

# SECTION 11 SOILS ANALYSIS REPORT

#### **Brian Groth**

**From:** G G <guss@harbengineering.com> **Sent:** Monday, July 02, 2018 9:37 AM

**To:** Brian Groth

**Subject:** Fwd: 6215 NW Larkspur Street Test Pit Information

Attachments: image001.jpg; Untitled attachment 00075.html; 6215 NW Larkspur Street Geotechincal

Investigation Proposal from CWE.PDF; Untitled attachment 00078.html; 17328, 6215 Larkspur Combined Test Plt Logs.pdf; Untitled attachment 00081.html; 17328, 6215 Larkspur PRELIM Figure 2 - Exploration Location Map.pdf; Untitled attachment

00084.html

The same info I sent you. Nothing more than his comments on the email. Note, the undocumented fill was fine as I remember talking to him. There was no unsuitable material on the site. it was basically within the foundation area and it was fine. Thanks

Begin forwarded message:

From: Alan Rutherford <alan@columbiawestengineering.com>
Subject: 6215 NW Larkspur Street Test Pit Information

Date: December 14, 2017 at 5:58:07 PM PST

To: "guss@harbengineering.com" <guss@harbengineering.com>, "Brian Groth

(brian@harbengineering.com)" <bri>brian@harbengineering.com>

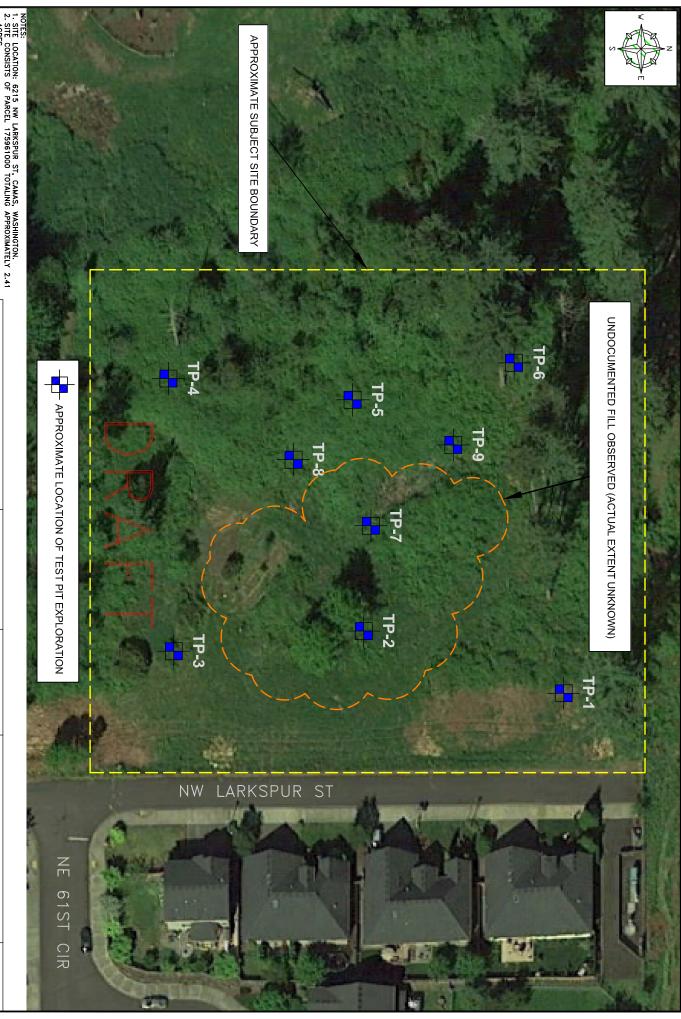
Gus,

Attached is our test pit logs and a figure showing locations and approximate area of undocumented fill. Generally the fill we saw was just side-cast, loose clay material which would be fine as re-use for fill. The bedrock was generally digable for the top 3-5 feet before becoming difficult. Refusal is relative, as we were using a smaller machine.

Let me know if you have any questions. Or if we should go forward on a full Geotech report. I have included a proposal for the geo report.

Best,

Alan Rutherford Project Geologist



DRAWING IS NOT TO SCALE.

AERIAL PHOTO SOURCED FROM GOOGLE EARTH.

GROUNDWAITER SEEPS ENCOUNTERED IN TP-3 AT 5-FT BGS AND IN TP-4 AT 2-FT BGS.

6. EXPLORATION LOCATIONS ARE APPROXIMATE AND NOT SURVEYED.
7. TEST PITS BACKFILLED LOOSELY WITH ONSITE SOIL ON DECEMBER 7, 2017.

**Columbia Wes** 11917 NE 95th STREET VANCOUVER, WASHINGTON 98682 PHONE: 360823-2900 FAX: 360-823-2901

Scale: NONE CAD File: FIGURE 2 Client: HARB Checked: ASR Job No: 17328 Date: 12/14/17 Rev By Drawn: JFM Date 6215 NW LARKSPUR STREET EXPLORATION LOCATION MAP CAMAS, WASHINGTON

Design:

FIGURE

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								PROJEC	T.N.O.		TEOT DIT	. 110	
6215	T NAME NW Larks	our Street				CLIENT Harb			17328	,	TEST PIT NO.  TP-1		
	CT LOCATION					CONTRACTOR	EQUIPMENT	ENGINE	ER		DATE		
Cam	as, Washin	gton				Thompson Brothers	Excavator		ASR /	JFM	12/7/17		
	T LOCATION					APPROX. SURFACE ELEVATION	GROUNDWATER DEPTH	START TIME			FINISH TIME		
See	Figure 2					248 ft amsl	Not encountered		0816		0835		
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIF	PTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing	
0						Approximately 8 to 12 in topsoil.			_				
-		Hesson clay loam		CL		Dark brown sandy CLA\ medium dense [Soil Typ	/, damp to moist, e 2].						
_					0	Weathered, varicolored, [Soil Type 3].	sedimentary bedrock						
- 5					0.0								
-						Bottom of test pit at 6.0 Groundwater not encour	feet. ntered.						
- - 10													
_													
- -													
15													

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PROJECT	FNAME					CLIENT		PROJEC	T NO		TEST PIT	NO	
6215 I	NW Larks	pur Street				Harb		17328			TP-2		
	r LOCATION IS, Washir	igton				CONTRACTOR Thompson Brothers	Excavator	ENGINE	ASR /	JFM	DATE 1	2/7/17	
TEST PIT	LOCATION					APPROX. SURFACE ELEVATION	GROUNDWATER DEPTH	START 1			FINISH TIME		
See F	igure 2		ı			260 ft amsl	Not encountered		0838			0848	
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRII	PTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing	
0						Approximately 6 to 8 inc	hes of grass and topsoil.		_				
- 5						FILL. Dark brown sandy soft to medium stiff [Soil	clay, damp to moist, Type 1]						
- - - 10						Weathered varicolored s [Soil Type 3].  Bottom of test pit at 8.5 Groundwater not encount	feet.						
- - -													

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						1201111						
	NW Larks	pur Street	t			CLIENT Harb		PROJEC	T NO. 17328		TEST PIT	NO. Γ <b>P-3</b>
	TLOCATION as, Washir	ngton				CONTRACTOR Thompson Brothers	EXCAVATOR	ENGINE	ER ASR /	JFM	DATE 1	2/7/17
EST PIT	LOCATION Figure 2					APPROX. SURFACE ELEVATION 262 ft amsl	GROUNDWATER DEPTH 5 feet bgs	START	0851		FINISH TI	ме 0905
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRI	PTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing
0 10	ID	Hesson clay loam	Type		Log	Approximately 8 to 12 in topsoil.  Dark brown sandy CLA' medium dense [Soil Type 3].  Groundwater seep at 5.  Bottom of test pit at 9.0 Groundwater seep enco	riches of grass and  Y, damp to moist, one 2].  sedimentary bedrock  0 feet bgs.	OW OO	Pa. No. 20		Plas In	Testing
15												

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						·							
	NW Larks <sub>l</sub>	pur Street				CLIENT Harb			17328	3		NO. Γ <b>P-4</b>	
	TLOCATION AS, Washin	gton				CONTRACTOR Thompson Brothers	Excavator	ENGINE	ER ASR /	JFM	DATE 1	2/7/17	
	LOCATION Figure 2					APPROX. SURFACE ELEVATION 278 ft amsl	GROUNDWATER DEPTH 2 feet bgs	START T	0910		FINISH TIME 0923		
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIF	PTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing	
0						'							
<b>▼</b>					0. 0. 0. 0. 0.	Weathered varicolored s [Soil Type 3].  Heavy groundwater see							
- - 5 -					. 0 . 0 . 0 . 0 . 0 . 0 . 0 . 0 . 0 . 0								
-					0:								
- 10 - -						Excavator met refusal a Heavy groundwater see feet.							
- - 15													

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	NW Larks <sub>l</sub>	pur Street				CLIENT <b>Harb</b>		PROJEC	T NO. 17328	}	TEST PIT	NO. Γ <b>P-5</b>	
	TLOCATION as, Washin	gton				CONTRACTOR Thompson Brothers	Excavator	ENGINE	ER ASR /	JFM	DATE 1	2/7/17	
TEST PIT	Γ LOCATION	<u> </u>				APPROX. SURFACE ELEVATION	GROUNDWATER DEPTH	START 1	IME		FINISH TI		
See F	igure 2	1		1		266 ft amsl	Not encountered		0926		0936		
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRII	PTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing	
0						Approximately 8 to 12 in topsoil.	ches of grass and						
-		Hesson clay loam		CL		Dark brown sandy CLA\ medium dense [Soil Typ	/, damp to moist, e 2].						
-					0.	Weathered varicolored s [Soil Type 3].	sedimentary bedrock						
- 5 - -					0. 0. 0. 0. 0. 0. 0. 0.								
- - 10 -						Bottom of test pit at 8.5 Groundwater not encoun							
- - 15													

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PROJEC <b>6215</b>	T NAME NW Larks	pur Street				CLIENT Harb		PROJECT NO. 17328			TEST PIT NO.		
	t LOCATION as, Washin	gton				CONTRACTOR Thompson Brothers	Excavator	ENGINE	ASR /	JFM			
	T LOCATION Figure 2					APPROX. SURFACE ELEVATION 256 ft amsl	GROUNDWATER DEPTH  Not encountered				FINISH TIME 0948		
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRII	PTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing	
0						'			_				
-		Hesson clay loam		CL		Dark brown sandy CLA\ medium dense [Soil Typ	/, damp to moist, se 2].						
_					00	Weathered varicolored s [Soil Type 3].	sedimentary bedrock						
- 5 - -					0.0.0.0.0								
-						Excavator met refusal a Groundwater not encoul							
- 10 - -													
- - 15													

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	T.114.45					CLIENT		PROJEC	TNO		TECT DIT	NO	
PROJEC 6215	TNAME NW Larksı	our Street				Harb			17328	3	TEST PIT NO.		
	T LOCATION					CONTRACTOR	EQUIPMENT	ENGINE	ER .		DATE		
Cama	as, Washin	gton				Thompson Brothers	Excavator		ASR /	JFM	1	2/7/17	
	T LOCATION					APPROX. SURFACE ELEVATION	GROUNDWATER DEPTH	START TIME			FINISH TIME		
See I	Figure 2					262 ft amsl	Not encountered		0950		0955		
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIF	PTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing	
Depth (feet)	Field	Soil Survey	Soil	Soil	Graphic Log	Approximately 8 to 12 in topsoil.  FILL. Dark brown sandy soft to medium stiff [Soil Garbage encountered a Soil Type 3].  Bottom of test pit at 7.0 Groundwater not encountered encountered encountered a soil Type 3.	clay, damp to moist, Type 1] t 2.0 feet bgs.	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid	Plasticity Index		
- - 15													

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PROJECT	TNAME NW Larksı	our Street				CLIENT Harb		PROJEC	17328	3	TEST PIT NO. TP-8		
	T LOCATION		<u> </u>			CONTRACTOR	EQUIPMENT	ENGINE	ER		DATE		
Cama	as, Washin	gton				Thompson Brothers	Excavator		ASR /	JFM	1	2/7/17	
	T LOCATION					APPROX. SURFACE ELEVATION	GROUNDWATER DEPTH	START TIME			FINISH TIME		
See	Figure 2					266 ft amsl	Not encountered		1000		1005		
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRIF	PTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing	
0						Approximately 8 to 12 in topsoil.	-						
-		Hesson clay loam		CL		Dark brown sandy CLA\ medium dense [Soil Typ	/, damp to moist, ne 2].						
_					0.:0	Weathered varicolored s [Soil Type 3].	sedimentary bedrock						
_						Bottom of test pit at 4.0 Groundwater not encour	feet. ntered.						
- 5 - -													
- - 10 -													
- - - 15													

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DDO IFOT	- NIANAT					CLIENT		DDO IEC	TNO		TEST DIT	NO	
PROJECT <b>6215 1</b>	NAME NW Larksı	our Street				Harb		PROJEC	17328	3	TEST PIT NO. TP-9		
	r LOCATION IS, Washin	aton				CONTRACTOR Thompson Brothers	EXCAVATOR	ENGINE	ER ASR /	JFM	DATE 1	2/7/17	
	LOCATION	91011				APPROX. SURFACE ELEVATION	GROUNDWATER DEPTH	START 1		01 101	FINISH TIME		
See F	igure 2					262 ft amsl	Not encountered		1020			1023	
Depth (feet)	Sample Field ID	SCS Soil Survey Description	AASHTO Soil Type	USCS Soil Type	Graphic Log	LITHOLOGIC DESCRII	PTION AND REMARKS	Moisture Content (%)	Passing No. 200 Sieve (%)	Liquid Limit	Plasticity Index	Infiltration Testing	
0						Approximately 8 to 12 in topsoil.	iches of grass and		_				
		Hesson clay loam		CL		Dark brown sandy CLA\ medium dense [Soil Typ	(, damp to moist, pe 2].						
_					.0	Weathered varicolored s [Soil Type 3].							
-						Bottom of test pit at 3.5 Groundwater not encoun	feet. ntered.						
- 5													
-													
-													
-													
- 10													
-													
15													