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10/7/2022

FIGURES

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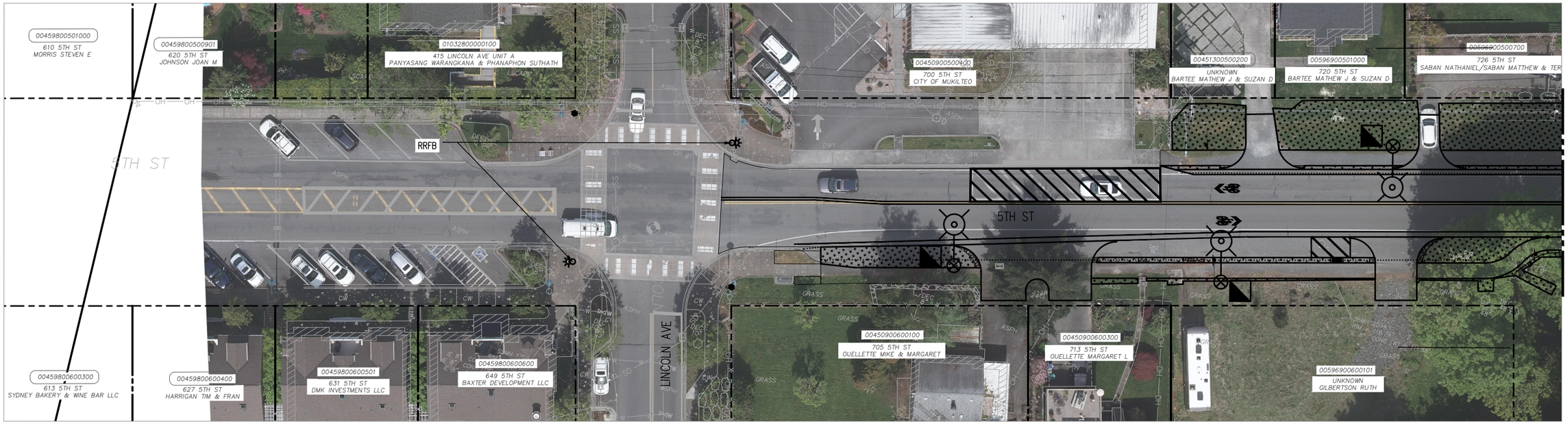

LEGEND

- NO PARKING ZONE
- LANDSCAPING
- DETECTABLE WARNING
- 4" GRAVEL
- RIGHT-OF-WAY
- PARCEL LINE
- STREET VACATION
- ILLUMINATION

N

0 10 20 40
1 inch = 20 feet

60% DESIGN NOT FOR CONSTRUCTION

NO.	DATE	BY	CHD.	APPR.	REVISION

DRAWN BY MRV | DESIGNED BY TCG
CHECKED BY JMM | APPROVED BY RJL
DATE 04/2022
J O B No. :2000722

CALL TWO BUSINESS DAYS BEFORE YOU DIG 1-800-424-5555

S C A L E: 1" = 20'

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Seattle, WA 98101
206.622.5822
www.kpff.com

CITY OF MUKILTEO

MUKILTEO 5TH ST BICYCLE & PEDESTRIAN
MUKILTEO, WA

SHT. 1 OF 9

ENVIROMENTAL PERMITTING

EP01

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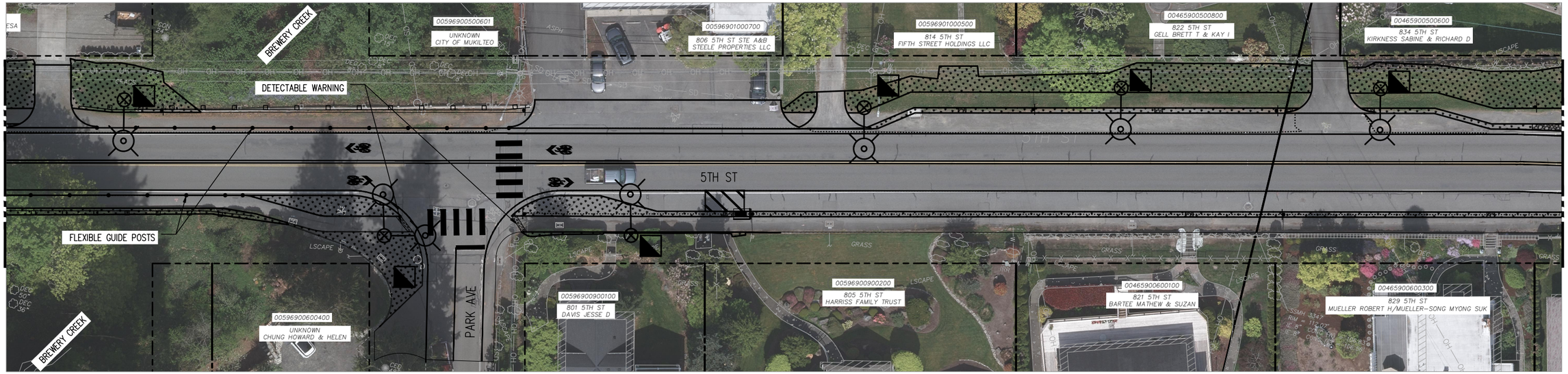
michaelv
Jun 01, 2022 - 4:28pm

S4 T28N R4E W.M.

SEE DWG EP01
MATCHLINE: STA A 105+50.00



MATCHLINE: STA A 111+50.00
SEE DWG EP03

LEGEND

- NO PARKING ZONE
- LANDSCAPING
- DETECTABLE WARNING
- 4" GRAVEL
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SHT. 2 OF 9

ENVIROMENTAL PERMITTING

EP02

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michaelv
Jun 01, 2022 - 4:28pm

S4 T28N R4E W.M.

LEGEND

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- DETECTABLE WARNING
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SHT. 3 OF 9

ENVIROMENTAL PERMITTING

EP03

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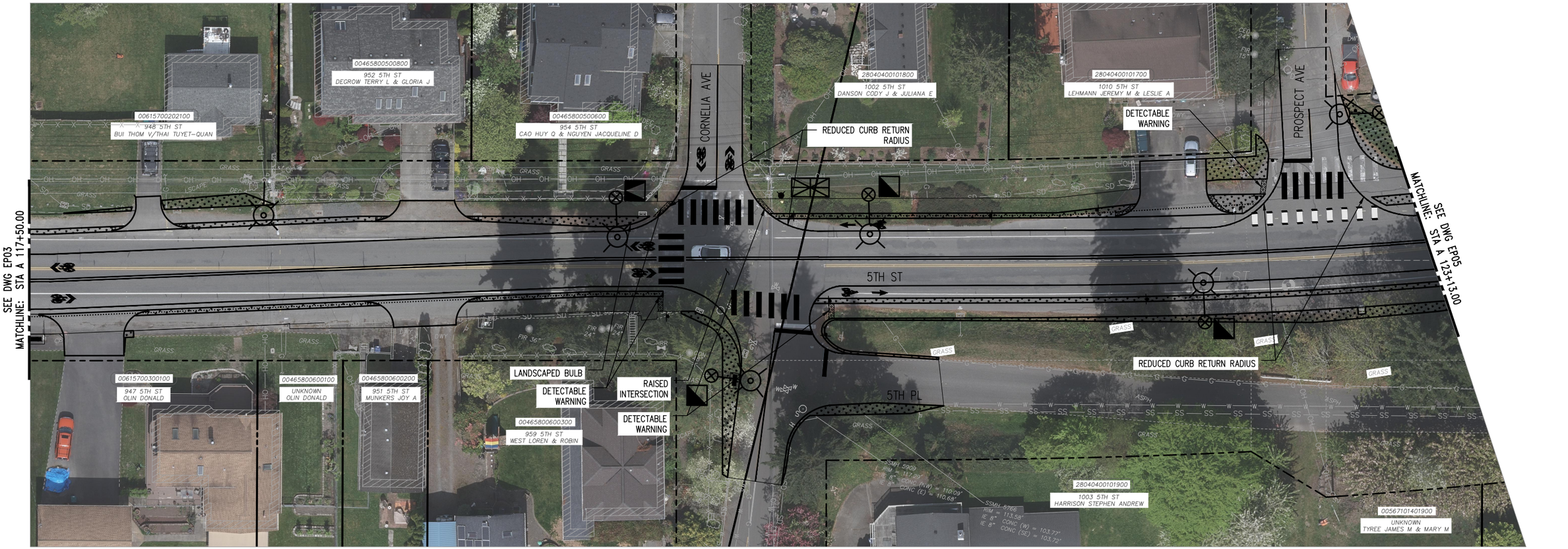

LEGEND

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- LANDSCAPING
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CHECKED BY: JMM | APPROVED BY: RJL
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JOB No.: 2000722

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SHT. 4 OF 9

ENVIROMENTAL PERMITTING

EP04

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michaelv
Jun 01, 2022 - 4:28pm

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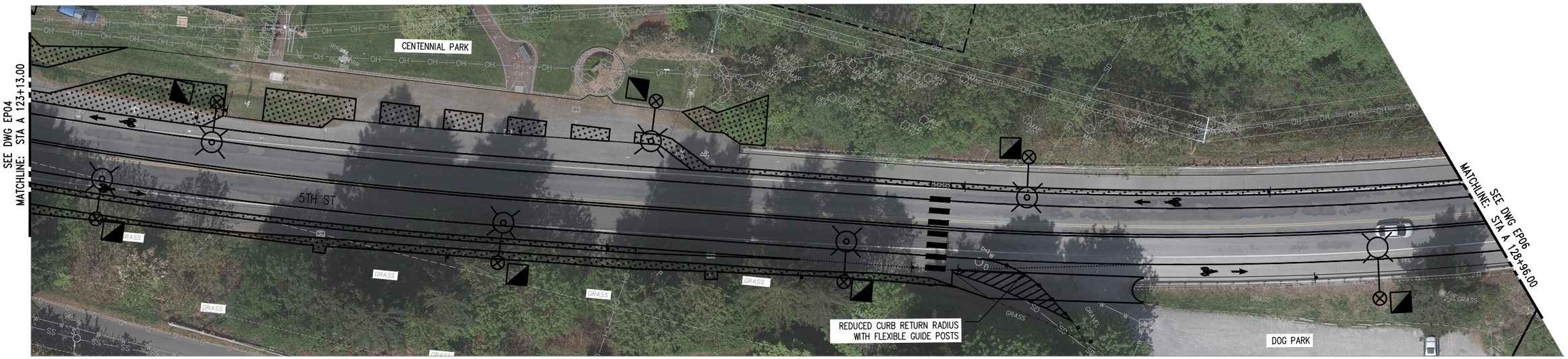

LEGEND

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ENVIROMENTAL PERMITTING

SHT. 5 OF 9

EP05

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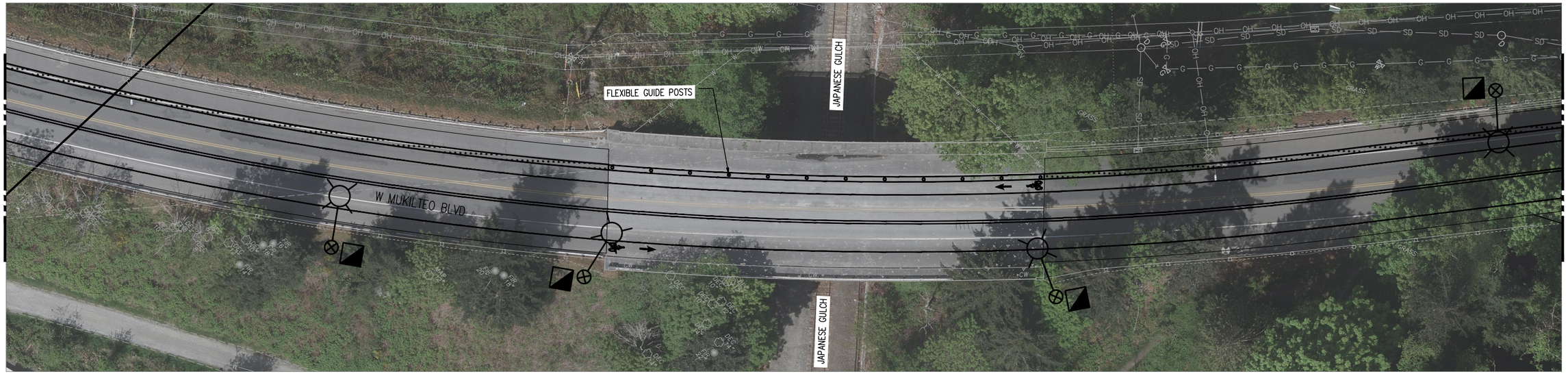
S4 T28N R4E W.M.& S3 T29N R4E

SEE DWG EP05
MATCHLINE: STA A 128+96.00



MATCHLINE: STA A 135+00.00
SEE DWG EP07

LEGEND

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- DETECTABLE WARNING
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SHT. 6 OF 9

ENVIROMENTAL PERMITTING

EP06

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Jun 01, 2022 - 4:28pm

S4 T28N R4E W.M.& S3 T29N R4E

LEGEND

- NO PARKING ZONE
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SHT. 7 OF 9

ENVIROMENTAL PERMITTING

EP07

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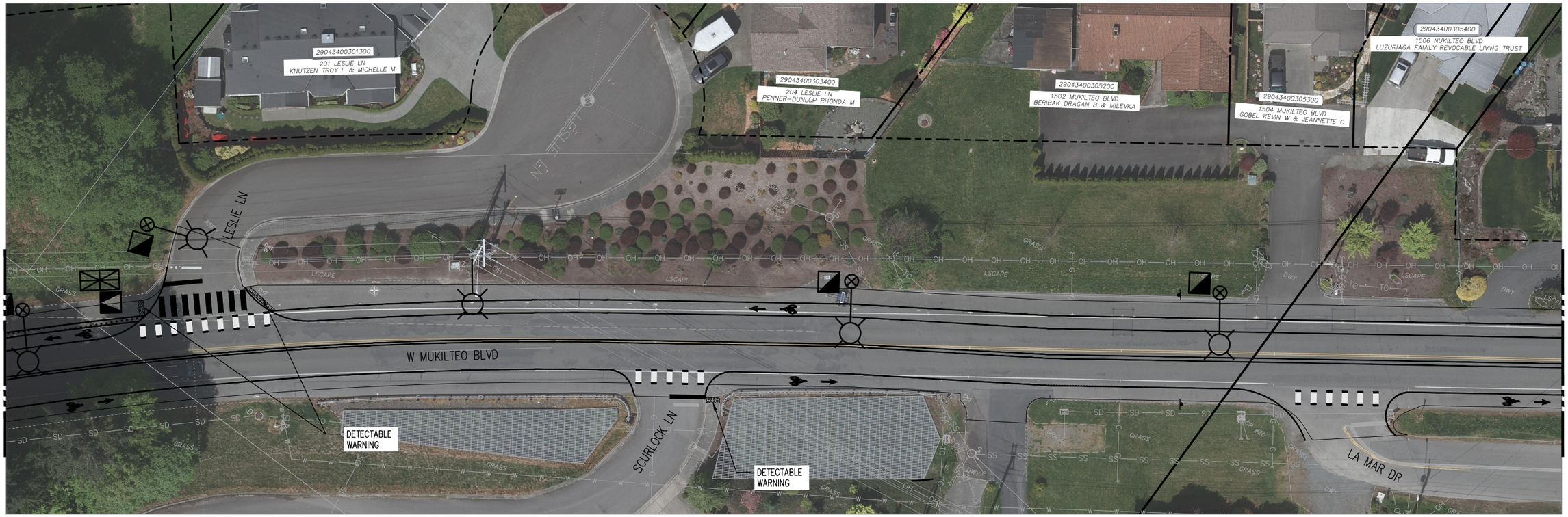

LEGEND

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SHT. 8 OF 9

ENVIROMENTAL PERMITTING

EP08

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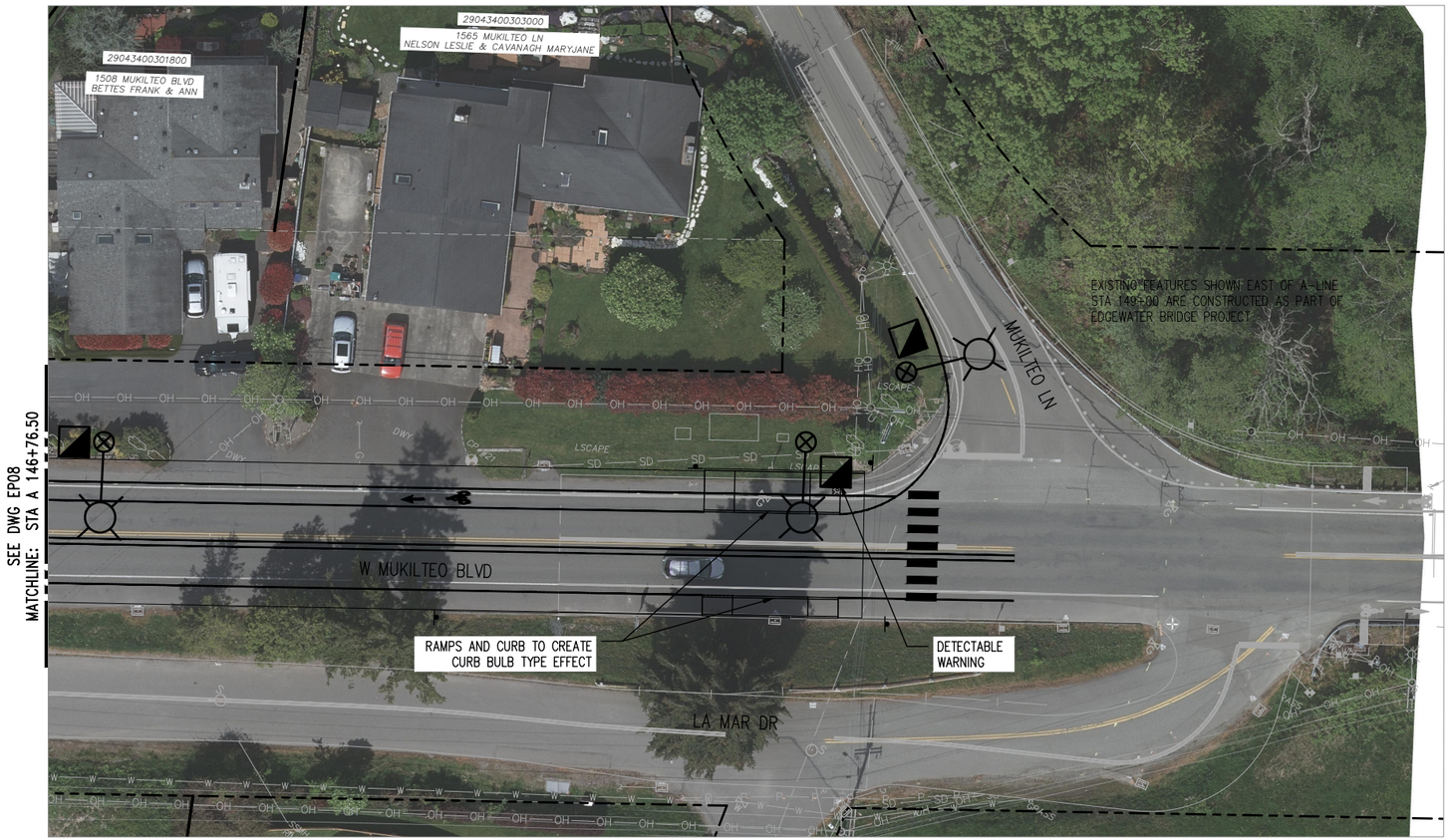

LEGEND

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SHT. 9 OF 9

ENVIROMENTAL PERMITTING

EP09

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michaelv
Jun 01, 2022 - 4:28pm

PLANTING SCHEDULE

SYM	QTY	SCIENTIFIC/COMMON NAME	SIZE	REMARKS
		TREES		
+	2	AMALANCHIER X GRANDIFLORA 'AUTUMN BRILLIANCE' / AUTUMN BRILLIANCE APPLE SERVICEBERRY	2" CAL; B&B / 8" FABRIC BAG	STRAIGHT TRUNK; SYMMETRICAL, FULL, WELL ROOTED & WELL BRANCHED
		SHRUBS AND GROUNDCOVER		
▨	148	ABELIA X 'EDWARD GOUCHER / EDWARD GOUCHER ABELIA	#1 CONT	FULL, WELL BRANCHED & WELL ROOTED; TRIANGULAR SPACING @ 30" OC
▨	411	HEMEROCALLIS 'STELLA D'ORO' / STELLA D'ORO DAYLILY	#1 CONT	FULL & WELL ROOTED; TRIANGULAR SPACING AT 18" OC
▨	411	JUNCUS EFFUSUS / SOFT RUSH	#1 CONT	FULL & WELL ROOTED; TRIANGULAR SPACING AT 18" OC
▨	411	NASELLA TENUISSIMA / MEXICAN FEATHER GRASS	#1 CONT	FULL & WELL ROOTED; TRIANGULAR SPACING AT 18" OC
▨	61	DIANTHUS GRATIANOPOLOTANUS / TINY RUBIES DIANTHUS	#1 CONT	FULL & WELL ROOTED; TRIANGULAR SPACING @ 30" OC
▨	169	LAVANDULA ANGUSTIFOLIA 'COMPACTA' / 'COMPACTA' LAVENDER	#1 CONT	FULL, WELL BRANCHED & WELL ROOTED; TRIANGULAR SPACING AT 18" OC
▨	253	SEDUM ACRE / GOLDMOSS STONECROP	#1 CONT	FULL & WELL ROOTED; TRIANGULAR SPACING AT 12" OC
▨	253	THYMUS ALBIFLORUS / WHITE CREEPING THYME	#1 CONT	FULL & WELL ROOTED; TRIANGULAR SPACING AT 12" OC
		HYDROSEED		
▨	3,630 SF	SEED LAWN		SEE SPECS
▨	4,613 SF	WILD FLOWER SEED MIX		SEE SPECS
4 / LP10		LANDSCAPE BOULDER	THREE MAN BOULDER	PER SPECIFICATION 9-03.11(3)

IRRIGATION SCHEDULE

3 / LP11	SCH 80 IRRIGATION PIPE SLEEVE
2 / LP11	SCH 40 IRRIGATION MAINLINE
2 / LP11	SCH 40 IRRIGATION LATERAL LINE
4 / LP11 ▲	DRIP CONNECTION AT LIGHT POLE; RAINBIRD XERI-BUBBLER, RAINBIRD PFR/RS POLYFLEX RISER, RAINBIRD RS-025T FLEX RISER STAKE, RAINBIRD SPB-025 1/4" SELF PIERCING BARB CONNECTORS, RAINBIRD 1/2" XBS TUBING
1 / LP11 C	BATTERY OPERATED AUTOMATIC CONTROL VALVE; HUNTER NODE BATTERY OPERATED CONTROLLER WITH HUNTER ICZ-101-25 VALVE KIT INCLUDING FILTER AND REGULATOR, AND HUNTER DC-LATCHING SOLENOID PN 45820
5 / LP11	200RS-075 (3/4") DRAIN VALVE; PROVIDE OWNER WITH TWO (2) VALVE KEYS
M	EXISTING IRRIGATION DEDUCT WATER METER
M	EXISTING IRRIGATION WATER METER

PLANTING NOTES

1. ANY DISCREPANCIES WITH THE DWGS AND/OR SPECS & SITE CONDITIONS MUST BE BROUGHT TO THE ATTENTION OF RESIDENT ENGINEER PRIOR TO PROCEEDING WITH CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
3. FIELD STAKE PLANTING LOCATIONS FOR RESIDENT ENGINEER REVIEW AND APPROVAL PRIOR TO INSTALLATION.
4. INSTALL GROUNDCOVERS IN A TRIANGULAR PATTERN AT SPACING SHOWN IN THE PLANT SCHEDULE. WHERE GROUNDCOVER ABUTS CURBING, WALLS, OR WALKS, MIN PLANTING DISTANCE MUST BE NINE (9) INCHES FROM SAME UNLESS OTHERWISE NOTED. INSTALL GROUNDCOVERS CONTINUOUS IN BETWEEN SHRUB PLANTINGS.
5. BACK OF SIDEWALK RESTORATION WILL BE SHOWN ON 90% SUBMITTAL.
6. TREE LOCATIONS SHOWN ON PLANTING PLAN SHEET LP05 ARE APPROXIMATE; IF FIELD ADJUSTMENTS ARE NECESSARY THE FOLLOWING MIN SETBACKS FOR CENTERLINE OF TREE TRUNKS TO EDGE OF DRIVEWAY, FACE OF CURB OR INTERSECTION AND TO CENTER OF ALL OTHERS SHOWN MUST APPLY:

A.	STREET LIGHTS	10'
B.	DRIVEWAYS	10'
C.	INTERSECTIONS	30'
D.	UNDERGROUND SEWER & WATER LINES	5'
E.	UNDERGROUND GAS LINES	1'
F.	UNDERGROUND HIGH PRESSURE GAS LINES	3'
G.	UTILITY/POWER POLES	5'
H.	UNDERGROUND FIBER CABLE	2'
I.	OTHER TREES	15'
J.	FACE OF CURB	3'

PLANTING LEGEND

- DETAIL IDENTIFICATION / SHEET IDENTIFICATION
- EXISTING STREET LIGHTING
- NEW STREET LIGHTING
- GRAVEL SURFACING, SEE CIVIL DWGS

PLANTING ABBREVIATIONS

#/NO	NUMBER	EX	EXISTING
%	PERCENT	MAX	MAXIMUM
&	AND	MIN	MINIMUM
ABBV	ABBREVIATIONS	OC	ON CENTER
ALT	ALTERNATE	PREP	PREPARATION
APPROX	APPROXIMATE	QTY	QUANTITY
B&B	BALLED AND BURLAPPED	SCH	SCHEDULE
CAL	CALIPER	SPEC	SPECIFICATION
CONT	CONTAINER	SQ	SQUARE
DIA	DIAMETER	SYM	SYMBOL
DWGS	DRAWINGS	TYP	TYPICAL
EA	EACH	ENG	ENGINEER
EQ	EQUAL		

IRRIGATION NOTES

1. THERE IS A LOSS OF PRESSURE IN EACH PIPE FITTING DUE TO FRICTION & ADDITIONAL HEADS MAY BE NEEDED DUE TO FIELD CONDITIONS. THESE LOSSES ARE COMPENSATED FOR BY ADDING TEN (10) PERCENT TO THE MFRS RATED GPM FOR EACH NOZZLE.
2. LOCATE VALVE BOXES & AUTOMATIC CONTROL VALVES IN SEEDED OR SHRUB/GROUNDCOVER AREAS AT POINT OF EASY ACCESS. RESIDENT ENGINEER TO REVIEW & APPROVE FINAL LOCATION OF ALL VALVE BOXES & AUTOMATIC CONTROL VALVES PRIOR TO INSTALLATION.
3. EX STATIC PSI AT FIRE STATION IRRIGATION METER IS __ PSI. EXISTING STATIC PSI AT CENTENNIAL PARK IRRIGATION METER IS ___ PSI. INFORMATION PROVIDED BY ____NAME, COMPANY, ADDRESS AND PHONE #____ RECEIVED ON XX/XX/XX. PRIOR TO INSTALLATION OF IRRIGATION SYSTEM, CONTRACTOR SHALL FIELD VERIFY EX PSI AT BOTH WATER METERS AND PROVIDE WRITTEN VERIFICATION TO RESIDENT ENGINEER. NOTIFY RESIDENT ENGINEER OF ANY DISCREPANCIES BETWEEN THE DESIGN PSI & EX PSI PRIOR TO PROCEEDING WITH WORK.
4. SYSTEM DESIGNED TO __ PSI AT IRRIGATION METER.
5. IRRIGATION CONTRACTOR SHALL COORDINATE IRRIGATION SLEEVING LOCATIONS WITH GENERAL CONTRACTOR.
6. DRAWING IS SCHEMATIC. ACTUAL LOCATIONS MAY VARY DUE TO PLANT MATERIALS, UTILITIES OR EX CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR LOCATING UTILITIES PRIOR TO BEGINNING CONSTRUCTION.
7. ALL IRRIGATION SLEEVING TO BE STAKED IN THE FIELD & LOCATED ON DIMENSIONED "AS-BUILT" DRAWING TO ALLOW FUTURE LOCATION & USE.
8. AIR BLOW IRRIGATION SYSTEM THROUGH QUICK COUPLERS TO WINTERIZE IRRIGATION SYSTEM.
9. CONTRACTOR TO DOCUMENT WORKING ORDER OF EX IRRIGATION SYSTEMS PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR RESTORING THE EX IRRIGATION SYSTEMS DAMAGED BY CONSTRUCTION TO THEIR PRE-CONSTRUCTION CONDITION, SEE SPECS.
10. WHERE PIPE SIZES ARE NOT SHOWN ON THE PLAN, PIPE SHALL BE SIZED TO THE NEXT LARGEST PIPE SIZE SHOWN UPSTREAM ON THE PLAN.
11. WHEN TRENCHING OCCURS AROUND TREES TO REMAIN, THE TREE ROOTS SHALL NOT BE CUT, BUT THE TRENCH SHALL BE TUNNELED UNDER OR AROUND THE ROOTS BY CAREFUL HAND-DIGGING & WITHOUT INJURY TO THE ROOTS.

NOT FOR CONSTRUCTION 60 Percent

NO.	DATE	BY	CHD.	APPR.	REVISION

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CHECKED BY MPW | APPROVED BY ARL
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SCALE: 1" = 20'

HBB LANDSCAPE ARCHITECTURE
2101 4TH AVENUE, SUITE 1800 SEATTLE, WA 98121
206.682.3051 phone 206.682.3245 fax

CITY OF MUKILTEO

MUKILTEO 5TH ST BICYCLE & PEDESTRIAN
MUKILTEO, WA

PLANTING & IRRIGATION SCHEDULE, LEGEND, ABBREV. & NOTES

SHT. 40 OF 98

LP00

P:\2021 Projects\2021-01 5th St Bicycle Ped Imp\Graphics\AutoCAD\L-PLOT.dwg
mwalton
Apr 08, 2022 - 1:15pm

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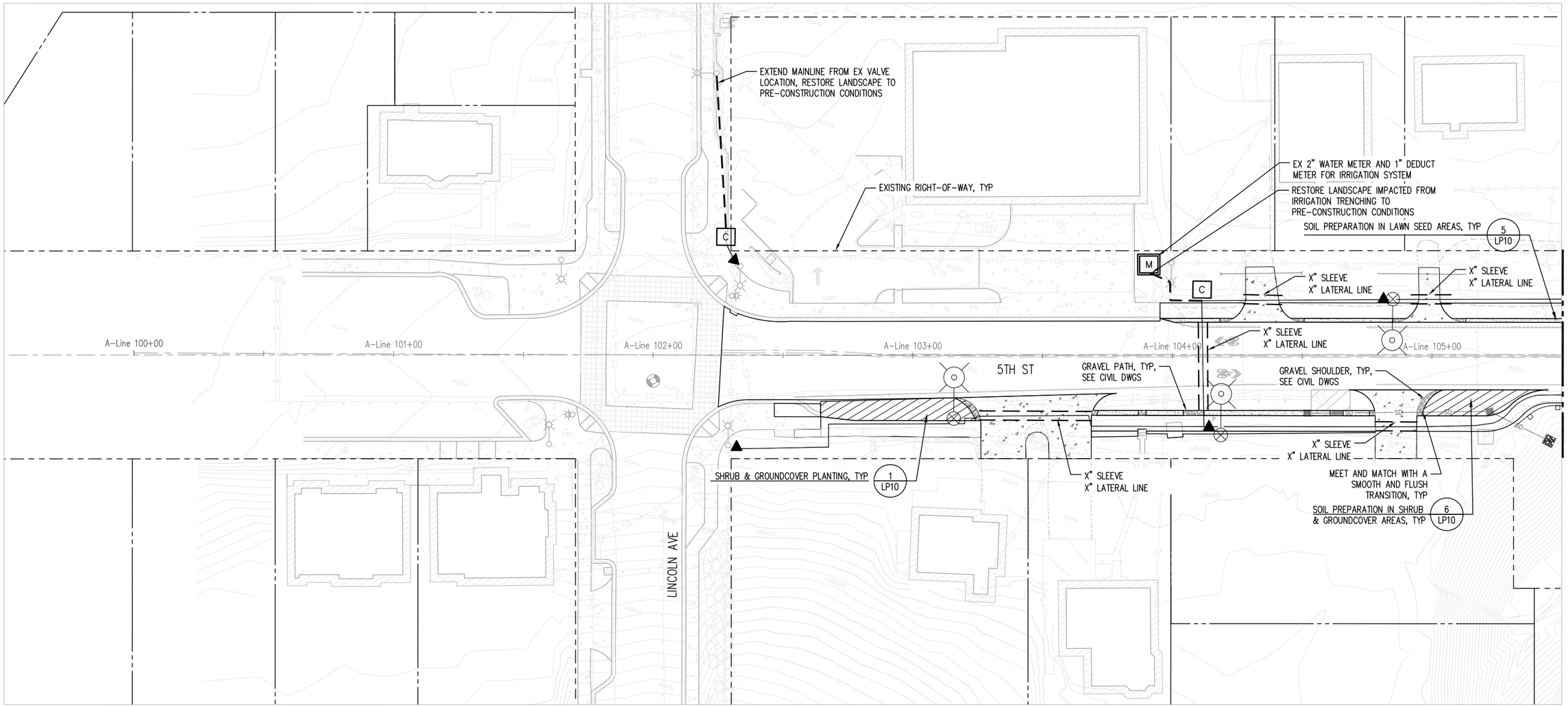

NOTES:

1. IRRIGATION LINES AND EQUIPMENT ARE SHOWN SCHEMATICALLY FOR CLARITY. INSTALL ALL IRRIGATION EQUIPMENT IN PLANTING AREAS AND IRRIGATION LINES WITHIN SLEEVES WHERE SHOWN.
2. SEE LP00 FOR PLANTING AND IRRIGATION SCHEDULE.

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MUKILTEO, WA

SHT. 41 OF 98

PLANTING AND IRRIGATION PLAN

LP01

Apr 08, 2022 - 1:15pm mwalton P:\2021 Projects\2021-01 5th St Bicycle Ped Imp\Graphics\AutoCAD\L-P1.01.dwg

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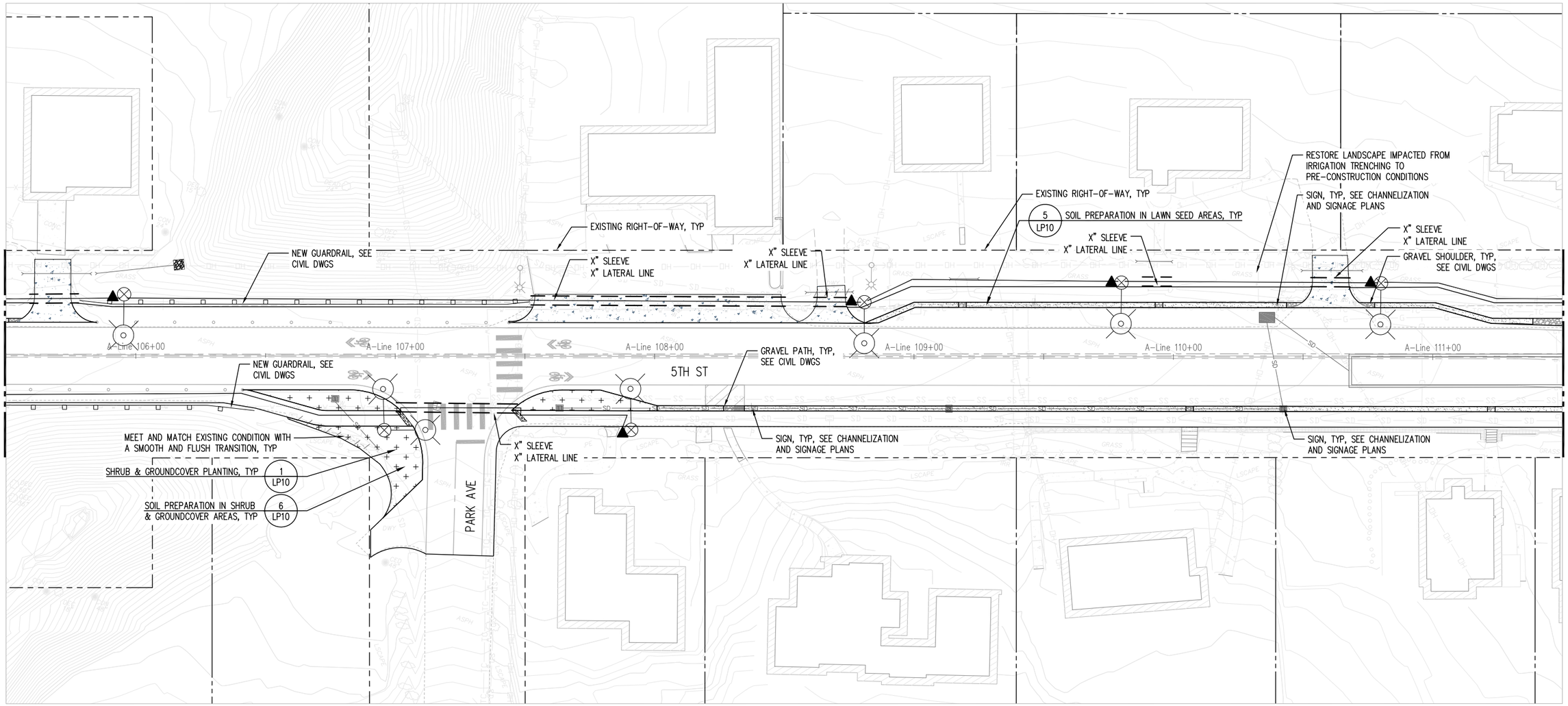

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MUKILTEO, WA

SHT. 42 OF 98

PLANTING AND IRRIGATION PLAN

LP02

P:\2021 Projects\2021-01 5th St Bicycle Ped Imp\Graphics\AutoCAD\L-PLOT.dwg
mwalton
Apr 08, 2022 - 1:15pm

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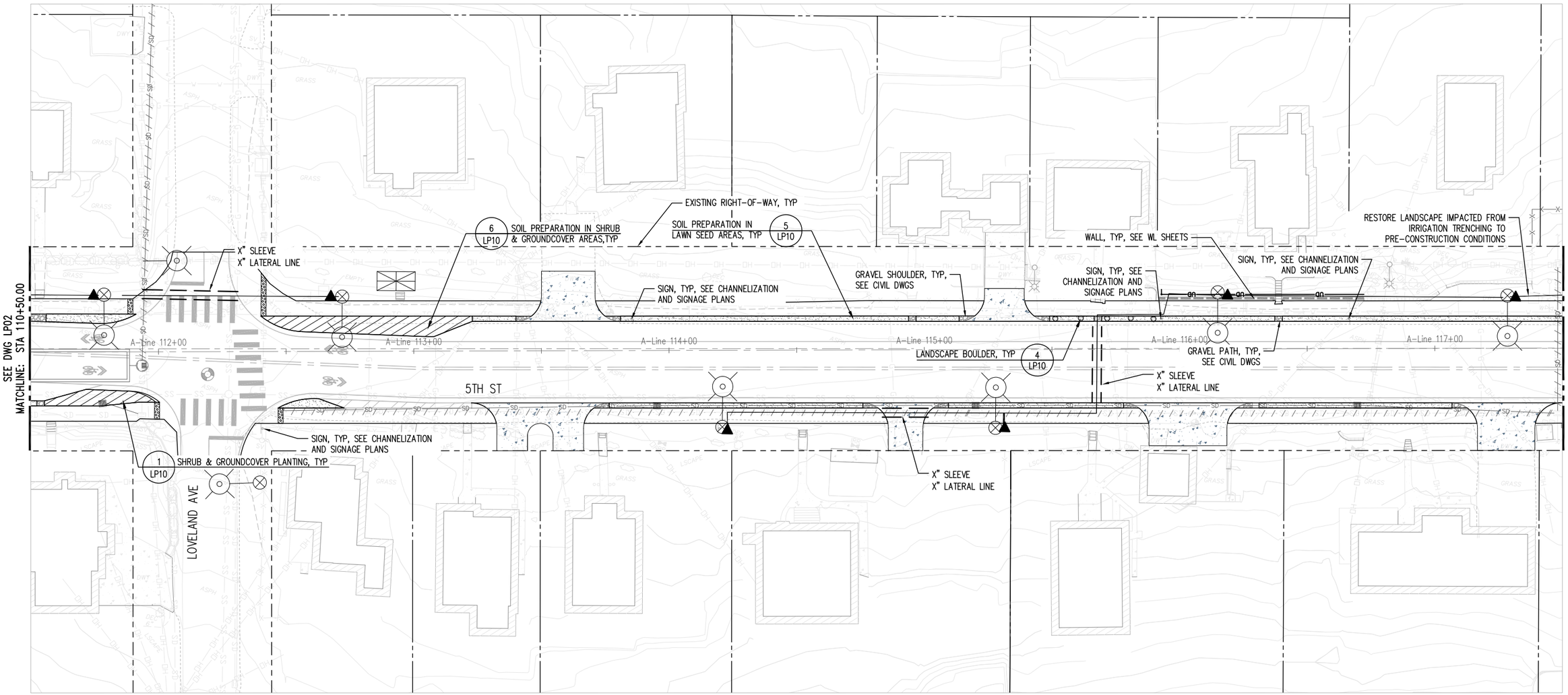

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DATE 03/2022
J O B No. : 2000722

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CITY OF MUKILTEO

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MUKILTEO, WA

SHT. 43 OF 98

PLANTING AND IRRIGATION PLAN

LP03

Apr 08, 2022 - 1:15pm mwalton P:\2021 Projects\2021-01 5th St Bicycle Ped Imp\Graphics\AutoCAD\L-PLOT.dwg

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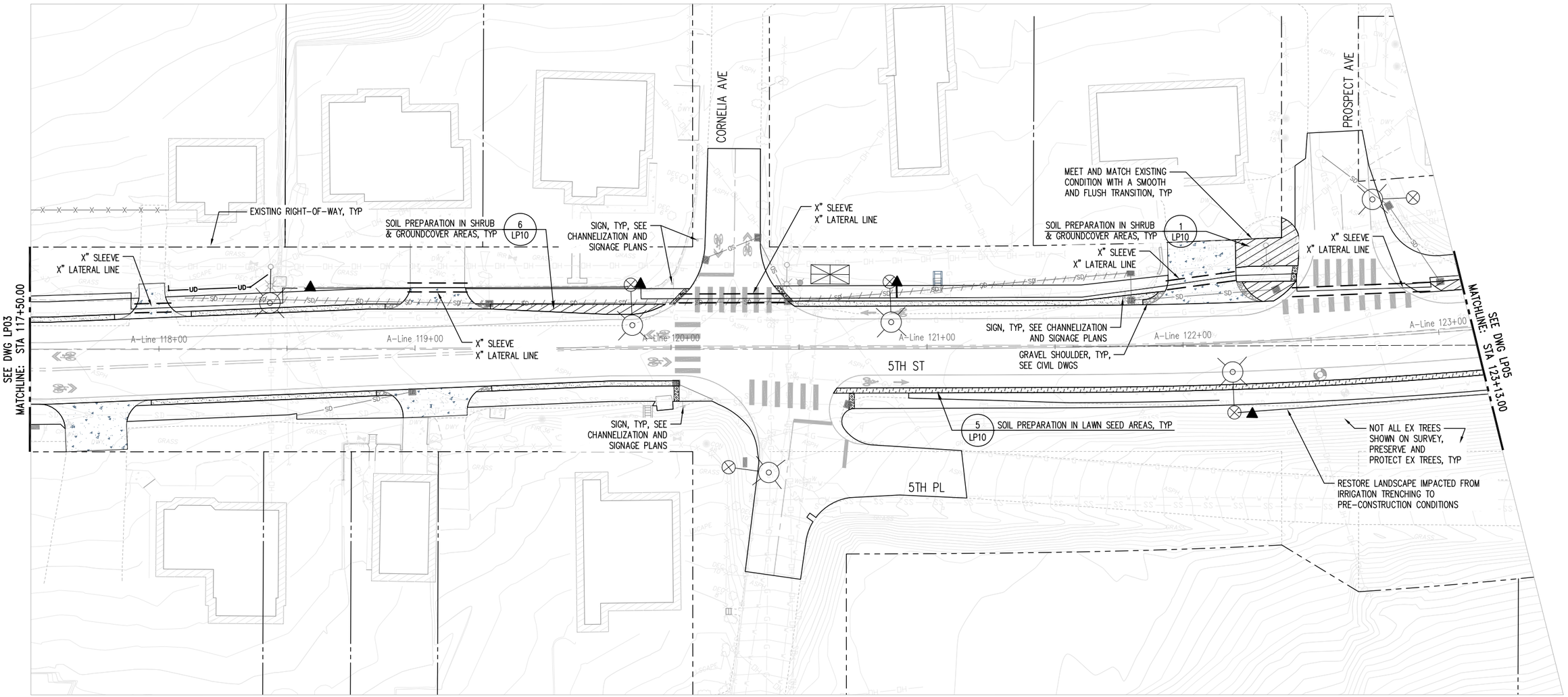

NOTES:

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2. SEE LP00 FOR PLANTING AND IRRIGATION SCHEDULE.

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1 inch = 20 feet

NOT FOR CONSTRUCTION 60 Percent

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SHT. 44 OF 98

PLANTING AND IRRIGATION PLAN

LP04

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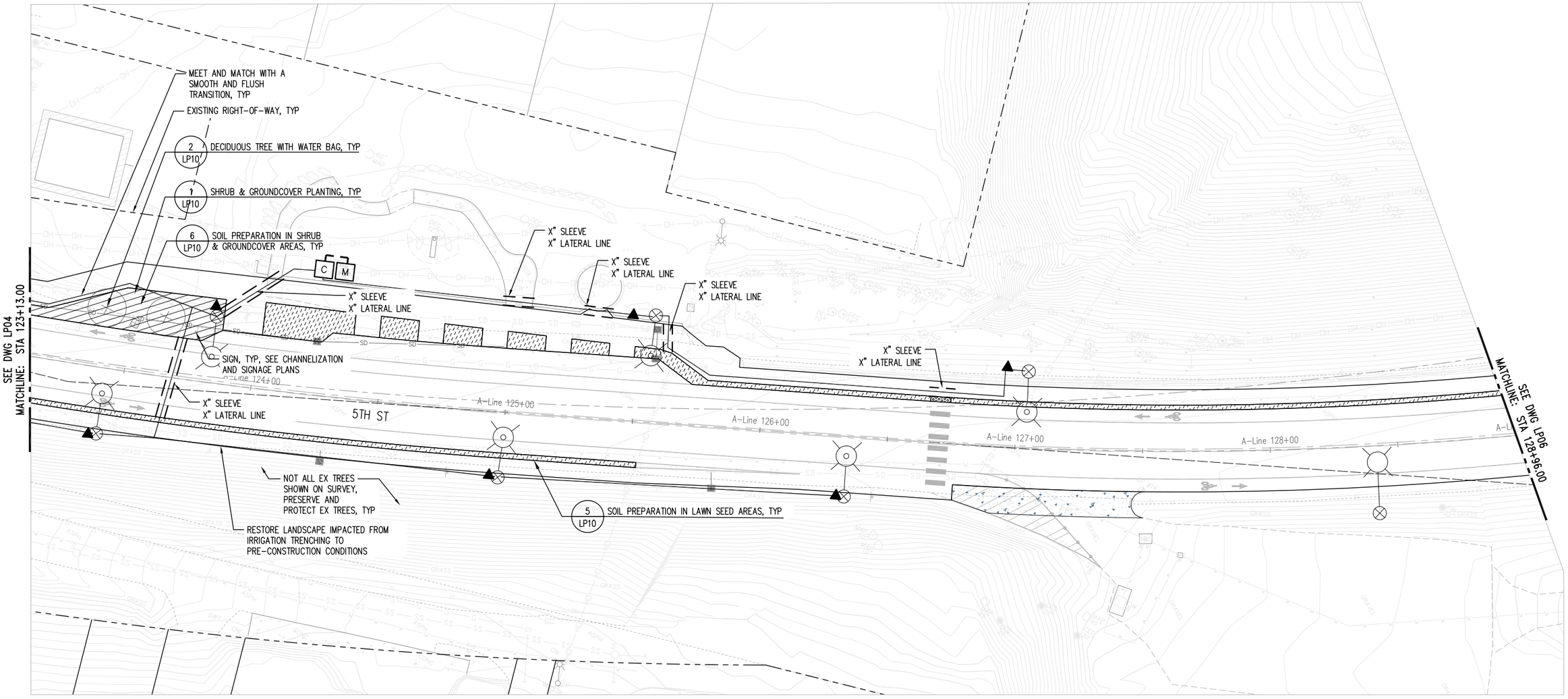

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2. SEE LP00 FOR PLANTING AND IRRIGATION SCHEDULE.

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1 inch = 20 feet

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SHT. 45 OF 98

PLANTING AND IRRIGATION PLAN

LP05

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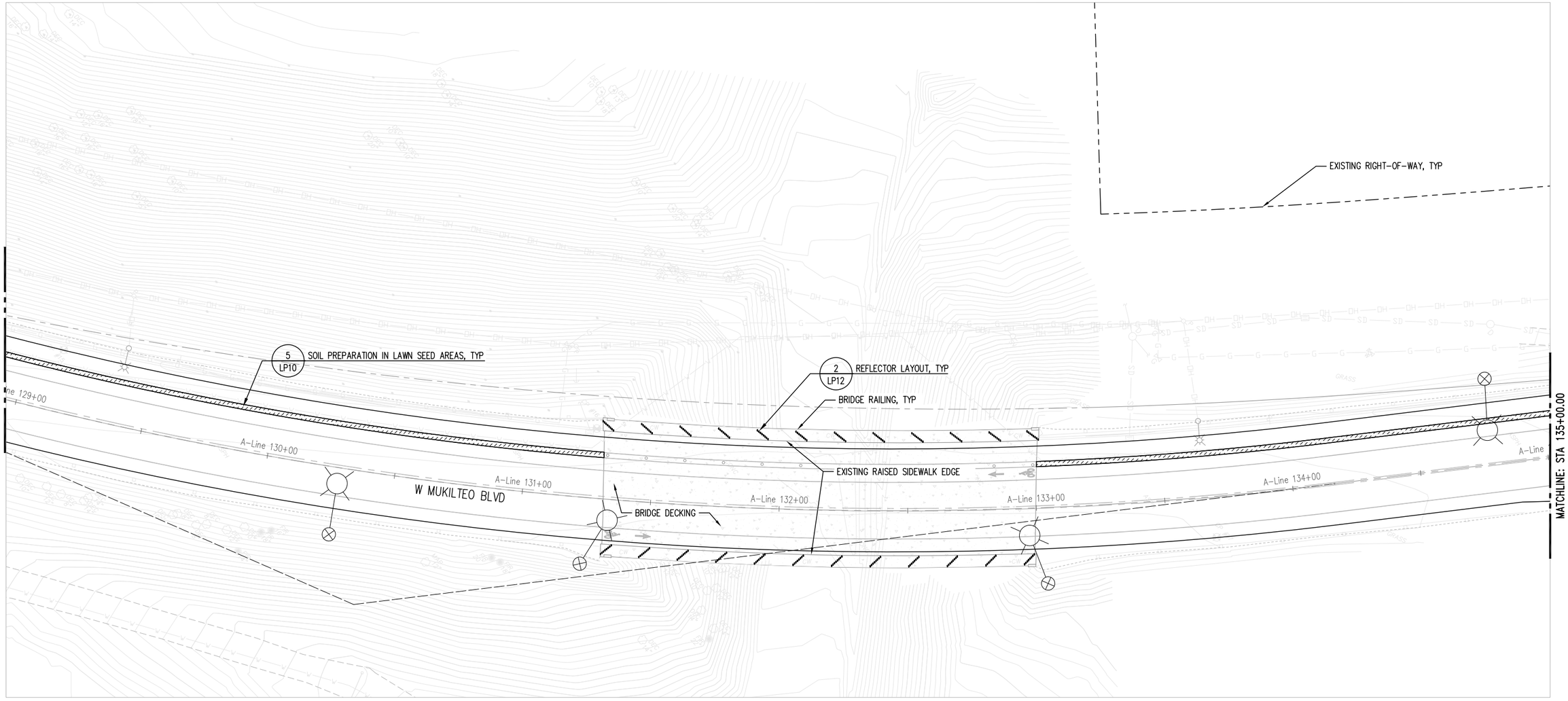

NOTE:
1. SEE LP00 FOR PLANTING SCHEDULE.

N

0 10 20 40
1 inch = 20 feet

NOT FOR CONSTRUCTION **60 Percent**

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SHT. 46 OF 98

PLANTING AND URBAN DESIGN PLAN

LP06

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NOTE:
1. SEE LP00 FOR PLANTING SCHEDULE.

N

0 10 20 40
1 inch = 20 feet

NOT FOR CONSTRUCTION **60 Percent**

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PLANTING PLAN

LP07

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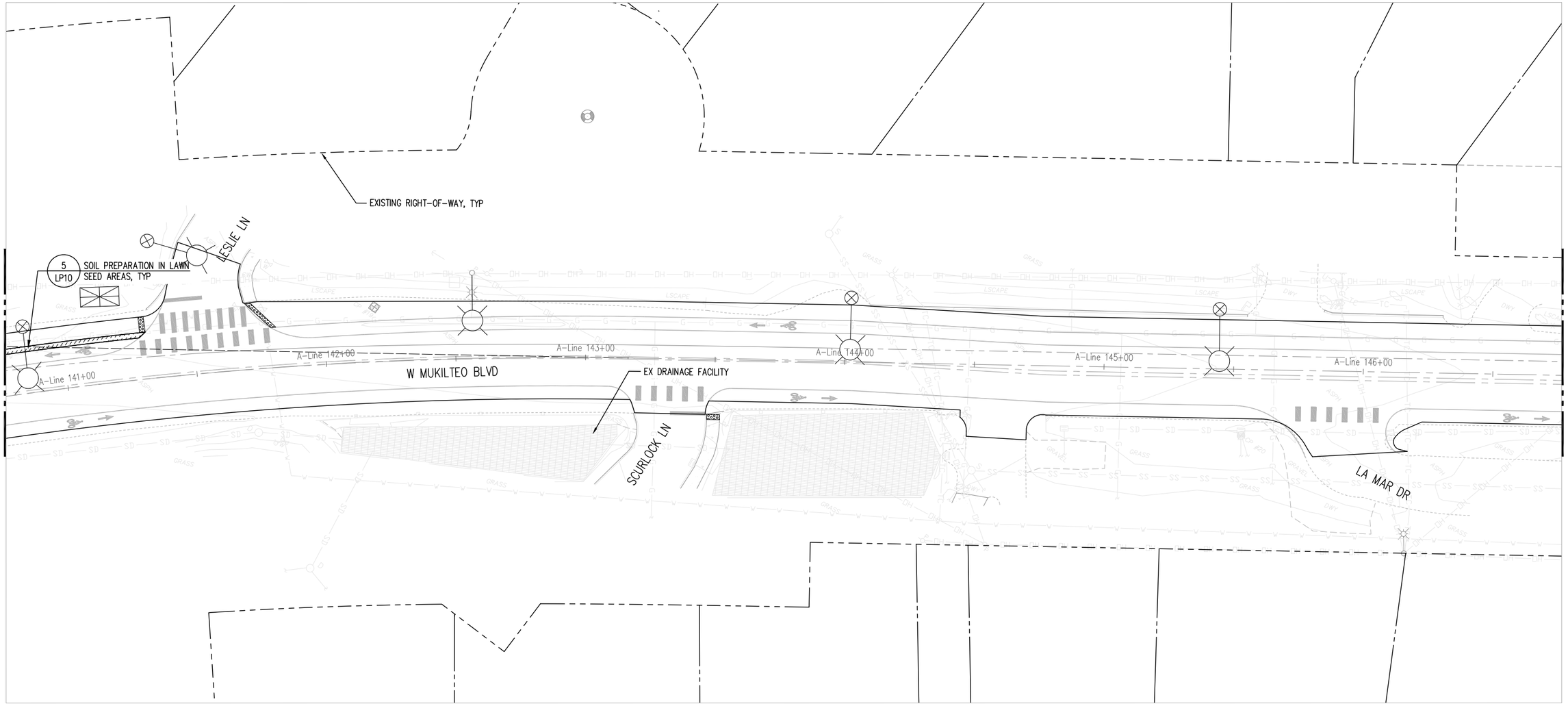

NOTE:
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PLANTING PLAN

SHT. 48 OF 98

LP08

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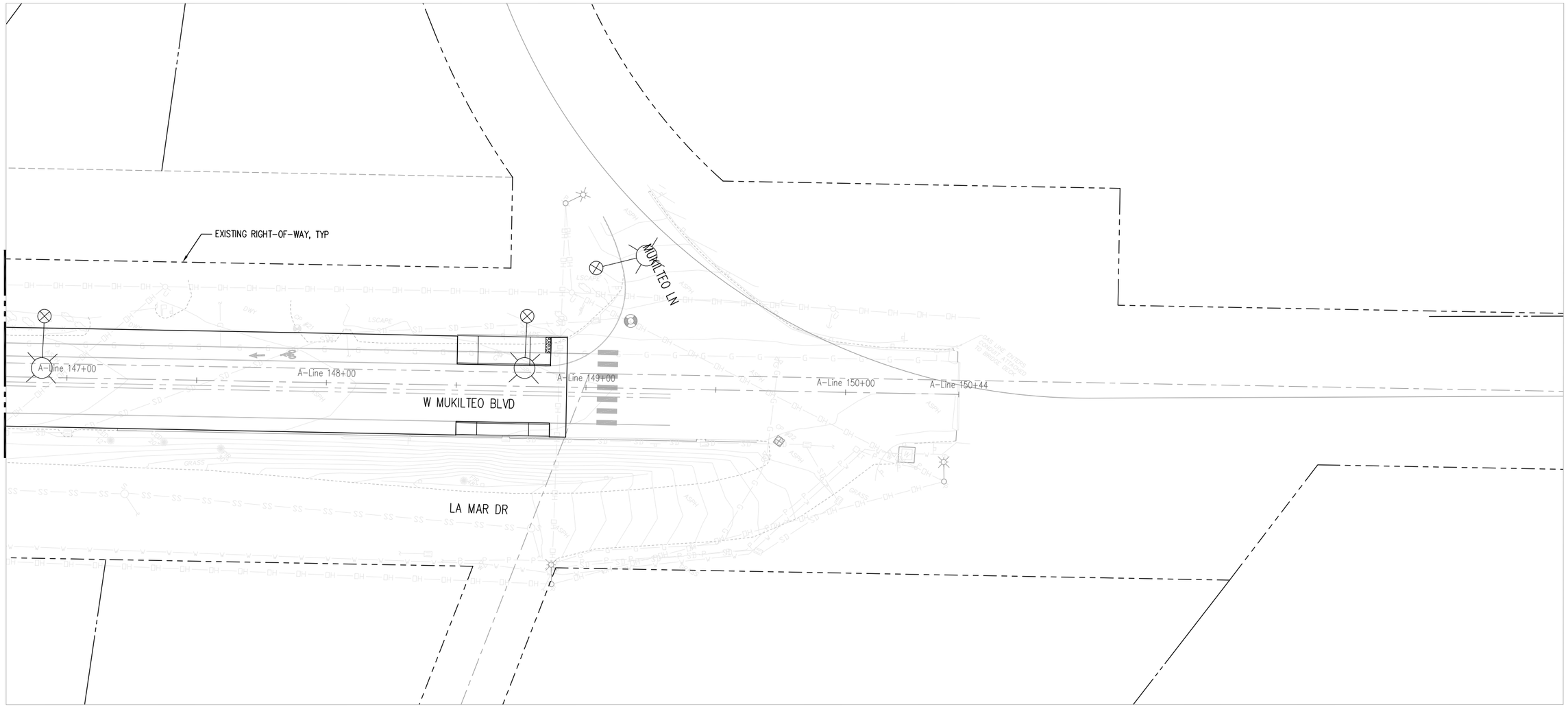

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1 inch = 20 feet

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PLANTING PLAN

LP09

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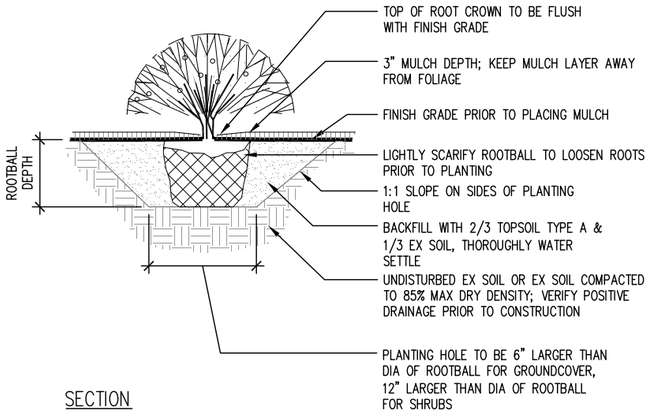
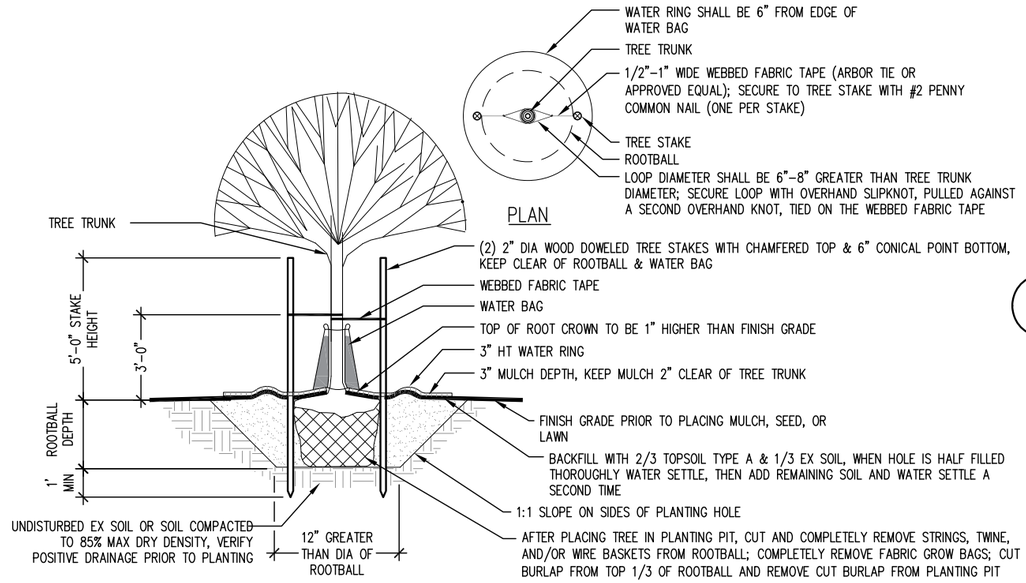


SECTION

1 SHRUB & GROUNDCOVER PLANTING

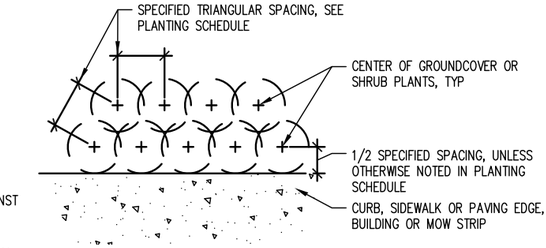
NOT TO SCALE



SECTION

2 DECIDUOUS TREE WITH WATER BAG

NOT TO SCALE

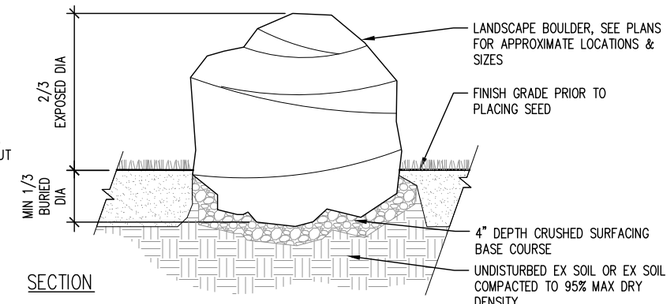


PLAN

3 SHRUB & GROUNDCOVER PLANTING LAYOUT

NOT TO SCALE

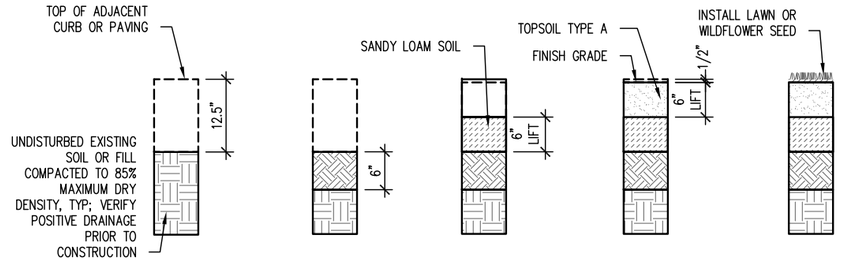
NOTES:
1. STAKE LANDSCAPE BOULDER LOCATIONS FOR RESIDENT ENGINEER APPROVAL PRIOR TO PLACING.



SECTION

4 LANDSCAPE BOULDER

NOT TO SCALE



STEP 1
EXCAVATE EXISTING SOIL TO 12.5" DEPTH BELOW ADJACENT CURB OR PAVING. AVOID UNDERMINING ADJACENT CURB OR PAVING SUBBASE MATERIAL. PROVIDE PERCOLATION TEST, PER SPECS, PRIOR TO PROCEEDING TO STEP 2.

STEP 2
SCARIFY SUBGRADE TO A MINIMUM 6" DEPTH. RESIDENT ENGINEER SHALL REVIEW & APPROVE WORK PRIOR TO PROCEEDING TO STEP 4.

STEP 3
INSTALL MINIMUM 6" DEPTH OF SANDY LOAM SOIL. WATER SETTLE/COMPACT PRIOR TO PROCEEDING TO STEP 4.

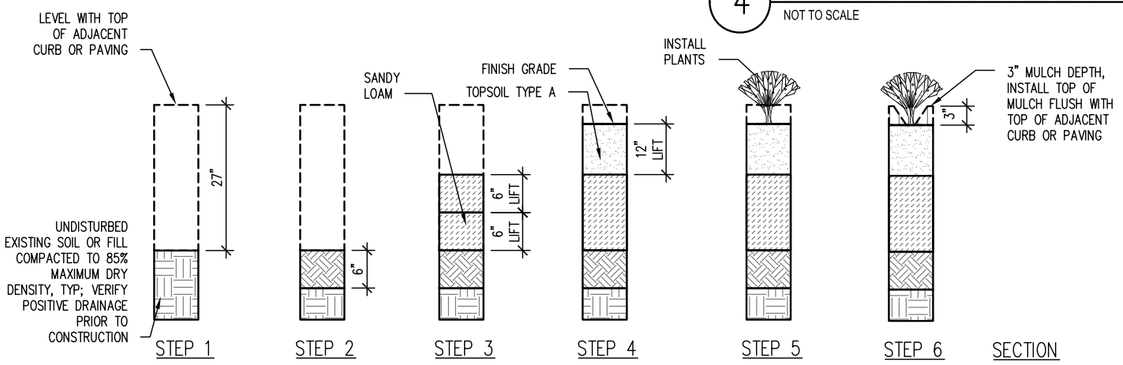
STEP 4
INSTALL MINIMUM 6" DEPTH OF TOPSOIL TYPE A. WATER SETTLE/COMPACT PRIOR TO INSTALLING LAWN SEED. REVIEW FINISH GRADE WITH RESIDENT ENGINEER PRIOR TO SEEDING.

STEP 5
INSTALL LAWN OR WILDFLOWER SEED.

NOTES
1. ALL DIMENSIONS INDICATE COMPACTED DEPTHS.

5 SOIL PREPARATION IN LAWN SEED AREAS

NOT TO SCALE



STEP 1
EXCAVATE EXISTING SOIL TO 27" DEPTH BELOW ADJACENT CURB OR PAVING. AVOID UNDERMINING ADJACENT CURB OR PAVING SUBBASE MATERIAL. PROVIDE PERCOLATION TEST PER SPECS, PRIOR TO PROCEEDING TO STEP 2.

STEP 2
THOROUGHLY SCARIFY SUBGRADE TO A MIN 6" DEPTH. RESIDENT ENGINEER SHALL REVIEW & APPROVE WORK PRIOR TO PROCEEDING TO STEP 3.

STEP 3
INSTALL MINIMUM 12" DEPTH OF SANDY LOAM SOIL IN 6" LIFTS. WATER SETTLE/COMPACT EACH LIFT PRIOR TO INSTALLING THE NEXT LIFT.

STEP 4
INSTALL 12" DEPTH OF TOPSOIL TYPE A & WATER SETTLE/COMPACT PRIOR TO INSTALLING PLANTS. REVIEW FINISH GRADE WITH RESIDENT ENGINEER PRIOR TO PLANTING.

STEP 5
INSTALL PLANTS.

STEP 6
INSTALL 3" MULCH DEPTH.

NOTES
ALL DIMENSIONS INDICATE COMPACTED DEPTHS.

6 SOIL PREPARATION IN SHRUB & GROUNDCOVER AREAS

NOT TO SCALE

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PLANTING DETAILS

SHT. 50 OF 98

LP10

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mwatton
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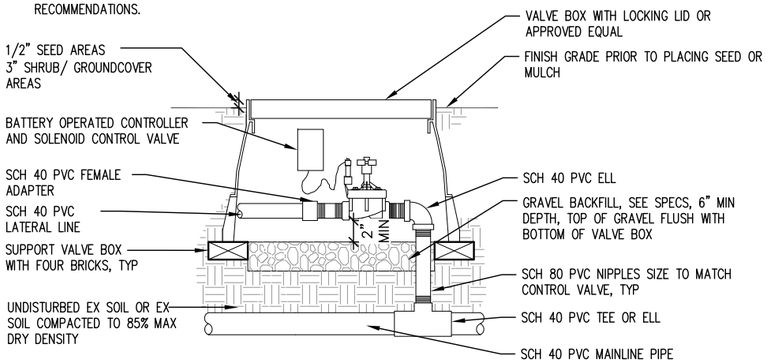
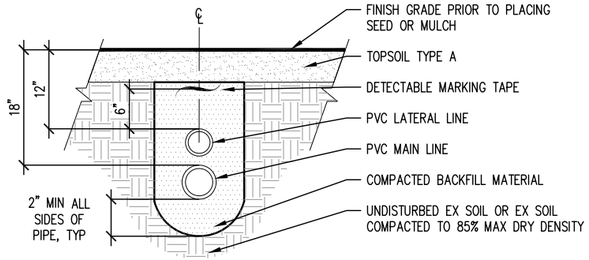
NOTE:
1. INSTALL CONTROL MODULE & POTTED LATCHING SOLENOID WITH AUTOMATIC CONTROL VALVE PER MANUFACTURER'S RECOMMENDATIONS.



SECTION

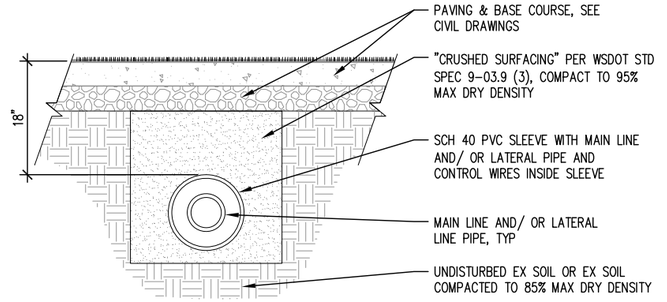
1 BATTERY OPERATED AUTOMATIC CONTROL VALVE
NOT TO SCALE

NOTES:
1. ALL MAIN LINE PIPE UNDER PAVEMENT SHALL BE SLEEVED, SEE DETAIL 3/LP11.
2. BACKFILL MATERIAL TO BE FREE OF ROCK OR DEBRIS LARGER THAN 1". ABSOLUTELY NO ROCK OR DEBRIS SHALL BE PLACED DIRECTLY ADJACENT TO ANY PIPE.



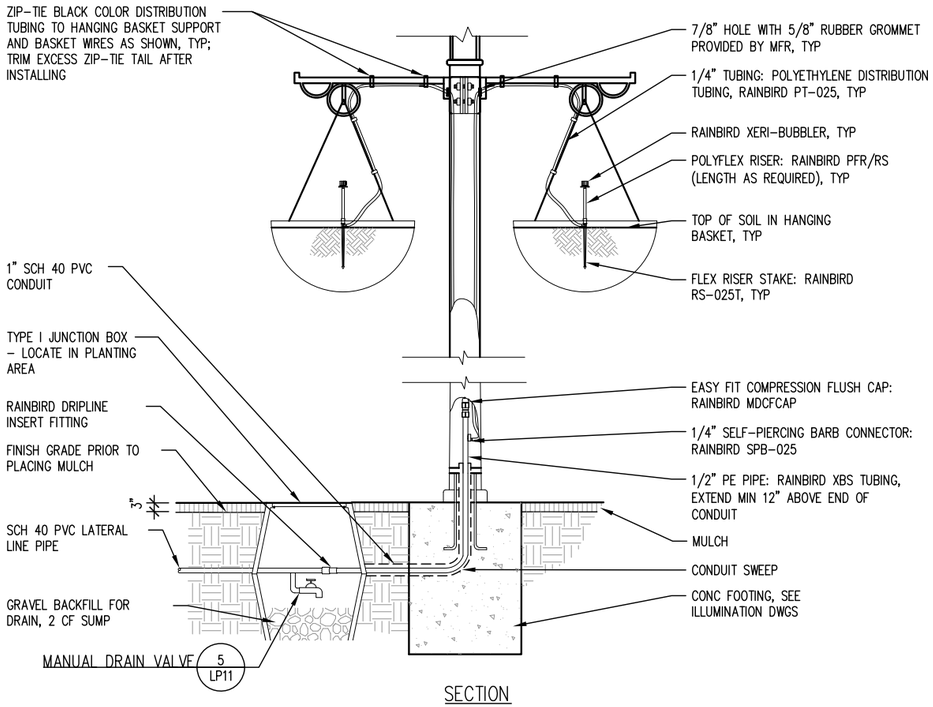
SECTION

2 MAIN AND LATERAL PIPE TRENCH
NOT TO SCALE



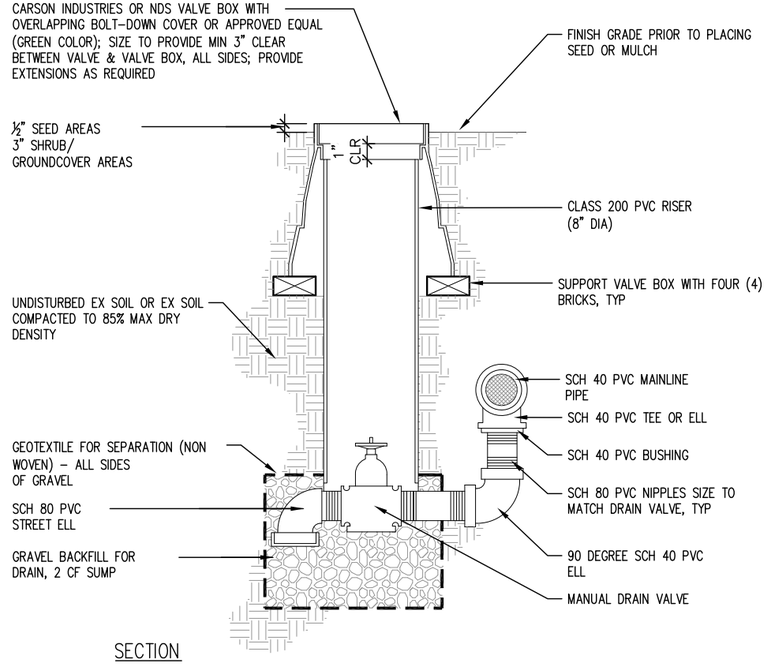
SECTION

3 PIPE SLEEVE UNDER PAVEMENT
NOT TO SCALE



SECTION

4 JUNCTION BOX AND DRIP CONNECTION AT LIGHT POLE
NOT TO SCALE



SECTION

5 MANUAL DRAIN VALVE
NOT TO SCALE

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IRRIGATION DETAILS

SHT. 51 OF 98

LP11

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mwatson
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APPENDIX A
Archeological Survey Report

CULTURAL RESOURCES REPORT COVER SHEET

Authors: Leah Koch-Michael, Kelly R. Bush, and Selena P. Williams

Title of Report: Archaeological Survey Report: 5th Street Bicycle and Pedestrian Improvement Project, Mukilteo, Snohomish County, Washington

Date of Report: March 25, 2022

County: Snohomish Sections: 3 and 4 Township: 28 N and 29 N Range: 4 E

Quad: Mukilteo Acres: 6.45

PDF of report submitted (REQUIRED) ☒ Yes

Historic Property Inventory Forms to be Approved Online? ☐ Yes ☒ No

Archaeological Site(s)/Isolate(s) Found or Amended? ☐ Yes ☒ No

TCP(s) found? ☐ Yes ☒ No

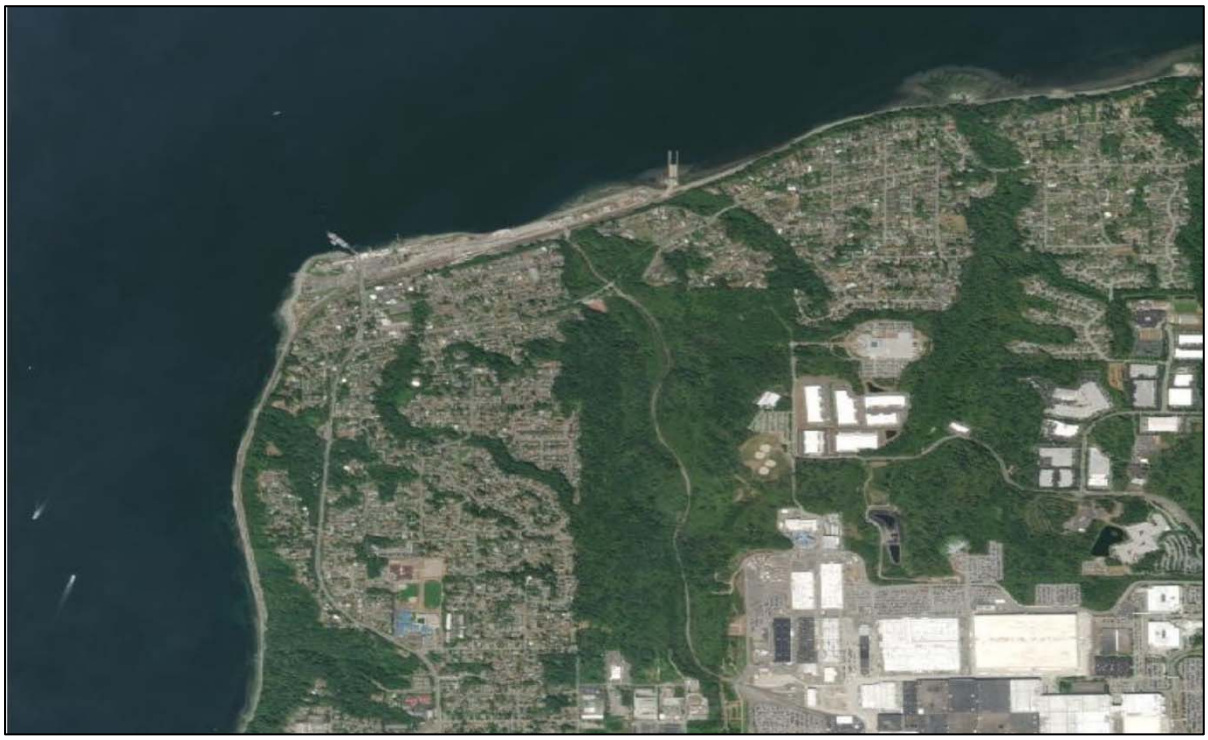
Replace a draft? ☐ Yes ☒ No

Satisfy a DAHP Archaeological Excavation Permit requirement? ☐ Yes # ☒ No

Were Human Remains Found? ☐ Yes DAHP Case # ☒ No

ARCHAEOLOGICAL SURVEY REPORT: 5TH STREET BICYCLE AND PEDESTRIAN IMPROVEMENT PROJECT, MUKILTEO, SNOHOMISH COUNTY, WASHINGTON

Prepared for: City of Mukilteo under contract to KPFF Consulting Engineers



March 25, 2022

Prepared by:

ERCI

1229 Cleveland Avenue, Mount Vernon, Washington 98273 • Tel 360-826-4930 • Fax 360-826-4830 • www.equinoxerci.com

CREDITS AND ACKNOWLEDGMENTS

PRINCIPAL INVESTIGATOR ..... Kelly R. Bush, MA

LEAD AGENCY ..... City of Mukilteo

REPORT AUTHORS ..... Leah Koch-Michael, MA, Kelly R. Bush, and Selena P. Williams, BA

GRAPHICS ..... Rhododendron E. O'Boyle, BA, and Caspian Hesper, BA

FIELD RESEARCHERS ..... Aleta R. Baxley, BA, Emma S. Dubois, BA, Fiona L. Koehnen, BA,

..... Leah Koch-Michael, Rhododendron E. O'Boyle, Selena P. Williams,

..... Robert C. S. Wright, BA, and Ashley A. Yates, BA

PROJECT CONTACT ..... John McMillan, KPFF Consulting Engineers

TRIBAL CONTACTS ..... Laura Murphy, Muckleshoot Indian Tribe

..... Steven Mullen-Moses, Snoqualmie Indian Tribe

..... Kerry Lyste, Stillaguamish Tribe of Indians

..... Dennis Lewarch, Suquamish Tribe

..... Richard Young and Gene Enick, Tulalip Tribes of Washington

DAHP CONTACTS ..... Robert Whitlam, State Archaeologist

..... Guy Tasa, State Physical Anthropologist

Equinox Research and Consulting International Inc. (ERCI) would like to thank KPFF Consulting Engineers and the City of Mukilteo for retaining us for this investigation and for their commitment to the process and archaeological resources.

We extend our thanks to the representatives of the Muckleshoot Indian Tribe, Snoqualmie Indian Tribe, Stillaguamish Tribe of Indians, Suquamish Tribe, and the Tulalip Tribes of Washington for their insights and timely attention to our projects.

The opinions and recommendations in this report are those of ERCI alone and do not necessarily reflect those held by any of the organizations or individuals mentioned above. Any errors or omissions are ERCI's responsibility.

MANAGEMENT SUMMARY

Project	Mukilteo 5th Street Bicycle and Pedestrian Improvements
County	Snohomish
TRS	Township 28 N, Range 4 E, Section 3,4 Township 29 N, Range 4 E, Section 34
Quad	Mukilteo
Parcel ID	ROW
Address	W Mukilteo Blvd
Property Owner	City of Mukilteo
Property Owner Address	11930 Cyrus Way, Mukilteo, WA 98275
Area	~6.45 acres
Lat/Long	47° 56' 51"N/ 122° 17' 30″ W
UTM	Zone 10 552896 Easting 5310715 Northing
Elevation	100-170′
Nearest Water Body	Puget Sound
Nearest Arch Site	45SN575 ~0.1 miles
Soils	Alderwood-Everett gravelly sandy loams, Alderwood-Urban land complex, Everett very gravelly sandy loam, Norma Loam
Geology	Till undivided (Fraser and pre-Fraser Glaciation) and Transitional Beds (Fraser to pre-Fraser time)

In October 2020, John McMillan of KPFF Consulting Engineers contacted Kelly R. Bush of Equinox Research and Consulting International Inc. (ERCI) to carry out a cultural resource survey for the 5th Street Bicycle and Pedestrian Improvement Project (the Project), between Park Avenue and Mukilteo Lane, in the City of Mukilteo, Washington.

On January 19, 21, 28 and February 3, 2022 ERCI carried out an archaeological investigation of the Project area, which included pedestrian survey and subsurface survey with 36 shovel tests. Surface visibility was low due to houses, a paved road and bridge, and varying vegetation in the Project area. A total of 5.32 cubic meters of sediment excavated. We focused our survey in areas of the 80-foot right-of-way in areas with no asphalt, utilities, or steep slope. This report documents ERCI's background research and archaeological survey for the Project.

No protected cultural resources were identified during this archaeological investigation.

No protected cultural resources were identified during our fieldwork. The management recommendations that we are now providing are based on our findings from this initial investigation. We recommend that:

1. The proposed project proceeds as planned, following an unanticipated discovery protocol (UDP) training given to all construction personnel by a professional archaeologist. A copy of the Unanticipated Discoveries Protocol (UDP) to be on site at all times (Appendix 3).
2. In the event that any ground-disturbing activities or other project activities related to this development or in any future development uncover protected cultural material (e.g., bones, shell, stone or antler tools), all work in the immediate vicinity should stop, the area should be secured, and any equipment moved to a safe distance away from the location. The on-site superintendent should then follow the steps specified in the UDP (Appendix 3).
3. In the event that any ground-disturbing activities or other project activities related to this development or in any future development uncover human remains, all work in the immediate vicinity should stop, the area should be secured, and any equipment moved to a

safe distance away from the location. The on-site superintendent should then follow the steps specified in the UDP (Appendix 3).

CONTENTS

FIGURES

TABLES

1.0 INTRODUCTION

In October 2020, John McMillan of KPFF Consulting Engineers contacted Kelly R. Bush of Equinox Research and Consulting International Inc. (ERCI) to carry out a cultural resource survey for the 5th Street Bicycle and Pedestrian Improvement Project (the Project), between Park Avenue and Mukilteo Lane, a stretch of road that is approximately 6.45 acres, in the City of Mukilteo, Washington (Figure 1–Figure 5).

The Project area stretches from 5th St/Mukilteo Blvd to Lincoln Ave, east of the city limits, about a mile in length. The Project intends to construct a safe system for bicyclists and pedestrians by providing safe and adequate crossings, sidewalks, and designated bike lanes as well as improve storm water drainage.

On January 19, 21, 28 and February 3, 2022 ERCI carried out an archaeological investigation of the Project area, which included pedestrian survey and subsurface survey with 36 shovel tests. Surface visibility was low due to houses, a paved road and bridge, and varying vegetation in the Project area. A total of 5.32 cubic meters of sediment excavated. We focused our survey in areas of the 80-foot right-of-way in areas with no asphalt, utilities, or steep slope. This report documents ERCI's background research and archaeological survey for the Project.

This report documents ERCI's background research and archaeological survey for the Project.

Figure 1: Regional map showing approximate Project area location.

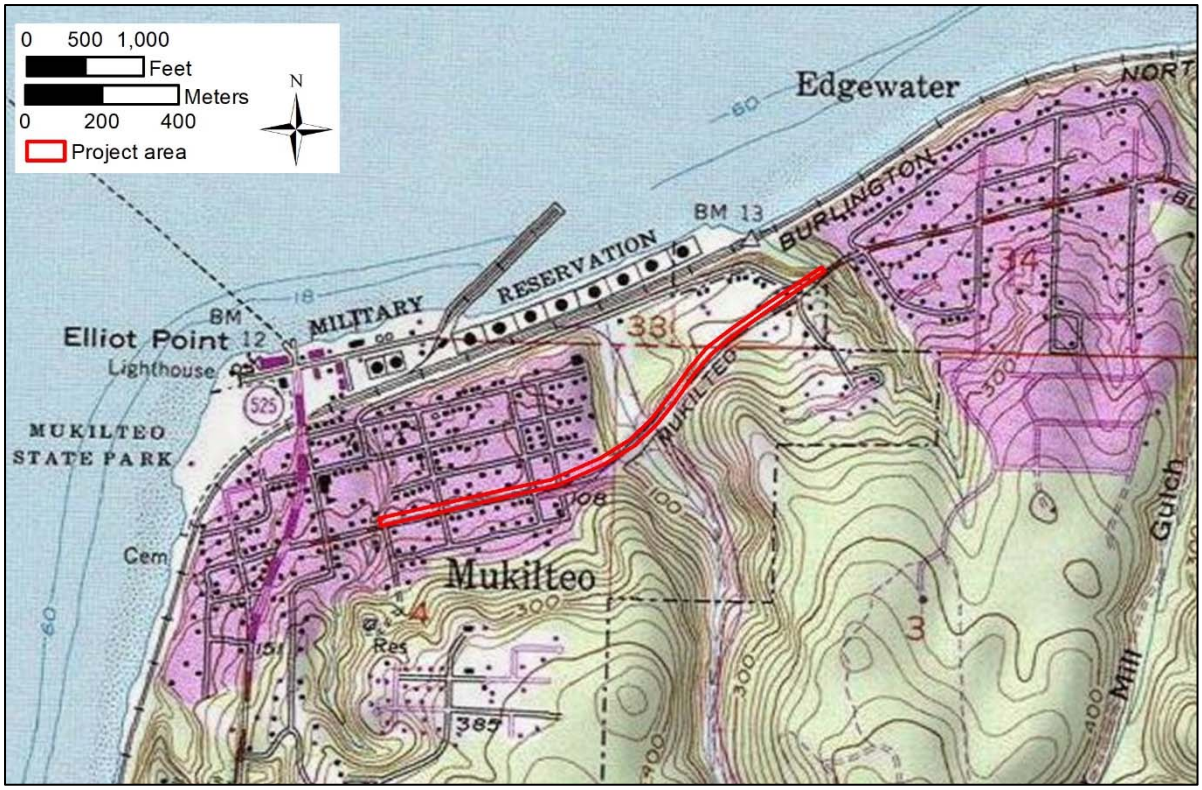


Figure 2: USGS Mukilteo 7.5-minute quadrangle with Project area outlined in red.

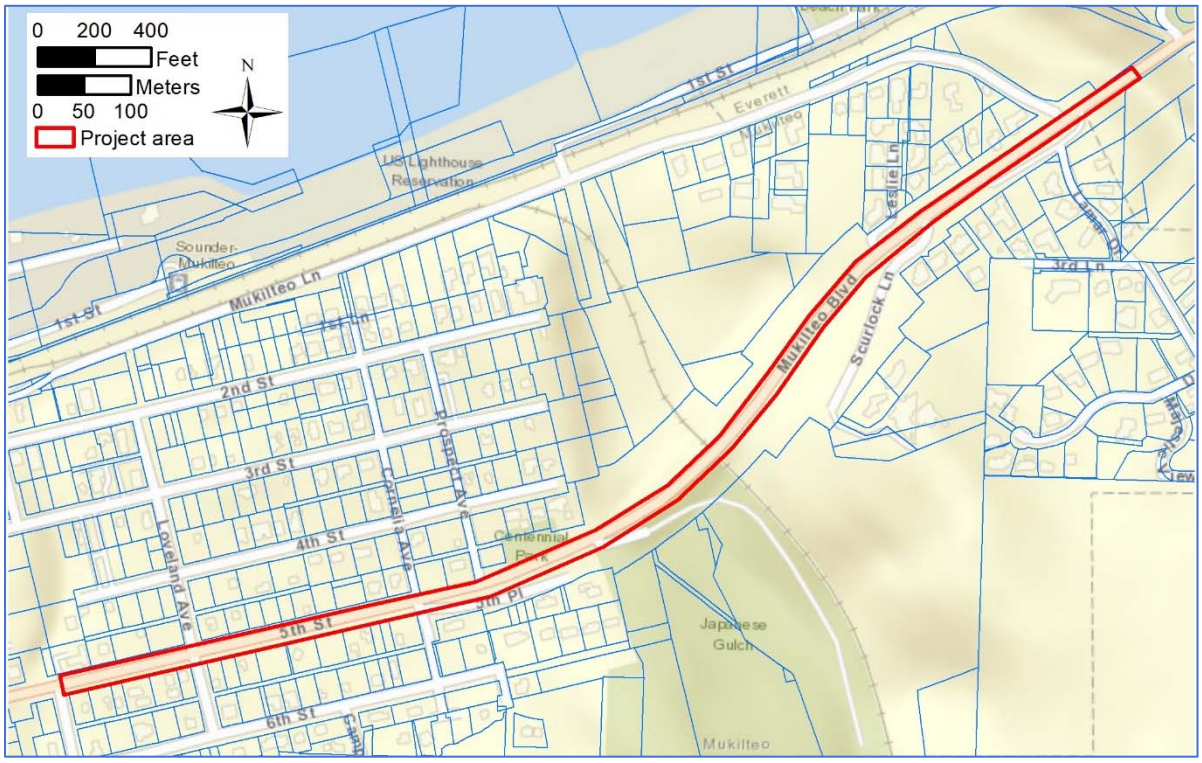


Figure 3: Snohomish County Assessor's map showing Project area outlined in red.

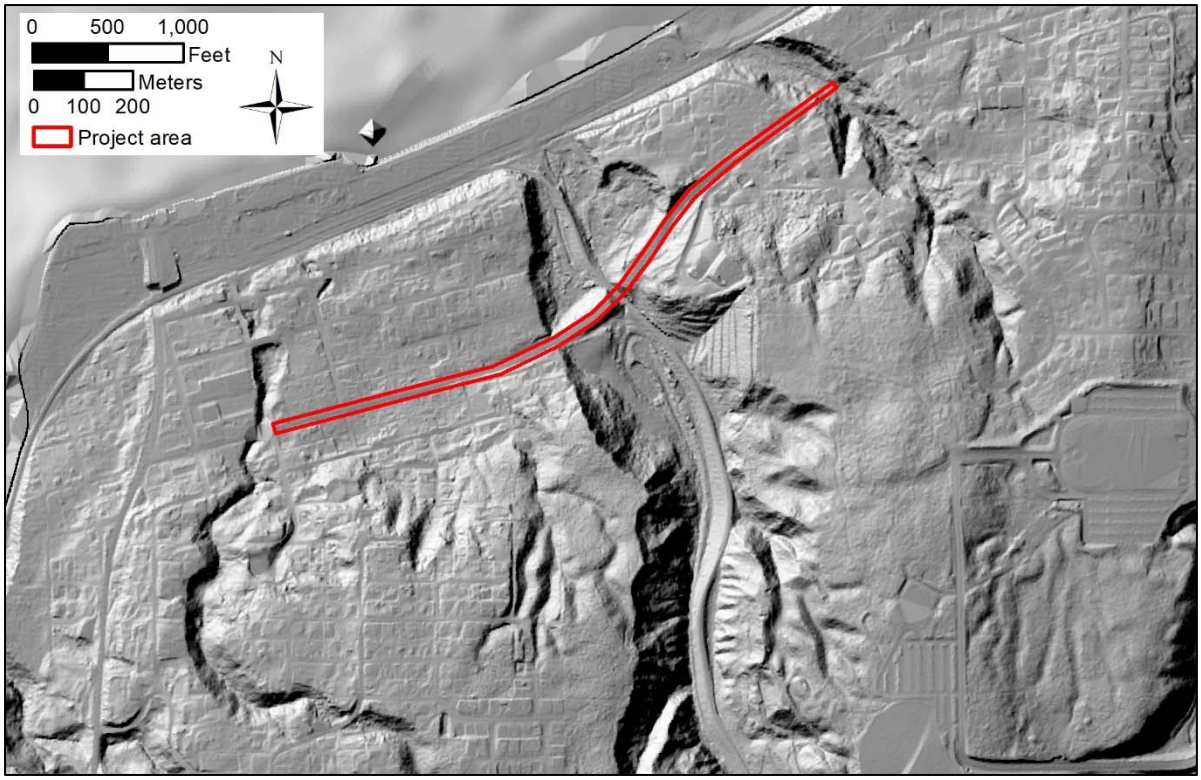


Figure 4: Lidar map with Project area outlined in red (courtesy of Puget Sound Lidar Consortium).

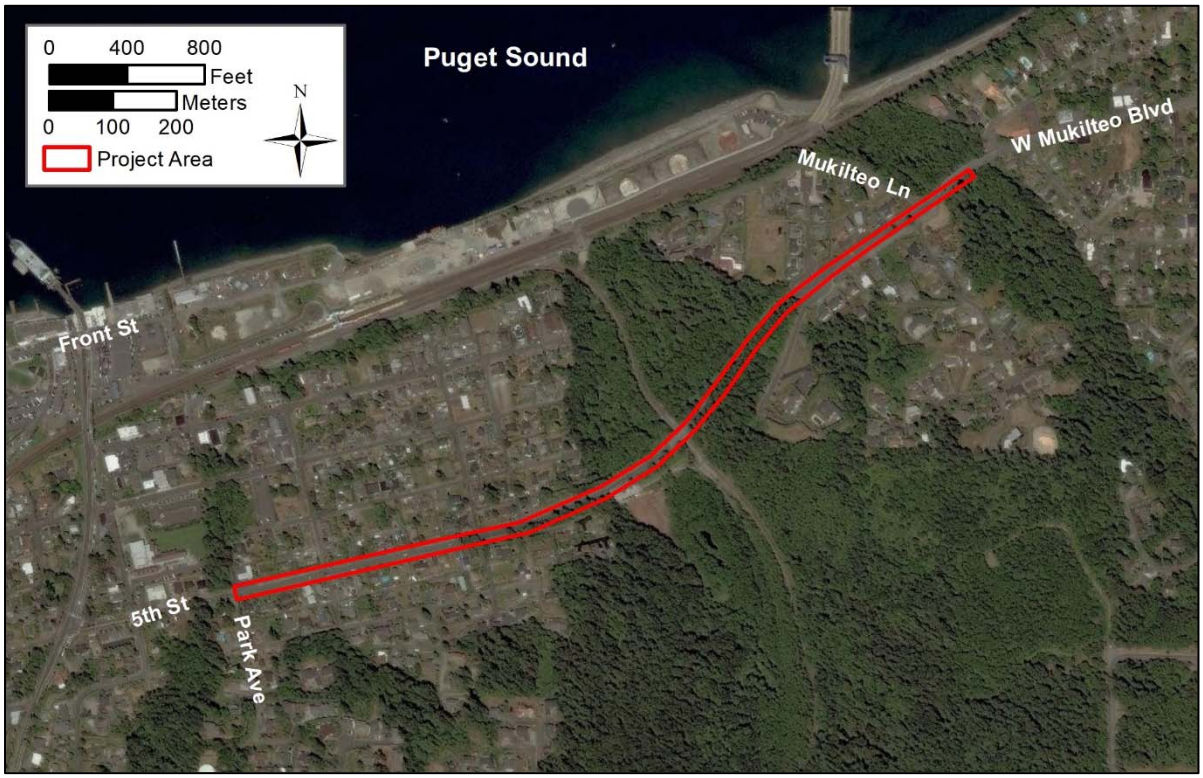


Figure 5: Aerial photograph with Project area outlined in red.

2.0 REGULATORY FRAMEWORK

The State Environmental Policy Act (SEPA) requires that all major actions sponsored, funded, permitted, or approved by state and/or local agencies undergo planning to ensure environmental considerations such as impacts on historic and cultural resources are given due weight in decision-making. State implementing regulations are in WAC 197- 11 and WAC 468-12 (WSDOT). For details on SEPA procedures see Chapter 400.

In Washington State, archaeological sites are protected by several state laws including the Revised Code of Washington (RCW) 27.53, Archaeological Sites and Resources, and RCW 27.44, Indian Graves and Records. These laws require that consideration be given to archaeological resources during construction and development activities. RCW 27.44 also strictly mandates the protection of human skeletal remains and imposes a duty to notify law enforcement in the case of inadvertent discovery.

Governor's executive order 21-02 replaced executive order 05-05, in April 2021. It recognizes the rich and diverse cultural heritage of Washington State, and that impacts to cultural resources are considered carefully as part of any state funded project or investment. This order requires that state agencies consult with the Department of Archaeology and Historic Preservation (DAHP) and affected Tribes, and incorporate them into the planning process for any capital construction projects or land acquisition projects for the purpose of capital construction. This executive order recognizes DAHP as having special expertise in cultural resources.

Initiation of consultation is the responsibility of the State agency involved with the capitol construction project. Consultation may require background research and/or field work to identify and evaluate archaeological sites or Historic Properties for eligibility to the State or Federal Register. If any of these resources are identified, reasonable steps must be taken to avoid, minimize or mitigate effects to these resources. Although some projects are exempted from investigation the best risk management is done early in the planning stages of a project. Typically, the only projects that do not trigger an investigation are those used to refinance an existing loan or those from a revolving fund.

The predominant change from EO 05-05 to EO 21-02 is that consultation can "be delegated to non-state recipients of state funds" (Executive Order 21-02). The state agency is still responsible for ensuring the consultation process is adequate and documented.

This legislation is supposed to improve consistency in the planning processes between the federal and state regulations and to provide a framework for the resolution of concerns by affected Tribes on any state funded or permitted project or projects on state lands.

3.0 TRIBAL CONSULTATION

The Project area is of interest to the Muckleshoot Indian Tribe, Snoqualmie Indian Tribe, Stillaguamish Tribe of Indians, Suquamish Tribe, and the Tulalip Tribes of Washington, who consider the Project area within their traditional use area.

Tribal representatives are the only people qualified to determine if Traditional Cultural Properties exist within the Project Area, whether they will be affected by the undertaking and how any suggested management strategies might work. In discussions between Kelly Bush and Tribal representatives, it is clear that the Tribes consider this area to be culturally and historically significant, and are concerned about the effects of development.

As the lead agency, the City of Mukilteo is responsible for carrying out Tribal consultation regarding this Project

4.0 BACKGROUND

Any archaeological undertaking requires knowledge of the physical surroundings (and their evolution) and the duration and kind of human activity in any given area. From this knowledge, archaeologists are able to develop the current best method to carry out field investigations. For example, environmental factors play an important role in the location and preservation of archaeological sites. Sediments and soils are of particular interest to cultural resource managers because they can be used for reconstructing past landscapes and landscape evolution, in estimating the age of surfaces and depositional episodes, and providing physical and chemical indicators of human occupation (Holliday 1992).

4.1 Physical Environment

The Project area stretches from 5th Street/Mukilteo Blvd to Lincoln Ave, east of the city limits, about a mile in length. The road itself is paved, with some gravel or grass at the edges. It is lined by residential homes except for the middle portion where the road edges are marked by guard rail leading up to the bridge that crosses over Japanese Gulch.

Previous disturbance to the Project area includes

- Logging, clearing, and railroad construction
- Construction and maintenance of buildings and access roads
- Construction of residential properties
- Construction of and maintenance of 5th Street/Mukilteo Blvd roadway

Geology and geomorphology

For most of the last 2.6 million years—the Pleistocene Epoch—the Earth underwent drastic shifts in global temperature caused by periodic variations in the Earth's orbital eccentricity, axial tilt and precession. The result has been 11 ice ages, during which almost 30 percent of the world's land surface was covered by sheets of ice as much as 3 kilometers thick (Porter and Swanson 1998). Archaeological evidence supports an inference that the first humans entered the Americas as the most recent deglaciation progressed, and that by about 10,500 years ago, humans had populated North and South America from the Arctic Ocean to Tierra del Fuego.

As the last cold stage intensified, high-altitude valley glaciers grew in depth and extent, and through a process of coalescence formed the Cordilleran Ice Sheet, centered over the Pacific Northwest's mountain ranges: Coast Mountains, Cascade Range, Olympic Mountains, Columbia Mountains and Rocky Mountains. Further east in North America, ice simply accumulated in place, creating the Laurentide ice sheet, centered over Hudson Bay. During the cold periods (glacials or glaciations) so much of the world's water was stored as ice that global sea level dropped by as much as 150 meters (almost 500 feet). At the same time, beneath the ice Earth's crust was depressed by the enormous weight. Thus, during the last glaciation, much of what is now the coastline was below present-day sea level. The most recent glacial period—the Fraser Glaciation—began about 25,000 years ago and ended by about 10,000. In that time the ice advanced and retreated twice in what is now the area of Puget Sound, first during the Everson Creek Stade and most recently in the Vashon Stade (Easterbrook 1986). At the height of the Vashon Stade—about 17,500 years ago—the Project area was under as much as 2 km of glacial ice (Porter and Swanson 1998:206). By about 16,500 years ago the ice was retreating—exposing the Puget Lowland and Cascade Range, and glacial meltwater carried rivers of sediment onto the lowlands, mantling the area with deep deposits that subsequent stream activity covered with alluvium in river valleys and built out deltas in Puget Sound.

As the ice sheets finally retreated the land rebounded and sea level rose. The precise timing of sea-level stabilization (eustacy) and the rate of post-glacial rebound (isostasy) varied from place to place due to a complex interplay between the underlying geology and the surficial geological processes that

predominated at any given location. In the Pacific Northwest, most of the coastline has been within a few meters of present-day sea level for about the last 6,000 years (Anundsen et al. 1994), while in the northernmost parts of the Northern Hemisphere the land is still rebounding (Thorson 1980, 1989). Yet, in the Hakai Passage region of the central British Columbia coast, due to the particulars of geology and movement of the receding ice sheet, sea level has been relatively stable for most of the past 15,000 years (McLaren et al. 2014).

On the Salish Sea the picture is equally complex. Due to the gradual south-to-north progression of deglaciation and the relatively rapid rise of sea level in the early postglacial period, sea level in the southern Puget Sound was about 40 meters below its present elevation by 8,000 years ago (Thorson 1989). By contrast, in the northern Puget Sound at the same time, sea level was only about 10 m below its present elevation (Clague 1983; Easterbrook 1963; Kelsey et al. 2004; Thorson 1989).

Across the globe, sea level has been rising gradually since about 8,000 years ago. By about 5,000 years ago, sea level across Puget Sound was about 2 to 3 m below its present level; it reached its present-day elevation only in the last 1,500 years or so (Kelsey et al. 2004; Sherrod et al. 2000). For all these reasons, even though people have been in the region for 14,000 or more years, evidence for human occupation near the present Puget Sound coastline dates to the time since sea level stabilized at or near its present elevation. In general, evidence of earlier coastal occupation has been inundated by the encroaching sea.

Surface Geology

Surface sediments in the Project area are pre-Fraser Glaciation to Fraser Glaciation-age advance outwash and non-glacial deposits (Qtb on Figure 6) and pre-Fraser Glaciation to Fraser Glaciation-age till (Qtu on Figure 6).

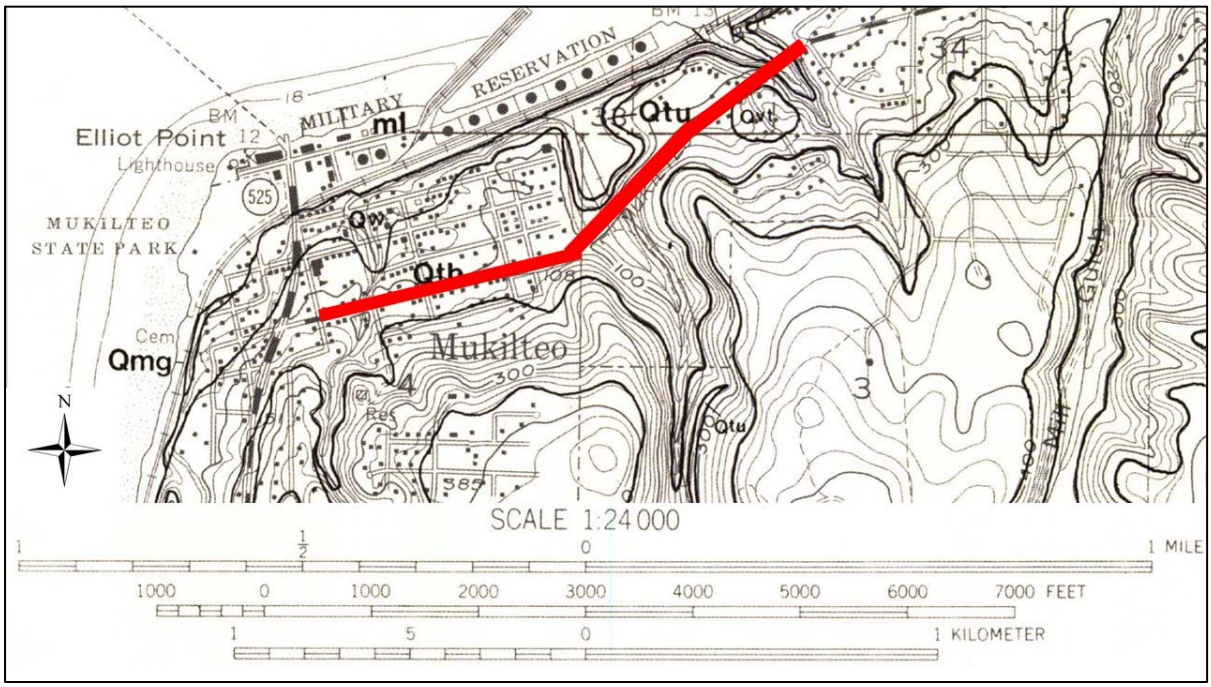


Figure 6: Map of surface geology with Project area shown in red (Minard 1982)

Soils

Geologists define a soil as the effect of weathering on naturally or culturally deposited sediments, which creates discernible 'horizons' within a vertical soil profile. A soil typically comprises an A horizon that contains decomposed organic material mixed with the upper portion of the so-called parent material—usually naturally occurring deposits that are exposed to weathering. The A horizon lies above one or more horizons that develop as a result of water percolating downward, carrying chemicals leached from the A and lower horizons. Soils vary from place to place across the landscape, in keeping with the type of sediments that form the parent material and the local environmental conditions. The horizons of different soil types display color variations according to the local soil chemistry. Color, coupled with the nature of the parent material are what enable soil scientists and archaeologists to distinguish one soil type from another, and, most importantly, to tell a naturally developed soil from a stratigraphic profile that results from cultural processes. A soil complex consists of areas of two or more soils, so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area of a complex contains some of each of the two or more dominant soils, and the pattern and relative proportions are about the same in all areas.

There are four soil types within the Project area: Alderwood-Everett gravelly sandy loams, 25 to 70 percent slopes (4 on Figure 7), Alderwood-Urban land complex, 2 to 8 percent slopes (5 on Figure 7), Everett very gravelly sandy loam, 0 to 8 percent slopes (17 on Figure 7), and Norma loam (39 on Figure 7).

Figure 7: Map of soils within the Project area indicated by green lines (Soil Survey Staff 2020).

Alderwood-Everett gravelly sandy loam (4)—distributed on ridges and hills, in glacial drift and/or glacial outwash over dense glaciomarine deposits. It is moderately well drained, with a depth to the water table of about 18 to 37 inches. The surface does not pond or flood. A typical profile includes: 0 to 7 inches, gravelly sandy loam; 7 to 59 inches, very gravelly sandy loam (Soil Survey Staff 2020).

0 to 18 cm; gravelly sandy loam, brown (10YR 5/3) dry, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots; few fine irregular pores; 20 percent gravel; moderately acid (pH 5.8); abrupt smooth boundary

18 to 53 cm; very gravelly sandy loam, yellowish brown (10YR 5/4) dry, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many fine roots; many fine tubular and irregular pores; 35 percent gravel; moderately acid (pH 5.8); gradual smooth boundary;

53 to 75 cm; very gravelly sandy loam, pale brown (10YR 6/3) dry, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common fine roots; few very fine tubular pores; 40 percent gravel; moderately acid (pH 5.8); clear wavy boundary

75 to 89 cm; very gravelly sandy loam, light yellowish brown (2.5Y 6/4) dry, olive brown (2.5Y 4/4) moist, and light brownish gray (2.5Y 6/2) dry, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine roots; common fine tubular and interstitial pores; reddish yellow (7.5YR 6/6) dry, strong brown (7.5YR 5/6) moist, masses of oxidized iron around rock fragments; 45 percent gravel; moderately acid (pH 6.0); abrupt wavy boundary

89 to 109 cm; very gravelly sandy loam, light brownish gray (2.5Y 6/2) dry, dark grayish brown (2.5Y 4/2) moist; massive; extremely hard; extremely firm, nonsticky and nonplastic; few fine roots; few fine tubular pores; dark yellowish brown (10YR 4/4) moist, olive (5Y 4/4) moist, yellowish red (5YR 4/6) and strong brown (7.5YR 5/6) moist iron-manganese masses and masses of oxidized iron in cracks; 40 percent gravel; moderately acid (pH 6.0); abrupt irregular boundary

109 to 150 cm; dense glacial till that breaks to very gravelly sandy loam, light gray (2.5Y 7/2) dry grayish brown (2.5Y 5/2) moist; massive; extremely hard, extremely firm, nonsticky and nonplastic; 40 percent gravel; moderately acid (pH 6.0) [National Cooperative Soil Survey 2018a]

Alderwood-Urban Land Complex (5)—distributed on ridges and hills, in glacial drift or outwash or both. It is moderately well drained, with a depth to the water table of 18 to 37 inches. The surface does not pond or flood.

0 to 18 cm; gravelly sandy loam, brown (10YR 5/3) dry, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots; few fine irregular pores; 20 percent gravel; … abrupt smooth boundary

18 to 53 cm; very gravelly sandy loam, yellowish brown (10YR 5/4) dry, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; many fine roots; many fine tubular and irregular pores; 35 percent gravel; … gradual smooth boundary;

53 to 75 cm; very gravelly sandy loam, pale brown (10YR 6/3) dry, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, very friable, nonsticky and nonplastic; common fine roots; few very fine tubular pores; 40 percent gravel; … clear wavy boundary

75 to 89 cm; very gravelly sandy loam, light yellowish brown (2.5Y 6/4) dry, olive brown (2.5Y 4/4) moist, and light brownish gray (2.5Y 6/2) dry, dark grayish brown

(2.5Y 4/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine roots; common fine tubular and interstitial pores; reddish yellow (7.5YR 6/6) dry, strong brown (7.5YR 5/6) moist, masses of oxidized iron around rock fragments; 45 percent gravel; … abrupt wavy boundary

89 to 109 cm; very gravelly sandy loam, light brownish gray (2.5Y 6/2) dry, dark grayish brown (2.5Y 4/2) moist; massive; extremely hard; extremely firm, nonsticky and nonplastic; few fine roots; few fine tubular pores; dark yellowish brown (10YR 4/4) moist, olive (5Y 4/4) moist, yellowish red (5YR 4/6) and strong brown (7.5YR 5/6) moist iron-manganese masses and masses of oxidized iron in cracks; 40 percent gravel; … abrupt irregular boundary

109 to 150 cm; dense glacial till that breaks to very gravelly sandy loam, light gray (2.5Y 7/2) dry grayish brown (2.5Y 5/2) moist; massive; extremely hard, extremely firm, nonsticky and nonplastic; 40 percent gravel; … [National Cooperative Soil Survey 2018a].

Everett very gravelly sandy loam (17)—distributed on eskers, kames and moraines, in sandy and gravelly glacial outwash. It is somewhat excessively drained, with a depth to the water table of more than 80 inches. The surface does not pond or flood. A typical profile includes: 0 to 1 inch, slightly decomposed plant material; 1 to 24 inches, very gravelly sandy loam; 24 to 35 inches, very gravelly loamy sand; 35 to 60 inches, extremely cobbly coarse sand. (Soil Survey Staff 2020)

A typical profile consists of:

0 to 3 cm; slightly decomposed plant material consisting of leaves, needles, and twigs

3 to 8 cm; very gravelly sandy loam, brown (7.5YR 4/3) dry, very dark brown (7.5YR 2.5/2) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; common medium and fine tubular pores; 35 percent gravel, 10 percent cobbles; strongly acid (pH 5.3); clear smooth boundary

8 to 60 cm; very gravelly sandy loam, brown (7.5YR 5/4) dry, dark brown (7.5YR 3/4) moist; weak fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; many very fine to medium roots; common fine tubular pores; 35 percent gravel, 10 percent cobbles; strongly acid (pH 5.5); clear wavy boundary

60 to 90 cm; very gravelly loamy sand, yellowish brown (10YR 5/4) dry, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; common medium and few coarse roots; many very fine interstitial pores; 40 percent gravel, 10 percent cobbles; strongly acid (pH 5.5); gradual wavy boundary

90 to 150 cm; extremely cobbly sand, yellowish brown (10YR 5/4) dry, dark yellowish brown (10YR 4/4) moist; single grain; loose, nonsticky and nonplastic; few coarse roots; many very fine interstitial pores; 40 percent gravel, 35 percent cobbles; moderately acid (pH 5.6) [National Cooperative Soil Survey 2018b]

Norma ashy loam (39)—pasture, distributed in depressions and drainageways, in alluvium. It is poorly drained, with a depth to the water table of 0 inches. The surface does not flood but will frequently pond. A typical profile includes: 0 to 1 inch, ashy loam; 10 to 60 inches, sandy loam. (Colors are for moist soil unless otherwise noted.)

0 to 9 inches; very dark gray (10YR 3/1) ashy loam, gray (10YR 5/1) dry; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine, medium and coarse roots; many very fine tubular pores; slightly acid (pH 6.2); abrupt wavy boundary. (6 to l0 inches thick)

9 to 28 inches; dark grayish brown (2.5Y 4/2) sandy loam, light brownish gray (2.5Y 6/2) dry; common medium prominent yellowish brown (10YR 5/8) redox concentrations; weak medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine roots; many very fine pores; slightly acid (pH 6.4); clear wavy boundary. (10 to 35 inches thick)

28 to 60 inches; dark gray (5Y 4/1) sandy loam, light gray (5Y 6/1) dry; common fine prominent red (2.5Y 4/6) yellowish brown (10YR 5/6) redox concentrations; massive; slightly hard, friable, nonsticky and nonplastic; few roots; many very fine pores; slightly acid (pH 6.4). [National Cooperative Soil Survey 2001].

Climate and biota

Prior to the influx of European immigrants, the south-central Puget Lowland likely supported a mixed prairie/forest vegetation of Western Washington's western hemlock (*Tsuga heterophylla*)/western red cedar (*Thuja plicata*) forests (Franklin and Dyrness 1988; Heusser 1983; Pojar and Mackinnon 1994; Turner 1995).

Warm, dry summers and mild, wet winters prevail in this biogeoclimatic zone. The area likely supported a wide variety of large and small mammals, birds, reptiles, and amphibians common to river deltas and foothill transition zones. Bear, cougar, deer and elk are the indigenous large mammals, with small mammals including otter, beaver, fox, porcupine, marten, snowshoe hare, bobcat, chipmunk and squirrel. A wide variety of marine resources would have been available in the nearby creeks and the Puget Sound. The creeks likely had once held salmon and trout among other types of fish. Prior to European immigration in this area, land mammals and plant resources would have been abundant during all seasons.

4.2 Cultural Environment

The Project Area lies in a region that Native Americans had inhabited for at least 14,000 years by the time of contact with Europeans, when Salishan-speaking people occupied vast tracts in the Columbia and Fraser River basins, the inland waters of the Salish Sea, the Puget Lowland, the Cascade Range, and parts of the Pacific Coast between the Columbia River and the Olympic Peninsula. First contact with European explorers took place in the late sixteenth century, with Euro-American settlement beginning in the early nineteenth century and increasing after the Donation Land Claim Act of 1850. Here we present a synopsis of the archaeological cultures, traditional Salish lifeways, and pertinent details of the time since non–Native American immigration began.

Archaeological cultures

Archaeological evidence of human presence in the Pacific Northwest is at least 14,000 years old, evidenced by finds of impressions of human feet discovered preserved in paleosol beach sand that date to 13,200 years ago (McLaren et al 2018) and Clovis and other early postglacial cultural traditions (Ames and Maschner 1999; Kopperl 2016; Kopperl et al. 2016). Although people have been in the region all along, many archaeological sites on the relatively narrow strip of near-shore landscape are dated at between 5,000 and 1,500 years ago due to sea-level changes that resulted from a complex interplay of climatic and geological processes whose magnitude and influence varied with location.

For example, large-magnitude changes in sea level can be due to the volume of water contained in Earth's glaciers and polar ice caps, but smaller (but nonetheless significant) changes can be caused by thermal expansion and contraction. At the same time, the earth's crust is dynamic. So, for example, the marine shoreline was significantly affected by depression and rebound in response to the weight of glaciers that formed during the last Ice Age. Smaller-magnitude changes occur due to the evolving

global ocean basin morphology (and thus capacity) due to plate tectonics and coastal buildup and erosion, such as delta formation and growth.

Despite having knowledge of these processes, and a broad understanding of how they combine in sometimes predictable ways to determine the marine–terrestrial interface at any given time, the variability inherent in each process means that each locality has its own unique history of sea-level change. Perhaps none is more illustrative of this than the Hakai Passage region of the central British Columbia coast, where sea level has been relatively stable for most of the past 15,000 years (McLaren et al. 2014).

As sea level rose in the early and middle Holocene, river valleys in the Puget Lowlands and elsewhere gradually filled up with sediment, burying any early archaeological sites in the near-stream areas. Thus, most evidence for early human occupation in Western Washington is found at higher elevations, on landforms that retain sediments from those earlier times, and sometimes deeply buried in river valleys.

In those upland areas, where sea level change has had no effect on archaeological visibility, evidence from the early Holocene is widespread, but well-dated contexts are extremely rare—most archaeological assemblages are 'dated' by their formal similarity to those recovered from dated contexts. Here we mention only the few well-dated archaeological occurrences.

The earliest period in Western Washington is represented by the Manis Mastodon Site (45CA218), near Sequim on the Olympic Peninsula and the Lower Bear Creek Site (45KI839), near the shore of Lake Sammamish. The Manis Site comprises a single disarticulated mastodon skeleton dated to about 13,800 cal BP (Waters et al. 2011), claimed to be associated with human activity based on a small bone splinter embedded in the head of a rib and two pieces of modified ivory. The Lower Bear Creek Site yielded artifacts belonging to the Western Stemmed Tradition that date to between 12,500 and 10,000 cal BP (Kopperl 2016).

In the Puget Sound regional cultural chronology, the Olcott Phase (ca. 10,000 to 7,550 years ago) succeeds the Fluted Point and Stemmed traditions. Olcott assemblages are remarkably similar to others attributed to the Old Cordilleran Tradition, well known from other parts of the Northwest Coast (Chatters et al. 2011). Typical Olcott artifacts include "Cascade" leaf-shaped bifaces, which bear distinctive edge grinding on the stem, or hafting portion, and often-heavily patinated expedient stone artifacts of medium- to coarse-grained raw material, and lacking in fine-grained silicates. One can imagine that sites with such artifacts are the result of people arriving on this landscape for the first time, without intimate knowledge of sources of fine-grained tool stone such as chert and obsidian.

Again, although there are numerous sites ascribed to the Olcott Phase, securely dated components are rare, as evidenced by the few mentioned here. Thermoluminescence (TL) dating of fire-modified rock (FMR) from the Woodhaven Site (45SN417), near Granite Falls, produced median dates of 9,316 and 7,886 years ago (Kiers 2014). Two other Olcott Phase sites near Granite Falls, 45SN28 and 45SN303, yielded TL dates on FMR in the same age range, between 7,340 and 9,650 years ago (Chatters et al. 2011). In the North Cascades National Park near Marblemount and Newhalem in the Skagit River basin, the Cascades Pass site yielded artifacts and a cooking feature beneath Mazama volcanic ash, estimated to be 9,600 years old (Mierendorf et al. 2018:99). The Beech Creek Site (45LE415) in the Gifford Pinchot National Forest of southwestern Washington represents another early Holocene archaeological culture, the Stemmed Point Tradition, at 9,200 years old (Mack et al. 2010).

Between about 7,550 and 4,000 years ago—often termed the middle Holocene—well-dated archaeological sites are more numerous, in part due to the gradual stabilization of sea level near present elevations. The archaeological cultures are called by many names, but the Marymoor Phase and Charles

Culture (or Mayne Phase in the San Juan/Gulf Islands) seem most common in the region. Many include microblade technology. Recent radiocarbon dates from calcined bone at the Marymoor Site (45KI9) range between approximately 5300 to 7000 BP (Chatters et al. 2017; Greengo and Houston 1970). Other sites in the region dated to the middle Holocene include Cattle Point (45SJ9) on San Juan Island (King 1950), the Glenrose Cannery Site (DgRr-22) near Vancouver, BC. (Matson 1976), the Milliken Site (DjRi-3) near Yale, B.C. (Borden 1960), and Pender Island (DeRt-1 and -2) in the Gulf Islands, the northern extension of the San Juan Islands (Carlson and Hobler 1993), the Marymoor Site (45KI9) in Redmond (Greengo and Houston 1970) and the Cascade Pass (45CH221) (Mierendorf et al. 2018). Some of these are the earliest coastal shell midden sites. The oldest dated shell midden component in the Puget Sound region is from the Dupont Site, 45PI72, which yielded a date of 5260 ±70 radiocarbon years before present (BP) (Wessen 1989).

Beginning roughly 5,000 years ago western red cedar became more prevalent in the coastal forests and archaeological evidence reveals the intensification of its use by the people living on the Salish Sea and elsewhere in Western Washington. Specifically, in the Locarno Beach Phase (3,300–3,500 to 2,500 years ago) and the succeeding Marpole Phase, the woodworking triad of the antler wedge, polished nephrite adze bit and hand maul formed an increasingly prominent part of coastal shell middens (Hebda and Mathewes 1984). In addition, evidence for large post and plank houses and food storage comes to the fore (Matson 2010). Artifact assemblages from this time also illustrate increasing social complexity in the form of personal adornment—e.g., finely made nephrite and jadeite labrets—refinements in procurement technology—e.g., ground slate knives, toggling harpoons and fishing paraphernalia—and ascribed status in the form of status symbols interred with infants and very young children, and cranial deformation. These archaeological manifestations comprise the climax Northwest Coast cultural pattern that was encountered when Europeans first visited the region.

Among the best known late precontact archaeological sites in the region are three National Register-eligible sites on the Olympic Peninsula, Ozette (45CA24) (2,500 to 500 years ago) (e.g., Daugherty and Fryxell 1967), Hoko River (45CA213) (3,000 to 1,700 years ago) (Croes 1977, 1995), and Tse-whit-zen (*č̓ix*^{w}*ícən*) Village (45CA523) (2,700 to 300 years ago) (Lewarch et al. 2005; White 2013). At Hoko River preserved botanical material was recovered in addition to the other artifacts common in most Northwest Coast middens, thus revealing a breadth of material culture similar to that known ethnographically—e.g., bentwood and composite fishhooks, atlatls, bone and wood projectile points, basketry including hats and mats—underscoring the material and social complexity of the regional cultures that existed in the late precontact period. At Ozette, a portion of a late precontact village of the ocean-oriented, whaling west coast people was preserved by a mudslide that preserved the full range of perishable and nonperishable utilitarian and ceremonial artifacts, including whole decorated plank houses. 55,000 artifacts were recovered in the multiyear excavations, most of which can be viewed at the Makah Cultural and Research Center in Neah Bay, Washington. At least 64,700 artifacts were recovered during mitigative data recovery excavations at Tse-whit-zen, in what is now Port Angeles, including plank house structural remains—posts and post molds—hearths, processing areas, bone, antler and stone tools, and numerous Ancestral human interments (Lewarch et al. 2005; White 2013).

Finally, the complex interplay of postglacial geological processes meant that salmon streams were constantly disrupted by cycles of erosion and deposition, which precluded establishment of nearshore marine resources and climax salmon runs between the time of deglaciation and that of sea-level stabilization, which began around 5,000 years ago and ended approximately 1,500 years ago (Fladmark 1975). Thus, prior to about 5,000 years ago, without the predictable salmon runs, the entire region may have been populated by mobile foragers (Grier et al. 2009; Moss et al. 2007). Since that time, the rich resources available in the maritime and riverine environments allowed for a more stable existence, increasingly dense populations and complex cultures that existed at the time of European contact (Butler and Campbell 2004; Taylor et al. 2011).

Salish Ethnography and Ethnohistory

A detailed description of the Northern Puget Sound and Puget Lowland's traditional Salish cultures is beyond the scope of this report. Instead, we present a broad overview of their traditional lifeways, including what is known of the precontact cultures, using knowledge gained from ethnography, ethnohistory, and the historic record. For in-depth descriptions of traditional Salish culture, readers are directed to the following references: Adamson (1969), AFSC (1970), Allen (1976), Amoss (1977a, 1977b, 1978, 1981), Ballard (1929), Barnett (1938, 1955), Belcher (1986), Bennett (1972), Bierwert (1990, 1993, 1999), Blukis Onat and Hollenbeck (1981), Boxberger (1986, 1996), Boyd (1994, 1999), Bruseth (1926), Collins (1950, 1952, 1974a, 1974b [1946], 1974c, 1980), Curtis (1913), Dewhirst (1976), Eells and Castile (1985), Elmendorf (1971, 1974, 1993), Guilmet et al. (1991), Gunther (1928, 1945), Haeberlin (1924), Haberlin and Gunther (1930), Hansen (1981), Harmon (1998), Harris (1994), Howay (1918), Jorgensen (1969), Kew (1972, 1990), Lane and Lane (1977), Mansfield (1993), B. Miller (1993, 1995, 1997, 1998, 2001), Miller and Boxberger (1994), Mooney (1976), Moss (1986), Riley (1974 [1953]), Roberts (1975), Sampson (1972), M. Smith (1941, 1950, 1956), Snyder (1954, 1964, 1980, 1981), Spier (1935, 1936), Stauss (2002), Stern (1934), Stewart (1973, 1977, 1979, 1984, 1996), Suttles (1957, 1958, 1960, 1974 [1951], 1987, 1990a, b), Suttles and Lane (1990), Taylor (1953, 1960, 1984), Tollefson (1987, 1989, 1992a, 1992b, 1996), Tollefson and Abbott (1993, 1998), Tollefson et al. (1996), Tremaine (1975), Tweddell (1974 [1953]), United States (1859), United States Court of Claims (1933), Waterman (1920), and Waterman et al. (2001).

The Northern Puget Sound shoreline and Puget Lowland have been home to people for millennia. Ethnographic accounts, the historic record and the oral histories of the people who lived there have all provided a rich story of the lives and deaths of the area's original inhabitants.

Salish social life

Social life on and near the Salish Sea began in the longhouse, a large, red cedar, post and beam structure clad in broad planks, in which up to twenty closely related families dwelt and cooperated economically. Frequently, longhouses were 100- to 200-foot-long structures, with gable or shed roofs. One or more longhouses comprised a village, usually situated advantageously with respect to the area's resources—often at the river mouth or on the main stem of the river at the mouth of a tributary stream. Each longhouse was led by the head of one of its residents, closely related, families.

Economy

Salish economies on and near the Salish Sea are often characterized by their relationship to salt and fresh water and the abundant and predictable resources it offers in addition to the plentiful salmon; however, kinship and marriage ties were important in gaining access to resource procurement areas (see, e.g., Collins 1974c:80–81). Many resources were seasonal; this applied to salmon as much as to the berries and bulbs that formed an important part of the diet. For this reason, economic life most of the year meant leaving the permanent winter village and the longhouse and setting up seasonal camps where local resources were exploited. This often entailed constructing temporary shelters of wood and waterproof mats similar to those shown in Figure 8. Mat houses like this one illustrated would have been a common structure on the prairies and riverbanks inland from Puget Sound.

Terrestrial resources were acquired by collecting and hunting. Using digging sticks, singly or in groups, women collected bulbs of camas, wild potato, bracken and wood fern, cattail, wild carrot and others. Some plant products were preserved and stored for use during the winter. Fruits gathered were salmonberry, huckleberry, wild blackberry, raspberry, salal, serviceberry, and wild strawberry, as well as acorn and hazelnut (Haeberlin and Gunther 1930:20–21). Using a variety of technologies, singly or in groups, men hunted elk and deer, beaver, bobcat, bear, marmot, cougar, as well as ducks and grouse. Seal and other sea mammals were hunted from canoes. As with the important salmon, all meat beyond

immediate need was cured and stored for winter consumption. Trade back and forth for shellfish and other seafood for camas or dried meat was common (Haeberlin and Gunther 1930:20).

Figure 8: Example of a seasonal house, "Mat House—Skokomish" (1912) by Edward S. Curtis (Northwestern University Library 2003).

Material culture

In addition to the archaeological collections and oral histories, much of what we know of traditional Salish material culture derives from ethnographic collections residing in museums around the world, from the observations of ethnographers and historians, and photographs taken in the nineteenth and early twentieth centuries (e.g., Curtis 1913).

Salish groups relied heavily on plants to create functional, decorative, and ceremonial objects. For example, the red cedar tree provided wood for longhouses, canoes and storage containers, as well as bark that when shredded could be woven to make clothing, capes and head coverings. Cedar and spruce root were used along with other fiber to make baskets similar to those shown in Figure 9, for use when foraging or cooking, some so tightly woven that they were waterproof. Local and exotic stone was chipped or ground to fashion knives, spear, dart and arrow tips, mauls, wedges, adzes and chisels for woodworking, and ear and lip ornaments. Fishing barbs, combs, pins and many other items were fashioned from animal bone, antler, teeth and shell. Various kinds and ages of tree also provided material to construct fish traps and weirs, bows and arrows, and spear and harpoon shafts.

At the coast, dog wool was spun and woven on a loom to produce blankets similar to the one shown in Figure 10; inland, mountain goat wool was used. Although the loom is from Vancouver Island, such looms would have been common in the Project area. Some clothing was made from bear and buckskin. Among the many uses for marine shell, clam shell disc beads— "shell money"—were used for trade

(Haeberlin and Gunther 1930:29). From an archaeological perspective only, special depositional circumstances could be expected to preserve most of these organic artifacts.

Figure 9: Examples of the kind of baskets made by Coast Salish people, "Puget Sound Baskets" (1912) by Edward S. Curtis (Northwestern University Library 2003).

Summary

This overview has barely sketched traditional lifeways. The Salish People thrived for millennia, and developed a rich and complex culture within an environment that supported a large population prior to European contact and the devastation of disease and political oppression. Despite these hardships the peoples of the region have resiliency, and continue to fight for renewed political and economic power, at the same time working to preserve and maintain traditional cultural knowledge and beliefs.

Exploration and Immigration

The first documented exploration of the Pacific Northwest was a Spanish expedition in 1592, led by Greek-born Apostolus Valerianos, more commonly known as Juan de Fuca, after whom the entrance to the Salish Sea is named. Between 47° and 48° north latitude—after entering a "broad Inlet of the Sea" de Fuca traveled for "twentie dayes … passed divers Ilands … went on Land in divers places, and … saw some people on Land, clad in Beasts skins" (Purchas 1906 [1625]:416).

Some of the earliest English-language records of this region come from George Vancouver's exploration of the Salish Sea. On June 4, 1792, he went ashore in the vicinity of Tulalip, near today's Everett, Washington, and claimed for King George III the coast south to 39° 20' N, which had been his first landfall. Vancouver was convinced of the historical justification of his claim and his maps all show British Territory from about 39° north latitude northward (Hayes 1999:85). The southern portion of the Salish Sea is named after Vancouver's lieutenant, Peter Puget.

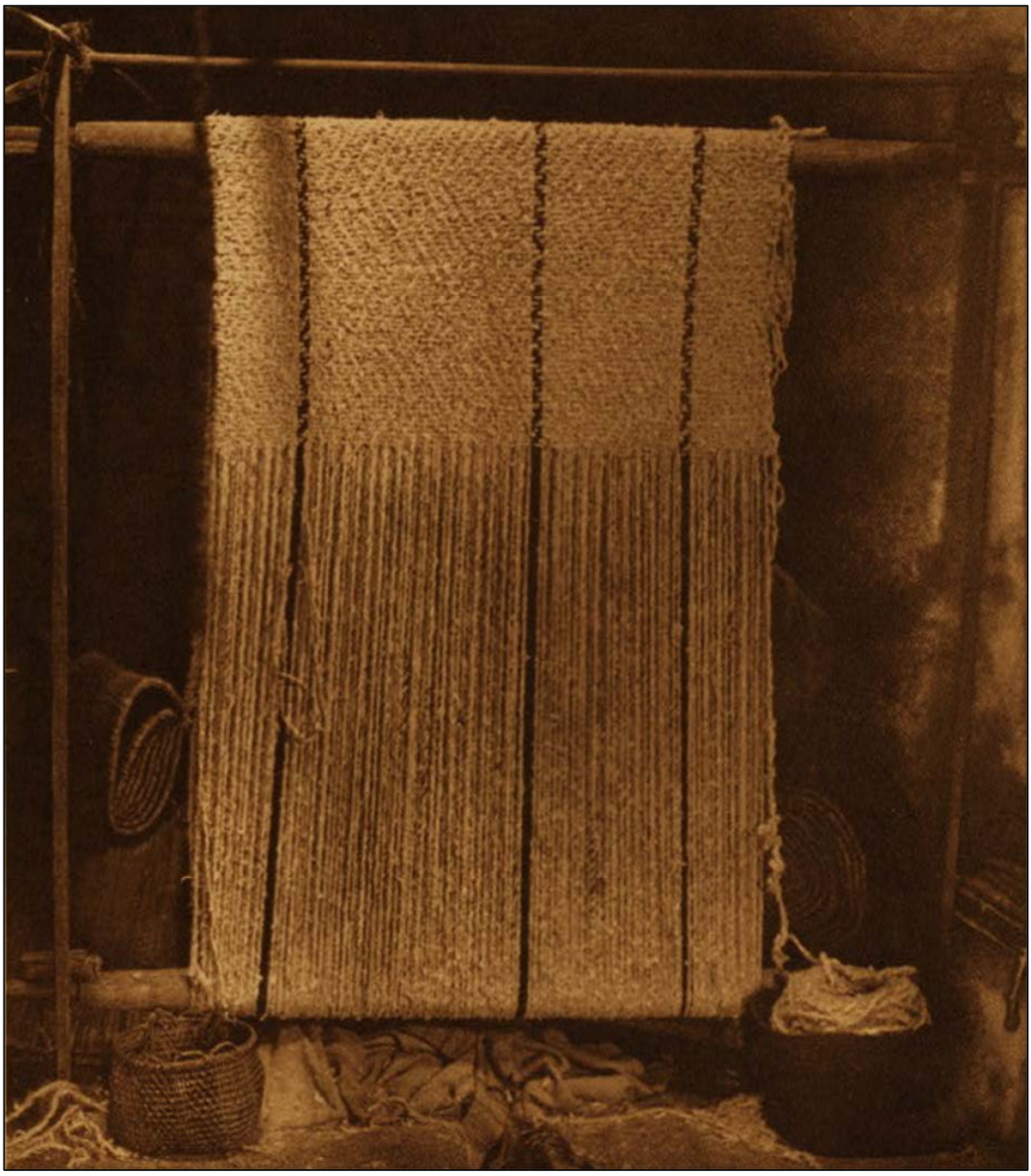


Figure 10: Example of the kind of weaving done by Salish people, "Goat-hair Blanket—Cowichan" (1912) by Edward S. Curtis (Northwestern University Library 2003).

Beginning in the late eighteenth century, introduced diseases took an enormous toll on Northwest Coast Native American populations. Estimates of mortality range from 30 to 90 percent, with the higher estimate being the more likely result of several successive catastrophic episodes of, especially, smallpox (Boyd 1994, 1998; Campbell 1991).

The Hudson's Bay Company

The first Europeans to stay for any length of time in the Puget Sound area were traders, trappers and explorers associated with the Hudson's Bay Company (HBC). From the 1820s through to the 1860s, HBC employees regularly traveled and traded around the Puget Sound (Harmon 1998). Tribes around Puget Sound took benefit from trading and bartering with HBC, and many were hired as guides. Fort Nisqually was established in 1833 at the southern end of Puget Sound, the first European settlement on Puget Sound (Bagley 1915). Many Native American groups traded with HBC at Fort Nisqually. Using the Naches, Snoqualmie, and Yakima passes through the Cascades, even the Yakima people traded with HBC at Fort Nisqually and Fort Langley, to the north. The influence of HBC in the Puget Sound was felt by native people and immigrants alike (Suttles and Lane 1990).

Fort Nisqually was handed over to the US in 1846 after a treaty between Great Britain and the United States had ostensibly settled the dispute over the Oregon Country; however, that treaty was vague as to possession of the islands that straddled the new boundary—including San Juan Island. The HBC took advantage of the confusion, built a log trading post on San Juan Island, and for several years traded with the resident Native American population for fish, which they salted and transported in barrels that they made on site (Bailey-Cummings and Cummings 1987).

The Wilkes Expedition

The United States Exploring Expedition led by Charles Wilkes was conducted in 1841 at a time when the territories of the Northwest were under contention by British and American interests. In 1845, 31 members of the Michael T. Simmons party cut a wagon trail that became the northern branch of the Oregon Trail at present-day Tumwater. Known as the end of the Oregon Trail or Cowlitz Trail, Tumwater is the oldest permanent American settlement on Puget Sound (Stevenson 1977; 1986:158). The discovery of gold in the Fraser River in 1858 brought more Euro-Americans (Jeffcott 1995). Immigrants arrived at Alki Point in 1851 and proceeded to lay claims along the waterfront that became the commercial center of Seattle by the 1860s.

The Donation Land Claim Act of 1850

The pace of immigrant settlement was encouraged by the U.S. 31st Congress, with the 1850 passage of Statute 496, an unnamed Act known by various names, most commonly as the Donation Land Claim Act, which legitimized a practice originally set in motion by the territorial Provisional Government in 1843 (Robbins 2019). The Act was

> to create the Office of Surveyor–General of the Public Lands in [the] Oregon [Territory], and to provide for the Survey, and to make Donations to Settlers of the said Public Lands. … granted to every white settler or occupant of the public lands, American half-breed Indians included ... three hundred and twenty acres of land, if a single man, and if a married man ... the quantity of one section, or six hundred and forty acres, one half to himself and the other half to his wife, to be held by her in her own right ... [US Statute 496, September 27, 1850]

The law explicitly excluded African Americans and Hawaiians. Prior to its enactment Territorial Delegate Samuel Thurston had told Congress that extinguishing Indian title was the "first prerequisite step" to settling Oregon's land question, so Congress had earlier authorized commissioners to negotiate treaties with that would, among other things, remove Native Americans from their land (Robbins 2019). What followed were the 1854 Treaty of Medicine Creek, the 1855 Treaties of Point Elliott, Point No Point, Neah Bay, Yakama, and Walla Walla, and the Quinault Treaty of 1856, by which the Native American tribes ceded their lands in return for continued resource procurement rights, 'reservations' (for some, but not all of the tribes), and a one-time payment. Once the treaties were in place, settlement and commercial exploitation of previously tribal lands proceeded almost unfettered.

Treaties, Allotments, Assimilation and Reorganization

By signing the 1854 Treaty of Medicine Creek, the 1855 Treaties of Point Elliott, Point No Point, Neah Bay, Yakama, and Walla Walla, and the Quinault Treaty of 1856, Native American tribes in Washington State ceded their lands in return for continued resource procurement rights, 'reservations' (for some, but not all of the tribes), and a one-time cash payment. Once the treaties were in place, settlement and commercial exploitation of previously tribal lands proceeded almost unfettered. In addition, several subsequent acts of federal legislation created the circumstances that would hasten the already severe breakdown of traditional Tribal lifeways that followed European-introduced disease pandemic in the 1770s that killed nearly 90% of the region's original inhabitants (Boyd 1994).

With the purpose of encouraging Tribal members to adopt the ways of the dominant culture—to assimilate them—the Dawes Act of 1887 provided "for the allotment of lands in severalty to Indians." The most charitable reading of this act was that it was intended to break the tradition of tribal communalism that most Americans of European descent believed was an obstacle to their 'progress' and assimilation into US society; the harshest critics see it as a continuation of efforts ultimately to take even the Reserve lands from the original inhabitants. Those who wished to take part were given either a portion of the reservation on which they lived, or, if their tribe had no reservation, a plot of land in or near their traditional lands. In both cases the individual was granted US citizenship. Regardless of the reason, fragmentation and fissioning of traditional communities was the inevitable result, which was made worse by provisions of the legislation that enabled eventual sale of the land to non-tribal people. In the 47 years between its enactment and its dismantling, the Dawes Act was responsible for reducing the acreage under Native title from 138 million to just 48 million (Newcomb 2012).

The disastrous effects of the Dawes Act did not go unnoticed. As part of F.D. Roosevelt's New Deal in the 1930s, the Indian Reorganization Act (IRA) (1934) was intended to redress some of the worst effects of the efforts at assimilation. It was

> [a]n Act to conserve and develop Indian lands and resources; to extend to Indians the right to form business and other organizations; to establish a credit system for Indians; to grant certain rights of home rule to Indians; to provide for vocational education for Indians; and for other purposes.

The IRA also restored rights to land and minerals. But it did not change the practice of removing children from their families and placing them in 'Residential Schools,' where they were forced to speak only English and taught only Euro-American history and culture. Only in the 1970s was this system dismantled, but the loss of cultural memory that it brought about was and is devastating, to say nothing of the intergenerational persistence of accumulated trauma it visited on the children who were subjected to this practice (see, e.g., Brave Heart and DeBruyn 1998).

Industry and infrastructure

Several large-scale commercial undertakings underpinned and dominated economic development and fueled settlement in the region during the nineteenth and early twentieth centuries: construction of transcontinental railroads, logging and sawmilling, mining, and hydroelectric power projects. The Northern Pacific Railway was the first transcontinental route to Puget Sound, completed in 1883 with its terminus at Tacoma. 1893 saw completion of the Great Northern Railway, which terminated in Seattle and was the only privately funded such railway in US history. These railways and their local spurs promoted economic growth and prompted the founding and development of small, coastal sawmill towns throughout the region. Timber harvested locally, or rafted by sea and river, was milled and loaded on trains for transport to the east.

History of Mukilteo

On May 31, 1872, Captain George Vancouver anchored his ship, the *Discovery*, and came ashore at Rose Point because of the abundance of wild roses that graced the hillsides (Riddle 2007). Later coined Point Elliott by Lieutenant Charles Wilkes, leader of the 1838-1842 U.S. Exploring Expedition, and situated on Possession sound, Mukilteo is one of the oldest settlements in Snohomish County and first county seat and is the site where the Treaty of Point Elliott was signed by Governor and Superintendent of Indian Affairs Isaac Stevens and the undersigned chiefs, headmen, and delegates of the Dwamish, Suquamish, Sk-kahl-mish, Sam-ahmish, Smalh-kamish, Skope-ahmish, St-kah-mish, Snoqualmoo, Skai-wha-mish, N'Quentl-ma-mish, Sk-tah-le-jum, Stoluck-wha-mish, Sno-ho-mish, Skagit, Kik-i-allus, Swin-a-mish, Squin-ah-mish, Sah-ku-mehu, Noo-wha-ha, Nook-wa-chah-mish, Mee-see-qua-guilch, Cho-bah-ah-bish, and other allied and subordinate tribes and bands of Indians occupying certain lands situated within the Territory of Washington (Riddle 2007; Treaty of Point Elliott 1855).

Chief William Shelton of the Tulalip Tribes described the meaning of the term “Mukilteo” as a throat, neck, or a narrowing in a body of water (Riddle 2007). The Lushootseed dialect of the Snohomish provides a close translation of Muk-wil-teo or Buk-wil-tee-whu, "to swallow" or "narrow passage", but is most commonly known as “good camping ground” due to the original land use as a camp during the winter months (Hess 1976; Anderson 2022).

Mukilteo Ferry and Lighthouse

To local tribes, the Mukilteo waterfront was an important crossing that connected Whidbey Island and Washington’s mainland, a water route that is continued today (Riddle 2007). The Island Transportation Company began a passenger ferry service in 1911, that provided access between multiple points on Whidbey Island (Riddle 2007). By 1919, the *Whidbey I* and the *Central I* were introduced as the first car ferries making connections between Mukilteo and Clinton (Riddle 2007). For three decades the Puget Sound Navigation Company (the Black Ball Line) maintained the ferry service with provided ships until the company was purchased by Washington State Ferries in 1951 (Riddle 2007).

In 1902, it was determined by the Lighthouse Board that a lighthouse at Mukilteo Point was needed due to the increased traffic of shipping vessels navigating through the rough waters of the Puget Sound to reach the Port of Everett (Anderson 2022). On January 9, 1903, 2.6 acres of land was surveyed for the lighthouse and a plat was prepared after Congress appropriated $22,000 for construction (Anderson 2022). Construction bids for the lighthouse station opened on June 30, 1905 and work began in August of 1905 (Anderson 2022).

In 1973, the station was reduced in size when one acre of tideland was transferred from the U. S. Coast Guard to Washington State Parks to become a section of Mukilteo State Park (Anderson 2022). Allowing public access in 1991, the City of Mukilteo leased the lighthouse from the U.S. Coast Guard with the Mukilteo Historical Society becoming temporary caretakers (Anderson 2022).

The lighthouse has remained an architectural landmark since its construction and is now a National Register Property that continues to define the nature of the Mukilteo Waterfront (Riddle 2007).

Japanese Gulch

A large community of Japanese immigrants lived in an area of Mukilteo called Japanese Gulch. The gulch itself bisects 5th Street/Mukilteo Boulevard, near the middle of the Project area, but the village site was about a mile away near the shoreline. The community was established by workers who were employed by the Crown Lumber Company (formerly the Mukilteo Lumber Company). The company was established in 1903, but closed down in 1930, leading most of the residents of Japanese Gulch to leave the area (Riddle 2007).

While Crown Lumber was operating, the community grew from mainly workers in 1910, to workers and their families in 1920, until the economic downturn of the 20s caused the closure of the company (Valentino et al. 2011). Several archaeological papers and reports have investigated the history and archaeological materials in this area (see section 4.3).

Land Ownership and Census

Jacob Fowler (Table 1) and Morris Frost (an early settler and politician in the area) established the town of Mukilteo in 1860, followed by some of Mukilteo's foundational businesses: one of the first salmon canneries in Washington Territory and one of the earliest breweries in the region (Dilgard 2010). Fowler became one of the first county commissioners in 1861 (Riddle 2007).

John Gould (Table 2) could be a settler mentioned in association with the same 1861 vote that made Jacob Fowler commissioner, but there is no census record for a John Gould living in what is now the Mukilteo area, and no further details were found in historical sources (Dilgard 2010).

Table 1: Census Data

Name	Jacob B. Fowler
Est. Birth	1838
Birthplace	Northwest Territories (New York)
Race	White
Gender	Male
Occupation	Merchant
Spouse	
Residence	Snohomish
Census	1887
Citation	Ancestry.com 2021a

Table 2: Land Records Research Info.

Accession	Location	Purchaser /Claimee	Date Acquired	Total Acreage	Cash/ Homestead	Citation
WAOAA 072193	SW1/4NW1/4 NW1/4NW1/4 SE1/4NE1/4 Lot/Tract 1	Jacob D. Fowler	5/2/1870	157.51	Homestead EntryOriginal	BLM GLO 2021a
WAOAA 072892	Lot/Tract 2	John Gould	12/9/1864	54.75	Sale-Cash Entry	BLM GLO 2021b

4.3 Previous Archaeology

For general overviews of the archaeology and cultural resources of the Northwest Coast, see Ames (1995, 2003, 2005a, 2005b), Ames and Maschner (1999), Avey (1991), Blukis Onat et al. (1980), Borden (1950, 1951, 1962, 1968, 1975), Boyd (1998, 1999), Bryan (1963), Burley (1980), Butler (1961), Butler and Campbell (2004), Campbell (1991), Carlson (1960, 1990), Carlson and Dalla Bona (1996), Carlson and Hobler (1993), Duncan (1977), Greengo (1983), Erlandson et al. (1998), Fladmark

(1975, 1982),), Hale (1991), Hearne and Hollenbeck (1996), Hollenbeck (1987),), Kidd (1964), Matson and Coupland (1995), Matson et al. (2003), Mattson (1971, 1989), Meltzer (2004), Meltzer and Dunnell (1987), Mitchell (1971, 1990), Nelson (1990), Pratt (1992), and Prentiss and Kuijt (2004, 2012), H.I. Smith (1990, 1907), Smith and Fowkes (1901), Stein (1984, 2000) and Wessen (1988).

Previously Recorded Archaeological Sites

Records of five archaeological sites within about three miles of the Project area are on file at the Washington State Department of Archaeology and Historic Preservation (DAHP). A short description of the sites is provided below, and summarized in Table 3.

45SN575—Japanese Gulch, a historic residential site less than a mile from the Project area is a scatter of domestic debris including bottle glass and ceramics dating from the early 1900s to the 1930s, buried beneath approximately 90 centimeters (cm) of fill (Valentino 2010:2).

45SN404—Crown Lumber Company Store and Butcher Shop, from the early 1900s, less than a mile from the Project area. The site was discovered during archaeological monitoring for construction of the Port of Everett Satellite Rail/Barge Transfer Facility. The site is approximately four feet below the surface of a deposit of sandy fill. The site mostly comprises red bricks, with some lumber, bottles, and other miscellaneous items. Charring and melting is evident on many of the items. An in-situ brick foundation is present below the burn layer (Shong 2006).

45SN398—Japanese Gulch Village, a historic residential site comprising structural remnants less than a mile away from the Project area. At the time of discovery approximately 40 Asian ceramic artifacts were collected from recently excavated sediment spoils adjacent to a buried wooden feature (probably a floor) (Shong 2005:2).

45SN393—Mukilteo Shoreline Site, a culture-rich precontact shell midden site approximately ¼ mile away from the Project area (Reetz and Lewarch 2005). The midden comprised the remains of campfires and processing features representing occupation over the last thousand years (Rinck 2009:1).

45SN83—Pigeon Creek No. 2, a flat plateau overlooking Pidgeon Creek, approximately 2.3 miles from the Project area in a subdivision of private homes. A single leaf-shaped basalt projectile point approximately 60 cm long, 20 cm wide, and 8 cm thick was recovered from the area. It is thought to belong to the Olcott cultural tradition (Mattson 1980).

Table 3: Previously recorded archaeological sites within three miles of the Project area.

Site #	Type	Distance (Miles)	Citations	NRHP Eligibility
45SN575	Historic Debris Scatter/Concentration	~0.1	Valentino 2010	Potentially Eligible
45SN404	Historic Commercial Properties	~0.2	Shong 2006	Eligible
45SN398	Historic Debris Scatter / Concentration, Historic Structures Not Specified	~0.2	Shong 2005	Eligible
45SN393	Pre-Contact Shell Midden	~0.25	Reetz & Lewarch 2005	Eligible
45SN83	Pre-Contact Isolate	~2.3	Mattson 1980	Not Eligible

Previous Cultural Resource Reports

Ten reports are on file with DAHP from cultural resource surveys within 0.2 miles of the Project area; they are listed below in Table 2, along with annotations for those that included subsurface investigation such as shovel test pits (ST), machine tests (MT) or monitoring.

Table 4: Previous cultural resource reports on file with DAHP.

Author	Title	Date
Stutzman	*Archaeological Resources Assessment of The University of Washington, Bothell Branch and Cascadia Community College Collocation Project at The Truly Farms/Stringtown Site, Bothell, Washington, Historical Research Associates Inc., Report No. 1334626.* **Unknown number of Augers. No cultural resources.**	1995
Schumacher	*Cultural Resources Assessment for The Port of Everett Railibarge Transfer Facility Snohomish County, Washington, Western Shore Heritage Services, Inc. Report No. 1343282.* **2 Negative Trenches. No cultural resources.**	2005
Gillis and Hodges	*Cultural Resources Assessment for The Lift Station No. 14 Project, Snohomish County, Washington, Northwest Archaeological Associates, Inc. Report No. WA06-110.* **1 ST. No cultural resources.**	2006
Miss and White	*Results Of Test Excavations at Site 45sn398a Mukilteo, Washington, Northwest Archaeological Associates, Inc. Report No.1349372.* **19 STs. Cultural resources recovered.**	2007
Miss et al.	*Additional heritage resources investigations at the Mukilteo multimodal ferry terminal project site, Washington, Northwest Archaeological Associates, Inc. Report No. Y-9959.* **16 Trenches & 135 Boreholes. Cultural resources recovered.**	2008
White	*Cultural resources assessment for the Japanese gulch trails project, Mukilteo, Snohomish County, Washington, northwest archaeological associates, inc. Report No. WA08-055.* **7 Negative STs. No cultural resources.**	2008
White, Boswell, and Miss	*Results of data recovery and site evaluation excavations at the Japanese gulch site 45SN398 Mukilteo, Washington, northwest archaeological associates, inc. Report No. WA07-057.* **30 1x1m units. Cultural resources recovered.**	2009
Valentino et al.	*Cultural resources assessment for the Japanese gulch fish passage improvement project, Mukilteo, Snohomish County, Washington, northwest archaeological associates inc. Report No. 21785.* **11 STs. Cultural resources recovered.**	2011
Dierich and Hushour	*Cultural Resources Assessment for the Soundview Business Campus Project, Everett, Snohomish County, Washington, Tierra Right of Way Services, Ltd. Report No. 2014-077.* **21 Negative STs. No cultural resources.**	2014
Lothrop and Lockwood	*Sound Transit, Mukilteo Station South Platform Project, Mukilteo, Snohomish County, Washington: Archaeological Monitoring, ESA.* **18 Negative Augers. No cultural resources.**	2014

National Register of Historic Places Properties

Records of four National Register of Historic Places properties within one-half mile of the Project area are on file with DAHP. A short description is provided below and summarized in Table 5.

45SN372—*Point Elliott Treaty DAR Monument,* constructed in 1930 by the Daughters of the American Revolution. It is approximately 6.5 feet tall, 3 feet wide, and 15 inches deep, on a concrete base, with a bronze plaque (USDI 2004).

45SN107—*Fowler Pear Tree,* the last remaining tree of an orchard planted by Jacob D. Fowler on his homestead in 1863. The Rose Point Garden Club is responsible for planting a garden around the tree, as well as placing a bronze plaque at the location describing the history of the tree (USDI 1969).

45SN108—*Point Elliott Treaty Site,* one of several proposed sites where the treaty signing took place. This location is known to be the general location of the first recorded attempt to locate the site of the treating signing in 1919 (USDI 1974).

45SN123—*Mukilteo Light Station,* a 35-foot-tall lighthouse beacon that marks the apex for entering Possession Strait. This is an essential navigational marker for Washington State ferries crossing between Mukilteo and Whidbey Island. The light station consists of six wood-frame buildings with twelve auxiliary structures. (USDI 2008).

Table 5: National Register Properties within one mile of the Project area.

Distance	NRHP	Name	Period of Significance
~0.1 miles	45SN372	Point Elliott Treaty DAR Monument	1930–1931
~0.2 miles	45SN107	Fowler Pear Tree	1863
~0.25 miles	45SN108	Point Elliott Treaty Site	1855
~0.3 miles	45SN123	Mukilteo Light Station	1906

Previous Cemetery Reports

The records of two cemeteries within one mile of the Project area are on file with DAHP. A short description is provided below.

45SN140—*Mukilteo Cemetery, also known as Snohomish County Cemetery,* overlooks Puget Sound and the city of Mukilteo. It is maintained by the city. The last burial occurred in 1917. There is minimal vandalism, with the primary damage attributed to natural elements (DAHP 1969).

45SN524—*Highland Memorial Park,* an inactive cemetery established in 1968. The company that originally established the cemetery went bankrupt in 1978, prompting the movement of many of the remains to Evergreen Cemetery. The land changed hands several times; for a time, it hosted a police station (DAHP 2020).

Archaeological Expectations

There a high probability of encountering a range of precontact and protohistoric Native American cultural resources due to the proximity to the Puget Sound and a precontact shell midden. There is also a high probability of encountering historic resources due to the proximity of historic sites in very close proximity. Japanese Gulch is an area of especially high probability, though the actual areas known to have been occupied are outside the Project area.

Due to multiple instances of road construction and repair, much of the Project area consists of disturbed local and imported fill. Cultural materials found in these areas are unlikely to have retained their original context. Additionally, this is a busy road and aside from residential use, there is a dog park on the south side of Japanese Gulch. These areas of frequent modern usage make intact cultural deposits less likely.

5.0 METHODS

This section provides details on the archival research and fieldwork methods that Equinox Research and Consulting International Inc. (ERCI) employed in support of the Project. The research undertaken for the Project uses best-practice archaeological survey techniques to record the presence or absence of moderate to large archaeological sites, with the expectation that we may also find isolated artifacts or features, or small artifact scatters. When sites or isolated artifacts are discovered ERCI records them on DAHP forms in accordance with the *Washington State Standards for Cultural Resources Reporting*.

5.1 Archival Research

ERCI researchers

- Reviewed site forms and reports of previous archaeology on file at the Department of Archaeology and Historic Preservation (DAHP) in Olympia, Washington
- Reviewed other archaeological reports and related documents on file at the ERCI offices in Mount Vernon, Washington
- Reviewed published information on the precontact, traditional Native American and historic land use in the Project area—as well as the Salish Sea, the Northern Puget Sound and Puget Lowland
- Reviewed the Snohomish County Assessor's records
- Reviewed General Land Office and other historic maps.

5.2 Fieldwork

On January 28 and February 3, 2022, ERCI carried out an archaeological survey of the Project area. Aleta R. Baxley, BA, Emma S Dubois, BA, Fiona L. Koehnen, BA, Leah Koch-Michael, MA, Rhododendron E. O'Boyle, BA, BA, Selena Williams, BA, Robert C. S. Wright, and Ashley Yates, BA, conducted fieldwork that included pedestrian survey and subsurface survey with 26 shovel tests (ST).

Whenever skeletal material is discovered, excavation is paused, and clear digital photographs are taken and transmitted to ERCI biological anthropologist Alyson Rollins, MA, who confirms whether or not the discovery is human.

Specific ST locations were determined judgmentally based on avoiding surface-marked water and electric utilities and locating areas that were not road asphalt. For ST and matrix descriptions, see Appendix 1.

STs consisted of cylindrical pits dug by hand using round-nosed shovels, approximately 45 to 50 centimeters (cm) in diameter, ranging up to 100 cm deep. All excavated sediments were passed through ¼-inch mesh hardware cloth shaker screens, then the >¼-inch fraction was examined for the presence of cultural resources. ST location overview photographs were taken, along with photographs of their sedimentary profiles. For the photograph log, see Appendix 2. Once documentation was complete, STs were backfilled with the excavated sediments and the surface restored to its original grade. No samples were removed from the Project area. Sediments encountered were characterized and recorded on paper, and activities photographed using digital cameras. ST locations were obtained using a Global

Positioning System (GPS) high-accuracy receiver. Field notes, digital photographs and GIS shapefiles are stored at ERCI's offices in Mount Vernon, Washington.

6.0 RESULTS

Fieldwork took place on January 28 and February 3 while a pedestrian survey took place prior to shovel testing on January 19 and 21 when spraying for locates. The weather was sunny and cool in the morning, but warm in the afternoon. The results of the pedestrian survey and subsurface survey are summarized below, followed by a discussion of the findings. **No protected cultural resources were encountered during pedestrian and subsurface survey.**

6.1 Pedestrian Survey

On January 19 and 21, 2022, ERCI carried out a pedestrian survey while marking utility locates. Surface visibility was low due to houses, a paved road and bridge, and varying vegetation in the Project area. Much of the Project area is obscured by the roadway, a dog park and residences. English ivy, cedar, alder, maple and Douglas fir trees covered most of the middle of the Project area. The eastern and western halves were covered with residences and lawns. Figure 11 to Figure 16 display several views of the Project area.

Figure 11: View northeast, 5th Street, Mukilteo, Washington.

Figure 12: View northeast, 5th Street and Cornelia Avenue, Mukilteo, Washington.

Figure 13: View northeast, 5th Street and Loveland Avenue, Mukilteo, Washington.

Figure 14: View northeast, West Mukilteo Boulevard.

Figure 15: View southwest, West Mukilteo Boulevard bridge.

Figure 16: View southwest, 5th Avenue, Mukilteo, Washington.

6.2 Subsurface Survey

On January 28 and February 3, 2022, ERCI archaeologists carried out a program of subsurface survey that included 36 STs (Figure 18), a total of 5.32 cubic meters of sediment excavated. We focused our survey in certain parts of the 80-foot right-of-way in areas with no asphalt, utilities, or steep slope (Figure 17-Figure 21).

Six distinct sedimentary matrices were identified. Matrix (M) 1 is a dark brown sandy silt with few pebbles, gravels, and organics; M2 is a dark yellowish brown sandy silt with few gravels; M3 is an olive brown silty sand with pebbles, gravels, and few cobbles; M4 is a light olive brown sandy silt with few gravels; M5 is a dark grayish brown to yellowish brown coarse sand with many pebbles and gravels, few cobbles, and some silt; M6 is a gray clay with few organics. The first three matrices were present in most of the STs that were excavated in the lower elevations that make up most of the west side of the Project area. M1 was most often found on the western half of the Project area and was seen over top the other matrices. M1 and M2 were composed of disturbed local fill from past roadwork. Full sedimentary matrix descriptions are available in Appendix 1. Annotated photographs of the sediments can be seen in Figure 22–Figure 24.

STs 15 and 29 contained ceramic fragments. STs 6, 9, 10, 12, 18, 19, 21, and 29 contained glass fragments. STs 6, 10, 15, and 21 contained nails or other miscellaneous metal objects such as wire, a metal cap, and a rusted disk. ST 19 contained a Hamm's beer can with a modern logo. This debris was of indeterminate age and appeared to represent recent land use and discarded waste. All were found disturbed fill sediments;

ST 15 contained the majority of the cultural material with 62 glass fragments, 39 porcelain fragments, 6 nails, 6 faunal bone fragments (confirmed nonhuman by Alyson Rollins), 5 shell fragments, 2 brick fragments, a piece of metal, and a fast-food drink lid. The shell and bone were found with modern refuse and occurred at different depths, to a maximum of 60 cm dbs. All nails found were modern, and most were with other refuse in front of residential homes. Figure 25 and Figure 26 show the highest concentrations of fragments in ST 15.

In total, the material constituted 91 glass fragments, 41 porcelain fragments, 10 rusted nails, 8 fragments of miscellaneous metal, 8 faunal bone fragments (ERCI sent photos to biological anthropologist Alyson Rollins, MA, who confirmed that they were nonhuman), 5 shell fragments (*Tresus or Saxidomus n.)* and 2 pieces of plastic. The glass and porcelain fragments had no maker's marks or any other indication of age. ST 6 contained a milk glass fragment with some visible text, but the text could not be matched to a specific company. Additionally, ST 35 contained a copper pipe in M1, that continued into the wall. It did not appear to be functional, and was found at 22 to 25 cm depth.

A carbon lens was seen in several STs (2, 3, 4, 28, 29) within the M2 matrix, in the southwestern part of the Project area. No other materials were found in it or at the transitions between it and the matrices above and below. These STs were in the right-of-way on residential lawn, the lens itself was between 2 and 5 cm thick, and were at a depth between 30 and 48 cm. M2 itself was an oxidized material that could have been part of a burn layer, and was seen in STs 1 to 6, with and without the carbon lens.

All STs were negative for protected cultural resources.

Figure 17: View west, ST 2 with ERCI working at ST 1.

Figure 18: Sketch map of STs in Project area.

Figure 19: View northeast, ST 4.

Figure 20: View west, ERCI working at ST 10.

Figure 21: View west, ST 6.

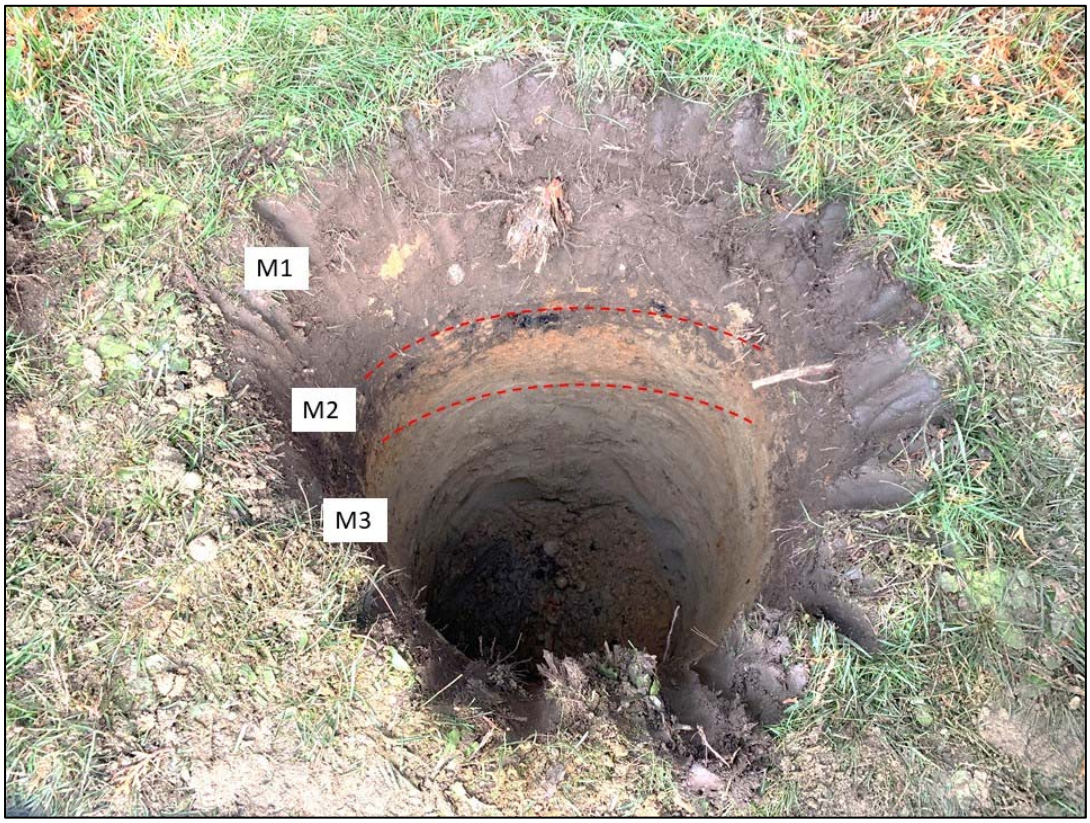


Figure 22: View northwest, ST 4.

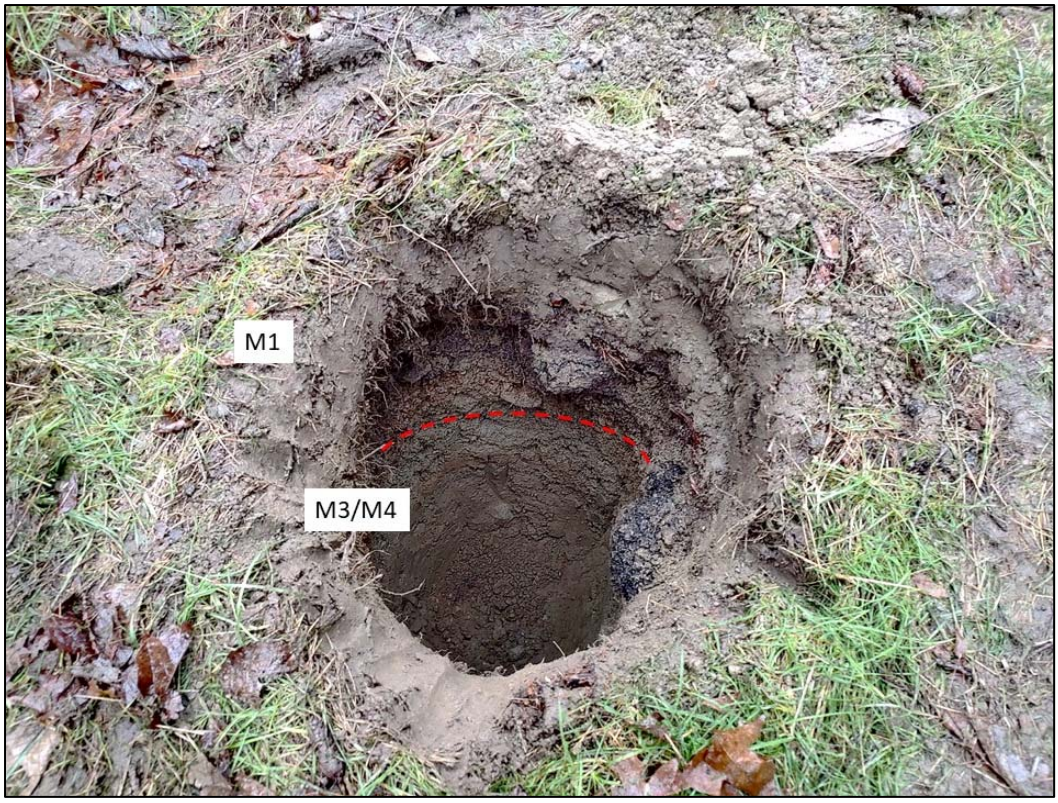


Figure 23: View north, ST 31.

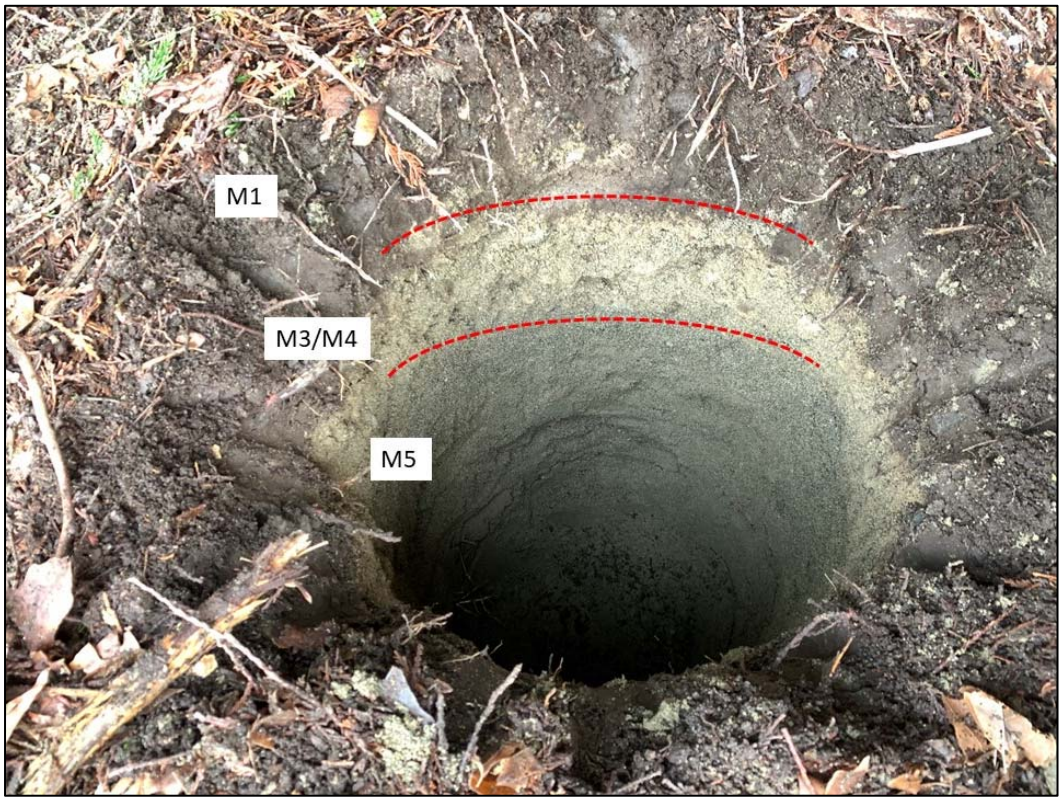


Figure 24: View southwest, ST 16.

Figure 25: 62 glass fragments from ST 15.

Figure 26: 39 porcelain fragments from ST 15.

7.0 DISCUSSION

While carrying out fieldwork for the 5th Steet Bicycle and Pedestrian Improvement Project, which included a pedestrian survey and subsurface survey of 36 STs, it was anticipated that we would encounter historic cultural resources, and possibly a range of precontact resources. Japanese Gulch runs through the Project area, although the areas once occupied by Japanese immigrants are located further north, outside the Project area.

ERCI saw a significant amount of refuse of indeterminate age; 91 glass fragments, 41 porcelain fragments, 10 rusted nails, 8 fragments of miscellaneous metal, 8 faunal bone fragments (determined nonhuman by biological anthropologist Alyson Rollins), 5 shell fragments (*Tresus or Saxidomus n.)* and two pieces of plastic.

The carbon lens in M2 may constitute a burn layer. As no cultural materials were seen in or around M2 or the lens itself, it is difficult to draw any conclusions. The houses attached to the parcels, according to Snohomish County Official Records, date as far back as 1919 (Snohomish County Official Records 2022), but no fire event could be linked specifically to this area.

The ceramic fragments might be historical residential refuse. The greatest concentration was found in ST 15, next to the parking lot for the Tails and Trails Dog Park where road construction and maintenance had almost certainly disturbed the area. ST 15 also had the greatest concentration of other cultural material, with shell, glass, plastic, nonhuman bone, metal nails and other metal fragments in M1 and M3. The presence of plastic makes it unlikely that this is an intact dump site. Additionally, no maker's marks or identifiable features were found that could determine age on any of the materials. It is more likely that this material originated nearby and was piled in the current location during road or parking lot construction.

None of the materials were connected with a feature. No precontact material was seen. Therefore, it was determined that **none of the materials found during our survey are protected cultural resources**

8.0 MANAGEMENT RECOMMENDATIONS

No protected cultural resources were identified during our fieldwork. The management recommendations that we are now providing are based on our findings from this initial investigation. We recommend that:

1. The proposed project proceeds as planned, following an unanticipated discovery protocol (UDP) training given to all construction personnel by a professional archaeologist. A copy of the Unanticipated Discoveries Protocol (UDP) to be on site at all times (Appendix 3).
2. In the event that any ground-disturbing activities or other project activities related to this development or in any future development uncover protected cultural material (e.g., bones, shell, stone or antler tools), all work in the immediate vicinity should stop, the area should be secured, and any equipment moved to a safe distance away from the location. The on-site superintendent should then follow the steps specified in the UDP (Appendix 3).
3. In the event that any ground-disturbing activities or other project activities related to this development or in any future development uncover human remains, all work in the immediate vicinity should stop, the area should be secured, and any equipment moved to a safe distance away from the location. The on-site superintendent should then follow the steps specified in the UDP (Appendix 3).

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Appendix 1: Shovel Test Descriptions, Particle Size Classes and Matrix Descriptions

Particle Size Classes

Scale	Clay	Silt	Sand	Gravel	Pebble	Cobble	Boulder
in	<.00015	.00015–.0025	.0025–.08	.08–1	1–4	4–10	>10
mm	<.004	.004–.062	.062–2	2–25.4	25.4–102	102–254	>254

Matrix Descriptions

Matrix 1: 10 YR 3/3 dark brown. 90% sandy silt, 5% rounded to subrounded pebbles, 5% subrounded to rounded gravels, <5% organics; moderate compaction; damp; gradual transition; Disturbed local sediment.

Matrix 2: 10 YR 4/6 dark yellowish brown. 95% sandy silt, 5% subrounded gravels; loose compaction; damp to dry; gradual transition or pockets.
Disturbed local sediment.

Matrix 3: 2.5 Y 4/3 olive brown. 70% sand, 10% silt, 10% subrounded gravels, 10% subrounded pebbles, <1% cobbles; moderate compaction; damp; gradual transition, Intact local sediment.

Matrix 4: 2.5 Y 5/3 light olive brown. 95% sandy silt, <5% subrounded gravels; dense compaction; dry; discontinuous to clear transition, may have oxidized streaks. Intact local sediment.

Matrix 5: 10 YR dark grayish brown 80% sand, 10% silt, 10% subrounded gravels; loose compaction, dry, damp, intact natural sediment.

Matrix 6: 10 YR 5/1 gray. Clay, some exterior oxidation on surfaces of fracture planes, <5% organics; dense compaction; dry; clear interface. Intact alluvium.

Shovel Test Descriptions

ST	Depth (cm)	Dia (cm)	Matrix Description (Depth Below Surface in cm)	Comments
1	101	50	**0–15:** M1, discontinuous interface, patch of M2 in NW corner **15–101:** M3 mixed with M4	Negative.
2	81	50	**North Wall** **0–13:** M1 **13–43:** M2, discontinuous interface, carbon lens ~5 cm thick 38–43 cm. **43–81:** M3 **South Wall** **0–20:** M1, gradual transition **20–81:** M3	Negative.
3	100	50	**0–30:** M1 **30–32:** Charcoal lens **32–52:** M2 **52–100:** M3	Negative.
4	100	54	**0–36:** M1 Melted colorless glass fragment at transition of M1–M2. **36–48:** M2 with carbon fragments **48–100:** M3, more gravels and pebbles	Negative.
5	100	50	**0–26:** M1, gradual transition **26–35:** M2, gradual transition **35–100:** M3	Negative.

ST	Depth (cm)	Dia (cm)	Matrix Description (Depth Below Surface in cm)	Comments
6	100	50	**0–40:** M1, clear to gradual interface, milk glass fragment, metal cap/rusty disk, rusted nail **40–85:** M2, gradual interface **85–100:** M2	Negative.
7	100	50	**0–14:** M1, mixed transition **14–35:** M3, gradual transition **35–100:** M4 with oxidation streak	Negative.
8	100	50	**0–25:** M1 with cobbles **25-100:** M4	Negative.
9	100	50	**0–13:** M1, gradual transition **13–100:** M4, M2 mixed with M4 on north wall, amber glass at 30 cm dbs and 80 cm dbs	Negative.
10	52	50	**0–24:** M1, grayer, one brown glass fragment, one aqua glass fragment, two metal fragments, one insulated metal wire fragment, and one mammalian bone fragment that biological anthropologist, Alyson Rollins, MA, identified as nonhuman. **24–52:** M4, grayer	Negative.
11	53	45	**0–20:** M1, clear transition **20–53:** M3/M4 mix	Negative.
12	100	49	**0–14:** M1, lighter color, more silt **14–59:** M5, amber glass fragments, discontinuous interface **59–100:** M3/M4 mixed, amber glass fragments	Negative.
13	100	45	**0–10:** M1 **10-100:** M5	Negative.
14	90	45	**0–15:** M1, clear transition **15–43:** M3/M4 mix, discontinuous transition **43–90:** M3	Negative.
15	100	48	**0–20:** M1, refuse throughout, including plastic **20–100:** M3, refuse throughout 6 faunal fragments 0–50 cm; 5 shells 0–60 cm; 6 nails 30–50 cm; 2 brick fragments 30-50cm, metal fragment 30–60 cm; 62 glass and 39 ceramic fragments 0–90 cm.	Negative.
16	99	45	**0–19:** M1 **19–36**: M3 dense **36–99:** M5	Negative.
17	100	45	**0–15:** M1, clear transition **15–100:** M5, disturbed	Negative. Glass throughout.
18	60	44	**0–25:** M1, amber glass fragments, can pull tab/pop top **25–60:** M4/M5 mix, disturbed	Negative.
19	94	45	**0–21:** M1, three colorless glass fragments and a Hamm's beer can **21–94:** M3/M4 mix	Negative.

ST	Depth (cm)	Dia (cm)	Matrix Description (Depth Below Surface in cm)	Comments
20	100	48	**0–20:** M1, gradual transition **20–100:** M3/M4 mix, more gravels, pebbles, and cobbles.	Negative.
21	100	45	**0–20:** M1, gradual transition **20–100:** M3, natural carbon flecks throughout, glass fragment at ~35 cm dbs, glass fragment and rusted nail at ~70 cm dbs	Negative.
22	100	45	**North Wall** **0–70:** M1/M3 mixture, discontinuous transition **70–100:** M3 **South Wall** **0–10:** M1, clear transition **10–100:** M3	Negative.
23	100	45	**0–28:** M1, gradual transition **28–100:** M3 some oxidation, pebbles throughout, slightly sorted, size increases with depth	Negative.
24	100	48	**0–40:** M1 **40–62:** M2, gradual change **62–100:** M3	Negative.
25			**NOT EXCAVATED DUE TO TIME CONSTRAINT.**	
26			**NOT EXCAVATED DUE TO TIME CONSTRAINT.**	
27	100	49	**0–35:** M1 more gravels **35–46:** carbon band **46–73:** M3, more gravels and pebbles **73–100:** M4 little oxidation	Negative.
28	103	47	**0–22:** M1, discontinuous transition **22–103:** M4, more subrounded gravels, carbon band 30 cm dbs, rusted metal in southeast wall 42 cm dbs, 56–75 cm dbs round carbon patch	Negative.
29	101	45	**0–23:** M1, discontinuous transition **23–101:** M3, carbon and oxidation lines throughout, porcelain fragment and rusted nail ~25 cm, rusted nail ~70 cm, glass fragment ~75 cm, glass fragment ~80 cm	Negative.
30	100	46	**0–14:** M1, clear transition **14–28:** M4, clear transition **28–100:** M3, some oxidation	Negative.
31	98	50	**0–20:** M1 **20–35:** layer of asphalt **35–98:** M3/M4 mix	Negative.
32	100	46	**0–21:** M1, some local silt inclusions, gradual interface **21–80:** M3, 1 amber glass fragment @ 50 cm **55–100:** M4,	Negative.

ST	Depth (cm)	Dia (cm)	Matrix Description (Depth Below Surface in cm)	Comments
33	100	50	**0–22:** M1, surface trash and glass **22–100:** M4 – used breaker bar throughout	Negative.
34	100	45	**0–15:** M1, <5% English ivy roots (organics), gradual interface **15–30:** M5 with rounded to subrounded gravels **30–100:** M6	Negative. ST on slope, 20 cm difference between NW and SE surface of ST, measurements @ middle of difference
35	42	50	**0–28:** M1 wet, copper pipe starting at ~22–25 cm **28–42:** M4	Negative.
36	86	48	**0–30:** M1 **30–50:** M4 discontinuous transition **30–86:** M2	Negative.
37	70	46	**0–15:** M1, gradual interface **15–70:** M4 with gravels, pebbles, and cobbles 7-inch-long 4x4 wood in coarse sand	Negative.
38	45	50	**0–24:** M1 **24–45:** M3/M4 mix	Negative.

Appendix 2: Photograph Log

Number	View	Description
22.01.28AAY001	N	ST 2 with scale
22.01.28AAY002	N	ST 2 without scale
22.01.28AAY003	N	ST 2 overview
22.01.28AAY004	W	ST 2 overview and ERCI working
22.01.28AAY005	E	ST 7 with scale
22.01.28AAY006	E	ST 7 without scale
22.01.28AAY007	E	ST 7 overview
22.01.28AAY008	N	ST 11 with scale
22.01.28AAY009	N	ST 11 without scale
22.01.28AAY010	N	ST 11 overview and Japanese memorial statue
22.01.28AAY011	W	ST 10 overview and ERCI working
22.01.28AAY012	P	Colorless glass fragment ST 11
22.01.28AAY013	P	Blue glass fragment ST 11
22.01.28AAY014	P	Tan ceramic fragment ST 11
22.01.28AAY015	N	ST 14 with scale
22.01.28AAY016	N	ST 14 without scale
22.01.28AAY017	W	ST 14 overview and ERCI working
22.01.28AAY018	W	ST 22 overview and ERCI working
22.01.28AAY019	E	ST 22 with scale
22.01.28AAY020	E	ST 22 without scale
22.01.28ARB001	NW	ST 4 with scale
22.01.28ARB002	NW	ST 4 without scale
22.01.28ARB003	NE	ST 4 overview
22.01.28ARB004	P	Glass from ST 4
22.01.28ARB005	P	Bone from ST 4
22.01.28ARB006	P	Bone from ST 4
22.01.28ARB007	P	Metal fragments and wire from ST 10
22.01.28ARB008	P	Glass from ST 10
22.01.28ARB009	P	"For Sale" sign from ST 10
22.01.28ARB010	NW	ST 10 with scale
22.01.28ARB011	NW	ST 10 without scale
22.01.28ARB012	SW	ST 10 overview and ERCI working
22.01.28ARB013	P	Bone from ST 10
22.01.28ARB014	SE	ST 16 with scale
22.01.28ARB015	SE	ST 16 without scale
22.01.28ARB016	SW	ST 16 overview, and ERCI at ST 18
22.01.28ARB017	P	Plastic fragment from ST 16
22.01.28ARB018	P	Glass fragment from ST 16
22.01.28ARB019	P	Sticks from ST 16
22.01.28ARB020	P	Plastic ribbon from ST 16
22.01.28ARB021	S	ST 19 with scale

Number	View	Description
22.01.28ARB022	S	ST 19 without scale
22.01.28ARB023	E	ST 19 overview
22.01.28ARB024	E	ST 19 overview, and ERCI at ST 18
22.01.28ARB025	P	Glass from ST 19
22.01.28ARB026	P	Aluminum can from ST 19
22.01.28ARB027	P	Can from ST 19
22.01.28ESD001	W	ST 6 with tape close to see M5
22.01.28ESD002	W	ST 6 with scale
22.01.28ESD003	W	ST 6 close up of M5 no scale
22.01.28ESD004	W	ST 6 no scale
22.01.28ESD005	S	ST 6 overview
22.01.28ESD006	P	ST 6 nail, metal fragment, and milk glass from 20 cm dbs, amber glass fragment from 50 cm dbs
22.01.28ESD007	P	ST 6 milk glass base fragment "COMPANY N" embossed
22.01.28ESD008	P	ST 6 milk glass fragment cross-section
22.01.28ESD009	P	ST 6 fragments flipped over
22.01.28ESD010	P	ST 12 glass fragments front side
22.01.28ESD011	P	ST 12 glass fragment back side
22.01.28ESD012	P	ST 12 glass fragment cross-section
22.01.28ESD013	NE	ST 12 with scale
22.01.28ESD014	NE	ST 12 without scale
22.01.28ESD015	S	ST 12 overview
22.01.28FLK001	N	ST 5 with scale
22.01.28FLK002	N	ST 5 without scale
22.01.28FLK003	SW	ST 5 overview, ERCI at ST 4 in background
22.01.28FLK004	E	ST 9 with scale
22.01.28FLK005	E	ST 9 without scale
22.01.28FLK006	E	ST 9 overview with ERCI at ST 9 and ST 10
22.01.28FLK007	P	ST 9 amber glass
22.01.28FLK008	P	ST 9 amber glass
22.01.28FLK009	P	ST 9 amber glass bottle lip
22.01.28FLK010	P	ST 9 amber glass bottle lip
22.01.28FLK011	S	ST 13 with scale
22.01.28FLK012	S	ST 13 without scale
22.01.28FLK013	SE	ST 13 overview with ERCI at ST 15 and dog park
22.01.28FLK014	S	ST 17 with scale
22.01.28FLK015	S	ST 17 without scale
22.01.28FLK016	E	ST 17 overview with ERCI at ST 16
22.01.28FLK017	P	Amber glass
22.01.28FLK018	P	Amber glass
22.01.28FLK019	P	Frosted glass
22.01.28FLK020	P	Frosted glass

Number	View	Description
22.01.28FLK021	S	ST 20 with scale
22.01.28FLK022	S	ST 20 without scale
22.01.28FLK023	W	ST 20 overview with ERCI at STs 21, 22,23
22.01.28LKM001	W	ST 6 M5 inclusion
22.01.28LKM002	W	ST 6 M5 inclusion
22.01.28LKM003	E	Toward dog park parking lot ERCI crew
22.01.28LKM004	NW	From dog park parking lot view of 5th St
22.01.28LKM005	W	ST 12 ERCI crew
22.01.28LKM006	P	Stone in ST 11
22.01.28LKM007	P	Stone in ST 11 other side
22.01.28LKM008	P	Stone in ST 11
22.01.28LKM009	SE	ST 12, dog park in background, ERCI crew
22.01.28LKM010	SE	ST 12, dog park in background, ERCI crew
22.01.28LKM011	W	Toward Cornelia Ave, ERCI crew at ST 19
22.01.28LKM012	S	ST 18 with scale
22.01.28LKM013	S	ST 18 without scale
22.01.28LKM014	S	ST 18 overview, ST 19 in background with ERCI crew
22.01.28LKM015	W	ST 18 overview, ST 19 in background with ERCI crew
22.01.28LKM016	P	Glass and plastic in ST 18
22.01.28LKM017	W	Toward ST 19, Cornelia Ave
22.01.28RCSW001	E	ST 1 start overview
22.01.28RCSW002	N	ST 1 with scale
22.01.28RCSW003	N	ST 1
22.01.28RCSW004	E	ST 1 overview
22.01.28RCSW005	E	ST 27 start overview
22.01.28RCSW006	SE	ST 27 with scale
22.01.28RCSW007	SE	ST 27
22.01.28RCSW008	W	ST 27 overview
22.01.28RCSW009	NE	ST 28 start overview
22.01.28RCSW010	S	ST 28 with scale
22.01.28RCSW011	S	ST 28
22.01.28RCSW012	P	Rusty metal in ST 28
22.01.28RCSW013	P	Large carbon spot in ST 28
22.01.28RCSW014	NW	Large carbon spot in ST 28
22.01.28RCSW015	N	ST 28 overview
22.01.28RCSW016	W	ST 29 start overview
22.01.28RCSW017	P	Fragment from ST 29
22.01.28RCSW018	P	Fragment from ST 29
22.01.28RCSW019	P	Rusty nail from ST 29
22.01.28RCSW020	P	Another rusty nail from ST 29
22.01.28RCSW021	P	Glass fragment from ST 29
22.01.28RCSW022	P	Another glass fragment from ST 29

Number	View	Description
22.01.28RCSW023	S	ST 29 with scale
22.01.28RCSW024	S	ST 29
22.01.28RCSW025	N	ST 29 overview
22.01.28RCSW026	W	ST 23 start overview
22.01.28RCSW027	S	ST 23 with scale
22.01.28RCSW028	S	ST 23
22.01.28RCSW029	E	ST 23 overview
22.01.28RCSW030	E	ST 30 start overview
22.01.28RCSW031	W	ST 30 restart due to pipe
22.01.28RCSW032	SE	ST 30 with scale
22.01.28RCSW033	SE	ST 30
22.01.28RCSW034	NE	ST 30 overview
22.01.28RCSW035	NE	ST 21 start overview
22.01.28RCSW036	P	Glass fragment from ST 21
22.01.28RCSW037	P	Another glass fragment from ST 21
22.01.28RCSW038	P	Rusty nail from ST 21
22.01.28RCSW039	SE	ST 21 with scale
22.01.28RCSW040	SE	ST 21
22.01.28RCSW041	E	ST 21 overview
22.01.28SPW001	W	ST 3 with scale
22.01.28SPW002	W	ST 3 without scale
22.01.28SPW003	SW	ST 3 overview with ERCI at ST 2
22.01.28SPW004	W	ST 8 with scale
22.01.28SPW005	W	ST 8 without scale
22.01.28SPW006	W	ST 8 overview
22.01.28SPW007	P	Faunal fragments ST 15
22.01.28SPW008	P	Faunal fragments ST 15
22.01.28SPW009	P	Faunal fragments ST 15
22.01.28SPW010	P	Faunal fragments ST 15
22.01.28SPW011	W	ST 15 with scale
22.01.28SPW012	W	ST 15 without scale
22.01.28SPW013	E	ST 15 overview
22.01.28SPW014	P	Shell ST 15
22.01.28SPW015	P	Shell ST 15
22.01.28SPW016	P	Faunal fragments ST 15
22.01.28SPW017	P	Faunal fragments ST 15
22.01.28SPW018	P	Plastic ST 15
22.01.28SPW019	P	Plastic ST 15
22.01.28SPW020	P	Miscellaneous metal ST 15
22.01.28SPW021	P	Miscellaneous metal ST 15
22.01.28SPW022	P	Brick fragments ST 15
22.01.28SPW023	P	Brick fragments ST 15

Number	View	Description
22.01.28SPW024	P	Nails ST 15
22.01.28SPW025	P	Glass ST 15
22.01.28SPW026	P	Ceramic ST 15
22.01.28SPW027	P	Ceramic ST 15
22.01.28SPW028	E	ST 24 with scale
22.01.28SPW029	E	ST 24 without scale
22.01.28SPW030	N	ST 24 overview with ERCI at ST 23
22.02.03ESD001	S	ST 32 with scale
22.02.03ESD002	S	ST 32 without scale
22.02.03ESD003	SW	ST 32 overview w/ ST 31 in background
22.02.03ESD004	P	Amber glass fragment (int.)
22.02.03ESD005	P	Amber glass fragment (ext.)
22.02.03ESD006	E	ST 34 with scale
22.02.03ESD007	E	ST 34 without scale
22.02.03ESD008	S	ST 34 overview, view of slope resulting from road cut
22.02.03ESD009	SW	View of cut and fill stretch of 5th St
22.02.03ESD010	S	ST 37 with scale
22.02.03ESD011	S	ST 37 without scale
22.02.03ESD012	SE	ST 37 overview with street sign
22.02.03ESD013	P	4x4 from ST 37
22.02.03ESD014	NE	View of cut and fill on 5th St near ST 34
22.02.03ESD015	N	View of cut and fill on 5th St near ST 34
22.02.03REO001	N	ST 31 with scale
22.02.03REO002	N	ST 31 without scale
22.02.03REO003	N	Overview ST 31
22.02.03REO004	E	ST 33 with scale
22.02.03REO005	E	ST 33 without scale
22.02.03REO006	S	Overview ST 33
22.02.03REO007	P	Plastic from ST33
22.02.03REO008	P	Brown glass from ST33
22.02.03REO009	P	Colorless glass from ST33
22.02.03REO010	N	ST 35 with scale
22.02.03REO011	N	ST 35 without scale
22.02.03REO012	S	Copper pipe in ST 35
22.02.03REO013	N	Overview of ST 35
22.02.03REO014	N	ST 36 with scale
22.02.03REO015	N	ST 36 without scale
22.02.03REO016	N	Overview of ST 36
22.02.03REO017	S	ST 38 with scale
22.02.03REO018	S	ST 38 without scale
22.02.03REO019	S	Overview of ST 38
22.02.03REO020	P	Colorless glass from ST38

Appendix 3: Unanticipated Discovery Protocol

In the event that any ground-disturbing activities or other project activities related to this development or any future development uncover protected cultural material (see below), the following actions should be taken:

1. If the cultural material is a historic or precontact object (glass bottle, tin can, stone, bone, horn or antler tool); a historic or precontact feature (hearth, building foundation, privy), then the on-site supervisor should avoid the object, secure the location and relocate work activities to a different part of the Project area. The Project manager should then call a professional archaeologist to evaluate the discovery.
2. If ground disturbing activities encounter human skeletal remains during the course of construction, then all activity will cease that may cause further disturbance to those remains. The area of the find will be secured and protected from further disturbance. The finding of human skeletal remains will be reported to the Snohomish County Medical Examiner (455-438-6200) and Mukilteo Police Department (425-263-8100) in the most expeditious manner possible. The remains will not be touched, moved, or further disturbed. The county medical examiner/coroner will assume jurisdiction over the human skeletal remains and make a determination of whether those remains are forensic or non-forensic. If the county medical examiner/coroner determines the remains are non-forensic, then they will report that finding to the Department of Archaeology and Historic Preservation (DAHP) who will then take jurisdiction over the remains. The DAHP will notify any appropriate cemeteries and all affected tribes of the find. The State Physical Anthropologist, Dr. Guy Tasa (360-790-1633), will make a determination of whether the remains are Native American or Non-Native American and report that finding to any appropriate cemeteries and the affected tribes. The DAHP will then handle all consultation with the affected parties as to the future preservation, excavation, and disposition of the remains.

Cultural material that may be protected by law could include but is not limited to:

- Logging, mining, railroad, or agriculture equipment older than 50 years
- Historic bottles, ceramic and soldered dot cans (Figure 27, Figure 28)
- Buried cobbles that may indicate a hearth feature (Figure 29)
- Non-natural sediment or stone deposits that may be related to activity areas of people
- Stone tools or stone flakes, projectile points (arrowheads), ground stone adzes or grinding stones (abraders) (Figure 30–Figure 33)
- Bone, shell, horn, or antler tools that may include scrapers, cutting tools, wood working wedges (Figure 34, Figure 35)
- Human remains

Figure 27: Example of historic glass artifacts for UDP.

Figure 28: Example of historic solder dot can for UDP

Figure 29: Example of protected rock-lined hearth feature for UDP.

Figure 30: Example of projectile point for UDP.

Figure 31: Example of protected adze blade for UDP.

Figure 32: Example of stone tool for UDP.

Figure 33: Example of stone tool for UDP.

Figure 34: Example of bone awl for UDP.

Figure 35: Example of worked bone, beak and spines for UDP.

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