GEOTECHNICAL ENGINEERING STUDY

33901 NW Pacific Highway & Parcel No. 258902000
LaCenter, Clark County, Washington

Prepared for:

Back Country Development
10013 NE Hazel Dell Avenue, PMB 504
Vancouver, Washington 98685

Prepared By:

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8/12/25

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Project No. G44-0525

{August 2025}

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August 12th 2025
G44-0525

Subject: **Geotechnical Engineering Study**
Proposed Residential Subdivision
33901 NW Pacific Hwy. & Parcel No. 258902000
LaCenter, Clark County, Washington

Hello Danny,

We are pleased to submit our engineering report for the subject property located in LaCenter, Washington. This report presents the results of our field exploration, selective laboratory tests, field testing and engineering analyses.

Based on the results of this study, it is our opinion that construction of the proposed residential subdivision is feasible from a geotechnical standpoint, provided recommendations presented in this report are included in the project design.

We appreciate the opportunity to have been of service to you and look forward to working with you in the future. Should you have any questions about the content of this report, or if we can be of further assistance, please call.

Respectfully Submitted,
Earth Engineering, Inc.,

Donald J. Bruno

Donald J. Bruno, CEG
Engineering Geologist

TABLE OF CONTENTS

{G44-0525}

INTRODUCTION	1
General	1
Project Description	1
SITE CONDITIONS	1
Surface	1
Subsurface & Soil Classification	2
Groundwater	2
General Regional Geology	2
LABORATORY TESTING	2-3
SEISMIC HAZARD EVALUATION	3-4
DISCUSSION AND RECOMMENDATIONS	4-9
General	4
Site Preparation & Grading	4-5
Foundations	5-6
Slab on Grade	6
Temporary Excavations	6-7
Infiltration Testing	7
Site Drainage	7
Utility Support & Back Fill	8
Pavements	8
Additional Services	9
LIMITATIONS	9

GRAPHICS

Figure 1	**Vicinity Map**
Figure 2	**Site Plan - Test Pits & Infiltration Locations**
Figure 3	**Site Photographs**
Figure 4	**Typical Footing Drain Detail**
Figure 5	**Typical Utility Trench Back Fill Detail**

APPENDICES

Appendix A	**Field Exploration**
Plate A1	**Unified Soil Classification - Legend**
Plate A2-A8	**Log of Exploratory Test Pits**

INTRODUCTION

General

This report presents the results of the geotechnical engineering study completed by Earth Engineering, Inc. for the proposed residential subdivision located in LaCenter, Washington. The general location of the site is shown on the Vicinity Map, Figure 1. At the time our study was performed, the site and our exploratory locations are approximately as shown on the Site Plan, Figure 2. Photographs of some of the test locations have been included as Figure 3.

The purpose of this study was to explore subsurface conditions at the site and based on the conditions encountered provide geotechnical recommendations for the proposed construction. In addition, this report includes infiltration testing for stormwater design as well as a seismic hazard evaluation.

Project Description

Based on the information that was provided to us by the project civil engineer (PLS) it is our understanding the project will consist of developing the site with forty-six (46) attached homes and thirty-five (35) detached homes. Site improvements will include a stormwater control system, subsurface utilities and asphalt paved roadways.

Structural design loads were not available at the time this report was written. However, based on our experience with similar projects, we anticipate that wall and column loads will be approximately seven hundred and fifty (750) to one thousand five hundred (1500) pounds per lineal foot (maximum dead plus live loads). Slab on grade floor loads will most likely be less than one hundred (100) pounds per square foot (psf).

If any of the above information is incorrect or changes, we should be consulted to review the recommendations contained in this report. In any case, it is recommended that Earth Engineering, Inc. perform a general review of the final design for the proposed construction.

SITE CONDITIONS

Surface

The rectangular shaped property is comprised of two separate parcels and encompasses approximately eleven (11.3) acres. The approximate northern half and southern half slope gently downward from the northeast to the south-central and from the east to the west, respectively, with a gradient that ranges from five to seven percent (5-7%). An existing single-family residence, detached garage and several out-buildings, located at the southeast section of the site, will be razed during development.

The subject properties are covered predominantly with pasture grass, excluding some landscape plants and trees in the vicinity of the existing residence. The site is bordered to the north by forest and pasture land, to the south and east with residential subdivisions and to the west by single family homes on acreage.

Subsurface & Soil Classification

For this study, the site was explored by excavating seven test pits at the approximate locations shown on the Site Plan, Figure 2. Infiltration testing was performed in two of the test pits. All soil was classified following the Unified Soil Classification System (USCS). A USCS Legend is included as Plate A1. A description of the field exploration methods is included in Appendix A.

In general, in our test pits we encountered less than eight inches of topsoil. The topsoil was underlain by stiff Silt (ML) and sandy Silt to a depth ranging from three to five- and one-half feet below the surface. The upper layer of Silt was underlain by stiff to very stiff elastic sandy Silt (MH) to the maximum exploration depth of eleven (11) feet below the surface. Please refer to the test pit logs, Plates A2 and A8, for a more detailed description of the conditions encountered.

Groundwater

During the time of our field exploration, light groundwater seepage was encountered in TP-1 and TP-3, at depths of ten and nine feet, respectively. The seepage encountered is an isolated perched condition and is not indicative of the groundwater table elevation. The existing ground surface elevation across the site, northeast to south central, ranges from approximately one hundred and ninety to one hundred and fifty (190-150) feet above mean sea level.

It is important to note that groundwater conditions are not static; fluctuations may be expected in the level and seepage flow depending on the season, amount of rainfall, surface water runoff, and other factors. Generally, groundwater levels and seepage rates are greater in the wetter winter and spring months (typically October through May).

General Regional Geology

General information about geologic conditions and soil in the vicinity of the site was obtained by reviewing the Geologic Map of Washington-Southwest Quadrant, Washington Division of Geology and Earth Resources, (Geologic Map GM-34, 1987). This map provides general information about geologic units in the Vancouver, Clark County, Washington area.

Our review of existing geological information indicates that soils in the vicinity of the subject site were formed from alluvial deposits during the Quaternary Period. Outburst flood deposits from glacial Lake Missoula deposited these sedimentary soils. The material encountered in our test pits consists predominantly of native Silt and sandy Silt.

LABORATORY TESTING

Laboratory tests were conducted on representative soil samples to verify or modify the field soil classification of the units encountered, and to evaluate the general physical properties as well as the engineering characteristics of the soils encountered. The following provides information about the testing procedures performed on representative soil samples and the general condition of subsurface soil conditions encountered:

- *Moisture Content (ASTM-D2216-92)* tests were performed on representative samples. The upper layer of native Silt has an average moisture content of twenty percent (20%). The lower layer of sandy elastic Silt has an average moisture content of twenty-nine percent (29%).

- *Material Finer than the No. 200 Sieve (ASTM-D117-04)* was performed on representative soil samples collected from four to eleven feet below the surface. Testing indicates that the upper layer of native Silt and deeper layer of elastic Silt has a fines content that ranges from fifty-six to sixty-six percent (56-66%) passing the #200 sieve.

- *In-Situ Soil Density (ASTM-D4564-93)* utilizing the sleeve method was performed on representative samples to determine the wet and dry density of native soil. The in-situ density provides a relative indication of soil support characteristics. The wet density of the upper layer of native Silt is eighty-six (86) pounds per cubic foot (pcf). The dry density of this soil is seventy-six (76) pcf.

Laboratory testing confirms that soil encountered in our test pits consists of Silt and sandy elastic Silt. This type of soil is sensitive to changes in moisture content. Moisture sensitive soils are discussed in more detail in the Site Preparation and Grading section of this report.

The results of laboratory tests performed on specific samples are provided at the appropriate sample depth on the individual test pit logs. However, it is important to note that some variation of subsurface conditions may exist. Our geotechnical recommendations are based on our interpretation of these test results.

SEISMIC HAZARD EVALUATION

The following provides a seismic hazard evaluation for the subject site. Our evaluation is based on subsurface conditions encountered at the site during the time of our geotechnical study and a review of applicable geologic maps (Washington Department of Natural Resources, Geologic Map of Washington-Southwest Quadrant, 1987) and the International Building Code (IBC-2021) guidelines.

In general, supportive soil encountered at the subject site consists of stiff Silt and is classified as a type "D" soil in accordance with "Seismic Design Categories" (IBC 2021, Section 1803.5.12). Structural engineering for this project should incorporate the 2021 Site Class "D" IBC parameters for seismic design. The referenced Geologic map indicates that no known active faults are located within one-mile of the subject site. For more detail regarding soil conditions refer to the test pit logs in Appendix A of this report.

Liquefaction:

Structures are subject to damage from earthquakes due to direct and indirect action. Shaking represents direct action. Indirect action is represented by foundation failures and is typified by liquefaction. Liquefaction occurs when soil loses all shear strength for short periods of time during an earthquake. Ground shaking of sufficient duration results in the loss of grain to grain contact as well as a rapid increase in pore water pressure. This causes the soil to assume physical properties of a fluid.

To have potential for liquefaction a soil must be loose, cohesion-less (generally sands and silts), below the groundwater table, and must be subjected to sufficient magnitude and duration of ground shaking. The effects of liquefaction may be large total settlement and or large differential settlement for structures with foundations in or above the liquefied soil.

Based on the stiff to very stiff soil conditions encountered, the absence of a near surface groundwater table and the distance to active fault zones, it is not likely that soil liquefaction would occur at the subject site during a seismic event.

DISCUSSION AND RECOMMENDATIONS

General

Based on the results of our study, it is our opinion the proposed residential subdivision can be developed as planned provided the geotechnical recommendations contained in this report are incorporated into the final design. The buildings can be supported on conventional shallow spread footings bearing either entirely on competent native soil or compacted structural fill. Supporting the proposed buildings on homogeneous material will significantly decrease the potential for differential settlement across the foundation area.

This report has been prepared for specific application to this project only and in a manner consistent with that level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area for the exclusive use of Back Country Development and their representatives. This report, in its entirety, should be included in the project documents for information to the contractor. No warranty, expressed or implied, is made.

Site Preparation and Grading

The site shall be stripped and cleared of all vegetation, organic matter and any other deleterious material. Stripped material should not be mixed with any soils to be used as fill. Stripped soil could potentially be used for topsoil at landscape areas after removing vegetation and screening out organic matter.

Building & Driveway Areas:

After clearing and grading, the building and pavement areas should be compacted to a dense non-yielding condition with suitable compaction equipment. This phase of earthwork compaction shall be performed prior to the placement of any structural fill, at the bottom of all foundation excavations, floor slab areas and roadways, before the placement of base rock.

Structural Fill:

Structural fill is defined as any soil placed under buildings or any other load bearing-areas. Structural fill placed under footings and slab on grade should be placed in thin horizontal lifts not exceeding eight inches and compacted to a minimum ninety-five percent (95%) of its maximum dry density (Standard Proctor ASTM D698). The fill material should be placed within two to three percent of the optimum moisture content.

Fill under pavements should also be placed in lifts approximately eight inches in thickness, and compacted to a minimum of ninety percent (92%) of its maximum dry density (Standard Proctor ASTM D698), except for the top twelve (12) inches which should be compacted to ninety-five percent (95%) of the maximum dry density.

We recommend that structural fill consist of a well graded granular material having a maximum size of two inches and no more than five percent (5%) fines passing the #200 sieve, based on the ¾ inch fraction. It is recommended that any structural fill planned for onsite use, be submitted for approval prior to import.

The placement and compaction of structural fill should be observed by a representative from our office to verify that fill has been placed and compacted in accordance with the approved project plans and specifications.

It should be noted that the depth of excavation to competent soil at foundation footings and floor slab areas could be greater or less than anticipated depending on conditions encountered. Our test pits provide general information about subsurface soil and groundwater conditions.

Wet Weather Construction & Moisture Sensitive Soils:

Field observations and laboratory testing indicates that soil encountered at the site consists of moisture sensitive Silt and elastic sandy Silt. As such in an exposed condition moisture sensitive soil can become disturbed during normal construction activity, especially when in a wet or saturated condition. Once disturbed, in a wet condition, these soils will be unsuitable for support of foundations, floor slabs and pavements.

Therefore, where soil is exposed and will support new construction, care must be taken not to disturb their condition. If disturbed soil conditions develop, the affected soil must be removed and replaced with structural fill. The depth of removal will be dependent on the depth of disturbance developed during construction. Covering the excavated area with plastic and refraining from excavation activities during rainfall will minimize the disturbance and decrease the potential degradation of supportive soils.

Earthwork grading and foundation construction will be difficult during the wet winter and spring seasons. Based on this condition we suggest that grading and foundation construction be completed during the drier summer and fall seasons.

Foundations

Based on the encountered subsurface soil conditions, preliminary building design criteria, and assuming compliance with the preceding Site Preparation and Grading section, the proposed structures may be supported on conventional shallow spread footings bearing either entirely on competent native soil or compacted structural fill.

Individual spread footings or continuous wall footings providing support for the proposed residential buildings may be designed for a maximum allowable bearing value of one thousand five hundred (1500) pounds per square foot (psf).

Footings for a one level structure should be at least twelve (12) inches in width. Footings for a two-level structure should be a minimum of fifteen (15) inches in width. In either case, all footings should extend to a depth of at least eighteen (18) inches below the lowest adjacent finished sub grade for lateral support and frost heave considerations.

These basic allowable bearing values are for dead plus live loads and may be increased one-third for combined dead, live, wind, and seismic forces. It is estimated that total and differential footing settlements for the relatively light building will be approximately one-half and one-quarter inches, respectively.

Lateral loads can be resisted by friction between the foundation and the supporting sub grade or by passive earth pressure acting on the buried portions of the foundation. For the latter, the foundations must be poured "neat" against the existing soil or back filled with a compacted fill meeting the requirements of structural fill.

- Passive Pressure = 300 pcf equivalent fluid weight
- Coefficient of Friction = 0.40

We recommend that all footing excavations be observed by a representative of Earth Engineering, Inc. prior to placing forms or rebar, to verify that sub grade support conditions are as anticipated in this report, and or provide modifications in the design as required.

Slab on Grade

The sub-grade for all concrete floor slab areas should be compacted to a dense non-yielding condition prior to the placement of base rock. It is important to note that the existing sub-grade soil may become too wet to re-compact due to weather conditions. If supportive soils become saturated it may be necessary to remove the unsuitable material and replace it with imported granular structural fill.

Interior floor slabs should be provided with a minimum of six inches of compacted granular structural fill after compacting the sub-grade. In areas where moisture is undesirable, a vapor barrier such as an 8-mil plastic membrane should be placed beneath the slab.

Temporary Excavations

The following information is provided solely as a service to our client. Under no circumstances should this information be interpreted to mean that Earth Engineering Inc. is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

In no case should excavation slopes be greater than the limits specified in local, state and federal safety regulations. Based on the information obtained from our field exploration and laboratory testing, the site soils expected to be encountered in excavations, stiff to very stiff silt and elastic sandy Silt with the potential for groundwater seepage would be classified as a Type "B" soil by OSHA guidelines.

Therefore, temporary excavations and cuts greater than four feet in height, should be sloped at an inclination no steeper than 3/4H:1V (horizontal: vertical) for type "A" soils. If slopes of this inclination, or flatter, cannot be constructed or if excavations greater than ten feet in depth are required, temporary shoring will be necessary.

Infiltration Testing

During June of 2025, infiltration testing was performed at two locations at a depth of four feet below the existing ground surface. The approximate location of the infiltration tests is shown on the Site Plan, Figure 2.

Infiltration testing was conducted in general accordance with the Southwest Washington Storm Water Manual. The Encased Falling Head Test consists of driving a fifteen inch long, six-inch diameter pipe six inches into the exposed ground surface at the bottom of the test pit.

The pipe is filled with water as the soil around the bottom and below the pipe is saturated for several hours. The pipe is filled again, and the amount of time required for the water to fall, per inch, for six inches, is recorded. This step is performed a minimum of three times. The test results are averaged and calculated in inches per hour (iph). The following table provides the infiltration test results, the coefficient of permeability, soil classification and a summary of laboratory test results for soils encountered at the infiltration test areas:

LOCATION	*USCS SOIL TYPE	AASHTO SOIL TYPE	DEPTH (FT.)	MOISTURE CONTENT %	% PASSING # 200 SIEVE	FIELD INFILTRATION RATE (inches per hr.)	COEFFICIENT OF PERMEABILITY
I-1	MH	A-5	4.0	25	61	0.15 iph	0.075
I-2	MH	A-5	4.0	29	59	0.20 iph	0.10

Due to the very low infiltration rates and the very stiff soil conditions encountered, it is our opinion onsite soils are not conducive to stormwater infiltration. Alternative methods will need to be employed to control storm water.

Site Drainage

The site should be graded so that surface water is directed off the site. Water should not be allowed to stand in any area where buildings or slabs are to be constructed. Loose surfaces should be sealed at the end of each workday by compacting the surface to reduce the potential for moisture infiltration into the soils. Final site grades should allow for drainage away from the building foundation. The ground should be sloped at a gradient of three percent for a distance of at least ten feet away from the buildings.

We recommend that a footing drain be installed around the perimeter of the buildings just below the invert of the footing with a gradient sufficient to initiate flow. Under no circumstances should the roof down spouts be connected to the footing drain system. We suggest that clean outs be installed at several accessible locations to allow for the periodic maintenance of the footing drain system. Details for the footing drain have been included on Figure 4, Typical Footing Drain Detail.

Utility Support and Back Fill

Based on the conditions encountered, the soil to be exposed by utility trenches should provide adequate support for utilities. Utility trench backfill is a concern in reducing the potential for settlement along utility alignments, particularly in pavement areas. It is also important that each section of utility line be adequately supported in the bedding material. The back fill material should be hand tamped to ensure support is provided around the pipe haunches.

Fill should be carefully placed and hand tamped to about twelve inches above the crown of the pipe before any compaction equipment is used. The remainder of the trench back fill should be placed in lifts having a loose thickness of eight inches.

A typical trench back fill section and compaction requirements for load supporting and non-load supporting areas is presented on Figure 5, Utility Trench Backfill Detail. Trench back fill may consist of imported granular fill provided the material is approved, placed and compacted near the optimum moisture content.

Imported granular material or on-site soil to be used as backfill should be submitted to our laboratory at least one week prior to construction so that we can provide a laboratory proctor for field density testing.

Pavements

The durability of pavements is related in part to the condition of the underlying sub grade. To provide a properly prepared sub grade for pavements, we recommend the sub grade be treated and prepared as described in the Site Preparation and Grading section of this report.

It is possible that some localized areas of soft, wet or unstable sub grade may still exist after this process. Before placement of any base rock, the sub grade should be compacted with suitable compaction equipment. Yielding areas that are identified should be excavated to firm material and replaced with compacted one and one quarter inch-minus clean-crushed rock. The following pavement sections are recommended for the proposed pavement areas:

- Three inches of Asphalt Concrete (AC) over nine inches of compacted Crushed Rock Base (CRB) material or,
- Three inches of Asphalt Concrete (AC) over seven inches of compacted Crushed Rock Base (CRB) material, over a geo-grid consisting of Tensar Triax or equivalent.

The geo-grid should be placed directly on the sub grade surface of the roadway prior to placement of base rock. Appropriate geo-textiles have been designed to increase the strength of the sub grade and extend pavement life. Asphaltic Cement (AC) and Crushed Rock Base (CRB) materials should conform to WSDOT specifications. All base rock should be compacted to at least ninety five percent (95%) of the ASTM D698 laboratory test standard.

We recommend that a minimum of eight inches of compacted CRB be placed below all exterior slabs. Exterior concrete slabs that are subject to vehicle traffic loads should be at least four inches in thickness. It is also suggested that nominal reinforcement such as "6x6-10/10" welded wire mesh be installed, near midpoint, in new exterior concrete slabs and paving. Fiber mesh concrete may be used in lieu of welded wire mesh.

Additional Services & Earthwork Monitoring

Earth Engineering, Inc. will be available to provide consultation services related to review of the final design to verify that the recommendations within our purview have been properly interpreted and implemented in the approved construction plans and specifications. A representative from our office will be available to attend a pre-construction meeting to discuss and or clarify all geotechnical issues related to the proposed project.

In addition, it is suggested that our office be retained to provide geotechnical services during construction to observe compliance with the design concepts and project specifications and to allow design changes in the event subsurface conditions differ from those anticipated. Our construction services would include monitoring and documenting the following:

- Provide erosion control documentation & stormwater monitoring
- Verify that site has been adequately stripped of organic materials
- Observe the condition of exposed bearing soils at the building areas
- Laboratory proctor tests for structural fill materials
- Observe compaction and provide density testing of structural fill
- Observe compaction and provide density testing of utility trench backfill
- Provide footing inspection at buildings to verify soil bearing capacity
- Verify the installation of all building and site drainage elements

LIMITATIONS

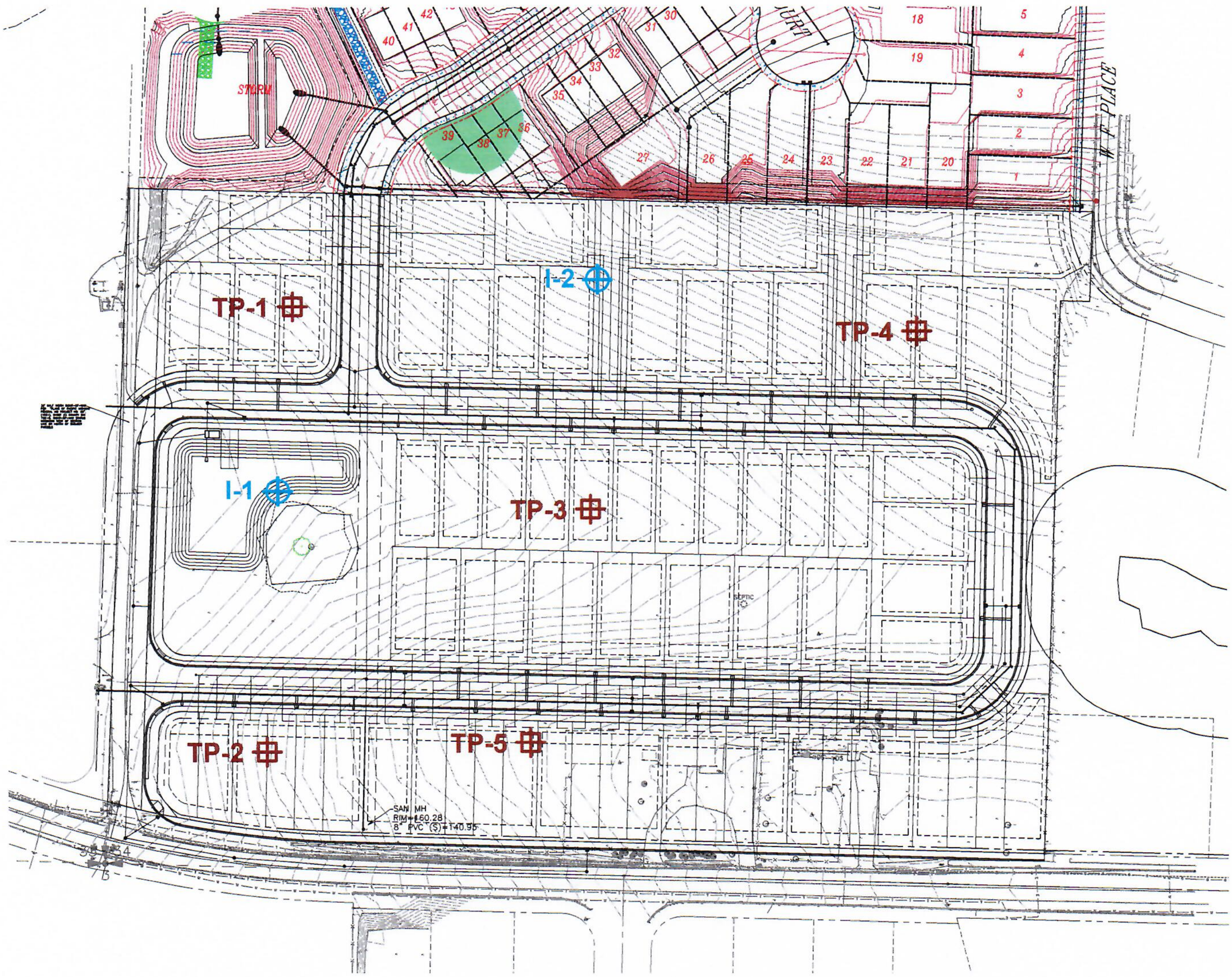
Our recommendations and conclusions are based on the site materials observed, selective laboratory testing, engineering analyses, the design information provided to Earth Engineering, Inc. and our experience as well as engineering judgment. The conclusions and recommendations are professional opinions derived in a manner consistent with that level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area. No warranty is expressed or implied.

The recommendations submitted in this report are based upon the data obtained from the test pits. Soil and groundwater conditions may vary from those encountered. The nature and extent of variations may not become evident until construction. If variations do appear, Earth Engineering, Inc. should be requested to reevaluate the recommendations contained in this report and to modify or verify them in writing prior to proceeding with the proposed construction.

VICINITY MAP

Earth Engineering GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: BACK COUNTRY DEVELOPMENT	DRAWN: EG
	PROJECT: 33901 NW PACIFIC HWY & PARCEL NO 258902000 LA CENTER, WA	DATE: 08/2025
		FIGURE: 1
		PRO. #: G44-0525

SITE PLAN



LEGEND

I-1 Approximate Location of Infiltration Tests

TP-1 Approximate Location of Test Pits

NTS

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GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT:	BACK COUNTRY DEVELOPMENT	DRAWN:	EG
PROJECT:	33901 NW PACIFIC HWY & PARCEL NO 258902000 LA CENTER, WA	DATE:	08/2025
		FIGURE:	2
		PRO. #:	G44-0525

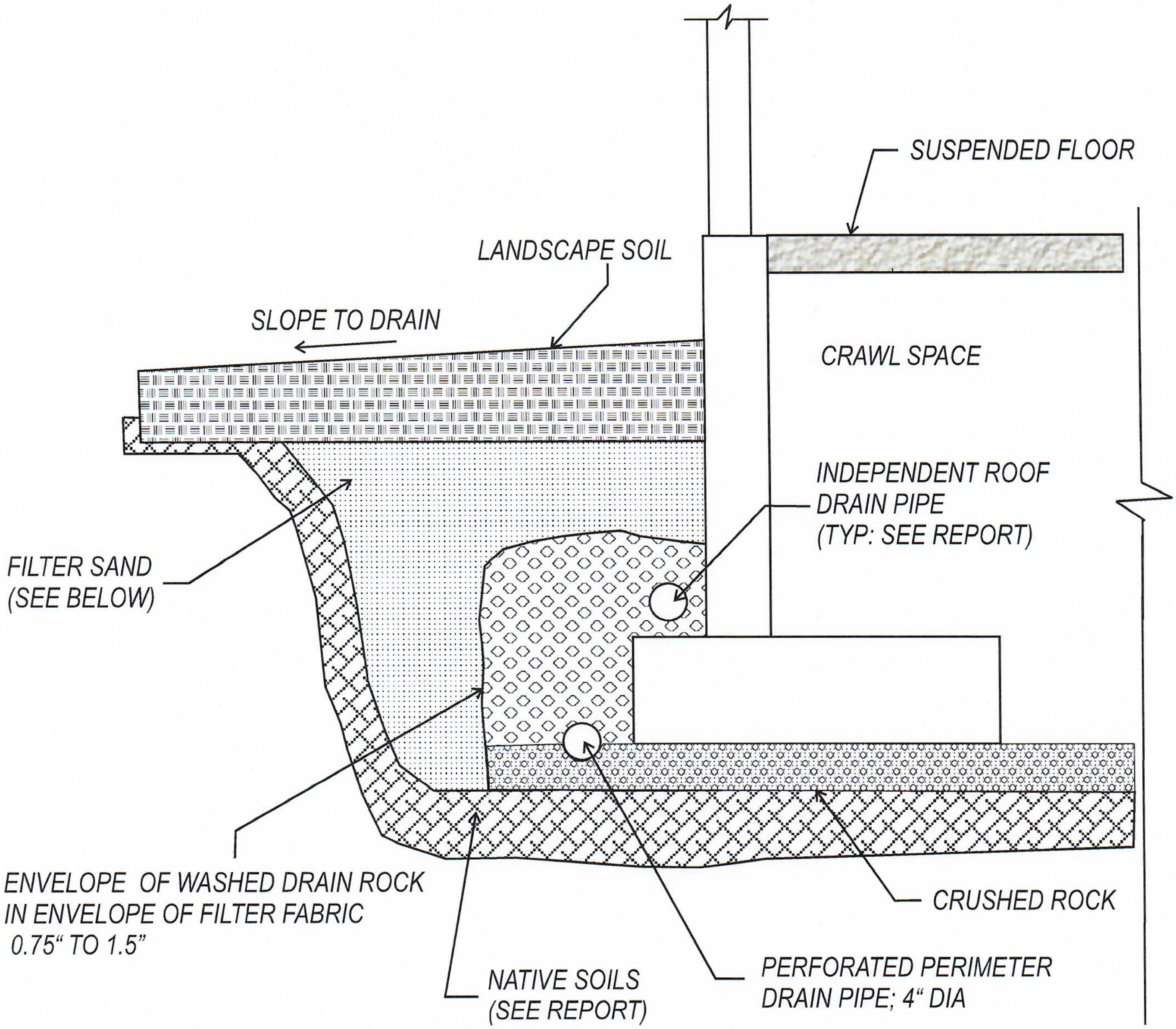
South Central Area Looking West

Test Pit TP-5 @ South Central Area

Central Area Looking East

Test Pit TP-1 @ Northwest Area Looking East

Earth Engineering GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: BACK COUNTRY DEVELOPMENT	DRAWN: EG
	PROJECT: 33901 NW PACIFIC HWY & PARCEL NO 258902000 LACENTER, WA	DATE: 08/2025
		FIGURE: 3
		PRO. #: G44-0525



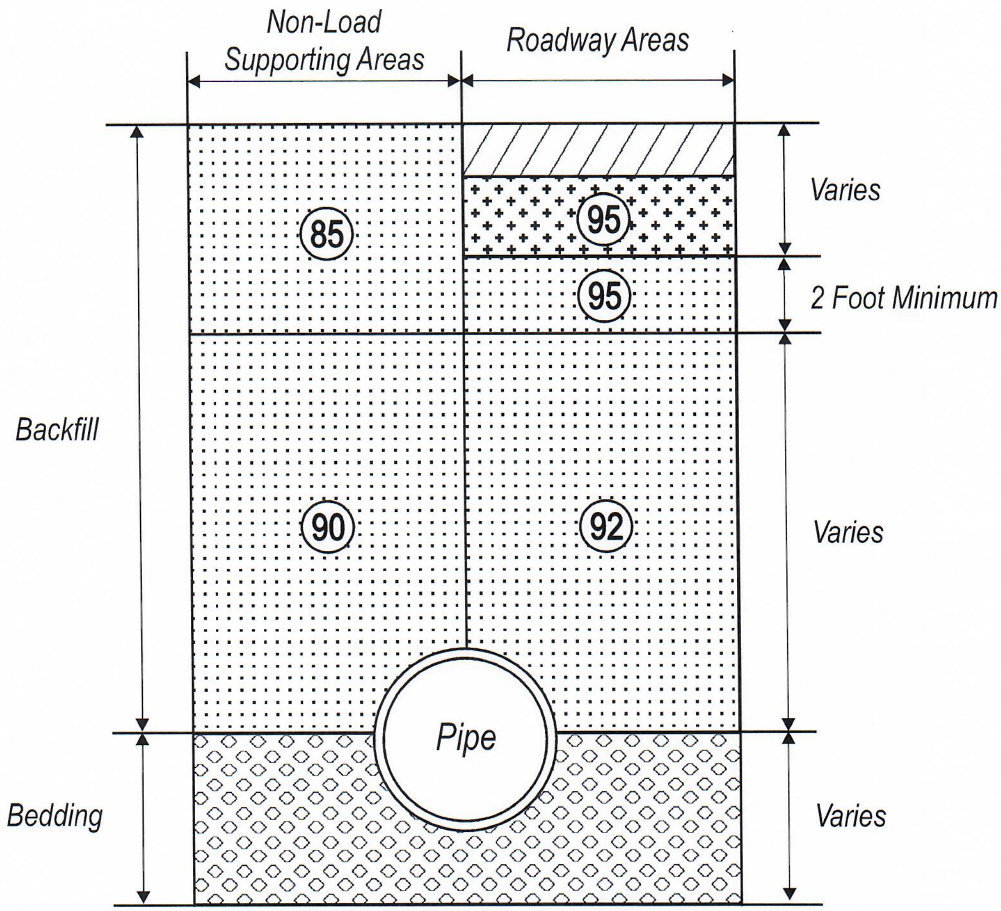
NOTES:

1. FILTER SAND - FINE AGGREGATE FOR PORTLAND CEMENT; SECTION 9=03.1(2)
2. PERFORATED OR SLOTTED RIGID PVC PIPE WITH A POSITIVE DRAINAGE GRADIENT
3. FILTER FABRIC OPTIONAL IF FILTER SAND USED

TYPICAL FOOTING DRAIN DETAIL

Not to Scale

Earth Engineering, Inc. GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: BACK COUNTRY DEVELOPMENT	DRAWN: EG
	PROJECT: 33901 NW PACIFIC HWY & PARCEL NO 258902000 LA CENTER, WA	DATE: 08/2025
		FIGURE: 4
		PRO. #: G44-0525



LEGEND

Asphalt or Concrete Pavement

Roadway Base Material or Base Rock

Backfill: Compacted on-site soil or imported select fill material as described in the site preparation of the general Earthwork Section of the attached report text.

92 — *Minimum percentage of maximum Laboratory Dry Density as determined by ASTM Test method D1557 (Modified Proctor),unless otherwise specified in the attached report text.*

Bedding Material: Material type depends on type of pipe and laying conditions. Bedding should conform to the manufacturer's recommendations for the type of pipe selected.

UTILITY TRENCH BACKFILL DETAIL

Not to Scale

Earth Engineering, Inc.
GEOTECHNICAL & ENVIRONMENTAL CONSULTANTS

CLIENT:	BACK COUNTRY DEVELOPMENT	DRAWN:	EG
PROJECT:	33901 NW PACIFIC HWY & PARCEL NO 258902000 LA CENTER, WA	DATE:	08/2025
		FIGURE:	5
		PRO. #:	G44-0525

APPENDIX A

(FIELD EXPLORATION)

FIELD EXPLORATION

Our field exploration was performed on June 12th 2025. Subsurface conditions at the site were explored by excavating seven test pits for soil sampling and infiltration testing. The test pits were excavated to a maximum depth of eleven (11) feet below the existing ground surface. The test pits were excavated using a track-hoe.

The test pits were located by pacing and or measuring from property features. The locations are shown on the Site Plan, Figure 2. Field exploration was monitored by an Earth Engineering, Inc. representative, who classified the soils that we encountered and maintained a log of each test pit, obtained representative samples, and observed pertinent site features. Representative soil samples were placed in closed containers and returned to the laboratory for further examination and testing.

All samples were identified using the Standard Classification of Soils for Engineering Purposes (ASTM D2487-93) in accordance with the Unified Soil Classification System (USCS), which is presented on Plate A1. The test pit logs are presented in Appendix A. The final log represents our interpretations of the field logs and the results of the laboratory tests on field samples.

UNIFIED SOIL CLASSIFICATION SYSTEM LEGEND

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTION
Coarse Grained Soils More Than 50% Material Larger Than No 200 Sieve Size	Gravel and Gravelly Soils More Than 50% Coarse Fraction Retained on No 4 Sieve	Clean Gravels (little or no fines)		GW gw	Well-Graded Gravels, Gravel-Sand Mixtures Little or no Fines
				GP gp	Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or no Fines
		Gravels with Fines (appreciable amount of fines)		GM gm	Silty Gravels, Gravel-Sand-Silt Mixtures
				GC gc	Clayey Gravels, Gravel-Sand-Clay Mixtures
	Sand and Sandy Soils More Than 50% Coarse Fraction Passing No 4 Sieve	Clean Sand (little or no fines)		SW sw	Well-graded Sands, Gravelly Sands Little or no Fines
				SP sp	Poorly-Graded Sands, Gravelly Sands Little or no Fines
		Sands with Fines (appreciable amount of fines)		SM sm	Silty Sands, Sand-Silt Mixtures
				SC sc	Clayey Sands, Sand-Clay Mixtures
Fine Grained Soils More Than 50% Material Smaller Than No 200 Sieve Size	Silts and Clays	Liquid Limit Less than 50		ML ml	Inorganic Silts and Very Fine Sands, Rock Flour, Silty-Clayey Fine Sands; Clayey Silts w/ slight Plasticity
				CL cl	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean
				OL ol	Organic Silts and Organic Silty Clays of Low Plasticity
	Silts and Clays	Liquid Limit Greater than 50		MH mh	Inorganic Silts, Micaceous or Diatomaceous Fine Sand or Silty Soils
				CH ch	Inorganic Clays of High Plasticity, Fat Clays
				OH oh	Organic Clays of Medium to High Plasticity, Organic Silts
Highly Organic Soils				PT pt	Peat, Humus, Swamp Soils with High Organic Contents

Topsoil		Humus and Duff Layer
Fill		Highly Variable Constituents

Earth Engineering Inc.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT:	BACK COUNTRY DEVELOPMENT	DRAWN:	EG
PROJECT:	33901 NW PACIFIC HWY & PARCEL NO 258902000 LA CENTER, WA	DATE:	08/2025
		PLATE:	A1
		PRO. #:	G44-0525

LOG OF TEST PIT I-1
(West Central)

ELEVATION: **+/- 148 feet**
EXPLORATORY EQUIPMENT: **TRACK HOE**
DATE: **06/12/2025**

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
0–3	2	4" Topsoil **Silt (ML)** **some sand** Wet γ ~87 pcf Dry γ ~76 pcf (Native)		Light Brown	Damp	Stiff	18	-
3–10	4, 9	Field Infiltration Rate: 0.15 iph **elastic sandy Silt (MH)**		Brown Iron	Moist	Very Stiff	25 29	61 59

Bottom of test pit at 10.0 feet below existing ground surface
No groundwater encountered

Earth Engineering, Inc.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT: BACK COUNTRY DEVELOPMENT		DRAWN:	EG
PROJECT: 33901 NW PACIFIC HWY & PARCEL NO 258902000 LA CENTER, WA		DATE:	08/2025
		PLATE:	A2
		PRO. #:	G44-0525

LOG OF TEST PIT **I-2**

(North Central)

ELEVATION: **+/- 170 feet**
EXPLORATORY EQUIPMENT: **TRACK HOE**
DATE: **06/12/2025**

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
0–3	2 (X)	6-8" Topsoil **Silt (ML)** **with some sand** Wet γ ~87 pcf Dry γ ~76 pcf (Native)		Light Brown	Damp	Stiff to Very Stiff	14	58
3–10	4 (•)	Field Infiltration Rate: 0.2 iph		Brown Iron	Moist to Very Moist	Very Stiff	29	59
		elastic sandy Silt (MH)						
	8 (•)						31	56

Bottom of test pit at 10.0 feet below existing ground surface
No groundwater encountered

Earth Engineering, Inc.
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CLIENT: BACK COUNTRY DEVELOPMENT		DRAWN:	EG
PROJECT: 33901 NW PACIFIC HWY & PARCEL NO 258902000 LA CENTER, WA		DATE:	08/2025
		PLATE:	A3
		PRO. #:	G44-0525

LOG OF TEST PIT TP-1
(Northwest)

ELEVATION: **+/- 152 feet**
EXPLORATORY EQUIPMENT: **TRACK HOE**
DATE: **06/12/2025**

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
0–5.5	2, 4	4-6" Topsoil **sandy Silt (ML)** (Native)		Brown	Damp to Moist	Very Stiff	17 22	- 57
5.5–11	7; groundwater at 10	**elastic sandy Silt (MH)**		Brown Iron to Grey	Moist	Very Stiff	25 27	59

Bottom of test pit at 11.0 feet below existing ground surface
Light groundwater seepage encountered at 10.0 feet

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CLIENT:	BACK COUNTRY DEVELOPMENT
PROJECT:	33901 NW PACIFIC HWY & PARCEL NO 258902000 LA CENTER, WA
DRAWN:	EG
DATE:	08/2025
PLATE:	A4
PRO. #:	G44-0525

LOG OF TEST PIT (Southwest) — TP-2

ELEVATION: **+/- 158 feet**
EXPLORATORY EQUIPMENT: **TRACK HOE**
DATE: **06/12/2025**

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
0–3	• (2)	6-8" Topsoil **sandy Silt (ML)** **with some sand** (Native)		Light Brown	Moist	Stiff	20	64
3–9.5	• (4), • (7)	**elastic sandy Silt (MH)**		Brown Iron	Moist	Stiff to Very Stiff	27 27	52 54

Bottom of test pit at 9.5 feet below existing ground surface
No groundwater encountered

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CLIENT:	BACK COUNTRY DEVELOPMENT	DRAWN:	EG
PROJECT:	33901 NW PACIFIC HWY & PARCEL NO 258902000 LA CENTER, WA	DATE:	08/2025
		PLATE:	A5
		PRO. #:	G44-0525

LOG OF TEST PIT TP-3
(Central)

ELEVATION: **+/- 156 feet**
EXPLORATORY EQUIPMENT: **TRACK HOE**
DATE: **06/12/2025**

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
0–3	● (2)	4-6" Topsoil **Silt (ML)** (Native)		Light Brown	Moist	Stiff to Very Stiff	23	-
3–10	● (5) ● (8) ▼ (9)	**elastic sandy Silt (MH)**		Brown Iron to Grey	Moist to Very Moist	Very Stiff to Stiff	30 32	64 61

Bottom of test pit at 10.0 feet below existing ground surface
Light groundwater seepage encountered at 9.0 feet

Earth Engineering, Inc.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT:	BACK COUNTRY DEVELOPMENT
PROJECT:	33901 NW PACIFIC HWY & PARCEL NO 258902000 LA CENTER, WA
DRAWN:	EG
DATE:	08/2025
PLATE:	A6
PRO. #:	G44-0525

LOG OF TEST PIT **TP-4**

(Northeast)

ELEVATION: **+/- 179 feet**

EXPLORATORY EQUIPMENT: **TRACK HOE**

DATE: **06/12/2025**

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
0–3	● (2)	6-8" Topsoil **Silt (ML)** some sand (Native)		Brown	Moist	Stiff	22	-
3–9	● (4) ● (7)	**elastic sandy Silt (MH)**		Brown Iron	Very Moist	Stiff to Very Stiff	32 33	- 56

Bottom of test pit at 9.0 feet below existing ground surface
No groundwater encountered

Earth Engineering, Inc.
GEOTECHNICAL & ENVIRONMENTAL SERVICES

CLIENT: BACK COUNTRY DEVELOPMENT		DRAWN:	EG
PROJECT: 33901 NW PACIFIC HWY & PARCEL NO 258902000 LA CENTER, WA		DATE:	08/2025
		PLATE:	A7
		PRO. #:	G44-0525

LOG OF TEST PIT **TP-5**

(South Central)

ELEVATION: **+/- 168 feet**

EXPLORATORY EQUIPMENT: **TRACK HOE**

DATE: **06/12/2025**

DEPTH IN FEET	SAMPLES	SOILS CLASSIFICATION	LITHOLOGY (USGS)	COLOR	MOISTURE	CONSISTENCY	MOISTURE CONTENT % OF DRY WEIGHT	PERCENT PASS NUMBER 200
0–4	• (2 ft)	6" Topsoil **sandy Silt (ML)** (Native)		Light Brown	Moist	Stiff	21	66
4–9	• (5 ft) • (8 ft)	**elastic sandy Silt (MH)**		Brown Iron	Moist	Very Stiff to Stiff	30 30	59 57

Bottom of test pit at 9.0 feet below existing ground surface

No groundwater encountered

Earth Engineering, Inc. GEOTECHNICAL & ENVIRONMENTAL SERVICES	CLIENT: BACK COUNTRY DEVELOPMENT	DRAWN: EG
	PROJECT: 33901 NW PACIFIC HWY & PARCEL NO 258902000 LA CENTER, WA	DATE: 08/2025
		PLATE: A8
		PRO. #: G44-0525

DISTRIBUTION

{G44-0525}

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