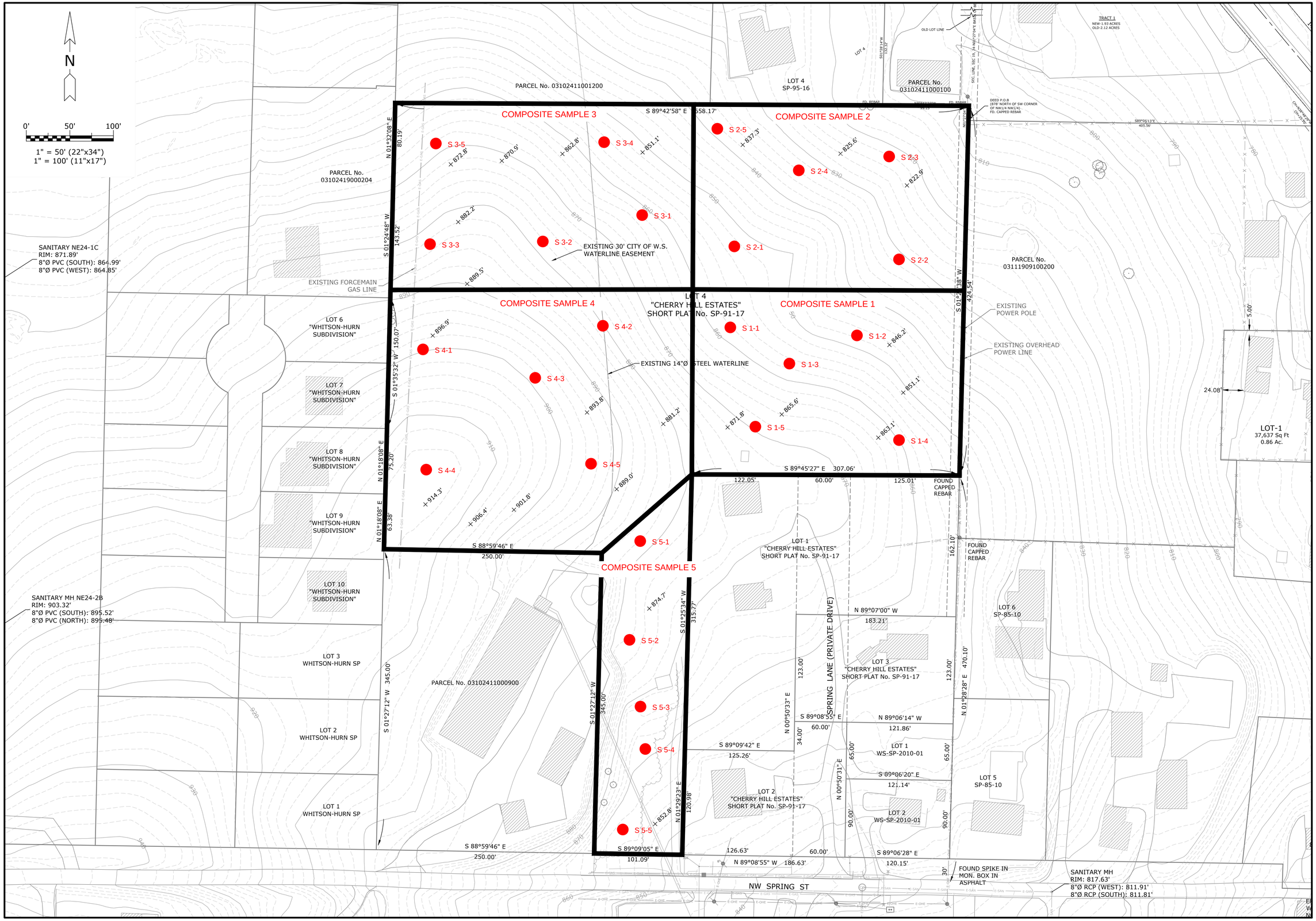
If you have any questions or require anything else, don't hesitate to contact me at the information provided below.

Phillip E. Kovacs, PE
Senior Environmental Engineer
pkovacs@hrkus.com
503-409-3346

[3]Washington Administrative Code (WAC) 173-340-900.

Attachment A

Soil Sampling Locations



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

ENGINEERING & DESIGN GROUP

NO.	DATE	DRWN	CHKD	DESCRIPTION
	09/07/23			

SHEET NAME
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

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

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
ICP/MS METALS-TOTAL RECOVERABLE				**SW 6020B**	**SW3050B**	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
ICP/MS METALS-TOTAL RECOVERABLE				**SW 6020B**	**SW3050B**	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
ICP/MS METALS-TOTAL RECOVERABLE				**SW 6020B**	**SW3050B**	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
ICP/MS METALS-TOTAL RECOVERABLE				**SW 6020B**	**SW3050B**	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
ICP/MS METALS-TOTAL RECOVERABLE				**SW 6020B**	**SW3050B**	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
9011 SE Jannsen Ra
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

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
			Soil		Arsenic	A
	2403148-002A	Sample 2			Arsenic	A
			Solid		Lead	A
			Soil		Lead	A
			Solid		Arsenic	A
	2403148-003A	Sample 3			Lead	A
			Soil		Arsenic	A
					Lead	A
			Solid		Arsenic	A
	2403148-004A	Sample 4	Soil		Arsenic	A
			Solid		Arsenic	A
			Soil		Lead	A
			Solid		Lead	A
	2403148-005A	Sample 5			Lead	A
			Soil		Arsenic	A
					Lead	A
			Solid		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: **ICV**	SampType: **ICV**	TestCode: **6020_S**	Units: **µg/Kg**	Prep Date:	RunNo: **53213**
Client ID: **ICV**	Batch ID: **23233**	TestNo: **SW 6020B**	**SW3050B**	Analysis Date: **3/18/2024**	SeqNo: **687698**

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: **MB-23233**	SampType: **MBLK**	TestCode: **6020_S**	Units: **µg/Kg**	Prep Date: **3/18/2024**	RunNo: **53213**
Client ID: **PBS**	Batch ID: **23233**	TestNo: **SW 6020B**	**SW3050B**	Analysis Date: **3/18/2024**	SeqNo: **687700**

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: **LCS-23233**	SampType: **LCS**	TestCode: **6020_S**	Units: **µg/Kg**	Prep Date: **3/18/2024**	RunNo: **53213**
Client ID: **LCSS**	Batch ID: **23233**	TestNo: **SW 6020B**	**SW3050B**	Analysis Date: **3/18/2024**	SeqNo: **687701**

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: **LCSD-23233** SampType: **LCSD** TestCode: **6020_S** Units: **µg/Kg** Prep Date: **3/18/2024** RunNo: **53213**

Client ID: **LCSS02** Batch ID: **23233** TestNo: **SW 6020B** **SW3050B** Analysis Date: **3/18/2024** SeqNo: **687702**

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: **2403148-003ADUP** SampType: **DUP** TestCode: **6020_S** Units: **µg/Kg-dry** Prep Date: **3/18/2024** RunNo: **53213**

Client ID: **Sample 3** Batch ID: **23233** TestNo: **SW 6020B** **SW3050B** Analysis Date: **3/18/2024** SeqNo: **687704**

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: **2403148-003AMS** SampType: **MS** TestCode: **6020_S** Units: **µg/Kg-dry** Prep Date: **3/18/2024** RunNo: **53213**

Client ID: **Sample 3** Batch ID: **23233** TestNo: **SW 6020B** **SW3050B** Analysis Date: **3/18/2024** SeqNo: **687705**

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: **2403148-003AMSD**	SampType: **MSD**	TestCode: **6020_S**	Units: **µg/Kg-dry**	Prep Date: **3/18/2024**	RunNo: **53213**
Client ID: **Sample 3**	Batch ID: **23233**	TestNo: **SW 6020B**	**SW3050B**	Analysis Date: **3/18/2024**	SeqNo: **687706**

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: **CCB**	SampType: **CCB**	TestCode: **6020_S**	Units: **µg/Kg**	Prep Date:	RunNo: **53213**
Client ID: **CCB**	Batch ID: **23233**	TestNo: **SW 6020B**	**SW3050B**	Analysis Date: **3/18/2024**	SeqNo: **687710**

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: **CCB**	SampType: **CCV**	TestCode: **6020_S**	Units: **µg/Kg**	Prep Date:	RunNo: **53213**
Client ID: **CCV**	Batch ID: **23233**	TestNo: **SW 6020B**	**SW3050B**	Analysis Date: **3/18/2024**	SeqNo: **687760**

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: **ICV**	SampType: **ICV**	TestCode: **6020_S**	Units: **µg/Kg**	Prep Date:	RunNo: **53213**
Client ID: **ICV**	Batch ID: **23233**	TestNo: **SW 6020B**	**SW3050B**	Analysis Date: **3/19/2024**	SeqNo: **687952**

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: **CCB**	SampType: **CCB**	TestCode: **6020_S**	Units: **µg/Kg**	Prep Date:	RunNo: **53213**
Client ID: **CCB**	Batch ID: **23233**	TestNo: **SW 6020B**	**SW3050B**	Analysis Date: **3/19/2024**	SeqNo: **687955**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	ND	25.0									

Sample ID: **CCV**	SampType: **CCV**	TestCode: **6020_S**	Units: **µg/Kg**	Prep Date:	RunNo: **53213**
Client ID: **CCV**	Batch ID: **23233**	TestNo: **SW 6020B**	**SW3050B**	Analysis Date: **3/19/2024**	SeqNo: **687959**

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: **CCB**	SampType: **CCB**	TestCode: **6020_S**	Units: **µg/Kg**	Prep Date:	RunNo: **53213**
Client ID: **CCB**	Batch ID: **23233**	TestNo: **SW 6020B**	**SW3050B**	Analysis Date: **3/19/2024**	SeqNo: **687960**

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: **CCB**	SampType: **CCB**	TestCode: **6020_S**	Units: **µg/Kg**	Prep Date:	RunNo: **53213**
Client ID: **CCB**	Batch ID: **23233**	TestNo: **SW 6020B**	**SW3050B**	Analysis Date: **3/19/2024**	SeqNo: **687960**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: **CCV**	SampType: **CCV**	TestCode: **6020_S**	Units: **µg/Kg**	Prep Date:	RunNo: **53213**
Client ID: **CCV**	Batch ID: **23233**	TestNo: **SW 6020B**	**SW3050B**	Analysis Date: **3/19/2024**	SeqNo: **687968**

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: **CCB**	SampType: **CCB**	TestCode: **6020_S**	Units: **µg/Kg**	Prep Date:	RunNo: **53213**
Client ID: **CCB**	Batch ID: **23233**	TestNo: **SW 6020B**	**SW3050B**	Analysis Date: **3/19/2024**	SeqNo: **687969**

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
9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

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 lables 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 ºC
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

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

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:

www.specialtyanalytical.com

Chain of Custody Record

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

Date:
Page: of:

Project Name: Cherry Hills Estate
Project No: 21-002 PO No:
Collected by: Alexander Pedroza
State Collected: OR (WA) OTHER
Report To (PM): Alexander Pedroza
PM Email: apedroza@hrkus.com

Laboratory Project No (internal): 2403148
Temperature on Receipt: 16.3 °C
Cooling: Cooler Shipped Via: Client
Custody Seal: Y / N Intact / Broken Cooler / Bottle
MDL TIER IV EDD
Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 60 days)

Client: HRK Engineering
Address: 489 N 3rd 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: Arsenic	Lead	Comments
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	Date/Time	Received	Date/Time
x	3/13/24	x	3/13/24 1343
x		x	
x		x	

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

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.

Specialty Analytical
9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

Definition Only

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

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
9011 SE Jannsen Rd
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com

Definition Only

WO#: **2403148**

Date: **3/20/2024**

Definitions:

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

SV: CCV exceded 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.

EXHIBIT 12

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 16th, 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 16th, 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

Owner's Lot and other areas within the subdivision. The Owner shall be responsible for obtaining such compliance and
shall be liable for any failure of compliance by such persons in the same manner and to the same extend as if the failure had been committed by the Owner.

7.8 Nonwaiver. Failure by the Declarant, the ARC or by an Owner to enforce any covenant or restriction herein contained shall in no event be deemed a waiver of the right to do so thereafter.

7.9 Number and Captions. As used herein, the singular shall include the plural and the plural the singular, and the neuter shall each include the masculine, feminine and neuter, as the context requires. All captions used herein are intended solely for convenience of reference and shall in no way limit any of the provisions of this Declaration.

IN WITNESS WHEREOF, Declarant has executed this instrument this 15th day of July, 2019.

LEGACY DEVELOPMENT GROUP, INC.

By:_____
Cameron Curtis, President

STATE OF OREGON)
) ss.
County of Hood River)

This instrument was acknowledged before me on July 15th, 2019, by Cameron Curtis, President, Legacy Development Group, Inc.

OFFICIAL STAMP
MARY M FINLEY
NOTARY PUBLIC-OREGON
COMMISSION NO. 945891
MY COMMISSION EXPIRES JANUARY 07, 2020

Notary Public for Oregon
My commission expires: 01/07/2020

TERRA SURVEYING

THE LOG CABIN SUBDIVISION
A
PLANNED UNIT DEVELOPMENT
FOR
LEGACY DEVELOPMENT GROUP, INC., AN OREGON CORPORATION

LOCATION OF SURVEY:

TRACT OF LAND LOCATED IN THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 3 NORTH, RANGE 10 EAST, WILLAMETTE MERIDIAN, THE CITY OF HOOD RIVER, HOOD RIVER COUNTY, OREGON

Log Cabin PUD
CC&Rs
EXHIBIT "A"

HOOD RIVER COUNTY SURVEYOR'S OFFICE
CS#
DATE FILED:
BY:

FOUND HOOD RIVER COUNTY BRASS CAP IN MONUMENT BOX @ THE NW CORNER OF THE NW 1/4 OF THE SE 1/4 OF THE NE 1/4 OF SECTION 34.

FOUND A 5/8" IRON ROD, L.S.1815. MONUMENTING THE NORTHWEST CORNER OF LOT 15 OF ORIGINAL L.F. HENDERSON (C.S.2007079)

0 30 60 90

SCALE: 1" = 30'

BASIS OF BEARING:
HOOD RIVER COUNTY SURVEY No. 2008048

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
December 30, 2008
ERIK W. CARLSON
72306
Expires: December, 2019

AREA TABLE	
LOT 1	5,073 SQ.FT.±
LOT 2	5,004 SQ.FT.±
LOT 3	5,080 SQ.FT.±
LOT 4	5,008 SQ.FT.±
ROADWAY AREA	12,642 SQ.FT. ±
TOTAL OPEN SPACE	14,066 SQ.FT. ±
TOTAL AREA OF PUD	46,872' SQ.FT.±
	30% OPEN SPACE

* 2 DRIVES ON NORTH LINE ARE NOT INCLUDED IN OPEN SPACE AREA. (111 SQ.FT. EACH)

FOUND HOOD RIVER COUNTY BRASS CAP @ THE SE CORNER OF THE SW 1/4 OF THE SE 1/4 OF THE NE 1/4 OF SECTION 34.

LEGEND:

- SET 5/8" IRON ROD WITH RED PLASTIC CAP, L.S.72306 (SET 8/13/16)
- SET 1-3/32" DIAMETER COPPER PLUG, L.S. 72306 (SET 8/13/16)
- FOUND 5/8" IRON ROD WITH CAP, L.S.72306 (C.S.2016059)
- FOUND 5/8" IRON ROD WITH CAP, L.S.72306 (C.S.2008058)
- FOUND 5/8" IRON ROD WITH CAP, L.S.72306 (C.S.2008048)
- FOUND 5/8" IRON ROD WITH CAP, L.S.1815 (C.S.2007079)
- FOUND 5/8" IRON ROD WITH CAP, L.S.1815 (C.S.2004069)
- FOUND 5/8" IRON ROD WITH CAP, L.S.1815 (C.S.95022)
- FOUND MONUMENT OF RECORD, AS NOTED.
- CALCULATED, NOT FOUND OR SET
- ( ) PREVIOUS SURVEY/PLAT CALL

HATCH LEGEND:

- NEW: PUBLIC UTILITY EASEMENT
- NEW: PRIVATE ROADWAY EASEMENT AND PUBLIC PEDESTRIAN ACCESS EASEMENT
- OPEN SPACE

LINE	BEARING	DISTANCE
L1	S 46°20'42" E	8.08'
L2	N 00°44'21" E	8.64'
L3	N 00°20'51" E	8.55'
L4	N 89°04'32" W	10.52'
L5	N 89°04'32" W	20.05'
L6	S 00°55'28" W	14.02'
L7	S 00°55'28" W	14.02'
L8	S 89°02'32" E	20.05'
L9	S 89°04'32" E	55.73'
L10	S 00°57'50" W	14.86'
L11	N 89°54'09" E	8.15'
L12	N 48°51'19" E	16.34'
L13	S 89°09'35" E	21.68'
L14	N 00°57'50" E	8.00'
L15	N 00°35'11" E	6.00'
L16	S 89°24'49" E	19.97'
L17	N 00°09'49" E	12.18'

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

DATE: JUNE 20, 2019
PROJECT: 15035PUDPLAT
SCALE: 1" = 30'
ASSESSORS MAP: 3N-10E-35A TL 2603

TERRA SURVEYING

THE LOG CABIN SUBDIVISION
A
PLANNED UNIT DEVELOPMENT
FOR
LEGACY DEVELOPMENT GROUP, INC., AN OREGON CORPORATION

PAGE 2 OF 2

LOCATION OF SURVEY:

TRACT OF LAND LOCATED IN THE NORTHEAST QUARTER OF SECTION 34, TOWNSHIP 3 NORTH, RANGE 10 EAST, WILLAMETTE MERIDIAN, THE CITY OF HOOD RIVER, HOOD RIVER COUNTY, OREGON

OWNER:
LEGACY DEVELOPMENT GROUP, INC.
P.O. BOX 4
HOOD RIVER, OREGON
97031

HOOD RIVER COUNTY SURVEYOR'S OFFICE
CS#
DATE FILED:
BY:

APPROVALS:

THE PLAT OF "THE LOG CABIN SUBDIVISION" WAS EXAMINED AND APPROVED BY ME THIS ____ DAY OF _____, 20__.

HOOD RIVER COUNTY SURVEYOR

THE PLAT OF "THE LOG CABIN SUBDIVISION" WAS EXAMINED AND APPROVED BY ME THIS ____ DAY OF _____, 20__.

CITY OF HOOD RIVER DIRECTOR OF PUBLIC WORKS

THE PLAT OF "THE LOG CABIN SUBDIVISION" WAS EXAMINED AND APPROVED BY ME THIS ____ DAY OF _____, 20__.

CITY OF HOOD RIVER RECORDER

THE PLAT OF "THE LOG CABIN SUBDIVISION" WAS EXAMINED AND APPROVED BY ME THIS ____ DAY OF _____, 20__.

CITY OF HOOD RIVER PLANNING DIRECTOR

THE PLAT OF "THE LOG CABIN SUBDIVISION" WAS EXAMINED AND APPROVED BY ME THIS ____ DAY OF _____, 20__.

CITY OF HOOD RIVER MAYOR

THE PLAT OF "THE LOG CABIN SUBDIVISION" WAS EXAMINED AND APPROVED BY ME THIS ____ DAY OF _____, 20__.

CHAIRPERSON HOOD RIVER COUNTY COMMISSIONERS

THE PLAT OF "THE LOG CABIN SUBDIVISION" WAS EXAMINED AND APPROVED BY ME THIS ____ DAY OF _____, 20__.

HOOD RIVER COUNTY COMMISSIONER

COVENANTS AND RESTRICTIONS:

THE DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS FOR "THE LOG CABIN SUBDIVISION PLAT" TO BE FILED UNDER SEPARATE DOCUMENTS AS RECORDER'S FILE FEE No. _____, RECORDED

_____, 20__, HOOD RIVER COUNTY DEED RECORDS.

APPROVALS:

THE DIRECTOR OF RECORDS AND ASSESSMENTS, AND THE DIRECTOR OF BUDGET AND FINANCE AND TAX COLLECTOR, RESPECTIVELY, OF HOOD RIVER COUNTY, OREGON, HEREBY CERTIFY THAT WE HAVE EXAMINED THE PLAT OF "THE LOG CABIN SUBDIVISION" IN THE COUNTY OF HOOD RIVER AND THAT THE NAME ADOPTED FOR SAID PLAT IS A PROPER NAME AND NOT INCLUDED IN ANY OTHER SUBDIVISION IN HOOD RIVER COUNTY, AND FURTHER CERTIFY THAT ALL ASSESSMENTS DUE HEREON HAVE BEEN FULLY PAID AS REQUIRED BY LAW AND WE HEREBY APPROVE SAID PLAT.

HOOD RIVER COUNTY DIRECTOR OF BUDGET AND FINANCE, TREASURER/TAX COLLECTOR

HOOD RIVER COUNTY DIRECTOR OF RECORDS AND ASSESSMENTS

CONSENT AFFIDAVIT

A CONSENT AFFIDAVIT FROM ANDY VON FLOWTOW AS TRUST DEED BENEFICIARY, PER TRUST DEED INST#2017-03785, RECORDED ON NOVEMBER 1, 2017 HAS BEEN EXECUTED AND RECORDED ON JUNE 17, 2019 ON INST#2019-01788 OF HOOD RIVER COUNTY OFFICIAL RECORDS.

NARRATIVE:

THE PURPOSE OF THIS SURVEY WAS TO PLAT TAX LOT 2603. THIS SUBDIVISION WILL BE CREATING 4 LOTS AND 1 TRACT. THE PROPERTY IS DESCRIBED AS PARCEL 1 OF PARTITION PLAT NO. 2008-13P (2008-048). TERRA HAS SURVEYED THIS PROPERTY IN THE PAST. THE PERIMETER MONUMENTS WERE RECOVERED AND MATCHED FAIRLY WELL WITH THE ORIGINAL POSITIONS WITH EXCEPTION OF THE SOUTHEASTERN CORNER ORIGINALLY SET ON 2008-048. THIS SCREW AND BRASS WASHER WAS UNSTABLE, WE REPLACED WITH A COPPER PLUG. THE PROPERTY TO THE NORTH WAS SUBDIVIDED ON THE HOPE TERRACE PUD, WHICH IS FILED AS C.S.2008058, MONUMENTS FROM C.S.2008048 WERE RECOVERED ON THAT PLAT. THE BASIS OF BEARING FOR THIS SUBDIVISION IS TWO BRASS CAP MONUMENTS RECOVERED ON THE 1/16TH LINE WHICH IS FOUND IN THE CENTERLINE OF ROCKY ROAD.

THE PLAT OF "THE LOG CABIN SUBDIVISION" WAS EXAMINED AND APPROVED BY ME THIS ____ DAY OF _____, 20__.

HOOD RIVER COUNTY COMMISSIONER

THE PLAT OF "THE LOG CABIN SUBDIVISION" WAS EXAMINED AND APPROVED BY ME THIS ____ DAY OF _____, 20__.

HOOD RIVER COUNTY COMMISSIONER

THE PLAT OF "THE LOG CABIN SUBDIVISION" WAS EXAMINED AND APPROVED BY ME THIS ____ DAY OF _____, 20__.

HOOD RIVER COUNTY COMMISSIONER

SURVEYOR'S CERTIFICATE:

I, ERIK M. CARLSON, REGISTERED LAND SURVEYOR FOR THE STATE OF OREGON, BEING FIRST DULY SWORN, DEPOSED AND SAY THAT I HAVE CORRECTLY SURVEYED THE PROPERTY DESCRIBED IN THE LEGAL DESCRIPTION AND MARKED WITH LEGAL MONUMENTS THE LAND REPRESENTED ON THE PLAT OF "THE LOG CABIN SUBDIVISION" HOOD RIVER COUNTY, STATE OF OREGON. SAID LAND IS DESCRIBED MORE PARTICULARLY AS FOLLOWS:

PARCEL 1 OF PARTITION PLAT NO.2008013P AS RECORDED IN HOOD RIVER RECORDS ON JUNE 24TH 2008.

INITIAL POINT IS A 5/8" IRON ROD, L.S.1815 FOUND AT THE INTERIOR CORNER OF PARCEL 1 OF PARTITION PLAT 2008-13P AS SHOWN ON THE FACE OF THE PLAT.

ERIK M. CARLSON PLS 72308

REFERENCES:

PLAT MAP OF THE LAND OF L.F. HENDERSON, DATED JULY 1905.
C.S. NO. 80083, SURVEY FOR H.R.COUNTY BY L.S.832, REVISED DATE 1983.
C.S. NO. 87022, SURVEY FOR JENSEN, BY L.S.1815, FILED MAY 7, 1987.
C.S. NO. 93106, PARTITION PLAT NO. 9336 FOR GERDE BY L.S. 1028, FILED DECEMBER 22, 1993.
C.S. NO. 95022, PARTITION PLAT NO. 9512 FOR THOMPSON BY L.S.2393, FILED APRIL 3, 1995.
C.S. NO. 96002, PARTITION PLAT NO. 9602 FOR THOMPSON BY L.S.2393, FILED MARCH 6, 1996.
C.S. NO. 97057, PARTITION PLAT NO.9719 FOR GERDE BY L.S.1028, FILED SEPTEMBER 24, 1997.
C.S. NO. 2004069, PLA SURVEY FOR MAUI MEYER BY L.S.1815, FILED OCT. 22, 2004.
C.S. NO. 2005006, PLA SURVEY FOR MAUI MEYER BY L.S.1815, FILED JAN. 24, 2005.
C.S. NO. 2007079, PLA SURVEY FOR H.O.P.E. BY L.S.1815, FILED AUGUST 6, 2007.
C.S. NO. 2008035, PLA SURVEY FOR H.O.P.E BY L.S.72306, FILED MAY 1, 2008.
C.S. NO. 2008048, PARTITION PLAT NO. 2008013P FOR HOPE BY L.S.72306, FILED JULY, 1 2008.
C.S. NO. 2008058, HOPE TERRACE PUD SUBDIVISION PLAT FOR HOPE BY L.S.72306, FILED AUGUST 26,2008
C.S. NO. 2018059, PARTITION PLAT NO. 2018011P FOR LEAVITT BY L.S.72306, FILED SEPT 8, 2016.

EXISTING EASEMENTS (AMERITITLE JUNE 6, 2018 SORT#241865AM):

BOOK 43, PAGE 328, PRIVATE EASEMENT GRANTED TO PACIFIC POWER & LIGHT COMPANY FOR THE PURPOSE OF POWER DISTRIBUTION, POWER HAS BEEN PLACED UNDERGROUND IN EXISTING RIGHT OF WAYS.
BOOK 49, PAGE 473, PRIVATE EASEMENT GRANTED TO DONALD E. PAYNE FOR THE PURPOSE OF 2" UNDERGROUND WATER DISTRUBUTION FROM FRANKTON WATER COMPANY. THE SPECIFIC LOCATION IS NOT GIVEN.

RECORDING INFORMATION:

PLAT NUMBER: _____

INSTRUMENT RECEIVED ON THE ____ DAY OF _____, 2019 AT ____ .M.

HOOD RIVER COUNTY CLERK

REGISTERED PROFESSIONAL LAND SURVEYOR

OREGON
December 30, 2005
ERIK M. CARLSON
72306
Expires: December, 2019

ACKNOWLEDGMENT:

ON THIS ____ DAY OF _____, 2019, BEFORE ME A NOTARY PUBLIC FOR THE STATE OF OREGON, PERSONALLY APPEARED _____ PRESIDENT OF LEGACY DEVELOPMENT GROUP, INC, SAID THAT HE DID ACKNOWLEDGE THIS INSTRUMENT OF HIS FREE AND VOLUNTARY ACT.

SIGNATURE

PRINTED NAME
NOTARY PUBLIC FOR THE STATE OF OREGON

COUNTY OF _____

COMMISSION NUMBER _____

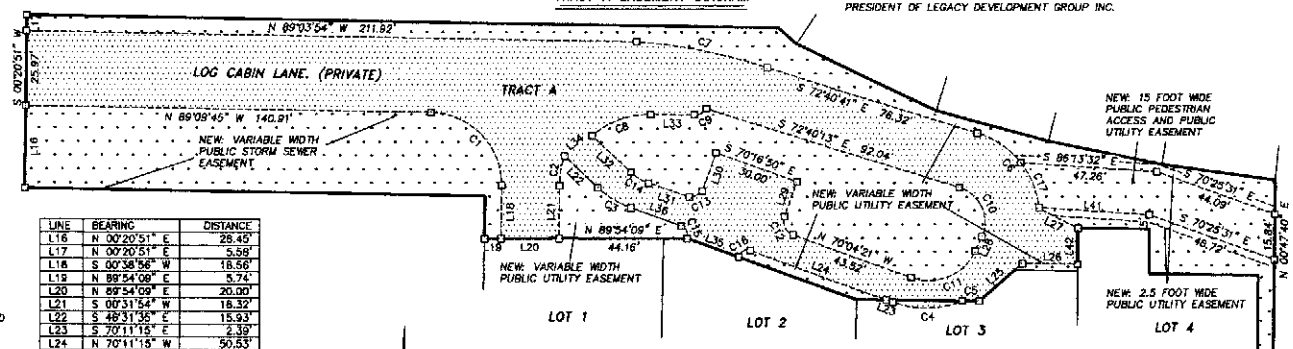
MY COMMISSION EXPIRES _____

DECLARATION AND DEDICATION:

I, _____, OWNER OF THE LAND SHOWN ON THE PLAT DESCRIBED IN THE SURVEYOR'S CERTIFICATE DOES HEREBY MAKE, ESTABLISH & DECLARE THE MAP TO BE A TRUE AND CORRECT MAP OF THE LAND OWNED AND LAID OUT AS "THE LOG CABIN SUBDIVISION" AND CAUSED THE SUBDIVISION TO BE PREPARED IN ACCORDANCE WITH THE PROVISIONS OF ORS 92, HEREBY DEDICATE TO THE PUBLIC A PUBLIC PEDESTRIAN ACCESS EASEMENT, PUBLIC STORM SEWER EASEMENT AND PUBLIC UTILITY EASEMENTS AND CREATES PRIVATE ROADWAY ACCESS EASEMENT FOR LOG CABIN LANE SHOWN ON SUCH PLAT.

PRESIDENT OF LEGACY DEVELOPMENT GROUP INC.

TRACT A EASEMENT DIAGRAM



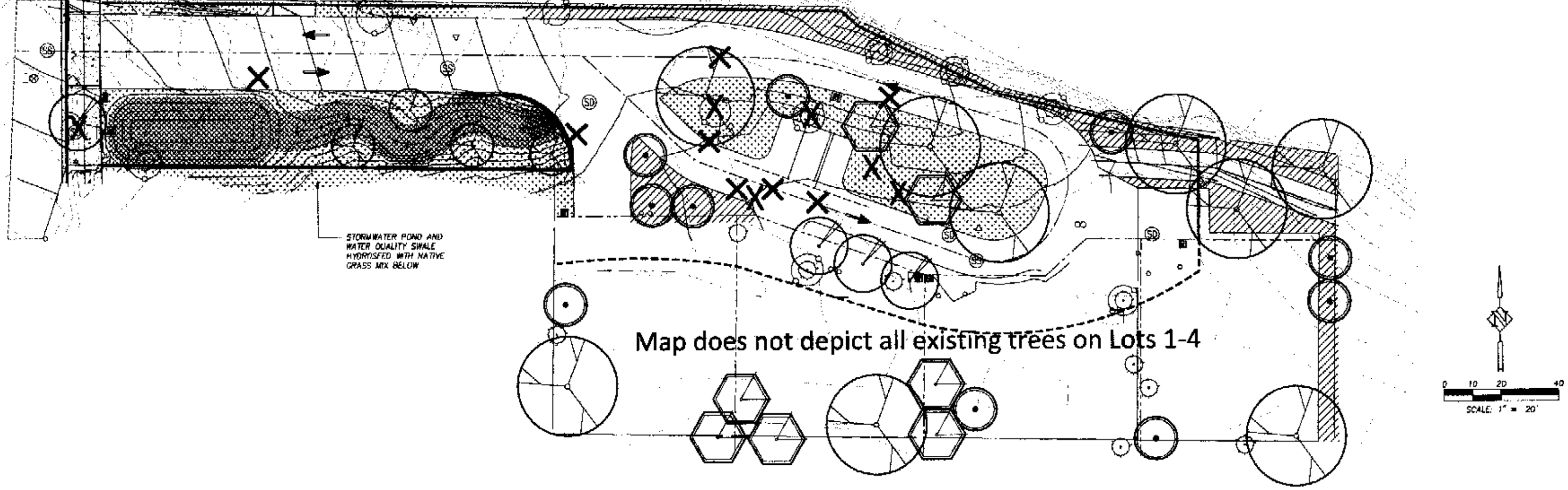
LINE	BEARING	DISTANCE
L16	N 00°20'51" E	28.45'
L17	N 00°20'51" E	5.56'
L18	S 00°38'56" W	18.56'
L19	N 89°54'09" E	5.74'
L20	N 89°54'09" E	20.00'
L21	S 00°31'54" W	18.32'
L22	S 48°31'36" E	15.93'
L23	S 70°11'15" E	2.39'
L24	N 70°11'15" W	50.53'
L25	S 48°31'18" W	19.80'
L26	S 89°10'00" E	19.10'
L27	N 61°56'12" W	15.22'
L28	N 24°14'02" E	5.45'
L29	S 19°43'10" W	11.19'
L30	S 19°43'10" W	11.06'
L31	S 70°50'47" E	13.39'
L32	S 48°31'36" E	18.42'
L33	S 89°10'23" E	14.99'
L34	N 53°08'30" E	11.87'
L35	N 70°16'50" W	19.04'
L36	N 70°11'15" W	18.46'
L37	N 00°35'11" E	14.83'
L38	S 89°10'05" E	24.77'
L39	S 00°09'49" W	15.50'
L40	N 89°05'49" W	5.50'
L41	S 86°13'32" E	38.30'
L42	S 00°35'11" W	12.50'

CURVE	RADIUS	ARC LENGTH	CHORD BEARING	CHORD LENGTH	DELTA ANGLE
C1	25.00'	39.19'	N 44°15'44" W	35.30'	89°49'19"
C2	30.30'	10.57'	S 09°19'35" W	10.51'	19°58'52"
C3	32.50'	13.47'	S 58°24'12" E	13.38'	23°45'14"
C4	32.50'	24.38'	S 88°58'08" W	23.81'	42°58'22"
C5	6.32'	6.07'	N 89°09'35" W	5.84'	55°01'31"
C6	30.49'	35.55'	S 39°20'58" E	33.57'	66°48'46"
C7	183.33'	46.23'	S 78°50'43" E	46.10'	14°26'51"
C8	30.00'	22.05'	N 89°46'31" E	21.55'	42°05'12"
C9	5.00'	4.90'	S 62°45'56" W	4.70'	56°07'21"
C10	12.50'	21.14'	N 24°13'06" W	18.71'	96°54'15"
C11	17.67'	28.27'	N 67°20'41" E	23.92'	85°09'56"
C12	5.02'	7.85'	N 25°16'50" W	7.07'	89°35'04"
C13	5.00'	7.80'	N 64°28'12" E	7.04'	89°26'02"
C14	15.62'	7.27'	S 58°24'12" E	7.20'	26°40'04"
C15	3.53'	5.30'	S 24°24'52" E	4.82'	86°01'25"
C16	3.00'	5.14'	N 60°43'07" E	4.52'	98°00'07"
C17	30.49'	16.98'	N 21°54'01" W	16.76'	31°54'52"

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

DATE: JUNE 20, 2019
PROJECT: 15035PUDPLAT
SCALE: 1" = 30'
ASSESSORS MAP: 3N-10E-35A TL 2603

Log Cabin PUD
CC&Rs
EXHIBIT "B"



GENERAL PLANTING NOTES

1. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH CURRENT CITY OF HOOD RIVER STANDARDS AND OREGON BUILDING AND SPECIALITY CODES.
2. INSTALL EROSION CONTROL SYSTEMS IN ACCORDANCE WITH CITY OF HOOD RIVER STANDARDS PRIOR TO SITE WORK AND LANDSCAPE INSTALLATION.
3. CONTRACTOR SHALL MARK AND PROTECT ALL UTILITIES, SITE FEATURES, AND VEGETATION TO REMAIN IN PLACE.
4. CONTRACTOR SHALL REMOVE ALL WEEDS AND INVASIVE SPECIES PRIOR TO PLANTING OR SEEDING.
5. PRIOR TO PLANTING, CONTRACTOR SHALL TEST ON-SITE SOILS FOR SOIL FERTILITY BY CERTIFIED TESTING LAB. IF NECESSARY, BACKFILL SOILS FOR TREE PITS. SHRUB AND GROUNDCOVER AREAS SHALL BE AMENDED AS RECOMMENDED BY SOIL ANALYSIS REPORT.
6. ALL SEEDED AREAS SHALL BE STRIPPED OF VEGETATION, SCARIFIED AND RECEIVE 4" OF TOPSOIL PRIOR TO APPLICATION OF SEED.
7. ALL PLANTER BEDS SHALL BE SCARIFIED 12" BELOW FINISHED GRADE AND HAVE 12" OF TOPSOIL ADDED TO BRING BACK TO FINISHED GRADE PRIOR TO PLANTING.
8. CONTRACTOR TO INSTALL 3" LAYER OF COMPOST MULCH AT ALL TREE, SHRUB AND GROUNDCOVER AREAS.
9. THE DEVELOPER OR ASSIGNED SHALL BE RESPONSIBLE FOR HAND WATERING PLANTINGS TWICE PER WEEK DURING THE MONTHS OF MAY THRU OCTOBER FOR A 2-YEAR ESTABLISHMENT PERIOD.
10. PLANT MATERIAL INSTALLED SHALL CONFORM IN SIZE AND GRADE TO THE "AMERICAN STANDARD FOR NURSERY STOCK" CURRENT EDITION.
11. DEVELOPER SHALL GUARANTEE ALL PLANTINGS TO BE IN SATISFACTORY HEALTH FOR A PERIOD OF 2-YEAR AFTER INSTALLATION. THE DEVELOPER SHALL REPLACE ALL DAMAGED, DEAD, OR DYING PLANTS COVERED BY WARRANTY WITHIN 30 DAYS OF INITIAL IDENTIFICATION OF CONDITION.

PLANT SCHEDULE

TREES

Qty / Size	Description
	EXISTING TREE (6"+ DBH) REMOVED
	EXISTING EVERGREEN TREE TO REMAIN
	EXISTING DECIDUOUS TREE TO REMAIN
4 2" CAL.	Cercis canadensis – Eastern Redbud B&B, WELL BRANCHED, LIMBED TO 6'
9 2" CAL.	Quercus garryana – Oregon White Oak B&B, WELL BRANCHED, LIMBED TO 6' LOCATE ON BANK ABOVE WATER QUALITY SWALE
8 6' HT.	Pinus Ponderosa – Ponderosa Pine B&B, FULL TREES, BRANCHED TO GROUND
10 6' HT.	Pseudotsuga menziesii – Douglas Fir B&B, FULL TREES, BRANCHED TO GROUND
4 2" CAL.	Populus tremuloides – Quaking Aspen B&B, WELL BRANCHED, LIMBED TO 6'

SHRUBS

Qty / Size	Description
113 1 GAL	Acer circinatum – Vine Maple Amelanchier alnifolia – Western Serviceberry Mahonia aquifolium – Oregon Grape Philadelphus lewisii – Mock Orange CONT., FULL PLANTS, 7' O.C.

SEED MIX

NATIVE EROSION CONTROL MIX	LBS OF PLS / 1000 S.F
BROMUS VULGARIS/COLUMBIA BROME	0.350
HORDEUM BRACHYANTHERUM/MEADOW BARLEY	0.400
DESCHAMPSIA CAESPITOSA//TUFTED HAIRGRASS	0.030
AGROSTIS EXERATA/SPIKE BENTGRASS	0.020
FESTUCA RUBRA VAR. RUBRA/NATIVE RED FESCUE	0.200
TOTAL	1.000

NATIVE WATER QUALITY MIX	LBS OF PLS / 1000 S.F
ELYMUS GLAUCUS/BLUE WILDRYE	0.480
FESTUCA RUBRA VAR. RUBRA/NATIVE RED FESCUE	0.380
DESCHAMPSIA CAESPITOSA//TUFTED HAIRGRASS	0.120
GLYCERA OCCIDENTALLIS/WESTERN MANAGRASS	0.020
BECKMANIA SYZIGACHNE/AMERICAN SLOUGHGRASS	0.020
TOTAL	1.000

PLANTING PLAN
LOG CABIN PUD
HOOD RIVER, OREGON

Harper Houf Peterson Righellis Inc.
205 SE Spokane Street, Suite 200, Portland, OR 97202
phone: 503.221.1131 www.hhpr.com fax: 503.221.1171

REGISTERED LANDSCAPE ARCHITECT • 747 • JEFFERY P. CREEL • OREGON • 05/15/11

DESIGNED:	JPC
DRAWN:	JPC
CHECKED:	KKV
DATE:	FEBRUARY 2019

REVISIONS

DATE	NO.	DESCRIPTION
5/31/2017	1	REVISED PER CITY COMMENTS
12/2017	2	REMOVED POWER VAULT AT LOT FOUR
4/24/2018	3	SAN MH 2 RELOCATED TO AVOID GAS LINE
8/20/2018	4	REROUTE WATER LINE
7/09/2018	5	RELOCATE EXISTING FIRE HYDRANT
7/20/2018	6	ADJUST ROCKY ROAD STORM
10/19/2018	7	REVISED PUBLIC STORM

SHEET NO. 10.0

JOB NO. CCL-02

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 daylights 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 ADMINSTRATION STANDARD 1910.

Detention Basin

Detention basins 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.

Inspections

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 *per year thereafter.* 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: _____

Inlet shall ensure unrestricted stormwater flow to the detention basin.

- ☐ Inlet pipe shall be kept clear at all times. Sources of sediment and debris shall be identified and corrected.
- ☐ Determine if pipe is in good condition:
- ☐ If more than 4 inches of settlement, add fill material and compact soils.
- ☐ If alignment is faulty, correct alignment.

Inspection Comments: _____

Swale coarse sediments, reduces incoming velocity, and distributes runoff evenly over the detention basin. A minimum 1-foot freeboard shall be maintained.

- ☐ Sediment exceeding 3 inches in depth, or so thick as to damage or kill vegetation, shall be removed.
- ☐ Sediment accumulation shall be hand-removed with minimum damage to vegetation using proper erosion control measures.

Inspection Comments: _____

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: _____

Conveyance: Pipes

Conveyance (pipes) system shall be routinely inspected and cleaned on a scheduled cycle.

Inspection 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. **No one should enter manholes without proper training and equipment for entering confined spaces.**

- □ Structural deficiencies shall be corrected upon discovery:
- □ If cracks exist, repair or replace structure.

Date:____/____/_____ Inspector's Name: _____

Access 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.

- □ Gravel or ground cover shall be added if erosion has occurred.

Inspection Comments: _____

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

- □ Releases of pollutants shall be corrected as soon as identified.

Inspection Comments: _____

Debris and litter shall be removed to prevent clogging.

Inspection Comments: _____

Training and/or written guidance information 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

EXHIBIT 13A

October 9, 2023

Alex Pedroza, EIT
489 North 8TH Street – Suite 201
Hood River, Oregon 97031
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

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

EXHIBIT 13B

November 21, 2023

Alex Pedroza, EIT
489 North 8TH Street – Suite 201
Hood River, Oregon 97031
apedroza@hrkus.com

RE: Cherry Hill Estates Subdivision – Notice of Incomplete Application #2

City staff have completed their 2nd 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 7th, 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).

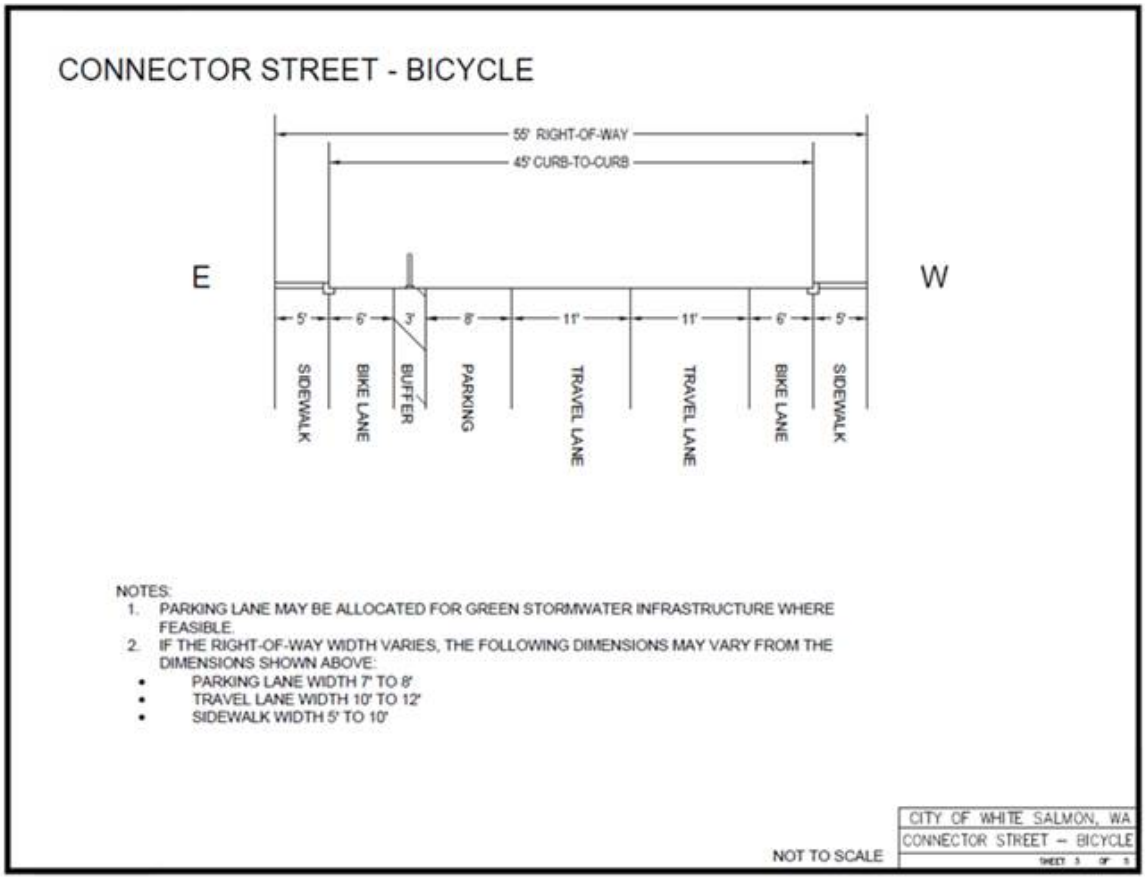
The following comment below is a consistency review-level comment and does not represent an entire compliance review. An initial response is anticipated, though not required at this stage.

Public Works

4. 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

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

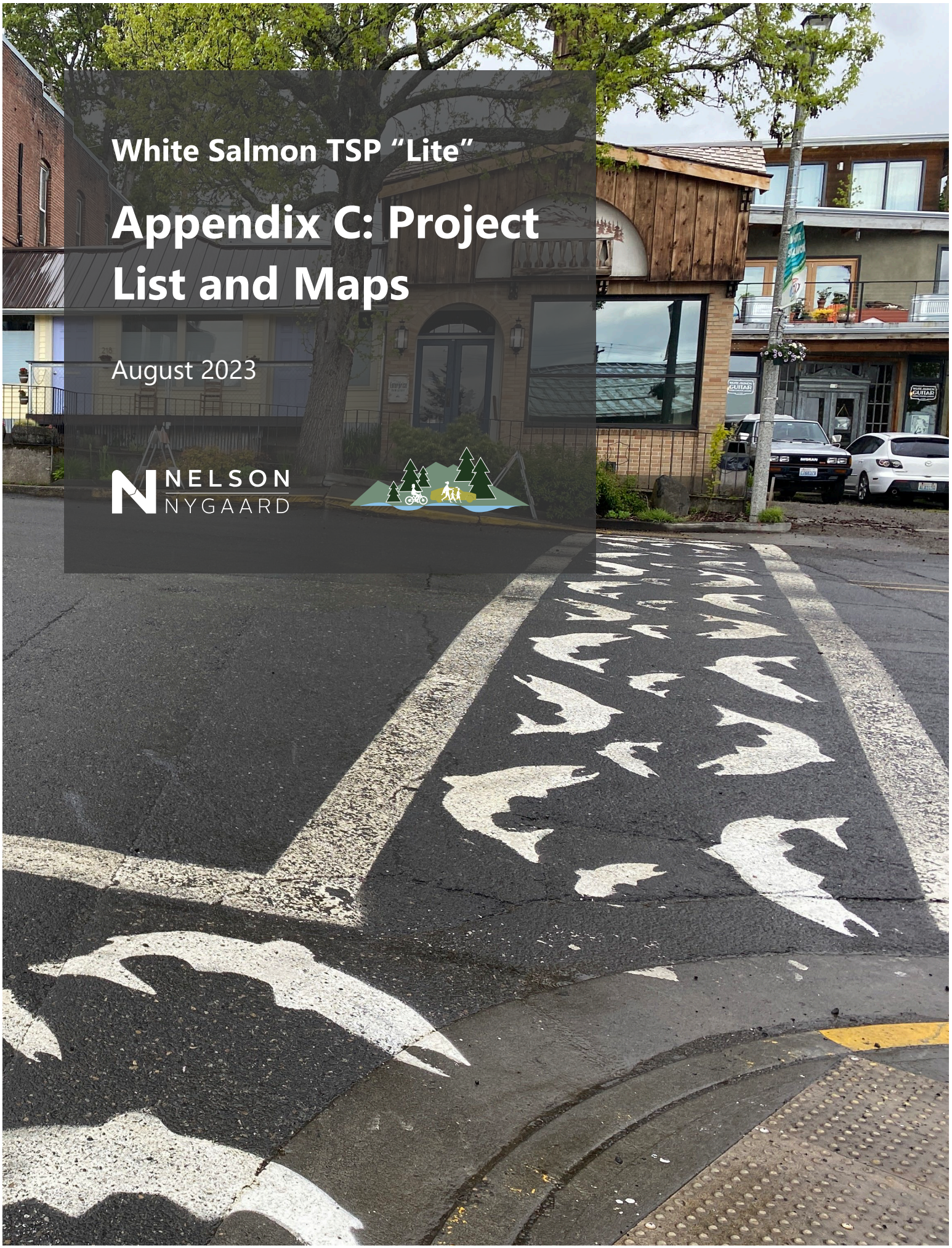
Encl: Transportation Systems Plan "Lite" – Safe Routes to Schools excerpt and Appendix C: Project List and Maps

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.

Figure 7 Safe Routes to School Network and County Extensions



White Salmon TSP "Lite"

Appendix C: Project List and Maps

August 2023

NELSON NYGAARD

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 Wysers 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

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

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

0 0.25 0.5 Miles

CITY OF WHITE SALMON
CITY HALL

EXHIBIT 13C

March 4, 2024

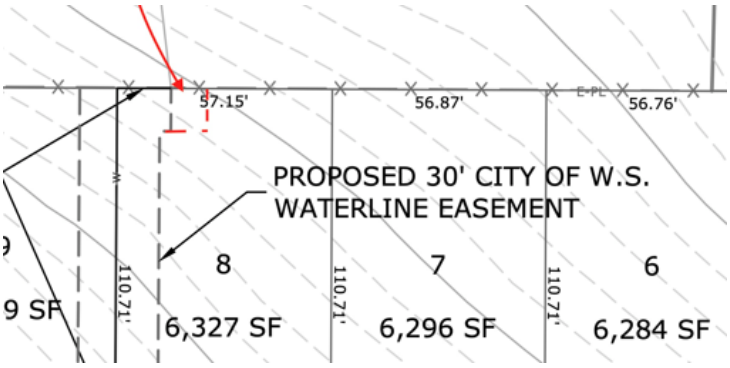
Alex Pedroza, EIT
489 North 8TH Street – Suite 201
Hood River, Oregon 97031
apedroza@hrkus.com

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

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 7th 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.

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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

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

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EXHIBIT 13D

June 14, 2024

Alex Pedroza, EIT
489 North 8TH Street – Suite 201
Hood River, Oregon 97031
apedroza@hrkus.com

RE: Cherry Hill Estates Subdivision WS-SEPA-2024.001 – 2nd 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

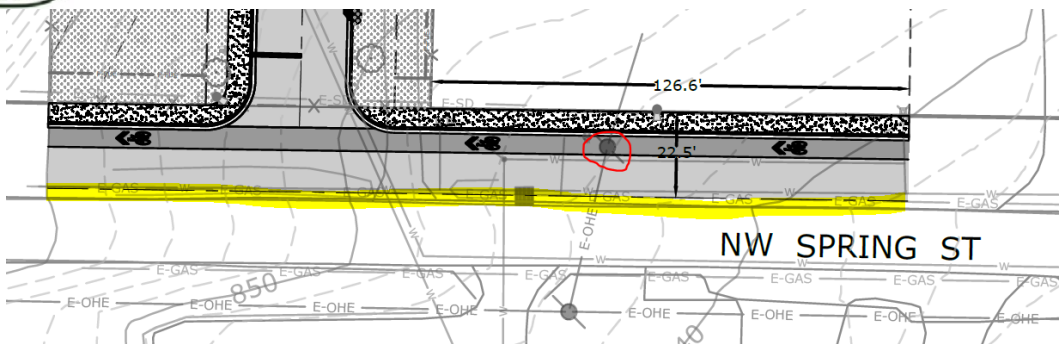
1. ***REPEAT COMMENT*** If impacts to steep slopes and/or their buffers are proposed, please provide a narrative assessing the each of the following provisions pulled from WSMC 18.10.413(B) and 18.10.415 (new ordinance attached), including how your proposal meets the following criteria:
   (1) Improvements 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.

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).



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: impervious area (sf) x 0.10 (ft) = 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,

CITY OF WHITE SALMON
CITY HALL

City of White Salmon

Alex Capron, AICP
Consultant Land-Use Planner