GEOTEST

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August 26, 2016
Job No. 16-0424

Greg Stewart LLC
3226 256th Street NW
Stanwood, WA 98292

Attention: Mr. Greg Stewart

Re: Infiltration Feasibility Evaluation
606 Highland Drive
Arlington, Washington

Dear Mr. Stewart:

As requested, GeoTest Services, Inc. (GTS) is pleased to submit this letter presenting our observations regarding site conditions and the feasibility of infiltrating water on site. Our professional services were performed in general accordance with the executed service agreement dated June 20, 2016.

PROJECT DESCRIPTION

The above referenced property currently supports a single family residence with a detached garage and separate out-building. GTS understands that a new development is planned that will include construction of a new multi-story apartment building. The proposed property improvements are not expected to require extensive grading activities, but they will require input regarding infiltration feasibility based on current Arlington Municipal Code.

SITE CONDITIONS

This section discusses the general surface and subsurface conditions observed at the project site at the time of our field investigation. Interpretations of the site conditions are based on the results of our review of available information, site reconnaissance, subsurface explorations, laboratory testing, and our experience in the project vicinity.

Surface Conditions

The subject property is a rectangular shaped lot that is surrounded by Highland Drive to its north, residentially developed lots to its east and west, and an undeveloped lot, partially forested lot to its south. The property is in a high-density residential area with single family residences in the site vicinity.

At the time of our visit, the northern portion of the subject property was developed with a residence, detached garage and accessory building as well as an access driveway that extended from the residence and garage to Highland Drive. The southern portion of the property (proposed development site) contained a baseball field and lacked structures. The property was relatively flat with less than approximately 8 feet of total elevation differential. Notably, an approximately 40-foot tall, descending, south-facing slope exists adjacent and to the south of

the property. The majority of the site was covered with grasses. Trees existed within the northern, central, and southeastern portions of the site. Landscaping was observed near the existing residence and associated structures. Surface water was not encountered on the property at the time of our visit.

Subsurface Soil Conditions

Subsurface conditions were explored by advancing 2 exploration test pits (TP-1 though TP-2) on July 29, 2016. The explorations were advanced to depths of between 8.5 and 9 feet below ground surface (BGS) using an excavator that was provided by the client.

The on-site subsurface soils generally consisted between 6 and 12 inches of topsoil (silty sand with organics) over approximately 1 foot of weathered glacial outwash (slightly silty sand with organics) over glacial outwash (poorly graded sand with interbeds of gravel) to the base of the explorations. Gravel content increased at approximately 5 feet below the ground surface in both test pit explorations.

See the attached Site and Exploration Map (Figure 2) and the Test Pit Logs (Figure 4) for more information regarding the approximate locations of the exploration pits and subsurface soil conditions encountered.

General Geologic Conditions

Geologic information for the project site was obtained from the interactive *Geologic Map of Washington State*, published by the Washington State Department of Natural Resources (DNR). According to the DNR map, subsurface soils mapped in the subject area consist of the Pleistocene aged continental glacial outwash deposited mostly during the Vashon Stade of the Fraser glaciation. These deposits are well sorted and stratified and described as recessional and proglacial sand with minor gravel or silt.

Groundwater

At the time of our subsurface investigation in July of 2016, groundwater was not encountered in our exploration test pits. The groundwater conditions reported on the exploration logs are for the specific locations and date indicated, and therefore may not necessarily be indicative of other locations and/or times.

As groundwater levels and/or seepage rates are typically not static, it is anticipated that groundwater conditions will vary depending on local subsurface conditions, season, precipitation, changes in land use both on and off site and other factors. Markedly, we anticipate that groundwater conditions on site are largely influenced by seasonal variations of precipitation. In addition, groundwater levels on site may fluctuate due to land use and alteration.

Considerations

The groundwater conditions reported on the test pit logs are for the specific locations and dates indicated, and therefore may not necessarily be indicative of other locations and/or times. Please consider that groundwater levels are generally higher (at shallower depths) during the wetter months (October through May). If characterization of seasonal groundwater highs are critical to the success of the project, we recommend we be contacted to further investigate groundwater conditions during the wetter months, particularly if our investigations were

conducted during the drier months (June through September) or after a prolonged period of dry weather.

CONCLUSIONS AND RECOMMENDATIONS

Based upon evaluation of the data collected during this investigation, it is our opinion that subsurface soil conditions at the site are suitable for the near-surface infiltration of stormwater provided that the recommendations contained herein are incorporated into the project design.

Stormwater Infiltration Potential

From the two explorations excavated within the proposed development site, three representative soil samples were selected and mechanically tested for grain size distribution and interpretation. Preliminary infiltration rate results are provided following the methods of the 2012 *Stormwater Management Manual for Western Washington (amended December 2014)*. These rates are presented in the following sections.

2012 Stormwater Infiltration Rates

Three representative soil samples were selected and mechanically tested for grain size distribution and interpretation according to the ASTM soil size distribution test procedure (ASTM D422) using the simplified approach as outlined in the 2012 Washington State Department of Ecology *Stormwater Management Manual for Western Washington (amended December 2014)*, Section 3.3.4. Infiltration rates are shown in Table 1 below.

TABLE 1
Test Pit Soil Sample Infiltration Rates
Based On The 2012 DOE Stormwater Management Manual Section 3.3.4

Test Pit Number	Sample Depth (ft)	Classification (USCS)	K_{sat} Uncorrected Rate (Inches/Hour)	Design Infiltration Rate Per ASTM D422 Detailed Approach (Inches/Hour)
1	1.3	SP-SM	30.58	9.36
1	8.0	SP	103.24	31.59
2	2.3	SP	78.57	24.04

In the simplified approach (Section 3.3.4), the infiltration rate is derived by applying appropriate correction factors to the measured saturated hydraulic conductivity (K_{sat}) from the ASTM 422 grain size analysis.

Saturated hydraulic conductivity is a quantitative measure of a saturated soil's ability to transmit water when subjected to a hydraulic gradient. It can be thought of as the ease with which pores of a saturated soil permit water movement.

Saturated Hydraulic Conductivity is expressed as follows:

$$Log_{10}(K_{sat}) = -1.57 + 1.90D_{10} + 0.015D_{60} - 0.013D_{90} - 2.08f_{fines}$$

Where D_{10}, D_{60}, and D_{90} are the grain sizes in mm for which 10 percent, 60 percent, and 90 percent is more fine and f_{fines} is the fraction of the soil (by weight) that passes the U.S. No. 200 sieve. K_{sat} is measured in cm/sec.

With this equation, we can determine the saturated hydraulic conductivity for our representative samples. See example below:

Test Pit TP-1 at 1.3 feet BGS: K_{sat} = 0.022 cm/sec or approximately 30.6 inches/hour

Applying correction factors for site variability (0.85), test method (0.4) and degree of influent control to prevent siltation and bio-buildup (0.9) gives a corrected long term design rate of 9.36 inches/hour for the example above.

As displayed in Table 1, the weathered and unweathered glacial outwash silty sands and poorly graded sands provide calculated design infiltration rates between 9.4 and 31.6 inches/hour. For design purposes, **GTS recommends that the most restrictive infiltration rate be used for design, or approximately 9 inches/hr.** Please note that the design infiltration rate does not consider the effects of near-surface groundwater (mounding) since near-surface water does not appear to be present on this site.

No groundwater or evidence of shallow groundwater was observed in the test pit explorations. The proposed depth of infiltration facilities was not known at the time that this report was written. GTS should be contacted once additional information regarding stormwater facilities and design becomes available so that we can review our design and/or recommendations for this project.

Stormwater Pollutant Treatment

The infiltration facilities on-site may require some form of pollutant pre-treatment or treatment with an amended soil prior to onsite infiltration or offsite discharge. It is our opinion, based on past experience, that the re-use of onsite topsoil is often the most sustainable and cost effective method for pollutant treatment purposes. Cation exchange capacities and organic contents of site topsoil and shallow subsurface soils were determined to establish their pollutant treatment suitability.

Cation Exchange Capacity, Organic Content, and pH Testing

Three composite samples were collected during our subsurface explorations for pollutant treatment purposes. Cation exchange capacity (CEC), organic content (LOI), and pH tests were performed by Northwest Agricultural Consultants. Laboratory test results are presented in Table 2.

TABLE 2
Cation Exchange Capacity, Organic Content, & pH Laboratory Test Results

Test Pit Number	Sample Depth (ft)	Cation Exchange Capacity (meq/100 grams)	Organic Content (%)	pH
TP-1	0.5	18.0	7.74	5.6
TP-2	1.25	12.6	4.27	5.9
TP-3	2.25	2.0	0.83	6.1

Criteria SSC-6 states that cation exchange capacity must be greater than or equal to 5.0 meq/100 grams and organic content must be a minimum of 1.0 percent for treatment purposes. Based on the results listed in Table 2, the fine-grained, near-surface topsoils and shallow weathered glacial outwash soils appear to be suitable for onsite pollutant treatment purposes based on the SSC-6 of the 2012 Washington State Department of Ecology *Stormwater Management Manual for Western Washington*. However, soils below approximately 2 feet BGS does not appear to be suitable for treatment. Soil below 2 feet BGS is clean with few organics or fines (silt and/or clay particles).

USE OF THIS REPORT

GeoTest Services has prepared this report for the exclusive use of Greg Stewart LLC and their design consultants for specific application to the proposed improvements at 606 Highland Drive in Arlington, Washington. Use of this report by others or for another project is at the user's sole risk. Within the limitations of scope, schedule, and budget, our services have been conducted in accordance with generally accepted practices of the geotechnical engineering profession; no other warranty, either express or implied, is made as to the professional advice included in this report.

Our site explorations indicate subsurface conditions at the dates and locations indicated. It is not warranted that they are representative of subsurface conditions at other locations and times. The analyses, conclusions, and recommendations contained in this report are based on site conditions to the limited depth of our explorations at the time of our exploration program, a brief geological reconnaissance of the area, and review of published geological information for the site. We assume that the explorations are representative of the subsurface conditions below the areas evaluated. If variations in subsurface conditions are encountered during construction, we should be notified for review of the recommendations of this report, and revision of such if necessary. If there is a substantial lapse of time between submission of this report and the start of construction, or if conditions change due to construction operations at or adjacent to the project site, we recommend that we review this report to determine the applicability of the conclusions and recommendations contained herein.

We appreciate the opportunity to provide geotechnical services on this project and look forward to assisting you during the construction phase. If you have any questions or comments regarding the information contained in this report, or if we may be of further service, please call.

Respectfully Submitted,
GeoTest Services, Inc.

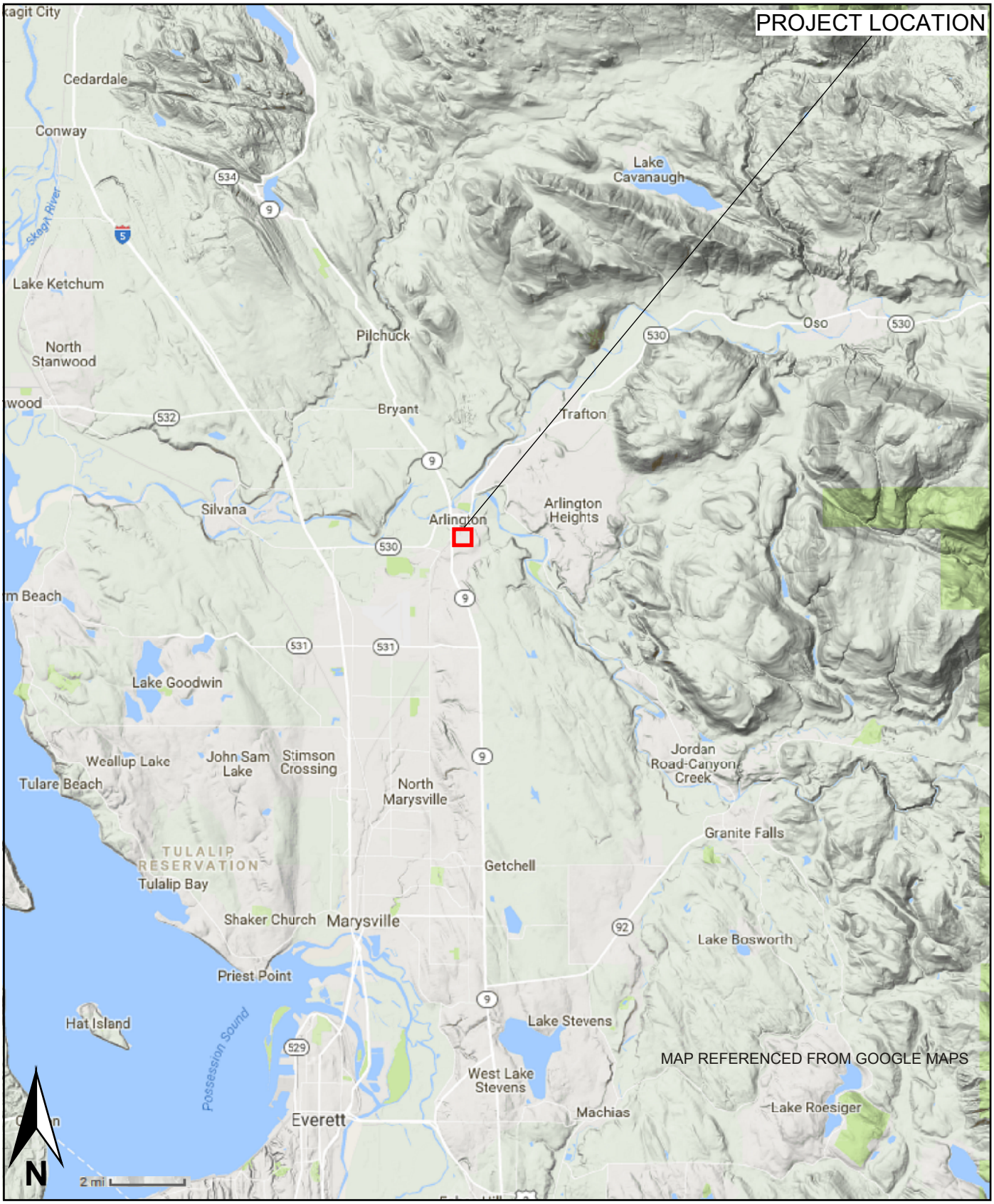
Edwardo Garcia, P.E.
Project Geotechnical Engineer

ATTACHMENTS:

Figure 1	Vicinity Map
Figure 2	Site and Exploration Plan
Figure 3	Soil Classification
Figure 4	Test Pit Exploration Logs
Figure 5	Grain Size Data
Attachment:	Report Limitations

REFERENCES

DNR, 2016, Washington Interactive Geologic Map. Washington Division of Geology and Earth Resources. Washington State Department of Natural Resources.



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Date: 08-22-16	By: JH	Scale: As Shown	Project 16-0424

VICINITY MAP
STEWART INFILTRATION FEASIBILITY
606 HIGHLAND DRIVE
ARLINGTON, WASHINGTON

Figure 1

TP-# = Approximate Test Pit Location

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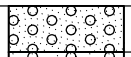
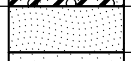
SITE AND EXPLORATION PLAN

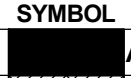
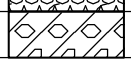
STEWART INFILTRATION FEASIBILITY
606 HIGHLAND DRIVE
ARLINGTON, WASHINGTON

PROJECT **16-0424**

FIGURE **2**

Soil Classification System

MAJOR DIVISIONS			GRAPHIC SYMBOL	USCS LETTER SYMBOL	TYPICAL DESCRIPTIONS[1][2]
COARSE-GRAINED SOIL (More than 50% of material is larger than No. 200 sieve size)	GRAVEL AND GRAVELLY SOIL (More than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (Little or no fines)		**GW**	Well-graded gravel; gravel/sand mixture(s); little or no fines
				**GP**	Poorly graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)		**GM**	Silty gravel; gravel/sand/silt mixture(s)
				**GC**	Clayey gravel; gravel/sand/clay mixture(s)
	SAND AND SANDY SOIL (More than 50% of coarse fraction passed through No. 4 sieve)	CLEAN SAND (Little or no fines)		**SW**	Well-graded sand; gravelly sand; little or no fines
				**SP**	Poorly graded sand; gravelly sand; little or no fines
		SAND WITH FINES (Appreciable amount of fines)		**SM**	Silty sand; sand/silt mixture(s)
				**SC**	Clayey sand; sand/clay mixture(s)
FINE-GRAINED SOIL (More than 50% of material is smaller than No. 200 sieve size)	SILT AND CLAY (Liquid limit less than 50)			**ML**	Inorganic silt and very fine sand; rock flour; silty or clayey fine sand or clayey silt with slight plasticity
				**CL**	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay
				**OL**	Organic silt; organic, silty clay of low plasticity
	SILT AND CLAY (Liquid limit greater than 50)			**MH**	Inorganic silt; micaceous or diatomaceous fine sand
				**CH**	Inorganic clay of high plasticity; fat clay
				**OH**	Organic clay of medium to high plasticity; organic silt
	HIGHLY ORGANIC SOIL			**PT**	Peat; humus; swamp soil with high organic content

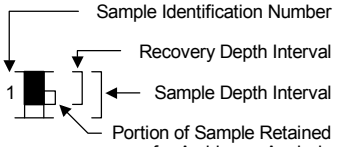
OTHER MATERIALS	GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
PAVEMENT		**AC** or **PC**	Asphalt concrete pavement or Portland cement pavement
ROCK		**RK**	Rock (See Rock Classification)
WOOD		**WD**	Wood, lumber, wood chips
DEBRIS		**DB**	Construction debris, garbage

Notes:
1. Soil descriptions are based on the general approach presented in the *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*, as outlined in ASTM D 2488. Where laboratory index testing has been conducted, soil classifications are based on the *Standard Test Method for Classification of Soils for Engineering Purposes*, as outlined in ASTM D 2487.
2. Soil description terminology is based on visual estimates (in the absence of laboratory test data) of the percentages of each soil type and is defined as follows:

Primary Constituent:	> 50% - "GRAVEL," "SAND," "SILT," "CLAY," etc.
Secondary Constituents:	> 30% and ≤ 50% - "very gravelly," "very sandy," "very silty," etc.
	> 12% and ≤ 30% - "gravelly," "sandy," "silty," etc.
Additional Constituents:	> 5% and ≤ 12% - "slightly gravelly," "slightly sandy," "slightly silty," etc.
	≤ 5% - "trace gravel," "trace sand," "trace silt," etc., or not noted.

Drilling and Sampling Key

SAMPLE NUMBER & INTERVAL



SAMPLER TYPE

Code	Description
a	3.25-inch O.D., 2.42-inch I.D. Split Spoon
b	2.00-inch O.D., 1.50-inch I.D. Split Spoon
c	Shelby Tube
d	Grab Sample
e	Other - See text if applicable
1	300-lb Hammer, 30-inch Drop
2	140-lb Hammer, 30-inch Drop
3	Pushed
4	Other - See text if applicable

Groundwater

▽ ATD — Approximate water elevation at time of drilling (ATD) or on date noted. Groundwater levels can fluctuate due to precipitation, seasonal conditions, and other factors.

Field and Lab Test Data

Code	Description
PP = 1.0	Pocket Penetrometer, tsf
TV = 0.5	Torvane, tsf
PID = 100	Photoionization Detector VOC screening, ppm
W = 10	Moisture Content, %
D = 120	Dry Density, pcf
-200 = 60	Material smaller than No. 200 sieve, %
GS	Grain Size - See separate figure for data
AL	Atterberg Limits - See separate figure for data
GT	Other Geotechnical Testing
CA	Chemical Analysis

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Stewart Infiltration Feasibility
606 Highland Drive
Arlington, Washington

Soil Classification System and Key

Figure 3

TP-1

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Test Data	Graphic Symbol	USCS Symbol	Excavation Method: Tracked Excavator Ground Elevation (ft): Undetermined	
0	1	d	W = 16		OL	Loose to medium dense, dark brown, moist, slightly gravelly, silty SAND, contains rootlets (Topsoil)	Groundwater not encountered.
	2	d	W = 13 GS		SP-SM		
2	3	d	W = 4		SP	Medium dense, orange, damp, slightly silty SAND, contains organics (Weathered Glacial Outwash)	
4	4	d	W = 5			Medium dense, gray, damp, poorly graded SAND with trace gravel (Glacial Outwash) - Presence of roots down to approximate 2 feet BGS - Increase in gravel content and transition to moist moisture content at approximately 5 feet BGS	
8	5	d	W = 4 GS			- Presence of cobbles at approximately 7 feet BGS	
10							
12							

Test Pit Completed 07/29/16
Total Depth of Test Pit = 9.0 ft.

TP-2

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Test Data	Graphic Symbol	USCS Symbol	Excavation Method: Tracked Excavator Ground Elevation (ft): Undetermined	
0	1	d	W = 11		OL	Loose to medium dense, light brown, dry, slightly gravelly, silty SAND, contains rootlets (Topsoil)	Groundwater not encountered.
					SP-SM		
2	2	d	W = 3 GS		SP	Medium dense, orange, dry to damp, slightly silty SAND, contains organics (Weathered Glacial Outwash)	
4						Medium dense, gray, damp, poorly graded SAND with trace gravel (Glacial Outwash)	
	3	d	W = 4			- Presence of moderate sidewall caving below approximately 1.5 feet BGS	
6	4	d	W = 10			- Presence of cobbles at approximately 5 feet BGS - Transition to moist moisture content at approximately 5.5 feet BGS	
8						- Presence of sandy interbeds at approximately 7 feet BGS	
10							
12							

Test Pit Completed 07/29/16
Total Depth of Test Pit = 8.5 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

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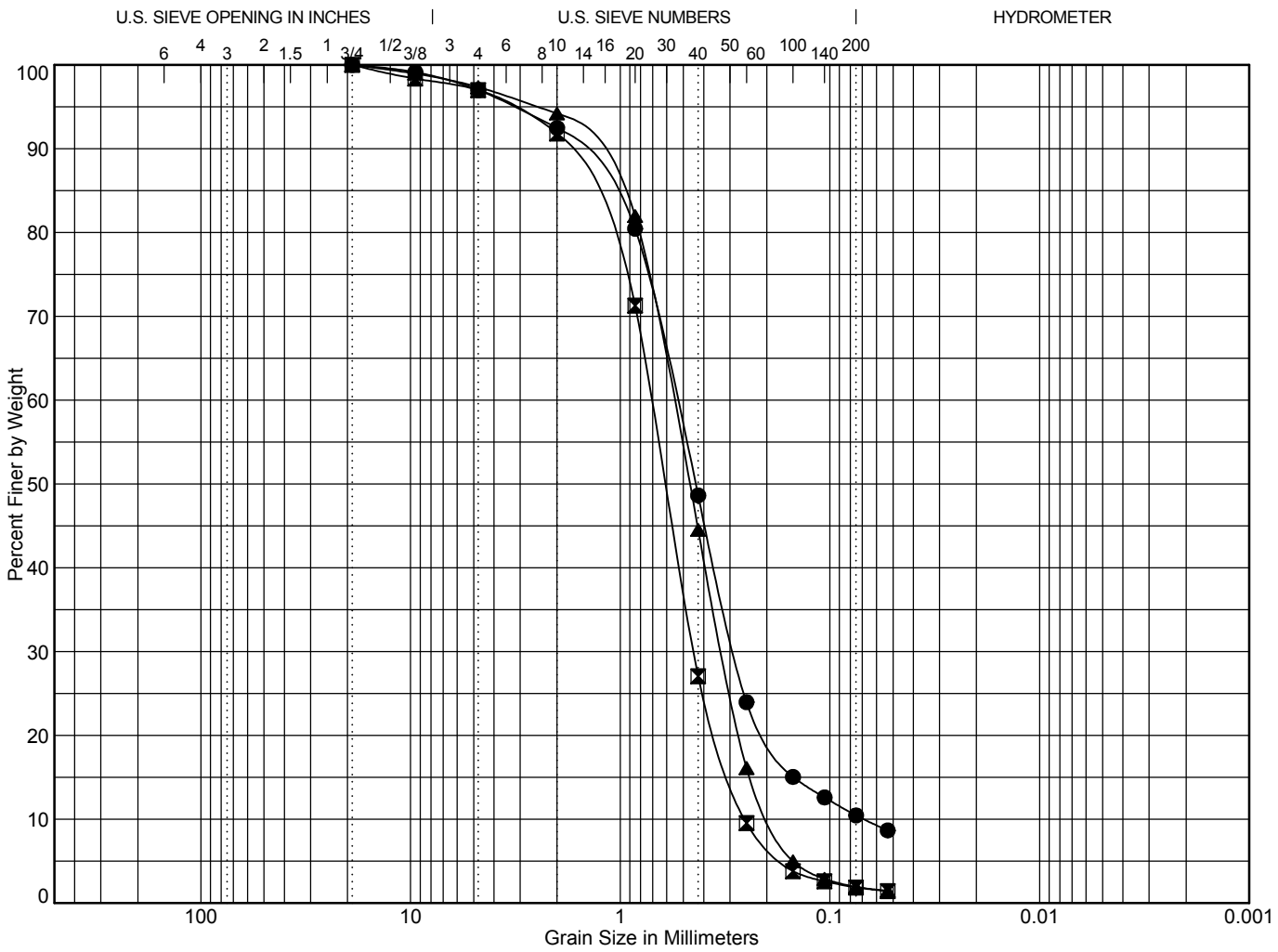
Stewart Infiltration Feasibility
606 Highland Drive
Arlington, Washington

Log of Test Pits

Figure 4



Cobbles	Gravel		Sand			Silt or Clay
	coarse	fine	coarse	medium	fine	

Point		Depth	Classification	LL	PL	PI	C_c	C_u
●	TP-1	1.3	SLIGHTLY SILTY SAND (SP-SM)				2.17	7.92
⊠	TP-1	8.0	POORLY GRADED SAND (SP)				1.10	2.81
▲	TP-2	2.3	POORLY GRADED SAND (SP)				0.98	3.00

Point		Depth	D_{100}	D_{60}	D_{50}	D_{30}	D_{10}	%Coarse Gravel	% Fine Gravel	% Coarse Sand	% Medium Sand	% Fine Sand	% Fines
●	TP-1	1.3	19	0.544	0.438	0.285	0.069	0.0	3.0	4.5	43.8	38.2	10.5
⊠	TP-1	8.0	19	0.712	0.609	0.445	0.253	0.0	3.0	5.2	64.8	25.2	1.9
▲	TP-2	2.3	19	0.566	0.47	0.324	0.189	0.0	2.7	3.1	49.7	42.6	1.9

$C_c = D_{30}^2/(D_{60} * D_{10})$
$C_u = D_{60}/D_{10}$

To be well graded: $1 < C_c < 3$ and $C_u > 4$ for GW or $C_u > 6$ for SW

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Stewart Infiltration Feasibility
606 Highland Drive
Arlington, Washington

Grain Size Test Data

Figure 5

REPORT LIMITATIONS AND GUIDELINES FOR ITS USE[1]

Subsurface issues may cause construction delays, cost overruns, claims, and disputes. While you cannot eliminate all such risks, you can manage them. The following information is provided to help:

Geotechnical Services are Performed for Specific Purposes, Persons, and Projects

At GeoTest our geotechnical engineers and geologists structure their services to meet specific needs of our clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of an owner, a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared solely for the client. No one except you should rely on your geotechnical engineer who prepared it. And no one – not even you – should apply the report for any purpose or project except the one originally contemplated.

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report is Based on a Unique Set of Project-Specific Factors

GeoTest's geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the clients goals, objectives, and risk management preferences; the general nature of the structure involved its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless GeoTest, who conducted the study specifically states otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed, for example, from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed construction,
- alterations in drainage designs; or
- composition of the design team; the passage of time; man-made alterations and construction whether on or adjacent to the site; or by natural alterations and events, such as floods, earthquakes or groundwater fluctuations; or project ownership.

Always inform GeoTest's geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

[1]Information in this document is based upon material developed by ASFE, Professional Firms Practicing in the Geosciences(asfe.org)

Subsurface Conditions Can Change

This geotechnical or geologic report is based on conditions that existed at the time the study was performed. Do not rely on the findings and conclusions of this report, whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. Always contact GeoTest before applying the report to determine if it is still relevant. A minor amount of additional testing or analysis will help determine if the report remains applicable.

Most Geotechnical and Geologic Findings are Professional Opinions

Our site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoTest's engineers and geologists review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ – sometimes significantly – from those indicated in your report. Retaining GeoTest who developed this report to provide construction observation is the most effective method of managing the risks associated with anticipated or unanticipated conditions.

A Report's Recommendations are *Not* Final

Do not over-rely on the construction recommendations included in this report. Those recommendations are not final, because geotechnical engineers or geologists develop them principally from judgment and opinion. GeoTest's geotechnical engineers or geologists can finalize their recommendations only by observing actual subsurface conditions revealed during construction. GeoTest cannot assume responsibility or liability for the report's recommendations if our firm does not perform the construction observation.

A Geotechnical Engineering or Geologic Report may be Subject to Misinterpretation

Misinterpretation of this report by other design team members can result in costly problems. Lower that risk by having GeoTest confer with appropriate members of the design team after submitting the report. Also, we suggest retaining GeoTest to review pertinent elements of the design teams plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having GeoTest participate in pre-bid and preconstruction conferences, and by providing construction observation.

Do not Redraw the Exploration Logs

Our geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors of omissions, the logs included in this report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable; but recognizes that separating logs from the report can elevate risk.

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, but preface it with a clearly written letter of transmittal. In that letter, consider advising the contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the GeoTest and/or to conduct

[1]Information in this document is based upon material developed by ASFE, Professional Firms Practicing in the Geosciences(asfe.org)

additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might you be in a position to give contractors the best information available, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. In addition, it is recommended that a contingency for unanticipated conditions be included in your project budget and schedule.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering or geology is far less exact than other engineering disciplines. This lack of understanding can create unrealistic expectations that can lead to disappointments, claims, and disputes. To help reduce risk, GeoTest includes an explanatory limitations section in our reports. Read these provisions closely. Ask questions and we encourage our clients or their representative to contact our office if you are unclear as to how these provisions apply to your project.

Environmental Concerns Are Not Covered in this Geotechnical or Geologic Report

The equipment, techniques, and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated containments, etc. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk management guidance. Do not rely on environmental report prepared for some one else.

Obtain Professional Assistance to Deal with Biological Pollutants

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts biological pollutants from growing on indoor surfaces. Biological pollutants includes but is not limited to molds, fungi, spores, bacteria and viruses. To be effective, all such strategies should be devised for the express purpose of prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional biological pollutant prevention consultant. Because just a small amount of water or moisture can lead to the development of severe biological infestations, a number of prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of this study, the geotechnical engineer or geologist in charge of this project is not a biological pollutant prevention consultant; none of the services preformed in connection with this geotechnical engineering or geological study were designed or conducted for the purpose of preventing biological infestations.

[1]Information in this document is based upon material developed by ASFE, Professional Firms Practicing in the Geosciences(asfe.org)