

Carlson Geotechnical

A Division of Carlson Testing, Inc.

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**Report of
Infiltration Testing
Santiam Street Duplexes
1100 E Santiam Street
Marion County, Oregon**

CGT Project Number G2506341

Prepared for

Sly Toran
12309 Miller Road
Gervais, Oregon 97026

February 25, 2025

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Dear Sly Toran:

Carlson Geotechnical (CGT), a division of Carlson Testing, Inc. (CTI), is pleased to submit this report summarizing the results of our infiltration testing services for the proposed Santiam Street Duplexes project. The site is located at 1100 E Santiam Street in Marion County, Oregon. We performed our work in general accordance with CGT Proposal GP25-022, dated January 17, 2025. Written authorization for our services was received on January 21, 2025.

We appreciate the opportunity to work with you on this project. Please contact us at (503) 601-8250 if you have any questions regarding this report.

Respectfully Submitted,
CARLSON GEOTECHNICAL



EXPIRES: 6/30/2026

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1.0 INTRODUCTION

Carlson Geotechnical (CGT), a division of Carlson Testing, Inc. (CTI), is pleased to submit this report summarizing the results of our infiltration testing services for the proposed Santiam Street Duplexes project. The site is located at 1100 E Santiam Street in Marion County, Oregon, as shown on the Site Location, attached as Figure 1.

1.1 Project Information

CGT developed an understanding of the proposed project based on our correspondence with our client and review of a marked up site plan showing infiltration testing locations, provided via email on January 10, 2025. Based on our review, we understand the project will include:

- Construction of two residential duplexes structures in the northern portion of the site. No details were provided regarding the future residential structures, but we anticipate each structure will be one- to two-stories, wood-framed, and incorporate slab on grade ground floors or post and beam floor construction (crawlspaces).
- Construction of a new driveway to serve the new structures.
- Although no stormwater management plans have been provided, we understand that, if conditions allow, stormwater collected from new impervious areas of the site will be disposed of, at least in part, via onsite infiltration. Design of on-site stormwater facilities, if incorporated, will rest with others. Infiltration testing was requested at two locations at depths of about 4 feet below ground surface (bgs) as part of this assignment.

No geotechnical engineering recommendations were requested for structural aspects (i.e. foundations, floor slabs, etc.) associated with the planned duplexes.

1.2 Scope of Work

Our scope of work included the following:

- Contact the Oregon Utilities Notification Center to mark the locations of public utilities at the site within a 30-foot radius of our planned exploration locations.
- Explore subsurface conditions at the site by advancing twelve hand auger borings and observing the excavation of three test pits to depths of up to about 10 feet bgs.
- Conduct infiltration testing in two of the test pits. Results of the infiltration testing are presented below.
- Classify the soils encountered in the explorations in general accordance with ASTM D2488 (Visual-Manual Procedure).
- Collect representative, disturbed soil samples from within the explorations in order to perform laboratory testing and to confirm our field classifications.
- Provide a site vicinity map and a site plan showing the locations of the explorations relative to existing site features.
- Provide logs of the explorations, including results of laboratory testing on selected soil samples.
- Provide this written report summarizing the results of our infiltration testing services.

2.0 SITE DESCRIPTION

2.1 Site Geology

Based on available geologic mapping¹ of the area, the site is underlain by Quaternary alluvium deposits. The alluvium deposits consist of poorly sorted gravel, sand, and silt deposited within active river and creek channels and within their floodplains. Based on review of nearby well logs, the alluvium may be up to about 40 feet thick in the vicinity of the site and is underlain by the Wanapum & Grande Ronde basalts of the Columbia River Basalt group (CRB). CRB consists of numerous fine-grained lava flows that primarily erupted from fissures in eastern Washington and Oregon and western Idaho during the Miocene (23.8 to 5.3 million years ago). Many individual flows are interbedded with thin paleosols that consist of clay-rich soils or sediments formed during periods of volcanic inactivity. The basalt, which has a flow thickness between 40 and 100 feet thick, features jointed patterns ranging from columnar to entablature/colonnade, and is described as having fresh exposures that are dark gray to black, while weathered exposures are red-brown to gray-brown.

2.2 Site Surface Conditions

The site is bordered by residential properties to the south, west, and east, and E Santiam Street to the north. At the time of our field investigation, the relatively level site was occupied by an existing residential structure and a gravel-surfaced driveway. The remainder of the site was covered with short grasses, bushes, and trees. Site layout and surface conditions at the time of our field investigation are shown on the attached Site Plan (Figure 2) and Site Photographs (Figure 3).

2.3 Subsurface Conditions

2.3.1 Subsurface Investigation & Laboratory Testing

Our subsurface investigation consisted of twelve hand auger borings (HA-1 through HA-12) and three test pits (TP-1 through TP-3) completed between January 31, 2024, and February 10, 2025. The approximate exploration locations are shown on the Site Plan, attached as Figure 2. In summary, the borings were advanced to practical refusal depths ranging from about 2 to 3½ feet bgs, and the test pits were excavated to depths ranging from about 5 to 10 feet bgs. Details regarding the subsurface investigation, logs of the explorations, and results of laboratory testing are presented in Appendix A. Subsurface conditions encountered during our investigation are summarized below.

2.3.2 Subsurface Materials

Logs of the explorations are presented in Appendix A. The following describes each of the subsurface materials encountered at the site.

Undocumented Poorly Graded Gravel Fill (GP Fill)

Undocumented poorly graded gravel fill was encountered at the surface of HA-10 through HA-12. Undocumented fill refers to materials placed without (available) records of subgrade conditions or evaluation of compaction. This soil was typically gray, moist, angular, and up to about ¾-inch in diameter. This soil extended to depths of about ½-foot bgs in those borings.

¹ McClaughry, J.D., Wiley, T.J., Ferns, M.L., and Madin, I.P., 2010. Geology of the Southern Willamette Valley Oregon: Department of Geology and Mineral Industries, Open File Report O-10-03 scale 1:63,360.

Undocumented Organic Soil Fill (OL Fill)

Undocumented organic soil fill was encountered at the surface of TP-1 and TP-2. This soil was typically dark brown, moist, exhibited low plasticity, and contained abundant rootlets. This soil extended to depths of about ½-foot bgs in those test pits.

Undocumented Silt Fill (ML Fill)

Undocumented silt fill was encountered below the organic soil fill in TP-1 and TP-2. This soil was typically dark brown, moist, exhibited low plasticity, and contained abundant rootlets. This soil extended to depths of about 1½ to 2 feet bgs in those test pits.

Organic Soil (OL)

Organic soil was encountered at the surface of HA-1 through HA-9, and TP-3. This soil was typically brown, moist, exhibited low plasticity, and contained trace rounded to subrounded gravel up to ½ inch in diameter. This soil extended to depths of about ½-foot bgs in those explorations.

Silty Gravel (GM), Poorly Graded Gravel with Silt (GP/GM)

Underlying the organic silt in HA-1 through HA-9 and TP-3, the gravel fill in HA-10 through HA-12, and the silt fill in TP-1 and TP-2 was silty gravel (GM) and poorly graded gravel with silt (GP/GM). This soil was typically very dense, gray, moist, subrounded to rounded, and contained cobbles up to about 8 inches in diameter and variable amounts of low plasticity silt. Trace small boulders up to 1-foot diameter were observed in TP-1 at about 9 feet bgs. The gravelly materials extended to the full depths explored in the explorations, about 2 to 10 feet bgs.

2.3.3 Groundwater

Groundwater was encountered at a depth of about 9 feet bgs in TP-1 excavated on February 10, 2025. No groundwater was encountered in the borings advanced in late January 2025, or within the remaining test pits excavated in early February 2025. To determine approximate regional groundwater levels in the area, we researched well logs available on the Oregon Water Resources Department (OWRD)² website for wells located within Section 11, Township 9 South, Range 1 West, Willamette Meridian. Our review indicated that groundwater levels in the area generally ranged from about 10 to 20 feet bgs. More shallow water zones were reported at depths of about 8 feet bgs. It should be noted groundwater levels vary with local topography. In addition, the groundwater levels reported on the OWRD logs often reflect the purpose of the well, so water well logs may only report deeper, confined groundwater, while geotechnical or environmental borings will often report any groundwater encountered, including shallow, unconfined groundwater. Therefore, the levels reported on the OWRD well logs referenced above are considered generally indicative of local water levels and may not reflect actual groundwater levels at the project site. We anticipate that groundwater levels will fluctuate due to seasonal and annual variations in precipitation, changes in site utilization, or other factors.

3.0 INFILTRATION TESTING

3.1 Test Procedure

Two infiltration tests (IT-1 and IT-2) were performed at the site in general accordance with the Open Pit Falling Test method as described in Appendix B of the June 2022 Marion County Stormwater Quality Treatment Engineering Standards manual.

² Oregon Water Resources Department, 2025. Well Log Records, accessed February 2025, from OWRD web site: http://apps.wrd.state.or.us/apps/gw/well_log/.

At each test location, a 2-foot by 2-foot hole was excavated at the infiltration test depths. A thin layer of fine gravel was placed on the exposed subgrade, and each excavation was filled with a minimum 12 inches of water. The water within IT-1 seeped away in about 30 minutes, and we were unable to maintain a 12 inch head of water. We were able to maintain a 12 inch head of water within IT-2, and the soil was allowed to soak for at least 4 hours. Within each test pit, any sloughed soil was removed, and the water level was adjusted to 6 inches above the gravel. The drop in water was measured in 10 minute intervals until all the water had drained. This was repeated until two successive trials did not vary more than 5 percent.

A total of four trials were conducted for IT-1 and a total of three trials were conducted for IT-2. Measurements were taken with a tape measure and recorded to the nearest one-eighth of an inch.

3.2 Infiltration Test Results

The following tables present the details, raw data, and calculated infiltration rates observed during testing. Please note that the calculated infiltration rates do not include any safety or correction factors.

Table 1 Results of Infiltration Test IT-1

Location:	Marion County (Stayton)	Date:	2-10-25	Exploration Number:	TP-2
Test Method:	Open Pit Falling Head Infiltration Test	Inner Diameter of Hole:	2-foot by 2-foot	Infiltration Test Depth:	4 feet
Soil at infiltration test depth:		Silty Gravel (GM)		see exploration log for detail	
Presaturation Start Time:		11:00 a.m.	Presaturation Notes:	Initial 12 inches of water seeped out in 26 minutes.	
Presaturation End Time:		11:26 a.m.			
Time (PM)	Time Interval	Measurement	Drop in Water level	Infiltration Rate**	Remarks
	(Minutes)	(inches)*	(inches)	(inches per hour)	
11:36	0	41¾	---	---	Water removed to provide 6-inch head.
11:45	9	47¾	6	40%	Trial 1 concluded
Trial 2 Initiated					
11:55	10	41¾	---	---	Water added to provide 6-inch head.
12:05	11	47¾	6	---	
12:06	0.4	47¾	½	18¾	Trial 2 concluded
Trial 3 initiated					
12:16	10	41¾	---	---	Water added to provide 6-inch head.
12:26	10	46¾	5½	---	
12:28	1.8	47¾	¾	29%	Trial 3 concluded
Trial 4 initiated					
12:38	10	41¾	---	---	Water added to provide 6-inch head.
12:48	10	46%	4½	---	
12:50	2.2	47¾	1½	30%	Trial 4 concluded
* Measured to nearest 1/8 inch using a measuring tape					
** Values calculated are raw (unfactored) rates.					

Table 2 Results of Infiltration Test IT-2

Location:	Marion County (Stayton)	Date:	2-10-25	Exploration Number:	TP-3
Test Method:	Open Pit Falling Head Infiltration Test	Inner Diameter of Hole:	2-foot by 2-foot	Infiltration Test Depth:	4 feet
Soil at infiltration test depth:	Poorly Graded Gravel with Silt (GP/GM)	see exploration log for detail			
Presaturation Start Time:	10:00 a.m.	Presaturation Notes:	Water added 4 times during presaturation to maintain 12 inch head.		
Presaturation End Time:	2:00 p.m.				
Time (PM)	Time Interval	Measurement	Drop in Water level	Infiltration Rate**	Remarks
	(Minutes)	(inches)*	(inches)	(inches per hour)	
2:10	0	41½	---	---	Water removed to provide 6-inch head.
2:30	10	42¾	1¾	---	
2:30	10	44¼	1¼	---	
2:40	10	45½	1¾	---	
2:50	10	46½	1	---	
3:00	10	47½	1	6	Trial 1 concluded
Trial 2 Initiated					
3:10	10	41½	---	---	Water added to provide 6-inch head.
3:20	10	43	1½	---	
3:30	10	44¼	1¼	---	
3:40	10	45¼	1	---	
3:50	10	46¾	1¾	---	
4:00	10	47½	1¾	6¾	Trial 2 concluded
Trial 3 initiated					
4:10	10	41½	---	---	Water added to provide 6-inch head.
4:20	10	42½	1	---	
4:30	10	43¾	1¾	---	
4:40	10	45¼	1¾	---	
4:50	10	46½	1¼	---	
5:00	10	47½	1	6	Trial 3 concluded
* Measured to nearest 1/8 inch using a measuring tape					
** Values calculated are raw (unfactored) rates.					

4.0 GEOTECHNICAL REVIEW & DISCUSSION

4.1 Infiltration Rates

Per the above referenced test procedure: *"The result of the last water level drop is used to calculate the tested infiltration rate"*. Accordingly, the raw (unfactored) tested infiltration test rates were 30¾ inches per hour for IT-1 and 6 inches per hour for IT-2. The difference in the infiltration rates is anticipated to be attributable to the varying amounts of fines (silt) in the soils.

Per Section B.1 of the above referenced manual: *"a minimum factor or safety of 2 must be applied to the measured native infiltration rate to obtain the design infiltration rate"*. Accordingly, design infiltration rates are 15¾ and 3 inches per hour for IT-1 and IT-2, respectively.

Once the infiltration facility design is completed, we recommend the infiltration system design (provided by others) and location be reviewed by CGT. If the location and/or depth of the system changes from what was indicated at the time of our fieldwork, additional testing may be recommended.

4.2 Seasonal High Groundwater Level

Groundwater was encountered at a depth of about 9 feet bgs in TP-1 excavated at the site on February 10, 2025. Based on our explorations and review of publicly available logs of water well logs in the site's vicinity, we recommend the seasonal high groundwater level at this site be assigned at a depth of 8 feet bgs. In the event refinement of the groundwater level is required for stormwater facility design, additional subsurface explorations could be performed at different time of year and/or piezometers could be installed at the site. Such work is outside the scope of this current assignment but could be performed, upon request, for an additional fee.

5.0 LIMITATIONS

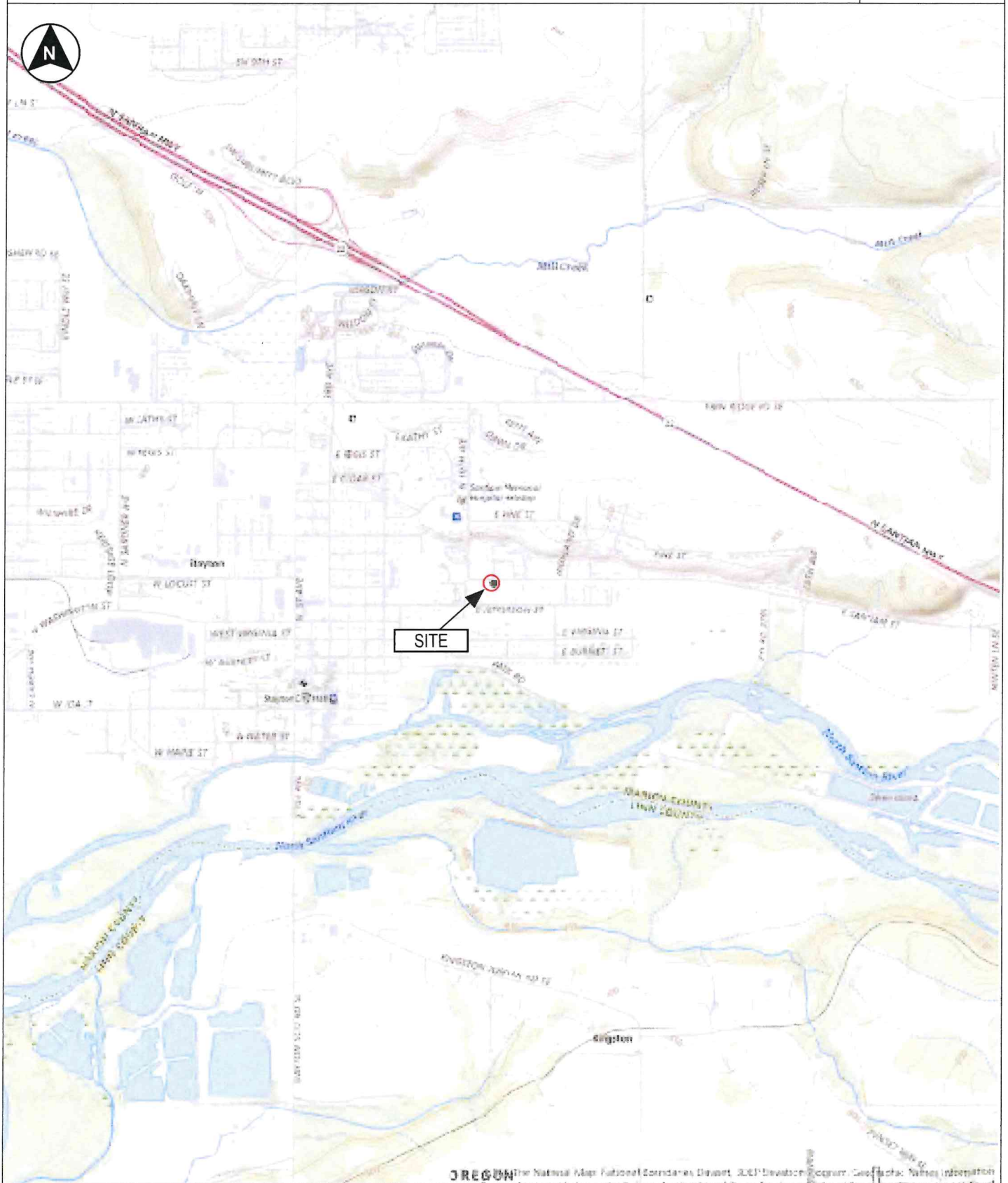
We have prepared this report for use by the owner/developer and other members of the design and construction team for the proposed development. The opinions and test results contained within this report are forwarded to assist in the planning and design process and are not intended to be, nor should they be construed as, a warranty of subsurface conditions.

We have provided test results based on our observations and testing that indicate the soil conditions at the time of our testing at only those specific locations and only to the depths penetrated. These observations do not necessarily reflect soil types, strata thickness, or water level variations that may exist at the site. If subsurface conditions vary from those encountered in our exploration, CGT should be alerted to the change in conditions so that we may provide additional observations, if necessary. Observation by experienced geotechnical personnel should be considered an integral part of the construction process.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with the generally accepted practices in this area at the time this report was prepared. No warranty or other conditions express or implied should be understood. This report is subject to review and should not be relied upon after a period of 3 years.

SANTIAM STREET DUPLEXES - STAYTON, OREGON
Project Number G2506341

FIGURE 1
Site Location



Drafted by: MDI

USGS Topographic base map created with The National Map, 2025, at
<https://viewer.nationalmap.gov/advanced-viewer/>

Township 9 South, Range 1 West, Section 11, Willamette Meridian

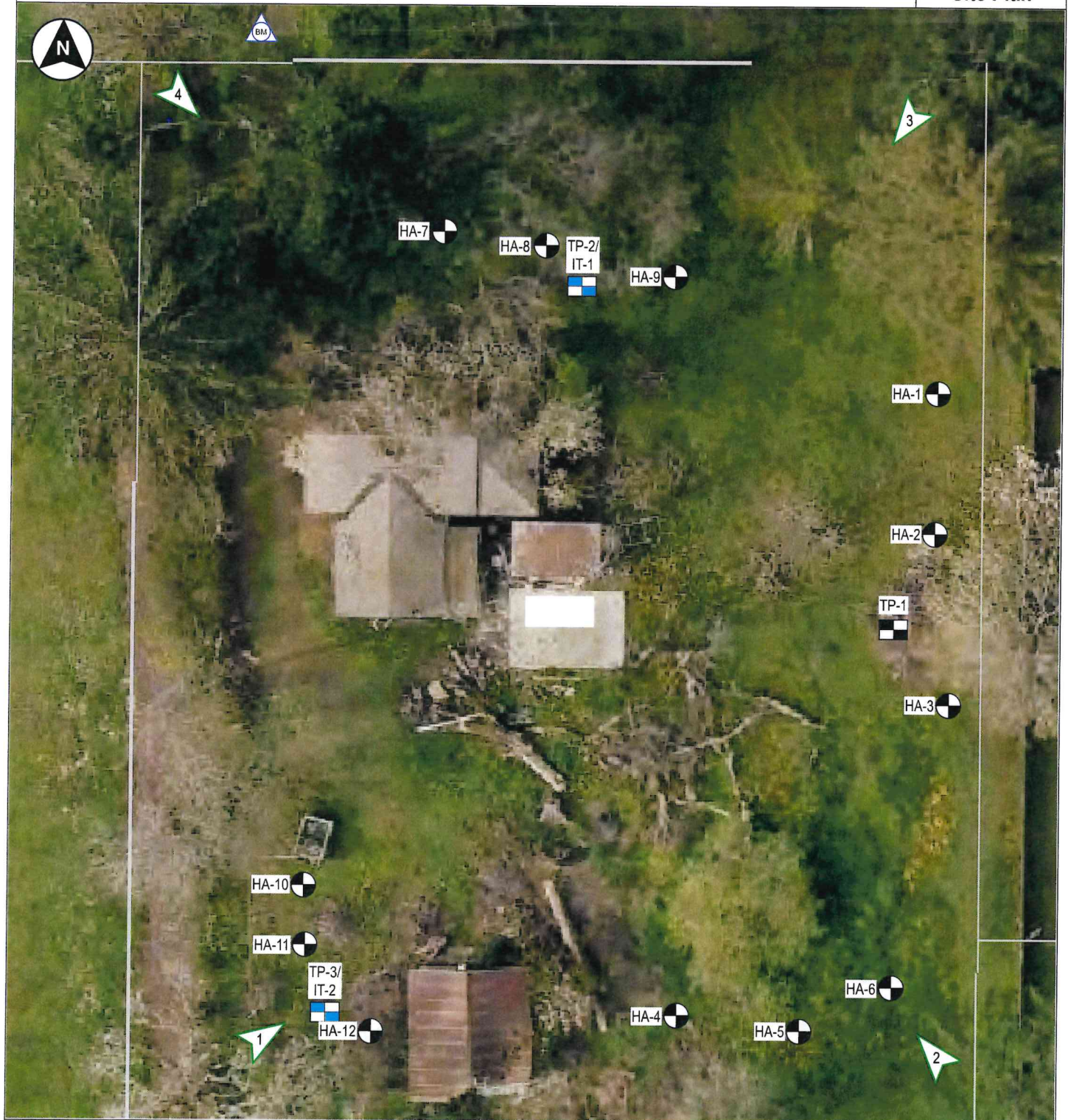
Latitude: 44.802358° North
 Longitude: 122.782637° West

1 Inch = 2,000 feet



SANTIAM STREET DUPLEXES - STAYTON, OREGON
Project Number G2506341

FIGURE 2
Site Plan



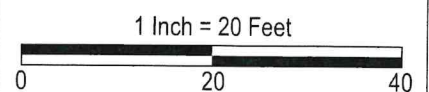
LEGEND

- | | | | | |
|-----------|--|--|--|--|
| HA-1 | | Hand auger boring advanced on January 31, 2025. | | Orientation of site photographs shown on Figure 3 |
| TP-1 | | Test pit excavated on February 10, 2025. | | Elevation benchmark - Assumed 100-foot elevation at the surface of Santiam Street. |
| TP-2/IT-1 | | Test pit and infiltration test excavated on February 10, 2025. | | |



Drafted by: MDL

NOTES: Drawing based on observations made while on site. 2023 aerial photograph from Marion County Mapping System <https://marioncounty.maps.arcgis.com/>. All locations are approximate.





Photograph 1



Photograph 2



Photograph 3



Photograph 4



See Figure 2 for approximate photograph locations and directions. Photographs were taken at the time of our fieldwork.

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Appendix A: Subsurface Investigation and Laboratory Testing

**Santiam Street Duplexes
1100 E Santiam Street
Marion County, Oregon**

CGT Project Number G2506341

February 25, 2025

Prepared For:

Sly Toran
12309 Miller Road
Gervais, Oregon 97026

Prepared by
Carlson Geotechnical

Exploration Key.....	Figure A1
Soil Classification.....	Figure A2
Exploration Logs	Figures A3 – A17

A.1.0 SUBSURFACE INVESTIGATION

Our field investigation consisted of twelve borings and three test pits completed between January 31, 2025, and February 10, 2025. The exploration locations are shown on the Site Plan, attached to the geotechnical report as Figure 2. The exploration locations shown therein were determined based on measurements from existing site features (buildings, etc.) and are approximate. Surface elevations indicated on the logs were estimated based on a temporary benchmark (assumed 100-foot elevation at the surface of Santiam Street) shown on the referenced Site Plan and are approximate. The attached figures detail the exploration methods (Figure A1), soil classification criteria (Figure A2), and present detailed logs of the explorations (Figures A3 through A17), as discussed below.

A.1.1 Hand Auger Borings

CGT advanced twelve hand auger borings (HA-1 through HA-12) at the site to practical refusal depths of about 2 to 3½ feet bgs. The borings were advanced using a manual, 3-inch-diameter hand auger. The borings were terminated due to practical refusal, which occurs when the auger cannot be advanced further, often due to coarse gravel particles in the soil. The hand auger borings were loosely backfilled with the excavated materials upon completion.

A.1.2 Test Pits

CGT observed the excavation of three test pits (TP-1 through TP-3) at the site to depths of about 5 to 10 feet bgs. The test pits were excavated using a JCB 55 Z-1 mini-excavator provided and operated provided by the client. The test pits were loosely backfilled with the excavated materials upon completion.

A.1.3 In-Situ Testing - Infiltration Tests

CGT performed two infiltration tests (IT-1 and IT-2) at the site within test pits TP-2 and TP-3. Details regarding the test procedure and results of the tests are presented in the main report.

A.1.4 Material Classification & Sampling

Representative disturbed (grab) samples of the soils encountered were obtained at select intervals within the test pits. A qualified member of CGT's geotechnical staff collected the samples and logged the soils in general accordance with the Visual-Manual Procedure (ASTM D2488). An explanation of this classification system is attached as Figure A2. The grab samples were stored in sealable plastic bags and transported to our soils laboratory for further examination and testing. Our geotechnical staff visually examined all samples in order to refine the initial field classifications.

A.1.5 Subsurface Conditions

Subsurface conditions are summarized in Section 2.3 of the geotechnical report. Detailed logs of the explorations are presented on the attached exploration logs, Figures A3 through A17.

A.2.0 LABORATORY TESTING

Laboratory testing was performed on samples collected in the field to refine our initial field classifications and determine in-situ parameters. Laboratory testing included two percentage passing the U.S. Standard No. 200 Sieve tests (ASTM D1140). Results of the laboratory tests are shown on the exploration logs.

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FIGURE A1
Exploration Key



Atterberg limits (plasticity) test results (ASTM D4318): PL = Plastic Limit, LL = Liquid Limit, and MC= Moisture Content (ASTM D2216)

□ FINES CONTENT (%) Percentage passing the U.S. Standard No. 200 Sieve (ASTM D1140)

SAMPLING

GRAB

Grab sample

BULK

Bulk sample

SPT

Standard Penetration Test (SPT) consists of driving a 2-inch, outside-diameter, split-spoon sampler into the undisturbed formation with repeated blows of a 140-pound, hammer falling a vertical distance of 30 inches (ASTM D1586). The number of blows (N-value) required to drive the sampler the last 12 inches of an 18-inch sample interval is used to characterize the soil consistency or relative density. The drill rig was equipped with an cat-head or automatic hammer to conduct the SPTs. The observed N-values, hammer efficiency, and N_{60} are noted on the boring logs.

MC

Modified California sampling consists of 3-inch, outside-diameter, split-spoon sampler (ASTM G3550) driven similarly to the SPT sampling method described above. A sampler diameter correction factor of 0.44 is applied to calculate the equivalent SPT N_{60} value per Lacroix and Horn, 1973.

CORE

Rock Coring interval

SH

Shelby Tube is a 3-inch, inner-diameter, thin-walled, steel tube push sampler (ASTM D1587) used to collect relatively undisturbed samples of fine-grained soils.

WDCP

Wildcat Dynamic Cone Penetrometer (WDCP) test consists of driving 1.1-inch diameter, steel rods with a 1.4-inch diameter, cone tip into the ground using a 35-pound drop hammer with a 15-inch free-fall height. The number of blows required to drive the steel rods is recorded for each 10 centimeters (3.94 inches) of penetration. The blow count for each interval is then converted to the corresponding SPT N_{60} values.

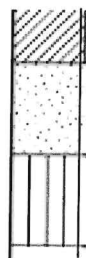
DCP

Dynamic Cone Penetrometer (DCP) test consists of driving a 20-millimeter diameter, hardened steel cone on 16-millimeter diameter steel rods into the ground using a 10-kilogram drop hammer with a 460-millimeter free-fall height. The depth of penetration in millimeters is recorded for each drop of the hammer.

POCKET
PEN. (tsf)

Pocket Penetrometer test is a hand-held instrument that provides an approximation of the unconfined compressive strength in tons per square foot (tsf) of cohesive, fine-grained soils.

CONTACTS



Observed (measured) contact between soil or rock units.

Inferred (approximate) contact between soil or rock units.

Transitional (gradational) contact between soil or rock units.

ADDITIONAL NOTATIONS

Italics

Notes drilling action or digging effort


{ Braces }

Interpretation of material origin/geologic formation (e.g. { Base Rock } or { Columbia River Basalt })



All measurements are approximate.

FIGURE A2
Soil Classification

Classification of Terms and Content				Grain Size		U.S. Standard Sieve		
NAME: Group Name and Symbol Relative Density or Consistency Color Moisture Content Plasticity Other Constituents Other: Grain Shape, Approximate Gradation Organics, Cement, Structure, Odor, etc. Geologic Name or Formation				Fines		<#200 (0.075 mm)		
				Sand	Fine	#200 - #40 (0.425 mm)		
					Medium	#40 - #10 (2 mm)		
					Coarse	#10 - #4 (4.75 mm)		
				Gravel	Fine	#4 - 0.75 inch		
					Coarse	0.75 inch - 3 inches		
				Cobbles	3 to 12 inches			
				Boulders	> 12 inches			
Coarse-Grained (Granular) Soils								
Relative Density		Minor Constituents						
SPT N ₆₀ -Value	Density	Percent by Volume		Descriptor		Example		
0 - 4	Very Loose	0 - 5%		"Trace" as part of soil description		"trace silt"		
4 - 10	Loose	5 - 15%		"With" as part of group name		"POORLY GRADED SAND WITH SILT"		
10 - 30	Medium Dense	15 - 49%		Modifier to group name		"SILTY SAND"		
30 - 50	Dense							
>50	Very Dense							
Fine-Grained (Cohesive) Soils								
SPT N ₆₀ -Value	Torvane tsf Shear Strength	Pocket Pen tsf Unconfined	Consistency	Manual Penetration Test		Minor Constituents		
<2	<0.13	<0.25	Very Soft	Thumb penetrates more than 1 inch		Percent by Volume	Descriptor	Example
2 - 4	0.13 - 0.25	0.25 - 0.50	Soft	Thumb penetrates about 1 inch				
4 - 8	0.25 - 0.50	0.50 - 1.00	Medium Stiff	Thumb penetrates about ¼ inch				
8 - 15	0.50 - 1.00	1.00 - 2.00	Stiff	Thumb penetrates less than ¼ inch				
15 - 30	1.00 - 2.00	2.00 - 4.00	Very Stiff	Readily indented by thumbnail				
>30	>2.00	>4.00	Hard	Difficult to indent by thumbnail		30 - 49%	Modifier to group name	"SANDY SILT"
Moisture Content				Structure				
Dry: Absence of moisture, dusty, dry to the touch				Stratified: Alternating layers of material or color >6 mm thick				
Moist: Leaves moisture on hand				Laminated: Alternating layers < 6 mm thick				
Wet: Visible free water, likely from below water table				Fissured: Breaks along definite fracture planes				
	Plasticity	Dry Strength	Dilatancy	Toughness	Slickensided: Striated, polished, or glossy fracture planes			
ML	Non to Low	Non to Low	Slow to Rapid	Low, can't roll	Blocky: Cohesive soil that can be broken down into small angular lumps which resist further breakdown			
CL	Low to Medium	Medium to High	None to Slow	Medium	Lenses: Has small pockets of different soils, note thickness			
MH	Medium to High	Low to Medium	None to Slow	Low to Medium	Homogeneous: Same color and appearance throughout			
CH	Medium to High	High to Very High	None	High				
Visual-Manual Classification								
Major Divisions			Group Symbols	Typical Names				
Coarse Grained Soils: More than 50% retained on No. 200 sieve	Gravels: 50% or more retained on the No. 4 sieve	Clean Gravels	GW	Well-graded gravels and gravel/sand mixtures, little or no fines				
		Gravels with Fines	GP	Poorly-graded gravels and gravel/sand mixtures, little or no fines				
			GM	Silty gravels, gravel/sand/silt mixtures				
			GC	Clayey gravels, gravel/sand/clay mixtures				
	Sands: More than 50% passing the No. 4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines				
		Sands with Fines	SP	Poorly-graded sands and gravelly sands, little or no fines				
			SM	Silty sands, sand/silt mixtures				
			SC	Clayey sands, sand/clay mixtures				
			Silt and Clays Low Plasticity Fines	ML	Inorganic silts, rock flour, clayey silts			
		CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays				
Silt and Clays High Plasticity Fines	OL	Organic soil of low plasticity						
	MH	Inorganic silts, clayey silts						
	CH	Inorganic clays of high plasticity, fat clays						
	OH	Organic soil of medium to high plasticity						
Highly Organic Soils			PT	Peat, muck, and other highly organic soils				
<div></div> <div><p>References: ASTM D2487 <i>Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)</i> ASTM D2488 <i>Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)</i> Terzaghi, K., and Peck, R.B., 1948, <i>Soil Mechanics in Engineering Practice</i>, John Wiley & Sons.</p></div>								



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FIGURE A3

Boring HA-01

PAGE 1 OF 1

CLIENT Sly Toran

PROJECT NAME Santiam Street Duplexes

PROJECT NUMBER G2506341

PROJECT LOCATION 1100 E Santiam Street - Marion County, Oregon

DATE STARTED 1/31/25 GROUND ELEVATION 99 ft

ELEVATION DATUM See Figure 2

WEATHER Rain SURFACE Grass

LOGGED BY MDL REVIEWED BY BMW

DRILLING CONTRACTOR CGT

SEEPAGE ---

EQUIPMENT 3-inch diameter hand auger

GROUNDWATER DURING DRILLING ---

DRILLING METHOD Hand Auger

GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N _{SPT} VALUE)	N ₆₀ VALUE	DRY UNIT WT. (pcf)	▲ SPT N _{SPT} VALUE ▲ <div>PL —●— LL MC</div> <div><input type="checkbox"/> FINES CONTENT (%) <input type="checkbox"/></div>
98		OL	ORGANIC SOIL: Dark brown, moist, low plasticity, and contained abundant rootlets.		0						0 20 40 60 80 100
96		GM	SILTY GRAVEL: <i>Very dense</i> , gray, moist, subrounded to rounded gravel up to ¾ inch diameter, and low to medium plasticity silt. Gravel and cobbles up to 3 inches diameter below about 2 feet bgs.		2						
94			<ul style="list-style-type: none">· Boring terminated at about 3½ feet bgs due to practical refusal on coarse particles.· No groundwater or caving encountered.· Boring backfilled with excavated material upon completion.								
92											
90											
88											



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FIGURE A4

Boring HA-02

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CLIENT Sly Toran

PROJECT NAME Santiam Street Duplexes

PROJECT NUMBER G2506341

PROJECT LOCATION 1100 E Santiam Street - Marion County, Oregon

DATE STARTED 1/31/25

GROUND ELEVATION 99 ft

ELEVATION DATUM See Figure 2

WEATHER Rain

SURFACE Grass

LOGGED BY MDL

REVIEWED BY BMW

DRILLING CONTRACTOR CGT

SEEPAGE ---

EQUIPMENT 3-inch diameter hand auger

GROUNDWATER DURING DRILLING ---

DRILLING METHOD Hand Auger

GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N _{SPT} VALUE)	N ₆₀ VALUE	DRY UNIT WT. (pcf)	▲ SPT N _{SPT} VALUE ▲	
											PL	LL
					0							
98		OL	ORGANIC SOIL: Dark brown, moist, low plasticity, and contained abundant rootlets.									
			SILTY GRAVEL: <i>Very dense</i> , gray, moist, subrounded to rounded gravel up to ¾ inch diameter, and low to medium plasticity silt.									
					2							
96		GM	Gravel and cobbles up to 3 inches diameter below about 2 feet bgs.									
94												
92												
90												
88												

· Boring terminated at about 3½ feet bgs due to practical refusal on coarse particles.

· No groundwater or caving encountered.

· Boring backfilled with excavated material upon completion.



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FIGURE A5

Boring HA-03

PAGE 1 OF 1

CLIENT Sly Toran

PROJECT NAME Santiam Street Duplexes

PROJECT NUMBER G2506341

PROJECT LOCATION 1100 E Santiam Street - Marion County, Oregon

DATE STARTED 1/31/25

GROUND ELEVATION 99 ft

ELEVATION DATUM See Figure 2

WEATHER Rain

SURFACE Grass

LOGGED BY MDL

REVIEWED BY BMW

DRILLING CONTRACTOR CGT

SEEPAGE ---

EQUIPMENT 3-inch diameter hand auger

GROUNDWATER DURING DRILLING ---

DRILLING METHOD Hand Auger

GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N _{SPT} VALUE)	N ₆₀ VALUE	DRY UNIT WT. (pcf)	▲ SPT N _{SPT} VALUE ▲	
											PL	LL
					0							
98		OL	ORGANIC SOIL: Dark brown, moist, low plasticity, and contained abundant rootlets.									
			SILTY GRAVEL: <i>Very dense</i> , gray, moist, subrounded to rounded gravel up to ¾ inch diameter, and low to medium plasticity silt.									
					2							
96		GM	Gravel and cobbles up to 3 inches diameter below about 2 feet bgs.									
94												
92												
90												
88												

- Boring terminated at about 3½ feet bgs due to practical refusal on coarse particles.
- No groundwater or caving encountered.
- Boring backfilled with excavated material upon completion.



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FIGURE A6

Boring HA-04

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CLIENT Sly Toran

PROJECT NAME Santiam Street Duplexes

PROJECT NUMBER G2506341

PROJECT LOCATION 1100 E Santiam Street - Marion County, Oregon

DATE STARTED 1/31/25

GROUND ELEVATION 99 ft

ELEVATION DATUM See Figure 2

WEATHER Rain

SURFACE Grass

LOGGED BY MDL

REVIEWED BY BMW

DRILLING CONTRACTOR CGT

SEEPAGE ---

EQUIPMENT 3-inch diameter hand auger

GROUNDWATER DURING DRILLING ---

DRILLING METHOD Hand Auger

GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N _{SPT} VALUE)	N ₆₀ VALUE	DRY UNIT WT. (pcf)	▲ SPT N _{SPT} VALUE ▲	
											PL	LL
					0							
98		OL	ORGANIC SOIL: Dark brown, moist, low plasticity, and contained abundant rootlets.									
			SILTY GRAVEL: <i>Very dense</i> , gray, moist, subrounded to rounded gravel up to ¾ inch diameter, and low to medium plasticity silt.									
					2							
96		GM	Gravel and cobbles up to 3 inches diameter below about 2 feet bgs.									
94												
92												
90												
88												

- Boring terminated at about 3½ feet bgs due to practical refusal on coarse particles.
- No groundwater or caving encountered.
- Boring backfilled with excavated material upon completion.



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FIGURE A7

Boring HA-05

PAGE 1 OF 1

CLIENT Sly Toran

PROJECT NAME Santiam Street Duplexes

PROJECT NUMBER G2506341

PROJECT LOCATION 1100 E Santiam Street - Marion County, Oregon

DATE STARTED 1/31/25

GROUND ELEVATION 99 ft

ELEVATION DATUM See Figure 2

WEATHER Rain

SURFACE Grass

LOGGED BY MDL

REVIEWED BY BMW

DRILLING CONTRACTOR CGT

SEEPAGE ---

EQUIPMENT 3-inch diameter hand auger

GROUNDWATER DURING DRILLING ---

DRILLING METHOD Hand Auger

GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N _{SPT} VALUE)	N ₆₀ VALUE	DRY UNIT WT. (pcf)	▲ SPT N _{SPT} VALUE ▲	
											PL	LL
					0							
98		OL	ORGANIC SOIL: Dark brown, moist, low plasticity, and contained abundant rootlets.									
			SILTY GRAVEL: Very dense, gray, moist, subrounded to rounded gravel up to ¾ inch diameter, and low to medium plasticity silt.									
					2							
96		GM	Gravel and cobbles up to 3 inches diameter below about 2 feet bgs.									
94												
92												
90												
88												

- Boring terminated at about 3½ feet bgs due to practical refusal on coarse particles.
- No groundwater or caving encountered.
- Boring backfilled with excavated material upon completion.



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FIGURE A8

Boring HA-06

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CLIENT Sly Toran

PROJECT NAME Santiam Street Duplexes

PROJECT NUMBER G2506341

PROJECT LOCATION 1100 E Santiam Street - Marion County, Oregon

DATE STARTED 1/31/25

GROUND ELEVATION 99 ft

ELEVATION DATUM See Figure 2

WEATHER Rain

SURFACE Grass

LOGGED BY MDL

REVIEWED BY BMW

DRILLING CONTRACTOR CGT

SEEPAGE ---

EQUIPMENT 3-inch diameter hand auger

GROUNDWATER DURING DRILLING ---

DRILLING METHOD Hand Auger

GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N _{SPT} VALUE)	N ₆₀ VALUE	DRY UNIT WT. (pcf)	▲ SPT N _{SPT} VALUE ▲	
											PL	LL
					0							
98		OL	ORGANIC SOIL: Dark brown, moist, low plasticity, and contained abundant rootlets.									
			SILTY GRAVEL: <i>Very dense</i> , gray, moist, subrounded to rounded gravel up to ¾ inch diameter, and low to medium plasticity silt.									
					2							
96		GM	Gravel and cobbles up to 3 inches diameter below about 2 feet bgs.									
94												
92												
90												
88												

- Boring terminated at about 3½ feet bgs due to practical refusal on coarse particles.
- No groundwater or caving encountered.
- Boring backfilled with excavated material upon completion.



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FIGURE A9

Boring HA-07

PAGE 1 OF 1

CLIENT	Sly Toran	PROJECT NAME	Santiam Street Duplexes
PROJECT NUMBER	G2506341	PROJECT LOCATION	1100 E Santiam Street - Marion County, Oregon
DATE STARTED	1/31/25	GROUND ELEVATION	99 ft
WEATHER	Rain	ELEVATION DATUM	See Figure 2
SURFACE	Grass	LOGGED BY	MDL
DRILLING CONTRACTOR	CGT	REVIEWED BY	BMW
EQUIPMENT	3-inch diameter hand auger	SEEPAGE	---
DRILLING METHOD	Hand Auger	GROUNDWATER DURING DRILLING	---
		GROUNDWATER AFTER DRILLING	---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N _{SPT} VALUE)	N ₆₀ VALUE	DRY UNIT WT. (pcf)	▲ SPT N _{SPT} VALUE ▲	
											PL	LL
											MC	
											□ FINES CONTENT (%) □	
											0 20 40 60 80 100	
98		OL	ORGANIC SOIL: Dark brown, moist, low plasticity, and contained abundant rootlets.		0							
		GM	SILTY GRAVEL: <i>Very dense</i> , gray, moist, subrounded to rounded gravel up to ¾ inch diameter, and low to medium plasticity silt. Gravel and cobbles up to 3 inches diameter below about 1 foot bgs.		2							
96		· Boring terminated at about 2 feet bgs due to practical refusal on coarse particles. · No groundwater or caving encountered. · Boring backfilled with excavated material upon completion.										
94												
92												
90												
88												



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FIGURE A10

Boring HA-08

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CLIENT Sly Toran

PROJECT NAME Santiam Street Duplexes

PROJECT NUMBER G2506341

PROJECT LOCATION 1100 E Santiam Street - Marion County, Oregon

DATE STARTED 1/31/25

GROUND ELEVATION 99 ft

ELEVATION DATUM See Figure 2

WEATHER Rain

SURFACE Grass

LOGGED BY MDL

REVIEWED BY BMW

DRILLING CONTRACTOR CGT

SEEPAGE ---

EQUIPMENT 3-inch diameter hand auger

GROUNDWATER DURING DRILLING ---

DRILLING METHOD Hand Auger

GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N _{SPT} VALUE)	N ₆₀ VALUE	DRY UNIT WT. (pcf)	▲ SPT N _{SPT} VALUE ▲	
											PL	LL
											MC	
					0						<input type="checkbox"/> FINES CONTENT (%) <input type="checkbox"/>	0 20 40 60 80 100
98		OL	ORGANIC SOIL: Dark brown, moist, low plasticity, and contained abundant rootlets.									
		GM	SILTY GRAVEL: <i>Very dense</i> , gray, moist, subrounded to rounded gravel up to ¾ inch diameter, and low to medium plasticity silt. Gravel and cobbles up to 3 inches diameter below about 1 foot bgs.		2							
96	<div>· Boring terminated at about 2 feet bgs due to practical refusal on coarse particles.</div> <div>· No groundwater or caving encountered.</div> <div>· Boring backfilled with excavated material upon completion.</div>											
94												
92												
90												
88												



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FIGURE A11

Boring HA-09

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CLIENT Sly Toran

PROJECT NAME Santiam Street Duplexes

PROJECT NUMBER G2506341

PROJECT LOCATION 1100 E Santiam Street - Marion County, Oregon

DATE STARTED 1/31/25

GROUND ELEVATION 99 ft

ELEVATION DATUM See Figure 2

WEATHER Rain

SURFACE Grass

LOGGED BY MDL

REVIEWED BY BMW

DRILLING CONTRACTOR CGT

SEEPAGE ---

EQUIPMENT 3-inch diameter hand auger

GROUNDWATER DURING DRILLING ---

DRILLING METHOD Hand Auger

GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N _{SPT} VALUE)	N ₆₀ VALUE	DRY UNIT WT. (pcf)	▲ SPT N _{SPT} VALUE ▲	
											PL	LL
98		OL	ORGANIC SOIL: Dark brown, moist, low plasticity, and contained abundant rootlets.		0						<div><div></div><div>MC</div><div></div></div> <div><input type="checkbox"/> FINES CONTENT (%) <input type="checkbox"/></div> <div>0 20 40 60 80 100</div>	
		GM	SILTY GRAVEL: <i>Very dense</i> , gray, moist, subrounded to rounded gravel up to ¾ inch diameter, and low to medium plasticity silt. Gravel and cobbles up to 3 inches diameter below about 1 foot bgs.		2							

- Boring terminated at about 2 feet bgs due to practical refusal on coarse particles.
- No groundwater or caving encountered.
- Boring backfilled with excavated material upon completion.



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FIGURE A12

Boring HA-10

PAGE 1 OF 1

CLIENT Sly Toran

PROJECT NAME Santiam Street Duplexes

PROJECT NUMBER G2506341

PROJECT LOCATION 1100 E Santiam Street - Marion County, Oregon

DATE STARTED 1/31/25

GROUND ELEVATION 99 ft

ELEVATION DATUM See Figure 2

WEATHER Rain

SURFACE Gravel

LOGGED BY MDL

REVIEWED BY BMW

DRILLING CONTRACTOR CGT

SEEPAGE ---

EQUIPMENT 3-inch diameter hand auger

GROUNDWATER DURING DRILLING ---

DRILLING METHOD Hand Auger

GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N _{SPT} VALUE)	N ₆₀ VALUE	DRY UNIT WT. (pcf)	▲ SPT N _{SPT} VALUE ▲	
											PL	LL
98		GP FILL	POORLY GRADED GRAVEL FILL: Gray, moist, angular, and up to ¾ inch diameter.		0							
		GM	SILTY GRAVEL: <i>Very dense</i> , gray, moist, subrounded to rounded gravel up to ¾ inch diameter, and low to medium plasticity silt. Gravel and cobbles up to 3 inches diameter below about 1 foot bgs.		2							

96

- Boring terminated at about 2 feet bgs due to practical refusal on coarse particles.
- No groundwater or caving encountered.
- Boring backfilled with excavated material upon completion.

94

92

90

88



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FIGURE A13

Boring HA-11

PAGE 1 OF 1

CLIENT Sly Toran

PROJECT NAME Santiam Street Duplexes

PROJECT NUMBER G2506341

PROJECT LOCATION 1100 E Santiam Street - Marion County, Oregon

DATE STARTED 1/31/25 GROUND ELEVATION 99 ft

ELEVATION DATUM See Figure 2

WEATHER Rain SURFACE Gravel

LOGGED BY MDL REVIEWED BY BMW

DRILLING CONTRACTOR CGT

SEEPAGE ---

EQUIPMENT 3-inch diameter hand auger

GROUNDWATER DURING DRILLING ---

DRILLING METHOD Hand Auger

GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N _{SPT} VALUE)	N ₆₀ VALUE	DRY UNIT WT. (pcf)	▲ SPT N _{SPT} VALUE ▲	
											PL	LL
98		GP FILL	POORLY GRADED GRAVEL FILL: Gray, moist, angular, and up to ¾ inch diameter.		0							
		GM	SILTY GRAVEL: <i>Very dense</i> , gray, moist, subrounded to rounded gravel up to ¾ inch diameter, and low to medium plasticity silt. Gravel and cobbles up to 3 inches diameter below about 1 foot bgs.		2							

- Boring terminated at about 2 feet bgs due to practical refusal on coarse particles.
- No groundwater or caving encountered.
- Boring backfilled with excavated material upon completion.



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FIGURE A14

Boring HA-12

PAGE 1 OF 1

CLIENT Sly Toran

PROJECT NAME Santiam Street Duplexes

PROJECT NUMBER G2506341

PROJECT LOCATION 1100 E Santiam Street - Marion County, Oregon

DATE STARTED 1/31/25

GROUND ELEVATION 99 ft

ELEVATION DATUM See Figure 2

WEATHER Rain

SURFACE Gravel

LOGGED BY MDL

REVIEWED BY BMW

DRILLING CONTRACTOR CGT



SEEPAGE ---

EQUIPMENT 3-inch diameter hand auger

GROUNDWATER DURING DRILLING ---

DRILLING METHOD Hand Auger

GROUNDWATER AFTER DRILLING ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N _{SPT} VALUE)	N ₆₀ VALUE	DRY UNIT WT. (pcf)	▲ SPT N _{SPT} VALUE ▲	
											PL	LL
											MC	
											<input type="checkbox"/> FINES CONTENT (%) <input type="checkbox"/>	
											0 20 40 60 80 100	
98		GP FILL	POORLY GRADED GRAVEL FILL: Gray, moist, angular, and up to ¾ inch diameter.		0							
		GM	SILTY GRAVEL: <i>Very dense</i> , gray, moist, subrounded to rounded gravel up to ¾ inch diameter, and low to medium plasticity silt. Gravel and cobbles up to 3 inches diameter below about 1 foot bgs.		2							
96	<div>· Boring terminated at about 2 feet bgs due to practical refusal on coarse particles.</div> <div>· No groundwater or caving encountered.</div> <div>· Boring backfilled with excavated material upon completion.</div>											
94												
92												
90												
88												



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FIGURE A15

Test Pit TP-1

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CLIENT Sly Toran

PROJECT NAME Santiam Street Duplexes

PROJECT NUMBER G2506341

PROJECT LOCATION 1100 E Santiam Street - Marion County, Oregon

DATE STARTED 2/10/25

GROUND ELEVATION 99 ft

ELEVATION DATUM See Figure 2

WEATHER Cloudy

SURFACE Grass

LOGGED BY MDL

REVIEWED BY BMW

EXCAVATION CONTRACTOR Client








SEEPAGE ---

EQUIPMENT JCB 55 Z-1 mini-excavator

GROUNDWATER DURING DRILLING 9.0 ft / El. 90.0 ft

EXCAVATION METHOD Test Pit

GROUNDWATER AFTER EXCAVATION ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N _{SPT} VALUE)	N ₆₀ VALUE	DRY UNIT WT. (pcf)	▲ SPT N _{SPT} VALUE ▲					
											PL	LL				
											MC					
											☐ FINES CONTENT (%) ☐					
											0	20	40	60	80	100
98		OL FILL	ORGANIC SOIL FILL: Dark brown, moist, low plasticity, and contained abundant rootlets.		0											
		ML FILL	SILT FILL: Brown, moist, low plasticity, and trace subrounded to rounded gravel up to ¾ inch diameter.			 GRAB 1	100									
96		GM	SILTY GRAVEL: <i>Very dense</i> , gray, moist, subrounded to rounded gravel up to 1 inch diameter, and low to medium plasticity silt.		2											
94			Cobbles up to 4 inches diameter below about 4 feet bgs.		4											
92		GM	Cobbles up to 8 inches diameter below about 6 feet bgs.		6	 GRAB 2	100									
90		GM	Trace small boulders up to 1 foot diameter below about 8 feet bgs.		8											
			Wet below 9 feet bgs.													
					10											

- Test pit terminated at about 10 feet bgs.
- No caving encountered.
- Groundwater encountered at about 9 feet bgs.
- Test pit loosely backfilled with excavated material upon completion.



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FIGURE A16

Test Pit TP-2

PAGE 1 OF 1

CLIENT Sly Toran

PROJECT NAME Santiam Street Duplexes

PROJECT NUMBER G2506341

PROJECT LOCATION 1100 E Santiam Street - Marion County, Oregon

DATE STARTED 2/10/25

GROUND ELEVATION 99 ft

ELEVATION DATUM See Figure 2

WEATHER Cloudy

SURFACE Grass

LOGGED BY MDL

REVIEWED BY BMW

EXCAVATION CONTRACTOR Client

SEEPAGE ---

EQUIPMENT JCB 55 Z-1 mini-excavator

GROUNDWATER DURING DRILLING ---

EXCAVATION METHOD Test Pit

GROUNDWATER AFTER EXCAVATION ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N _{SPT} VALUE)	N ₆₀ VALUE	DRY UNIT WT. (pcf)	▲ SPT N _{SPT} VALUE ▲ PL —●— LL MC <input type="checkbox"/> FINES CONTENT (%) <input type="checkbox"/> 0 20 40 60 80 100
98		OL FILL	ORGANIC SOIL FILL: Dark brown, moist, low plasticity, and contained abundant rootlets.		0						
		ML FILL	SILT FILL: Brown, moist, low plasticity, and trace subrounded to rounded gravel up to ¾ inch diameter.								
96		GM	SILTY GRAVEL: <i>Very dense</i> , gray, moist, subrounded to rounded gravel up to ¾ inch diameter, and low to medium plasticity silt. Gravel and cobbles up to 3 inches diameter below about 2 feet bgs.		2						
94					4	GRAB 1	100				14 <input type="checkbox"/> 36 ●

- Test pit terminated at about 5 feet bgs.
- No groundwater or caving encountered.
- Infiltration test IT-1 performed in test pit at about 4 feet bgs. Reference main report for test results.
- Grab sample 1 taken after completion of infiltration test.
- Test pit loosely backfilled with excavated material upon completion.



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FIGURE A17

Test Pit TP-3

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CLIENT Sly Toran

PROJECT NAME Santiam Street Duplexes

PROJECT NUMBER G2506341

PROJECT LOCATION 1100 E Santiam Street - Marion County, Oregon

DATE STARTED 2/10/25 GROUND ELEVATION 99 ft

ELEVATION DATUM See Figure 2

WEATHER Cloudy SURFACE Gravel

LOGGED BY MDL REVIEWED BY BMW

EXCAVATION CONTRACTOR Client

SEEPAGE ---

EQUIPMENT JCB 55 Z-1 mini-excavator

GROUNDWATER DURING DRILLING ---

EXCAVATION METHOD Test Pit

GROUNDWATER AFTER EXCAVATION ---

ELEVATION (ft)	GRAPHIC LOG	GROUP SYMBOL	MATERIAL DESCRIPTION	GROUNDWATER	DEPTH (ft)	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N _{SPT} VALUE)	N ₆₀ VALUE	DRY UNIT WT. (pcf)	▲ SPT N _{SPT} VALUE ▲ <div>PL —●— LL MC</div> <input type="checkbox"/> FINES CONTENT (%) <input type="checkbox"/>
98		OL	ORGANIC SOIL: Dark brown, moist, low plasticity, and contained abundant rootlets.		0						
96		GP-GM	POORLY GRADED GRAVEL WITH SILT: <i>Very dense</i> , gray, moist, subrounded to rounded gravel up to ¾ inch diameter, and with low to medium plasticity silt.		2						
			Gravel and cobbles up to 3 inches diameter below about 1½ feet bgs.		4						
94						GRAB 1	100				23 ● 37 □
92			<ul style="list-style-type: none">Test pit terminated at about 5 feet bgs.No groundwater or caving encountered.Infiltration test IT-2 performed in test pit at about 4 feet bgs. Reference main report for test results.Grab sample 1 taken after completion of infiltration test..Test pit loosely backfilled with excavated material upon completion.								
90											
88											